Data Definitions Manual

v3.0

This document defines each data element a user may need to enter into the registry. Please note that many items are only relevant for a subset of patients; such qualifiers are noted in the "Displayed if" section of the description. If the item is marked as required for case closure, it only applies to the subset of cases for which it is relevant.

Sites can opt out of sending any or all of the following fields to the registry:

- Medical record number
- Social security number / Social insurance number / National ID
- Patient first name
- Patient last name
- Patient DOB
- Mother's first name
- Mother's last name
- Birth zip code
- Residential zip code

Please work with your local compliance office to determine the data you can submit.

Wherever possible, fields are shared across registries and/or use common International Pediatric and Congenital Cardiac Code (IPCCC) definitions.

PC4 Data Definition Manual – Clarifications by Sequence Number

PC4 Seq Num	Case Report Form Section	Field Description	Clarification added 6/1/2023	Clarification added 2/1/2025
540	Patient Information	Antenatal diagnosis of congenital heart disease		✓
640	Patient Information	Fundamental diagnosis		✓
1022	Episode of Care	Home respiratory support at hospital admit		✓
1026	Episode of Care	Existing PPM/AICD at hospital admission	✓	
1027	Episode of Care	PPM/AICD placed during admission	✓	✓
1029	Episode of Care	New dx diaphragm dysfunction	✓	
1031	Episode of Care	New dx vocal cord dysfunction		✓
1033	Episode of Care	Ever had a chest tube during this hospital admission	✓	
1080	Episode of Care	Hospital discharge location		✓
1140	Episode of Care	New permanent feeding tube		✓
1160	Cardiothoracic Surgery	Cardiothoracic surgery	✓	
1220	Cardiac Cath	Cardiac Catheterization	✓	✓
1240	Episode of Care	30-day hospital readmission		✓
1325	Cardiothoracic Surgery	OR entry time		✓
1500	Cardiothoracic Surgery	Cardiac surgery type	✓	✓
1525	Cardiothoracic Surgery	Planned surgery	✓	✓
1541	Cardiothoracic Surgery	Multiple bypass runs	✓	✓
1671	Cardiothoracic Surgery	Extubated in OR/on arrival	✓	
1680	Cardiothoracic Surgery	Date/time of ICU/PACU arrival	✓	
1817	Cardiac Cath	Cath procedure	✓	✓
2180	Cardiac Cath	Pulmonary hypertension eval	✓	
2200	Cardiac Cath	Transvenous pacemaker placement	✓	
2250	Cardiac Cath	Other interventional cardiac cath procedure	✓	
2270	Cardiac Cath	Planned cath intervention	✓	✓
2273	Cardiac Cath	Extubated in cath lab / on arrival	✓	

PC4 Seq Num	Case Report Form Section	Field Description	Clarification added 6/1/2023	Clarification added 2/1/2025
2280	Cardiac Cath	Cath end date/time		✓
2310	CICU Encounter	Admission date/time		✓
2341	CICU Encounter	Critical care end date	✓	✓
2360	CICU Encounter	CICU discharge date/time	✓	✓
2460	CICU Encounter	Reason for encounter		✓
2540	CICU Encounter	Encounter cardiothoracic diagnosis		✓
2560	CICU Encounter	Encounter medical diagnosis		✓
2620	CICU Encounter	CICU disposition	✓	
2640	CICU Encounter	Specific CICU disposition		✓
2740	CICU Encounter	Withdrawal of life-sustaining therapy		✓
2920	CICU Encounter	Any non-cardiothoracic surgery during the encounter	✓	✓
3040	Respiratory Support	Invasive ventilation	✓	
3060	Respiratory Support	Positive airway pressure (PAP)	✓	
3070	Respiratory Support	High-flow nasal cannula (HFNC)	✓	✓
3100	Vascular Access	Venous lines	✓	✓
3110	Vascular Access	Arterial lines	✓	
3130	Vascular Access	Intracardiac lines	✓	
3210	Respiratory Support	Invasive ventilation began at CICU start	✓	
3280	Respiratory Support	Ventilation end date/time	✓	
3300	Respiratory Support	Was the extubation planned	✓	✓
4040	Vascular Access	Venous line type	✓	
4180	Vascular Access	Venous line thrombus requiring treatment	✓	✓
4340	Vascular Access	Intracardiac line site	✓	
4360	Vascular Access	Intracardiac line venue		✓
4460	Vascular Access	Intracardiac line thrombus requiring treatment	✓	
4760	Vascular Access	Arterial line thrombus requiring treatment	✓	
5100	Other Therapies	Vasoactive infusions	✓	✓
5240	Other Therapies	Vasoactive agents	✓	✓
5255	Other Therapies	Date vasoactive course began	✓	
5300	Other Therapies	Sedation/analgesia/neuromuscular block	✓	✓
5340	Other Therapies	Sedation/analgesia/neuromuscular block agent	✓	
5900	Other Therapies	RRT	✓	

PC4 Seq Num	Case Report Form Section	Field Description	Clarification added 6/1/2023	Clarification added 2/1/2025
5905	Other Therapies	RRT for ARF		✓
5980	Other Therapies	Intermittent Hemodialysis	✓	
6440	Medical Events and Complications-Cardiovascular	Cardiac arrest	✓	
6460	Medical Events and Complications-Cardiovascular	ECPR for arrest	✓	✓
6520	Medical Events and Complications-Infectious	Endocarditis		✓
6540	Medical Events and Complications-Cardiovascular	Pericardial effusion	✓	
6560	Medical Events and Complications-Cardiovascular	Pericardial effusion drainage procedure date/time		✓
6580	Medical Events and Complications-Cardiovascular	Arrhythmia requiring therapy	✓	✓
6621	Medical Events and Complications-Cardiovascular	Arrhythmia end date	✓	
6630	Medical Events and Complications-Cardiovascular	Arrhythmia type	✓	
6640	Medical Events and Complications-Cardiovascular	Arrhythmia therapy - Drug	✓	✓
6650	Medical Events and Complications-Cardiovascular	Arrhythmia therapy - Electrical Cardioversion/Defibrillation	✓	
6660	Medical Events and Complications-Cardiovascular	Arrhythmia therapy - Permanent Pacemaker/AICD	✓	
6670	Medical Events and Complications-Cardiovascular	Arrhythmia therapy - Temporary Pacemaker	✓	

PC4 Seq Num	Case Report Form Section	Field Description	Clarification added 6/1/2023	Clarification added 2/1/2025
6700	Medical Events and Complications-Cardiovascular	Mechanical circulatory support	✓	✓
6730	Medical Events and Complications-Cardiovascular	Active CPR at cannulation	✓	
6760	Medical Events and Complications-Cardiovascular	Date/time of circulatory support initiation	✓	
6780	Medical Events and Complications-Cardiovascular	Date/time of circulatory support discontinuation	✓	
6851	Medical Events and Complications-Cardiovascular	Low cardiac output syndrome (LCOS)	✓	✓
6861	Medical Events and Complications-Cardiovascular	Initial LCOS date/time		✓
6872	Medical Events and Complications-Cardiovascular	LCOS - VIS tripled	✓	✓
6874	Medical Events and Complications-Cardiovascular	LCOS - AVO2 >40%		✓
6876	Medical Events and Complications-Cardiovascular	LCOS - Physician note	✓	
6881	Medical Events and Complications-Cardiovascular	LCOS timing	✓	✓
6930	Medical Events and Complications-Cardiovascular	ICU-level treatment for PHTN	✓	
7200	Medical Events and Complications-Operative/Procedural	Bleeding requiring reoperation	✓	✓
7280	Medical Events and Complications-Operative/Procedural	Sternum left open or reopened	✓	

PC4 Seq Num	Case Report Form Section	Field Description	Clarification added 6/1/2023	Clarification added 2/1/2025
7320	Medical Events and Complications-Respiratory	Chylothorax requiring intervention	✓	✓
7382	Medical Events and Complications-Respiratory	Multiple chest tubes for chylothorax	✓	
7401	Medical Events and Complications-Respiratory	Pleural effusion/hemothorax requiring chest tube	✓	✓
7407	Medical Events and Complications-Respiratory	Multiple chest tubes for pleural effusion/hemothorax	✓	
7487	Medical Events and Complications-Respiratory	Multiple chest tubes for pneumothorax	✓	
7721	Medical Events and Complications-Infectious	VAP	✓	
7760	Medical Events and Complications-Infectious	CLABSI	✓	✓
7840	Medical Events and Complications-Infectious	Sepsis	✓	
7880	Medical Events and Complications-Infectious	Superficial surgical site infection (SSI)	✓	✓
7920	Medical Events and Complications-Infectious	Deep surgical site infection (SSI)	✓	
8040	Medical Events and Complications-Infectious	UTI	✓	
8120	Medical Events and Complications-Neuro	Stroke	✓	
8142	Medical Events and Complications-Neuro	Stroke date/time	✓	
8240	Medical Events and Complications-Neuro	Seizure date/time	✓	✓
8260	Medical Events and Complications-Neuro	IVH grade II or higher	✓	

PC4 Seq Num	Case Report Form Section	Field Description	Clarification added 6/1/2023	Clarification added 2/1/2025
8302	Medical Events and Complications-Neuro	Intracranial hemorrhage (non-stroke)	✓	
8462	Medical Events and Complications-Gastrointestinal	Hepatic injury (ALT>500)	✓	
8501	Medical Events and Complications-Gastrointestinal	NEC - Bell's stage II or III		✓
8562	Medical Events and Complications-Other	Pressure ulcer stage III or higher		✓
8600	Medical Events and Complications-Other	Narcotic dependence requiring wean	✓	✓
8700	Medical Events and Complications-Other	Other complication	✓	
8900	Encounter type	Cardiac surgery immediately before or during CICU encounter	✓	
9000	Surgical encounters	Preop factor		✓
9005	Surgical encounters	Preop PHTN	✓	
9007	Surgical encounters	Preop chronic lung disease of prematurity		✓
9070	Surgical encounters - VIS	Inotropic/vasopressor infusion at time of surgery		✓
9150	Surgical encounters	Any CPR prior to surgery		✓
9170	Surgical encounters	Preop viral respiratory infection	✓	✓
9180	Surgical encounters	Arrest during surgery		✓
9210	Surgical encounters	Left OR with open sternum	✓	
9260	Surgical encounters	Postop lactate available (first 2 hrs postop)	✓	
9320	Surgical encounters	2 hour postop chest tube output (cc)	✓	
9324	Surgical encounters - Feeding	Any preop enteral feeding	✓	
9332	Surgical encounters - Feeding	Any postop enteral feeding in the CICU	✓	
9336	Surgical encounters - Feeding	Nutrition at CICU discharge	✓	
9350	Surgical encounters - VIS	Postop dopamine (mcg/kg/min)	✓	
9360	Surgical encounters - VIS	Postop dobutamine (mcg/kg/min)	✓	

PC4 Seq Num	Case Report Form Section	Field Description	Clarification added 6/1/2023	Clarification added 2/1/2025
9370	Surgical encounters - VIS	Postop epinephrine (mcg/kg/min)	✓	
9380	Surgical encounters - VIS	Postop norepinephrine (mcg/kg/min)	✓	
9390	Surgical encounters - VIS	Postop milrinone (mcg/kg/min)	✓	
9400	Surgical encounters - VIS	Postop vasopressin (units/kg/min)	✓	
9450	Surgical encounters	FiO2	✓	
9506	Surgical encounters - VIS	On support at this postop timepoint	✓	
9526	Surgical encounters	Max postop Cr (mg/dL)	✓	
9528	Surgical encounters	Max postop Cr date	✓	
9700	Non-surgical encounters	High-risk diagnoses on admission		✓
9761	Non-surgical encounters	BNP available (18hr window)		✓
9791	Non-surgical encounters	Creatinine available (18hr window)		✓
9796	Non-surgical encounters	Creatinine available through CICU day 7	✓	
9798	Non-surgical encounters	Max CICU creatinine (mg/dL)	✓	
9801	Non-surgical encounters	Max Cr date	✓	
9921	Non-surgical encounters - VIS	Inotropic/vasopressor infusion on admission		✓

Data Definitions

Patient Information

MRN

Seq Num: 120

Required for case closure: No *Submission is optional*

Registry field: [Demographics].[MedRecN]

Shared with PAC3

Description: Indicate the patient's medical record number at the hospital where the encounter occurred. This field should be collected in compliance with state/local privacy laws.

Social security number / Social insurance number/National ID

Seq Num: 180

Required for case closure: No *Submission is optional*

Registry field: [Demographics].[NationalID]

Shared with PAC3

Description: Indicate the nine-digit Patient's Social Security Number (SSN). Although this is the Social Security Number in the USA, other countries may have a different National Patient Identifier Number. For example in Canada, this would be the Social Insurance Number. This field should be collected in compliance with state/local privacy laws.

Last name

Seq Num: 140

Required for case closure: No *Submission is optional*

Registry field: [Demographics].[PatLName]

Shared with PAC3

Description: Indicate the patient's last name as documented in the medical record. This field should be collected in compliance with state/local privacy laws.

First name

Seq Num: 160

Required for case closure: No *Submission is optional*

Registry field: [Demographics].[PatFName]

Shared with PAC3

Description: Indicate the patient's first name as documented in the medical record. This field should be collected in compliance with state/local privacy laws.

DOB

Seq Num: 200

Required for case closure: Yes *Submission is optional*

Registry field: [Demographics].[DOB]

Shared with PAC3

Description: Indicate the patient's date of birth using 4-digit format for year. This field should be collected in compliance with state/local privacy laws.

Gender

Seq Num: 220

Required for case closure: Yes

Registry field: [Demographics].[Gender]

Shared with PAC3

Description: Indicate the patient's gender at birth.

Values	*Code*	*Text*
	1	Male
	2	Female
	3	Ambiguous

Mother's name known

Seq Num: 375

Required for case closure: Yes

Registry field: [Demographics].[MothKnown]

Shared with PAC3

Description: Indicate whether the name of patient's biological mother at time of patient's birth is known. If the patient is adopted and the name of the patient's biological mother is not known, indicate whether the name of the patient's adopted mother is known.

Values	*Code*	*Text*
	1	Yes
	0	No

Mother's last name

Seq Num: 380

Required for case closure: No *Submission is optional*

Registry field: [Demographics].[MothLName]

Shared with PAC3

Description: Indicate the last name of patient's biological mother at time of patient's birth, if it is known. If the patient is adopted, if the last name of the patient's biological mother is known, please enter the last initial of the patient's biological mother. If the patient is adopted, if the last name of the patient's biological mother is not known, please enter the last name of the patient's adopted mother. This field should be collected in compliance with state/local privacy laws.

Mother's first name

Seq Num: 400

Required for case closure: No *Submission is optional*

Registry field: [Demographics].[MothFName]

Shared with PAC3

Description: Indicate the first name of patient's biological mother at time of patient's birth, if it is known. If the patient is adopted, if the first name of the patient's biological mother is known, please enter the first initial of the patient's biological mother. If the patient is adopted, if the first name of the patient's biological mother is not known, please enter the first name of the patient's adopted mother. This field should be collected in compliance with state/local privacy laws.

Race documented

Seq Num: 230

Required for case closure: Yes

Registry field: [Demographics].[RaceDocumented]

Shared with PAC3

Description: Indicate whether race is documented.

Values

Code	*Text*
1	Yes
0	No
3	Patient declined to disclose

Caucasian

Seq Num: 240

Required for case closure: Yes

Registry field: [Demographics].[RaceCaucasian]

Shared with PAC3

Description: Indicate whether the patient's race, as determined by the patient or family, includes Caucasian. This includes a person having origins in any of the original peoples of Europe, the Middle East, or North Africa. Definition source: Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity: The minimum categories for data on race and ethnicity for Federal statistics, program administrative reporting, and civil rights compliance reporting. (www.whitehouse.gov/omb/fedreg/1997standards.html)

Values

Code	*Text*
1	Yes
0	No

Black/African American

Seq Num: 260

Required for case closure: Yes

Registry field: [Demographics].[RaceBlack]

Shared with PAC3

Description: Indicate whether the patient's race, as determined by the patient or family, includes Black / African American. This includes a person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American." Definition source: Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity: The minimum categories for data on race and ethnicity for Federal statistics, program administrative reporting, and civil rights compliance reporting. (www.whitehouse.gov/omb/fedreg/1997standards.html)

Values

Code	*Text*
1	Yes
0	No

Asian

Seq Num: 280

Required for case closure: Yes

Registry field: [Demographics].[RaceAsian]

Shared with PAC3

Description: Indicate whether the patient's race, as determined by the patient or family, includes Asian. This includes a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam. Definition source: Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity: The minimum categories for data on race and ethnicity for Federal statistics, program administrative reporting, and civil rights compliance reporting. (www.whitehouse.gov/omb/fedreg/1997standards.html)

Values

Code	*Text*
1	Yes
0	No

Native American

Seq Num: 300

Required for case closure: Yes

Registry field: [Demographics].[RaceNativeAm]

Shared with PAC3

Description: Indicate whether the patient's race, as determined by the patient or family, includes American Indian / Alaskan Native. This includes a person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment. Definition source: Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity: The minimum categories for data on race and ethnicity for Federal statistics, program administrative reporting, and civil rights compliance reporting. (www.whitehouse.gov/omb/fedreg/1997standards.html)

Values

Code	*Text*
1	Yes
0	No

Native Pacific Islander

Seq Num: 320

Required for case closure: Yes

Registry field: [Demographics].[RaceNativePI]

Shared with PAC3

Description: Indicate whether the patient's race, as determined by the patient or family, includes Native Hawaiian / Pacific Islander. This includes a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. Definition source: Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity: The minimum categories for data on race and ethnicity for Federal statistics, program administrative reporting, and civil rights compliance reporting. (www.whitehouse.gov/omb/fedreg/1997standards.html)

Values

Code	*Text*
1	Yes
0	No

Other race

Seq Num: 340

Required for case closure: Yes

Registry field: [Demographics].[RaceOther]

Shared with PAC3

Description: Indicate whether the patient's race, as determined by the patient or family, includes any other race.

Values

Code	*Text*
1	Yes
0	No

Hispanic or Latino ethnicity

Seq Num: 360

Required for case closure: Yes

Registry field: [Demographics].[Ethnicity]

Shared with PAC3

Description: Indicate if the patient is of Hispanic or Latino ethnicity as determined by the patient / family. Hispanic or Latino ethnicity includes patient report of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.

Values

Code	*Text*
1	Yes
0	No
3	Not documented

Premature birth

Seq Num: 417

Required for case closure: Yes

Registry field: [Demographics].[Preterm]

Shared with PAC3

Description: If the patient age is <= 1 year, indicate whether patient was born prematurely as defined by a gestational period of less than 37 weeks.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Gestational age at birth known

Seq Num: 420

Required for case closure: Yes

Registry field: [Demographics].[GestAgeKnown]

Shared with PAC3

Description: If the patient age is <= 1 year, indicate whether the patient's gestational age at birth is known

Values	*Code*	*Text*
	1	Yes
	0	No

Gestational age – weeks

Seq Num: 440

Required for case closure: Yes

Registry field: [Demographics].[GestAgeWks]

Shared with PAC3

Description: If the gestational age is known, indicate the patient's estimated gestational age at birth in weeks.

Birth weight known

Seq Num: 460

Required for case closure: Yes

Registry field: [Demographics].[BirthWtKnown]

Shared with PAC3

Description: If the patient age is <= 30 days, indicate whether the patient's birth weight is known.

Values	*Code*	*Text*
	1	Yes
	0	No

Birth weight (kg)

Seq Num: 480

Required for case closure: Yes

Registry field: [Demographics].[BirthWt]

Shared with PAC3

Description: If the birth weight is known, indicate the weight in kilograms of the patient at birth.

Birth length (cm)

Seq Num: 500

Required for case closure: No

Registry field: [Demographics].[BirthLen]

Shared with PAC3

Description: If the patient age is <= 30 days, indicate the length in centimeters of the patient at birth.

Birth head circumference (cm)

Seq Num: 520

Required for case closure: No

Registry field: [Demographics].[BirthHCircum]

Shared with PAC3

Description: If the patient age is <= 30 days, indicate the head circumference in centimeters of the patient at birth.

Birth country

Seq Num: 600

Required for case closure: No

Registry field: [Demographics].[BirthCountry]

Shared with PAC3

Description: If the patient age is <= 30 days, indicate the country in which patient was born. For a list of values, see the "Country of Residence" field in the Episode of Care section.

Values

Code	*Text*
USA	UNITED STATES OF AMERICA
AFG	AFGHANISTAN
ALA	ÅLAND ISLANDS
ALB	ALBANIA
DZA	ALGERIA
ASM	AMERICAN SAMOA
AND	ANDORRA
AGO	ANGOLA
AIA	ANGUILLA
ATG	ANTIGUA AND BARBUDA
ARG	ARGENTINA
ARM	ARMENIA
ABW	ARUBA
AUS	AUSTRALIA
AUT	AUSTRIA
AZE	AZERBAIJAN
BHS	BAHAMAS
BHR	BAHRAIN
BGD	BANGLADESH
BRB	BARBADOS
BLR	BELARUS
BEL	BELGIUM
BLZ	BELIZE
BEN	BENIN
BMU	BERMUDA
BTN	BHUTAN
BOL	BOLIVIA (PLURINATIONAL STATE OF)
BES	BONAIRE, SAINT EUSTATIUS AND SABA
BIH	BOSNIA AND HERZEGOVINA
BWA	BOTSWANA
BRA	BRAZIL

VGB	BRITISH VIRGIN ISLANDS
BRN	BRUNEI DARUSSALAM
BGR	BULGARIA
BFA	BURKINA FASO
BDI	BURUNDI
KHM	CAMBODIA
CMR	CAMEROON
CAN	CANADA
CPV	CAPE VERDE
CYM	CAYMAN ISLANDS
CAF	CENTRAL AFRICAN REPUBLIC
TCD	CHAD
CHL	CHILE
CHN	CHINA
COL	COLOMBIA
COM	COMOROS
COG	CONGO
COK	COOK ISLANDS
CRI	COSTA RICA
CIV	CÔTE D'IVOIRE
HRV	CROATIA
CUB	CUBA
CUW	CURAÇAO
CYP	CYPRUS
CZE	CZECH REPUBLIC
PRK	DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA
COD	DEMOCRATIC REPUBLIC OF THE CONGO
DNK	DENMARK
DJI	DJIBOUTI
DMA	DOMINICA
DOM	DOMINICAN REPUBLIC
ECU	ECUADOR
EGY	EGYPT
SLV	EL SALVADOR
GNQ	EQUATORIAL GUINEA
ERI	ERITREA
EST	ESTONIA
ETH	ETHIOPIA
FRO	FAEROE ISLANDS

FLK	FALKLAND ISLANDS (MALVINAS)
FJI	FIJI
FIN	FINLAND
FRA	FRANCE
GUF	FRENCH GUIANA
PYF	FRENCH POLYNESIA
GAB	GABON
GMB	GAMBIA
GEO	GEORGIA
DEU	GERMANY
GHA	GHANA
GIB	GIBRALTAR
GRC	GREECE
GRL	GREENLAND
GRD	GRENADA
GLP	GUADELOUPE
GUM	GUAM
GTM	GUATEMALA
GGY	GUERNSEY
GIN	GUINEA
GNB	GUINEA-BISSAU
GUY	GUYANA
HTI	HAITI
VAT	HOLY SEE
HND	HONDURAS
HKG	CHINA, HONG KONG SPECIAL ADMINISTRATIVE REGION
HUN	HUNGARY
ISL	ICELAND
IND	INDIA
IDN	INDONESIA
IRN	IRAN (ISLAMIC REPUBLIC OF)
IRQ	IRAQ
IRL	IRELAND
IMN	ISLE OF MAN
ISR	ISRAEL
ITA	ITALY
JAM	JAMAICA
JPN	JAPAN
JEY	JERSEY

JOR	JORDAN
KAZ	KAZAKHSTAN
KEN	KENYA
KIR	KIRIBATI
KWT	KUWAIT
KGZ	KYRGYZSTAN
LAO	LAO PEOPLE'S DEMOCRATIC REPUBLIC
LVA	LATVIA
LBN	LEBANON
LSO	LESOTHO
LBR	LIBERIA
LBY	LIBYA
LIE	LIECHTENSTEIN
LTU	LITHUANIA
LUX	LUXEMBOURG
MAC	CHINA, MACAO SPECIAL ADMINISTRATIVE REGION
MDG	MADAGASCAR
MWI	MALAWI
MYS	MALAYSIA
MDV	MALDIVES
MLI	MALI
MLT	MALTA
MHL	MARSHALL ISLANDS
MTQ	MARTINIQUE
MRT	MAURITANIA
MUS	MAURITIUS
MYT	MAYOTTE
MEX	MEXICO
FSM	MICRONESIA (FEDERATED STATES OF)
MCO	MONACO
MNG	MONGOLIA
MNE	MONTENEGRO
MSR	MONTSERRAT
MAR	MOROCCO
MOZ	MOZAMBIQUE
MMR	MYANMAR
NAM	NAMIBIA
NRU	NAURU

NPL	NEPAL
NLD	NETHERLANDS
NCL	NEW CALEDONIA
NZL	NEW ZEALAND
NIC	NICARAGUA
NER	NIGER
NGA	NIGERIA
NIU	NIUE
NFK	NORFOLK ISLAND
MNP	NORTHERN MARIANA ISLANDS
NOR	NORWAY
PSE	OCCUPIED PALESTINIAN TERRITORY
OMN	OMAN
PAK	PAKISTAN
PLW	PALAU
PAN	PANAMA
PNG	PAPUA NEW GUINEA
PRY	PARAGUAY
PER	PERU
PHL	PHILIPPINES
PCN	PITCAIRN
POL	POLAND
PRT	PORTUGAL
PRI	PUERTO RICO
QAT	QATAR
KOR	REPUBLIC OF KOREA
MDA	REPUBLIC OF MOLDOVA
REU	RÉUNION
ROU	ROMANIA
RUS	RUSSIAN FEDERATION
RWA	RWANDA
SHN	SAINT HELENA
KNA	SAINT KITTS AND NEVIS
LCA	SAINT LUCIA
SPM	SAINT PIERRE AND MIQUELON
VCT	SAINT VINCENT AND THE GRENADINES
BLM	SAINT-BARTHÉLEMY
MAF	SAINT-MARTIN (FRENCH PART)
WSM	SAMOA

SMR	SAN MARINO
STP	SAO TOME AND PRINCIPE
SAU	SAUDI ARABIA
SEN	SENEGAL
SRB	SERBIA
SYC	SEYCHELLES
SLE	SIERRA LEONE
SGP	SINGAPORE
SXM	SINT MAARTEN (DUTCH PART)
SVK	SLOVAKIA
SVN	SLOVENIA
SLB	SOLOMON ISLANDS
SOM	SOMALIA
ZAF	SOUTH AFRICA
SSD	SOUTH SUDAN
ESP	SPAIN
LKA	SRI LANKA
SDN	SUDAN
SUR	SURINAME
SJM	SVALBARD AND JAN MAYEN ISLANDS
SWZ	SWAZILAND
SWE	SWEDEN
CHE	SWITZERLAND
SYR	SYRIAN ARAB REPUBLIC
TJK	TAJIKISTAN
THA	THAILAND
MKD	THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
TLS	TIMOR-LESTE
TGO	TOGO
TKL	TOKELAU
TON	TONGA
TTO	TRINIDAD AND TOBAGO
TUN	TUNISIA
TUR	TURKEY
TKM	TURKMENISTAN
TCA	TURKS AND CAICOS ISLANDS
TUV	TUVALU
UGA	UGANDA
UKR	UKRAINE

ARE	UNITED ARAB EMIRATES
GBR	UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND
TZA	UNITED REPUBLIC OF TANZANIA
VIR	UNITED STATES VIRGIN ISLANDS
URY	URUGUAY
UZB	UZBEKISTAN
VUT	VANUATU
VEN	VENEZUELA (BOLIVARIAN REPUBLIC OF)
VNM	VIET NAM
WLF	WALLIS AND FUTUNA ISLANDS
ESH	WESTERN SAHARA
YEM	YEMEN
ZMB	ZAMBIA
ZWE	ZIMBABWE
OTH	Other

Birth zip code/postal code

Seq Num: 620

Required for case closure: No *Submission is optional*

Registry field: [Demographics].[BirthZip]

Shared with PAC3

Description: If the patient age is <= 30 days and the patient was born in the United States or Canada, indicate the zip/postal code of residence at birth. This field should be collected in compliance with state/local privacy laws.

Antenatal diagnosis of congenital heart disease

Seq Num: 540

Required for case closure: Yes

Registry field: [Demographics].[AntenatalDiag]

Shared with PAC3

Description: If the patient age is <= 30 days, indicate whether a cardiac anomaly was diagnosed antenatally (e.g., fetal ultrasound)

Clarification 2/1/2025: Code yes if patient had an antenatal diagnosis of congenital heart disease, even if subsequent evaluation reveals the antenatal diagnosis was incorrect.

For example, if a patient with a prenatal diagnosis of CHD comes to the CICU for evaluation and is found to have a normal heart, still code Yes, since the patient did carry an antenatal diagnosis and that was the reason for admission. However, this patient's fundamental diagnosis (#640) would be Normal Heart.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

In-vitro Fertilization

Seq Num: 560

Required for case closure: No

Registry field: [Demographics].[BirthIVF]

Shared with PAC3

Description: If the patient age is <= 30 days, indicate if there is any notation that the patient was conceived through in-vitro fertilization

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

In- or out-born

Seq Num: 580

Required for case closure: No

Registry field: [Demographics].[BornLoc]

Shared with PAC3

Description: If the patient age is <= 30 days, indicate Yes if the patient was born at this hospital or one in the immediate vicinity and affiliated with the PC4/PAC3 institution (e.g. Brigham and Women's Hospital and Boston Children's).

Values

Code	*Text*
1	Yes
0	No

Fundamental diagnosis

Seq Num: 640

Required for case closure: Yes

Registry field: [Demographics].[FundDiagnosis]

Shared with PAC3

Description: The fundamental diagnosis is a diagnosis that is carried with a patient throughout life, through all operations and hospitalizations. The fundamental diagnosis is the most complex cardiac anomaly or condition (congenital or acquired) of the patient. This may be the same as or differ from the patient's encounter cardiothoracic diagnosis. For example, a patient with HLHS admitted from home with new onset systemic AV valve regurgitation would have a fundamental diagnosis of "Hypoplastic Left Heart Syndrome" but an encounter cardiothoracic diagnosis of "Tricuspid regurgitation". The appropriate arrhythmia diagnosis should be listed as the fundamental diagnosis for patients with no other forms of structural heart disease that would be otherwise listed as a fundamental diagnosis. The definitions and response options for this field are specified by the STS Congenital Heart Surgery Database.

Clarification 2/1/2025: If the patient is admitted to the CICU due to an antenatal diagnosis (or suspicion) of CHD, but is found to have a normal heart, code "normal heart."

Values

Code	*Text*
10	PFO
20	ASD, Secundum
30	ASD, Sinus venosus
40	ASD, Coronary sinus
50	ASD, Common atrium (single atrium)
71	VSD, Type 1 (Subarterial) (Supracristal) (Conal septal defect) (Infundibular)
73	VSD, Type 2 (Perimembranous) (Paramembranous) (Conoventricular)
75	VSD, Type 3 (Inlet) (AV canal type)
77	VSD, Type 4 (Muscular)
79	VSD, Type: Gerbode type (LV-RA communication)
80	VSD, Multiple
100	AVC (AVSD), Complete (CAVSD)
2610	AVC (AVSD), Complete (CAVSD), Left dominant
2620	AVC (AVSD), Complete (CAVSD), Right dominant
2630	AVC (AVSD), Complete (CAVSD), Balanced
110	AVC (AVSD), Intermediate (transitional)
2640	AVC (AVSD), Intermediate

2640	(transitional), Left dominant
2650	AVC (AVSD), Intermediate (transitional), Right dominant
2660	AVC (AVSD), Intermediate (transitional), Balanced
120	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum)
2670	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum), Left dominant
2680	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum), Right dominant
2690	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum), Balanced
140	AP window (aortopulmonary window)
150	Pulmonary artery origin from ascending aorta (hemitruncus)
160	Truncus arteriosus
2010	Truncus arteriosus + Interrupted aortic arch
180	Partial anomalous pulmonary venous connection (PAPVC)
190	Partial anomalous pulmonary venous connection (PAPVC), scimitar
200	Total anomalous pulmonary venous connection (TAPVC), Type 1 (supracardiac)
210	Total anomalous pulmonary venous connection (TAPVC), Type 2 (cardiac)
220	Total anomalous pulmonary venous connection (TAPVC), Type 3 (infracardiac)
230	Total anomalous pulmonary venous connection (TAPVC), Type 4 (mixed)
250	Cor triatriatum
260	Pulmonary venous stenosis
2480	Pulmonary venous stenosis, Acquired
2490	Pulmonary venous stenosis, Spontaneous
280	Systemic venous obstruction
290	TOF
2140	TOF, Pulmonary stenosis
300	TOF, AVC (AVSD)

310	TOF, Absent pulmonary valve
320	Pulmonary atresia
330	Pulmonary atresia, IVS
340	Pulmonary atresia, VSD (Including TOF, PA)
350	Pulmonary atresia, VSD-MAPCA
360	MAPCA(s) (major aortopulmonary collateral[s]) (without PA-VSD)
370	Ebstein's anomaly
2700	Dysplastic Tricuspid or non-systemic atrioventricular valve, non-Ebstein's
410	Tricuspid or non-systemic atrioventricular valve, Other
420	Pulmonary stenosis, pulmonary or neo-pulmonary Valvar
430	Pulmonary artery stenosis (hypoplasia), Main (trunk)
440	Pulmonary artery stenosis, Branch, Central (within the hilar bifurcation)
450	Pulmonary artery stenosis, Branch, Peripheral (at or beyond the hilar bifurcation)
470	Pulmonary artery, Discontinuous
490	Pulmonary stenosis, Subvalvar
500	DCRV
510	Pulmonary or neo-pulmonary valve, Other
530	Pulmonary or neo-pulmonary valve insufficiency
540	Pulmonary or neo-pulmonary valve insufficiency and stenosis
550	Aortic stenosis, Subvalvar
2500	Aortic Stenosis, Subvalvar, Discrete
2510	Aortic Stenosis, Subvalvar, IHSS
2520	Aortic Stenosis, Subvalvar, Tunnel-like
560	Aortic stenosis, aortic, neo-aortic, or truncal, Valvar
570	Aortic stenosis, Supravalvar
590	Aortic valve atresia
600	Aortic, neo-aortic or truncal valve insufficiency
610	Aortic, neo-aortic or truncal valve insufficiency and stenosis

620 Aortic, neo-aortic or truncal valve, Other

630 Sinus of Valsalva aneurysm

640 LV to aorta tunnel

650 Mitral or systemic AV valve stenosis, Supravalvar ring

660 Mitral or systemic AV valve stenosis, Valvar

670 Mitral or systemic AV valve stenosis, Subvalvar

680 Mitral or systemic AV valve stenosis, Subvalvar, Parachute

700 Mitral or systemic AV valve insufficiency and stenosis

710 Mitral or systemic AV valve insufficiency

720 Mitral or systemic AV valve, Other

730 Hypoplastic left heart syndrome (HLHS)

2760 Hypoplastic left heart syndrome (HLHS), AA+MA

2770 Hypoplastic left heart syndrome (HLHS), AA+MS

2780 Hypoplastic left heart syndrome (HLHS), AS+MA

2790 Hypoplastic left heart syndrome (HLHS), AS+MS

2080 Shone's syndrome

740 Cardiomyopathy (including dilated, restrictive, and hypertrophic)

750 Cardiomyopathy, End-stage congenital heart disease

760 Pericardial effusion

770 Pericarditis

780 Pericardial disease, Other

790 Single ventricle, DILV

800 Single ventricle, DIRV

810 Single ventricle, Mitral atresia

820 Single ventricle, Tricuspid atresia

830 Single ventricle, Unbalanced AV canal

840 Single ventricle, Heterotaxia syndrome

850 Single ventricle, Other

851 Single Ventricle + Total anomalous

851	pulmonary venous connection (TAPVC)
870	Congenitally corrected TGA
872	Congenitally corrected TGA, IVS
874	Congenitally corrected TGA, IVS-LVOTO
876	Congenitally corrected TGA, VSD
878	Congenitally corrected TGA, VSD-LVOTO
2800	Congenitally corrected TGA, IVS + Coarctation or arch hypoplasia or arch interruption
2810	Congenitally corrected TGA, VSD + Coarctation or arch hypoplasia or arch interruption
880	TGA, IVS
890	TGA, IVS-LVOTO
900	TGA, VSD
910	TGA, VSD-LVOTO
2820	TGA, IVS + Coarctation or arch hypoplasia or arch interruption
2830	TGA, VSD + Coarctation or arch hypoplasia or arch interruption
930	DORV, VSD type
940	DORV, TOF type
950	DORV, TGA type
960	DORV, Remote VSD (uncommitted VSD)
2030	DORV + AVSD (AV Canal)
975	DORV, IVS
980	DOLV
990	Coarctation of aorta
1000	Aortic arch hypoplasia
92	VSD + Aortic arch hypoplasia
94	VSD + Coarctation of aorta
1010	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA)
2840	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA), Left coronary artery from right sinus
2850	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA), Right coronary

2850	artery from left sinus
2860	Coronary artery Anomaly, Intramural coronary
1020	Coronary artery anomaly, Anomalous pulmonary origin (includes ALCAPA)
1030	Coronary artery anomaly, Fistula
1040	Coronary artery anomaly, Aneurysm
2420	Coronary artery anomaly, ostial atresia
1050	Coronary artery anomaly, Other
1070	Interrupted aortic arch
2020	Interrupted aortic arch + VSD
2000	Interrupted aortic arch + AP window (aortopulmonary window)
1080	Patent ductus arteriosus
1090	Vascular ring
1100	Pulmonary artery sling
2870	Esophageal compression by vessel
2880	Tracheal compression by vessel
1110	Aortic aneurysm (including pseudoaneurysm)
1120	Aortic dissection
1130	Lung disease, Benign
1140	Lung disease, Malignant
1160	Tracheal stenosis
2430	Tracheomalacia
1170	Airway disease
1430	Pleural disease, Benign
1440	Pleural disease, Malignant
1450	Pneumothorax
1460	Pleural effusion
1470	Chylothorax
1480	Empyema
1490	Esophageal disease, Benign
1500	Esophageal disease, Malignant
1505	Mediastinal disease
1510	Mediastinal disease, Benign
1520	Mediastinal disease, Malignant
1540	Diaphragm paralysis
1550	Diaphragm disease, Other
2160	Rib tumor, Benign

2170 Rib tumor, Malignant

2180 Rib tumor, Metastatic

2190 Sternal tumor, Benign

2200 Sternal tumor, Malignant

2210 Sternal tumor, Metastatic

2220 Pectus carinatum

2230 Pectus excavatum

2240 Thoracic outlet syndrome

1180 Arrhythmia

2440 Arrhythmia, Atrial, Atrial fibrillation

2450 Arrhythmia, Atrial, Atrial flutter

2460 Arrhythmia, Atrial, Other

2050 Arrhythmia, Junctional

2060 Arrhythmia, Ventricular

1185 Arrhythmia, Heart block

1190 Arrhythmia, Heart block, Acquired

1200 Arrhythmia, Heart block, Congenital

2530 Short QT syndrome

2540 Long QT Syndrome (Ward Romano syndrome)

2550 Wolff-Parkinson-White syndrome (WPW syndrome)

1230 Atrial Isomerism, Left

1240 Atrial Isomerism, Right

1250 Aneurysm, Ventricular, Right (including pseudoaneurysm)

1260 Aneurysm, Ventricular, Left (including pseudoaneurysm)

1270 Aneurysm, Pulmonary artery

1280 Aneurysm, Other

1310 Mediastinitis

2910 Mediastinitis, Wound infection, Deep

2920 Mediastinitis, Wound infection, Superficial

1320 Endocarditis

1350 Cardiac tumor, Unspecified

2930 Cardiac tumor, Ventricular fibroma

2940 Cardiac tumor, Ventricular rhabdomyoma

2950 Cardiac tumor, Atrial myxoma

2960 Pericardial teratoma

1360	Pulmonary AV fistula
1370	Pulmonary embolism
1385	Pulmonary vascular obstructive disease
1390	Pulmonary vascular obstructive disease (Eisenmenger's)
1400	Primary pulmonary hypertension
1410	Persistent fetal circulation
1420	Meconium aspiration
2250	Kawasaki disease
1560	Cardiac, Other
1570	Thoracic and/or mediastinal, Other
1580	Peripheral vascular, Other
2340	Foreign body, Intracardiac foreign body
2350	Foreign body, Intravascular foreign body
2390	Syncope
2400	Trauma, Blunt
2410	Trauma, Penetrating
2560	Cardio-respiratory failure not secondary to known structural heart disease
2570	Myocarditis
2580	Common AV valve insufficiency
2970	Common AV valve stenosis
7000	Normal heart
170	Truncal valve insufficiency (RETIRED)
270	Systemic venous anomaly (RETIRED)
380	Tricuspid regurgitation, non-Ebstein's related (RETIRED)
390	Tricuspid stenosis (RETIRED)
400	Tricuspid regurgitation and tricuspid stenosis (RETIRED)
695	Mitral stenosis (RETIRED)
1290	Hypoplastic RV (RETIRED)
1300	Hypoplastic LV (RETIRED)
1325	Rheumatic heart disease (RETIRED)
1340	Myocardial infarction (RETIRED)
2590	Protein-losing enteropathy (RETIRED)
2600	Plastic bronchitis (RETIRED)
7777	Miscellaneous, Other (RETIRED)

Extracardiac anomaly

Seq Num: 760

Required for case closure: Yes

Registry field: [ExtracardAnomaly].[ExtracardAnom]

Shared with PAC3

Description: Select all of the noncardiac congenital anatomic abnormalities identified in the patient. If none, select "None." The definitions and response options for this field are specified by the STS Congenital Heart Surgery Database.

Values

Code	*Text*
5	None
80	Major abnormality of head, Choanal atresia
90	Major abnormality of head, Cleft lip
100	Major abnormality of head, Cleft palate
440	Major abnormality of head, Craniosynostosis
450	Major abnormality of head, Macrocephaly
460	Major abnormality of head, Microcephaly
470	Major abnormality of head, Micrognathia
120	Major abnormality of brain, Hydrocephalus
480	Major abnormality of brain, Tuberous sclerosis
160	Major abnormality of spinal cord, Myelomeningocele
170	Major abnormality of spinal cord, Spina bifida
660	Major abnormality of spinal cord, Tethered cord
190	Major abnormality of spine, Scoliosis
670	Major abnormality of spine, Kyphosis
680	Major abnormality of spine, Lordosis
640	Major abnormality of vertebra, Hemi-vertebrae
650	Major abnormality of vertebra, Butterfly vertebrae
490	Major abnormality of larynx - trachea - or bronchus, Laryngeal cleft

210	Major abnormality of larynx - trachea - or bronchus, Laryngomalacia
220	Major abnormality of larynx - trachea - or bronchus, Congenital tracheal stenosis
230	Major abnormality of larynx - trachea - or bronchus, Tracheomalacia
70	Major abnormality of larynx - trachea - or bronchus, Tracheoesophageal fistula (TEF)
240	Major abnormality of larynx - trachea - or bronchus, Bronchomalacia
500	Major abnormality of chest wall, Pectus carinatum
510	Major abnormality of chest wall, Pectus excavatum
520	Major abnormality of lung, Alveolar capillary dysplasia
260	Major abnormality of lung, Congenital lobar emphysema (CLE)
270	Major abnormality of lung, Cystic congenital adenomatous malformation of the lung (CAM)
280	Major abnormality of lung, Cystic fibrosis
530	Major abnormality of lung, Hypoplastic lung
290	Major abnormality of lung, Pulmonary lymphangiectasia
20	Major abnormality of diaphragm, Congenital diaphragmatic hernia (CDH), Bochdalek hernia
30	Major abnormality of abdominal wall, Gastroschisis
60	Major abnormality of abdominal wall, Omphalocele
540	Major abnormality of gastrointestinal system, Esophageal atresia
550	Major abnormality of gastrointestinal system, Pyloric stenosis
310	Major abnormality of gastrointestinal system, Biliary atresia

320	Major abnormality of gastrointestinal system, Duodenal atresia
330	Major abnormality of gastrointestinal system, Duodenal stenosis
340	Major abnormality of gastrointestinal system, Jejunal atresia
350	Major abnormality of gastrointestinal system, Jejunal stenosis
360	Major abnormality of gastrointestinal system, Ileal atresia
370	Major abnormality of gastrointestinal system, Ileal stenosis
50	Major abnormality of gastrointestinal system, Intestinal malrotation
40	Major abnormality of gastrointestinal system, Hirschsprung's disease (Congenital aganglionic megacolon)
380	Major abnormality of gastrointestinal system, Stenosis of large intestine
390	Major abnormality of gastrointestinal system, Atresia of large intestine
400	Major abnormality of gastrointestinal system, Atresia of rectum
410	Major abnormality of gastrointestinal system, Stenosis of rectum
10	Major abnormality of gastrointestinal system, Anal Atresia (imperforate anus)
560	Major abnormality of genitalia, Ambiguous genitalia
570	Major abnormality of genitalia, Hypospadias
580	Major abnormality of genitalia, Rectovaginal fistula
590	Major abnormality of genitalia, Undescended testis
600	Major abnormality of kidney, Horseshoe kidney

610	Major abnormality of kidney, Hydronephrosis
620	Major abnormality of kidney, Polycystic kidney
630	Major abnormality of kidney, Single kidney
990	Other
110	Major abnormality of head (RETIRED)
130	Major abnormality of brain, Macrocephaly (RETIRED)
140	Major abnormality of brain, Microcephaly (RETIRED)
150	Major abnormality of brain (RETIRED)
180	Major abnormality of spinal cord (RETIRED)
200	Major abnormality of spine (RETIRED)
250	Major abnormality of larynx - trachea - or bronchus (RETIRED)
300	Major abnormality of lung (RETIRED)
420	Major abnormality of gastrointestinal system (RETIRED)
430	Major abnormality of kidney - ureter - or bladder (RETIRED)

Extracardiac anomaly - specify

Seq Num: 765

Required for case closure: No

Registry field: [ExtracardAnomaly].[ExtracardAnomSpec]

Shared with PAC3

Description: Indicate the other major extracardiac abnormality.

Chromosomal abnormality

Seq Num: 700

Required for case closure: Yes

Registry field: [ChromAnom].[ChromAnom]

Shared with PAC3

Description: Select all of the chromosomal anomalies identified for the patient. If none, select "No chromosomal abnormality identified." The definitions and response options for this field are specified by the STS Congenital Heart Surgery Database.

Values

Code	*Text*
5	No chromosomal or genetic abnormality identified
490	Known Mosaicism
360	1p36 del
370	1q21.1 del
380	1q21.1 dup
70	1q42.1
100	2p21
110	3p22
400	3q dup
150	4p16
410	4q del
420	5p15.2 del
430	5p15.33 del
170	6p12
180	7q11
440	7q11.23 del
450	7q11.23 dup
200	7q32
210	7q34
460	8p23.1 del
470	8p23.1 dup
220	8q12
480	9q34.3 del
10	11p15.5
20	11q
30	12p1.21
40	12p12.1
50	12q24
320	15q11.2 del
60	15q21.1

330	16p11.2 del
340	17p11.2 del
350	17q21.31 del
80	20p12
90	22q11 deletion
390	22q11.2 dup
120	45X0/Monosomy X
130	47,XXY
250	Trisomy 08
260	Trisomy 09
270	Trisomy 13
280	Trisomy 18
290	Trisomy 21
310	Other chromosomal or genetic abnormality
140	4p (RETIRED)
160	5p (RETIRED)
190	7q11.23 (RETIRED)
240	TGFBR1 or 2 (RETIRED)
230	Monosomy X (RETIRED)

Chromosomal abnormality - specify

Seq Num: 705

Required for case closure: No

Registry field: [ChromAnom].[ChromAnomSpec]

Shared with PAC3

Description: Indicate the other chromosomal abnormality.

Syndromes

Seq Num: 820

Required for case closure: Yes

Registry field: [Syndromes].[Syndrome]

Shared with PAC3

Description: Indicate all Syndromes or Syndromic abnormalities. Select all that apply or "No syndromic abnormality identified". The definitions and response options for this field are specified by the STS Congenital Heart Surgery Database.

Values

Code	*Text*
5	No syndromic abnormality identified
680	1p36 deletion syndrome
690	1q21.1 duplication syndrome
710	3q duplication syndrome
720	4q deletion syndrome
730	7q11.23 duplication syndrome
740	8p23.1 deletion syndrome
660	15q11.2 deletion syndrome
670	16p11.2 deletion syndrome
700	22q11.2 duplication syndrome
750	Adams-Oliver syndrome
10	Alagille syndrome (intrahepatic biliary duct agenesis)
760	Alstrom syndrome
580	Alveolar Capillary Dysplasia Syndrome
20	Apert syndrome
770	Baller-Gerold Syndrome
780	Bardet-Biedl syndrome
790	Beckwith-Wiedemann syndrome
30	Brugada syndrome (Sudden unexplained nocturnal death syndrome) (SUNDS)
800	Brugada/Timothy Syndrome
810	Cantu syndrome
40	Cardiofaciocutaneous syndrome
50	Carpenter syndrome
60	Cat-eye syndrome
590	Caudal Regression Syndrome
830	Char syndrome
70	CHARGE Association
600	Chiari I Malformation

840	Chromosome 17q12 deletion syndrome
850	Coffin Lowry syndrome
860	Coffin Siris Syndrome
80	Cornelia de Lange syndrome
90	Costello syndrome
870	Cranioectodermal dysplasia (Sensenbrenner syndrome)
100	Cri-du-chat syndrome
610	Dandy Walker Malformation
110	Deletion 10p syndrome
120	Deletion 8p syndrome
130	DiGeorge syndrome (velocardiofacial syndrome) (conotruncal anomaly face syndrome) (22q11 deletion)
140	Down syndrome (Trisomy 21)
890	Duane Radial Ray (Okihiro) syndrome
620	Duchenne Muscular Dystrophy
150	Edwards syndrome (Trisomy 18)
570	Ehlers-Danlos Syndrome
160	Ellis-van Creveld syndrome
910	Familial CHD
165	Fetal alcohol syndrome (FAS)
380	Fetal rubella syndrome (Congenital rubella syndrome)
930	Fragile X
170	Goldenhar syndrome
180	Heterotaxy syndrome, Unknown if asplenia or polysplenia
190	Heterotaxy syndrome, Asplenia syndrome
200	Heterotaxy syndrome, Polysplenia syndrome
210	Holt-Oram syndrome
220	Jacobsen syndrome
940	Joubert syndrome
230	Kabuki syndrome
240	Kartagener syndrome (Siewert syndrome) (Primary ciliary dyskinesia)
950	Kleefstra Syndrome
250	Klinefelter syndrome (XXY

250	Syndrome)
1270	Klippel-Feil Sequence
960	Koolen-De Vries Syndrome
260	LEOPARD syndrome
270	Loeys-Dietz syndrome
290	Marfan syndrome
300	Marfan-like syndrome
970	McKusick-Kaufman syndrome
980	Meckel-Gruber syndrome
990	Microphthalmia syndromic 9
1000	Mowat Wilson Syndrome
310	Mucopolysaccharidosis type IH (Hurler syndrome)
320	Mucopolysaccharidosis type IH/S (Hurler-Scheie syndrome)
330	Mucopolysaccharidosis type II (Hunter syndrome)
340	Mucopolysaccharidosis type IS (Scheie syndrome)
1010	Nance Horan syndrome
1020	Nephronophthisis
1030	Neurofibromatosis
350	Noonan syndrome
1050	Oculofaciocardiodental
1060	Oral-facial-digital syndromes (types I-XVI and unclassified)
360	Patau syndrome (Trisomy 13)
1070	Peter’s Plus syndrome
540	Pierre Robin syndrome
1080	Polycystic Kidney Disease
1090	Primary ciliary dyskinesia (PCD)
530	Prune Belly Syndrome
370	Rethore syndrome (Trisomy 9)
1100	Roberts syndrome
1110	Robinow syndrome
390	Rubinstein-Taybi syndrome
1120	Saethre Chotzen syndrome
1130	Short Rib Polydactyly Type I
1140	Short rib thoracic dysplasias including Jeune chondrodysplasia, Saldino Mainzer
550	Sickle cell disease

560	Sickle cell trait
1150	Sifrim-Hitz-Weiss syndrome (SIHIWES)
1160	Simpson-Golabi-Behmel syndrome
410	Situs inversus
1170	Smith Magenis syndrome
420	Smith-Lemli-Opitz syndrome
1180	Sotos syndrome
1280	Spinal Muscular Atrophy
1210	TAR syndrome
640	Thalassemia – Major
650	Thalassemia – Minor
1220	Townes-Brocks syndrome
430	Turner syndrome (45XO)
440	VACTERL syndrome (VACTER/VATER/VATERR syndrome)
450	VACTERL-H syndrome (VATER association with hydrocephalus) (Briard-Evans syndrome)
520	von Willebrand disease (vWD)
460	Warkany syndrome (Trisomy 8)
470	Williams syndrome (Williams-Beuren syndrome)
490	Wolf-Hirschhorn syndrome
1260	X-linked heterotaxy
510	Other syndromic abnormality
280	Long QT syndrome (Ward Romano syndrome) (RETIRED)
400	Short QT syndrome (RETIRED)
480	Wolff-Parkinson-White syndrome (WPW syndrome) (RETIRED)
166	Fetal drug exposure (RETIRED)
630	Spinal Muscular Atrophy, Type II (RETIRED)
880	Distinct disorder (RETIRED)
900	Familial atrial septal defects (RETIRED)
920	Familial non-syndromic CHD (RETIRED)
1040	Non-syndromic CHD (RETIRED)
1190	Sporadic and familial CHD (RETIRED)
1200	Syndromic CHD (RETIRED)
1230	Trisomy 13 (RETIRED)

1240	Trisomy 18 (RETIRED)
1250	Trisomy 21 (RETIRED)

Syndrome - specify

Seq Num: 825

Required for case closure: No

Registry field: [Syndromes].[SyndromeSpec]

Shared with PAC3

Description: Indicate the other “Syndrome” or “Syndromic abnormality”.

Deceased

Seq Num: 840

Required for case closure: No

Registry field: [Demographics].[Deceased]

Shared with PAC3

Description: Indicate Yes if the patient is known to be deceased

Values	*Code*	*Text*
	0	No
	1	Yes
	9	Unk

DOD

Seq Num: 860

Required for case closure: No

Registry field: [Demographics].[DOD]

Shared with PAC3

Description: If the patient is deceased, indicate the date of death

EDC known

Seq Num: 418

Retired in version 1.0

Required for case closure: No

Registry field: [Demographics].[EDCKnown]

Description: If the patient age is <= 1 year, is the estimated date of confinement known

Values	*Code*	*Text*
Retired	0	No
Retired	1	Yes

Estimated date of confinement

Seq Num: 419

Retired in version 1.0

Required for case closure: Yes

Registry field: [Demographics].[EDCDt]

Description: Estimated date of confinement

Episode of Care (Hospitalization)

Hospital name

Seq Num: 911

Required for case closure: Yes

Registry field: [Hospitalization].[HospName]

Shared with PAC3

Description: Indicate the full name of the facility in which the patient was hospitalized. Values should be full, official hospital names with no abbreviations or variations in spelling for a single hospital. Values should also be in mixed-case.

Hospital admit date

Seq Num: 980

Required for case closure: Yes

Registry field: [Hospitalization].[HospAdmitDt]

Shared with PAC3

Description: Indicate the date the patient was admitted to the hospital. For those patients who originally enter the hospital in an out-patient capacity (i.e., catheterization), but then are not discharged, the admit date is the date of the patients entry into the hospital.

Patient age at hospital admission

Seq Num: 982

Required for case closure: Yes

Registry field: [Hospitalization].[HospAdmitAgeD]

Shared with PAC3

Description: The patient's age in days at hospital admission, calculated by the DOB and hospital admit date.

Country of residence

Seq Num: 920

Required for case closure: No

Registry field: [Hospitalization].[ResCountry]

Shared with PAC3

Description: Indicate the patient's country of permanent residence at time of hospital admission.

Values

Code	*Text*
USA	UNITED STATES OF AMERICA
AFG	AFGHANISTAN
ALA	ÅLAND ISLANDS
ALB	ALBANIA
DZA	ALGERIA
ASM	AMERICAN SAMOA
AND	ANDORRA
AGO	ANGOLA
AIA	ANGUILLA
ATG	ANTIGUA AND BARBUDA
ARG	ARGENTINA
ARM	ARMENIA
ABW	ARUBA
AUS	AUSTRALIA
AUT	AUSTRIA
AZE	AZERBAIJAN
BHS	BAHAMAS
BHR	BAHRAIN
BGD	BANGLADESH
BRB	BARBADOS
BLR	BELARUS
BEL	BELGIUM
BLZ	BELIZE
BEN	BENIN
BMU	BERMUDA
BTN	BHUTAN
BOL	BOLIVIA (PLURINATIONAL STATE OF)
BES	BONAIRE, SAINT EUSTATIUS AND SABA
BIH	BOSNIA AND HERZEGOVINA
BWA	BOTSWANA
BRA	BRAZIL
VGB	BRITISH VIRGIN ISLANDS

BRN	BRUNEI DARUSSALAM
BGR	BULGARIA
BFA	BURKINA FASO
BDI	BURUNDI
KHM	CAMBODIA
CMR	CAMEROON
CAN	CANADA
CPV	CAPE VERDE
CYM	CAYMAN ISLANDS
CAF	CENTRAL AFRICAN REPUBLIC
TCD	CHAD
CHL	CHILE
CHN	CHINA
COL	COLOMBIA
COM	COMOROS
COG	CONGO
COK	COOK ISLANDS
CRI	COSTA RICA
CIV	CÔTE D'IVOIRE
HRV	CROATIA
CUB	CUBA
CUW	CURAÇAO
CYP	CYPRUS
CZE	CZECH REPUBLIC
PRK	DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA
COD	DEMOCRATIC REPUBLIC OF THE CONGO
DNK	DENMARK
DJI	DJIBOUTI
DMA	DOMINICA
DOM	DOMINICAN REPUBLIC
ECU	ECUADOR
EGY	EGYPT
SLV	EL SALVADOR
GNQ	EQUATORIAL GUINEA
ERI	ERITREA
EST	ESTONIA
ETH	ETHIOPIA
FRO	FAEROE ISLANDS

FLK	FALKLAND ISLANDS (MALVINAS)
FJI	FIJI
FIN	FINLAND
FRA	FRANCE
GUF	FRENCH GUIANA
PYF	FRENCH POLYNESIA
GAB	GABON
GMB	GAMBIA
GEO	GEORGIA
DEU	GERMANY
GHA	GHANA
GIB	GIBRALTAR
GRC	GREECE
GRL	GREENLAND
GRD	GRENADA
GLP	GUADELOUPE
GUM	GUAM
GTM	GUATEMALA
GGY	GUERNSEY
GIN	GUINEA
GNB	GUINEA-BISSAU
GUY	GUYANA
HTI	HAITI
VAT	HOLY SEE
HND	HONDURAS
HKG	CHINA, HONG KONG SPECIAL ADMINISTRATIVE REGION
HUN	HUNGARY
ISL	ICELAND
IND	INDIA
IDN	INDONESIA
IRN	IRAN (ISLAMIC REPUBLIC OF)
IRQ	IRAQ
IRL	IRELAND
IMN	ISLE OF MAN
ISR	ISRAEL
ITA	ITALY
JAM	JAMAICA
JPN	JAPAN
JEY	JERSEY

JOR	JORDAN
KAZ	KAZAKHSTAN
KEN	KENYA
KIR	KIRIBATI
KWT	KUWAIT
KGZ	KYRGYZSTAN
LAO	LAO PEOPLE'S DEMOCRATIC REPUBLIC
LVA	LATVIA
LBN	LEBANON
LSO	LESOTHO
LBR	LIBERIA
LBY	LIBYA
LIE	LIECHTENSTEIN
LTU	LITHUANIA
LUX	LUXEMBOURG
MAC	CHINA, MACAO SPECIAL ADMINISTRATIVE REGION
MDG	MADAGASCAR
MWI	MALAWI
MYS	MALAYSIA
MDV	MALDIVES
MLI	MALI
MLT	MALTA
MHL	MARSHALL ISLANDS
MTQ	MARTINIQUE
MRT	MAURITANIA
MUS	MAURITIUS
MYT	MAYOTTE
MEX	MEXICO
FSM	MICRONESIA (FEDERATED STATES OF)
MCO	MONACO
MNG	MONGOLIA
MNE	MONTENEGRO
MSR	MONTSERRAT
MAR	MOROCCO
MOZ	MOZAMBIQUE
MMR	MYANMAR
NAM	NAMIBIA
NRU	NAURU

NPL	NEPAL
NLD	NETHERLANDS
NCL	NEW CALEDONIA
NZL	NEW ZEALAND
NIC	NICARAGUA
NER	NIGER
NGA	NIGERIA
NIU	NIUE
NFK	NORFOLK ISLAND
MNP	NORTHERN MARIANA ISLANDS
NOR	NORWAY
PSE	OCCUPIED PALESTINIAN TERRITORY
OMN	OMAN
PAK	PAKISTAN
PLW	PALAU
PAN	PANAMA
PNG	PAPUA NEW GUINEA
PRY	PARAGUAY
PER	PERU
PHL	PHILIPPINES
PCN	PITCAIRN
POL	POLAND
PRT	PORTUGAL
PRI	PUERTO RICO
QAT	QATAR
KOR	REPUBLIC OF KOREA
MDA	REPUBLIC OF MOLDOVA
REU	RÉUNION
ROU	ROMANIA
RUS	RUSSIAN FEDERATION
RWA	RWANDA
SHN	SAINT HELENA
KNA	SAINT KITTS AND NEVIS
LCA	SAINT LUCIA
SPM	SAINT PIERRE AND MIQUELON
VCT	SAINT VINCENT AND THE GRENADINES
BLM	SAINT-BARTHÉLEMY
MAF	SAINT-MARTIN (FRENCH PART)
WSM	SAMOA

SMR	SAN MARINO
STP	SAO TOME AND PRINCIPE
SAU	SAUDI ARABIA
SEN	SENEGAL
SRB	SERBIA
SYC	SEYCHELLES
SLE	SIERRA LEONE
SGP	SINGAPORE
SXM	SINT MAARTEN (DUTCH PART)
SVK	SLOVAKIA
SVN	SLOVENIA
SLB	SOLOMON ISLANDS
SOM	SOMALIA
ZAF	SOUTH AFRICA
SSD	SOUTH SUDAN
ESP	SPAIN
LKA	SRI LANKA
SDN	SUDAN
SUR	SURINAME
SJM	SVALBARD AND JAN MAYEN ISLANDS
SWZ	SWAZILAND
SWE	SWEDEN
CHE	SWITZERLAND
SYR	SYRIAN ARAB REPUBLIC
TJK	TAJIKISTAN
THA	THAILAND
MKD	THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
TLS	TIMOR-LESTE
TGO	TOGO
TKL	TOKELAU
TON	TONGA
TTO	TRINIDAD AND TOBAGO
TUN	TUNISIA
TUR	TURKEY
TKM	TURKMENISTAN
TCA	TURKS AND CAICOS ISLANDS
TUV	TUVALU
UGA	UGANDA
UKR	UKRAINE

ARE	UNITED ARAB EMIRATES
GBR	UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND
TZA	UNITED REPUBLIC OF TANZANIA
VIR	UNITED STATES VIRGIN ISLANDS
URY	URUGUAY
UZB	UZBEKISTAN
VUT	VANUATU
VEN	VENEZUELA (BOLIVARIAN REPUBLIC OF)
VNM	VIET NAM
WLF	WALLIS AND FUTUNA ISLANDS
ESH	WESTERN SAHARA
YEM	YEMEN
ZMB	ZAMBIA
ZWE	ZIMBABWE
OTH	Other

Residential zip code

Seq Num: 940

Required for case closure: No *Submission is optional*

Registry field: [Hospitalization].[ResZip]

Shared with PAC3

Description: If the patient resides in the USA or Canada, indicate the zip/postal code of patient's permanent residence at time of hospital admission. This field should be collected in compliance with state/local privacy laws.

Primary insurance type

Seq Num: 960

Required for case closure: No

Registry field: [Hospitalization].[InsPrimType]

Shared with PAC3

Description: Indicate the primary insurance type at the beginning of this hospitalization.

Values	*Code*	*Text*	
	1	Public	Includes Medicare, Medicaid, Military Health Care (e.g., TriCare), State-Specific Plan, and Indian Health Service.
	2	Private	Includes all indemnity (fee-for-service) carriers, Preferred Provider Organizations (PPOs), and Health Maintenance Organizations (HMOs).
	3	Non-U.S. insurance	Includes all non-U.S. insurance
	4	None / Self	No insurance was used by the patient to pay for this admission.

Initial weight

Seq Num: 1000

Required for case closure: Yes

Registry field: [Hospitalization].[HospAdmitWt]

Shared with PAC3

Description: Indicate the weight of the patient in kilograms at hospital admission

Initial length/height

Seq Num: 1020

Required for case closure: No

Registry field: [Hospitalization].[HospAdmitLen]

Shared with PAC3

Description: Indicate the length/height of the patient in centimeters at hospital admission. If not available, use length/height +/- one month of the hospital admit date

Tracheostomy at hospital admit

Seq Num: 1021

Required for case closure: Yes

Registry field: [Hospitalization].[HospAdmitTrach]

Shared with PAC3

Description: Indicate Yes if the patient had an actively cannulated tracheostomy present at hospital admission.

* Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Home respiratory support at hospital admit

Seq Num: 1022

Required for case closure: Yes

Registry field: [Hospitalization].[HospAdmitResp]

Shared with PAC3

Description: Indicate Yes if the patient was on any home respiratory support -- invasive or non-invasive (CPAP or BiPAP) -- during all or part of the day/night at the time of hospital admission. This does not include supplementary oxygen only.

Clarification 2/1/2025: If the patient is only on HFNC at home, code No here.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

On heart transplant list at hospital admission

Seq Num: 1023

Required for case closure: Yes

Registry field: [Hospitalization].[HospListedAdmit]

Shared with PAC3

Description: Was the patient on the heart transplant list at the time of hospital admission? Code Yes if the patient is listed at any status, including hold status due to any contraindication.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Listed during admission

Seq Num: 1024

Required for case closure: Yes

Registry field: [Hospitalization].[HospListedNew]

Shared with PAC3

Description: If the patient was not listed at hospital admission, code Yes if he/she was either placed on the transplant list during this hospitalization or referred to another facility (as a direct transfer) with the expressed purpose of transplant evaluation or listing.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Date listed

Seq Num: 1025

Required for case closure: Yes

Registry field: [Hospitalization].[HospListedNewDt]

Shared with PAC3

Description: Document the date the patient was placed on the list. Use the date of hospital discharge if the patient was referred to another facility with the expressed purpose of transplant evaluation or listing.

Existing PPM/AICD at hospital admission

Seq Num: 1026

Required for case closure: Yes

Registry field: [Hospitalization].[HospPPMadmit]

Shared with PAC3

Description: Indicate Yes if the patient had a permanent implanted pacemaker or AICD at the time of hospital admission.

Clarification 6/1/2023: This includes wearable defibrillators such as LifeVest.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

PPM/AICD placed during admission

Seq Num: 1027

Required for case closure: Yes

Registry field: [Hospitalization].[HospPPMnew]

Shared with PAC3

Description: If no device was present on admission, was a PPM or AICD placed during this hospitalization?

Clarification 6/1/2023: This includes wearable defibrillators such as LifeVest.

Clarification 2/1/2025: If pacemaker leads are placed without a generator, code No.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Date PPM/AICD placed

Seq Num: 1028

Required for case closure: Yes

Registry field: [Hospitalization].[HospPPMnewDt]

Shared with PAC3

Description: Document the earliest date a PPM or AICD was placed during this hospital admission.

New dx diaphragm dysfunction

Seq Num: 1029

Required for case closure: Yes

Registry field: [Hospitalization].[HospDiaphragm]

Shared with PAC3

Description: Did the patient receive a new diagnosis of diaphragm dysfunction during the hospital admission? Diaphragm dysfunction is defined as the presence of an elevated hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile or paradoxical movement assessed by ultrasound or fluoroscopy.

Clarification 6/1/2023: This field is intended to capture acquired diaphragm dysfunction. A new diagnosis of congenital diaphragmatic hernia (CHD) may be coded in the extracardiac anomalies (#760) but should NOT be coded here.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Diaphragm dysfunction dx date

Seq Num: 1030

Required for case closure: Yes

Registry field: [Hospitalization].[HospDiaphragmDt]

Shared with PAC3

Description: If the patient had new diaphragm dysfunction, document the date it was first diagnosed during the hospital admission.

New dx vocal cord dysfunction

Seq Num: 1031

Required for case closure: Yes

Registry field: [Hospitalization].[HospVocalCord]

Shared with PAC3

Description: Did the patient receive a new diagnosis of vocal cord dysfunction during the hospital admission? Vocal cord dysfunction is defined as the presence of poor or no vocal cord movement assessed by endoscopy. Patient may or may not have stridor, hoarse voice, or poor cry, in conjunction with endoscopic findings.

Clarification 2/1/2025: This includes diagnoses made by ultrasound. If the dysfunction resolves later in the hospitalization, still code Yes here and use the date of the original diagnosis.

If the diagnosis is not confirmed at your site by scope or ultrasound, code No.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Vocal cord dysfunction dx date

Seq Num: 1032

Required for case closure: Yes

Registry field: [Hospitalization].[HospVocalCordDt]

Shared with PAC3

Description: If the patient had vocal cord dysfunction, document the date it was first diagnosed during the hospital admission.

Ever had a chest tube during this hospital admission

Seq Num: 1033

Required for case closure: Yes

Registry field: [Hospitalization].[HospChestTube]

Shared with PAC3

Description: Did the patient ever have a chest tube in place during this hospital admission?

Clarification 6/1/2023: This field is intended to capture drains inserted into the pleural space.

Pericardial effusions that require drainage during the CICU encounter should be captured in the Complication section (#6540).

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Final chest tube date

Seq Num: 1034

Required for case closure: Yes

Registry field: [Hospitalization].[HospChestTubeFinalDt]

Shared with PAC3

Description: Document the date the final chest tube was removed. If the patient died or was discharged to another facility with a tube in place, use the hospital discharge date.

Ever on cardiac acute care attending service

Seq Num: 1036

Required for case closure: Yes

Registry field: [Hospitalization].[HospAcuteCare]

Description: During this hospital admission, was the patient ever cared for in a non-ICU setting where the cardiac acute care team was the primary attending service?

Values

Code	*Text*
1	Yes
0	No
9	Unk

Hospital discharge date

Seq Num: 1040

Required for case closure: Yes

Registry field: [Hospitalization].[HospDischDt]

Shared with PAC3

Description: Indicate the date the patient was discharged from this hospital. If the patient died in-hospital, use the date of death.

Discharge weight

Seq Num: 1100

Required for case closure: No

Registry field: [Hospitalization].[HospDischWt]

Description: Indicate the weight of the patient in kilograms at hospital discharge

Mortality status at hospital discharge

Seq Num: 1060

Required for case closure: Yes

Registry field: [Hospitalization].[HospDischStat]

Shared with PAC3

Description: Indicate whether the patient was alive or deceased at hospital discharge.

Values	*Code*	*Text*
	1	Alive
	2	Deceased

Hospital discharge location

Seq Num: 1080

Required for case closure: Yes

Registry field: [Hospitalization].[HospDischLoc]

Shared with PAC3

Description: If the patient was alive at hospital discharge, indicate the location to which the patient was discharged.

Clarification 2/1/2025: We currently do not have a way to differentiate between a rehab facility that is part of the site's hospital and one that is not. Document consistently according to the set up at your site. In general, if the patient is discharged from your hospital and readmitted to the rehab unit, code that as a discharge/end of hospitalization. If the patient is not officially discharged when transferred to the rehab unit, you may still consider that to be an end to the hospitalization if that is your site's preference.

Values	*Code*	*Text*
	1	Home
	2	Other Acute Care Center
	3	Chronic Care Center

Tube feeding at hospital discharge

Seq Num: 1120

Required for case closure: Yes

Registry field: [Hospitalization].[HospDischTube]

Description: Indicate Yes if patient was receiving any enteral feedings by temporary or permanent feeding tube at hospital discharge

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

New permanent feeding tube

Seq Num: 1140

Required for case closure: Yes

Registry field: [Hospitalization].[HospDischTubePerm]

Description: If the patient was tube fed at hospital discharge, indicate Yes if a new permanent feeding tube was placed during this hospital admission. This includes both placement of a new permanent feeding tube or revision of a previous permanent feeding tube to a different type (e.g. gastric tube changed to a gastro-jejunal tube).

Replacement clarification 2/1/2025: The replacement of an existing tube with a similar tube (i.e., a larger or smaller tube, replacement of a defective tube, or transition to different a type of tube such as a Mic-key) does not count as a new tube if the new device ends in the same location.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

30-day hospital readmission

Seq Num: 1240

Required for case closure: No

Registry field: [Hospitalization].[HospReadm]

Shared with PAC3

Description: Indicate whether the patient was readmitted within thirty days of discharge.

Clarification 2/1/2025: Code the initial hospitalization as having a 30 day readmission if both the initial hospitalization and the current hospitalization were to an inpatient unit and both included an H&P and/or progress note by an inpatient attending (intensivist or inpatient cardiologist). This includes patients re-admitted for observation.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

30-day mortality status

Seq Num: 1260

Required for case closure: No

Registry field: [Hospitalization].[Hosp30DStat]

Shared with PAC3

Description: If the patient was alive at hospital discharge, Indicate whether the patient was alive or deceased on the 30th day post hospital discharge.

Values	*Code*	*Text*
	1	Alive
	2	Deceased
	3	Unknown

Beta-blockers on admit

Seq Num: 1180

Retired in version 2.0

Required for case closure: No

Registry field: [Hospitalization].[HospAdmitBeta]

Description: If the patient is >= 18 years of age and had cardiothoracic surgery during this episode of care (hospitalization), indicate Yes if the patient was on beta-blockers at hospital admission or received beta blockers within 24 hours preceding surgery, or No if this did not occur. Select "contraindicated" if beta blocker was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, or physician assistant.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	2	Contraindicated
Retired	9	Unk

Beta-blockers at discharge

Seq Num: 1200

Retired in version 2.0

Required for case closure: No

Registry field: [Hospitalization].[HospDischBeta]

Description: If the patient is >= 18 years of age and had cardiothoracic surgery during this episode of care (hospitalization), indicate Yes if the patient was discharged on beta blockers, or no if this was not the case. Select "contraindicated" if beta blocker was contraindicated. The contraindication must be documented in the medical record by a physician, nurse practitioner, or physician assistant.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	2	Contraindicated
Retired	9	Unk

Cardiothoracic Surgery

Cardiothoracic surgery

Seq Num: 1160

Required for case closure: Yes

Registry field: [Hospitalization].[CardSurg]

Shared with PAC3

Description: Select Yes if the patient had any cardiac or thoracic surgery during this episode of care (hospitalization).

Clarification 6/1/2023: If the hospitalization meets criteria for inclusion in PC4, capture every cardiothoracic surgery or cardiac catheterization during the hospitalization, regardless of venue. For example, surgeries or catheterizations that happen in the NICU or acute care ward should all be captured.

Patients who undergo a hybrid procedure should have both a cardiac surgery procedure and a cardiac cath procedure (#1220) recorded.

Values	*Code*	*Text*
	1	Yes
	0	No

Cardiac surgery date

Seq Num: 1320

Required for case closure: Yes

Registry field: [Operative].[CardSurgDt]

Shared with PAC3

Description: If the patient underwent cardiac or thoracic surgery, indicate the date of surgery which equals the date the patient enters the OR or equivalent.

OR entry time

Seq Num: 1325

Required for case closure: Yes

Registry field: [Operative].[OREntryT]

Description: Indicate to the nearest minute (using 24-hour clock) the time the patient entered the OR. If the procedure was performed in a location other than the OR, record the time when the sterile field was set up. Recording time of last inpatient vital signs prior to procedure is also acceptable for sites not importing directly from their STS database.

Clarification 2/1/2025: For any CT surgical procedure done in the cath lab, use the procedure start time on the anesthesia record. If not clear, discuss with the clinical champion to identify the most accurate time.

Surgical Age in days

Seq Num: 1340

Required for case closure: Yes

Registry field: [Operative].[CardSurgAgeD]

Shared with PAC3

Description: If the patient underwent cardiac or thoracic surgery, calculate the patient's age in days at the time of the surgery procedure. The patient's age will be calculated by the software from the date of birth and the date of surgery.

Weight (kg) at surgery

Seq Num: 1360

Required for case closure: Yes

Registry field: [Operative].[SurgWtKg]

Shared with PAC3

Description: Indicate the weight of the patient in kilograms at the time of surgery

Number of Prior Cardiac Operations

Seq Num: 1520

Required for case closure: Yes

Registry field: [Operative].[PrevOpCount]

Shared with PAC3

Description: Indicate how many cardiac (heart or great vessels) surgical procedures were performed prior to this surgical procedure with or without cardiopulmonary bypass (CPB). Also include lung procedures utilizing CPB or tracheal procedures utilizing CPB.

PGE infusion at time of surgery

Seq Num: 1660

Required for case closure: Yes

Registry field: [Operative].[PGEsurg]

Shared with PAC3

Description: For patients age <= 30 days, indicate Yes if the patient was on PGE infusions at the time of surgery.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Planned surgery

Seq Num: 1525

Required for case closure: Yes

Registry field: [Operative].[OpPlanned]

Description: Record Yes if the surgery was the planned operative repair or part of a multi-stage palliative strategy determined prior to the first intervention (surgery or catheterization) during the hospitalization. Delayed sternal closure, ECMO decannulation, VAD decannulation, and removal of Broviac catheter should always be coded as Planned = Yes. Examples: 1. Hybrid Stage I followed by Norwood procedure in the same hospitalization. If the Norwood procedure was planned prior to the hybrid (i.e., there was no plan to perform comprehensive stage II), code the Norwood as Planned = Yes. 2. If the initial surgery was complete repair of AVSD and patient develops mitral regurgitation necessitating mitral valve repair as second operation, code the mitral valve repair as Planned = No. 3. If the initial intervention was balloon aortic valvuloplasty for critical aortic stenosis and the patient required a Ross procedure for aortic insufficiency, code the Ross procedure as Planned = No.

Additional examples, Clarification 6/1/2023:

4. A patient's sternum was left open after surgery, although the initial plan had been to close the chest at the end of the operation. The delayed sternal closure should still be coded as Planned.

5. A patient with HLHS underwent her Norwood surgery and had a complicated postoperative course. The original plan was to discharge her prior to her Glenn, but instead she remained in the hospital through her Stage 2 postop recovery. The Glenn should be coded as planned because it was part of her planned palliative course at the time of the original intervention.

6. A patient who requires emergent ECMO support prior to undergoing the originally planned surgical intervention, who then recovers and undergoes the originally planned intervention, should have both the ECMO cannulation (as the first intervention of the hospitalization) and the eventual surgical repair coded as “planned.”

Additional examples, Clarification 2/1/2025:

7. If the sternum is left open after an unplanned reoperation, the delayed sternal closure is still coded as planned.

8. There will be occasional exceptions to chest closure and ECMO decannulation being coded as planned. If an additional procedure is done at the time of chest closure or ECMO decannulation that was not foreseen at the time of the initial procedure (such as placement of a pacemaker or repair of a residual defect), the chest closure or decannulation should be coded as unplanned.

9. If a patient has an ECMO cannula position adjustment done as a separate procedure from the cannulation procedure and it is entered as an separate STS procedure, the cannula adjustment would be unplanned.

10. A BAS done to decompress the left atrium after ECMO initiation will be coded as planned in most 2V patients.

Values	*Code*	*Text*
	1	Yes
	0	No

9	Unk

Procedure diagnosis

Seq Num: 1440

Required for case closure: Yes

Registry field: [SurgDiag].[SurgDiag]

Shared with PAC3

Description: Indicate all diagnoses noted at the time of the surgical procedure or documented by preoperative studies. This entry may duplicate the Fundamental Diagnosis. (Please see the Fundamental Diagnosis field in the Patient Information section for available values) The definitions and response options for this field are specified by the STS Congenital Heart Surgery Database.

Values

Code	*Text*
10	PFO
20	ASD, Secundum
30	ASD, Sinus venosus
40	ASD, Coronary sinus
50	ASD, Common atrium (single atrium)
2150	ASD, Postoperative interatrial communication
71	VSD, Type 1 (Subarterial) (Supracristal) (Conal septal defect) (Infundibular)
73	VSD, Type 2 (Perimembranous) (Paramembranous) (Conoventricular)
75	VSD, Type 3 (Inlet) (AV canal type)
77	VSD, Type 4 (Muscular)
79	VSD, Type: Gerbode type (LV-RA communication)
80	VSD, Multiple
100	AVC (AVSD), Complete (CAVSD)
2610	AVC (AVSD), Complete (CAVSD), Left dominant
2620	AVC (AVSD), Complete (CAVSD), Right dominant
2630	AVC (AVSD), Complete (CAVSD), Balanced
110	AVC (AVSD), Intermediate (transitional)
2640	AVC (AVSD), Intermediate (transitional), Left dominant
2650	AVC (AVSD), Intermediate (transitional), Right dominant
2660	AVC (AVSD), Intermediate (transitional), Balanced

120	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum)
2670	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum), Left dominant
2680	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum), Right dominant
2690	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum), Balanced
140	AP window (aortopulmonary window)
150	Pulmonary artery origin from ascending aorta (hemitruncus)
160	Truncus arteriosus
2010	Truncus arteriosus + Interrupted aortic arch
180	Partial anomalous pulmonary venous connection (PAPVC)
190	Partial anomalous pulmonary venous connection (PAPVC), scimitar
200	Total anomalous pulmonary venous connection (TAPVC), Type 1 (supracardiac)
210	Total anomalous pulmonary venous connection (TAPVC), Type 2 (cardiac)
220	Total anomalous pulmonary venous connection (TAPVC), Type 3 (infracardiac)
230	Total anomalous pulmonary venous connection (TAPVC), Type 4 (mixed)
250	Cor triatriatum
260	Pulmonary venous stenosis
2480	Pulmonary venous stenosis, Acquired
2490	Pulmonary venous stenosis, Spontaneous
270	Systemic venous anomaly
280	Systemic venous obstruction
290	TOF
2140	TOF, Pulmonary stenosis
300	TOF, AVC (AVSD)
310	TOF, Absent pulmonary valve
320	Pulmonary atresia
330	Pulmonary atresia, IVS
340	Pulmonary atresia, VSD (Including

340	TOF, PA)
350	Pulmonary atresia, VSD-MAPCA
360	MAPCA(s) (major aortopulmonary collateral[s]) (without PA-VSD)
370	Ebstein's anomaly
2700	Dysplastic Tricuspid or non-systemic atrioventricular valve, non-Ebstein's
410	Tricuspid or non-systemic atrioventricular valve, Other
420	Pulmonary stenosis, pulmonary or neo-pulmonary Valvar
430	Pulmonary artery stenosis (hypoplasia), Main (trunk)
440	Pulmonary artery stenosis, Branch, Central (within the hilar bifurcation)
450	Pulmonary artery stenosis, Branch, Peripheral (at or beyond the hilar bifurcation)
470	Pulmonary artery, Discontinuous
490	Pulmonary stenosis, Subvalvar
500	DCRV
510	Pulmonary or neo-pulmonary valve, Other
530	Pulmonary or neo-pulmonary valve insufficiency
540	Pulmonary or neo-pulmonary valve insufficiency and stenosis
2130	Shunt failure
2730	Shunt Problem
2740	Shunt Problem, Excess pulmonary blood flow (pulmonary overcirculation)
2750	Shunt Problem, Inadequate pulmonary blood flow
520	Conduit failure
550	Aortic stenosis, Subvalvar
2500	Aortic Stenosis, Subvalvar, Discrete
2510	Aortic Stenosis, Subvalvar, IHSS
2520	Aortic Stenosis, Subvalvar, Tunnel-like
560	Aortic stenosis, aortic, neo-aortic, or truncal, Valvar
570	Aortic stenosis, Supravalvar
590	Aortic valve atresia
600	Aortic, neo-aortic or truncal valve

600	insufficiency
610	Aortic, neo-aortic or truncal valve insufficiency and stenosis
620	Aortic, neo-aortic or truncal valve, Other
630	Sinus of Valsalva aneurysm
640	LV to aorta tunnel
650	Mitral or systemic AV valve stenosis, Supravalvar ring
660	Mitral or systemic AV valve stenosis, Valvar
670	Mitral or systemic AV valve stenosis, Subvalvar
680	Mitral or systemic AV valve stenosis, Subvalvar, Parachute
700	Mitral or systemic AV valve insufficiency and stenosis
710	Mitral or systemic AV valve insufficiency
720	Mitral or systemic AV valve, Other
730	Hypoplastic left heart syndrome (HLHS)
2760	Hypoplastic left heart syndrome (HLHS), AA+MA
2770	Hypoplastic left heart syndrome (HLHS), AA+MS
2780	Hypoplastic left heart syndrome (HLHS), AS+MA
2790	Hypoplastic left heart syndrome (HLHS), AS+MS
2080	Shone’s syndrome
740	Cardiomyopathy (including dilated, restrictive, and hypertrophic)
750	Cardiomyopathy, End-stage congenital heart disease
760	Pericardial effusion
770	Pericarditis
780	Pericardial disease, Other
790	Single ventricle, DILV
800	Single ventricle, DIRV
810	Single ventricle, Mitral atresia
820	Single ventricle, Tricuspid atresia
830	Single ventricle, Unbalanced AV canal
840	Single ventricle, Heterotaxia

840	syndrome
850	Single ventricle, Other
851	Single Ventricle + Total anomalous pulmonary venous connection (TAPVC)
870	Congenitally corrected TGA
872	Congenitally corrected TGA, IVS
874	Congenitally corrected TGA, IVS-LVOTO
876	Congenitally corrected TGA, VSD
878	Congenitally corrected TGA, VSD-LVOTO
2800	Congenitally corrected TGA, IVS + Coarctation or arch hypoplasia or arch interruption
2810	Congenitally corrected TGA, VSD + Coarctation or arch hypoplasia or arch interruption
880	TGA, IVS
890	TGA, IVS-LVOTO
900	TGA, VSD
910	TGA, VSD-LVOTO
2820	TGA, IVS + Coarctation or arch hypoplasia or arch interruption
2830	TGA, VSD + Coarctation or arch hypoplasia or arch
930	DORV, VSD type
940	DORV, TOF type
950	DORV, TGA type
960	DORV, Remote VSD (uncommitted VSD)
2030	DORV + AVSD (AV Canal)
975	DORV, IVS
980	DOLV
990	Coarctation of aorta
1000	Aortic arch hypoplasia
92	VSD + Aortic arch hypoplasia
94	VSD + Coarctation of aorta
1010	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA)
2840	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA), Left coronary artery from right sinus

2850	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA), Right coronary artery from left sinus
2860	Coronary artery Anomaly, Intramural coronary
1020	Coronary artery anomaly, Anomalous pulmonary origin (includes ALCAPA)
1030	Coronary artery anomaly, Fistula
1040	Coronary artery anomaly, Aneurysm
2420	Coronary artery anomaly, Ostial Atresia
1050	Coronary artery anomaly, Other
1070	Interrupted aortic arch
2020	Interrupted aortic arch + VSD
2000	Interrupted aortic arch + AP window (aortopulmonary window)
1080	Patent ductus arteriosus
1090	Vascular ring
1100	Pulmonary artery sling
2870	Esophageal compression by vessel
2880	Tracheal compression by vessel
1110	Aortic aneurysm (including pseudoaneurysm)
1120	Aortic dissection
1130	Lung disease, Benign
1140	Lung disease, Malignant
1160	Tracheal stenosis
2430	Tracheomalacia
1170	Airway disease, Other
1430	Pleural disease, Benign
1440	Pleural disease, Malignant
1450	Pneumothorax
1460	Pleural effusion
1470	Chylothorax
1480	Empyema
1490	Esophageal disease, Benign
1500	Esophageal disease, Malignant
1505	Mediastinal disease
1510	Mediastinal disease, Benign
1520	Mediastinal disease, Malignant
1540	Diaphragm paralysis

1550	Diaphragm disease, Other
2160	Rib tumor, Benign
2170	Rib tumor, Malignant
2180	Rib tumor, Metastatic
2190	Sternal tumor, Benign
2200	Sternal tumor, Malignant
2210	Sternal tumor, Metastatic
2220	Pectus carinatum
2230	Pectus excavatum
2240	Thoracic outlet syndrome
1180	Arrhythmia
2440	Arrhythmia, Atrial, Atrial fibrillation
2450	Arrhythmia, Atrial, Atrial flutter
2460	Arrhythmia, Atrial, Other
2050	Arrhythmia, Junctional
2060	Arrhythmia, Ventricular
1185	Arrhythmia, Heart block
1190	Arrhythmia, Heart block, Acquired
1200	Arrhythmia, Heart block, Congenital
1220	Arrhythmia, Pacemaker, Indication for replacement
2530	Short QT syndrome
2540	Long QT Syndrome (Ward Romano syndrome)
2550	Wolff-Parkinson-White syndrome (WPW syndrome)
1230	Atrial Isomerism, Left
1240	Atrial Isomerism, Right
2890	Interrupted IVC with azygos continuation
2090	Dextrocardia
2100	Levocardia
2110	Mesocardia
2120	Situs inversus
1250	Aneurysm, Ventricular, Right (including pseudoaneurysm)
1260	Aneurysm, Ventricular, Left (including pseudoaneurysm)
1270	Aneurysm, Pulmonary artery
1280	Aneurysm, Other
1290	Hypoplastic RV
1300	Hypoplastic LV

2070	Postoperative bleeding
1310	Mediastinitis
2910	Mediastinitis, Deep
2920	Mediastinitis, Superficial
1320	Endocarditis
1325	Rheumatic heart disease
1330	Prosthetic valve failure
1340	Myocardial infarction
1350	Cardiac tumor, unspecified
2930	Cardiac tumor, Ventricular fibroma
2940	Cardiac tumor, Ventricular rhabdomyoma
2950	Cardiac tumor, Atrial myxoma
2960	Pericardial teratoma
1360	Pulmonary AV fistula
1370	Pulmonary embolism
1385	Pulmonary vascular obstructive disease
1390	Pulmonary vascular obstructive disease (Eisenmenger's)
1400	Primary pulmonary hypertension
1410	Persistent fetal circulation
1420	Meconium aspiration
2250	Kawasaki disease
1560	Cardiac, Other
1570	Thoracic and/or mediastinal, Other
1580	Peripheral vascular, Other
2260	Complication of cardiovascular catheterization procedure
2270	Complication of cardiovascular catheterization procedure, Device embolization
2280	Complication of cardiovascular catheterization procedure, Device malfunction
2290	Complication of cardiovascular catheterization procedure, Perforation
2300	Complication of interventional radiology procedure
2310	Complication of interventional radiology procedure, Device embolization
2320	Complication of interventional

	2320	radiology procedure, Device malfunction
	2330	Complication of interventional radiology procedure, Perforation
	2340	Foreign body, Intracardiac foreign body
	2350	Foreign body, Intravascular foreign body
	2360	Open sternum with closed skin
	2370	Open sternum with open skin (includes membrane placed to close skin)
	2380	Retained sternal wire causing irritation
	2390	Syncope
	2400	Trauma, Blunt
	2410	Trauma, Penetrating
	2560	Cardio-respiratory failure not secondary to known structural heart disease
	2570	Myocarditis
	2580	Common AV valve insufficiency
	2970	Common AV valve stenosis
	2590	Protein-losing enteropathy
	2600	Plastic bronchitis
	7000	Normal heart
	7777	Miscellaneous, Other
	170	Truncal valve insufficiency (RETIRED)
	2470	Truncal valve stenosis (RETIRED)
	380	Tricuspid regurgitation, non-Ebstein's related (RETIRED)
	390	Tricuspid stenosis (RETIRED)
	400	Tricuspid regurgitation and tricuspid stenosis (RETIRED)
	695	Mitral stenosis (RETIRED)
Retired	2040	Arrhythmia, Atrial (RETIRED)

Primary diagnosis indicator

Seq Num: 1460

Required for case closure: Yes

Registry field: [SurgDiag].[SurgDiagPrim]

Shared with PAC3

Description: Indicate the diagnosis of primary importance at the time of this surgical procedure. Example: fundamental diagnosis of Tetralogy of Fallot. The current Diagnoses are both pulmonary insufficiency and residual ventricular septal defect. In this case, pulmonary insufficiency will be flagged as the primary diagnosis.

Values

Code	*Text*
1	Yes
0	No

Surgical procedure(s)

Seq Num: 1400

Required for case closure: Yes

Registry field: [Procedures].[ProcName]

Shared with PAC3

Description: If the patient underwent cardiac or thoracic surgery, indicate ALL procedures that were performed during this surgical procedure. The definitions and response options for this field are specified by the STS Congenital Heart Surgery Database.

Values

Code	*Text*
10	PFO, Primary closure
20	ASD repair, Primary closure
30	ASD repair, Patch
40	ASD repair, Device
2110	ASD repair, Patch + PAPVC repair
5024	VSD repair, Patch + PAPVC repair
5028	VSD repair, Patch + ASD repair, Patch + PAPVC repair
50	ASD, Common atrium (single atrium), Septation
60	ASD creation/enlargement
70	ASD partial closure
80	Atrial septal fenestration
85	Atrial fenestration closure
100	VSD repair, Primary closure
110	VSD repair, Patch
120	VSD repair, Device
130	VSD, Multiple, Repair
5001	VSD repair, Patch + ASD repair, Primary closure
140	VSD creation/enlargement
150	Ventricular septal fenestration
170	AVC (AVSD) repair, Complete (CAVSD)
180	AVC (AVSD) repair, Intermediate (Transitional)
190	AVC (AVSD) repair, Partial (Incomplete) (PAVSD)
5022	AVC (AVSD) repair, Partial (Incomplete) (PAVSD) + VSD repair, Patch
2300	Valvuloplasty, Common atrioventricular valve

2250	Valvuloplasty converted to valve replacement in the same operation, Common atrioventricular valve
2230	Valve replacement, Common atrioventricular valve
5027	AVC (AVSD) repair, Complete (CAVSD) + Vascular ring repair
5034	AVC (AVSD) repair, Complete (CAVSD) + Coarctation repair, End to end, Extended
3480	AVC (AVSD) repair, Complete (CAVSD) + Arch repair
210	AP window repair
220	Pulmonary artery origin from ascending aorta (hemitruncus) repair
230	Truncus arteriosus repair
240	Valvuloplasty, Truncal valve
3490	Valvuloplasty, Truncal valve, Reduction of number of cusps/sinus resection
3500	Valvuloplasty, Truncal valve, Augmentation of valve leaflet (one or more)
3510	Valvuloplasty, Truncal valve, Neo-cuspidization (including one or more leaflet – 'Ozaki' type repair etc.)
2290	Valvuloplasty converted to valve replacement in the same operation, Truncal valve
250	Valve replacement, Truncal valve
3790	Valve replacement, Truncal, Mechanical
3800	Valve replacement, Truncal, Bioprosthetic
3810	Valve replacement, Truncal, Homograft
2220	Truncus + Interrupted aortic arch repair (IAA) repair
260	PAPVC repair
5007	PAPVC repair + ASD repair, Primary closure
270	PAPVC, Scimitar, Repair
2120	PAPVC repair, Baffle redirection to left atrium with systemic vein translocation (Warden) (SVC sewn to right atrial appendage)

280	TAPVC repair
2200	TAPVC repair + Shunt - systemic-to-pulmonary
5006	TAPVC repair + Shunt - systemic-to-pulmonary + PDA closure, Surgical
290	Cor triatriatum repair
300	Pulmonary venous stenosis repair
5019	Pulmonary venous stenosis repair + ASD partial closure
310	Atrial baffle procedure (non-Mustard, non-Senning)
330	Anomalous systemic venous connection repair
340	Systemic venous stenosis repair
350	TOF repair, No ventriculotomy
5004	TOF repair, No Ventriculotomy + ASD repair, Primary closure
360	TOF repair, Ventriculotomy, Nontransanular patch
370	TOF repair, Ventriculotomy, Transanular patch
3330	TOF repair, Ventriculotomy, Transanular patch, plus native valve reconstruction
3340	TOF repair, Ventriculotomy, Transanular patch, with monocusp or other surgically fashioned RVOT valve
380	TOF repair, RV-PA conduit
390	TOF - AVC (AVSD) repair
400	TOF - Absent pulmonary valve repair
5018	TOF repair, Ventriculotomy, Transanular patch + Vascular ring repair
420	Pulmonary atresia - VSD (including TOF, PA) repair
5031	Pulmonary atresia - VSD (including TOF, PA) repair + ASD repair, Primary closure + PDA closure, Surgical
2700	Pulmonary atresia - VSD - MAPCA repair, Complete single stage repair (1-stage that includes bilateral pulmonary unifocalization + VSD closure + RV to PA connection [with or without conduit])
2710	Pulmonary atresia - VSD - MAPCA

2710	repair, Status post prior complete unifocalization (includes VSD closure + RV to PA connection [with or without conduit])
2720	Pulmonary atresia - VSD - MAPCA repair, Status post prior incomplete unifocalization (includes completion of pulmonary unifocalization + VSD closure + RV to PA connection [with or without conduit])
2730	Unifocalization MAPCA(s), Bilateral pulmonary unifocalization - Complete unifocalization (all usable MAPCA[s] are incorporated)
2740	Unifocalization MAPCA(s), Bilateral pulmonary unifocalization - Incomplete unifocalization (not all usable MAPCA[s] are incorporated)
2750	Unifocalization MAPCA(s), Unilateral pulmonary unifocalization
440	Unifocalization MAPCA(s)
5011	Unifocalization MAPCA(s) + Conduit placement, RV to PA
5014	Unifocalization MAPCA(s) + Shunt, Systemic to pulmonary, Central (shunt from aorta)
450	Occlusion of MAPCA(s)
460	Valvuloplasty, Tricuspid
2280	Valvuloplasty converted to valve replacement in the same operation, Tricuspid
465	Ebstein's repair
5030	Ebstein's repair + PDA closure, Surgical
470	Valve replacement, Tricuspid (TVR)
480	Valve closure, Tricuspid (exclusion, univentricular approach)
490	Valve excision, Tricuspid (without replacement)
500	Valve surgery, Other, Tricuspid
510	RVOT procedure
520	1 1/2 ventricular repair
530	PA, reconstruction (plasty), Main (trunk)
540	PA, reconstruction (plasty), Branch, Central (within the hilar bifurcation)
5003	PA, reconstruction (plasty), Branch, Central (within the hilar bifurcation)

5003	+ Shunt, Systemic to pulmonary, Modified Blalock-Taussig Shunt (MBTS)
550	PA, reconstruction (plasty), Branch, Peripheral (at or beyond the first lobar branch)
3350	PA, reconstruction (plasty), Branch, Peripheral (at or beyond the first lobar branch, proximal to first segmental branch)
3360	PA, reconstruction (plasty), Branch, Peripheral (at or beyond the first lobar branch, beyond the first segmental branch)
570	DCRV repair
3370	RV Rehabilitation, Endocardial Resection
590	Valvuloplasty, Pulmonic
2270	Valvuloplasty converted to valve replacement in the same operation, Pulmonic
600	Valve replacement, Pulmonic (PVR)
5015	ASD repair, Patch + Valve replacement, Pulmonary or neopulmonary (PVR)
5023	VSD repair, Patch + Valve replacement, Pulmonary or neopulmonary (PVR)
5033	Valve replacement, Pulmonary or neo-pulmonary (PVR) + explantation of pacing system
630	Valve excision, Pulmonary or neo-pulmonary (without replacement)
640	Valve closure, Semilunar
650	Valve surgery, Other, Pulmonary or neo-pulmonary
5025	Valve replacement, Pulmonary or neo-pulmonary (PVR) + Valve replacement, Aortic/neo-aortic/truncal (AVR), Mechanical
610	Conduit placement, RV to PA
3520	Conduit placement, RV to PA, Valved
3530	Conduit placement, RV to PA, Non-valved
620	Conduit placement, LV to PA
1774	Conduit placement, Ventricle to aorta
1772	Conduit placement, Other

5013	Conduit placement, RV to PA + PDA closure, Surgical
5035	Conduit placement, RV to PA + Aortic root replacement, Mechanical
580	Conduit reoperation
5016	VSD repair, Patch + Conduit reoperation
5020	Conduit reoperation + Valve replacement, Aortic/neoaortic/truncal (AVR), Mechanical
660	Valvuloplasty, Aortic/neo-aortic
3540	Valvuloplasty, Aortic/neo-aortic valve, Reduction of number of cusps/sinus resection
3550	Valvuloplasty, Aortic/neo-aortic valve, Augmentation of valve leaflet (one or more)
3560	Valvuloplasty, Aortic/neo-aortic valve, Neo-cuspidization (including one or more leaflet – 'Ozaki' type repair etc.)
2240	Valvuloplasty converted to valve replacement in the same operation, Aortic/neo-aortic
2310	Valvuloplasty converted to valve replacement in the same operation, Aortic/neo-aortic – with Ross procedure
2320	Valvuloplasty converted to valve replacement in the same operation, Aortic/neo-aortic – with Ross-Konno procedure
670	Valve replacement, Aortic/neo-aortic (AVR)
680	Valve replacement, Aortic/neo-aortic (AVR), Mechanical
690	Valve replacement, Aortic/neo-aortic (AVR), Bioprosthetic
700	Valve replacement, Valve replacement, Aortic/neo-aortic (AVR), Homograft
715	Aortic root replacement, Bioprosthetic
720	Aortic root replacement, Mechanical
730	Aortic root replacement, Homograft
735	Aortic root replacement, Valve sparing

740	Ross procedure
750	Konno procedure
760	Ross-Konno procedure
5026	Ross-Konno procedure + Valve replacement, Mitral or systemic atrioventricular valve (MVR)
770	Other annular enlargement procedure
780	Aortic stenosis, Subvalvar, Repair
2100	Aortic stenosis, Subvalvar, Repair, With myectomy for IHSS
790	Aortic stenosis, Supravalvar, Repair
800	Valve surgery, Other, Aortic/neo-aortic/truncal valve
3380	Extended Ventricular Septoplasty (modified Konno, VSD creation and patch enlargement of LVOT, sparing aortic valve) for tunnel type sub aortic stenosis
810	Sinus of Valsalva, Aneurysm repair
820	LV to aorta tunnel repair
830	Valvuloplasty, Mitral or systemic atrioventricular valve
5005	Mitral or systemic atrioventricular Valvuloplasty + Valvuloplasty, Aortic/neo-aortic/truncal
2260	Valvuloplasty converted to valve replacement in the same operation, Mitral or systemic atrioventricular valve
840	Mitral or systemic atrioventricular valve stenosis, Supravalvar ring repair
850	Valve replacement, Mitral or systemic atrioventricular valve (MVR)
860	Valve surgery, Other, Mitral or systemic atrioventricular valve
870	Norwood procedure
5012	Norwood procedure+Valvuloplasty, Systemic atrioventricular valve+Conduit placement, RV to PA
880	Biventricular repair for hypoplastic left ventricle
3390	LV Endocardial Fibroelastosis resection
2755	Conduit insertion right ventricle to

2755	pulmonary artery + Intraventricular tunnel left ventricle to neoaorta + Arch reconstruction (Rastelli and Norwood type arch reconstruction) (Yasui)
2160	Hybrid Approach "Stage 1", Application of RPA & LPA bands with concomitant use of PGE to maintain ductal patency
2170	Hybrid Approach "Stage 1", Stent placement in arterial duct (PDA)
2180	Hybrid Approach "Stage 1", Stent placement in arterial duct (PDA) + application of RPA & LPA bands
2140	Hybrid approach "Stage 2", Aortopulmonary amalgamation + Superior Cavopulmonary anastomosis(es) + PA Debanding + Aortic arch repair (Norwood [Stage 1] + Superior Cavopulmonary anastomosis(es) + PA Debanding)
2150	Hybrid approach "Stage 2", Aortopulmonary amalgamation + Superior Cavopulmonary anastomosis(es) + PA Debanding + Without aortic arch repair
2760	Hybrid Approach, Transcardiac balloon dilation
2770	Hybrid Approach, Transcardiac transcatheter device placement
890	Transplant, Heart
5002	PA, reconstruction (plasty), Branch, Central (within the hilar bifurcation) + Transplant, Heart
900	Transplant, Heart and lung (Combined procedure)
3570	Transplant, Heart and Liver (Combined procedure)
3580	Transplant, Heart and Kidney (Combined procedure)
3590	Transplant, Heart and Liver and Kidney (Combined procedure)
910	Partial left ventriculectomy (LV volume reduction surgery) (Batista)
920	Pericardial drainage procedure
930	Pericardiectomy
940	Pericardial procedure, Other
950	Fontan, Atrio-pulmonary connection

960	Fontan, Atrio-ventricular connection
970	Fontan, TCPC, Lateral tunnel, Fenestrated
980	Fontan, TCPC, Lateral tunnel, Nonfenestrated
1000	Fontan, TCPC, External conduit, Fenestrated
5010	Fontan, TCPC, External conduit, Fenestrated + Pacemaker procedure
1010	Fontan, TCPC, External conduit, Nonfenestrated
2780	Fontan, TCPC, Intra/extracardiac conduit, Fenestrated
2790	Fontan, TCPC, Intra/extracardiac conduit, Nonfenestrated
3310	Fontan, TCPC, External conduit, Hepatic veins to pulmonary artery, Fenestrated
3320	Fontan, TCPC, External conduit, Hepatic veins to pulmonary artery, Nonfenestrated
1025	Fontan revision or conversion (Re-do Fontan)
1030	Fontan, Other
3600	Fontan, Takedown
2340	Fontan + Atrioventricular valvuloplasty
1035	Ventricular septation
3610	Ventricular septation, Following superior cavopulmonary anastomosis or hemifontan
3620	Ventricular septation, Following prior total cavopulmonary connection
3630	Ventricular septation, Following prior Hybrid Stage 1
3640	Ventricular septation, Following prior Norwood or DKS procedure
1050	Congenitally corrected TGA repair, Atrial switch and ASO (double switch)
1060	Congenitally corrected TGA repair, Atrial switch and Rastelli
1070	Congenitally corrected TGA repair, VSD closure
1080	Congenitally corrected TGA repair, VSD closure and LV to PA conduit

1090	Congenitally corrected TGA repair, Other
1110	Arterial switch operation (ASO)
1120	Arterial switch operation (ASO) and VSD repair
1123	Arterial switch procedure + Aortic arch repair
1125	Arterial switch procedure and VSD repair + Aortic arch repair
1130	Senning
1140	Mustard
1145	Atrial baffle procedure, Mustard or Senning revision
1150	Rastelli
1160	REV
2190	Aortic root translocation over left ventricle (Including Nikaidoh procedure)
2210	TGA, Other procedures (Kawashima, LV-PA conduit, other)
3400	Double root translocation
1180	DORV, Intraventricular tunnel repair
3410	DORV repair, No Ventriculotomy
3420	DORV repair, Ventriculotomy, Nontransannular patch
3430	DORV repair, Ventriculotomy, Transannular patch
3440	DORV repair, RV-PA conduit
3450	DORV - AVC (AVSD) repair
1200	DOLV repair
1210	Coarctation repair, End to end
1220	Coarctation repair, End to end, Extended
3460	Coarctation repair, Descending aorta anastomosed to Ascending aorta
1230	Coarctation repair, Subclavian flap
1240	Coarctation repair, Patch aortoplasty
1250	Coarctation repair, Interposition graft
3470	Coarctation repair, Extra-anatomic Bypass graft
1260	Coarctation repair, Other
1275	Coarctation repair + VSD repair

1280	Aortic arch repair
1285	Aortic arch repair + VSD repair
5008	Aortic arch repair + VSD repair + ASD repair, Patch
1290	Coronary artery fistula ligation
1291	Anomalous origin of coronary artery from pulmonary artery repair
1300	Coronary artery bypass
1305	Anomalous aortic origin of coronary artery from aorta (AAOCA) repair
1310	Coronary artery procedure, Other
1320	Interrupted aortic arch repair
1330	PDA closure, Surgical
1340	PDA closure, Device
1360	Vascular ring repair
1365	Aortopexy
3650	Division with or without reimplantation of aberrant subclavian artery
1370	Pulmonary artery sling repair
5009	Pulmonary artery sling repair + Tracheal procedure
1380	Aortic aneurysm repair
1390	Aortic dissection repair
3655	Aorta, Other
1400	Lung biopsy
1410	Transplant, lung(s)
1420	Lung procedure, Other
1440	Tracheal procedure
2800	Muscle flap, Trunk (i.e. intercostal, pectus, or serratus muscle)
2810	Muscle flap, Trunk (i.e. latissimus dorsi)
2820	Removal, Sternal wire
2830	Rib excision, Complete
2840	Rib excision, Partial
2850	Sternal fracture - open treatment
2860	Sternal resection, Radical resection of sternum
2870	Sternal resection, Radical resection of sternum with mediastinal lymphadenectomy
2880	Tumor of chest wall - Excision

2880	including ribs
2890	Tumor of chest wall - Excision including ribs, With reconstruction
2900	Tumor of soft tissue of thorax - Excision of deep subfascial or intramuscular tumor
2910	Tumor of soft tissue of thorax - Excision of subcutaneous tumor
2920	Tumor of soft tissue of thorax - Radical resection
2930	Hyoid myotomy and suspension
2940	Muscle flap, Neck
2950	Procedure on neck
2960	Tumor of soft tissue of neck - Excision of deep subfascial or intramuscular tumor
2970	Tumor of soft tissue of neck - Excision of subcutaneous tumor
2980	Tumor of soft tissue of neck - Radical resection
2990	Pectus bar removal
3000	Pectus bar repositioning
3010	Pectus repair, Minimally invasive repair (Nuss), With thoracoscopy
3020	Pectus repair, Minimally invasive repair (Nuss), Without thoracoscopy
3030	Pectus repair, Open repair
3040	Division of scalenus anticus, With resection of a cervical rib
3050	Division of scalenus anticus, Without resection of a cervical rib
3060	Rib excision, Excision of cervical rib
3070	Rib excision, Excision of cervical rib, With sympathectomy
3080	Rib excision, Excision of first rib
3090	Rib excision, Excision of first rib, With sympathectomy
3100	Procedure on thorax
1450	Pacemaker implantation, Permanent
1460	Pacemaker procedure
2350	Explantation of pacing system
1470	ICD (AICD) implantation
1480	ICD (AICD) ([automatic] implantable cardioverter defibrillator) procedure
1490	Arrhythmia surgery - atrial, Surgical

1490 Ablation

1500 Arrhythmia surgery - ventricular, Surgical Ablation

2500 Cardiovascular catheterization procedure, Diagnostic

2520 Cardiovascular catheterization procedure, Diagnostic, Angiographic data obtained

2550 Cardiovascular catheterization procedure, Diagnostic, Electrophysiology alteration

2540 Cardiovascular catheterization procedure, Diagnostic, Hemodynamic alteration

2510 Cardiovascular catheterization procedure, Diagnostic, Hemodynamic data obtained

2530 Cardiovascular catheterization procedure, Diagnostic, Transluminal test occlusion

2410 Cardiovascular catheterization procedure, Therapeutic

2670 Cardiovascular catheterization procedure, Therapeutic, Adjunctive therapy

1540 Cardiovascular catheterization procedure, Therapeutic, Balloon dilation

2590 Cardiovascular catheterization procedure, Therapeutic, Balloon valvotomy

1580 Cardiovascular catheterization procedure, Therapeutic, Coil implantation

1560 Cardiovascular catheterization procedure, Therapeutic, Device implantation

3110 Cardiovascular catheterization procedure, Therapeutic, Device implantation attempted

2690 Cardiovascular catheterization procedure, Therapeutic, Electrophysiological ablation.

3120 Cardiovascular catheterization procedure, Therapeutic, Intravascular foreign body removal

2640 Cardiovascular catheterization procedure, Therapeutic, Perforation (establishing interchamber and/or

2640	intervessel communication)
2580	Cardiovascular catheterization procedure, Therapeutic, Septostomy
1550	Cardiovascular catheterization procedure, Therapeutic, Stent insertion
2630	Cardiovascular catheterization procedure, Therapeutic, Stent re-dilation
2650	Cardiovascular catheterization procedure, Therapeutic, Transcatheter Fontan completion
2660	Cardiovascular catheterization procedure, Therapeutic, Transcatheter implantation of valve
3660	Open chest exposure for transcatheter/per-ventricular/per-atrial procedure
3670	Peripheral vascular access for transcatheter procedures
1590	Shunt, Systemic to pulmonary, Modified Blalock-Taussig Shunt (MBTS)
5000	Shunt, Systemic to pulmonary, Modified Blalock-Taussig Shunt (MBTS) + PDA closure, Surgical
1600	Shunt, Systemic to pulmonary, Central (shunt from aorta)
3130	Shunt, Systemic to pulmonary, Central (shunt from aorta), Central shunt with an end-to-side connection between the transected main pulmonary artery and the side of the ascending aorta (i.e. Mee shunt)
3230	Shunt, Systemic to pulmonary, Potts - Smith type (descending aorta to pulmonary artery)
1610	Shunt, Systemic to pulmonary, Other
3680	RV to PA Shunt (e.g., Sano Shunt or palliative RV-PA nonvalved conduit to augment pulmonary blood flow)
1630	Shunt, Ligation and takedown
2095	Shunt, Reoperation
1640	PA banding (PAB), placement of main pulmonary band
3860	PA banding (PAB), Placement of unilateral or bilateral branch

3860	pulmonary artery band(s) without the need for concomitant PGE and/or ductal stent
5037	PA banding (PAB) + Valvuloplasty, Common atrioventricular valve
1650	PA debanding
3200	PA band adjustment
1660	Damus-Kaye-Stansel procedure (DKS) (creation of AP anastomosis without arch reconstruction)
5017	Damus-Kaye-Stansel procedure (DKS) (creation of AP anastomosis without arch reconstruction) + Shunt, Systemic to pulmonary, Modified Blalock-Taussig Shunt (MBTS)
1670	Bidirectional cavopulmonary anastomosis (BDCPA) (bidirectional Glenn)
1680	Glenn (unidirectional cavopulmonary anastomosis) (unidirectional Glenn)
1690	Bilateral bidirectional cavopulmonary anastomosis (BBDCPA) (bilateral bidirectional Glenn)
1700	HemiFontan
2330	Superior cavopulmonary anastomosis(es) (Glenn or HemiFontan) + Atrioventricular valvuloplasty
2130	Superior Cavopulmonary anastomosis(es) + PA reconstruction
3300	Takedown of superior cavopulmonary anastomosis
3140	Hepatic vein to azygous vein connection, Direct
3150	Hepatic vein to azygous vein connection, Interposition graft
3160	Kawashima operation (superior cavopulmonary connection in setting of interrupted IVC with azygous continuation)
1710	Palliation, Other
2360	ECMO cannulation
2370	ECMO decannulation
1910	ECMO procedure
1900	Intraaortic balloon pump (IABP)

1900	insertion
3820	Right/Left heart temporary assist device, Implant
3830	Right/Left heart temporary assist device, Explant
3840	Right/Left heart temporary assist device, Procedure
2390	VAD, Explant
2380	VAD, Implant
3170	VAD, Change out
3850	VAD, Procedure
2420	Echocardiography procedure, Sedated transesophageal echocardiogram
2430	Echocardiography procedure, Sedated transthoracic echocardiogram
2435	Non-cardiovascular, Non-thoracic procedure on cardiac patient with cardiac anesthesia
2440	Radiology procedure on cardiac patient, Cardiac Computerized Axial Tomography (CT Scan)
2450	Radiology procedure on cardiac patient, Cardiac Magnetic Resonance Imaging (MRI)
2460	Radiology procedure on cardiac patient, Diagnostic radiology
2470	Radiology procedure on cardiac patient, Non-Cardiac Computerized Tomography (CT) on cardiac patient
2480	Radiology procedure on cardiac patient, Non-cardiac Magnetic Resonance Imaging (MRI) on cardiac patient
2490	Radiology procedure on cardiac patient, Therapeutic radiology
1720	Aneurysm, Ventricular, Right, Repair
1730	Aneurysm, Ventricular, Left, Repair
1740	Aneurysm, Pulmonary artery, Repair
1760	Cardiac tumor resection
3690	Cardiac tumor resection, Resection of ventricular fibroma
3700	Cardiac tumor resection, Resection of ventricular rhadbomyoma
3710	Cardiac tumor resection, Resection of atrial myxoma

3720	Cardiac tumor resection, Resection of Other tumor
5021	Cardiac tumor resection + PDA closure, Surgical
3730	Cardiac tumor resection + PDA closure, Surgical, Resection of ventricular fibroma
3740	Cardiac tumor resection + PDA closure, Surgical, Resection of ventricular rhadbomyoma
3750	Cardiac tumor resection + PDA closure, Surgical, Resection of Atrial myxoma
3760	Cardiac tumor resection + PDA closure, Surgical, Resection of Other tumor
3770	Resection of pericardial teratoma
3780	Anterior PA translocation (not performed as part of an arterial switch operation) (Le Compte)
1780	Pulmonary AV fistula repair/occlusion
1790	Ligation, Pulmonary artery
1802	Pulmonary embolectomy, Acute pulmonary embolus
1804	Pulmonary embolectomy, Chronic pulmonary embolus
1810	Pleural drainage procedure
1820	Pleural procedure, Other
1830	Ligation, Thoracic duct
1840	Decortication
1850	Esophageal procedure
1860	Mediastinal procedure
1870	Bronchoscopy
1880	Diaphragm plication
1890	Diaphragm procedure, Other
1930	VATS (video-assisted thoracoscopic surgery)
1940	Minimally invasive procedure
1950	Bypass for noncardiac lesion
1960	Delayed sternal closure
1970	Mediastinal exploration
1980	Sternotomy wound drainage
3180	Intravascular stent removal
3220	Removal of transcatheter-delivered

3220 device from heart

3210 Removal of transcatheter-delivered device from blood vessel

1990 Thoracotomy, Other

2000 Cardiotomy, Other

2010 Cardiac procedure, Other

2020 Thoracic and/or mediastinal procedure, Other

2030 Peripheral vascular procedure, Other

2040 Miscellaneous procedure, Other

2050 Organ procurement

7777 Other procedure

7800 Operation canceled before skin incision

7810 Operation aborted after skin incision

3240 Attempted fetal intervention, percutaneous trans-catheter directed at interatrial septum (RETIRED)

3250 Attempted fetal intervention, percutaneous trans-catheter directed at aortic valve (RETIRED)

3260 Attempted fetal intervention, percutaneous trans-catheter directed at pulmonic valve (RETIRED)

3270 Attempted fetal intervention “open” (maternal laparotomy with hysterotomy), directed at interatrial septum (RETIRED)

3280 Attempted fetal intervention “open” (maternal laparotomy with hysterotomy), directed at aortic valve (RETIRED)

3290 Attempted fetal intervention “open” (maternal laparotomy with hysterotomy), directed at pulmonic valve (RETIRED)

1920 Right/left heart assist device procedure (RETIRED)

Primary procedure indicator

Seq Num: 1405

Required for case closure: Yes

Registry field: [Procedures].[PrimProc]

Shared with PAC3

Description: Indicate whether this procedure is considered the PRIMARY procedure performed during this operation.

Values

Code	*Text*
1	Yes
0	No

Procedure location

Seq Num: 1480

Required for case closure: Yes

Registry field: [Operative].[ProcLoc]

Shared with PAC3

Description: Indicate the location where the operation/procedure was performed.

Values	*Code*	*Text*	
	9	Cardiac OR	Indicate if the operation/procedure was performed in the following location: Cardiac OR (Cardiac Operating Room).
	10	General OR	Indicate if the operation/procedure was performed in the following location: General OR (General Operating Room).
	3	Hybrid Suite	Indicate if the operation/procedure was performed in the following location: Hybrid Suite. A “Hybrid Suite” is defined as a room that is designed for both surgical procedure s and transcatheter interventional procedures. A “Hybrid Procedure” is defined as a procedure that combines surgical and transcatheter interventional approaches. The term “Hybrid approach” is used somewhat differently than the term “Hybrid Procedure”. A “Hybrid approach” is defined as any of a group of procedures that fit into the general silo of procedures developed from the combined use of surgical and transcatheter interventional techniques. Therefore, not all procedures classified as “Hybrid approach” are truly “Hybrid Procedures”.
	2	Cath lab	Indicate if the operation/procedure was performed in the following location: Cath lab (Cardiac catheterization laboratory).
	11	ICU	Indicate if the operation/procedure was performed in the following location: ICU (Intensive Care Unit).
	4	CVICU	Indicate if the operation/procedure was performed in the following location: CVICU (CardioVascular Intensive Care Unit).
	5	NICU	Indicate if the operation/procedure was performed in the following location: NICU (Neonatal Intensive Care Unit).
	6	PICU	Indicate if the operation/procedure was performed in the following location: PICU (Pediatric Intensive Care Unit).
	7	SICU	Indicate if the operation/procedure was performed in the following location: SICU (Surgical Intensive Care Unit).
	12	Radiology Suite	Indicate if the operation/procedure was performed in the following location: Radiology Suite
	13	Procedure Room	Indicate if the operation/procedure was performed in the following location: Procedure Room

8	Other	Indicate if the operation/procedure was performed in the following location: Other (Any location not contained in this list).

Cardiac surgery type

Seq Num: 1500

Required for case closure: Yes

Registry field: [Operative].[CardSurgType]

Shared with PAC3

Description: If the patient underwent cardiac or thoracic surgery, indicate the type of primary surgical procedure performed (e.g., CPB, No CPB cardiovascular, thoracic, etc.)

Clarification 6/1/2023: Please always ensure that the classifications recorded in PC4 match those coded in STS.

AICDs, permanent pacemakers, and loop recorders should all generally be code as 2 - No CPB cardiovascular.

Clarification 2/1/2025: A surgical procedure performed by CV surgery to remove a retained foreign object in the chest cavity, and done without CPB, should be coded as thoracic.

Values	*Code*	*Text*	
	1	CPB Cardiovascular	If cardiopulmonary bypass is used, this must be chosen as the case category whether the procedure is thoracic (e.g., tracheal reconstruction) or cardiovascular in nature.
	2	No CPB Cardiovascular	If the procedure is cardiovascular, but cardiopulmonary bypass is not used, this must be chosen as the case category. This includes any procedure that includes the heart, great vessels, or any of the branches from the great vessels, where CPB is not used. Examples include but are not limited to: coarctation of the aorta repair, creation of a systemic-to-pulmonary artery shunt, patent ductus arteriosus ligation. A delayed sternal closure is included in this category. If a pericardial window done for cancer, it should be classified as a Cardiac Operation (Operation type = No CPB Cardiovascular).
	9	CPB Non-Cardiovascular	Procedures that are done with bypass support that do not involve a concomitant cardiovascular procedure. For example, tracheal surgery, neurosurgical procedures, resuscitation and rewarming of drowning victims.
	3	ECMO	If ECMO cannulation or decannulation is the primary procedure performed, this category must be chosen. However, if ECMO is initiated for support at the end of another type procedure (i.e., CPB, No CPB Cardiovascular), that procedure takes precedence and the category code would not be ECMO.
	4	Thoracic	If a procedure is performed on a structure within the chest cavity but does not involve the cardiac chambers or vessels, it would be a Thoracic category case (for example, lobectomy, pectus excavatum/carinatum repair, anterior spine exposure). There will be thoracic cases that require cardiopulmonary bypass (e.g., some types of tracheal reconstructions). In those cases, the use of cardiopulmonary bypass takes precedence and the case would not be Thoracic, but CPB.

6	VAD Operation Done With CPB	Ventricular Assist Device procedure done with CPB. This includes operations to insert the VAD or to remove the VAD.
7	VAD Operation Done Without CPB	Ventricular Assist Device procedure done without CPB. This includes operations to insert the VAD, to remove the VAD, or any procedure performed while on the VAD.
777	Other	All other procedures that do not fall within the above definitions should be coded as category Other. This would include but not be limited to supportive minor procedures (e.g., line placements)
5	Interventional Cardiology (RETIRED)	If an interventional device (e.g., occluder, stent) is placed in the operating room as the primary procedure performed, this category must be chosen. However, if in the course of another type procedure (i.e., CPB, No CPB Cardiovascular), an interventional device is placed in addition to the other procedure, the other category takes precedence and the case would not be Interventional Cardiology.
8	Non-cardiac, Non-thoracic procedure on cardiac patient with cardiac anesthesia (RETIRED)	Any non-cardiac or non-thoracic procedure such as a general surgical procedure with anesthesia provided by cardiac anesthesiology because of the patient's underlying cardiac physiology.

Cardiopulmonary bypass time

Seq Num: 1540

Required for case closure: Yes

Registry field: [Operative].[CPBTm]

Description: Indicate the total number of minutes that systemic return is diverted into the cardiopulmonary bypass (CPB) circuit and returned to the systemic system. Indicate the total number of minutes that systemic return is diverted into the cardiopulmonary bypass (CPB) circuit and returned to the systemic system. This time period (Cardiopulmonary Bypass Time) includes all periods of cerebral perfusion and sucker bypass and excludes any circulatory arrest and modified ultrafiltration periods. If more than one period of CPB is required during the surgical procedure, enter the sum of all the CPB periods.

Multiple bypass runs

Seq Num: 1541

Required for case closure: No

Registry field: [Operative].[CPBmult]

Description: Indicate whether multiple bypass runs occurred during this surgery.

Clarification 6/1/2023: This field is meant to capture patients who separate from bypass and then require re-initiation of bypass for any reason. A patient who undergoes circulatory arrest during an operative procedure should not be coded as having multiple bypass runs solely due to the period of circulatory arrest.

Clarification 2/1/2025: If the initial bypass run is discontinued following surgery, and the patient returns to bypass for any reason, code Yes for multiple bypass runs.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Aortic cross-clamp time

Seq Num: 1560

Required for case closure: Yes

Registry field: [Operative].[XClampTm]

Description: Indicate the total number of minutes that the coronary circulation is mechanically isolated from systemic circulation, either by an aortic cross clamp or systemic circulatory arrest. This time period includes all intervals of intermittent or continuous cardioplegia administration. If more than one cross clamp period is required during this surgical procedure, enter the sum of the cross clamp periods. Enter zero if the coronary circulation was never mechanically isolated from systemic circulation, either by an aortic cross clamp or systemic circulatory arrest. For operations involving transplants, the cross clamp time is for the donor heart.

Circulatory arrest time

Seq Num: 1580

Required for case closure: Yes

Registry field: [Operative].[DHCATm]

Description: Indicate the total number of minutes of complete cessation of blood flow to the patient. This time period (Circulatory Arrest Time) excludes any periods of cerebral perfusion. If more than one period of circulatory arrest is required during this surgical procedure, the sum of these periods is equal to the total duration of circulatory arrest. Enter zero if circulatory arrest technique was not used.

Cerebral perfusion used

Seq Num: 1600

Required for case closure: Yes

Registry field: [Operative].[CPerfUtil]

Description: Indicate whether cerebral perfusion was performed.

Values	*Code*	*Text*
	1	Yes
	0	No

Cerebral perfusion time

Seq Num: 1620

Required for case closure: Yes

Registry field: [Operative].[CPerfTm]

Description: If cerebral perfusion was used, indicate the total number of minutes cerebral perfusion was performed. This would include antegrade or retrograde cerebral perfusion strategies.

Ultrafiltration performed after CPB

Seq Num: 1621

Required for case closure: Yes

Registry field: [Operative].[Ultrafiltration]

Description: Indicate whether ultrafiltration was performed after CPB.

Values	*Code*	*Text*
	0	No
	2	Yes, Modified ultrafiltration (MUF)
	3	Yes, Conventional ultrafiltration (CUF)
	4	Yes, MUF and CUF
	9	Unk

Cross Clamp Time - No CPB

Seq Num: 1640

Required for case closure: Yes

Registry field: [Operative].[XClampTmNC]

Description: Indicate the total number of minutes the aorta is completely cross-clamped during this non-CPB cardiovascular surgical procedure. Enter zero if no cross-clamp was used.

Endotracheal intubation

Seq Num: 1670

Required for case closure: Yes

Registry field: [Operative].[OpIntubate]

Description: Indicate whether an endotracheal intubation was performed. This includes (1) patients intubated for this procedure; (2) those on preoperative invasive ventilation who remained on support until the surgical start time.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Extubated in OR/on arrival

Seq Num: 1671

Required for case closure: Yes

Registry field: [Operative].[OpExtubate]

Description: Indicate Yes if the patient (1) had the endotracheal tube removed in OR or PACU and arrived to the inpatient unit with a natural airway or (2) had the endotracheal tube removed in the inpatient unit by the anesthesia team shortly after arrival with no course of mechanical ventilation. (Bag-mask ventilation does not qualify as mechanical ventilation.) This includes patients with a tracheostomy who are never mechanically ventilated but remain cannulated with their tracheostomy tube.

Clarification 6/1/2023: A patient who fails extubation in the OR and is then reintubated before arriving at the CICU should be coded as No.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Date/time of ICU/PACU arrival

Seq Num: 1680

Required for case closure: Yes

Registry field: [Operative].[ICUPACUAdmitDtTm]

Shared with PAC3

Description: Indicate the date/time the patient arrived in the ICU/PACU following this surgery. If the patient was first admitted to CICU care following this surgery, this will be the same as the CICU start date/time. If, however, the patient was under CICU care during the pre-operative period, this will differ from the CICU start date/time. If the procedure was performed at the bedside, use the procedure date/time. For PAC3: If the patient did not go to the CICU or PACU after leaving the OR, record the OR exit time. Do not modify this field without consulting the PC4 data champion because it impacts inotrope/vasopressor infusion calculations in the PC4 version 3 case report form (seq. 9921-10018).

Clarification 6/1/2023: For a patient who undergoes more than one procedure before entering the CICU, please add one minute to this value for the second procedure so that we can determine the sequencing in analysis.

Please enter a time for this field. If the time is left blank, the software will default to midnight. If the actual time value is midnight, please code as 00:01 so we know it is not a default value.

Glucose check

Seq Num: 1700

Retired in version 2.0

Required for case closure: No

Registry field: [Operative].[GlucoseCheck]

Description: If the patient age is >= 18 years and had cardiothoracic surgery during this episode of care (hospitalization), indicate Yes if the patient's glucose checked on the morning of postop day 1 and postop day 2. (Postop day 1 begins at midnight of the day following surgery).

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

VTE prophylaxis

Seq Num: 1720

Retired in version 2.0

Required for case closure: No

Registry field: [Operative].[VTEProph]

Description: If the patient age is >= 18 years and had cardiothoracic surgery during this episode of care (hospitalization), indicate Yes if any VTE prophylaxis was used following this surgery.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Pharmacologic

Seq Num: 1740

Retired in version 2.0

Required for case closure: No

Registry field: [Operative].[VTEProphPharm]

Description: If any VTE prophylaxis was used following this surgery, indicate Yes if it included pharmacologic prophylaxis (i.e., heparin or enoxaparin).

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Non-pharmacologic

Seq Num: 1760

Retired in version 2.0

Required for case closure: No

Registry field: [Operative].[VTEProphNonPharm]

Description: If any VTE prophylaxis was used following this surgery, indicate Yes if it included non-pharmacologic prophylaxis

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Cardiac Catheterization

Cardiac Catheterization

Seq Num: 1220

Required for case closure: Yes

Registry field: [Hospitalization].[CardCath]

Shared with PAC3

Description: Indicate Yes if the patient had a cardiac catheterization -- either diagnostic or interventional -- during this hospitalization. This should include hybrid procedures and bedside balloon septostomy.

Clarification 6/1/2023: Septostomies not captured by IMPACT, regardless of the venue in which they took place, should be captured in the cardiac cath module.

Patients receiving fluoroscopy only should NOT be captured in the cardiac cath module.

A sheath that remains in place after the catheterization should also be coded as a CVL.

Clarification 2/1/2025: Procedures that include both a cath and surgical intervention, *regardless of location of the procedure*, should be captured as both a catheterization and a surgery.

Catheterization procedures require vascular access for hemodynamic or interventional procedures.

Patients receiving ONLY a pericardial drainage or pleural drainage procedure in the cath lab should not have a cath procedure recorded.

Values	*Code*	*Text*
	1	Yes
	0	No

Cardiac Cath Date

Seq Num: 1810

Required for case closure: Yes

Registry field: [CardiacCath].[CardCathDt]

Shared with PAC3

Description: If cardiac catheterization was performed, indicate the date of the procedure.

Diagnostic Cath

Seq Num: 1830

Required for case closure: Yes

Registry field: [CardiacCath].[ProcDxCath]

Shared with PAC3

Description: Select Yes if a diagnostic cath was performed. Diagnostic cardiac catheterization is the process of introducing a catheter into veins and/or arteries from which it is advanced to the right and/or left sides of the heart. Once the catheters are positioned the pressure of the blood in various chambers of the heart can be measured, blood samples can be taken, and dye (radiographic contrast material) can be injected (a process called angiography) to allow x-ray visualization.

Values

Code	*Text*
1	Yes
0	No

ASD closure

Seq Num: 1850

Required for case closure: Yes

Registry field: [CardiacCath].[ProcASD]

Shared with PAC3

Description: Select Yes if an ASD closure was performed. Atrial septal defect (ASD) is a congenital heart defect in which the wall that separates the upper heart chambers (atria) does not close completely. During the procedure, a catheter is threaded to the heart's septum. The device is then pushed out of the catheter and positioned so that it plugs the hole between the atria.

Values

Code	*Text*
1	Yes
0	No

Aortic coarctation procedure

Seq Num: 1870

Required for case closure: Yes

Registry field: [CardiacCath].[ProcCoarc]

Shared with PAC3

Description: Select Yes if an aortic coarct intervention was performed. Coarctation of the aorta is a congenital heart defect involving a narrowing of the aorta. To repair the aortic coarctation, a catheter is inserted and balloon inflated through the narrowed section of the aorta to stretch the area open. A stent may also be placed in the narrowed area after the balloon dilation to keep the aorta open.

Values

Code	*Text*
1	Yes
0	No

Aortic valvuloplasty

Seq Num: 1890

Required for case closure: Yes

Registry field: [CardiacCath].[ProcAorticValv]

Shared with PAC3

Description: Select Yes if an aortic valvuloplasty was performed. Aortic stenosis is a narrowing of the aortic valve. Aortic valvuloplasty is the repair of a stenotic aortic valve using a balloon catheter inside the valve. The balloon is then inflated in an effort to increase the opening size of the valve and improving blood flow.

Values

Code	*Text*
1	Yes
0	No

Electrophysiology ablation procedure

Seq Num: 1960

Required for case closure: Yes

Registry field: [CardiacCath].[ProcEPAblation]

Shared with PAC3

Description: Select Yes if an ablation was performed. Catheter ablation is a minimally invasive procedure in which flexible tubes, called catheters, are placed into superficial blood vessels and advanced into the heart, or into the pericardial space around the heart, where the substrate of heart rhythm disorders can be localized and eradicated using heat or cold energy delivered at the tip of the catheter. Includes endocardial and epicardial catheter ablation

Values

Code	*Text*
1	Yes
0	No
9	Unk

Electrophysiology cath

Seq Num: 1955

Required for case closure: Yes

Registry field: [CardiacCath].[ProcEPCath]

Shared with PAC3

Description: Select Yes if a diagnostic electrophysiology cath was performed. One or more catheters capable of recording and pacing are placed in one or more of the cardiac chambers. The catheters may be used to measure conduction of the impulse from the sinus node to the ventricle; induce a tachycardia; and/or localize (map) the location where the tachycardia originates

Values

Code	*Text*
1	Yes
0	No
9	Unk

PDA closure

Seq Num: 1930

Required for case closure: Yes

Registry field: [CardiacCath].[ProcPDA]

Shared with PAC3

Description: Select Yes if a PDA closure was performed. Patent ductus arteriosus (PDA) is the persistence of a normal fetal structure between the left pulmonary artery and the descending aorta. Persistence of this fetal structure beyond 10 days of life is considered abnormal. A transcatheter device closure is a minimally invasive procedure where the doctor passes a small metal coil or other blocking device through the catheter to the site of the PDA. This corrects the congenital defect by blocking blood flow through the vessel.

Values

Code	*Text*
1	Yes
0	No

Proximal PA Stent

Seq Num: 1950

Required for case closure: Yes

Registry field: [CardiacCath].[ProcProxPAStent]

Shared with PAC3

Description: Select Yes if a proximal PA stent was performed. Pulmonary artery stenosis is a narrowing (stenosis) that occurs in the pulmonary artery, a large artery that sends oxygen-poor blood into the lungs to be enriched with oxygen. Pulmonary artery stenting consists of moving a balloon dilation catheter into the narrowed area of the artery. Stent placement is accomplished by positioning the balloon dilatation catheter and stent across the narrowed segment of the artery. The balloon is inflated to its recommended pressure, expanding the stent and anchoring it in place.

Values

Code	*Text*
1	Yes
0	No

Pulmonary valvuloplasty

Seq Num: 1910

Required for case closure: Yes

Registry field: [CardiacCath].[ProcPulmonaryValv]

Shared with PAC3

Description: Select Yes if a pulmonary valvuloplasty was performed. Pulmonary stenosis is a narrowing of the pulmonary valve. Pulmonary valvuloplasty is the repair of a stenotic pulmonary valve using a balloon catheter inside the valve. The balloon is then inflated in an effort to increase the opening size of the valve and improving blood flow.

Values

Code	*Text*
1	Yes
0	No

Transcatheter pulmonary valve replacement

Seq Num: 2120

Required for case closure: Yes

Registry field: [CardiacCath].[ProcPVplace]

Shared with PAC3

Description: Select Yes if a Transcatheter pulmonary valve replacement (TPVR) was performed. TPVR is a percutaneous replacement of a dysfunctional pulmonary valve for pulmonary regurgitation and right ventricular outflow tract obstruction in selected patients. The device is introduced through the femoral vein and advanced into the right side of the heart and put into place at the site of the pulmonary valve.

Values

Code	*Text*
1	Yes
0	No

Endomyocardial biopsy

Seq Num: 2210

Required for case closure: Yes

Registry field: [CardiacCath].[ProcBiopsy]

Shared with PAC3

Description: Select Yes if an endomyocardial biopsy was performed

Values

Code	*Text*
1	Yes
0	No
9	Unk

Pulmonary hypertension eval

Seq Num: 2180

Required for case closure: Yes

Registry field: [CardiacCath].[ProcPHTNeval]

Shared with PAC3

Description: Select Yes if a pulmonary hypertension eval was performed

Clarification 6/1/2023: In this field, we are looking for cath lab procedures that include formal right heart and pulmonary artery hemodynamic catheterization in multiple conditions. These include testing of right heart and pulmonary artery pressures at rest/baseline conditions, and with the addition of supplemental oxygen and/or inhaled/intravenous pulmonary vasodilators.

Values	*Code*	*Text*
	1	Yes
	0	No

Transvenous pacemaker placement

Seq Num: 2200

Required for case closure: Yes

Registry field: [CardiacCath].[ProcPPMplace]

Shared with PAC3

Description: Select Yes if a transvenous pacemaker placement was performed

Clarification 6/1/2023: This includes AICD placed in the cath lab by EP physicians.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Other interventional cardiac cath procedure

Seq Num: 2250

Required for case closure: Yes

Registry field: [CardiacCath].[ProcOther]

Shared with PAC3

Description: Select Yes if another cardiac cath procedure requiring vascular access was performed. For example, select Yes if a PDA stent or BAS is performed as part of this cardiac cath. Do not count pericardiocentesis, drain placement in the cath lab, or PICC line placements.

Clarification 6/1/2023: When importing a procedure from IMPACT that is not specifically listed, you must manually select this option in order to activate the "Cath Planned Yes/No" question.

Values	*Code*	*Text*
	1	Yes
	0	No

Other interventional cath - specify

Seq Num: 2251

Required for case closure: No

Registry field: [CardiacCath].[ProcOtherSpec]

Shared with PAC3

Description: Specify the other interventional cath procedure(s) performed

Cath procedure

Seq Num: 1817

Required for case closure: No

Registry field: [CathProc].[CathProc]

Shared with PAC3

Description: Indicate all procedures performed while the patient was in the cath lab.

Clarification 6/1/2023: You must list every cardiac cath (diagnostic or interventional) during the hospital stay, and you must answer all the Yes/No questions for the listed procedure types. If a procedure began but was subsequently aborted, capture that procedure ONLY if sheath(s) were actually placed.

Clarification 2/1/2025: There are three ways to capture specific cath interventions:
1. Using the yes/no questions, all of which must be answered. If the cath is fully described in this section, you do not need to add additional information.
2. If the procedure is not listed in the yes/no questions, please select "yes" for "other cardiac cath procedure" (#2250) and then do one of the following:
a. Preferred: select specific procedures from the procedure drop down list. (This list will auto-populate if your site imports from IMPACT, please review for accuracy.)
b. Rare: use the free text box to describe the procedure(s) if the procedure is not listed in the yes/no box section AND there is not an accurate option in the procedure drop down list.

NOTE: the planned/unplanned field (#2270) will only be active if you have selected an intervention using one of the methods above. This field should be answered for every interventional cath but remains greyed out for caths that are diagnostic only. Please double check that you are able to answer planned/unplanned for every interventional cath so that data will be included on the reporting platform and in analysis work.

For the placement of pulmonary artery flow restrictors, please use procedure 475 from the procedure drop down list: device implantation, pulmonary artery.

Values

Code	*Text*
760	Stent insertion - PDA
665	Septostomy - Balloon atrial septostomy by pullback (Rashkind) (BAS)
5	Adjunctive therapy - Adenosine
10	Adjunctive therapy - Beta blockade
15	Adjunctive therapy - Rapid pacing
20	Adjunctive therapy - Rapid pacing: Endocardial
25	Adjunctive therapy - Rapid pacing: Epicardial
40	Balloon dilation - Conduit: LA to LV
45	Balloon dilation - Conduit: LV to aorta
50	Balloon dilation - Conduit: LV to PA
55	Balloon dilation - Conduit: Other
60	Balloon dilation - Conduit: RA to PA

65	Balloon dilation - Conduit: RA to PA-pulmonary trunk
70	Balloon dilation - Conduit: RA to RV
75	Balloon dilation - Conduit: RV to aorta
80	Balloon dilation - Conduit: RV to PA
30	Balloon dilation - Conduit: Sano modification (RV to PA valveless conduit)
35	Balloon dilation - Conduit: Sano modification-with valve (RV to PA valved conduit)
85	Balloon dilation - Conduit: Shunt - systemic-to-pulmonary
90	Balloon dilation - Intracardiac/septum: Atrial baffle S/P atrial switch
95	Balloon dilation - Intracardiac/septum: Atrial septum (Static balloon dilation [without pullback])
100	Balloon dilation - Intracardiac/septum: Fontan Baffle
105	Balloon dilation - Intracardiac/septum: Fontan fenestration
110	Balloon dilation - Intracardiac/septum: Ventricular septum
1185	Balloon dilation - Pulmonary artery, Peripheral, Lobar
1190	Balloon dilation - Pulmonary artery, Peripheral, Lobar, Left lingula PA
1195	Balloon dilation - Pulmonary artery, Peripheral, Lobar, Left lower PA
1200	Balloon dilation - Pulmonary artery, Peripheral, Lobar, Left upper PA
1205	Balloon dilation - Pulmonary artery, Peripheral, Lobar, Right lower PA
1210	Balloon dilation - Pulmonary artery, Peripheral, Lobar, Right middle PA
1215	Balloon dilation - Pulmonary artery, Peripheral, Lobar, Right upper PA
1220	Balloon dilation - Pulmonary artery, Peripheral, Sublobar = Segmental
1225	Balloon dilation - Pulmonary artery, Peripheral, Sublobar = Segmental, Left

1230	Balloon dilation - Pulmonary artery, Peripheral, Sublobar = Segmental, Right
1235	Balloon dilation - Pulmonary artery, Proximal, Left
1240	Balloon dilation - Pulmonary artery, Proximal, Right
115	Balloon dilation - Pulmonary artery: Central (Proximal left and/or proximal right pulmonary artery including the pulmonary artery bifurcation)
120	Balloon dilation - Pulmonary artery: Main (Trunk)
125	Balloon dilation - Pulmonary artery: Peripheral
130	Balloon dilation - Pulmonary artery: Proximal
135	Balloon dilation - Pulmonary vein: Left (Left pulmonary vein [LPV])
140	Balloon dilation - Pulmonary vein: Left lower (Left lower pulmonary vein [LLPV])
145	Balloon dilation - Pulmonary vein: Left upper (Left upper pulmonary vein [LUPV])
150	Balloon dilation - Pulmonary vein: Lingula (Lingular pulmonary vein)
155	Balloon dilation - Pulmonary vein: Pulmonary venous confluence
160	Balloon dilation - Pulmonary vein: Pulmonary venous confluence with left atrium
165	Balloon dilation - Pulmonary vein: Right (Right pulmonary vein [RPV])
170	Balloon dilation - Pulmonary vein: Right lower (Right lower pulmonary vein [RLPV])
175	Balloon dilation - Pulmonary vein: Right middle (Right middle pulmonary vein [RMPV])
180	Balloon dilation - Pulmonary vein: Right upper (Right upper pulmonary vein [RUPV])
1245	Balloon dilation - Systemic artery, Aorta, Abdominal aorta, Coarctation
1250	Balloon dilation - Systemic artery, Aorta, Abdominal aorta, Native (Primary) coarctation

1255 Balloon dilation - Systemic artery, Aorta, Abdominal aorta, Recurrent coarctation

1260 Balloon dilation - Systemic artery, Aorta, Thoracic aorta, Ascending aorta

1265 Balloon dilation - Systemic artery, Aorta, Thoracic aorta, Coarctation, Native (Primary) coarctation

1270 Balloon dilation - Systemic artery, Aorta, Thoracic aorta, Coarctation, Recurrent coarctation

1275 Balloon dilation - Systemic artery, Aorta, Thoracic aorta, Descending thoracic aorta

1280 Balloon dilation - Systemic artery, Aorta, Thoracic aorta, Transverse arch

1285 Balloon dilation - Systemic artery, Systemic artery other than aorta, Coronary artery

1290 Balloon dilation - Systemic artery, Systemic artery other than aorta, Femoral artery

1295 Balloon dilation - Systemic artery, Systemic artery other than aorta, Iliac artery

1300 Balloon dilation - Systemic artery, Systemic artery other than aorta, Innominate artery

1305 Balloon dilation - Systemic artery, Systemic artery other than aorta, Renal artery

1310 Balloon dilation - Systemic artery, Systemic artery other than aorta, Subclavian artery

185 Balloon dilation - Systemic artery: Aorta

190 Balloon dilation - Systemic artery: Systemic artery other than aorta

1175 Balloon dilation - Systemic vein

1180 Balloon dilation - Systemic vein, Caval vein, Superior vena cava

1315 Balloon dilation - Systemic vein, Non-Caval vein, Femoral vein

1320 Balloon dilation - Systemic vein, Non-Caval vein, Iliac vein

1325 Balloon dilation - Systemic vein, Non-Caval vein, Innominate

1325	(Brachiocephalic)
1330	Balloon dilation - Systemic vein, Non-Caval vein, Subclavian vein
195	Balloon dilation - Systemic vein: Caval vein
200	Balloon dilation - Systemic vein: Non-Caval vein
205	Balloon valvotomy - Aortic valve
210	Balloon valvotomy - Mitral valve
215	Balloon valvotomy - Pulmonic valve
220	Balloon valvotomy - Tricuspid valve
225	Biopsy - RV not S/P heart transplant
230	Biopsy - RV post heart transplant
235	Biopsy - Site not RV
1400	Cardiovascular catheterization procedure, Therapeutic, Perforation (establishing interchamber and/or intervessel communication) - Systemic artery, Systemic artery other than aorta, Iliac artery
240	Coil implantation - Atrial septal defect (ASD)
1335	Coil implantation - Coil implantation
255	Coil implantation - Conduit: LA to LV
260	Coil implantation - Conduit: LV to aorta
265	Coil implantation - Conduit: LV to PA
270	Coil implantation - Conduit: Other
275	Coil implantation - Conduit: RA to PA
280	Coil implantation - Conduit: RA to PA-pulmonary trunk
285	Coil implantation - Conduit: RA to RV
290	Coil implantation - Conduit: RV to aorta
295	Coil implantation - Conduit: RV to PA
245	Coil implantation - Conduit: Sano modification (RV to PA valveless conduit)
250	Coil implantation - Conduit: Sano modification-with valve (RV to PA valved conduit)
300	Coil implantation - Conduit: Shunt - systemic-to-pulmonary
305	Coil implantation - Coronary artery fistula

310	Coil implantation - Fontan fenestration
315	Coil implantation - Intracardiac baffle leak
320	Coil implantation - Patent ductus arteriosus (PDA)
325	Coil implantation - Perivalvar leak
330	Coil implantation - Pulmonary arteriovenous malformation
335	Coil implantation - Systemic arteriovenous malformation
1340	Coil implantation - Systemic artery
340	Coil implantation - Systemic artery to pulmonary artery collateral
345	Coil implantation - Systemic artery: Aorta
350	Coil implantation - Systemic artery: Systemic artery other than aorta
1345	Coil implantation - Systemic vein
355	Coil implantation - Systemic vein to pulmonary vein collateral
360	Coil implantation - Systemic vein: Caval vein
365	Coil implantation - Systemic vein: Non-caval vein
368	Data - Angiographic data obtained
367	Data - Hemodynamic data obtained
370	Device implantation - Aortopulmonary window (AP window)
375	Device implantation - Atrial septal defect (ASD)
1355	Device implantation - Conduit
390	Device implantation - Conduit: LA to LV
395	Device implantation - Conduit: LV to aorta
400	Device implantation - Conduit: LV to PA
405	Device implantation - Conduit: Other
410	Device implantation - Conduit: RA to PA
415	Device implantation - Conduit: RA to PA-pulmonary trunk
420	Device implantation - Conduit: RA

420	to RV
425	Device implantation - Conduit: RV to aorta
430	Device implantation - Conduit: RV to PA
380	Device implantation - Conduit: Sano modification (RV to PA valveless conduit)
385	Device implantation - Conduit: Sano modification-with valve (RV to PA valved conduit)
435	Device implantation - Conduit: Shunt - systemic-to-pulmonary
440	Device implantation - Coronary artery fistula
445	Device implantation - Fontan fenestration
450	Device implantation - Intracardiac baffle leak
455	Device implantation - Patent ductus arteriosus (PDA)
460	Device implantation - Patent Foramen Ovale (PFO)
465	Device implantation - Perivalvar leak
470	Device implantation - Pulmonary arteriovenous malformation
475	Device implantation - Pulmonary artery
480	Device implantation - Systemic arteriovenous malformation
1360	Device implantation - Systemic artery
485	Device implantation - Systemic artery to pulmonary artery collateral
490	Device implantation - Systemic artery: Aorta
495	Device implantation - Systemic artery: Systemic artery other than aorta
1365	Device implantation - Systemic vein
500	Device implantation - Systemic vein to pulmonary vein collateral
1370	Device implantation - Systemic vein, Caval vein, Inferior vena cava
1375	Device implantation - Systemic vein, Caval vein, Superior vena cava
505	Device implantation - Systemic vein:

505	Caval vein
510	Device implantation - Systemic vein: Caval vein (Superior vena cava - Right)
515	Device implantation - Systemic vein: Non-Caval vein
520	Device implantation - Ventricular septal defect (VSD)
1350	Diagnostic - Transluminal test occlusion
525	Electrophysiology alteration - Atrial stimulation
530	Electrophysiology alteration - Ventricular stimulation
533	Hemodynamic alteration - Fuild bolus challenge
532	Hemodynamic alteration - Inotropy test
531	Hemodynamic alteration - Oxygen/nitric test
1165	Hybrid Approach - Transcardiac balloon dilation
1170	Hybrid Approach - Transcardiac transcatheter device placement
1140	Hybrid Approach "Stage 1" - Application of RPA & LPA bands
1145	Hybrid Approach "Stage 1" - Stent placement in arterial duct (PDA)
1150	Hybrid Approach "Stage 1" - Stent placement in arterial duct (PDA) + application of RPA& LPA bands
1155	Hybrid approach "Stage 2" - Aortopulmonary amalgamation + Superior Cavopulmonary anastomosis(es) + PA Debanding + Aortic arch repair (Norwood [Stage 1] + Superior Cavopulmonary anastomosis(es) + PA Debanding)
1160	Hybrid approach "Stage 2" - Aortopulmonary amalgamation + Superior Cavopulmonary anastomosis(es) + PA Debanding + Without aortic arch repair
1380	Intravascular foreign body removal - Intravascular foreign body removal
535	Other invasive procedures/interventional techniques - Pericardiocentesis - elective

540 Other invasive procedures/interventional techniques - Pericardiocentesis - emergent

545 Other invasive procedures/interventional techniques - Pleuracentesis - elective

550 Other invasive procedures/interventional techniques - Pleuracentesis - emergent

555 Other invasive procedures/interventional techniques - Snare foreign body

560 Perforation (establishing interchamber and/or intervessel communication) - Atretic aortic valve

565 Perforation (establishing interchamber and/or intervessel communication) - Atretic pulmonary valve

570 Perforation (establishing interchamber and/or intervessel communication) - Atrial septum

585 Perforation (establishing interchamber and/or intervessel communication) - Conduit: LA to LV

590 Perforation (establishing interchamber and/or intervessel communication) - Conduit: LV to aorta

595 Perforation (establishing interchamber and/or intervessel communication) - Conduit: LV to PA

600 Perforation (establishing interchamber and/or intervessel communication) - Conduit: Other

605 Perforation (establishing interchamber and/or intervessel communication) - Conduit: RA to PA

610 Perforation (establishing interchamber and/or intervessel communication) - Conduit: RA to PA-pulmonary trunk

615 Perforation (establishing interchamber and/or intervessel communication) - Conduit: RA to RV

620 Perforation (establishing

620 interchamber and/or intervessel communication) - Conduit: RV to aorta

625 Perforation (establishing interchamber and/or intervessel communication) - Conduit: RV to PA

575 Perforation (establishing interchamber and/or intervessel communication) - Conduit: Sano modification (RV to PA valveless conduit)

580 Perforation (establishing interchamber and/or intervessel communication) - Conduit: Sano modification-with valve (RV to PA valved conduit)

630 Perforation (establishing interchamber and/or intervessel communication) - Conduit: Shunt - systemic-to-pulmonary

635 Perforation (establishing interchamber and/or intervessel communication) - Fontan Baffle

1385 Perforation (establishing interchamber and/or intervessel communication) - Perforation (establishing interchamber and/or intervessel communication)

1390 Perforation (establishing interchamber and/or intervessel communication) - Systemic artery

1395 Perforation (establishing interchamber and/or intervessel communication) - Systemic artery, Systemic artery other than aorta, Femoral artery

640 Perforation (establishing interchamber and/or intervessel communication) - Systemic artery: Aorta

645 Perforation (establishing interchamber and/or intervessel communication) - Systemic artery: Systemic artery other than aorta

1405 Perforation (establishing interchamber and/or intervessel communication) - Systemic vein

1420 Perforation (establishing interchamber and/or intervessel communication) - Systemic vein, Non-Caval vein, Femoral vein

1425	Perforation (establishing interchamber and/or intervessel communication) - Systemic vein, Non-Caval vein, Iliac vein
650	Perforation (establishing interchamber and/or intervessel communication) - Systemic vein: Caval vein
655	Perforation (establishing interchamber and/or intervessel communication) - Systemic vein: Non-Caval vein
660	Perforation (establishing interchamber and/or intervessel communication) - Ventricular septum
1410	Perforation (establishing interchamber and/or intervessel communication), Systemic vein, Caval vein, Inferior vena cava - Systemic vein, Caval vein, Inferior vena cava
1415	Perforation (establishing interchamber and/or intervessel communication), Systemic vein, Caval vein, Superior vena cava - Systemic vein, Caval vein, Superior vena cava
670	Septostomy - Blade atrial septostomy
1430	Septostomy - Septostomy
685	Stent insertion - Conduit: LA to LV
690	Stent insertion - Conduit: LV to aorta
695	Stent insertion - Conduit: LV to PA
700	Stent insertion - Conduit: Other
705	Stent insertion - Conduit: RA to PA
710	Stent insertion - Conduit: RA to PA-pulmonary trunk
715	Stent insertion - Conduit: RA to RV
720	Stent insertion - Conduit: RV to aorta
725	Stent insertion - Conduit: RV to PA
675	Stent insertion - Conduit: Sano modification (RV to PA valveless conduit)
680	Stent insertion - Conduit: Sano modification-with valve (RV to PA valved conduit)

730 Stent insertion - Conduit: Shunt - systemic-to-pulmonary

735 Stent insertion - Intracardiac/septum: Atrial baffle S/P atrial switch

740 Stent insertion - Intracardiac/septum: Atrial septum

745 Stent insertion - Intracardiac/septum: Fontan Baffle

750 Stent insertion - Intracardiac/septum: Fontan fenestration

755 Stent insertion - Intracardiac/septum: Ventricular septum

1435 Stent insertion - Pulmonary artery, Peripheral, Lobar

1440 Stent insertion - Pulmonary artery, Peripheral, Lobar, Left

1445 Stent insertion - Pulmonary artery, Peripheral, Lobar, Right

1450 Stent insertion - Pulmonary artery, Peripheral, Sublobar = Segmental

1455 Stent insertion - Pulmonary artery, Peripheral, Sublobar = Segmental, Left

1460 Stent insertion - Pulmonary artery, Peripheral, Sublobar = Segmental, Right

1465 Stent insertion - Pulmonary artery, Proximal, Left

1470 Stent insertion - Pulmonary artery, Proximal, Right

765 Stent insertion - Pulmonary artery: Central (Proximal left and/or proximal right pulmonary artery including the pulmonary artery bifurcation)

770 Stent insertion - Pulmonary artery: Main (Trunk)

775 Stent insertion - Pulmonary artery: Peripheral

780 Stent insertion - Pulmonary artery: Proximal

785 Stent insertion - Pulmonary vein: Left (Left pulmonary vein [LPV])

790 Stent insertion - Pulmonary vein: Left lower (Left lower pulmonary

790	vein [LLPV])
795	Stent insertion - Pulmonary vein: Left upper (Left upper pulmonary vein [LUPV])
800	Stent insertion - Pulmonary vein: Lingula (Lingular pulmonary vein)
805	Stent insertion - Pulmonary vein: Pulmonary venous confluence
810	Stent insertion - Pulmonary vein: Pulmonary venous confluence with left atrium
815	Stent insertion - Pulmonary vein: Right (Right pulmonary vein [RPV])
820	Stent insertion - Pulmonary vein: Right lower (Right lower pulmonary vein [RLPV])
825	Stent insertion - Pulmonary vein: Right middle (Right middle pulmonary vein [RMPV])
830	Stent insertion - Pulmonary vein: Right upper (Right upper pulmonary vein [RUPV])
1480	Stent insertion - Systemic artery, Aorta, Abdominal aorta
1485	Stent insertion - Systemic artery, Aorta, Abdominal aorta, Coarctation
1490	Stent insertion - Systemic artery, Aorta, Abdominal aorta, Native (Primary) coarctation
1495	Stent insertion - Systemic artery, Aorta, Abdominal aorta, Recurrent coarctation
1500	Stent insertion - Systemic artery, Aorta, Thoracic aorta
1505	Stent insertion - Systemic artery, Aorta, Thoracic aorta, Ascending aorta
1510	Stent insertion - Systemic artery, Aorta, Thoracic aorta, Coarctation, Native (Primary) coarctation
1515	Stent insertion - Systemic artery, Aorta, Thoracic aorta, Coarctation, Recurrent coarctation
1520	Stent insertion - Systemic artery, Aorta, Thoracic aorta, Descending thoracic aorta
1525	Stent insertion - Systemic artery, Aorta, Thoracic aorta, Transverse arch

1530	Stent insertion - Systemic artery, Aorta, Thoracoabdominal aorta
1535	Stent insertion - Systemic artery, Systemic artery other than aorta, Coronary artery
1540	Stent insertion - Systemic artery, Systemic artery other than aorta, Femoral artery
1545	Stent insertion - Systemic artery, Systemic artery other than aorta, Iliac artery
1550	Stent insertion - Systemic artery, Systemic artery other than aorta, Renal artery
1555	Stent insertion - Systemic artery, Systemic artery other than aorta, Subclavian artery
1560	Stent insertion - Systemic artery, Systemic artery other than aorta, Systemic pulmonary vessel connection
835	Stent insertion - Systemic artery: Aorta
840	Stent insertion - Systemic artery: Systemic artery other than aorta
1475	Stent insertion - Systemic vein, Caval vein, Superior vena cava
845	Stent insertion - Systemic vein: Caval vein
850	Stent insertion - Systemic vein: Non-Caval vein
1565	Stent insertion - Transcatheter implantation of valve
865	Stent re-dilation - Conduit: LA to LV
870	Stent re-dilation - Conduit: LV to aorta
875	Stent re-dilation - Conduit: LV to PA
880	Stent re-dilation - Conduit: Other
885	Stent re-dilation - Conduit: RA to PA
890	Stent re-dilation - Conduit: RA to PA-pulmonary trunk
895	Stent re-dilation - Conduit: RA to RV
900	Stent re-dilation - Conduit: RV to aorta
905	Stent re-dilation - Conduit: RV to PA
855	Stent re-dilation - Conduit: Sano modification (RV to PA valveless

855 conduit)

860 Stent re-dilation - Conduit: Sano modification-with valve (RV to PA valved conduit)

910 Stent re-dilation - Conduit: Shunt - systemic-to-pulmonary

915 Stent re-dilation - Intracardiac/septum: Atrial baffle S/P atrial switch

920 Stent re-dilation - Intracardiac/septum: Atrial septum

925 Stent re-dilation - Intracardiac/septum: Fontan Baffle

930 Stent re-dilation - Intracardiac/septum: Fontan fenestration

935 Stent re-dilation - Intracardiac/septum: Ventricular septum

940 Stent re-dilation - PDA

945 Stent re-dilation - Pulmonary artery: Central (Proximal left and/or proximal right pulmonary artery including the pulmonary artery bifurcation)

950 Stent re-dilation - Pulmonary artery: Main (Trunk)

955 Stent re-dilation - Pulmonary artery: Peripheral

960 Stent re-dilation - Pulmonary artery: Proximal

965 Stent re-dilation - Pulmonary vein: Left (Left pulmonary vein [LPV])

970 Stent re-dilation - Pulmonary vein: Left lower (Left lower pulmonary vein [LLPV])

975 Stent re-dilation - Pulmonary vein: Left upper (Left upper pulmonary vein [LUPV])

980 Stent re-dilation - Pulmonary vein: Lingula (Lingular pulmonary vein)

985 Stent re-dilation - Pulmonary vein: Pulmonary venous confluence

990 Stent re-dilation - Pulmonary vein: Pulmonary venous confluence with left atrium

995 Stent re-dilation - Pulmonary vein: Right (Right pulmonary vein [RPV])

1000 Stent re-dilation - Pulmonary vein: Right lower (Right lower pulmonary vein [RLPV])

1005 Stent re-dilation - Pulmonary vein: Right middle (Right middle pulmonary vein [RMPV])

1010 Stent re-dilation - Pulmonary vein: Right upper (Right upper pulmonary vein [RUPV])

1015 Stent re-dilation - Systemic artery: Aorta

1020 Stent re-dilation - Systemic artery: Systemic artery other than aorta

1025 Stent re-dilation - Systemic vein: Caval vein

1030 Stent re-dilation - Systemic vein: Non-Caval vein

1035 Transcatheter Fontan completion - Completion of total cavopulmonary connection (TCPC) using transcatheter covered stent

1040 Transcatheter implantation of valve - Not systemic or pulmonary outflow

1045 Transcatheter implantation of valve - Pulmonary outflow position

1570 Transcatheter implantation of valve - pulmonary ventricular inflow position

1050 Transcatheter implantation of valve - Systemic outflow position

1575 Transcatheter implantation of valve - Systemic ventricular inflow position

1065 Transluminal test occlusion - Conduit: LA to LV

1070 Transluminal test occlusion - Conduit: LV to aorta

1075 Transluminal test occlusion - Conduit: LV to PA

1080 Transluminal test occlusion - Conduit: Other

1085 Transluminal test occlusion - Conduit: RA to PA

1090 Transluminal test occlusion - Conduit: RA to RV

1095 Transluminal test occlusion - Conduit: RV to aorta

1100 Transluminal test occlusion - Conduit: RV to PA

1055 Transluminal test occlusion - Conduit: Sano modification (RV to PA valveless conduit)

1060 Transluminal test occlusion - Conduit: Sano modification-with valve (RV to PA valved conduit)

1105 Transluminal test occlusion - Conduit: Shunt - systemic-to-pulmonary

1110 Transluminal test occlusion - Fontan fenestration

1115 Transluminal test occlusion - Interatrial communication

1120 Transluminal test occlusion - Systemic artery: Aorta

1125 Transluminal test occlusion - Systemic artery: Systemic artery other than aorta

1130 Transluminal test occlusion - Systemic vein: Caval vein

1135 Transluminal test occlusion - Systemic vein: Non-Caval vein

Planned cath intervention

Seq Num: 2270

Required for case closure: Yes

Registry field: [CardiacCath].[CathPlanned]

Description: Record Yes if the cath was the planned intervention or part of a multi-stage palliative strategy determined prior to the first intervention (surgery or catheterization) during the hospitalization. For example, patient undergoing hybrid stage I palliation has initial ductal stent placement and branch PA banding. In a second cath procedure, an atrial septal stent is placed. Code the stent procedure as Planned = Yes.

Clarification 6/1/2023: This field is intended to capture unplanned reinterventions following the patient's initial intervention (surgical or cath) for this hospitalization. Therefore, the first surgery or interventional catheter (whichever comes first) should always be coded as Planned, regardless of the circumstances.

PLEASE NOTE: All interventional caths (not diagnostic-only) must have the “Planned/unplanned” field answered. That field is only enabled if you have answered Yes to at least one of the intervention Yes/No fields, including Other (#2250).

(Diagnostic caths, biopsies, PHTN evaluations, and EP studies are all considered diagnostic.)

Clarification 2/1/2025: A BAS done to decompress the left atrium after ECMO initiation will be coded as planned in most 2V patients.

If clicking "Other cath" in the list of cath options does not make the planned/unplanned field active, you may need to place a random character in the free text box next to "other cath" in order to make the planned/unplanned field active.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Invasive ventilation during this cath

Seq Num: 2272

Required for case closure: Yes

Registry field: [CardiacCath].[CathIntub]

Description: Indicate whether an endotracheal intubation was performed. This includes (1) patients intubated for this procedure; (2) those on pre-procedure invasive ventilation who remained on support until the cath start time.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Extubated in cath lab / on arrival

Seq Num: 2273

Required for case closure: Yes

Registry field: [CardiacCath].[CathExtub]

Description: Indicate Yes if the patient (1) had the endotracheal tube removed in cath lab or PACU and arrived to the inpatient unit with a natural airway or (2) had the endotracheal tube removed in the inpatient unit by the anesthesia team shortly after arrival with no course of mechanical ventilation. (Bag-mask ventilation does not qualify as mechanical ventilation.) This includes patients with a tracheostomy who are never mechanically ventilated but remain cannulated with their tracheostomy tube.

Clarification 6/1/2023: If a patient has an unplanned or failed extubation in the cath lab and is then reintubated, code this field as No.

If a patient returns from the cath lab receiving manual ventilation and never gets connected to a ventilator in the CICU prior to extubation, code this field as Yes.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Cath end date/time

Seq Num: 2280

Required for case closure: Yes

Registry field: [CardiacCath].[CathEndDtTm]

Description: Indicate the date/time the procedure ended. For sites directly importing from IMPACT, this will be the time at which the operator breaks scrub at the end of the procedure. All other sites should use the time of the first post-cath vitals in the inpatient unit.

Clarification 2/1/2025: If the patient goes from the cath lab directly to the OR, use the physician scrub out time for cath end date/time, or upload from IMPACT.

Fenestration closure

Seq Num: 1970

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcFenClose]

Description: Select Yes if a fenestration closure was performed. This includes coil and device implantations.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Fenestration creation/enlargement

Seq Num: 1990

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcFenCreate]

Description: Select Yes if a fenestration creation or enlargement was performed. This includes balloon dilation, perforation (establishing interchamber and/or intervessel communication), stent insertion, and stent re-dilation.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Balloon septostomy

Seq Num: 2000

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcBAS]

Description: Select Yes if a balloon atrial septostomy (BAS) was performed.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Balloon dilation - Systemic-to-pulmonary shunt

Seq Num: 2010

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcBallSyst]

Description: Select Yes if a balloon dilation of the systemic-to-pulmonary shunt was performed

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Balloon dilation - RV-PA conduit

Seq Num: 2020

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcBallRVPA]

Description: Select Yes if a balloon dilation of the RV-PA conduit was performed

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

ASD creation/enlargement

Seq Num: 2040

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcASDCreate]

Description: Select Yes if an ASD creation or enlargement was performed. This includes perforation (establishing interchamber and/or intervessel communication), blade septostomy, stent insertion, and stent re-dilation.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Stent placed in duct

Seq Num: 2060

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcStentDuct]

Description: Select Yes if a stent was placed in a duct.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Stent placed in shunt

Seq Num: 2080

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcStentShunt]

Description: Select Yes if a stent was placed in a shunt. This includes Sano modification (RV to PA valveless conduit), Sano modification-with valve (RV to PA valved conduit), and systemic-to-pulmonary shunts.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Stent placed in other location

Seq Num: 2100

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcStentOth]

Description: Select Yes if a stent was placed in any other location (i.e., not a duct or shunt).

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Device closure of VSD

Seq Num: 2140

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcVSDdevice]

Description: Select Yes if a device closure of a VSD was performed

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

RFA and balloon for pulmonary atresia

Seq Num: 2160

Retired in version 2.0

Required for case closure: Yes

Registry field: [CardiacCath].[ProcRFAPA]

Description: Select Yes if an RFA and balloon for pulmonary atresia was performed

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

CICU Encounter

Admission date/time

Seq Num: 2310

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUStartDtTm]

Description: Date and time a CICU attending assumes primary responsibility for patient care in an ICU setting. Patient may be in any ICU setting as long as the CICU team is responsible for care.

Clarification 2/1/2025: Only code a procedural encounter if an H&P/progress note is completed and co-signed by the CICU attending.

Patient age at start of CICU Encounter

Seq Num: 2380

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUPatAgeStartD]

Description: The patient's age in days at the start of the CICU encounter, calculated by the DOB and CICU admit date/time.

Critical care end date

Seq Num: 2341

Required for case closure: Yes

Registry field: [CICUEncounter].[CritCareEndDt]

Description: Date the CICU attending physician deems the patient medically ready to leave CICU service. For hospitals with a single inpatient service model, this should correspond to a change from critical care status to another inpatient status. If the patient's status returns to critical care, you must start a new encounter.

Clarification 6/1/2023: This may differ from the CICU Discharge Date (#2360), which is the date the CICU service is no longer primarily responsible for the patient's care.

If your hospital has a single inpatient service model and therefore, by design, does not transfer patients from a critical care unit to an acute care unit, please use the Critical Care End Date for the CICU Discharge Date.

When a question asks whether a line, complication, therapy, etc. was present at CICU discharge, we are referring to the CICU Discharge Date/Time (#2360), not this field.

Please note that temporarily leaving the CICU for a procedure (e.g., to the OR or cath lab) does not end the encounter.

Clarification 2/1/2025: If a patient goes from the CICU to a procedure location, and does not return to the CICU, use the time the patient was transferred out of the CICU for this field and CICU discharge date/time (#2360).

If a patient is declared brain dead, the date and time of declaration of death should be used for this field and CICU discharge date/time (#2360). No data for lines, complications, organ harvest etc. should be included after that time.

CICU discharge date/time

Seq Num: 2360

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUPhysEndDtTm]

Description: Indicate the date/time that the patient is transferred from the CICU attending service. For hospitals with a single inpatient service model, this should correspond to a change from critical care status to another inpatient status. If the patient's status returns to critical care, you must start a new encounter.

Clarification 6/1/2023: This may differ from the CICU Critical Care End Date (#2341), which is when the CICU attending physician deems the patient medically ready to leave CICU service.

If your hospital has a single inpatient service model and does not transfer patients from a critical care unit to an acute care unit, please use the Critical Care End Date for the CICU Discharge Date.

When a question asks whether a line, complication, therapy, etc. was present at CICU discharge, we are referring to the date in/time this field, not the Critical Care End Date (#2341) .

Please note that temporarily leaving the CICU for a procedure (e.g., to the OR or cath lab) does not end the encounter.

Clarification 2/1/2025: If a patient goes from the CICU to a procedure location, and does not return to the CICU, use the time the patient was transferred out of the CICU for critical care end date (#2341) and CICU discharge date/time (#2360).

If a patient is declared brain dead, the date and time of declaration of death should be used for critical care end date (#2341) and CICU discharge date/time (#2360). No data for lines, complications, organ harvest etc. should be included after that time.

Patient age at end of CICU Encounter

Seq Num: 2400

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUPatAgeEndD]

Description: The patient's age in days at the end of the CICU encounter, calculated by the DOB and CICU discharge date/time.

Planned CICU encounter

Seq Num: 2420

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUSched]

Description: Indicate whether this CICU encounter was planned or unplanned. Planned CICU encounters are those where the CICU was aware of the definite need for CICU admission during morning bed meeting. In general, planned admissions include those where a patient was admitted directly from the cardiac operating room and those situations where a baby is born in the PC4 institution with prenatally diagnosed congenital heart disease. Patients transferred from other operating room/procedure suite environments and transfers from other hospitals are likely to be more evenly split between planned and unplanned status. Conversely, patients transferred to the CICU from another unit in the hospital will most likely not be planned admissions

Values	*Code*	*Text*	
	10	Planned	
	20	Unplanned	
Retired	1	Scheduled	Admission was non-emergent and/or planned
Retired	2	Unscheduled	Admission was emergent and/or unplanned

Reason for encounter

Seq Num: 2460

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUReason]

Description: Indicate the primary reason the patient was initially cared for by the CICU team. This represents the reason identified at time of admission regardless what ultimately happened to the patient. For example, a patient may have been admitted for decompensated heart failure and evaluation for heart transplant and eventually went on to have a transplant. This patient should be coded as Medical Condition as the need for surgery was not determined at the start of the encounter.

Additional example, 2/1/2025: If the patient is admitted to the CICU after a cath procedure, and with a definitive plan to go for surgical repair, code pre-op CT surgery.

If the patient is admitted post cath, and eventually goes for surgery, but the plan was unclear at time of admission, code the reason for admission as post-cath.

Additional clarifications are below between asterisks.

Values	*Code*	*Text*	
	1	Preop cardiothoracic surgery	CICU team began care prior to anticipated cardiothoracic surgery, regardless of whether surgery occurred **(Clarification 6/1/2023) If a patient is admitted to the CICU with a plan to undergo cardiac surgery but that plan changes during his stay, 1) Preop cardiothoracic surgery was still the reason for admission. This code is ONLY for patients admitted with a plan in place for surgery. If a patient is admitted to the CICU to determine whether or not they will require surgery, code those patients as 7) Evaluation of structural heart disease.**
	2	Postop cardiothoracic surgery	CICU team began care immediately after cardiac surgery. Patient was either cared for by another service prior to surgery (e.g., NICU) or patient went immediately to OR upon hospital admit (e.g., elective surgery from home) **(Clarification 6/1/2023) This may include CICU patients who had their cardiothoracic surgery and immediate postop care at an outside hospital, if the patient is receiving post op care and that was the purpose of the transfer. However, if the primary reason for transfer to your CICU is not post-op care but rather to diagnose/treat a medical condition, they are more appropriately coded as 3) Medical condition. (Clarification 2/1/2025) Note that these will still be medical admissions that feed into the medical risk model since the surgery was done at another facility. **
	3	Medical condition	CICU care for medical condition; no surgery was anticipated at the time CICU assumed care.

3		
		(Clarification 6/1/2023) This category includes patients admitted preoperatively for non-cardiothoracic surgery.
4	Non-cardiothoracic postop	CICU team began care immediately following non-cardiac surgery. If there is an active medical condition and the patient would have otherwise gone to a non-ICU recovery area, code Medical Condition.
8	Pre cardiac cath	CICU team began care prior to anticipated cardiac cath, regardless of whether cath occurred
5	Post cardiac cath	CICU team began care immediately after cardiac catheterization for routine post-procedural monitoring and care. If there is an active medical condition and the patient would have otherwise gone to a non-ICU recovery area, code Medical Condition.
6	Evaluation of structural heart disease	Patient admitted with known or suspected congenital/structural heart disease for the purpose of a diagnostic/therapeutic trial to determine if intervention is needed. Illustrative examples of this scenario would be a) patient with suspected coarctation of the aorta who is observed without PGE infusion for signs of aortic narrowing, or b) patient with Tetralogy of Fallot who is observed to determine whether oxygen saturations are appropriate for discharge to home. If a patient is admitted with one of these conditions, but requires treatment of a medical diagnosis (e.g. respiratory failure, acute cardiogenic shock) at the time of admission, then they should NOT be coded with this reason and instead coded as a “Medical” Encounter with the correct accompanying diagnosis. If a patient is admitted for “Evaluation of Structural Heart Disease” and eventually goes on to have cardiac surgery, the reason for encounter should remain “Eval for Structural Heart Disease. **(Clarification 6/1/2023) When the purpose of admission is to determine whether or not a patient requires surgery, or to decide between a surgical and cath intervention, use this code, regardless of whether the procedure ultimately occurs. Patients requiring acute medical care should be coded as 3) Medical condition. (Clarification 2/1/2025) Also use this code if a patient is admitted to the CICU due to an antenatal diagnosis (or suspicion) of CHD but is found to have a normal heart. **
9	Post non-cardiac procedure	CICU team began care immediately following anesthesia

9		for a non-cardiac procedure such as interventional radiology or MRI (not including catheterization, cardiac surgery or non-cardiac surgery). If there is an active medical condition and the patient would have otherwise gone to a non-ICU recovery area, code Medical Condition.
10	Anticoagulation	CICU care for initiation of anticoagulation
7	ICU overflow	Patient without any cardiac disease, or any cardiac medical condition, is admitted to the CICU under the care of the CICU attending physician. NOTE: These patients do NOT need to be added to the registry if an institution chooses not to do so. **(Clarification 6/1/2023) This option is intended to allow sites to track patients who were cared for in the CICU only because a bed was unavailable in another ICU. These records can be submitted to the PC4 registry, but they will be excluded from all dashboard reports and analyses.**

Non-cardiothoracic surgery

Seq Num: 2480

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUNCSurg]

Description: If the reason for the CICU encounter is "Non-cardiothoracic postop", select the type of surgery that immediately preceded CICU care.

Values

Code	*Text*
20	ENT - Cervical tracheoplasty
40	ENT - Cleft lip and palate repair
210	ENT - Incision and drainage of peritonsilar or retropharyngeal abscess
30	ENT - Laryngoplasty
10	ENT - Tracheostomy
420	ENT - Tympanoplasty
7000	ENT - Other
170	General surg - Abdominal laparoscopic procedure
360	General surg - Cholecystectomy
260	General surg - Correction of malrotation
250	General surg - Gastric restrictive procedure
240	General surg - Gastrostomy or gastrojejunostomy tube placement, open
230	General surg - Gastrostomy or gastrojejunostomy tube placement, percutaneous
280	General surg - Hernia repair
220	General surg - Nissen procedure with or without gastrostomy tube placement
100	General surg - Pectus excavatum repair
330	General surg - Proctectomy
270	General surg - Reduction of volvulus, intussusception, or internal hernia
200	General surg - Repair of diaphragmatic hernia
180	General surg - Repair of hiatal hernia
390	General surg - Repair of omphalocele or gastroschisis

320	General surg - Repair of perforated colon
310	General surg - Repair of perforated small intestine
190	General surg - Repair of tracheoesophageal fistula
300	General surg - Resection of colon
340	General surg - Resection of liver
290	General surg - Resection of small intestine
160	General surg - Splenectomy
7050	General surg - Other
410	Neurosurg - Craniectomy or craniotomy
50	Neurosurg - Creation or revision of ventriculo-peritoneal or –pleural shunt
60	Neurosurg - Repair of myelomeningocele
7100	Neurosurg - Other
90	Oncologic - Excision of abdominal tumor
70	Oncologic - Excision of benign mass
80	Oncologic - Excision of chest wall tumor
7150	Oncologic - Other
140	Ortho - Fasciotomy
120	Ortho - Open repair of fracture, joint dislocation
130	Ortho - Other open orthopedic procedure
110	Ortho - Spinal fusion, insertion of spinal fixation device, or removal of spinal hardware
7200	Ortho - Other
380	Transplant - Kidney
350	Transplant - Liver
7250	Transplant - Other
400	Urology - Bladder, uterine, or ovarian surgery
370	Urology - Resection of kidney
7300	Urology - Other
150	Vasc - Repair of systemic artery with or without graft
430	Vasc - Tunneled venous catheter

430	placement
440	Vasc - Tunneled venous catheter removal
7350	Vasc - Other
7777	Other non-cardiothoracic surgery

Non-cardiothoracic surgery - specify

Seq Num: 2481

Required for case closure: No

Registry field: [CICUEncounter].[CICUNCSurgSpec]

Description: Specify the type of non-cardiothoracic surgery

Surgical status at the start of the CICU encounter

Seq Num: 2490

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUsurgStatus]

Description: Select the category that best represents the status of a patient's surgical palliation at the beginning of this CICU encounter. For example, a patient status post Glenn/hemiFontan who undergoes tricuspid valve repair at the beginning of the encounter should be coded as s/p stage II palliation.

Additional clarifications are below between asterisks.

Values	*Code*	*Text*	
	0	Never had cardiothoracic surgery	**(Clarification 2/1/2025) A patient whose only prior intervention is ECMO should be coded as never had cardiac surgery, regardless of peripheral or central cannulation.**
	1	S/P stage I palliation - Norwood	Status post Norwood stage I palliation
	2	S/P stage I palliation - Hybrid	Status post hybrid stage I palliation **(Clarification 6/1/2023) Includes single ventricle patients on prostins with PA bands.**
	3	S/P stage II palliation	Status post stage II palliation (bi-directional Glenn, hemi-Fontan or Kawashima procedure) **(Clarification 6/1/2023) Includes: - A patient status post Glenn/hemiFontan who undergoes tricuspid valve repair at the beginning of the encounter - A single ventricle patient who has a Kawashima procedure**
	4	S/P stage III palliation	Status post stage III palliation (fenestrated or non-fenestrated Fontan procedure)
	5	S/P aortopulmonary shunt	Status post aortopulmonary shunt (including MBTS, RVPAS or central shunt) for 1V or 2V palliation **(Clarification 2/1/2025) This includes a Potts shunt placed to offload the RV in a patient with pulmonary hypertension. **
	6	S/P other 1V surgery	Patient with single ventricle anatomy status post other surgery ** (Clarification 6/1/2023) Includes PA bands with 1V anatomy but NOT on PGE **
	7	S/P 2V surgery	Patient with two ventricle anatomy status post other palliative or reparative surgery ** (Clarification 6/1/2023) Includes vascular ring repair, permanent pacemaker or AICD placement, and PA bands

7		with 2V anatomy. (Clarification 2/1/2025) The pacemaker or AICD should only be coded if placed by the CT surgeons, not in the cath lab transvenously. **
9	S/P heart transplant	Patient status post heart transplant
8	S/P thoracic surg (never had cardiac surg)	Patient never had cardiac surgery; status post thoracic surgery, including tracheal reconstruction, with or without CPB. **(Clarification 6/1/2023) Includes VAD procedures. **

Encounter cardiothoracic diagnosis

Seq Num: 2540

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUDiag]

Description: Indicate the primary cardiothoracic anatomy/physiology requiring care in the CICU at the start of this encounter. This may be the same as or differ from the patient's fundamental diagnosis. For example, a patient with HLHS admitted from home with new onset systemic AV valve regurgitation presenting with respiratory insufficiency would have a fundamental diagnosis of "Hypoplastic Left Heart Syndrome" but an encounter cardiothoracic diagnosis of "Tricuspid regurgitation" and an encounter medical diagnosis of "Respiratory insufficiency." For CICU readmissions during the same hospitalization, this may differ from the initial encounter cardiothoracic diagnosis. For example, and infant with complete AVSD who presents for surgery at his initial CICU encounter would have both a fundamental diagnosis and an initial encounter cardiothoracic diagnosis of "AVC (AVSD), Complete." The patient is discharged from the CICU and develops mitral stenosis requiring readmission for respiratory insufficiency. At this readmission, his encounter cardiothoracic diagnosis is "Mitral stenosis" and his encounter medical diagnosis is "Respiratory insufficiency."

Clarification 2/1/2025: If the patient has multiple interventions in the OR or cath lab prior to admission, use the most physiologically important problem for the encounter CT diagnosis. Consult clinical champion for assistance if needed.

If the patient is admitted to the CICU due to an antenatal diagnosis (or suspicion) of CHD but is found to have a normal heart, code "normal heart."

If a patient is readmitted and a medical diagnosis or encounter CT diagnosis from an earlier encounter is found to be incorrect based on new testing, do not go back and change the diagnosis from the previous encounter.

Values	*Code*	*Text*	
	10	PFO	A small interatrial communication (or potential communication) confined to the region of the oval fossa (fossa ovalis) characterized by no deficiency of the primary atrial septum (septum primum) and a normal limbus with no deficiency of the septum secundum (superior interatrial fold).
	20	ASD, Secundum	A congenital cardiac malformation in which there is an interatrial communication confined to the region of the oval fossa (fossa ovalis), most commonly due to a deficiency of the primary atrial septum (septum primum) but deficiency of the septum secundum (superior interatrial fold) may also contribute.
	30	ASD, Sinus venosus	A congenital cardiac malformation in which there is a caval vein (vena cava) and/or pulmonary vein (or veins) that overrides the atrial septum or the septum secundum (superior interatrial fold) producing an interatrial or anomalous venoatrial communication Although the term sinus venosus atrial septal defect is commonly used, the lesion is more properly termed a sinus venosus communication because, while it functions as an interatrial communication, this lesion is not a

30		defect of the atrial septum.
40	ASD, Coronary sinus	A congenital cardiac malformation in which there is a deficiency of the walls separating the left atrium from the coronary sinus allowing interatrial communication through the coronary sinus ostium.
50	ASD, Common atrium (single atrium)	Complete absence of the interatrial septum. "Single atrium" is applied to defects with no associated malformation of the atrioventricular valves. "Common atrium" is applied to defects with associated malformation of the atrioventricular valves.
2150	ASD, Postoperative interatrial communication	A surgically created communication between the atria.
71	VSD, Type 1 (Subarterial) (Supracristal) (Conal septal defect) (Infundibular)	A VSD that lies beneath the semilunar valve(s) in the conal or outlet septum.
73	VSD, Type 2 (Perimembranous) (Paramembranous) (Conoventricular)	A VSD that is confluent with and involves the membranous septum and is bordered by an atrioventricular valve, not including type 3 VSDs.
75	VSD, Type 3 (Inlet) (AV canal type)	A VSD that involves the inlet of the right ventricular septum immediately inferior to the AV valve apparatus.
77	VSD, Type 4 (Muscular)	A VSD completely surrounded by muscle.
79	VSD, Type: Gerbode type (LV-RA communication)	A rare form of VSD in which the defect is at the membranous septum; the communication is between the left ventricle and right atrium.
80	VSD, Multiple	More than one VSD exists. Each individual VSD may be coded separately to specify the individual VSD types.
100	AVC (AVSD), Complete (CAVSD)	Indicate if the patient has the diagnosis of “AVC (AVSD), Complete (CAVSD)”. An “AVC (AVSD), Complete (CAVSD)” is a “complete atrioventricular canal” or a “complete atrioventricular septal defect” and occurs in a heart with the phenotypic feature of a common atrioventricular junction. An “AVC (AVSD), Complete (CAVSD)” is defined as an AVC with a common AV valve and both a defect in the atrial septum just above the AV valve (ostium primum ASD [a usually crescent-shaped ASD in the inferior (posterior) portion of the atrial septum just above the AV valve]) and a defect in the ventricular septum just below the AV valve. The AV valve is one valve that bridges both the right and left sides of the heart. Balanced AVC is an AVC with two essentially appropriately sized ventricles. Unbalanced AVC is an AVC defect with two ventricles in which one ventricle is inappropriately small. Such a patient may be thought to be a candidate for biventricular repair, or, alternatively, may be managed as having a functionally univentricular heart. AVC lesions with unbalanced ventricles so severe as to preclude biventricular repair should be classified as single ventricles. Rastelli type A: The common superior (anterior) bridging leaflet is effectively split in two at the septum. The left superior (anterior) leaflet is entirely over the left

100		ventricle and the right superior (anterior) leaflet is similarly entirely over the right ventricle. The division of the common superior (anterior) bridging leaflet into left and right components is caused by extensive attachment of the superior (anterior) bridging leaflet to the crest of the ventricular septum by chordae tendineae. Rastelli type B: Rare, involves anomalous papillary muscle attachment from the right side of the ventricular septum to the left side of the common superior (anterior) bridging leaflet. Rastelli type C: Marked bridging of the ventricular septum by the superior (anterior) bridging leaflet, which floats freely (often termed a "free-floater") over the ventricular septum without chordal attachment to the crest of the ventricular septum.
2610	AVC (AVSD), Complete (CAVSD), Left dominant	
2620	AVC (AVSD), Complete (CAVSD), Right dominant	
2630	AVC (AVSD), Complete (CAVSD), Balanced	
110	AVC (AVSD), Intermediate (transitional)	An AVC with two distinct left and right AV valve orifices but also with both an ASD just above and a VSD just below the AV valves. While these AV valves in the intermediate form do form two separate orifices they remain abnormal valves. The VSD is often restrictive.
2640	AVC (AVSD), Intermediate (transitional), Left dominant	
2650	AVC (AVSD), Intermediate (transitional), Right dominant	
2660	AVC (AVSD), Intermediate (transitional), Balanced	
120	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum)	An AVC with an ostium primum ASD (a usually crescent-shaped ASD in the inferior (posterior) portion of the atrial septum just above the AV valve) and varying degrees of malformation of the left AV valve leading to varying degrees of left AV valve regurgitation. No VSD is present.
2670	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum), Left dominant	
2680	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum), Right dominant	
2690	AVC (AVSD), Partial (incomplete) (PAVSD) (ASD, primum), Balanced	
140	AP window (aortopulmonary window)	Indicate if the patient has the diagnosis of “AP window (aortopulmonary window)”. An “AP window (aortopulmonary window)” is defined as a defect with side-to-side continuity of the lumens of the aorta and

140		pulmonary arterial tree, which is distinguished from common arterial trunk (truncus arteriosus) by the presence of two arterial valves or their atretic remnants. (In other words, an aortopulmonary window is a communication between the main pulmonary artery and ascending aorta in the presence of two separate semilunar [pulmonary and aortic] valves. The presence of two separate semilunar valves distinguishes AP window from truncus arteriosus. Type 1 proximal defect: AP window located just above the sinus of Valsalva, a few millimeters above the semilunar valves, with a superior rim but little inferior rim separating the AP window from the semilunar valves. Type 2 distal defect: AP window located in the uppermost portion of the ascending aorta, with a well-formed inferior rim but little superior rim. Type 3 total defect: AP window involving the majority of the ascending aorta, with little superior and inferior rims. The intermediate type of AP window is similar to the total defect but with adequate superior and inferior rims. In the event of AP window occurring in association with interrupted aortic arch, code "Interrupted aortic arch + AP window (aortopulmonary window)", and then use additional (secondary) diagnostic codes to describe the interrupted aortic arch and AP window separately to provide further documentation about the individual interrupted arch and AP window types.)
150	Pulmonary artery origin from ascending aorta (hemitruncus)	One pulmonary artery arises from the ascending aorta and the other pulmonary artery arises from the right ventricle. DOES NOT include origin of the right or left pulmonary artery from the innominate artery or the aortic arch via a patent ductus arteriosus or collateral artery.
160	Truncus arteriosus	Indicate if the patient has the diagnosis of "Truncus arteriosus". A truncus arteriosus is also known as a common arterial trunk and is defined as a heart in which a single arterial trunk arises from the heart, giving origin to the coronary arteries, the pulmonary arteries, and the systemic arterial circulation. In the majority of instances there is a ventricular septal defect and a single semilunar valve which may contain two, three, four, or more leaflets and is occasionally dysplastic. Often, the infundibular septum is virtually absent superiorly. In most instances the truncal valve overrides the true interventricular septum (and thus both ventricles), but very rarely the truncal valve may override the right ventricle entirely. In such instances, there may be no ventricular septal defect or a very small ventricular septal defect, in which case the left ventricle and mitral valve may be extremely hypoplastic.
170	Truncal valve insufficiency	Functional abnormality - insufficiency - of the truncal valve. May be further subdivided into grade of insufficiency (I, II, III, IV or mild, moderate, severe).
2470	Truncal valve stenosis	

2010	Truncus arteriosus + Interrupted aortic arch	Indicate if the patient has the diagnosis of "Truncus arteriosus + Interrupted aortic arch". {A truncus arteriosus is also known as a common arterial trunk and is defined as a heart in which a single arterial trunk arises from the heart, giving origin to the coronary arteries, the pulmonary arteries, and the systemic arterial circulation. In the majority of instances there is a ventricular septal defect and a single semilunar valve which may contain two, three, four, or more leaflets and is occasionally dysplastic. The infundibular septum is virtually absent superiorly. In most instances the truncal valve overrides the true interventricular septum (and thus both ventricles), but very rarely the truncal valve may override the right ventricle entirely. If in such case there is no ventricular septal defect, then the left ventricle and mitral valve may be extremely hypoplastic.} {Interrupted aortic arch is defined as the loss of luminal continuity between the ascending and descending aorta. In most cases blood flow to the descending thoracic aorta is through a PDA, and there is a large VSD. Arch interruption is further defined by site of interruption. In type A, interruption is distal to the left subclavian artery; in type B interruption is between the left carotid and left subclavian arteries; and in type C interruption occurs between the innominate and left carotid arteries.}
180	Partial anomalous pulmonary venous connection (PAPVC)	Some, but not all of the pulmonary veins connect to the right atrium or to one or more of its venous tributaries. This definition excludes sinus venosus defects with normally connected but abnormally draining pulmonary veins (the pulmonary veins may drain abnormally into the right atrium via the atrial septal defect).
190	Partial anomalous pulmonary venous connection (PAPVC), scimitar	The right pulmonary vein(s) connect anomalously to the inferior vena cava or to the right atrium at the insertion of the inferior vena cava. The descending vertical vein resembles a scimitar (Turkish sword) on frontal chest x-ray. Frequently associated with: hypoplasia of the right lung with bronchial anomalies; dextroposition and/or dextrorotation of the heart; hypoplasia of the right pulmonary artery; and anomalous subdiaphragmatic systemic arterial supply to the lower lobe of the right lung directly from the aorta or its main branches.
200	Total anomalous pulmonary venous connection (TAPVC), Type 1 (supracardiac)	All of the pulmonary veins connect anomalously with the right atrium or to one or more of its venous tributaries. None of the pulmonary veins connect normally to the left atrium. In Type 1 (supracardiac) TAPVC, the anomalous connection is at the supracardiac level and can be obstructed or nonobstructed.
210	Total anomalous pulmonary venous connection (TAPVC), Type 2 (cardiac)	All of the pulmonary veins connect anomalously with the right atrium or to one or more of its venous tributaries. None of the pulmonary veins connect normally to the left atrium. In Type 2 (cardiac) TAPVC, the anomalous connection is to the heart, either to the right atrium directly or to the coronary sinus. Most patients with type 2 TAPVC are nonobstructed.

220	Total anomalous pulmonary venous connection (TAPVC), Type 3 (infracardiac)	All of the pulmonary veins connect anomalously with the right atrium or to one or more of its venous tributaries. None of the pulmonary veins connect normally to the left atrium. In Type 3 (infracardiac) TAPVC, the anomalous connection is at the infracardiac level (below the diaphragm), with the pulmonary venous return entering the right atrium ultimately via the inferior vena cava. In the vast majority of patients infracardiac TAPVC is obstructed.
230	Total anomalous pulmonary venous connection (TAPVC), Type 4 (mixed)	All of the pulmonary veins connect anomalously with the right atrium or to one or more of its venous tributaries. None of the pulmonary veins connect normally to the left atrium. In Type 4 (mixed) TAPVC, the anomalous connection is at two or more of the above levels (supracardiac, cardiac, infracardiac) and can be obstructed or nonobstructed.
250	Cor triatriatum	In the classic form of cor triatriatum a membrane divides the left atrium (LA) into a posterior accessory chamber that receives the pulmonary veins and an anterior chamber (LA) that communicates with the mitral valve. In differentiating cor triatriatum from supravalvar mitral ring, in cor triatriatum the posterior compartment contains the pulmonary veins while the anterior contains the left atrial appendage and the mitral valve orifice; in supravalvar mitral ring, the anterior compartment contains only the mitral valve orifice. Cor triatriatum dexter (prominent venous valve producing obstruction of the IVC and tricuspid valve) is to be coded as a systemic venous obstruction, not as a form of cor triatriatum.
260	Pulmonary venous stenosis	Any pathologic narrowing of one or more pulmonary veins. Can be further subdivided by etiology (congenital, acquired-postoperative, acquired-nonpostoperative) and extent of stenosis (diffusely hypoplastic, long segment focal/tubular stenosis, discrete stenosis).
2480	Pulmonary venous stenosis, Acquired	
2490	Pulmonary venous stenosis, Spontaneous	
270	Systemic venous anomaly	Anomalies of the systemic venous system (superior vena cava (SVC), inferior vena cava (IVC), brachiocephalic veins (often the innominate vein), azygos vein, coronary sinus, levo-atrial cardinal vein) arising from one or more anomalies of origin, duplication, course, or connection. Examples include abnormal or absent right SVC with LSVC, bilateral SVC, interrupted right or left IVC, azygos continuation of IVC, and anomalies of hepatic drainage. Bilateral SVC may have, among other configurations: 1) RSVC draining to the RA and the LSVC to the LA with completely unroofed coronary sinus, 2) RSVC draining to the RA and LSVC to the coronary sinus which drains (normally) into the RA, or 3) RSVC to the coronary sinus which drains (abnormally) into the LA and LSVC to LA. Anomalies of the inferior vena caval system include, among others: 1) left IVC to LA, 2) biatrial drainage, or 3)

270		interrupted IVC (left or right) with azygos continuation to an LSVC or RSVC.
280	Systemic venous obstruction	Obstruction of the systemic venous system (superior vena cava (SVC), inferior vena cava (IVC), brachiocephalic veins (often the innominate vein), azygos vein, coronary sinus, levo-atrial cardinal vein) arising from congenital or acquired stenosis or occlusion. Cor triatriatum dexter (prominent venous valve producing obstruction of the IVC and tricuspid valve) is to be coded as a systemic venous obstruction, not as a form of cor triatriatum.
290	TOF	Indicate if the patient has the diagnosis of “TOF”. Only use this diagnosis if it is NOT known if the patient has one of the following four more specific diagnoses: (1). “TOF, Pulmonary stenosis”, (2). “TOF, AVC (AVSD)”, (3). “TOF, Absent pulmonary valve”, (4). “Pulmonary atresia, VSD (Including TOF, PA)”, or (5). “Pulmonary atresia, VSD-MAPCA (pseudotruncus)”.{“TOF” is “Tetralogy of Fallot” and is defined as a group of malformations with biventricular atrioventricular alignments or connections characterized by anterosuperior deviation of the conal or outlet septum or its fibrous remnant, narrowing or atresia of the pulmonary outflow, a ventricular septal defect of the malalignment type, and biventricular origin of the aorta. Hearts with tetralogy of Fallot will always have a ventricular septal defect, narrowing or atresia of the pulmonary outflow, and aortic override; hearts with tetralogy of Fallot will most often have right ventricular hypertrophy.} (An additional, often muscular [Type 4] VSD may be seen with TOF and should be coded separately as a secondary diagnosis as “VSD, Type 4 (Muscular)”. Pulmonary arteries may be diminutive or there may be an absent left or right pulmonary artery; additional coding for pulmonary artery and/or branch pulmonary artery stenoses may be found under RVOT obstruction. Abnormal coronary artery distribution may also be associated with tetralogy of Fallot and may be coded separately under coronary artery anomalies. The presence of associated anomalies such as additional VSD, atrial septal defect, right aortic arch, left superior vena cava, and coronary artery anomalies must be subspecified as an additional or secondary diagnosis under the primary TOF diagnosis. TOF with absent pulmonary valve or TOF with associated complete atrioventricular canal are NOT to be secondary diagnoses under TOF - they are separate entities and should be coded as such. Controversy surrounds the differentiation between TOF and double outlet right ventricle [DORV]; in the nomenclature used here, DORV is defined as a type of ventriculoarterial connection in which both great vessels arise predominantly from the right ventricle. TOF with pulmonary atresia is to be coded under "Pulmonary atresia-VSD.")
2140	TOF, Pulmonary stenosis	Indicate if the patient has the diagnosis of “TOF, Pulmonary stenosis”. Use this diagnosis if the patient has tetralogy of Fallot and pulmonary stenosis. Do not

2140		use this diagnosis if the patient has tetralogy of Fallot and pulmonary atresia. Do not use this diagnosis if the patient has tetralogy of Fallot and absent pulmonary valve. Do not use this diagnosis if the patient has tetralogy of Fallot and atrioventricular canal. {Tetralogy of Fallot is defined as a group of malformations with biventricular atrioventricular alignments or connections characterized by anterosuperior deviation of the conal or outlet septum or its fibrous remnant, narrowing or atresia of the pulmonary outflow, a ventricular septal defect of the malalignment type, and biventricular origin of the aorta. Hearts with tetralogy of Fallot will always have a ventricular septal defect, narrowing or atresia of the pulmonary outflow, and aortic override; hearts with tetralogy of Fallot will most often have right ventricular hypertrophy. (An additional, often muscular [Type 4] VSD may be seen with TOF and should be coded separately as a secondary diagnosis as “VSD, Type 4 (Muscular)”. Pulmonary arteries may be diminutive or there may be an absent left or right pulmonary artery; additional coding for pulmonary artery and/or branch pulmonary artery stenoses may be found under RVOT obstruction. Abnormal coronary artery distribution may also be associated with tetralogy of Fallot and may be coded separately under coronary artery anomalies. The presence of associated anomalies such as additional VSD, atrial septal defect, right aortic arch, left superior vena cava, and coronary artery anomalies must be subspecified as an additional or secondary diagnosis under the primary TOF diagnosis. TOF with absent pulmonary valve or TOF with associated complete atrioventricular canal are NOT to be secondary diagnoses under TOF - they are separate entities and should be coded as such. Controversy surrounds the differentiation between TOF and double outlet right ventricle [DORV]; in the nomenclature used here, DORV is defined as a type of ventriculoarterial connection in which both great vessels arise predominantly from the right ventricle. TOF with pulmonary atresia is to be coded under "Pulmonary atresia-VSD.")}
300	TOF, AVC (AVSD)	TOF with complete common atrioventricular canal defect is a rare variant of common atrioventricular canal defect with the associated conotruncal abnormality of TOF. The anatomy of the endocardial cushion defect is that of Rastelli type C in almost all cases.
310	TOF, Absent pulmonary valve	Indicate if the patient has the diagnosis of “TOF, Absent pulmonary valve”. “TOF, Absent pulmonary valve” is “Tetralogy of Fallot with Absent pulmonary valve” and is defined as a malformation with all of the morphologic characteristics of tetralogy of Fallot (anterosuperior deviation of the conal or outlet septum or its fibrous remnant, narrowing of the pulmonary outflow, a ventricular septal defect of the malalignment type, and biventricular origin of the aorta), in which the ventriculo-arterial junction of the right ventricle with the main

310		pulmonary artery features an atypical valve with rudimentary cusps that lack the anatomical semi-lunar features of normal valve cusps and which functionally do not achieve central coaptation. The physiologic consequence is usually a combination of variable degrees of both stenosis and regurgitation of the pulmonary valve. A developmental accompaniment of this anatomy and physiology is dilatation of the main pulmonary artery and central right and left pulmonary arteries, which when extreme, is associated with abnormal arborization of lobar and segmental pulmonary artery branches and with compression of the trachea and mainstem bronchi. One theory holds that absence of the arterial duct or ductal ligament (which is a nearly constant finding in cases of tetralogy of Fallot with absent pulmonary valve) in combination with pulmonary `valve stenosis and regurgitation, comprise the physiologic conditions which predispose to central pulmonary artery dilatation during fetal development. (Tetralogy of Fallot with Absent Pulmonary Valve Syndrome is a term frequently used to describe the clinical presentation when it features both circulatory alterations and respiratory distress secondary to airway compression.)
320	Pulmonary atresia	Pulmonary atresia defects which do not readily fall into pulmonary atresia-intact ventricular septum or pulmonary atresia-VSD (with or without MAPCAs) categories. These may include complex lesions in which pulmonary atresia is a secondary diagnosis, for example, complex single ventricle malformations with associated pulmonary atresia.
330	Pulmonary atresia, IVS	Pulmonary atresia (PA) and intact ventricular septum (IVS) is a duct-dependent congenital malformation that forms a spectrum of lesions including atresia of the pulmonary valve, a varying degree of right ventricle and tricuspid valve hypoplasia, and anomalies of the coronary circulation. An RV dependent coronary artery circulation is present when coronary artery fistulas (coronary sinusoids) are associated with a proximal coronary artery stenosis. Associated Ebstein's anomaly of the tricuspid valve can be present; the tricuspid diameter is enlarged and the prognosis is poor.
340	Pulmonary atresia, VSD (Including TOF, PA)	Pulmonary atresia (PA) and ventricular septal defect (VSD) is a heterogeneous group of congenital cardiac malformations in which there is lack of luminal continuity and absence of blood flow from either ventricle (in cases with ventriculo-arterial discordance) and the pulmonary artery, in a biventricular heart that has an opening or a hole in the interventricular septum (VSD). The malformation forms a spectrum of lesions including tetralogy of Fallot with pulmonary atresia. Tetralogy of Fallot with PA is a specific type of PA-VSD where the intracardiac malformation is more accurately defined (extreme underdevelopment of the RV infundibulum with marked anterior and leftward displacement of the infundibular septum often fused with the anterior wall of

340		the RV resulting in complete obstruction of blood flow into the pulmonary artery and associated with a large outlet, subaortic ventricular septal defect). In the vast majority of cases of PA-VSD the intracardiac anatomy is that of TOF. The pulmonary circulation in PA-VSD is variable in terms of origin of blood flow, presence or absence of native pulmonary arteries, presence or absence of major aortopulmonary collateral arteries (MAPCA(s)), and distal distribution (pulmonary parenchymal segment arborization) abnormalities. Native pulmonary arteries may be present or absent. If MAPCAs are present this code should not be used; instead, Pulmonary atresia, VSD-MAPCA (pseudotruncus) should be used.
350	Pulmonary atresia, VSD-MAPCA	MAPCA(s) are large and distinct arteries, highly variable in number, that usually arise from the descending thoracic aorta, but uncommonly may originate from the aortic arch or the subclavian, carotid or even the coronary arteries. MAPCA(s) may be associated with present or absent native pulmonary arteries. If present, the native pulmonary arteries may be hypoplastic, and either confluent or nonconfluent. Systemic pulmonary collateral arteries have been categorized into 3 types based on their site of origin and the way they connect to the pulmonary circulation: direct aortopulmonary collaterals, indirect aortopulmonary collaterals, and true bronchial arteries. Only the first two should be considered MAPCA(s). If MAPCA(s) are associated with PA-VSD or TOF, PA this code should be used.
360	MAPCA(s) (major aortopulmonary collateral[s]) (without PA-VSD)	Rarely MAPCA(s) may occur in patents who do not have PA-VSD, but have severe pulmonary stenosis. The intracardiac anatomy in patients who have MAPCA(s) without PA should be specifically coded in each case as well.
370	Ebstein's anomaly	Indicate if the patient has the diagnosis of “Ebstein's anomaly”. Ebstein's anomaly is a malformation of the tricuspid valve and right ventricle that is characterized by a spectrum of several features: (1) incomplete delamination of tricuspid valve leaflets from the myocardium of the right ventricle; (2) downward (apical) displacement of the functional annulus; (3) dilation of the "atrialized" portion of the right ventricle with variable degrees of hypertrophy and thinning of the wall; (4) redundancy, fenestrations, and tethering of the anterior leaflets; and (5) dilation of the right atrioventricular junction (the true tricuspid annulus). These anatomical and functional abnormalities cause tricuspid regurgitation (and rarely tricuspid stenosis) that results in right atrial and right ventricular dilatation and atrial and ventricular arrhythmias. With increasing degrees of anatomic severity of malformation, the fibrous transformation of leaflets from their muscular precursors remains incomplete, with the septal leaflet being most severely involved, the posterior leaflet less severely involved, and the anterior leaflet usually the

370		least severely involved. Associated cardiac anomalies include an interatrial communication, the presence of accessory conduction pathways often associated with Wolff-Parkinson-White syndrome, and dilation of the right atrium and right ventricle in patients with severe Ebstein's anomaly. (Varying degrees of right ventricular outflow tract obstruction may be present, including pulmonary atresia in some cases. Such cases of Ebstein's anomaly with pulmonary atresia should be coded with a Primary Diagnosis of “Ebstein’s anomaly”, and a Secondary Diagnosis of “Pulmonary atresia”.) (Some patients with atrioventricular discordance and ventriculoarterial discordance in situs solitus [congenitally corrected transposition] have an Ebstein-like deformity of the left-sided morphologically tricuspid valve. The nature of the displacement of the septal and posterior leaflets is similar to that in right-sided Ebstein's anomaly in patients with atrioventricular concordance and ventriculoarterial concordance in situs solitus. These patients with “Congenitally corrected TGA” and an Ebstein-like deformity of the left-sided morphologically tricuspid valve should be coded with a Primary Diagnosis of “Congenitally corrected TGA”, and a Secondary Diagnosis of “Ebstein's anomaly”.)
2700	Dysplastic Tricuspid or non-systemic atrioventricular valve, non-Ebstein's	
380	Tricuspid regurgitation, non-Ebstein's related	Non-Ebstein's tricuspid regurgitation may be due to congenital factors (primary annular dilation, prolapse, leaflet underdevelopment, absent papillary muscle/chordae) or acquired (post cardiac surgery or secondary to rheumatic fever, endocarditis, trauma, tumor, cardiomyopathy, iatrogenic or other causes).
390	Tricuspid stenosis	Tricuspid stenosis may be due to congenital factors (valvar hypoplasia, abnormal subvalvar apparatus, double-orifice valve, parachute deformity) or acquired (post cardiac surgery or secondary to carcinoid, rheumatic fever, tumor, systemic disease, iatrogenic, or other causes).
400	Tricuspid regurgitation and tricuspid stenosis	Tricuspid regurgitation present with tricuspid stenosis may be due to congenital factors or acquired.
410	Tricuspid valve, Other	Tricuspid valve pathology not otherwise specified in diagnosis definitions 370, 380, 390 and 400.
420	Pulmonary stenosis, Valvar	Pulmonary stenosis, Valvar ranges from critical neonatal pulmonic valve stenosis with hypoplasia of the right ventricle to valvar pulmonary stenosis in the infant, child, or adult, usually better tolerated but potentially associated with infundibular stenosis. Pulmonary branch hypoplasia can be associated. Only 10% of neonates with Pulmonary stenosis, Valvar with intact ventricular septum have RV-to-coronary artery fistula(s). An RV dependent coronary artery circulation is present when coronary artery fistulas (coronary sinusoids) are associated with a proximal coronary artery stenosis; this

420		occurs in only 2% of neonates with Pulmonary stenosis, Valvar with IVS.
430	Pulmonary artery stenosis (hypoplasia), Main (trunk)	Indicate if the patient has the diagnosis of “Pulmonary artery stenosis (hypoplasia), Main (trunk)”. “Pulmonary artery stenosis (hypoplasia), Main (trunk)” is defined as a congenital or acquired anomaly with pulmonary trunk (main pulmonary artery) narrowing or hypoplasia. The stenosis or hypoplasia may be isolated or associated with other cardiac lesions. Since the narrowing is distal to the pulmonic valve, it may also be known as supravalvar pulmonary stenosis.
440	Pulmonary artery stenosis, Branch, Central (within the hilar bifurcation)	Indicate if the patient has the diagnosis of “Pulmonary artery stenosis, Branch, Central (within the hilar bifurcation)”. “Pulmonary artery stenosis, Branch, Central (within the hilar bifurcation)” is defined as a congenital or acquired anomaly with central pulmonary artery branch (within the hilar bifurcation involving the right or left pulmonary artery, or both) narrowing or hypoplasia. The stenosis or hypoplasia may be isolated or associated with other cardiac lesions. Coarctation of the pulmonary artery is related to abnormal extension of the ductus arteriosus into a pulmonary branch, more frequently the left branch.
450	Pulmonary artery stenosis, Branch, Peripheral (at or beyond the hilar bifurcation)	Indicate if the patient has the diagnosis of “Pulmonary artery stenosis, Branch, Peripheral (at or beyond the hilar bifurcation)”. “Pulmonary artery stenosis, Branch, Peripheral (at or beyond the hilar bifurcation)” is defined as a congenital or acquired anomaly with peripheral pulmonary artery narrowing or hypoplasia (at or beyond the hilar bifurcation). The stenosis or hypoplasia may be isolated or associated with other cardiac lesions.
470	Pulmonary artery, Discontinuous	Indicate if the patient has the diagnosis of “Pulmonary artery, Discontinuous”. Pulmonary artery, Discontinuous” is defined as a congenital or acquired anomaly with discontinuity between the branch pulmonary arteries or between a branch pulmonary artery and the main pulmonary artery trunk.
490	Pulmonary stenosis, Subvalvar	Subvalvar (infundibular) pulmonary stenosis is a narrowing of the outflow tract of the right ventricle below the pulmonic valve. It may be due to a localized fibrous diaphragm just below the valve, an obstructing muscle bundle or to a long narrow fibromuscular channel.
500	DCRV	The double chambered right ventricle is characterized by a low infundibular (subvalvar) stenosis rather than the rare isolated infundibular stenosis that develops more superiorly in the infundibulum, and is often associated with one or several closing VSDs. In some cases, the VSD is already closed. The stenosis creates two chambers in the RV, one inferior including the inlet and trabecular portions of the RV and one superior including the infundibulum.
510	Pulmonary valve, Other	Other anomalies of the pulmonary valve may be listed here including but not restricted to absent pulmonary

510		valve.
530	Pulmonary insufficiency	Pulmonary valve insufficiency or regurgitation may be due to congenital factors (primary annular dilation, prolapse, leaflet underdevelopment, etc.) or acquired (for example, post cardiac surgery for repair of tetralogy of Fallot, etc.).
540	Pulmonary insufficiency and pulmonary stenosis	Pulmonary valve insufficiency and pulmonary stenosis beyond the neonatal period, in infancy and childhood, may be secondary to leaflet tissue that has become thickened and myxomatous. Retraction of the commissure attachment frequently creates an associated supravalvar stenosis.
2130	Shunt failure	Indicate if the patient has the diagnosis of "Shunt failure". This diagnostic subgroup includes failure of any of a variety of shunts ("Shunt, Systemic to pulmonary, Modified Blalock-Taussig Shunt (MBTS)", "Shunt, Systemic to pulmonary, Central (from aorta or to main pulmonary artery)", "Shunt, Systemic to pulmonary, Other", and "Sano Shunt"), secondary to any of the following etiologies: shunt thrombosis, shunt occlusion, shunt stenosis, shunt obstruction, and shunt outgrowth. This diagnosis ("Shunt failure") would be the primary diagnosis in a patient with, for example, "Hypoplastic left heart syndrome (HLHS)" who underwent a "Norwood procedure" with a "Modified Blalock-Taussig Shunt" and now requires reoperation for thrombosis of the "Modified Blalock-Taussig Shunt". The underlying or fundamental diagnosis in this patient is "Hypoplastic left heart syndrome (HLHS)", but the primary diagnosis for the operation to be performed to treat the thrombosis of the "Modified Blalock-Taussig Shunt" would be "Shunt failure". Please note that the choice "2130 Shunt failure" does not include "520 Conduit failure".
520	Conduit failure	Indicate if the patient has the diagnosis of "Conduit failure". This diagnostic subgroup includes failure of any of a variety of conduits (ventricular [right or left]-to-PA conduits, as well as a variety of other types of conduits [ventricular {right or left}-to-aorta, RA-to-RV, etc.]), secondary to any of the following etiologies: conduit outgrowth, obstruction, stenosis, insufficiency, or insufficiency and stenosis. This diagnosis ("Conduit failure") would be the primary diagnosis in a patient with, for example, "Truncus arteriosus" repaired in infancy who years later is hospitalized because of conduit stenosis/insufficiency. The underlying or fundamental diagnosis in this patient is "Truncus arteriosus", but the primary diagnosis for the operation to be performed during the hospitalization (in this case, "Conduit reoperation") would be "Conduit failure". Please note that the choice "520 Conduit failure" does not include "2130 Shunt failure".

550	Aortic stenosis, Subvalvar	Subaortic obstruction can be caused by different lesions: subaortic membrane or tunnel, accessory mitral valve tissue, abnormal insertion of the mitral anterior leaflet to the ventricular septum, deviation of the outlet septum (seen in coarctation of the aorta and interrupted aortic arch), or a restrictive bulboventricular foramen in single ventricle complexes. The Shone complex consists of subvalvar aortic stenosis in association with supravalvar mitral ring, parachute mitral valve, and coarctation of aorta. Subvalvar aortic stenosis may be categorized into two types: localized subvalvar aortic stenosis, which consists of a fibrous or fibromuscular ridge, and diffuse tunnel subvalvar aortic stenosis, in which circumferential narrowing commences at the annular level and extends downward for 1-3 cm. Idiopathic hypertrophic subaortic stenosis (IHSS) is also known as hypertrophic obstructive cardiomyopathy (HOCM), and is characterized by a primary hypertrophy of the myocardium. The obstructive forms involve different degrees of dynamic subvalvar aortic obstruction from a thickened ventricular wall and anterior motion of the mitral valve. Definitive nomenclature and therapeutic options for IHSS are listed under cardiomyopathy.
2500	Aortic Stenosis, Subvalvar, Discrete	
2510	Aortic Stenosis, Subvalvar, IHSS	
2520	Aortic Stenosis, Subvalvar, Tunnel-like	
560	Aortic stenosis, Valvar	Valvar aortic stenosis may be congenital or acquired. In its congenital form there are two types: critical (infantile), seen in the newborn in whom systemic perfusion depends on a patent ductus arteriosus, and noncritical, seen in infancy or later. Acquired valvar stenosis may be seen after as a result of rheumatic valvar disease, or from stenotic changes of an aortic valve prosthesis. Congenital valvar stenosis may result: (1) from complete fusion of commissures (acommissural) that results in a dome-shaped valve with a pinpoint opening (seen most commonly in infants with critical aortic valve stenosis); (2) from a unicommissural valve with one defined commissure and eccentric orifice (often with two raphes radiating from the ostium indicating underdeveloped commissures of a tricuspid aortic valve); (3) from a bicuspid aortic valve, with leaflets that can be equal in size or discrepant, and in left-right or anterior-posterior position; and finally (4) from a dysplastic tricuspid valve, which may have a gelatinous appearance with thick rarely equal in size leaflets, often obscuring the commissures. The dysplastic, tricuspid or bicuspid form of aortic valve deformity may not be initially obstructive but may become stenotic later in life due to leaflet thickening and calcification.
570	Aortic stenosis, Supravalvar	Congenital supravalvar aortic stenosis is described as three forms: an hourglass deformity, a fibrous membrane, and a diffuse narrowing of the ascending

570		aorta. The disease can be inherited as an autosomal dominant trait or part of Williams-Beuren syndrome in association with mental retardation, elfin facies, failure to thrive, and occasionally infantile hypercalcemia. Supravalvar aortic stenosis may involve the coronary artery ostia, and the aortic leaflets may be tethered. The coronary arteries can become tortuous and dilated due to elevated pressures and early atherosclerosis may ensue. Supravalvar aortic stenosis may also be acquired: (1) after a neoaortic reconstruction such as arterial switch, Ross operation, or Norwood procedure; (2) at a suture line from a previous aortotomy or cannulation; and (3) from a narrowed conduit.
590	Aortic valve atresia	Aortic valve atresia will most often be coded under the Hypoplastic left heart syndrome/complex diagnostic codes since it most often occurs as part of a spectrum of cardiac malformations. However, there is a small subset of patients with aortic valve atresia who have a well-developed left ventricle and mitral valve and a large VSD (nonrestrictive or restrictive). The diagnostic code "Aortic valve atresia" enables users to report those patients with aortic valve atresia and a well-developed systemic ventricle without recourse to either a hypoplastic left heart syndrome/complex diagnosis or a single ventricle diagnosis.
600	Aortic insufficiency	Congenital aortic regurgitation/insufficiency is rare as an isolated entity. There are rare reports of congenital malformation of the aortic valve that result in aortic insufficiency shortly after birth from an absent or underdeveloped aortic valve cusp. Aortic insufficiency is more commonly seen with other associated cardiac anomalies: (1) in stenotic aortic valves (commonly stenotic congenital bicuspid aortic valves) with some degree of aortic regurgitation due to aortic leaflet abnormality; (2) in association with a VSD (especially in supracristal or conal type I VSD, more commonly seen in Asian populations); (3) secondary to aortic-left ventricular tunnel; (4) secondary to tethering or retraction of aortic valve leaflets in cases of supravalvar aortic stenosis that may involve the aortic valve; and similarly (5) secondary to encroachment on an aortic cusp by a subaortic membrane; or (6) turbulence caused by a stenotic jet can create progressive aortic regurgitation. Aortic insufficiency may also result from: (1) post-procedure such as closed or open valvotomy or aortic valve repair, VSD closure, balloon valvotomy, or diagnostic catheterization; (2) in the neo-aorta post arterial switch, pulmonary autograft (Ross) procedure, homograft placement, Norwood procedure, or Damus-Kaye-Stansel procedure; (3) as a result of endocarditis secondary to perforated or prolapsed leaflets or annular dehiscence; (4) secondary to annulo-aortic ectasia with prolapsed or noncoapting leaflets; (5) secondary to trauma, blunt or penetrating; or (6) as a result of aortitis, bacterial, viral or autoimmune. Aortic regurgitation

600		secondary to prosthetic failure should be coded first as either conduit failure or prosthetic valve failure, as applicable, and secondarily as aortic regurgitation secondary to prosthetic failure (perivalvar or due to structural failure). The underlying fundamental diagnosis that led to the initial conduit or valve prosthesis placement should also be described.
610	Aortic insufficiency and aortic stenosis	Aortic insufficiency is often seen in association with stenotic aortic valve, commonly the stenotic congenital bicuspid aortic valve. The degree of aortic regurgitation is due to the severity of the aortic leaflet abnormality.
620	Aortic valve, Other	This diagnostic subgroup may be used to delineate aortic valve cusp number (unicuspid, bicuspid, tricuspid, more than three cusps), commissural fusion (normal, partially fused, completely fused), and valve leaflet (normal, thickened, dysplastic, calcified, gelatinous), annulus (normal, hypoplastic, calcified), or sinus description (normal, dilated). Note that any extensive descriptors chosen within those made available by a vendor will be converted, at harvest, to Aortic valve, Other.
630	Sinus of Valsalva aneurysm	The sinus of Valsalva is defined as that portion of the aortic root between the aortic root annulus and the sinotubular ridge. A congenital sinus of Valsalva aneurysm is a dilation usually of a single sinus of Valsalva. These most commonly originate from the right sinus (65%-85%), less commonly from the noncoronary sinus (10%-30%), and rarely from the left sinus (<5%). A true sinus of Valsalva aneurysm presents above the aortic annulus. The hierarchical coding system distinguishes between congenital versus acquired, ruptured versus nonruptured, sinus of origin, and chamber/site of penetration (right atrium, right ventricle, left atrium, left ventricle, pulmonary artery, pericardium). A nonruptured congenital sinus of Valsalva aneurysm may vary from a mild dilation of a single aortic sinus to an extensive windsock deformity. Rupture of a congenital sinus of Valsalva aneurysm into an adjacent chamber occurs most commonly between the ages of 15-30 years. Rupture may occur spontaneously, after trauma, after strenuous physical exertion, or from acute bacterial endocarditis. Congenital etiology is supported by the frequent association of sinus of Valsalva aneurysms with VSDs. Other disease processes are also associated with sinus of Valsalva aneurysm and include: syphilis, endocarditis, cystic medial necrosis, atherosclerosis, and trauma. Acquired sinus of Valsalva aneurysms more frequently involve multiple sinuses of Valsalva; when present in multiple form they are more appropriately classified as aneurysms of the aortic root.
640	LV to aorta tunnel	The aortico-left ventricular tunnel (LV-to-aorta tunnel) is an abnormal paravalvular (alongside or in the vicinity of a valve) communication between the aorta and left ventricle, commonly divided into 4 types: (1) type I, a simple tunnel with a slit-like opening at the aortic end

640		and no aortic valve distortion; (2) type II, a large extracardiac aortic wall aneurysm of the tunnel with an oval opening at the aortic end, with or without ventricular distortion; (3) type III, intracardiac aneurysm of the septal portion of the tunnel, with or without right ventricular outflow obstruction; and (4) type IV, a combination of types II and III. Further differentiation within these types may be notation of right coronary artery arising from the wall of the tunnel. If a LV-to-aorta tunnel communicates with the right ventricle, many feel that the defect is really a ruptured sinus of Valsalva aneurysm.
650	Mitral stenosis, Supravalvar mitral ring	Supravalvar mitral ring is formed by a circumferential ridge of tissue that is attached to the anterior mitral valve leaflet (also known as the aortic leaflet) slightly below its insertion on the annulus and to the atrium slightly above the attachment of the posterior mitral valve leaflet (also known as the mural leaflet). Depending on the diameter of the ring orifice, varying degrees of obstruction exist. The underlying valve is usually abnormal and frequently stenotic or hypoplastic. Supravalvar mitral ring is commonly associated with other stenotic lesions such as parachute or hammock valve (subvalvar stenosis), papillary muscle fusion (subvalvar stenosis), and double orifice mitral valve (valvar stenosis). Differentiation from cor triatriatum focuses on the compartments created by the supravalvar ring. In cor triatriatum the posterior compartment contains the pulmonary veins; the anterior contains the left atrial appendage and the mitral valve orifice. In supravalvar mitral ring, the posterior compartment contains the pulmonary veins and the left atrial appendage; the anterior compartment contains only the mitral valve orifice. When coding multiple mitral valvar lesions the predominant defect causing the functional effect (regurgitation, stenosis, or regurgitation and stenosis) should be listed as the primary defect.
660	Mitral stenosis, Valvar	Valvar mitral stenosis may arise from congenital (annular and / or leaflet) or acquired causes, both surgical (after mitral valve repair or replacement or other cardiac surgery) and non-surgical (post rheumatic heart disease, infective endocarditis, ischemia, myxomatous degeneration, trauma, or cardiomyopathy). Mitral valve annular hypoplasia is distinguished from severe mitral valve hypoplasia and mitral valve atresia, which are typically components of hypoplastic left heart syndrome. When coding multiple mitral valvar lesions the predominant defect causing the functional effect (regurgitation, stenosis, or regurgitation and stenosis) should be listed as the primary defect.
670	Mitral stenosis, Subvalvar	Congenital subvalvar mitral stenosis may be due to obstructive pathology of either the chordae tendineae and / or papillary muscles which support the valve leaflets. When coding multiple mitral valvar lesions the predominant defect causing the functional effect

670		(regurgitation, stenosis, or regurgitation and stenosis) should be listed as the primary defect.
680	Mitral stenosis, Subvalvar, Parachute	In parachute mitral valve, all chordae are attached to a single papillary muscle originating from the posterior ventricular wall. When the interchordal spaces are partially obliterated valvar stenosis results. This defect also causes valvar insufficiency, most commonly due to a cleft leaflet, a poorly developed anterior leaflet, short chordae, or annular dilatation. This lesion is also part of Shone's anomaly, which consists of the parachute mitral valve, supravalvar mitral ring, subaortic stenosis, and coarctation of the aorta. When coding multiple mitral valvar lesions the predominant defect causing the functional effect (regurgitation, stenosis, or regurgitation and stenosis) should be listed as the primary defect.
695	Mitral stenosis	Stenotic lesions of the mitral valve not otherwise specified in the diagnosis definitions 650, 660, 670, and 680.
700	Mitral regurgitation and mitral stenosis	Mitral regurgitation and mitral stenosis may arise from congenital or acquired causes or after cardiac surgery. Additional details to aid in coding specific components of the diagnosis are available in the individual mitral stenosis or mitral regurgitation field definitions. When coding multiple mitral valve lesions the predominant defect causing the functional effect (regurgitation, stenosis, or regurgitation and stenosis) should be listed as the primary defect.
710	Mitral regurgitation	Mitral regurgitation may arise from congenital (at the annular, leaflet or subvalvar level) or acquired causes both surgical (after mitral valve repair or replacement, subaortic stenosis repair, atrioventricular canal repair, cardiac transplantation, or other cardiac surgery) and non-surgical (post rheumatic heart disease, infective endocarditis, ischemia (with chordal rupture or papillary muscle infarct), myxomatous degeneration including Barlow's syndrome, trauma, or cardiomyopathy). Congenital lesions at the annular level include annular dilatation or deformation (usually deformation is consequent to associated lesions). At the valve leaflet level, mitral regurgitation may be due to a cleft, hypoplasia or agenesis of leaflet(s), excessive leaflet tissue, or a double orifice valve. At the subvalvar level, mitral regurgitation may be secondary to chordae tendineae anomalies (agenesis, rupture, elongation, or shortening as in funnel valve), or to papillary muscle anomalies (hypoplasia or agenesis, shortening, elongation, single-parachute, or multiple-hammock valve). When coding multiple mitral valvar lesions the predominant defect causing the functional effect (regurgitation, stenosis, or regurgitation and stenosis) should be listed as the primary defect.
720	Mitral valve, Other	Mitral valve pathology not otherwise coded in diagnosis definitions 650 through 710.
730	Hypoplastic left heart syndrome	Hypoplastic left heart syndrome (HLHS) is a spectrum of

730	(HLHS)	cardiac malformations characterized by a severe underdevelopment of the left heart-aorta complex, consisting of aortic and/or mitral valve atresia, stenosis, or hypoplasia with marked hypoplasia or absence of the left ventricle, and hypoplasia of the ascending aorta and of the aortic arch with coarctation of the aorta. Hypoplastic left heart complex is a subset of patients at the favorable end of the spectrum of HLHS characterized by hypoplasia of the structures of the left heart-aorta complex, consisting of aortic and mitral valve hypoplasia without valve stenosis or atresia, hypoplasia of the left ventricle, hypoplasia of the left ventricular outflow tract, hypoplasia of the ascending aorta and of the aortic arch, with or without coarctation of the aorta.
2760	Hypoplastic left heart syndrome (HLHS), AA+MA	
2770	Hypoplastic left heart syndrome (HLHS), AA+MS	
2780	Hypoplastic left heart syndrome (HLHS), AS+MA	
2790	Hypoplastic left heart syndrome (HLHS), AS+MS	
2080	Shone's syndrome	Shone's syndrome is a syndrome of multilevel hypoplasia and obstruction of left sided cardiovascular structures including more than one of the following lesions: (1) supravalvar ring of the left atrium, (2) a parachute deformity of the mitral valve, (3) subaortic stenosis, and (4) aortic coarctation. The syndrome is based on the original report from Shone [1] that was based on analysis of 8 autopsied cases and described the tendency of these four obstructive, or potentially obstructive, conditions to coexist. Only 2 of the 8 cases exhibited all four conditions, with the other cases exhibiting only two or three of the anomalies [2]. [1] Shone JD, Sellers RD, Anderson RG, Adams P, Lillehei CW, Edwards JE. The developmental complex of "parachute mitral valve", supravalvar ring of left atrium, subaortic stenosis, and coarctation of the aorta. Am J Cardiol 1963; 11: 714–725. [2]. Tchervenkov CI, Jacobs JP, Weinberg PM, Aiello VD, Beland MJ, Colan SD, Elliott MJ, Franklin RC, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G. The nomenclature, definition and classification of hypoplastic left heart syndrome. Cardiology in the Young, 2006; 16(4): 339–368, August 2006. Please note that the term "2080 Shone's syndrome" may be the "Fundamental Diagnosis" of a patient; however, the term "2080 Shone's syndrome" may not be the "Primary Diagnosis" of an operation. The term "2080 Shone's syndrome" may be a "Secondary Diagnosis" of an operation.
740	Cardiomyopathy (including dilated, restrictive, and hypertrophic)	Cardiomyopathy is a term applied to a wide spectrum of cardiac diseases in which the predominant feature is poor myocardial function in the absence of any anatomic

740		abnormalities. Cardiomyopathies can be divided into three relatively easily distinguishable entities: (1) dilated, characterized by ventricular dilatation and systolic dysfunction; (2) hypertrophic, characterized by physiologically inappropriate hypertrophy of the left ventricle; and (3) restrictive, characterized by diastolic dysfunction, with a presentation often identical to constrictive pericarditis. Also included in this diagnostic category are patients with a cardiomyopathy or syndrome confined to the right ventricle, for example: (1) arrhythmogenic right ventricular dysplasia; (2) Uhl's syndrome (hypoplasia of right ventricular myocardium, parchment heart); or (3) spongiform cardiomyopathy.
750	Cardiomyopathy, End-stage congenital heart disease	Myocardial abnormality in which there is systolic and/or diastolic dysfunction in the presence of structural congenital heart disease without any (or any further) surgically correctable lesions.
760	Pericardial effusion	Inflammatory stimulation of the pericardium that results in the accumulation of appreciable amounts of pericardial fluid (also known as effusive pericarditis). The effusion may be idiopathic or acquired (e.g., postoperative, infectious, uremic, neoplastic, traumatic, drug-induced).
770	Pericarditis	Inflammatory process of the pericardium that leads to either (1) effusive pericarditis with accumulation of appreciable amounts of pericardial fluid or (2) constrictive pericarditis that leads to pericardial thickening and compression of the cardiac chambers, ultimately with an associated significant reduction in cardiac function. Etiologies are varied and include idiopathic or acquired (e.g., postoperative, infectious, uremic, neoplastic, traumatic, drug-induced) pericarditis.
780	Pericardial disease, Other	A structural or functional abnormality of the visceral or parietal pericardium that may, or may not, have a significant impact on cardiac function. Included are absence or partial defects of the pericardium.
790	Single ventricle, DILV	A congenital cardiac malformation in which both atria connect to a single, morphologically left ventricle. The version of the IPCCC derived from the International Congenital Heart Surgery Nomenclature and Database Project of the EACTS and STS uses the term "single ventricle" as synonymous for the "functionally univentricular heart". The term "functionally univentricular heart" describes a spectrum of congenital cardiovascular malformations in which the ventricular mass may not readily lend itself to partitioning that commits one ventricular pump to the systemic circulation, and another to the pulmonary circulation. A heart may be functionally univentricular because of its anatomy or because of the lack of feasibility or lack of advisability of surgically partitioning the ventricular mass. Common lesions in this category

790		typically include double inlet right ventricle (DIRV), double inlet left ventricle (DILV), tricuspid atresia, mitral atresia, and hypoplastic left heart syndrome. Other lesions which sometimes may be considered to be a functionally univentricular heart include complex forms of atrioventricular septal defect, double outlet right ventricle, congenitally corrected transposition, pulmonary atresia with intact ventricular septum, and other cardiovascular malformations. Specific diagnostic codes should be used whenever possible, and not the term "functionally univentricular heart". Reference: Jacobs JP, Franklin RCG, Jacobs ML, Colan SD, Tchervenkov CI, Maruszewski B, Gaynor JW, Spray TL, Stellin G, Aiello VD, Béland MJ, Krogmann ON, Kurosawa H, Weinberg PM, Elliott MJ, Mavroudis C, Anderson R. Classification of the Functionally Univentricular Heart: Unity from mapped codes. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges in the Management of the Functionally Univentricular Heart, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16, Supplement 1: 9 - 21, February 2006.
800	Single ventricle, DIRV	A congenital cardiac malformation in which both atria connect to a single, morphologically right ventricle The version of the IPCCC derived from the International Congenital Heart Surgery Nomenclature and Database Project of the EACTS and STS uses the term "single ventricle" as synonymous for the "functionally univentricular heart". The term "functionally univentricular heart" describes a spectrum of congenital cardiovascular malformations in which the ventricular mass may not readily lend itself to partitioning that commits one ventricular pump to the systemic circulation, and another to the pulmonary circulation. A heart may be functionally univentricular because of its anatomy or because of the lack of feasibility or lack of advisability of surgically partitioning the ventricular mass. Common lesions in this category typically include double inlet right ventricle (DIRV), double inlet left ventricle (DILV), tricuspid atresia, mitral atresia, and hypoplastic left heart syndrome. Other lesions which sometimes may be considered to be a functionally univentricular heart include complex forms of atrioventricular septal defect, double outlet right ventricle, congenitally corrected transposition, pulmonary atresia with intact ventricular septum, and other cardiovascular malformations. Specific diagnostic codes should be used whenever possible, and not the term "functionally univentricular heart". Reference: Jacobs JP, Franklin RCG, Jacobs ML, Colan SD, Tchervenkov CI, Maruszewski B, Gaynor JW, Spray TL, Stellin G, Aiello VD, Béland MJ, Krogmann ON, Kurosawa

800		H, Weinberg PM, Elliott MJ, Mavroudis C, Anderson R. Classification of the Functionally Univentricular Heart: Unity from mapped codes. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges in the Management of the Functionally Univentricular Heart, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16, Supplement 1: 9 - 21, February 2006.
810	Single ventricle, Mitral atresia	A congenital cardiac malformation in which there is no orifice of mitral valve The version of the IPCCC derived from the International Congenital Heart Surgery Nomenclature and Database Project of the EACTS and STS uses the term "single ventricle" as synonymous for the "functionally univentricular heart". The term "functionally univentricular heart" describes a spectrum of congenital cardiovascular malformations in which the ventricular mass may not readily lend itself to partitioning that commits one ventricular pump to the systemic circulation, and another to the pulmonary circulation. A heart may be functionally univentricular because of its anatomy or because of the lack of feasibility or lack of advisability of surgically partitioning the ventricular mass. Common lesions in this category typically include double inlet right ventricle (DIRV), double inlet left ventricle (DILV), tricuspid atresia, mitral atresia, and hypoplastic left heart syndrome. Other lesions which sometimes may be considered to be a functionally univentricular heart include complex forms of atrioventricular septal defect, double outlet right ventricle, congenitally corrected transposition, pulmonary atresia with intact ventricular septum, and other cardiovascular malformations. Specific diagnostic codes should be used whenever possible, and not the term "functionally univentricular heart". Reference: Jacobs JP, Franklin RCG, Jacobs ML, Colan SD, Tchervenkov CI, Maruszewski B, Gaynor JW, Spray TL, Stellin G, Aiello VD, Béland MJ, Krogmann ON, Kurosawa H, Weinberg PM, Elliott MJ, Mavroudis C, Anderson R. Classification of the Functionally Univentricular Heart: Unity from mapped codes. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges in the Management of the Functionally Univentricular Heart, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16, Supplement 1: 9 - 21, February 2006.
820	Single ventricle, Tricuspid atresia	A congenital cardiac malformation in which there is no orifice of tricuspid valve. The version of the IPCCC derived from the International Congenital Heart Surgery Nomenclature and Database Project of the EACTS and STS uses the term "single

820		ventricle" as synonymous for the "functionally univentricular heart". The term "functionally univentricular heart" describes a spectrum of congenital cardiovascular malformations in which the ventricular mass may not readily lend itself to partitioning that commits one ventricular pump to the systemic circulation, and another to the pulmonary circulation. A heart may be functionally univentricular because of its anatomy or because of the lack of feasibility or lack of advisability of surgically partitioning the ventricular mass. Common lesions in this category typically include double inlet right ventricle (DIRV), double inlet left ventricle (DILV), tricuspid atresia, mitral atresia, and hypoplastic left heart syndrome. Other lesions which sometimes may be considered to be a functionally univentricular heart include complex forms of atrioventricular septal defect, double outlet right ventricle, congenitally corrected transposition, pulmonary atresia with intact ventricular septum, and other cardiovascular malformations. Specific diagnostic codes should be used whenever possible, and not the term "functionally univentricular heart". Reference: Jacobs JP, Franklin RCG, Jacobs ML, Colan SD, Tchervenkov CI, Maruszewski B, Gaynor JW, Spray TL, Stellin G, Aiello VD, Béland MJ, Krogmann ON, Kurosawa H, Weinberg PM, Elliott MJ, Mavroudis C, Anderson R. Classification of the Functionally Univentricular Heart: Unity from mapped codes. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges in the Management of the Functionally Univentricular Heart, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16, Supplement 1: 9 - 21, February 2006.
830	Single ventricle, Unbalanced AV canal	Single ventricle anomalies with a common atrioventricular (AV) valve and only one completely well developed ventricle. If the common AV valve opens predominantly into the morphologic left ventricle, the defect is termed a left ventricular (LV)–type or LV-dominant AV septal defect. If the common AV valve opens predominantly into the morphologic right ventricle, the defect is termed a right ventricular (RV)–type or RV-dominant AV septal defect. The version of the IPCCC derived from the International Congenital Heart Surgery Nomenclature and Database Project of the EACTS and STS uses the term "single ventricle" as synonymous for the "functionally univentricular heart". The term "functionally univentricular heart" describes a spectrum of congenital cardiovascular malformations in which the ventricular mass may not readily lend itself to partitioning that commits one ventricular pump to the systemic circulation, and another to the pulmonary

830		circulation. A heart may be functionally univentricular because of its anatomy or because of the lack of feasibility or lack of advisability of surgically partitioning the ventricular mass. Common lesions in this category typically include double inlet right ventricle (DIRV), double inlet left ventricle (DILV), tricuspid atresia, mitral atresia, and hypoplastic left heart syndrome. Other lesions which sometimes may be considered to be a functionally univentricular heart include complex forms of atrioventricular septal defect, double outlet right ventricle, congenitally corrected transposition, pulmonary atresia with intact ventricular septum, and other cardiovascular malformations. Specific diagnostic codes should be used whenever possible, and not the term "functionally univentricular heart".
840	Single ventricle, Heterotaxia syndrome	"Heterotaxia syndrome" is synonymous with "heterotaxy", "visceral heterotaxy", and "heterotaxy syndrome". Heterotaxy is defined as an abnormality where the internal thoraco-abdominal organs demonstrate abnormal arrangement across the left-right axis of the body. By convention, heterotaxy does not include patients with either the expected usual or normal arrangement of the internal organs along the left-right axis, also known as 'situs solitus', nor patients with complete mirror-imaged arrangement of the internal organs along the left-right axis also known as 'situs inversus'. The version of the IPCCC derived from the International Congenital Heart Surgery Nomenclature and Database Project of the EACTS and STS uses the term "single ventricle" as synonymous for the "functionally univentricular heart". The term "functionally univentricular heart" describes a spectrum of congenital cardiovascular malformations in which the ventricular mass may not readily lend itself to partitioning that commits one ventricular pump to the systemic circulation, and another to the pulmonary circulation. A heart may be functionally univentricular because of its anatomy or because of the lack of feasibility or lack of advisability of surgically partitioning the ventricular mass. Common lesions in this category typically include double inlet right ventricle (DIRV), double inlet left ventricle (DILV), tricuspid atresia, mitral atresia, and hypoplastic left heart syndrome. Other lesions which sometimes may be considered to be a functionally univentricular heart include complex forms of atrioventricular septal defect, double outlet right ventricle, congenitally corrected transposition, pulmonary atresia with intact ventricular septum, and other cardiovascular malformations. Specific diagnostic codes should be used whenever possible, and not the term "functionally univentricular heart". Reference: Jacobs JP, Franklin RCG, Jacobs ML, Colan SD,

840		Tchervenkov CI, Maruszewski B, Gaynor JW, Spray TL, Stellin G, Aiello VD, Béland MJ, Krogmann ON, Kurosawa H, Weinberg PM, Elliott MJ, Mavroudis C, Anderson R. Classification of the Functionally Univentricular Heart: Unity from mapped codes. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges in the Management of the Functionally Univentricular Heart, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16, Supplement 1: 9 - 21, February 2006.
850	Single ventricle, Other	If the single ventricle is of primitive or indeterminate type, other is chosen in coding. It is recognized that a considerable variety of other structural cardiac malformations (e.g., biventricular hearts with straddling atrioventricular valves, pulmonary atresia with intact ventricular septum, some complex forms of double outlet right ventricle) may at times be best managed in a fashion similar to that which is used to treat univentricular hearts. They are not to be coded in this section of the nomenclature, but according to the underlying lesions. The version of the IPCCC derived from the International Congenital Heart Surgery Nomenclature and Database Project of the EACTS and STS uses the term "single ventricle" as synonymous for the "functionally univentricular heart". The term "functionally univentricular heart" describes a spectrum of congenital cardiovascular malformations in which the ventricular mass may not readily lend itself to partitioning that commits one ventricular pump to the systemic circulation, and another to the pulmonary circulation. A heart may be functionally univentricular because of its anatomy or because of the lack of feasibility or lack of advisability of surgically partitioning the ventricular mass. Common lesions in this category typically include double inlet right ventricle (DIRV), double inlet left ventricle (DILV), tricuspid atresia, mitral atresia, and hypoplastic left heart syndrome. Other lesions which sometimes may be considered to be a functionally univentricular heart include complex forms of atrioventricular septal defect, double outlet right ventricle, congenitally corrected transposition, pulmonary atresia with intact ventricular septum, and other cardiovascular malformations. Specific diagnostic codes should be used whenever possible, and not the term "functionally univentricular heart". Reference: Jacobs JP, Franklin RCG, Jacobs ML, Colan SD, Tchervenkov CI, Maruszewski B, Gaynor JW, Spray TL, Stellin G, Aiello VD, Béland MJ, Krogmann ON, Kurosawa H, Weinberg PM, Elliott MJ, Mavroudis C, Anderson R. Classification of the Functionally Univentricular Heart: Unity from mapped codes. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges in

850		the Management of the Functionally Univentricular Heart, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16, Supplement 1: 9 - 21, February 2006.
851	Single Ventricle + Total anomalous pulmonary venous connection (TAPVC)	Indicate if the patient has the diagnosis of "Single Ventricle + Total anomalous pulmonary venous connection (TAPVC)". In the event of Single Ventricle occurring in association with Total anomalous pulmonary venous connection (TAPVC), code "Single Ventricle + Total anomalous pulmonary venous connection (TAPVC)", and then use additional (secondary) diagnostic codes to describe the Single Ventricle and the Total anomalous pulmonary venous connection (TAPVC) separately to provide further documentation about the Single Ventricle and Total anomalous pulmonary venous connection (TAPVC) types. {"Total anomalous pulmonary venous connection (TAPVC)" is defined as a heart where all of the pulmonary veins connect anomalously with the right atrium or to one or more of its venous tributaries. None of the pulmonary veins connect normally to the left atrium.} The version of the IPCCC derived from the International Congenital Heart Surgery Nomenclature and Database Project of the EACTS and STS uses the term "single ventricle" as synonymous for the "functionally univentricular heart". The term "functionally univentricular heart" describes a spectrum of congenital cardiovascular malformations in which the ventricular mass may not readily lend itself to partitioning that commits one ventricular pump to the systemic circulation, and another to the pulmonary circulation. A heart may be functionally univentricular because of its anatomy or because of the lack of feasibility or lack of advisability of surgically partitioning the ventricular mass. Common lesions in this category typically include double inlet right ventricle (DIRV), double inlet left ventricle (DILV), tricuspid atresia, mitral atresia, and hypoplastic left heart syndrome. Other lesions which sometimes may be considered to be a functionally univentricular heart include complex forms of atrioventricular septal defect, double outlet right ventricle, congenitally corrected transposition, pulmonary atresia with intact ventricular septum, and other cardiovascular malformations. Specific diagnostic codes should be used whenever possible, and not the term "functionally univentricular heart". Reference: Jacobs JP, Franklin RCG, Jacobs ML, Colan SD, Tchervenkov CI, Maruszewski B, Gaynor JW, Spray TL, Stellin G, Aiello VD, Béland MJ, Krogmann ON, Kurosawa H, Weinberg PM, Elliott MJ, Mavroudis C, Anderson R. Classification of the Functionally Univentricular Heart: Unity from mapped codes. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges in

851		the Management of the Functionally Univentricular Heart, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16, Supplement 1: 9 - 21, February 2006.
870	Congenitally corrected TGA	Indicate if the patient has the diagnosis of “Congenitally corrected TGA”. Congenitally corrected transposition is synonymous with the terms ‘corrected transposition’ and ‘discordant atrioventricular connections with discordant ventriculo-arterial connections’, and is defined as a spectrum of cardiac malformations where the atrial chambers are joined to morphologically inappropriate ventricles, and the ventricles then support morphologically inappropriate arterial trunks [1]. [1] Jacobs JP, Franklin RCG, Wilkinson JL, Cochrane AD, Karl TR, Aiello VD, Béland MJ, Colan SD, Elliott, MJ, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G, Tchervenkov CI, Weinberg PM. The nomenclature, definition and classification of discordant atrioventricular connections. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges of the Atrioventricular Junctions and Other Challenges Facing Paediatric Cardiovascular Practitioners and their Patients, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16 (Supplement 3): 72-84, September 2006.
872	Congenitally corrected TGA, IVS	Indicate if the patient has the diagnosis of “Congenitally corrected TGA, IVS”. “Congenitally corrected TGA, IVS” is “Congenitally corrected transposition with an intact ventricular septum”, in other words, “Congenitally corrected transposition with no VSD”. (Congenitally corrected transposition is synonymous with the terms ‘corrected transposition’ and ‘discordant atrioventricular connections with discordant ventriculo-arterial connections’, and is defined as a spectrum of cardiac malformations where the atrial chambers are joined to morphologically inappropriate ventricles, and the ventricles then support morphologically inappropriate arterial trunks [1]. [1] Jacobs JP, Franklin RCG, Wilkinson JL, Cochrane AD, Karl TR, Aiello VD, Béland MJ, Colan SD, Elliott, MJ, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G, Tchervenkov CI, Weinberg PM. The nomenclature, definition and classification of discordant atrioventricular connections. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges of the Atrioventricular Junctions and Other Challenges Facing Paediatric Cardiovascular Practitioners and their Patients, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16 (Supplement 3): 72-84, September 2006.)
874	Congenitally corrected TGA, IVS-LVOTO	Indicate if the patient has the diagnosis of “Congenitally corrected TGA, IVS-LVOTO”. “Congenitally corrected TGA, IVS-LVOTO” is “Congenitally corrected transposition with an intact ventricular septum and left ventricular outflow tract obstruction”, in other words, “Congenitally

874		corrected transposition with left ventricular outflow tract obstruction and no VSD". (Congenitally corrected transposition is synonymous with the terms 'corrected transposition' and 'discordant atrioventricular connections with discordant ventriculo-arterial connections', and is defined as a spectrum of cardiac malformations where the atrial chambers are joined to morphologically inappropriate ventricles, and the ventricles then support morphologically inappropriate arterial trunks [1]. [1] Jacobs JP, Franklin RCG, Wilkinson JL, Cochrane AD, Karl TR, Aiello VD, Béland MJ, Colan SD, Elliott, MJ, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G, Tchervenkov CI, Weinberg PM. The nomenclature, definition and classification of discordant atrioventricular connections. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges of the Atrioventricular Junctions and Other Challenges Facing Paediatric Cardiovascular Practitioners and their Patients, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16 (Supplement 3): 72-84, September 2006.)
876	Congenitally corrected TGA, VSD	Indicate if the patient has the diagnosis of "Congenitally corrected TGA, VSD". "Congenitally corrected TGA, VSD" is "Congenitally corrected transposition with a VSD". (Congenitally corrected transposition is synonymous with the terms 'corrected transposition' and 'discordant atrioventricular connections with discordant ventriculo-arterial connections', and is defined as a spectrum of cardiac malformations where the atrial chambers are joined to morphologically inappropriate ventricles, and the ventricles then support morphologically inappropriate arterial trunks [1]. [1] Jacobs JP, Franklin RCG, Wilkinson JL, Cochrane AD, Karl TR, Aiello VD, Béland MJ, Colan SD, Elliott, MJ, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G, Tchervenkov CI, Weinberg PM. The nomenclature, definition and classification of discordant atrioventricular connections. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges of the Atrioventricular Junctions and Other Challenges Facing Paediatric Cardiovascular Practitioners and their Patients, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16 (Supplement 3): 72-84, September 2006.)
878	Congenitally corrected TGA, VSD-LVOTO	Indicate if the patient has the diagnosis of "Congenitally corrected TGA, VSD-LVOTO". "Congenitally corrected TGA, VSD-LVOTO" is "Congenitally corrected transposition with a VSD and left ventricular outflow tract obstruction". (Congenitally corrected transposition is synonymous with the terms 'corrected transposition' and 'discordant atrioventricular connections with discordant ventriculo-arterial connections', and is defined as a spectrum of cardiac malformations where the atrial chambers are joined to morphologically

878		inappropriate ventricles, and the ventricles then support morphologically inappropriate arterial trunks [1]. [1] Jacobs JP, Franklin RCG, Wilkinson JL, Cochrane AD, Karl TR, Aiello VD, Béland MJ, Colan SD, Elliott, MJ, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G, Tchervenkov CI, Weinberg PM. The nomenclature, definition and classification of discordant atrioventricular connections. In 2006 Supplement to Cardiology in the Young: Controversies and Challenges of the Atrioventricular Junctions and Other Challenges Facing Paediatric Cardiovascular Practitioners and their Patients, Jacobs JP, Wernovsky G, Gaynor JW, and Anderson RH (editors). Cardiology in the Young, Volume 16 (Supplement 3): 72-84, September 2006.)
2800	Congenitally corrected TGA, IVS + Coarctation or arch hypoplasia or arch interruption	
2810	Congenitally corrected TGA, VSD + Coarctation or arch hypoplasia or arch interruption	
880	TGA, IVS	A malformation of the heart in which there is atrioventricular concordance and ventriculoarterial discordance with an intact ventricular septum. There may be d, l, or ambiguous transposition (segmental diagnoses include S,D,D, S,D,L, S,D,A). Also to be included in this diagnostic grouping are those defects with situs inversus, L-loop ventricles and either d or l transposition (segmental diagnosis of I,L,L and I,L,D) and occasionally those defects with ambiguous situs of the atria which behave as physiologically uncorrected transposition and are treated with arterial switch (segmental diagnoses include A,L,L and A,D,D).
890	TGA, IVS-LVOTO	A malformation of the heart in which there is atrioventricular concordance and ventriculoarterial discordance with an intact ventricular septum and associated left ventricular obstruction. There may be d, l, or ambiguous transposition (segmental diagnoses include S,D,D, S,D,L, S,D,A). Also to be included in this diagnostic grouping are those defects with situs inversus, L-loop ventricles and either d or l transposition (segmental diagnosis of I,L,L and I,L,D) and occasionally those defects with ambiguous situs of the atria which behave as physiologically uncorrected transposition and are treated with arterial switch (segmental diagnoses include A,L,L and A,D,D).
900	TGA, VSD	A malformation of the heart in which there is atrioventricular concordance and ventriculoarterial discordance with one or more ventricular septal defects. There may be d, l, or ambiguous transposition (segmental diagnoses include S,D,D, S,D,L, S,D,A). Also to be included in this diagnostic grouping are those defects with situs inversus, L-loop ventricles and either d or l transposition (segmental diagnosis of I,L,L and I,L,D) and occasionally those defects with ambiguous situs of the

900		atria which behave as physiologically uncorrected transposition and are treated with arterial switch (segmental diagnoses include A,L,L and A,D,D).
910	TGA, VSD-LVOTO	A malformation of the heart in which there is atrioventricular concordance and ventriculoarterial discordance with one or more ventricular septal defects and left ventricular outflow tract obstruction. There may be d, l, or ambiguous transposition (segmental diagnoses include S,D,D, S,D,L, S,D,A). Also to be included in this diagnostic grouping are those defects with situs inversus, L-loop ventricles and either d or l transposition (segmental diagnosis of I,L,L and I,L,D) and occasionally those defects with ambiguous situs of the atria which behave as physiologically uncorrected transposition and are treated with arterial switch (segmental diagnoses include A,L,L and A,D,D).
2820	TGA, IVS + Coarctation or arch hypoplasia or arch interruption	
2830	TGA, VSD + Coarctation or arch hypoplasia or arch interruption	
930	DORV, VSD type	Double outlet right ventricle is a type of ventriculoarterial connection in which both great vessels arise entirely or predominantly from the right ventricle. In double outlet right ventricle, VSD type, there is an associated subaortic or doubly-committed VSD and no pulmonary outflow tract obstruction. Subaortic VSD's are located beneath the aortic valve. Doubly-committed VSD's lie beneath the leaflets of the aortic and pulmonary valves (juxtaarterial). In the nomenclature developed for DORV, there must be usual atrial arrangements and concordant atrioventricular connections, and normal or near-normal sized ventricles. Discordant atrioventricular connection with DORV is to be coded under congenitally corrected TGA. DORV associated with univentricular atrioventricular connections, atrioventricular valve atresia, or atrial isomerism is to be coded under the appropriate single ventricle listing.
940	DORV, TOF type	Double outlet right ventricle is a type of ventriculoarterial connection in which both great vessels arise entirely or predominantly from the right ventricle. In double outlet right ventricle, TOF type, there is an associated subaortic or doubly-committed VSD and pulmonary outflow tract obstruction. Subaortic VSD's are located beneath the aortic valve. Doubly-committed VSD's lie beneath the leaflets of the aortic and pulmonary valves (juxtaarterial). DORV can occur in association with pulmonary atresia, keeping in mind in coding that in the nomenclature developed for DORV, there must be usual atrial arrangements and concordant atrioventricular connections, and normal or near-normal sized ventricles (in this situation DORV is coded as a primary diagnosis). Discordant atrioventricular connection with DORV is to be coded under congenitally

940		corrected TGA. DORV associated with univentricular atrioventricular connections, atrioventricular valve atresia, or atrial isomerism is to be coded under the appropriate Single ventricle listing.
950	DORV, TGA type	Double outlet right ventricle is a type of ventriculoarterial connection in which both great vessels arise entirely or predominantly from the right ventricle. In double outlet right ventricle, TGA type, there is an associated subpulmonary VSD. Most frequently, there is no pulmonary outflow tract obstruction (Taussig-Bing heart). The aorta is usually to the right and slightly anterior to or side-by-side with the pulmonary artery. Associated aortic outflow tract stenosis (subaortic, aortic arch obstruction) is commonly associated with the Taussig-Bing heart and if present should be coded as a secondary diagnosis. Rarely, there is associated pulmonary outflow tract obstruction. In the nomenclature developed for DORV, there must be usual atrial arrangements and concordant atrioventricular connections, and normal or near-normal sized ventricles. Discordant atrioventricular connection with DORV is to be coded under congenitally corrected TGA. DORV associated with univentricular atrioventricular connections, atrioventricular valve atresia, or atrial isomerism is to be coded under the appropriate single ventricle listing.
960	DORV, Remote VSD (uncommitted VSD)	Double outlet right ventricle is a type of ventriculoarterial connection in which both great vessels arise entirely or predominantly from the right ventricle. In double outlet right ventricle, Remote VSD type, there is a remote or noncommitted VSD. The VSD is far removed from both the aortic and pulmonary valves, usually within the inlet septum. Many of these VSD's are in hearts with DORV and common atrioventricular canal/septal defect. In the nomenclature developed for DORV, there must be usual atrial arrangements and concordant atrioventricular connections, and normal or near-normal sized ventricles. Discordant atrioventricular connection with DORV is to be coded under congenitally corrected TGA. DORV associated with univentricular atrioventricular connections, atrioventricular valve atresia, or atrial isomerism is to be coded under the appropriate single ventricle listing.
2030	DORV + AVSD (AV Canal)	Indicate if the patient has the diagnosis of “DORV + AVSD (AV Canal)”. In the event of DORV occurring in association with AVSD (AV Canal), code “DORV + AVSD (AV Canal)”, and then use additional (secondary) diagnostic codes to describe the DORV and the AVSD (AV Canal) separately to provide further documentation about the DORV and AVSD (AV Canal) types. {“DORV” is “Double outlet right ventricle” and is defined as a type of ventriculoarterial connection in which both great vessels arise entirely or predominantly from the right ventricle.} In this case, the DORV exists in combination with an atrioventricular septal defect and common

2030		atrioventricular junction guarded by a common atrioventricular valve.
975	DORV, IVS	Double outlet right ventricle is a type of ventriculoarterial connection in which both great vessels arise entirely or predominantly from the right ventricle. In the rare case of double outlet right ventricle with IVS the ventricular septum is intact. In the nomenclature developed for DORV, there must be usual atrial arrangements and concordant atrioventricular connections, and normal or near-normal sized ventricles. Discordant atrioventricular connections with DORV are to be coded under congenitally corrected TGA. DORV associated with univentricular atrioventricular connections, atrioventricular valve atresia, or atrial isomerism is to be coded under the appropriate single ventricle listing.
980	DOLV	Double outlet left ventricle is a type of ventriculoarterial connection in which both great vessels arise entirely or predominantly from the left ventricle. In the nomenclature developed for DOLV, there must be usual atrial arrangements and concordant atrioventricular connections, and normal or near-normal sized ventricles. Discordant atrioventricular connection with DOLV is to be coded under congenitally corrected TGA. DOLV associated with univentricular atrioventricular connections, atrioventricular valve atresia, or atrial isomerism is to be coded under the appropriate single ventricle listing.
990	Coarctation of aorta	Indicate if the patient has the diagnosis of “Coarctation of aorta”. A “Coarctation of the aorta” generally indicates a narrowing of the descending thoracic aorta just distal to the left subclavian artery. However, the term may also be accurately used to refer to a region of narrowing anywhere in the thoracic or abdominal aorta.
1000	Aortic arch hypoplasia	Hypoplasia of the aortic arch is hypoplasia of the proximal or distal transverse arch or the aortic isthmus. The isthmus (arch between the left subclavian and insertion of the patent ductus arteriosus / ligamentum arteriosum) is hypoplastic if its diameter is less than 40% of the diameter of the ascending aorta. The proximal transverse arch (arch between the innominate and left carotid arteries) and distal transverse arch (arch between the left carotid and left subclavian arteries) are hypoplastic if their diameters are less than 60% and 50%, respectively, of the diameter of the ascending aorta.
92	VSD + Aortic arch hypoplasia	A ventricular septal defect, any type, associated with hypoplasia of the aortic arch. (See diagnosis definition 1000 for a definition of hypoplasia of the aortic arch.)
94	VSD + Coarctation of aorta	Indicate if the patient has the diagnosis of “VSD + Coarctation of aorta”. In the event of a VSD occurring in association with Coarctation of aorta, code “VSD + Coarctation of aorta”, and then use additional (secondary) diagnostic codes to describe the VSD and the Coarctation of aorta separately to provide further

94		documentation about the individual VSD and Coarctation of aorta types. {A "VSD" is a "Ventricular Septal Defect" and is also known as an "Interventricular communication". A VSD is defined as "a hole between the ventricular chambers or their remnants". (The VSD is defined on the basis of its margins as seen from the aspect of the morphologically right ventricle. In the setting of double outlet right ventricle, the defect provides the outflow from the morphologically left ventricle. In univentricular atrioventricular connections with functionally single left ventricle with an outflow chamber, the communication is referred to by some as a bulboventricular foramen.)} {A “Coarctation of the aorta” generally indicates a narrowing of the descending thoracic aorta just distal to the left subclavian artery. However, the term may also be accurately used to refer to a region of narrowing anywhere in the thoracic or abdominal aorta.}
1010	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA)	Anomalous aortic origins of the coronary arteries include a spectrum of anatomic variations of the normal coronary artery origins. Coronary artery anomalies of aortic origin to be coded under this diagnostic field include: anomalies of take-off (high take-off), origin (sinus), branching, and number. An anomalous course of the coronary artery vessels is also significant, particularly those coronary arteries that arise or course between the great vessels.
2840	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA), Left coronary artery from right sinus	
2850	Coronary artery anomaly, Anomalous aortic origin of coronary artery (AAOCA), Right coronary artery from left sinus	
2860	Coronary artery Anomaly, Intramural coronary	
1020	Coronary artery anomaly, Anomalous pulmonary origin (includes ALCAPA)	In patients with anomalous pulmonary origin of the coronary artery, the coronary artery (most commonly the left coronary artery) arises from the pulmonary artery rather than from the aorta. Rarely, the right coronary artery, the circumflex, or both coronary arteries may arise from the pulmonary artery.
1030	Coronary artery anomaly, Fistula	The most common of coronary artery anomalies, a coronary arteriovenous fistula is a communication between a coronary artery and either a chamber of the heart (coronary-cameral fistula) or any segment of the systemic or pulmonary circulation (coronary arteriovenous fistula). They may be congenital or acquired (traumatic, infectious, iatrogenic) in origin, and are mostly commonly seen singly, but occasionally multiple fistulas are present. Nomenclature schemes have been developed that further categorize the fistulas by vessel of origin and chamber of termination, and one

1030		angiographic classification scheme by Sakakibara has surgical implications. Coronary artery fistulas can be associated with other congenital heart anomalies such as tetralogy of Fallot, atrial septal defect, ventricular septal defect, and pulmonary atresia with intact ventricular septum, among others. The major cardiac defect should be listed as the primary diagnosis and the coronary artery fistula should be as an additional secondary diagnoses.
1040	Coronary artery anomaly, Aneurysm	Coronary artery aneurysms are defined as dilations of a coronary vessel 1.5 times the adjacent normal coronaries. There are two forms, saccular and fusiform (most common), and both may be single or multiple. These aneurysms may be congenital or acquired (atherosclerotic, Kawasaki, systemic diseases other than Kawasaki, iatrogenic, infectious, or traumatic) in origin.
2420	Coronary artery anomaly, Ostial Atresia	
1050	Coronary artery anomaly, Other	Coronary artery anomalies which may fall within this category include coronary artery bridging and coronary artery stenosis, as well as secondary coronary artery variations seen in congenital heart defects such as tetralogy of Fallot, transposition of the great arteries, and truncus arteriosus (with the exception of variations that can be addressed by a more specific coronary artery anomaly code).
1070	Interrupted aortic arch	Indicate if the patient has the diagnosis of “Interrupted aortic arch”. Interrupted aortic arch is defined as the loss of luminal continuity between the ascending and descending aorta. In most cases blood flow to the descending thoracic aorta is through a PDA, and there is a large VSD. Arch interruption is further defined by site of interruption. In type A, interruption is distal to the left subclavian artery; in type B interruption is between the left carotid and left subclavian arteries; and in type C interruption occurs between the innominate and left carotid arteries.
2020	Interrupted aortic arch + VSD	Indicate if the patient has the diagnosis of “Interrupted aortic arch + VSD”. In the event of interrupted aortic arch occurring in association with VSD, code “Interrupted aortic arch + VSD”, and then use additional (secondary) diagnostic codes to describe the interrupted aortic arch and the VSD separately to provide further documentation about the individual interrupted aortic arch and VSD types. {Interrupted aortic arch is defined as the loss of luminal continuity between the ascending and descending aorta. In most cases blood flow to the descending thoracic aorta is through a PDA, and there is a large VSD. Arch interruption is further defined by site of interruption. In type A, interruption is distal to the left subclavian artery; in type B interruption is between the left carotid and left subclavian arteries; and in type C interruption occurs between the innominate and left carotid arteries.} {A "VSD" is a "Ventricular Septal

2020		Defect" and is also known as an "Interventricular communication". A VSD is defined as "a hole between the ventricular chambers or their remnants". (The VSD is defined on the basis of its margins as seen from the aspect of the morphologically right ventricle. In the setting of double outlet right ventricle, the defect provides the outflow from the morphologically left ventricle. In univentricular atrioventricular connections with functionally single left ventricle with an outflow chamber, the communication is referred to by some as a bulboventricular foramen.)}
2000	Interrupted aortic arch + AP window (aortopulmonary window)	Indicate if the patient has the diagnosis of “Interrupted aortic arch + AP window (aortopulmonary window)”. In the event of interrupted aortic arch occurring in association with AP window, code “Interrupted aortic arch + AP window (aortopulmonary window)”, and then use additional (secondary) diagnostic codes to describe the interrupted aortic arch and the AP window separately to provide further documentation about the individual interrupted aortic arch and AP window types. {Interrupted aortic arch is defined as the loss of luminal continuity between the ascending and descending aorta. In most cases blood flow to the descending thoracic aorta is through a PDA, and there is a large VSD. Arch interruption is further defined by site of interruption. In type A, interruption is distal to the left subclavian artery; in type B interruption is between the left carotid and left subclavian arteries; and in type C interruption occurs between the innominate and left carotid arteries.} {An “AP window (aortopulmonary window)” is defined as a defect with side-to-side continuity of the lumens of the aorta and pulmonary arterial tree, which is distinguished from common arterial trunk (truncus arteriosus) by the presence of two arterial valves or their atretic remnants. (In other words, an aortopulmonary window is a communication between the main pulmonary artery and ascending aorta in the presence of two separate semilunar [pulmonary and aortic] valves. The presence of two separate semilunar valves distinguishes AP window from truncus arteriosus. Type 1 proximal defect: AP window located just above the sinus of Valsalva, a few millimeters above the semilunar valves, with a superior rim but little inferior rim separating the AP window from the semilunar valves. Type 2 distal defect: AP window located in the uppermost portion of the ascending aorta, with a well-formed inferior rim but little superior rim. Type 3 total defect: AP window involving the majority of the ascending aorta, with little superior and inferior rims. The intermediate type of AP window is similar to the total defect but with adequate superior and inferior rims. In the event of AP window occurring in association with interrupted aortic arch, code “Interrupted aortic arch + AP window (aortopulmonary window)”, and then use additional (secondary) diagnostic codes to describe the

2000		interrupted aortic arch and AP window separately to provide further documentation about the individual interrupted arch and AP window types.)}
1080	Patent ductus arteriosus	Indicate if the patient has the diagnosis of "Patent ductus arteriosus". The ductus arteriosus (arterial duct) is an essential feature of fetal circulation, connecting the main pulmonary trunk with the descending aorta, distal to the origin of the left subclavian artery. In most patients it is on the left side. If a right aortic arch is present, it may be on the right or the left; very rarely it is bilateral. When luminal patency of the duct persists post-natally, it is referred to as patent ductus arteriosus (patent arterial duct). The length and diameter may vary considerably from case to case. The media of the ductus consists mainly of smooth muscle that is arranged spirally, and the intima is much thicker than that of the aorta. (A patent ductus arteriosus is a vascular arterial connection between the thoracic aorta and the pulmonary artery. Most commonly a PDA has its origin from the descending thoracic aorta, just distal and opposite the origin of the left subclavian artery. The insertion of the ductus is most commonly into the very proximal left pulmonary artery at its junction with the main pulmonary artery. Origination and insertion sites can be variable, however.)
1090	Vascular ring	The term vascular ring refers to a group of congenital vascular anomalies that encircle and compress the esophagus and trachea. The compression may be from a complete anatomic ring (double aortic arch or right aortic arch with a left ligamentum) or from a compressive effect of an aberrant vessel (innominate artery compression syndrome).
1100	Pulmonary artery sling	In pulmonary artery sling, the left pulmonary artery originates from the right pulmonary artery and courses posteriorly between the trachea and esophagus in its route to the left lung hilum, causing a sling-like compression of the trachea.
2870	Esophageal compression by vessel	
2880	Tracheal compression by vessel	
1110	Aortic aneurysm (including pseudoaneurysm)	An aneurysm of the aorta is defined as a localized dilation or enlargement of the aorta at any site along its length (from aortic annulus to aortoiliac bifurcation). A true aortic aneurysm involves all layers of the aortic wall. A false aortic aneurysm (pseudoaneurysm) is defined as a dilated segment of the aorta not containing all layers of the aortic wall and may include postoperative or post-procedure false aneurysms at anastomotic sites, traumatic aortic injuries or transections, and infectious processes leading to a contained rupture.
1120	Aortic dissection	Aortic dissection is a separation of the layers of the aortic wall. Extension of the plane of the dissection may progress to free rupture into the pericardium, mediastinum, or pleural space if not contained by the

1120		outer layers of the media and adventitia. Dissections may be classified as acute or chronic (if they have been present for more than 14 days).
1130	Lung disease, Benign	Lung disease arising from any etiology (congenital or acquired) which does not result in death or lung or heart-lung transplant; examples might be non-life threatening asthma or emphysema, benign cysts.
1140	Lung disease, Malignant	Lung disease arising from any etiology (congenital or acquired, including pulmonary parenchymal disease, pulmonary vascular disease, congenital heart disease, neoplasm, etc.) which may result in death or lung or heart-lung transplant.
1160	Tracheal stenosis	Tracheal stenosis is a reduction in the anatomic luminal diameter of the trachea by more than 50% of the remaining trachea. This stenosis may be congenital or acquired (as in post-intubation or traumatic tracheal stenosis).
2430	Tracheomalacia	
1170	Airway disease, Other	Included in this diagnostic category would be airway pathology not included under the definition of tracheal stenosis such as tracheomalacia, bronchotracheomalacia, tracheal right upper lobe, bronchomalacia, subglottic stenosis, bronchial stenosis, etc.
1430	Pleural disease, Benign	Benign diseases of the mediastinal or visceral pleura.
1440	Pleural disease, Malignant	Malignant diseases of the mediastinal or visceral pleura.
1450	Pneumothorax	A collection of air or gas in the pleural space.
1460	Pleural effusion	Abnormal accumulation of fluid in the pleural space.
1470	Chylothorax	The presence of lymphatic fluid in the pleural space secondary to a leak from the thoracic duct or its branches. Chylothorax is a specific type of pleural effusion.
1480	Empyema	A collection of purulent material in the pleural space, usually secondary to an infection.
1490	Esophageal disease, Benign	Any benign disease of the esophagus.
1500	Esophageal disease, Malignant	Any malignant disease of the esophagus.
1505	Mediastinal disease	Any disease of the mediastinum awaiting final benign/malignant pathology determination.
1510	Mediastinal disease, Benign	Any benign disease of the mediastinum.
1520	Mediastinal disease, Malignant	Any malignant disease of the mediastinum.
1540	Diaphragm paralysis	Paralysis of diaphragm, unilateral or bilateral.
1550	Diaphragm disease, Other	Any disease of the diaphragm other than paralysis.
2160	Rib tumor, Benign	Non-cancerous tumor of rib(s) (e.g., fibrous dysplasia)
2170	Rib tumor, Malignant	Cancerous tumor of rib(s)- primary (e.g., osteosarcoma, chondrosarcoma)
2180	Rib tumor, Metastatic	Cancerous tumor metastasized to rib(s)from a different primary location
2190	Sternal tumor, Benign	Non-cancerous tumor of sternum (e.g., fibrous dysplasia)

2200	Sternal tumor, Malignant	Cancerous tumor of sternum - primary (e.g., osteosarcoma, chondrosarcoma)
2210	Sternal tumor, Metastatic	Cancerous tumor metastasized to sternum from a different primary location
2220	Pectus carinatum	Pectus carinatum represents a spectrum of protrusion abnormalities of the anterior chest wall. Severe deformity may result in dyspnea and decreased endurance. Some patients develop rigidity of the chest wall with decreased lung compliance, progressive emphysema, and increased frequency of respiratory tract infections.
2230	Pectus excavatum	Pectus excavatum is a congenital chest wall deformity in which several ribs and the sternum grow abnormally, producing a concave, or caved-in, appearance in the anterior chest wall. Pectus excavatum is the most common type of congenital chest wall abnormality. It occurs in an estimated 1 in 300-400 births, with male predominance (male-to-female ratio of 3:1). The condition is typically noticed at birth, and more than 90% of cases are diagnosed within the first year of life. Worsening of the chest's appearance and the onset of respiratory symptoms are usually reported during rapid bone growth in the early teenage years.
2240	Thoracic outlet syndrome	Thoracic outlet syndrome (TOS) is caused by compression at the superior thoracic outlet wherein excess pressure is placed on a neurovascular bundle passing between the anterior scalene and middle scalene muscles. It can affect the brachial plexus (nerves that pass into the arm from the neck), the subclavian artery, and - rarely - the vein, which does not normally pass through the scalene hiatus. TOS may occur due to a positional cause - for example, by abnormal compression from the clavicle (collarbone) and shoulder girdle on arm movement. There are also several static forms, caused by abnormalities, enlargement, or spasm of the various muscles surrounding the arteries, veins, and/or brachial plexus, a fixation of a first rib, or a cervical rib. The most common causes of thoracic outlet syndrome include physical trauma from a car accident, repetitive injuries from a job such as frequent non-ergonomic use of a keyboard, sports-related activities, anatomical defects such as having an extra rib, and pregnancy.
1180	Arrhythmia	Any cardiac rhythm other than normal sinus rhythm.
2440	Arrhythmia, Atrial, Atrial fibrillation	
2450	Arrhythmia, Atrial, Atrial flutter	
2460	Arrhythmia, Atrial, Other	
2050	Arrhythmia, Junctional	Indicate if the patient has the diagnosis of ''Arrhythmia, Junctional''. "Arrhythmias arising from the atrioventricular junction; may be bradycardia, tachycardia, premature beats, or escape rhythm [1]. [1]. Jacobs JP. (Editor). 2008 Supplement to Cardiology in the Young: Databases and The Assessment of

2050		Complications associated with The Treatment of Patients with Congenital Cardiac Disease, Prepared by: The Multi-Societal Database Committee for Pediatric and Congenital Heart Disease, Cardiology in the Young, Volume 18, Supplement S2, pages 1 –530, December 9, 2008, page 379.
2060	Arrhythmia, Ventricular	Indicate if the patient has the diagnosis of ''Arrhythmia, Ventricular''. "Arrhythmia, Ventricular'' ROOT Definition = Abnormal rhythm originating from the ventricles [1]. [1]. Jacobs JP. (Editor). 2008 Supplement to Cardiology in the Young: Databases and The Assessment of Complications associated with The Treatment of Patients with Congenital Cardiac Disease, Prepared by: The Multi-Societal Database Committee for Pediatric and Congenital Heart Disease, Cardiology in the Young, Volume 18, Supplement S2, pages 1 –530, December 9, 2008, page 393.
1185	Arrhythmia, Heart block	Atrioventricular block may be congenital or acquired, and may be of varying degree (first, second, or third degree).
1190	Arrhythmia, Heart block, Acquired	Atrioventricular block, when acquired, may be post-surgical, or secondary to myocarditis or other etiologies; the block may be first, second or third degree.
1200	Arrhythmia, Heart block, Congenital	Atrioventricular block, when congenital, may be first, second or third degree block.
1220	Arrhythmia, Pacemaker, Indication for replacement	Indications for pacemaker replacement may include end of generator life, malfunction, or infection.
2530	Short QT syndrome	
2540	Long QT Syndrome (Ward Romano syndrome)	
2550	Wolff-Parkinson-White syndrome (WPW syndrome)	
1230	Atrial Isomerism, Left	In isomerism, both appendages are of like morphology or structure; in left atrial isomerism both the right atrium and left atrium appear to be a left atrium structurally.
1240	Atrial Isomerism, Right	In isomerism, both appendages are of like morphology or structure; in right atrial isomerism both the right atrium and left atrium appear to be a right atrium structurally.
2090	Dextrocardia	Indicate if the patient has the diagnosis of ''Dextrocardia''. "Dextrocardia'' is most usually considered synonymous with a right-sided ventricular mass, whilst ''dextroversion'' is frequently defined as a configuration where the ventricular apex points to the right. In a patient with the usual atrial arrangement, or situs solitus, dextroversion, therefore, implies a turning to the right of the heart [1]. [1]. Jacobs JP, Anderson RH, Weinberg P, Walters III HL, Tchervenkov CI, Del Duca D, Franklin RCG, Aiello VD, Béland MJ, Colan SD, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G, Elliott MJ. The nomenclature, definition and classification of cardiac structures in the setting of heterotaxy. In 2007 Supplement to Cardiology in the

2090		Young: Controversies and Challenges Facing Paediatric Cardiovascular Practitioners and their Patients, Anderson RH, Jacobs JP, and Wernovsky G, editors. Cardiology in the Young, Volume 17, Supplement 2, pages 1–28, doi: 10.1017/S1047951107001138, September 2007.
2100	Levocardia	Indicate if the patient has the diagnosis of ‘‘Levocardia’’. ‘‘Levocardia’’ usually considered synonymous with a left-sided ventricular mass, whilst ‘‘levoversion’’ is frequently defined as a configuration where the ventricular apex points to the left [1]. [1]. Jacobs JP, Anderson RH, Weinberg P, Walters III HL, Tchervenkov CI, Del Duca D, Franklin RCG, Aiello VD, Béland MJ, Colan SD, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G, Elliott MJ. The nomenclature, definition and classification of cardiac structures in the setting of heterotaxy. In 2007 Supplement to Cardiology in the Young: Controversies and Challenges Facing Paediatric Cardiovascular Practitioners and their Patients, Anderson RH, Jacobs JP, and Wernovsky G, editors. Cardiology in the Young, Volume 17, Supplement 2, pages 1–28, doi: 10.1017/S1047951107001138, September 2007.
2110	Mesocardia	Indicate if the patient has the diagnosis of ‘‘Mesocardia’’. “Mesocardia’’ is most usually considered synonymous with the ventricular mass occupying the midline [1]. [1]. Jacobs JP, Anderson RH, Weinberg P, Walters III HL, Tchervenkov CI, Del Duca D, Franklin RCG, Aiello VD, Béland MJ, Colan SD, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G, Elliott MJ. The nomenclature, definition and classification of cardiac structures in the setting of heterotaxy. In 2007 Supplement to Cardiology in the Young: Controversies and Challenges Facing Paediatric Cardiovascular Practitioners and their Patients, Anderson RH, Jacobs JP, and Wernovsky G, editors. Cardiology in the Young, Volume 17, Supplement 2, pages 1–28, doi: 10.1017/S1047951107001138, September 2007.
2120	Situs inversus	Indicate if the patient has the diagnosis of “Situs inversus” of the atrial chambers. The development of morphologically right-sided structures on one side of the body, and morphologically left-sided structures on the other side, is termed lateralization. Normal lateralization, the usual arrangement, is also known as ‘‘situs solitus’’. The mirror-imaged arrangement is also known as ‘‘situs inversus’’. The term ‘‘visceroatrial situs’’ is often used to refer to the situs of the viscera and atria when their situs is in agreement. The arrangement of the organs themselves, and the arrangement of the atrial chambers, is not always the same. Should such disharmony be encountered, the sidedness of the organs and atrial chambers must be separately specified [1]. [1]. Jacobs JP, Anderson RH, Weinberg P, Walters III HL, Tchervenkov CI, Del Duca D, Franklin RCG, Aiello VD, Béland MJ, Colan SD, Gaynor JW, Krogmann ON, Kurosawa H, Maruszewski B, Stellin G, Elliott MJ. The nomenclature, definition and classification of cardiac

2120		structures in the setting of heterotaxy. In 2007 Supplement to Cardiology in the Young: Controversies and Challenges Facing Paediatric Cardiovascular Practitioners and their Patients, Anderson RH, Jacobs JP, and Wernovsky G, editors. Cardiology in the Young, Volume 17, Supplement 2, pages 1–28, doi: 10.1017/S1047951107001138, September 2007.
1250	Aneurysm, Ventricular, Right (including pseudoaneurysm)	An aneurysm of the right ventricle is defined as a localized dilation or enlargement of the right ventricular wall.
1260	Aneurysm, Ventricular, Left (including pseudoaneurysm)	An aneurysm of the left ventricle is defined as a localized dilation or enlargement of the left ventricular wall.
1270	Aneurysm, Pulmonary artery	An aneurysm of the pulmonary artery is defined as a localized dilation or enlargement of the pulmonary artery trunk and its central branches (right and left pulmonary artery).
1280	Aneurysm, Other	A localized dilation or enlargement of a cardiac vessel or chamber not coded in specific fields available for aortic aneurysm, sinus of Valsalva aneurysm, coronary artery aneurysm, right ventricular aneurysm, left ventricular aneurysm, or pulmonary artery aneurysm.
1290	Hypoplastic RV	Small size of the right ventricle. This morphological abnormality usually is an integral part of other congenital cardiac anomalies and, therefore, frequently does not need to be coded separately. It should, however, be coded as secondary to an accompanying congenital cardiac anomaly if the right ventricular hypoplasia is not considered an integral and understood part of the primary congenital cardiac diagnosis. It would rarely be coded as a primary and/or isolated diagnosis.
1300	Hypoplastic LV	Small size of the left ventricle. This morphological abnormality usually is an integral part of other congenital cardiac anomalies and, therefore, frequently does not need to be coded separately. It should, however, be coded as secondary to an accompanying congenital cardiac anomaly if the left ventricular hypoplasia is not considered an integral and understood part of the primary congenital cardiac diagnosis. It would rarely be coded as a primary and/or isolated diagnosis.
2070	Postoperative bleeding	Indicate if the patient has the diagnosis of “Postoperative bleeding”.
1310	Mediastinitis	Inflammation/infection of the mediastinum, the cavity between the lungs which holds the heart, great vessels, trachea, esophagus, thymus, and connective tissues. In the United States mediastinitis occurs most commonly following chest surgery.
2910	Mediastinitis, Wound infection, Deep	
2920	Mediastinitis, Wound infection,Superficial	
1320	Endocarditis	An infection of the endocardial surface of the heart, which may involve one or more heart valves (native or

1320		prosthetic) or septal defects or prosthetic patch material placed at previous surgery.
1325	Rheumatic heart disease	Heart disease, usually valvar (e.g., mitral or aortic), following an infection with group A streptococci
1330	Prosthetic valve failure	Indicate if the patient has the diagnosis of “Prosthetic valve failure”. This diagnosis is the primary diagnosis to be entered for patients undergoing replacement of a previously placed valve (not conduit) prosthesis, whatever type (e.g., bioprosthetic, mechanical, etc.). Failure may be due to, among others, patient somatic growth, malfunction of the prosthesis, or calcification or overgrowth of the prosthesis (e.g., pannus formation). Secondary or fundamental diagnosis would relate to the underlying valve disease entity. As an example, a patient undergoing removal or replacement of a prosthetic pulmonary valve previously placed for pulmonary insufficiency after repair of tetralogy of Fallot would have as a primary diagnosis “Prosthetic valve failure”, as a secondary diagnosis “Pulmonary insufficiency”, and as a fundamental diagnosis “Tetralogy of Fallot”.
1340	Myocardial infarction	A myocardial infarction is the development of myocardial necrosis caused by a critical imbalance between the oxygen supply and demand of the myocardium. While a myocardial infarction may be caused by any process that causes this imbalance it most commonly results from plaque rupture with thrombus formation in a coronary vessel, resulting in an acute reduction of blood supply to a portion of the myocardium. Myocardial infarction is a usual accompaniment of anomalous left coronary artery from the pulmonary artery (ALCAPA).
1350	Cardiac tumor	An abnormal growth of tissue in or on the heart, demonstrating partial or complete lack of structural organization, and no functional coordination with normal cardiac tissue. Commonly, a mass is recognized which is distinct from the normal structural components of the heart. A primary cardiac tumor is one that arises directly from tissues of the heart, (e.g., myxoma, fibroelastoma, rhabdomyoma, fibroma, lipoma, pheochromocytoma, teratoma, hemangioma, mesothesioloma, sarcoma). A secondary cardiac tumor is one that arises from tissues distant from the heart, with subsequent spread to the otherwise normal tissues of the heart, (e.g., renal cell tumor with caval extension from the kidney to the level of the heart or tumor with extension from other organs or areas of the body (hepatic, adrenal, uterine, infradiaphragmatic)). N.B., in the nomenclature system developed, cardiac thrombus and cardiac vegetation are categorized as primary cardiac tumors.
2930	Cardiac tumor, Ventricular fibroma	
2940	Cardiac tumor, Ventricular rhabdomyoma	
2950	Cardiac tumor, Atrial myxoma	
2960	Pericardial teratoma	

1360	Pulmonary AV fistula	An abnormal intrapulmonary connection (fistula) between an artery and vein that occurs in the blood vessels of the lungs. Pulmonary AV fistulas may be seen in association with congenital heart defects; the associated cardiac defect should be coded as well.
1370	Pulmonary embolism	A pulmonary embolus is a blockage of an artery in the lungs by fat, air, clumped tumor cells, or a blood clot.
1385	Pulmonary vascular obstructive disease	Pulmonary vascular obstructive disease (PVOD) other than those specifically defined elsewhere (Eisenmenger's pulmonary vascular obstructive disease, primary pulmonary hypertension, persistent fetal circulation). The spectrum includes PVOD arising from (1) pulmonary arterial hypertension or (2) pulmonary venous hypertension or (3) portal hypertension, or (4) collage vascular disease, or (5) drug or toxin induced, or (6) diseases of the respiratory system, or (7) chronic thromboembolic disease, among others.
1390	Pulmonary vascular obstructive disease (Eisenmenger's)	"Eisenmenger syndrome" could briefly be described as "Acquired severe pulmonary vascular disease associated with congenital heart disease (Eisenmenger)". Eisenmenger syndrome is an acquired condition. In Eisenmenger-type pulmonary vascular obstructive disease, long-term left-to-right shunting (e.g., through a ventricular or atrial septal defect, patent ductus arteriosus, aortopulmonary window) can lead to chronic pulmonary hypertension with resultant pathological changes in the pulmonary vessels. The vessels become thick-walled, stiff, noncompliant, and may be obstructed. In Eisenmenger syndrome, the long-term left-to-right shunting will reverse and become right to left. Please note that the specific heart defect should be coded as a secondary diagnosis.
1400	Primary pulmonary hypertension	Primary pulmonary hypertension is a rare disease characterized by elevated pulmonary artery hypertension with no apparent cause. Two forms are included in the nomenclature, a sporadic form and a familial form which can be linked to the BMPR-II gene.
1410	Persistent fetal circulation	Persistence of the blood flow pattern seen in fetal life, in which high pulmonary vascular resistance in the lungs results in decreased blood flow to the lungs. Normally, after birth pulmonary pressure falls with a fall in pulmonary vascular resistance and there is increased perfusion of the lungs. Persistent fetal circulation, also known as persistent pulmonary hypertension of the newborn, can be related to lung or diaphragm malformations or lung immaturity.
1420	Meconium aspiration	Aspiration of amniotic fluid stained with meconium before, during, or after birth can lead to pulmonary sequelae including (1) pneumothorax, (2) pneumomediastinum, (3) pneumopericardium, (4) lung infection, and (5) meconium aspiration syndrome (MAS) with persistent pulmonary hypertension.
2250	Kawasaki disease	Kawasaki disease, also known as Kawasaki syndrome, is

2250		an acute febrile illness of unknown etiology that primarily affects children younger than 5 years of age. it was first described in Japan in 1967, and the first cases outside of Japan were reported in Hawaii in 1976. It is characterized by fever, rash, swelling of the hands and feet, irritation and redness of the whites of the eyes, swollen lymph glands in the neck, and irritation and inflammation of the mouth, lips, and throat. Serious complications of Kawasaki disease include coronary artery dilatations and aneurysms, and Kawasaki disease is a leading cause of acquired heart disease in children in the United States. The standard treatment with intravenous immunoglobulin and aspirin substantially decreases the development of coronary artery abnormalities.
1560	Cardiac, Other	Any cardiac diagnosis not specifically delineated in other diagnostic codes.
1570	Thoracic and/or mediastinal, Other	Any thoracic and/or mediastinal disease not specifically delineated in other diagnostic codes.
1580	Peripheral vascular, Other	Any peripheral vascular disease (congenital or acquired) or injury (from trauma or iatrogenic); vessels involved may include, but are not limited to femoral artery, femoral vein, iliac artery, brachial artery, etc.
2260	Complication of cardiovascular catheterization procedure	Unspecified complication of cardiovascular catheterization procedure
2270	Complication of cardiovascular catheterization procedure, Device embolization	Migration or movement of device introduced during a cardiac catheterization procedure to an unintended location
2280	Complication of cardiovascular catheterization procedure, Device malfunction	Malfunction of a device introduced during a cardiac catheterization procedure
2290	Complication of cardiovascular catheterization procedure, Perforation	Perforation or puncture caused by a device introduced during a cardiac catheterization procedure
2300	Complication of interventional radiology procedure	Unspecified complication of interventional radiology procedure
2310	Complication of interventional radiology procedure, Device embolization	Migration or movement of device introduced during an interventional radiology procedure to an unintended location
2320	Complication of interventional radiology procedure, Device malfunction	Malfunction of a device introduced during an interventional radiology procedure
2330	Complication of interventional radiology procedure, Perforation	Perforation or puncture caused by a device introduced during an interventional radiology procedure
2340	Foreign body, Intracardiac foreign body	Presence of a foreign body within the heart
2350	Foreign body, Intravascular foreign body	Presence of a foreign body within an artery or vein
2360	Open sternum with closed skin	Sternotomy edges not re-approximated prior to closure of skin incision

	2370	Open sternum with open skin (includes membrane placed to close skin)	Sternotomy and skin incision left open following surgery, covered with a membrane or dressing
	2380	Retained sternal wire causing irritation	Surgically placed wire causing soft tissue irritation, pain or swelling (not infected)
	2390	Syncope	A transient, self-limited loss of consciousness with an inability to maintain postural tone that is followed by spontaneous recovery. The term syncope excludes seizures, coma, shock, or other states of altered consciousness.
	2400	Trauma, Blunt	Injury (ies) sustained from blunt force, caused by motor vehicle accidents, falls, blows or crush injuries
	2410	Trauma, Penetrating	Injury (ies) sustained as a result of sharp force, including cutting or piercing instruments or objects, bites, or firearm injuries from projectiles.
	2560	Cardio-respiratory failure not secondary to known structural heart disease	
	2570	Myocarditis	
	2580	Common AV valve insufficiency	
	2970	Common AV valve stenosis	
	2590	Protein-losing enteropathy	
	2600	Plastic bronchitis	
	7000	Normal heart	Normal heart.
	7777	Miscellaneous, Other	Any disease (congenital or acquired) not specifically delineated in other diagnostic codes.
	1590	Status post - Transplant, Heart	
	1610	Status post - Transplant, Heart and lung	
	1600	Status post - Transplant, Lung(s)	
Retired	2040	Arrhythmia, Atrial	Indicate if the patient has the diagnosis of ‘‘Arrhythmia, Atrial’’. ‘‘Arrhythmia, Atrial’’ ROOT Definition = Non-sinus atrial rhythm with or without atrioventricular conduction. [1]. [1]. Jacobs JP. (Editor). 2008 Supplement to Cardiology in the Young: Databases and The Assessment of Complications associated with The Treatment of Patients with Congenital Cardiac Disease, Prepared by: The Multi-Societal Database Committee for Pediatric and Congenital Heart Disease, Cardiology in the Young, Volume 18, Supplement S2, pages 1 –530, December 9, 2008, page 373.

Encounter medical diagnosis

Seq Num: 2560

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUDiagMedical]

Description: Code the medical condition or diagnosis that most directly indicates admission to CICU service. This diagnosis should be the patient's final diagnosis, not necessarily what was suspected at the time of CICU admission. For example, a patient admitted with respiratory failure who ultimately was found to have transplant rejection should be coded as "Cardiovasc - Heart transplant rejection." If this is the initial CICU encounter during a hospitalization, and the reason for CICU care is entirely explained by the encounter cardiothoracic diagnosis, you may select "None" for the encounter medical diagnosis. We expect all CICU readmissions to have an encounter medical diagnosis in addition to the encounter cardiothoracic diagnosis (except in the case where a readmission to the CICU is directly from the cardiac OR).

Clarification 2/1/2025: If a patient was admitted preoperatively for a medical reason, please include a medical diagnosis even if the patient later went on to have cardiac surgery. (Example: a patient who is admitted after a cardiac arrest and goes on to have cardiac surgery during the same encounter should have cardiac arrest entered as the medical diagnosis.)

If a patient is readmitted and a medical diagnosis or encounter CT diagnosis from an earlier encounter is found to be incorrect based on new testing, do not go back and change the diagnosis from the previous encounter.

Additional clarifications are below between asterisks.

Values	*Code*	*Text*	
	0	None	
	14	Cardiovasc - Arrhythmia - Atrial fibrillation	
	16	Cardiovasc - Arrhythmia - Atrial flutter	
	18	Cardiovasc - Arrhythmia - Atrioventricular block, complete	
	22	Cardiovasc - Arrhythmia - Bradycardia	
	24	Cardiovasc - Arrhythmia - SVT	SVT separate from atrial flutter or atrial fibrillation, which would include paroxysmal SVT, ectopic atrial tachycardia, and AV node re-entrant tachycardia.
	26	Cardiovasc - Arrhythmia - Ventricular tachycardia	
	10	Cardiovasc - Cardiac arrest	Patient admitted to the CICU either in active cardiac arrest receiving CPR or resuscitated from cardiac arrest and presenting for post-arrest care. If there is an active underlying condition prompting the cardiac arrest, code this underlying condition as a complication present on arrival.
	194	Cardiovasc - Cardiac contusion	Confirmed or suspected cardiac contusion based on history of blunt trauma to chest wall and elevated cardiac enzymes (troponin/CK) or direct inspection of the

194		myocardium by a cardiothoracic surgeon.
2	Cardiovasc - Heart failure, Acute decompensated	Systolic or diastolic cardiac dysfunction that requires at least one of the following therapies: (1) continuous infusion of a vasoactive agent or diuretic agent; (2) respiratory support (non-invasive or invasive positive pressure ventilation); or (3) mechanical circulatory support. If heart failure due to acute myocarditis, use acute myocarditis as medical diagnosis **(Clarification 6/1/2023) Does not include intermittent infusion of any agent. (Clarification 2/1/2025) For a patient newly diagnosed with heart failure during the current hospitalization who has a waxing and waning course that results in multiple CICU encounters, continue to use the acute decompensated heart failure medical diagnosis if the patient meets the criteria. During the initial hospitalization for heart failure, there is no point that the patient would move into the chronic heart failure group as that requires being on support at home. **
200	Cardiovasc - Heart failure, Chronic or acute on chronic	Chronic or acute on chronic heart failure which was managed prior the admission with heart failure medications and/or mechanical circulatory support and requiring the initiation of at least one of the following therapies: 1) new or increased dose of diuretic therapy (IV or enteral), 2) continuous infusion of a new vasoactive agent or increased dose of an existing vasoactive agent, 3) increased respiratory support (HFNC, non-invasive or invasive mechanical ventilation), 4) new mechanical circulatory support.
4	Cardiovasc - Heart transplant rejection	Treatment with anti-rejection medical therapy, or biopsy or explant documented heart transplant rejection (before or after therapy). If patient has acute decompensated heart failure due to rejection, use this diagnosis not acute decompensated heart failure. **(Clarification 6/1/2023) Includes patients admitted to the CICU with other conditions (e.g., respiratory failure) who are later determined to be in rejection. (Clarification 2/1/2025) If a patient is found to have post-transplant coronary vasculopathy, code as "other diagnosis" and not as rejection. **
201	Cardiovasc - Inadequate pulmonary blood flow	Hypoxemia caused by inadequate pulmonary blood flow either confirmed by echo and/or angiogram or suspected clinically after ruling out all other causes. If inadequate pulmonary blood flow is due to pulmonary hypertension or pulmonary embolism, then those should be used as the medical diagnosis.

202	Cardiovasc - Myocarditis, acute	New diagnosis of cardiac dysfunction and/or rhythm disturbance suspected to be secondary to acute myocarditis requiring at least one of the following therapies: (1) continuous infusion of a vasoactive agent; (2) respiratory support (HFNC, CPAP/BiPAP, mechanical ventilation); (3) mechanical circulatory support. ** (Clarification 6/1/2023) Patients who don't meet this criteria but are diagnosed with myocarditis via MRI can be coded as Other. **
203	Cardiovasc - Myocarditis, acute, infective	Acute myocarditis, as defined above, proven to be infectious by myocardial biopsy, MRI, and/or positive serologies. ** (Clarification 6/1/2023) Patients who don't meet this criteria but are diagnosed with myocarditis via MRI can be coded as Other. **
6	Cardiovasc - Pacemaker malfunction	Permanent pacemaker malfunction requiring ICU level monitoring and/or therapy.
40	Cardiovasc - Pericardial effusion	Pericardial effusion requiring intensive care level monitoring, medical therapy, and/or drainage
204	Cardiovasc - Pulmonary embolism	Pulmonary embolism is defined as the embolization of a clot or other foreign material to the pulmonary vasculature documented by CT angiogram, nuclear medicine scan, MRI or angiography. This would include patients with superior cavopulmonary anastomosis or Fontan physiology.
30	Cardiovasc - Pulmonary hypertension	The primary reason the patient is admitted to the CICU is for management of pulmonary hypertension. This could include patients newly diagnosed with pulmonary hypertension during this CICU encounter, initiation of pulmonary antihypertensive therapy, or for management of pulmonary hypertension in a patient who is currently being treated with medical (e.g. iNO, sildenafil, bosentan, etc.) therapy.
205	Cardiovasc - Syncope/near syncope	Sudden loss of consciousness without cardiac arrest. If the patient is admitted following a syncopal event and a more definitive diagnosis is identified during the hospitalization, the definitive diagnosis should be used. For example, a patient admitted after a syncopal event who is diagnosed with pulmonary hypertension should carry a medical diagnosis of pulmonary hypertension
206	Cardiovasc - VAD malfunction	Admission for VAD malfunction. Complications related to VAD with specific diagnosis (such as stroke) should be entered with specific diagnosis as the medical diagnosis.
182	GI - Bowel obstruction, unspecified	Gastric outlet, small bowel obstruction, or large bowel obstruction requiring CICU level monitoring/intervention and/or surgical intervention.
184	GI - GI tract hemorrhage, unspecified	Upper or lower GI tract hemorrhage requiring CICU level monitoring and/or transfusion.
207	GI - Hepatic injury	New onset hepatic dysfunction characterized by an ALT >

207		500.
189	GI - Necrotizing enterocolitis (Bell's criteria)	NEC is defined as Bell's criteria II or III: ileus, pneumatosis, portal vein gas, ascites, and /or pneumoperitoneum AND antibiotics/NPO for > 6 days.
208	GI - PLE	Protein Losing Enteropathy defined as (1) clinical manifestations (peripheral edema, abdominal distention or discomfort, diarrhea, ascites, pleural or pericardial effusion), and (2) serum albumin < 3.5 g/dL and/or serum protein < 6.3 g/dL, or (3) documentation of increased enteric protein loss by fecal alpha 1 anti-trypsin (>27 ml/24 hr without diarrhea and >56 ml/24 hr with diarrhea), spot fecal alpha 1 anti-trypsin concentration (>54 mg/dL) or nuclear scintigraphy.
146	Infectious - Bronchiolitis or other respiratory infection, viral due to RSV	Clinical RSV infection confirmed by PCR or immunoassay. If a patient has respiratory failure or insufficiency due to RSV, use this diagnosis not respiratory failure or respiratory insufficiency.
144	Infectious - Bronchiolitis or other respiratory infection, viral other	Non-RSV viral infection with or without a positive PCR for a known viral pathogen. If a patient has respiratory failure or insufficiency due to a non-RSV viral infection, use this diagnosis not respiratory failure or respiratory insufficiency. ** (Clarification 6/1/2023) Please also use this diagnosis to code COVID19, unless you are coding myocarditis. **
20	Infectious - Endocarditis	Endocarditis as defined by the Duke criteria. This may include infections that began at another institution or at home. These infections may not be adjudicated by the local infection control personnel or person responsible for adjudicating infections because they would not be attributed to the CICU.
162	Infectious - Gastroenteritis	Diarrhea and/or vomiting not due to NEC or other cause (e.g. intestinal obstruction). Does not require positive rotavirus screen.
148	Infectious - Meningitis, bacterial	Fever with lumbar puncture showing positive CSF culture.
154	Infectious - Pneumonia	Clinical diagnosis of pneumonia characterized by fever, increased WBC, and chest X-ray change. If a patient has respiratory failure or insufficiency due to pneumonia, use this diagnosis not respiratory failure or respiratory insufficiency.
140	Infectious - Sepsis	Temperature instability and abnormal WBC (leukopenia or leukocytosis) and hemodynamic instability requiring at least one of the following: (1) volume > 40 cc/kg; (2) new or increased inotropic support; or (3) new or increased mechanical ventilation support. ** (Clarification 6/1/2023) New or increased mechanical ventilation support refers ONLY to invasive ventilation. **
152	Infectious - Surgical site infection, deep	Deep surgical site infection, as defined by the CDC (requiring incision and drainage). This may include infections that began at another institution or at home. These infections may not be adjudicated by the local

152		infection control personnel or person responsible for adjudicating infections because they would not be attributed to the CICU.
153	Infectious - Surgical site infection, superficial	Superficial surgical site infection, as defined by the CDC. This may include infections that began at another institution or at home. These infections may not be adjudicated by the local infection control personnel or person responsible for adjudicating infections because they would not be attributed to the CICU.
164	Infectious - Urinary tract infection	UTI, as defined by the CDC; select this only if it has been adjudicated by the local infection control personnel or the clinician responsible for adjudicating infections for the purpose of external reporting. This may include infections that began at another institution or at home. These infections may not be adjudicated by the local infection control personnel or person responsible for adjudicating infections because they would not be attributed to the CICU.
172	Neuro - Hypoxic-ischemic brain injury	Hypoxic-ischemic brain injury diagnosed by MRI/CT.
209	Neuro - Intracranial hemorrhage	New or previously unsuspected focus of discrete central nervous system injury consistent with hemorrhage. Patients with hemorrhagic stroke or hemorrhagic conversion of a thromboembolic stroke should be coded as stroke.
160	Neuro - Seizure	
192	Neuro - Skull fracture with intracranial hemorrhage	
170	Neuro - Stroke	Clinical evidence of stroke with thrombotic and/or embolic changes on MRI or CT.
176	Neuro - VP shunt dysfunction	
80	Resp - Chylothorax	
211	Resp - Hemothorax	
212	Resp - Plastic bronchitis	Requires documentation of airway casts at bronchoscopy (on this or a previous admission) or at autopsy.
90	Resp - Pleural effusion	
110	Resp - Pneumothorax	
84	Resp - Pulmonary hemorrhage (hemoptysis)	
82	Resp - Respiratory failure, acute	Respiratory failure requiring institution of invasive mechanical ventilation at the time of or within the first hour of ICU admission. This includes patients intubated for acute respiratory failure at another hospital or in another ward/unit in the current hospital who were admitted to the CICU for management of respiratory failure. This excludes chronically ventilated patients and those who require ongoing respiratory support from a procedure suite (OR, cath lab, etc.).
120	Resp - Respiratory insufficiency	Respiratory insufficiency requiring initiation of HFNC or any form of non-invasive positive pressure at the time of

	120		or within the first hour of CICU admission. This excludes patients who require ongoing respiratory support from a procedure suite (OR, cath lab, etc) or patients requiring respiratory support for procedural sedation.
	196	Other - Drug overdose	Inappropriate pharmacologic therapy (intentional or unintentional) requiring ICU monitoring or intervention.
	210	Other - ICU therapy at home	Patient is receiving ICU level therapy at home (mechanical ventilation, VAD, milrinone, treprostinil, etc) and requires admission for a non-ICU indication but home therapy can only be delivered in the ICU.
	178	Other - Intracardiac tumor	
	180	Other - Oncologic process	
	130	Other - Renal failure, acute	Oliguria with sustained urine output < 0.5 cc/kg/hr for 6 hours and/or a rise in creatinine > 1.5 times upper limits of normal for age.
	190	Other - Rhabdomyolisis	Patient admitted with rhabdomyolysis consisting of CPK elevation or myoglobinuria.
	198	Other - DNR / hospice care	Patients with DNR/DNI order at admission or created within the first hour after admission. This diagnosis is intended to capture patients admitted for comfort care only. ** (Clarification 6/1/2023) If the DNR/DNI order was put in place more than 1 hour after CICU admission, or if the existing order is cancelled at any time during the CICU admission, do not use this diagnosis. If any attempt was made to provide life sustaining/curative therapy to the patient, then DNR/DNI should NOT be coded as the medical diagnosis. **
	800	Other	
Retired	100	Infectious - Pneumonia	
Retired	150	Infectious - Wound infection	
Retired	50	Cardiovascular dysfunction	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial - Venous oxygen saturation, need to open the chest, or need for mechanical support.
Retired	60	Other - Postoperative bleeding	
Retired	70	Cardiovasc - Arrhythmia	
Retired	188	Other - Necrotizing enterocolitis	Evidence of clinical deterioration (apnea, bradycardia, temperature instability, metabolic/lactic acidosis, oliguria, hypotension, biochemical derangement) with associated radiographic (pneumatosis, portal venous free air, fixed/prominent bowel loops, pneumoperitoneum) and gastrointestinal findings (bloody stools, absent bowel sounds, abdominal wall distention/edema/erythema, persistent gastric residuals, surgical intervention).

Medical diagnosis - specify

Seq Num: 2561

Required for case closure: No

Registry field: [CICUEncounter].[CICUDiagMedicalSpec]

Description: If the medical diagnosis is "Other", specify

Source of CICU admission

Seq Num: 2580

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUAdmitSource]

Description: Indicate the patient's location immediately prior to this CICU encounter

Values

Code	*Text*
1	Home
2	Current hospital
3	Outside hospital

Specific source of CICU admission

Seq Num: 2600

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUAdmitSourceDesc]

Description: If the patient was hospitalized prior to this CICU encounter, indicate the specific source of transfer to the CICU.

Values

Code	*Text*	
1	Clinic	Current hospital - clinic
2	ED	Current hospital - ED
3	Ward-cardiac	Current hospital - Cardiac ward
4	Ward-non-cardiac	Current hospital - Non-cardiac ward
5	OR-cardiac	Current hospital - Cardiac OR
6	OR-general	Current hospital - General OR
7	Cath lab	Current hospital - Cath lab
8	PACU/Procedure suite	Current hospital - PACU/Procedure suite **(Clarification 2/1/2025) This includes imaging suites. **
9	Delivery suite	Current hospital - Delivery suite
10	NICU service	Current hospital - NICU service. Only select NICU service if the CICU attending was not the primary caregiver in that setting
11	PICU service	Current hospital - PICU service. Only select PICU service if the CICU attending was not the primary caregiver in that setting
12	Adult ICU service	Current hospital - Adult ICU service. Only select adult ICU service if the CICU attending was not the primary caregiver in that setting
21	OSH - ED	Outside hospital - ED
22	OSH - Floor	Outside hospital - Floor
23	OSH - NICU / Delivery suite	Outside hospital - NICU or delivery suite
24	OSH - PICU	Outside hospital - PICU
25	OSH - CICU	Outside hospital - CICU
26	OSH - Adult ICU	Outside hospital - Adult ICU

Weight (kg) at CICU admit

Seq Num: 2760

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUWtAdmit]

Description: Indicate the patient's weight in kg closest to the CICU admit date/time or the presumed dry weight as noted in the medical record.

Permanent feeding tube at CICU admit

Seq Num: 2805

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUpermTube]

Description: Indicate Yes if patient has a permanent feeding tube (gastrostomy or jejunal gastrostomy tube) at time of CICU admission

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Existing trach at CICU admission

Seq Num: 2810

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUTrach]

Description: Indicate Yes if the patient had an actively cannulated tracheostomy at the time of CICU admission.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Advance directive at CICU admission

Seq Num: 2806

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUadvDirective]

Description: If patient age is >= 18 years, was there an advance directive in the medical record at the time of CICU admission.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Any non-cardiothoracic surgery during the encounter

Seq Num: 2920

Required for case closure: Yes

Registry field: [CICUEncounter].[NCSurgEnc]

Description: Indicate Yes if the patient had any non-cardiothoracic surgery after CICU admission.

Clarification 6/1/2023: If a corrective procedure was done during a bronchoscopy (e.g. balloon of subglottic stenosis, removal of granulation tissue, etc.) it may be captured as non-cardiothoracic surgery.

Otherwise, isolated bronchoscopies and endoscopies should NOT be coded here.

If a bronchoscopy is performed as part of a cardiothoracic (STS) surgery, capture it in the 'Therapy - Bronchoscopy' (#6280) field if it occurred during the PC4 encounter.

Clarification 2/1/2025: Code Yes here even if the procedure was not performed in the operating room. (Example: emergent tracheostomy done at the bedside.)

Please capture IR procedures here, and specify the procedure under "Other."

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Non-cardiothoracic surgery date

Seq Num: 2980

Required for case closure: Yes

Registry field: [NCSurg].[NCSurgDt]

Description: Date the non-cardiothoracic surgery was performed.

Non-cardiothoracic surgery type

Seq Num: 3000

Required for case closure: Yes

Registry field: [NCSurg].[NCSurg]

Description: Type of non-cardiothoracic surgery performed.

Values

Code	*Text*
20	ENT - Cervical tracheoplasty
40	ENT - Cleft lip and palate repair
210	ENT - Incision and drainage of peritonsilar or retropharyngeal abscess
30	ENT - Laryngoplasty
10	ENT - Tracheostomy
420	ENT - Tympanoplasty
7000	ENT - Other
170	General surg - Abdominal laparoscopic procedure
360	General surg - Cholecystectomy
260	General surg - Correction of malrotation
250	General surg - Gastric restrictive procedure
240	General surg - Gastrostomy or gastrojejunostomy tube placement, open
230	General surg - Gastrostomy or gastrojejunostomy tube placement, percutaneous
280	General surg - Hernia repair
220	General surg - Nissen procedure with or without gastrostomy tube placement
100	General surg - Pectus excavatum repair
330	General surg - Proctectomy
270	General surg - Reduction of volvulus, intussusception, or internal hernia
200	General surg - Repair of diaphragmatic hernia
180	General surg - Repair of hiatal hernia
390	General surg - Repair of omphalocele or gastroschisis
320	General surg - Repair of perforated

320	colon
310	General surg - Repair of perforated small intestine
190	General surg - Repair of tracheoesophageal fistula
300	General surg - Resection of colon
340	General surg - Resection of liver
290	General surg - Resection of small intestine
160	General surg - Splenectomy
7050	General surg - Other
410	Neurosurg - Craniectomy or craniotomy
50	Neurosurg - Creation or revision of ventriculo-peritoneal or –pleural shunt
60	Neurosurg - Repair of myelomeningocele
7100	Neurosurg - Other
90	Oncologic - Excision of abdominal tumor
70	Oncologic - Excision of benign mass
80	Oncologic - Excision of chest wall tumor
7150	Oncologic - Other
140	Ortho - Fasciotomy
120	Ortho - Open repair of fracture, joint dislocation
130	Ortho - Other open orthopedic procedure
110	Ortho - Spinal fusion, insertion of spinal fixation device, or removal of spinal hardware
7200	Ortho - Other
380	Transplant - Kidney
350	Transplant - Liver
7250	Transplant - Other
400	Urology - Bladder, uterine, or ovarian surgery
370	Urology - Resection of kidney
7300	Urology - Other
150	Vasc - Repair of systemic artery with or without graft
430	Vasc - Tunneled venous catheter placement

440	Vasc - Tunneled venous catheter removal
7350	Vasc - Other
7777	Other non-cardiothoracic surgery

Non-cardiothoracic surgery - specify

Seq Num: 3001

Required for case closure: No

Registry field: [NCSurg].[NCSurgSpec]

Description: Specify the type of non-cardiothoracic surgery

Multiple venues

Seq Num: 2820

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUMultiVenues]

Description: During this encounter, was the patient cared for in more than one ICU venue (i.e., CICU, NICU, PICU, adult ICU) while under CICU care.

Values

Code	*Text*
1	Yes
0	No

Venue

Seq Num: 2860

Required for case closure: Yes

Registry field: [Venue].[Venue]

Description: Document each ICU venue in which the patient was located while under CICU care. For each venue, you will be asked the admission and discharge dates/times.

Values

Code	*Text*
1	CICU
2	NICU
3	PICU
4	Adult ICU

Venue start date/time

Seq Num: 2880

Required for case closure: Yes

Registry field: [Venue].[VenueStartDtTm]

Description: Indicate the date/time the patient was physically admitted to this venue

Venue end date/time

Seq Num: 2900

Required for case closure: Yes

Registry field: [Venue].[VenueEndDtTm]

Description: Indicate the date/time the patient was physically discharged from this venue

Weight (kg) at CICU discharge

Seq Num: 2780

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUWtDisch]

Description: Indicate the patient's weight in kg closest to the CICU discharge date/time.

CICU disposition

Seq Num: 2620

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUDispo]

Description: Indicate the disposition at CICU discharge date/time

Clarification 6/1/2023: Patients discharged to home on hospice care should be coded as 5 - Hospice.

Values

Code	*Text*
1	Home
2	Current hospital
3	Outside hospital
5	Hospice
4	Deceased

Specific CICU disposition

Seq Num: 2640

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUDispoDesc]

Description: If the patient was transferred to another ward or service, indicate the specific location/service.

Clarification 2/1/2025: Prioritize service caring for the patient over physical location. For example, if patient is being cared for by cardiology/CV surgery services, even if not physically located on the cardiac ward due to bed availability or other reasons, code disposition as cardiac ward.

Values	*Code*	*Text*	
	1	Ward - Cardiac	
	8	Ward-Cardiac via procedure suite/OR	Patient was sent to OR/procedure suite from ICU with planned admission to cardiac ward thereafter
	2	Ward - Noncardiac	
	3	NICU service	
	4	PICU service	
	5	Adult ICU service	
	6	OSH - CICU	
	7	Rehab unit	

Withdrawal of life-sustaining therapy

Seq Num: 2740

Required for case closure: Yes

Registry field: [CICUEncounter].[CICULSTWithdraw]

Description: If the disposition status is deceased, indicate whether life-sustaining therapy withdrawn during this encounter.

Clarification 2/1/2025: If parents request active resuscitation be stopped in a patient who did not have a limitation of care order prior to the start of the resuscitation, code No for withdrawal of life-sustaining therapy.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

CICU critical care end date/time

Seq Num: 2340

Retired in version 2.0

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUEndDtTm]

Description: Date and time the CICU attending physician deems the patient medically ready to leave CICU service.

Initial CICU encounter

Seq Num: 2500

Retired in version 2.0

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUInit]

Description: Select Yes if this is the patient's first CICU encounter during this hospital stay.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Change in cardiothoracic diagnosis from initial encounter

Seq Num: 2520

Retired in version 2.0

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUDiagChange]

Description: If this is not the initial CICU encounter during the hospital stay, indicate whether the primary cardiothoracic anatomy/physiology requiring care in the CICU differs from the initial CICU encounter during this hospitalization. For example, a patient's whose initial CICU encounter was for surgical repair of AVSD would have an initial encounter cardiothoracic diagnosis of "AVC (AVSD), Complete." After discharge from the CICU, the patient develops mitral stenosis requiring readmission to the CICU for respiratory insufficiency. The encounter cardiothoracic diagnosis for this readmission ("Mitral stenosis") is different from his initial encounter. Code this patient as Yes.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

DNR/DNI on File

Seq Num: 2660

Retired in version 2.0

Required for case closure: Yes

Registry field: [CICUEncounter].[DNROnFile]

Description: Indicate whether a DNR/DNI order was on file at any point during this CICU encounter. This includes orders written prior to or during the encounter.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Existing pacemaker/AICD at CICU admission

Seq Num: 2800

Retired in version 2.0

Required for case closure: Yes

Registry field: [CICUEncounter].[CICUDefib]

Description: Indicate Yes if the patient had a permanent implanted pacemaker/AICD at the time of CICU admission.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Respiratory Support

Invasive ventilation

Seq Num: 3040

Required for case closure: Yes

Registry field: [CICUEncounter].[MechVent]

Description: Indicate whether the patient was ever on invasive ventilation during this CICU encounter. If Yes, you will be asked to document each course. Courses that began prior to this encounter should be included if they continued after the CICU service became responsible for care.

Clarification 6/1/2023: This only includes patients receiving support through an endotracheal tube or trach. It does not include patients receiving support via a laryngeal mask airway (LMA).

CPAP support delivered via a conventional ventilator for a trached patient should be coded as mechanical ventilation with a mode type of 'Conventional' (#3480).

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Invasive ventilation began at CICU start

Seq Num: 3210

Required for case closure: Yes

Registry field: [MechanicalVent].[MechVentCICUInit]

Description: Did this course of invasive ventilatory support begin at CICU admission? This includes ventilated patients directly admitted to the CICU from the OR/cath lab if they had NOT been on vent prior to their procedure. If the patient was extubated in the OR/cath lab prior to arrival or was intubated prior to the procedure, please check No.

Clarification 6/1/2023: There are two situations where the answer to this question is Yes, and the CICU admit date/time should be used as the intubation date/time:

1) The CICU admission begins immediately post-procedure (surgery or cath). Ventilator support was initiated during the procedure (i.e., the patient was not on support in the immediate preop period) and was admitted to the CICU still on vent.

OR

2) A patient is admitted to your hospital on vent support and goes directly to the CICU. This includes patients on home vent support and those transferred from an outside hospital if they were admitted directly to the CICU.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No

Ventilation start date/time

Seq Num: 3220

Required for case closure: Yes

Registry field: [MechanicalVent].[IntubDtTm]

Description: For each course of invasive ventilatory support, indicate the date/time it started. If the patient arrived on vent support from the OR or procedure suite and had NOT been on vent prior to their procedure, use the post-procedure CICU arrival time. If this ventilation course began prior to hospital admission, please use the hospital admit date/time. In all other cases, use the actual date/time this course began.

Clarification 6/1/2024: If the patient was on invasive ventilation during this hospitalization but prior to CICU admission, please list the actual date and time support began. The only exception to this is for patients who arrive on vent from the OR or procedure suite who were NOT on vent prior to their surgery/procedure. For these patients, use the post-procedure CICU arrival date/time.

If the course of vent began prior to this hospitalization, please enter the hospital admit date/time.

This logic should also be applied to patients who remain on vent at the end of the CICU encounter. If the course ends during this hospitalization, enter the actual end date/time. If this is unknown or the patient remained on support at hospital discharge, use the hospital discharge date/time.

Ventilated for procedure

Seq Num: 3223

Required for case closure: Yes

Registry field: [MechanicalVent].[IntubProc]

Description: Did this course of ventilation begin either during or for the purpose of undergoing a procedure? If the patient was on vent support prior to the procedure and it continued until the procedure start time, code No.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Invasive ventilation at CICU discharge

Seq Num: 3240

Required for case closure: Yes

Registry field: [MechanicalVent].[MechVentCICUEnd]

Description: For each course of invasive ventilation, select Yes if the patient remained on invasive ventilator support at the end of the CICU encounter. This includes patients who expired while intubated.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No

Vent end date known

Seq Num: 3260

Required for case closure: Yes

Registry field: [MechanicalVent].[ExtubDtKnown]

Description: If the patient remained on ventilator support at the end of the CICU encounter, indicate whether the vent end date is known. If this course of support continued through the end of this hospital admission, answer Yes and use the hospital discharge date/time for the vent end date/time.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No

Ventilation end date/time

Seq Num: 3280

Required for case closure: Yes

Registry field: [MechanicalVent].[ExtubDtTm]

Description: For each course of invasive ventilation, indicate the date/time it ended, whether by planned or unplanned extubation. Please note, a planned airway exchange does not signify the end of a course of support. If the patient had been on vent support prior to a procedure but was extubated in the OR/PACU, use the surgery end time. For patients with a tracheostomy, this is the date/time when they are not mechanically ventilated (by any mode, IMV, CPAP, etc.) for the following 24 hours. If the patient remained on a ventilator at hospital discharge, use the hospital discharge date/time. If the patient was on support at CICU discharge and the end date/time is unknown, this will default to noon on the hospital discharge date.

Clarification 6/1/2023: A vent course ends when either:

(1) the endotracheal tube is intentionally removed (or, for trached patients, the end of vent support by any mode) for the purpose of allowing the patient to breathe without ventilator support or (2) the endotracheal tube was inadvertently dislodged.

A tube that is removed and immediately replaced, for example to clear a mucus plug, is not an extubation and should not be coded here.

Was the extubation planned

Seq Num: 3300

Required for case closure: Yes

Registry field: [MechanicalVent].[ExtubPlanned]

Description: Did the physician write an extubation order prior to the end of this course of mechanical ventilation.

Clarification 6/1/2023: If a patient is extubated and immediately reintubated (for example, to remove a mucus plug), this is not an extubation; the planned/unplanned question is not applicable.

Patients taken off vent because the decision was made to withdraw life-sustaining therapy should be coded as a planned extubation.

If a patient expires while on vent, answer Yes to "Mechanical ventilation at CICU discharge" (#3240) which will deactivate this planned/unplanned question.

Clarification 2/1/2025: If a tracheostomy is accidently dislodged but uneventfully replaced without clinical deterioration, do not include as an extubation (and planned versus unplanned is moot). If an unintended trach dislodgement results in significant clinical deterioration, code as an unplanned extubation and start a new ventilation course after the trach is replaced and mechanical ventilation is resumed.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Initial support following invasive vent

Seq Num: 3305

Required for case closure: Yes

Registry field: [MechanicalVent].[ExtubSupport]

Description: Indicate the type of respiratory support provided immediately following discontinuation of mechanical ventilation.

Values	*Code*	*Text*
	1	CPAP or BiPAP
	2	HFNC
	3	Nasal cannula
	4	Other
	5	None
	9	Unk

Initial airway

Seq Num: 3226

Required for case closure: Yes

Registry field: [MechanicalVent].[AirwayInit]

Description: Indicate the type of airway at the beginning of this course.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Oral
	2	Nasal
	3	Trach
	9	Unk

Final airway

Seq Num: 3229

Required for case closure: Yes

Registry field: [MechanicalVent].[AirwayFinal]

Description: Indicate the type of airway at the end of this course.

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Oral
	2	Nasal
	3	Trach
	9	Unk

Tracheostomy date/time

Seq Num: 3232

Required for case closure: Yes

Registry field: [MechanicalVent].[AirwayTrachDtTm]

Description: If the patient began this course with an oral or nasal airway but ended with a trach, enter the date/time the tracheostomy was performed

Please see the Tracheostomy/Ventilation Scenarios table in the Appendix at the end of this document for coding examples.

Multiple Modes

Seq Num: 3440

Required for case closure: No

Registry field: [MechanicalVent].[MechVentModes]

Description: During this course of mechanical ventilation, was more than one mode of support used? If No, indicate the one mode in the space provided. If Yes, indicate each mode used and its associated start and end date/time.

Values	*Code*	*Text*
	1	Yes
	0	No

Mode type

Seq Num: 3480

Required for case closure: No

Registry field: [VentModes].[VentModeType]

Description: Mode of ventilator support

Values	*Code*	*Text*	
	1	Conventional (including bi-vent)	
	3	High-frequency	
Retired	2	Bi-Vent	Bi-Vent/APRV is a specific mode on Conventional ventilation. A change between Bi-Vent/APRV and Conventional should be documented as a distinct mode.

Mode start date/time

Seq Num: 3500

Required for case closure: No

Registry field: [VentModes].[VentModeStartDtTm]

Description: Date/time this modality began

Mode end date/time

Seq Num: 3520

Required for case closure: No

Registry field: [VentModes].[VentModeEndDtTm]

Description: Date/time this modality began

Positive airway pressure (PAP)

Seq Num: 3060

Required for case closure: Yes

Registry field: [CICUEncounter].[PosAirPress]

Description: Was the patient ever on CPAP or BiPAP during this CICU encounter? Courses that began prior to this encounter should be included if they continued after the CICU service became responsible for care. If Yes, document each course that occurred during this encounter. A course is defined as consecutive days during which the patient is on support for any part of that day.

Clarification 6/1/2023: For patients who are on CPAP or BiPAP every night and only at night, record this as a single course using the first date on as the start date, and the final date on as the end date. If there is ever a gap of at least one night when the patient is not on that support, start a new course when the support resumes.

This field includes patients receiving respiratory support via a RAM cannula.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

PAP at CICU start

Seq Num: 3620

Required for case closure: No

Registry field: [PAPSupport].[PAPCICUStart]

Description: Indicate Yes if the patient was on CPAP or BiPAP at the start of the CICU encounter. This would include patients arriving from the OR/procedural suite and extubated on arrival by anesthesia to CPAP or BiPAP.

Values	*Code*	*Text*
	1	Yes
	0	No

PAP start date

Seq Num: 3640

Required for case closure: No

Registry field: [PAPSupport].[PAPStartDt]

Description: Date this course of CPAP or BiPAP began If the patient was on CPAP/BiPAP prior to this encounter, this will default to the CICU start date.

PAP at CICU end

Seq Num: 3660

Required for case closure: No

Registry field: [PAPSupport].[PAPCICUEnd]

Description: Did this course of CPAP/BiPAP continue until the end of the CICU encounter? Indicate Yes if the patient was on CPAP or BiPAP for all or part of every calendar day from PAP start date through the end of the CICU encounter.

Values

Code	*Text*
1	Yes
0	No

PAP end date

Seq Num: 3680

Required for case closure: No

Registry field: [PAPSupport].[PAPEndDt]

Description: Indicate the last day during this course that the patient was on CPAP or BiPAP for any part of the calendar day. If the patient was still on CPAP or BiPAP at the end of this CICU encounter, this will default to the CICU discharge date.

High-flow nasal cannula (HFNC)

Seq Num: 3070

Required for case closure: Yes

Registry field: [CICUEncounter].[HighFlowNasCan]

Description: Was the patient ever on a high-flow nasal cannula (HFNC) during this CICU encounter? Courses that began prior to this encounter should be included if they continued after the CICU service became responsible for care. If Yes, document each course that occurred during this encounter. A course is defined as consecutive days during which the patient is on support for any part of that day.

Clarification 6/1/2023: If a high-flow system is being used, code HFNC support. This delivery system usually involves the use of heated and humidified air which distinguishes it from normal oxygen delivery. The flow rate is not relevant for this definition.

Clarification 2/1/2025: Code No if a HFNC setup is used to deliver oxygen via a tracheostomy.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

HFNC at CICU start

Seq Num: 3820

Required for case closure: No

Registry field: [HFNCSupport].[HFNCCICUStart]

Description: Indicate Yes if the patient was on HFNC at the start of the CICU encounter. This would include patients arriving from the OR/procedural suite and extubated on arrival by anesthesia to HFNC.

Values	*Code*	*Text*
	1	Yes
	0	No

HFNC start date

Seq Num: 3840

Required for case closure: No

Registry field: [HFNCSupport].[HFNCStartDt]

Description: Date this course of HFNC support began. If the patient was on support prior to this encounter, this will default to the CICU start date.

HFNC at CICU end

Seq Num: 3860

Required for case closure: No

Registry field: [HFNCSupport].[HFNCCICUEnd]

Description: Did this course of HFNC continue until the end of the CICU encounter? Indicate Yes if the patient was on HFNC for all or part of every calendar day from HFNC start date through the end of the CICU encounter.

Values	*Code*	*Text*
	1	Yes
	0	No

HFNC end date

Seq Num: 3900

Required for case closure: No

Registry field: [HFNCSupport].[HFNCEndDt]

Description: Indicate the last day during this course that the patient was on HFNC for any part of the calendar day. If the patient was still on HFNC at the end of this CICU encounter, this will default to the CICU discharge date.

Mechanical ventilation at CICU start

Seq Num: 3206

Retired in version 1.0

Required for case closure: Yes

Registry field: [MechanicalVent].[MechVentCICUStart]

Description: Was the patient on mechanical ventilation at the start of the CICU encounter. This includes patients directly admitted to the ICU from the OR if ventilated. If extubated in the OR prior to arrival, please check No

Values	*Code*	*Text*
Retired	0	No
Retired	1	Yes

Intubation date known

Seq Num: 3207

Retired in version 1.0

Required for case closure: Yes

Registry field: [MechanicalVent].[IntubDtKnown]

Description: If the patient was already ventilated at the start of the CICU encounter, indicate whether the intubation date is known.

Values	*Code*	*Text*
Retired	0	No
Retired	1	Yes

Multiple Airways

Seq Num: 3320

Retired in version 2.0

Required for case closure: No

Registry field: [MechanicalVent].[MultiAirways]

Description: During this course of mechanical ventilation, was more than one airway used? If No, indicate the one airway type in the space provided. If Yes, indicate each type of airway used and its associated start and end date/time.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Airway type

Seq Num: 3360

Retired in version 2.0

Required for case closure: No

Registry field: [AirwaySupport].[AirwayType]

Description: Type of airway used

Values	*Code*	*Text*
Retired	1	Oral
Retired	2	Nasal
Retired	3	Trach

Airway cuffed

Seq Num: 3380

Retired in version 2.0

Required for case closure: No

Registry field: [AirwaySupport].[AirwayCuffed]

Description: Cuffed or uncuffed airway

Values	*Code*	*Text*
Retired	1	Cuffed
Retired	2	Uncuffed

Airway start date/time

Seq Num: 3400

Retired in version 2.0

Required for case closure: No

Registry field: [AirwaySupport].[AirwayStartDtTm]

Description: Date/time this airway began

Airway end date/time

Seq Num: 3420

Retired in version 2.0

Required for case closure: No

Registry field: [AirwaySupport].[AirwayEndDtTm]

Description: Date/time this airway ended

Vascular Access

IO access

Seq Num: 3090

Required for case closure: Yes

Registry field: [CICUEncounter].[IOAccess]

Description: Indicate whether intraosseous (IO) access ever used during this CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Venous lines

Seq Num: 3100

Required for case closure: Yes

Registry field: [CICUEncounter].[VenLines]

Description: Were any venous lines used during this CICU encounter (including those placed prior to encounter start)? If Yes, document the type, access site, and start/end dates of each line used during the encounter. Line exchanges over a wire are not considered new lines; lines removed and replaced with a fresh puncture are new lines.

Clarification 6/1/2023: This includes sheaths left in place post cath, hemodialysis lines, apharesis lines, and Broviacs placed in a central vein.

It also includes IJ, subclavian and upper extremity lines placed into the Fontan pathway.

For a port-a-cath that is accessed any time during the encounter, code as a tunneled CVL (#4040) with a cut-down access type (#4020). Use the accessed and de-accessed dates to code the line start (#4121) and line end (#4161) dates.

This field does not include ECMO cannulae.

Clarification 2/1/2025: If a line is placed, completely removed, and then replaced at the same site, code as two separate lines even if the replacement line is placed immediately after the initial line is removed.

If a line is rewired and the line type does not change, it can be documented as a single line. If the line changes (e.g., it is transitioned from non-tunneled to tunneled), document as a new line.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Venous access type

Seq Num: 4020

Required for case closure: Yes

Registry field: [VenousLine].[VenAccessType]

Description: Access method for this venous line

Values	*Code*	*Text*
	1	Cut-down
	2	Percutaneous

Venous line type

Seq Num: 4040

Required for case closure: Yes

Registry field: [VenousLine].[VenLineType]

Description: Type of venous line

Clarification 6/1/2023: Only code PICC here if the line was inserted into a peripheral vessel and threaded into a central vein. If, however, a PICC-type catheter is tunneled directly into a central vein, code it as a tunneled CVL.

We only capture central lines in PC4. Do not code midline catheters.

Values	*Code*	*Text*	
	1	PICC	
	2	Central venous line (CVL) – percutaneous	
	3	Central venous line (CVL) – tunneled	Includes Broviacs or port (if accessed)
	4	Pulmonary artery catheter (PAC)	Pulmonary artery catheter (PAC). Not to include internal jugular lines in patients with cavopulmonary anastomosis.

Venous line site

Seq Num: 4060

Required for case closure: Yes

Registry field: [VenousLine].[VenLineSite]

Description: Anatomic site in which this venous line was placed

Values	*Code*	*Text*
	5	Femoral
	4	Internal jugular (IJ)
	9	Internal jugular (IJ) - Glenn/Fontan
	2	Lower extremity
	6	Subclavian
	10	Subclavian - Glenn/Fontan
	7	Transhepatic
	3	Umbilical
	1	Upper extremity
	11	Upper extremity - Glenn/Fontan
	8	Other

Venous line venue

Seq Num: 4080

Required for case closure: Yes

Registry field: [VenousLine].[VenLineVenue]

Description: Venue in which this venous line was placed

Values	*Code*	*Text*
	1	CICU
	2	Other ICU
	3	OR
	4	Interventional radiology (IR)
	5	Cath lab
	7	Ward
	8	Delivery suite
	6	Outside hospital
	12	Other

Venous line present at CICU start

Seq Num: 4100

Required for case closure: Yes

Registry field: [VenousLine].[VenLineCICUStart]

Description: Was this line placed prior to the start of the CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No

Venous line start date

Seq Num: 4121

Required for case closure: Yes

Registry field: [VenousLine].[VenLineStartDt]

Description: Date this line was placed. If the line was placed prior to this encounter, this will default to the CICU start date.

Venous line present at CICU end

Seq Num: 4140

Required for case closure: Yes

Registry field: [VenousLine].[VenLineCICUEnd]

Description: Was this line still in place at the end of the CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No

Venous line end date

Seq Num: 4161

Required for case closure: Yes

Registry field: [VenousLine].[VenLineEndDt]

Description: Date this line was removed. If the line was still in place at the end of this encounter, this will default to the CICU discharge date.

Venous line thrombus requiring treatment

Seq Num: 4180

Required for case closure: Yes

Registry field: [VenousLine].[VenLineThrombus]

Description: Was there ever a thrombus associated with this line that required either (a) the initiation of systemic anticoagulation or (b) an increase in dose or duration of systemic anticoagulation? This should not include tPA of a clotted line. Treatment may begin at any time during/after this CICU encounter.

Clarification 6/1/2023: Include patients treated with Lovenox therapy for a thrombus.

For patients already on systemic anticoagulation when a clot was discovered on their line: if the dose and/or duration of therapy changed, capture the thrombus and use the date of therapy change as the treatment start date.

If no changes were made to the patient's systemic anticoagulation regime, do not code the thrombus.

Clarification 2/1/2025: If a patient is being actively treated for a line-associated thrombus at the start of the CICU encounter and you will document the line because it is still in place at the start of the encounter, code the thrombus as present at the start of the encounter.

Aspirin does not qualify as treatment for a line associated thrombus.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Thrombus treatment start date

Seq Num: 4201

Required for case closure: Yes

Registry field: [VenousLine].[VenLineThrombusDt]

Description: Date treatment initiated for this thrombus

Intracardiac lines

Seq Num: 3130

Required for case closure: Yes

Registry field: [CICUEncounter].[IntraCardLines]

Description: Were any intracardiac lines used during this CICU encounter (including those placed prior to encounter start)? If Yes, document the type, access site, and start/end dates of each intracardiac line used during this encounter.

Clarification 6/1/2023: This includes lines placed transthoracically into the Fontan pathway (use 'Right atrium' (#4340), and Broviac lines placed transthoracically directly into the heart.

Broviac lines placed in a central vein should be coded as CVL's (#3100), not intracardiac lines.

Lines placed in the ascending aorta should be coded as arterial lines (#3110) with 'central' site (#4640).

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Intracardiac line type

Seq Num: 4320

Required for case closure: Yes

Registry field: [IntracardLine].[IntraCardLineType]

Description: Type of intracardiac line

Values	*Code*	*Text*
	1	Monitoring / infusions
	2	Broviac

Intracardiac line site

Seq Num: 4340

Required for case closure: Yes

Registry field: [IntracardLine].[IntraCardLineSite]

Description: Anatomic site in which this intracardiac line was placed

Clarification 6/1/2023: A PA line migrated to RV should be coded as a PA line.

Values	*Code*	*Text*
	1	Right atrium (RA)
	2	Left atrium (LA) or common atrium
	3	Pulmonary artery
	4	Superior vena cava (SVC)

Intracardiac line venue

Seq Num: 4360

Required for case closure: Yes

Registry field: [IntracardLine].[IntraCardLineVenue]

Description: Venue in which this intracardiac line was placed

Clarification 2/1/2025: For lines placed at the bedside by the CT surgeon during a procedure, please check to ensure that the venue matches the STS entry (OR or CICU).

Values	*Code*	*Text*
	1	CICU
	2	Other ICU
	3	OR
	4	Interventional radiology (IR)
	5	Cath lab
	7	Ward
	8	Delivery suite
	6	Outside hospital
	12	Other

Intracardiac line present at CICU start

Seq Num: 4380

Required for case closure: Yes

Registry field: [IntracardLine].[IntraCardLinePresCICUStart]

Description: Was this line placed prior to the start of the CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No

Intracardiac line start date

Seq Num: 4401

Required for case closure: Yes

Registry field: [IntracardLine].[IntracardLineStartDt]

Description: Date this line was placed. If the line was placed prior to this encounter, this will default to the CICU start date.

Intracardiac line present at CICU end

Seq Num: 4420

Required for case closure: Yes

Registry field: [IntracardLine].[IntraCardLinePresCICUEnd]

Description: Was this line still in place at the end of the CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No

Intracardiac line end date

Seq Num: 4441

Required for case closure: Yes

Registry field: [IntracardLine].[IntracardLineEndDt]

Description: Date this line was removed. If the line was still in place at the end of this encounter, this will default to the CICU discharge date.

Intracardiac line thrombus requiring treatment

Seq Num: 4460

Required for case closure: Yes

Registry field: [IntracardLine].[IntraCardLineThrombus]

Description: Was there ever a thrombus associated with this line that required either (a) the initiation of systemic anticoagulation or (b) an increase in dose or duration of systemic anticoagulation? This should not include tPA of a clotted line. Treatment may begin at any time during/after this CICU encounter.

Clarification 6/1/2023: Include patients treated with Lovenox therapy for a thrombus.

For patients already on systemic anticoagulation when a clot was discovered on their line: if the dose and/or duration of therapy changed, capture the thrombus and use the date of therapy change as the treatment start date.

If no changes were made to the patient's systemic anticoagulation regime, do not code the thrombus.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Thrombus treatment start date

Seq Num: 4481

Required for case closure: Yes

Registry field: [IntracardLine].[IntracardLineThrombusDt]

Description: Date treatment initiated for this thrombus

Arterial lines

Seq Num: 3110

Required for case closure: Yes

Registry field: [CICUEncounter].[ArtLines]

Description: Were any arterial lines used during this CICU encounter (including those placed prior to encounter start)? If Yes, document the type, access site, and start/end dates of arterial each line used during this encounter. Line exchanges over a wire are not considered new lines; lines removed and replaced with a fresh puncture are new lines.

Clarification 6/1/2023: Lines placed in the ascending aorta should be coded as arterial lines with a 'central' site (#4640).

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arterial access type

Seq Num: 4620

Required for case closure: Yes

Registry field: [ArterialLine].[ArtAccessType]

Description: Access method for this arterial line

Values	*Code*	*Text*
	1	Cut-down
	2	Percutaneous

Arterial line site

Seq Num: 4640

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineSite]

Description: Anatomic site in which this arterial line was placed

Values	*Code*	*Text*
	1	Peripheral
	4	Central (axillary, femoral)
	5	Umbilical
	3	Internal mammary artery (IMA)
Retired	2	Central (axillary, femoral, umbilical artery)

Arterial line venue

Seq Num: 4660

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineVenue]

Description: Venue in which this arterial line was placed

Values	*Code*	*Text*
	1	CICU
	2	Other ICU
	3	OR
	4	Interventional radiology (IR)
	5	Cath lab
	7	Ward
	8	Delivery suite
	6	Outside hospital
	12	Other

Arterial line present at CICU start

Seq Num: 4680

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineCICUStart]

Description: Was this line placed prior to the start of the CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No

Arterial line start date

Seq Num: 4701

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineStartDt]

Description: Date this line was placed. If the line was placed prior to this encounter, this will default to the CICU start date.

Arterial line present at CICU end

Seq Num: 4720

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineCICUEnd]

Description: Was this line still in place at the end of the CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No

Arterial line end date

Seq Num: 4741

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineEndDt]

Description: Date this line was removed. If the line was still in place at the end of this encounter, this will default to the CICU discharge date.

Arterial line thrombus requiring treatment

Seq Num: 4760

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineThrombus]

Description: Was there ever a thrombus associated with this line that required either (a) the initiation of systemic anticoagulation or (b) an increase in dose or duration of systemic anticoagulation? This should not include tPA of a clotted line. Treatment may begin at any time during/after this CICU encounter.

Clarification 6/1/2023: Include patients treated with Lovenox therapy for a thrombus.

For patients already on systemic anticoagulation when a clot was discovered on their line: if the dose and/or duration of therapy changed, capture the thrombus and use the date of therapy change as the treatment start date.

If no changes were made to the patient's systemic anticoagulation regime, do not code the thrombus.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Thrombus treatment start date

Seq Num: 4781

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineThrombusDt]

Description: Date treatment initiated for this thrombus

Venous line start date/time

Seq Num: 4120

Retired in version 2.0

Required for case closure: Yes

Registry field: [VenousLine].[VenLineStartDtTm]

Description: Date/time this line was placed. If the line was placed prior to this encounter, this will default to the CICU start date/time.

Venous line end date/time

Seq Num: 4160

Retired in version 2.0

Required for case closure: Yes

Registry field: [VenousLine].[VenLineEndDtTm]

Description: Date/time this line was removed. If the line was still in place at the end of this encounter, this will default to the CICU discharge date/time.

Thrombus treatment start date/time

Seq Num: 4200

Retired in version 2.0

Required for case closure: Yes

Registry field: [VenousLine].[VenLineThromTrtDtTm]

Description: Date/time treatment initiated for this thrombus

Intracardiac line start date/time

Seq Num: 4400

Retired in version 2.0

Required for case closure: Yes

Registry field: [IntracardLine].[IntraCardLineStartDtTm]

Description: Date/time this line was placed. If the line was placed prior to this encounter, this will default to the CICU start date/time.

Intracardiac line end date/time

Seq Num: 4440

Retired in version 2.0

Required for case closure: Yes

Registry field: [IntracardLine].[IntraCardLineEndDtTm]

Description: Date/time this line was removed. If the line was still in place at the end of this encounter, this will default to the CICU discharge date/time.

Thrombus treatment start date/time

Seq Num: 4480

Retired in version 2.0

Required for case closure: Yes

Registry field: [IntracardLine].[IntraCardLineThromTrtStartDtTm

Description: Date/time treatment initiated for this thrombus

Arterial line start date/time

Seq Num: 4700

Retired in version 2.0

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineStartDtTm]

Description: Date/time this line was placed. If the line was placed prior to this encounter, this will default to the CICU start date/time.

Arterial line end date/time

Seq Num: 4740

Retired in version 2.0

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineEndDtTm]

Description: Date/time this line was removed. If the line was still in place at the end of this encounter, this will default to the CICU discharge date/time.

Thrombus treatment start date/time

Seq Num: 4780

Retired in version 2.0

Required for case closure: Yes

Registry field: [ArterialLine].[ArtLineThromTrtDtTm]

Description: Date/time treatment initiated for this thrombus

Other Devices

Foley Catheter

Seq Num: 3140

Required for case closure: Yes

Registry field: [CICUEncounter].[Foley]

Description: Did the patient have a Foley catheter at any time during the CICU encounter (including those placed prior to encounter start)? If Yes, document each catheter used during the encounter.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Foley at start of CICU encounter

Seq Num: 4920

Required for case closure: Yes

Registry field: [FoleyCath].[FoleyCICUStart]

Description: Was a Foley present at the start of the CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No

Date Foley placed

Seq Num: 4940

Required for case closure: Yes

Registry field: [FoleyCath].[FoleyStartDt]

Description: Date this Foley was placed. If the Foley was placed prior to this encounter, this will default to the CICU start date.

Foley at end of CICU encounter

Seq Num: 4960

Required for case closure: Yes

Registry field: [FoleyCath].[FoleyCICUEnd]

Description: Was this Foley still in place at the end of the CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No

Date Foley removed

Seq Num: 4980

Required for case closure: Yes

Registry field: [FoleyCath].[FoleyEndDt]

Description: Date this Foley was removed. If the Foley was still in place at the end of this encounter, this will default to the CICU discharge date.

Other Therapies

Vasoactive infusions

Seq Num: 5100

Required for case closure: Yes

Registry field: [Therapy].[VasoInfusion]

Description: Was the patient on any vasoactive infusions during this CICU encounter? If Yes, record the start and end date of each course of vasoactive infusions. A course begins when a patient is on an infusion of any agent. A course of infusions ends when the patient is off all agents. If any agent is restarted that day or the following calendar day, the course is not considered over.

Clarification 6/1/2023: Do not include infusions of any agents during a procedure that are not continued into the post-procedure CICU stay. For patients on one or more of these agents, but not for the purposes of vasoactive support, code Yes except as noted below.

Clarification 2/1/2025: Include vasoactives that are initiated in the setting of shunt obstruction to drive flow through the shunt.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Vasoactive agents

Seq Num: 5240

Required for case closure: Yes

Registry field: [VasoactiveInfusion].[VasoAgent]

Description: What agent(s) did the patient receive during this CICU encounter

Clarification 6/1/2023: Isoproterenol (Isuprel) to treat rhythm is NOT considered a vasoactive agent.

Clarification 2/1/2025: if a medication is given as a bolus only, do not include in vasoactive infusions.

Additional clarifications below between asterisks.

Values	Code	Text	
	12	Calcium infusion	Excludes calcium used exclusively to treat hypocalcemia
	2	Dobutamine	
	1	Dopamine	**(Clarification 2/1/2025) Dopamine used to improve renal or splanchnic perfusion should be included. **
	4	Epinephrine	
	11	Esmolol	Excludes esmolol used exclusively as an anti-arrhythmic agent ** and esmolol used to bring down a patient's heartrate for imaging. (Clarification 6/1/2023)**
	14	Fenoldopam	
	16	Isoproterenol	
	17	Levosimendan	
	3	Milrinone	
	15	Nesiritide	
	13	Nicardipine	
	10	Nitroglycerine	
	8	Nitroprusside	
	5	Norepinephrine	
	7	Phentolamine	
	9	Phenylephrine	
	6	Vasopressin	**(Clarification 2/1/2025) Do not include vasopressin used to treat diabetes insipidus or GI bleeding. **
	88	Other agent	

Other vasoactive agent - specify

Seq Num: 5241

Required for case closure: No

Registry field: [VasoactiveInfusion].[VasoAgentSpec]

Description: Specify the other vasoactive agent used

Was this course active at CICU start?

Seq Num: 5254

Required for case closure: Yes

Registry field: [VasoCourse].[VasoEncStart]

Description: Did this course begin prior to or immediately upon CICU admission?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Date vasoactive course began

Seq Num: 5255

Required for case closure: Yes

Registry field: [VasoCourse].[VasoStartDt]

Description: Record the date this course of support began in the CICU. If the patient was on any vasoactive infusions at CICU admission, use the CICU admit date.

Clarification 6/1/2023: A course of infusions is consecutive days on which the patient is on an infusion of any qualifying agent. When the patient is off all agents, the course ends. The agents themselves may change during the course – we are simply looking for consecutive days on which the patient is on any support.

If all the patient's infusions are stopped, and then any infusion is restarted that day or the following calendar day, it is a continuation of the same course.

Did this course continue through CICU discharge?

Seq Num: 5259

Required for case closure: Yes

Registry field: [VasoCourse].[VasoEncEnd]

Description: Was the patient discharged from the CICU before this course was complete?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Date vasoactive course ended

Seq Num: 5260

Required for case closure: Yes

Registry field: [VasoCourse].[VasoEndDt]

Description: Date this course of vasoactive infusions ended. If this course was still active at CICU discharge, this will default to the CICU discharge date.

Sedation/analgesia/neuromuscular block

Seq Num: 5300

Required for case closure: Yes

Registry field: [Therapy].[OTSedation]

Description: Was the patient ever on a sedation, analgesic, or neuromuscular blockade infusions during this CICU encounter? If Yes, list all agents used.

Clarification 6/1/2023: If a patient starts on a sedative infusion in preparation for a procedure, and the infusion is discontinued when the procedure is complete, code as No. If the infusion does continue after the procedure, code as Yes.

Do not include a benzodiazepine infusion to treat seizures.

If a dexmedetomidine (Precedex) infusion is used only to treat an arrhythmia, code as No. If used for both an arrhythmia and sedation, code as Yes.

Do not code a PCA pump that is only administering bolus doses. However, if there is a baseline rate infusing, then code as Yes.

Clarification 2/1/2025: Include infusions that are started to replace enteral medications in a patient who is NPO.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Sedation/analgesia/neuromuscular block agent

Seq Num: 5340

Required for case closure: Yes

Registry field: [Sedation].[SedationType]

Description: Sedation, analgesic, or neuromuscular block agent used

Clarification 6/1/2023: Do not include a benzodiazepine infusion to treat seizures.

If a dexmedetomidine (Precedex) infusion is used only to treat an arrhythmia, code as No.

If used for both an arrhythmia and sedation, code as Yes.

Values	*Code*	*Text*
	1	Benzodiazepines
	2	Narcotics
	3	Dexmedetomidine
	4	Ketamine
	5	Barbiturate
	6	Propofol
	7	Neuromuscular block
	8	Epidural anesthesia

Peritoneal drain

Seq Num: 5870

Required for case closure: Yes

Registry field: [Therapy].[PDrain]

Description: Was a peritoneal drain present at any time during the CICU encounter? Any device used for peritoneal drainage qualifies.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Drain present on admit

Seq Num: 5872

Required for case closure: Yes

Registry field: [Therapy].[PDrainEncStart]

Description: Was a drain present at CICU admission?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Drain start date

Seq Num: 5874

Required for case closure: Yes

Registry field: [Therapy].[PDrainStartDt]

Description: Earliest date a peritoneal drain was placed. If it was placed prior to this encounter, this will default to the CICU start date

Venue drain placed

Seq Num: 5876

Required for case closure: Yes

Registry field: [Therapy].[PDrainVenue]

Description: Indicate the venue in which the earliest drain was placed

Values	*Code*	*Text*
	1	CICU
	2	OR
	8	Other
	9	Unk

Drain present on discharge

Seq Num: 5878

Required for case closure: Yes

Registry field: [Therapy].[PDrainEncEnd]

Description: Was a drain present at CICU discharge?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Final drain removal date

Seq Num: 5880

Required for case closure: Yes

Registry field: [Therapy].[PDrainEndDt]

Description: Date the final peritoneal drain was removed. If it was present at CICU discharge, this will default to the discharge date.

RRT

Seq Num: 5900

Required for case closure: Yes

Registry field: [Therapy].[CRRT]

Description: Was the patient ever on renal replacement therapy (RRT) during this CICU encounter. This includes patients who received RRT on ECMO but not those who only received ultrafiltration on ECMO. If a patient had peritoneal drainage only (i.e., no dialysate was used), code this as No.

Clarification 6/1/2023: Code intermittent hemodialysis as Yes to RRT and Hemodialysis (#5980).

If peritoneal dialysis catheters are in place for passive drainage only, then do not include them as RRT. Code this patient as having a peritoneal drain (#5870). If, however, dialysate is administered, you would code both a peritoneal drain (#5870) and RRT-peritoneal dialysis (sequence #5900 and #5920).

If at any point the patient has clinical renal failure and RRT continues, you would also answer Yes to 'CRRT for ARF' (#5905) – even if the catheters were initially placed prophylactically.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

RRT for ARF

Seq Num: 5905

Required for case closure: Yes

Registry field: [Therapy].[CRRTarf]

Description: During this CICU encounter, was the patient ever on RRT for treatment of acute renal failure (ARF)?

Replacement clarification 2/1/2025: This field is intended to capture ONLY acute renal failure.

Patients on RRT for chronic renal failure should NOT be coded as Yes to 'CRRT for ARF.'

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

RRT for ARF date/time

Seq Num: 5910

Required for case closure: Yes

Registry field: [Therapy].[CRRTarfDtTm]

Description: Enter the date/time during this CICU encounter when RRT treatment for acute renal failure began. If treatment for ARF was initiated prior to CICU admission, use the CICU admit date/time.

Peritoneal dialysis

Seq Num: 5920

Required for case closure: Yes

Registry field: [Therapy].[CRRTPD]

Description: If the patient required RRT, indicate if he/she was ever on peritoneal dialysis during this CICU encounter. If Yes, also answer Yes to the Peritoneal Drain question above.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Peritoneal dialysis start date

Seq Num: 5922

Required for case closure: Yes

Registry field: [Therapy].[CRRTPDstartDt]

Description: Date peritoneal dialysis began in the CICU. If it began prior to CICU admission, use the CICU start date

Peritoneal dialysis end date

Seq Num: 5924

Required for case closure: Yes

Registry field: [Therapy].[CRRTPDendDt]

Description: Final date peritoneal dialysis ended in the CICU. If it continued after CICU discharge, use the CICU discharge date

Intermittent Hemodialysis

Seq Num: 5980

Required for case closure: Yes

Registry field: [Therapy].[CRRTHemodial]

Description: If the patient required RRT, indicate if he/she was ever on intermittent hemodialysis during this CICU encounter

Clarification 6/1/2023: Code intermittent hemodialysis as Yes to Hemodialysis and RRT (#5900).

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Hemodialysis start date

Seq Num: 5982

Required for case closure: Yes

Registry field: [Therapy].[CRRTHemodialStartDt]

Description: Date hemodialysis began in the CICU. If it began prior to CICU admission, use the CICU start date

Hemodialysis end date

Seq Num: 5984

Required for case closure: Yes

Registry field: [Therapy].[CRRTHemodialEndDt]

Description: Final date hemodialysis ended in the CICU. If it continued after CICU discharge, use the CICU discharge date

CVVH

Seq Num: 5940

Required for case closure: Yes

Registry field: [Therapy].[CRRTCVVH]

Description: If the patient required RRT, indicate if he/she was ever on continuous veno-venous hemofiltration (CVVH) during this CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

CVVH start date

Seq Num: 5942

Required for case closure: Yes

Registry field: [Therapy].[CRRTCVVHstartDt]

Description: Date CVVH began in the CICU. If it began prior to CICU admission, use the CICU start date

CVVH end date

Seq Num: 5944

Required for case closure: Yes

Registry field: [Therapy].[CRRTCVVHendDt]

Description: Final date CVVH ended in the CICU. If it continued after CICU discharge, use the CICU discharge date

Nitric oxide

Seq Num: 5600

Required for case closure: Yes

Registry field: [Therapy].[NitricOxide]

Description: Was inhaled nitric oxide ever used during this CICU encounter. If the iNO was used to treat pulmonary hypertension, answer Yes both to this question and the pulmonary hypertension treatment question.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Bronchoscopy

Seq Num: 6280

Required for case closure: Yes

Registry field: [Therapy].[OTBronch]

Description: Did the patient undergo bronchoscopy during the CICU encounter? This includes procedures done in the OR as well as the bedside.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Active cooling

Seq Num: 5081

Retired in version 1.0

Required for case closure: Yes

Registry field: [Therapy].[OTActiveCool]

Description: Was a cooling blanket used at any time during this CICU encounter

Values	*Code*	*Text*
Retired	0	No
Retired	1	Yes

Enteral feeding volume at CICU end (cc/kg/day)

Seq Num: 5839

Retired in version 1.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeedCICUEndVol]

Description: Total volume of enteral feeding, in cc/kg, over the final full 24 hour period of CICU care.

Date first vasoactive infusion began

Seq Num: 5120

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[VasoAgentStartDt]

Description: Date the first infusion of any vasoactive agent began during this encounter

Initial vasoactive course active at CICU discharge

Seq Num: 5140

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[VasoInfusionCICUEnd]

Description: Was the patient discharged from the CICU before the first course of vasoactive infusions was complete? The course is not considered complete until he/she is off all vasoactive infusions for 24 hours.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Date first course of vasoactive infusions ended

Seq Num: 5160

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[VasoAgentEndDt]

Description: First date when a patient treated with vasoactive infusions is no longer on any continuous vasoactive infusion. The course is not complete if any vasoactive infusion is reinitiated within 24 hours. If the patient's initial course is not complete at CICU discharge, this will default to the CICU discharge date.

Vasoactive infusions at CICU discharge

Seq Num: 5180

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[VasoInfusionFinalCICUEnd]

Description: Was the patient still on any vasoactive infusions at CICU discharge?

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Date final course of vasoactive infusions ended

Seq Num: 5200

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[VasoAgentFinalDt]

Description: Final date any vasoactive infusion was used during this encounter. If there was a single course of vasoactive infusions, this will be the same as the date the first course ended. If the patient remained on vasoactive infusions at CICU discharge, this will default to the CICU discharge date.

Apharesis/plasmapharesis during CICU encounter

Seq Num: 5400

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[Apharesis]

Description: Select Yes if apharesis/plasmapharesis were ever used during the CICU encounter. This is defined as the removal, treatment, and return of blood plasma from the circulation, often employed in patients peri-OHT and myocarditis

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Enteral feeding

Seq Num: 5700

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeed]

Description: Was patient ever on any volume of enteral feedings during this CICU stay, including trophic feedings.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Date enteral feeding initiated

Seq Num: 5720

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeedInitDt]

Description: Date enteral feeding was initiated in the CICU

Feeds reinitiated following cardiothoracic surgery

Seq Num: 5740

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeedReInit]

Description: After enteral feeds were initiated in the CICU, were they subsequently held then reinitiated following cardiothoracic surgery. Select No if the patient was only on enteral feeds postop or feeds were never reinitiated following surgery. Select N/A if the patient did not have cardiothoracic surgery during this CICU encounter.

Values	*Code*	*Text*	
Retired	1	Yes	Feeds were held then reinitiated following cardiothoracic surgery
Retired	0	No	Patient had cardiothoracic surgery, but feeds were not held/reinitiated
Retired	8	N/A - No card surg	Patient did not have cardiothoracic surgery during this encounter
Retired	9	Unk	

Date enteral feeding reinitiated

Seq Num: 5760

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeedReInitDt]

Description: Date enteral feeding was reinitiated following cardiac surgery.

PO ad lib at CICU end

Seq Num: 5780

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeedAdLib]

Description: For surgical patients age <=30 days at CICU discharge, indicate whether the patient had an order for PO ad lib feeds and was receiving no tube feedings at CICU discharge.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Caloric density (kCal/oz) at CICU end

Seq Num: 5800

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeedDens]

Description: For surgical patients age <=30 days at CICU discharge, indicate their caloric density (kCal/oz) at CICU discharge. If the patient was NPO, enter 0.

Final feeds reported in cc/day or kCal/kg/day

Seq Num: 5820

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeedUnits]

Description: For surgical patients age <=30 days at CICU discharge, select whether their final feeds are reported in cc/day or kCal/kg/day.

Values	*Code*	*Text*
Retired	1	cc/day
Retired	2	kCal/kg/day

Enteral feeding volume at CICU end (cc/day)

Seq Num: 5840

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeedCCday]

Description: For surgical patients age <=30 days at CICU discharge, document the total volume of enteral feeding, in cc/kg, over the final full 24 hour period of CICU care.

Enteral feeding at CICU end (kCal/kg/day)

Seq Num: 5860

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[EntFeedKcalDay]

Description: For surgical patients age <=30 days at CICU discharge, document the total volume of enteral feeding, in kCal/kg/day, over the final full 24 hour period of CICU care.

CRRT CVAH

Seq Num: 5960

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[CRRTCVAH]

Description: If the patient required CRRT, indicate if he/she was ever on continuous veno-arterial hemofiltration (CVAH) during this CICU encounter

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Other Therapies - Monitoring

EtCO2

Seq Num: 6040

Required for case closure: Yes

Registry field: [Therapy].[MonitorEtCO2]

Description: Was end tidal CO2 (EtCO2) monitoring used at any time during this CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

SVO2- Continuous

Seq Num: 6060

Required for case closure: Yes

Registry field: [Therapy].[MonitorSVO2Cont]

Description: Was continuous mixed venous (SvO2) monitoring used at any time during this CICU encounter, excluding such monitoring only done during ECMO.

Clarification 2/1/2025: SVO2 measured via an Aquadex catheter can be included if the measurement is being taken from a central location.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

NIRS

Seq Num: 6200

Required for case closure: Yes

Registry field: [Therapy].[MonitorNIRS]

Description: Was NIRS used at any time during this CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Cerebral

Seq Num: 6220

Required for case closure: Yes

Registry field: [Therapy].[NIRSCerebral]

Description: If NIRS was used, was it cerebral

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Somatic

Seq Num: 6240

Required for case closure: Yes

Registry field: [Therapy].[NIRSSomatic]

Description: If NIRS was used, was it somatic

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

NIRS - Other

Seq Num: 6261

Required for case closure: Yes

Registry field: [Therapy].[NIRSother]

Description: NIRS in any other location

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

CVP

Seq Num: 6020

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[MonitorCVP]

Description: Was central venous pressure (CVP) monitoring used at any time during this CICU encounter

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

EEG - Continuous

Seq Num: 6080

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[MonitorEEGCont]

Description: Was continuous EEG monitoring used at any time during this CICU encounter

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

BIS

Seq Num: 6100

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[MonitorBIS]

Description: Was Bispectral Index (BIS) monitoring used at any time during this CICU encounter

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

LA pressure

Seq Num: 6120

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[MonitorLApressure]

Description: Was left atrial or common atrial pressure monitoring used at any time during this CICU encounter

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

PA catheter

Seq Num: 6140

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[MonitorPAcath]

Description: Was pulmonary artery catheter monitoring used at any time during this CICU encounter

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Limb

Seq Num: 6260

Retired in version 2.0

Required for case closure: Yes

Registry field: [Therapy].[NIRSLimb]

Description: If NIRS was used, was it limb

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Medical Events and Complications-Cardiovascular

Cardiac arrest

Seq Num: 6440

Required for case closure: Yes

Registry field: [Complications].[CompCardArrest]

Description: During this CICU encounter, did the patient have a cardiac arrest as defined by AHA GWTG-R, excluding acute respiratory compromise that does not progress to cardiopulmonary arrest. An event is defined as (1) cardiopulmonary arrest requiring chest compressions and/or defibrillation, or (2) acute respiratory compromise requiring emergency assisted ventilation leading to cardiopulmonary arrest requiring chest compressions and/or defibrillation. All events must also elicit a resuscitation response by facility personnel and have a resuscitation record completed. This includes events that occur during a CICU encounter even if they happened outside of the ICU (e.g., imaging suites, procedure suites, etc.) However, cardiac arrest events that begin during a cardiothoracic surgical procedure in any location should be excluded. If Yes, document each arrest that occurred during the CICU encounter.

Clarification 6/1/2023: If less than 20 minutes elapsed between the end of one arrest (i.e., return of spontaneous circulation or ECMO initiation) and the beginning of the next arrest, then these are considered part of the same event. Code the arrest date/time (#6450) as the start of the first arrest, and code CPR end date/time (#6480) as the end of the arrest where 20 minutes or more of ROSC was achieved (the second event in this scenario).

If a patient had ventricular tachycardia that ultimately resulted in cardiac arrest, and received ICU-level therapy for the arrhythmia prior to the arrest, then code both events. If there was no ICU-level therapy for the arrhythmia, just code the arrest. In either instance, you would capture VT as the rhythm at CPR onset (#6462).

If patient was admitted to the CICU from home in cardiac arrest upon arrival and into the CICU encounter, code as Yes because it was present upon arrival and treated in the CICU.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrest date/time

Seq Num: 6450

Required for case closure: Yes

Registry field: [CompCardArrest].[CardArrestDtTm]

Description: For this arrest, document the date/time it began

ECPR for arrest

Seq Num: 6460

Required for case closure: Yes

Registry field: [CompCardArrest].[CardArrestECPR]

Description: For this arrest, indicate whether ECPR (cannulation during compressions) used during this arrest

Clarification 6/1/2023: If a patient had return of spontaneous circulation following CPR, but the decision was made to cannulate onto ECMO, and the patient had a ROSC of less than 20 minutes before the cannulation began, then this is considered ECPR for both the arrest complication and Active CPR at cannulation' (#6730) in the mechanical circulatory support section.

Clarification 2/1/2025: If a patient on ECMO is removed from circuit due to circuit failure, with immediate plan to replace circuit, and then arrests before flows are re-established, this would be a single ECMO run. It would not be documented as eCPR unless the criteria are met at the start of the support run.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Rhythm at CPR onset

Seq Num: 6462

Required for case closure: Yes

Registry field: [CompCardArrest].[CardArrestRhythm]

Description: Record the rhythm at the onset of cardiopulmonary resuscitation. Only code JET, SVT, or complete heart block if the patient had a pulse and began receiving CPR for hypotension.

Values

Code	*Text*
1	Complete heart block (CHB)
2	JET
3	PEA
4	Sinus bradycardia / junctional rhythm
5	SVT
6	VF
7	VT
99	Unk

CPR onset location

Seq Num: 6464

Required for case closure: Yes

Registry field: [CompCardArrest].[CardArrestVenue]

Description: Indicate the venue at the onset of cardiopulmonary resuscitation

Values	*Code*	*Text*
	1	CICU
	2	Cath lab
	3	Non-cardiac OR
	4	Procedure suite
	5	Imaging suite
	8	Other
	9	Unk

CPR end time known

Seq Num: 6470

Required for case closure: Yes

Registry field: [CompCardArrest].[CardArrestEndKnown]

Description: For this arrest, is the CPR end time known?

Values	*Code*	*Text*
	1	Yes
	0	No

CPR end date/time

Seq Num: 6480

Required for case closure: Yes

Registry field: [CompCardArrest].[CardArrestEndDtTm]

Description: If it is known for this arrest, indicate the date/time CPR ended. This is the time when CPR was discontinued for >20 minutes with the return of spontaneous circulation, ECMO initiation, or death.

Cooled to <34

Seq Num: 6490

Required for case closure: Yes

Registry field: [CompCardArrest].[CardArrestHypo]

Description: For this arrest, did the patient have a documented core temperature<34 with stated intent to provide therapeutic

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Cooled to normothermia

Seq Num: 6500

Required for case closure: Yes

Registry field: [CompCardArrest].[CardArrestNormo]

Description: If the patient was not cooled to<34 for this arrest, is there documentation that the patient's temperature was actively controlled with the intent to maintain normothermia.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Pericardial effusion

Seq Num: 6540

Required for case closure: Yes

Registry field: [Complications].[CompPeriEffus]

Description: Did the patient have pericardial effusion during the CICU encounter. Pericardial effusion is defined as abnormal accumulation of fluid in the pericardial space, requiring drainage, by any technique.

Clarification 6/1/2023: A pericardial effusion diagnosed and treated while in another unit, and prior to CICU admit, should not be coded as a complication here. That could, however, be captured as a medical diagnosis where appropriate.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Pericardial effusion drainage procedure date/time

Seq Num: 6560

Required for case closure: Yes

Registry field: [Complications].[CompPeriEffusDtTm]

Description: If the patient had pericardial effusion, document the date/time it was first treated during this CICU encounter.

Clarification 2/1/2025: Date/time of first treatment refers to the date/time of the first drainage procedure.

Arrhythmia requiring therapy

Seq Num: 6580

Required for case closure: Yes

Registry field: [Complications].[CompArrhythTherapy]

Description: Did the patient have an arrhythmia requiring ICU-level therapy during the CICU encounter? An arrhythmia is defined as atrial tachycardia (automatic or re-entrant), ventricular tachycardia (automatic or re-entrant), junctional tachycardia (automatic or re-entrant), complete heart block, second degree heart block or sinus/junctional bradycardia which requires at least one of the following ICU-level therapies: continuous IV medication (excluding electrolyte repletion with the exception of magnesium for torsades), bolus dosing (excluding bolus digoxin), pacing, defibrillation, cardioversion, or cooling. Premature ventricular beats of any type and PVCs treated with electrolyte replacement should not be included. This includes therapies while on ECLS/VAD. This includes arrhythmias clearly documented in the operating room for which therapy was initiated in the OR and was ongoing at the time of CICU admission.

Clarification 6/1/2023: An arrhythmia that recurs within 24 hours of stopping ICU level intervention and results in reinstitution of any ICU level intervention should be coded as a single arrythmia event.

Code NO if the patient:

Changed from oral to IV anti-arrhythmia meds because they were NPO.

Is admitted to the CICU with a permanent pacemaker to treat complete heart block, the pacemaker is functioning appropriately, and no arrhythmia is seen in the CICU.

Is on a backup pacing mode, or paced to improve cardiac output with underlying sinus rhythm at an appropriate rate.

Clarification 2/1/2025: Code NO if the patient:

Is admitted after undergoing an ablation procedure in the cath lab and requires no ICU level therapy during the CICU encounter.

Was given a bolus of an anti-arrhythmic agent for diagnostic purposes only.

Has ventricular ectopy (but NOT ventricular tachycardia), even if treated with continuous anti-arrhythmic therapy.

Had arrythmia in the cath lab only and no ICU level therapy administered in the CICU.

Code YES if the patient:

Had an arrhythmia that began outside of the ICU AND ICU level therapy is ongoing at the time of admission, even if the arrythmia is never documented in the ICU.

Already has a defibrillator prior to CICU admission, and the defibrillator delivers an appropriate shock. (The presence of a defibrillator alone does not require coding an arrhythmia complication.)

Has a pacemaker that malfunctions and the patient is in CHB and is paced for symptomatic bradycardia.

These distinctions may be difficult to determine from the medical record, so please discuss with your clinical champion any paced patients without clear documentation of an arrhythmia.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrhythmia treatment at CICU start Seq Num: 6611

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythCICUstart]

Description: Was the patient receiving ICU-level treatment for this arrhythmia at the start of this CICU encounter?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrhythmia date/time Seq Num: 6600

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythStartDtTm]

Description: Document the date and time, to the nearest hour, ICU-level treatment began for the arrhythmia. For patients with multiple cardioversions or defibrillations for the same arrhythmia, the start should be the date/time of the first event. If the patient was receiving ICU-level treatment at the start of the encounter, this will default to the CICU admit date/time.

Arrhythmia type

Seq Num: 6630

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythFoci]

Description: For each arrhythmia, select the type

Clarification 6/1/2023: Atrial fibrillation and atrial flutter (treated with ICU-level therapy) should be coded as Atrial Tachycardia/SVT.

Values	*Code*	*Text*	
	1	Atrial tachycardia / SVT	Automatic or re-entry tachy arrhythmia that originates from the atrium. This includes SVT.
	2	Ventricular tachycardia	Automatic or re-entry tachy arrhythmia that originates from the ventricle
	3	Junctional tachycardia	Automatic or re-entry tachy arrhythmia that originates from the junction
	4	Complete heart block	
	5	Second degree heart block	
	6	Sinus or junctional bradycardia	

Arrhythmia therapy - Drug

Seq Num: 6640

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythTherapyDrug]

Description: Was this arrhythmia treated with ICU-level drug therapy? This includes continuous IV medication (excluding electrolyte repletion with the exception of magnesium for torsades) or bolus dosing (excluding bolus digoxin).

Clarification 6/1/2023: ONLY continuous IV medications and bolus dosing are included (exclusions noted above).

Do not code an arrhythmia event if:

- the only intervention is adenosine and it is used SOLELY as a diagnostic agent

- the patient was switched to IV bolus medication solely due to being made NPO

Clarification 2/1/2025: A continuous infusion of dexmedetomidine that is clearly documented as being initiated (or the dose is adjusted) to address an arrhythmia can be coded as arrhythmia drug therapy, even if also being used for sedation.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrhythmia therapy - Electrical Cardioversion/Defibrillation

Seq Num: 6650

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythTherapyCvrsn]

Description: Was this arrhythmia treated with electrical cardioversion (including rapid atrial pacing) or defibrillation?

Clarification 6/1/2023: This field includes:

- A shock delivered by an AICD if the shock is delivered in the ICU and is found to be an appropriate shock

-Use of the rapid atrial pacing mode via a temporary pacemaker

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrhythmia therapy - Permanent Pacemaker/AICD

Seq Num: 6660

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythTherapyPermPace]

Description: Was a permanent pacemaker or AICD used to treat this arrhythmia

Clarification 6/1/2023: An appropriate shock delivered by an AICD is considered ICU level therapy.

If the patient is stable without therapy in the ICU and then has a permanent pacemaker placed during the ICU encounter, an arrythmia event should be entered with a start and end date on the date of the pacemaker placement.

If a patient goes to the OR from a non-ICU location and has a pacemaker placed and then is admitted to the ICU, an arrythmia event would only be captured if the pacemaker fails and an ICU level therapy is instituted during the encounter.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrhythmia therapy - Temporary Pacemaker

Seq Num: 6670

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythTherapyTempPace]

Description: Was a temporary pacemaker used to treat this arrhythmia

Clarification 6/1/2023: Includes transvenous pacing.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrhythmia therapy - Cooled <35

Seq Num: 6680

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythTherapyHypo]

Description: For this arrhythmia, did the patient have a documented core temperature<35 with stated intent to provide therapeutic

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrhythmia treatment at CICU discharge

Seq Num: 6610

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythCICUEnd]

Description: Was the patient still receiving ICU-level treatment for this arrhythmia at CICU discharge?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrhythmia end date

Seq Num: 6621

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythEndDt]

Description: Document the date ICU-level treatment ended for the arrhythmia. For patients with multiple cardioversions or defibrillations for the same arrhythmia the end date should be the date of the last event. If a PPM or AICD was placed for this arrhythmia, use the PPM/AICD placement date as the end date. If the patient was still receiving ICU-level treatment for this arrhythmia at CICU discharge, this will default to the CICU discharge date.

Clarification 6/1/2023: The end date is when the ICU-level therapy used to treat the arrhythmia is discontinued and the arrhythmia does not recur. If the patient receives a permanent pacemaker or defibrillator during the encounter and the arrhythmia is not seen again in the CICU (or recurs but is not treated with ICU-level therapy), record the date of pacemaker/AICD placement as the end date.

For patients who are treated with temporary pacing, the end date/time should be when the pacemaker is no longer actively pacing the patient (i.e., attached as a back up/rescue only) or the patient is disconnected from the pacemaker, whichever happens first.

If a patient is transitioned to an oral medication and the arrhythmia doesn't recur, then the end date should be recorded as the final date any ICU-level therapy (e.g., intravenous medication) was stopped.

If the patient is still receiving ICU-level treatment for arrhythmia at CICU discharge (#6610 = Yes), set this field to the date of CICU physical end date/time (#2360).

Mechanical circulatory support

Seq Num: 6700

Required for case closure: Yes

Registry field: [Complications].[MechCircSupp]

Description: Did the patient ever require ECMO or VAD support during this CICU encounter? Support that began prior to this encounter should be included if it continued after the CICU service became responsible for care. If Yes, document each course that occurred during this encounter.

Clarification 6/1/2023: In a patient supported with a VAD who has an oxygenator added to the circuit (i.e., the assist device is still in place and patient is not fully converted to an ECMO circuit), the VAD event should continue from placement through removal of that device and an ECMO course should also be documented for the duration that the oxygenator is in place.

If a patient's entire course of mechanical support takes place outside of the CICU (example: patient is cannulated in the cath lab, goes to the OR for an intervention, and then comes off support prior to coming to the CICU), a course of mechanical support should not be recorded.

Any decannulation/recannulation where mechanical support is discontinued and then needs to be reinitiated should be documented as separate courses of mechanical support. This is different than ELSO documentation, where recannulation within 12 hours is considered a single course.

These events should all be documented as single courses of mechanical support:
- a cannula change
- a transition between VV and VA ECMO
- a transition from one type of VAD to another
- a patient is bridged with the cannulae in place as a trial off of support but support has to be reinitiated (“failed clamp trial”)

Clarification 2/1/2025: Do not code mechanical circulatory support if cannulation attempted but flows never established.

A patient with any combination of LVAD and RVAD can be considered to have one continuous VAD run if at least one ventricle has a VAD in place throughout.

If support is initiated by a surgeon other than your CT surgeon (e.g., adult or general pediatric surgeon) and there is no STS entry, or if support is initiated by your CT surgeon but an STS entry is not made for any reason, capture the mechanical support just as you would if cannulation was done by your CT surgeon/entry in STS is made.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Circulatory support type

Seq Num: 6710

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppType]

Description: Type of mechanical circulatory support for this course

Clarification 2/1/2025: Code total artificial heart as a VAD.

Values	*Code*	*Text*
	1	VAD
	2	ECMO

Reason for ECMO

Seq Num: 6720

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppReason]

Description: If the patient was on ECMO, select the reason it was initiated

Values	*Code*	*Text*
	1	LCOS/Cardiac failure/Ventricular dysfunction
	3	Hypoxemia
	4	Hypercarbic respiratory failure
	5	Shunt occlusion
	6	Arrhythmia
	7	Bleeding
	8	Multisystem organ failure
Retired	2	Ventricular dysfunction

Active CPR at cannulation

Seq Num: 6730

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppCPR]

Description: If the patient was on ECMO, indicate whether the patient was receiving active CPR at the time of cannulation

Clarification 6/1/2023: If a patient had return of spontaneous circulation following CPR, but the decision was made to cannulate onto ECMO, and the patient had a ROSC of less than 20 minutes before the cannulation began, then this is considered ECPR for both 'Active CPR at cannulation' (#6730) and the arrest complication (#6460).

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Active CPR within 2 hours prior to initiation of cannulation

Seq Num: 6740

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppPrevCPR]

Description: If the patient was not receiving CPR at cannulation, indicate whether active CPR was received within 2 hours prior to cannulation

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Initial ECMO cannula site

Seq Num: 6742

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppInitCan]

Description: Indicate the initial cannula site(s)

Values	*Code*	*Text*
	1	Peripheral
	2	Transthoracic
	3	Both
	9	Unk

Final ECMO cannula site

Seq Num: 6744

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppFinalCan]

Description: Indicate the final cannula site(s)

Values	*Code*	*Text*
	1	Peripheral
	2	Transthoracic
	3	Both
	9	Unk

Support present at start of CICU encounter

Seq Num: 6750

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppCICUStart]

Description: Was this course of support initiated prior to the start of the CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No

Date/time of circulatory support initiation

Seq Num: 6760

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppInitDtTm]

Description: Date/time this course mechanical circulatory support began. If the patient was on support prior to the CICU encounter, this will default to the CICU start date/time. If support was initiated in the OR, use the date/time of postop ICU arrival as the start date/time.

Clarification 6/1/2023: The mechanical support start time for patients placed on support in the CICU is the time at which full flows are reached. Consult clinical champion on a case by case basis if full flow time is unclear.

If mechanical support is initiated outside of the CICU prior to the start of a CICU encounter, the start time will be the start of the CICU encounter.

If mechanical support is initiated outside of the CICU but after the start of the CICU encounter (example: a patient is admitted to the CICU and then goes to the cath lab and has ECMO initiated in the cath lab), the mechanical support start time will be the time at which full flows are achieved.

For bedside procedures, use the time full flow is established.

Support present at end of CICU encounter

Seq Num: 6770

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppCICUEnd]

Description: Was the patient still on this course of support at the end of the CICU encounter? This includes patients who died on support and those who died immediately after support was withdrawn.

Values	*Code*	*Text*
	1	Yes
	0	No

Date/time of circulatory support discontinuation

Seq Num: 6780

Required for case closure: Yes

Registry field: [CompMechSupport].[MechCircSuppDiscDtTm]

Description: Date/time this course mechanical circulatory support ended. If the patient was still on support at the end of the CICU encounter, this will default to the CICU discharge date/time.

Clarification 6/1/2023: For a patient who is taken to the OR for discontinuation of mechanical support, use the time the patient leaves the unit as the support end time. If your site's preference is to use the actual time off mechanical support in the OR to be consistent with ELSO data entry, that is acceptable also. Each site should be consistent in their methodology.

If mechanical support is discontinued due to discontinuation of life sustaining measures and the patient does not immediately expire when mechanical support is discontinued, record the actual end time of mechanical support. If the patient expires immediately, record that support was present at time of discharge and use time of death as the end time for mechanical support.

Low cardiac output syndrome (LCOS)

Seq Num: 6851

Required for case closure: Yes

Registry field: [Complications].[CompLCOS2]

Description: Did the patient have any episodes of low cardiac output syndrome (LCOS) during the CICU encounter? LCOS is defined by at least one of the following: 1. VIS >15 at any time 2. Tripling of VIS during any 48 hour period, INCLUDING escalation immediately after surgery; the baseline VIS must be post-procedure, not before or during. After tripling, the VIS must be 10 or higher. 3. AVO2 difference >40% by invasive measurement or NIRS 4. LCOS documented in physician note. If Yes, document the earliest date any of these criteria were met.

Clarification 6/1/2023:
Criteria #2: A patient who is on no vasoactives and then reaches a VIS of 10 or greater in a 48 hour period is considered to meet the tripling criteria.

Do not compare preop and postop values (or pre- and post- cath values). ONLY compare post operative values to determine if the VIS has tripled.

Criteria #4: the physician note does not have to specifically state 'low cardiac output syndrome.' Synonyms such as “poor oxygen delivery” or “oxygen debt” are sufficient. Please work with your clinical champion to understand what phrases to look for to indicate the patient had LCOS.

Please also note that some sites include LCOS (or one of its synonyms) as part of their templated notes for all patients receiving certain types of ICU-level care. Please work with your clinical champion to determine if this is the case and, if so, how best to distinguish these patients from those with true LCOS.

Clarification 2/1/2025:

Criteria #3:
If using NIRS for the venous sat value when assessing the AVO2 difference, please review other data (other NIRS values over time, progress notes) to assure that you are not using a single spurious NIRS value.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Initial LCOS date/time

Seq Num: 6861

Required for case closure: Yes

Registry field: [Complications].[CompLCOS2DtTm]

Description: If the patient did have LCOS, record the date/time the patient first met any criteria.

Clarification 2/1/2025: If the patient meets LCOS criteria on arrival to the unit, please use the CICU arrival date/time.

LCOS - VIS >15

Seq Num: 6870

Required for case closure: Yes

Registry field: [Complications].[CompLCOSvIS]

Description: At the initial LCOS date/time, did the patient have a VIS over 15?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

LCOS - VIS tripled

Seq Num: 6872

Required for case closure: Yes

Registry field: [Complications].[CompLCOStriple]

Description: At the initial LCOS date/time, had the VIS tripled over a 48-hr period? After tripling, the score must be at least 10. This INCLUDES escalation of support following surgery.

Clarification 6/1/2023: A patient who is on no vasoactives and then reaches a VIS of 10 or greater in a 48 hour period is considered to meet the tripling criteria.

Clarification 2/1/2025 update: For this criteria, do not compare preop and postop values, or pre-cath and post-cath values. ONLY compare post operative values to determine if the VIS has tripled.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

LCOS - AVO2 >40%

Seq Num: 6874

Required for case closure: Yes

Registry field: [Complications].[CompLCOSavo]

Description: At the initial LCOS date/time, was the AVO2 difference >40% by invasive measurement or NIRS?

Clarification 2/1/2025: If using NIRS for the venous sat value when assessing the AVO2 difference, please review other data (other NIRS values over time, progress notes) to assure that you are not using a single spurious NIRS value.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

LCOS - Physician note

Seq Num: 6876

Required for case closure: Yes

Registry field: [Complications].[CompLCOSnote]

Description: At the initial LCOS date/time, was there documentation of LCOS in a physician note?

Clarification 6/1/2023: For this criteria, the physician note does not have to specifically state 'low cardiac output syndrome.' Synonyms such as “poor oxygen delivery” or “oxygen debt” are sufficient. Please work with your clinical champion to understand what phrases to look for to indicate the patient had LCOS.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

LCOS timing

Seq Num: 6881

Required for case closure: Yes

Registry field: [Complications].[CompLCOS2Timing]

Description: If the patient underwent cardiothoracic surgery during or immediately before this encounter, indicate whether this first episode of LCOS occurred preop or postop. If the initial episode was prior to the first cardiothoracic surgery for this encounter, select "Preop". If it was after the first cardiothoracic surgery for this encounter, select "Postop." If the patient did not have cardiothoracic surgery immediately before or during this encounter, select "N/A." Please do not select this answer until the patient has been discharged from the CICU to be sure that no cardiothoracic surgery ever took place.

Clarification 6/1/2023: This question refers to the first surgery of type “CPB Cardiovascular” or “No CPB Cardiovascular” during this CICU encounter. If LCOS is initially diagnosed prior to this surgery, it’s preop; if it is after this surgery, it’s postop (even if the patient goes on to have additional surgeries during the encounter.)

Surgeries of type “ECMO”, “VAD” (with or without bypass), “Thoracic”, etc., should not be considered when coding this as pre- or postop.

Clarification 2/1/2025: LCOS following a surgery is considered postop regardless of how much time has passed between the surgery and the episode of LCOS.

Values	*Code*	*Text*
	1	Preop
	2	Postop
	3	N/A
	9	Unk

Additional postop LCOS

Seq Num: 6901

Required for case closure: Yes

Registry field: [Complications].[CompLCOS2Post]

Description: If the initial LCOS episode recorded was preop, was there a subsequent episode of LCOS during the postoperative period of this CICU encounter?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Initial postop LCOS date/time

Seq Num: 6911

Required for case closure: Yes

Registry field: [Complications].[CompLCOS2PostDtTm]

Description: If the patient did have a subsequent postop LCOS episode, record the date/time the patient first met the criteria in the postoperative period.

Postop LCOS - VIS >15

Seq Num: 6920

Required for case closure: Yes

Registry field: [Complications].[CompLCOSpostVIS]

Description: At the initial postop LCOS date/time, did the patient have a VIS over 15?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Postop LCOS - VIS tripled

Seq Num: 6922

Required for case closure: Yes

Registry field: [Complications].[CompLCOSpostTriple]

Description: At the initial postop LCOS date/time, had the VIS tripled over a 48-hr period? After tripling, the score must be at least 10. This includes escalation of support following surgery.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Postop LCOS - AVO2 >40%

Seq Num: 6924

Required for case closure: Yes

Registry field: [Complications].[CompLCOSpostAVO]

Description: At the initial postop LCOS date/time, was the AVO2 difference >40% by invasive measurement or NIRS?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Postop LCOS - Physician note

Seq Num: 6926

Required for case closure: Yes

Registry field: [Complications].[CompLCOSpostNote]

Description: At the initial postop LCOS date/time, was there documentation of LCOS in a physician note?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

ICU-level treatment for PHTN

Seq Num: 6930

Required for case closure: Yes

Registry field: [Complications].[PHTNtherapy]

Description: During this CICU encounter, was continuous inhaled, continuous IV, or continuous subcutaneous therapy ever given for suspected or defined pulmonary artery hypertension or elevated pulmonary vascular resistance? Examples include inhaled nitric oxide, prostacyclin and remodulin. This does not include nitric oxide given for hypoxemia when there was clearly no pulmonary hypertension, nor does it include enteral therapy.

Clarification 6/1/2023: Do not include oral sildenafil here.

Do not code every patient on inhaled nitric oxide (iNO) has having PHTN. Only code patients receiving iNO for pulmonary hypertension / increased pulmonary vascular resistance. For example, patients on prophylactic iNO following stage II surgery and post-transplant patients on iNO for RV afterload reduction should not be coded as having PHTN.

Additionally, PHTN or increased PVR can be presumed by the clinician without other objective data. If the treating clinician believes that the patient has PHTN or elevated PVR and treats the patient with iNO based on that, then code PHTN.

Please note that patients on iNO for any reason should also be coded as Nitric Oxide = Yes (#5600) in the Therapy section.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

PHTN treatment start date/time

Seq Num: 6940

Required for case closure: Yes

Registry field: [Complications].[PHTNtherDtTm]

Description: Enter the date/time any ICU-level treatment was initiated.

Inhaled NO for PHTN

Seq Num: 7000

Required for case closure: Yes

Registry field: [Complications].[PHTNnox]

Description: Was inhaled nitric oxide used for treatment of pulmonary hypertension during this CICU encounter. This does not include nitric oxide given for hypoxemia when there was clearly no pulmonary hypertension.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Prostacyclin for PHTN

Seq Num: 7040

Required for case closure: Yes

Registry field: [Complications].[PHTNprost]

Description: Was prostacyclin used for treatment of pulmonary hypertension during this CICU encounter.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Remodulin for PHTN

Seq Num: 7060

Required for case closure: Yes

Registry field: [Complications].[PHTNremod]

Description: Was remodulin used for treatment of pulmonary hypertension during this CICU encounter.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Other therapy for PHTN

Seq Num: 7065

Required for case closure: Yes

Registry field: [Complications].[PHTNother]

Description: Was another continuous agent used for treatment of PHTN during this CICU encounter?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Other PHTN therapy - specify

Seq Num: 7066

Required for case closure: No

Registry field: [Complications].[PHTNotherSpec]

Description: Specify the other continuous agent

PHTN treatment at CICU end

Seq Num: 6960

Required for case closure: Yes

Registry field: [Complications].[PHTNCICUend]

Description: Was the patient still receiving ICU-level treatment for PHTN at CICU discharge?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

PHTN treatment end date/time

Seq Num: 6980

Required for case closure: Yes

Registry field: [Complications].[PHTNendDtTm]

Description: Date/time all PHTN treatments were discontinued. If the patient was still receiving treatment for PHTN at CICU discharge, this will default to the CICU discharge date/time.

Arrhythmia end date/time

Seq Num: 6620

Retired in version 2.0

Required for case closure: Yes

Registry field: [CompArrhythmia].[ArrhythEndDtTm]

Description: Date/time this arrhythmia ended. This is defined as the time all treatments were discontinued. If the patient was still receiving treatment for this arrhythmia at CICU discharge, this will default to the CICU discharge date/time.

Pulmonary vein obstruction

Seq Num: 6800

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPulmVeinObstr]

Description: Indicate whether the patient was diagnosed with a pulmonary vein obstruction during the CICU encounter. Pulmonary vein obstruction is defined as clinically significant stenosis or obstruction of pulmonary veins. Typically diagnosed by echocardiography or cardiac catheterization, this may present with or without symptoms. A “clinically significant” event or condition is an event or condition that necessitates a change in treatment.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Pulmonary vein obstruction dx date

Seq Num: 6810

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPulmVeinObstrDt]

Description: If the patient had a pulmonary vein obstruction, document the date it was first diagnosed during the CICU encounter.

Systemic vein obstruction

Seq Num: 6820

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompSystVeinObstr]

Description: Was the patient diagnosed with a systemic vein obstruction during the CICU encounter? Systemic vein obstruction is defined as clinically significant stenosis or obstruction of any major systemic vein (e.g., superior vena cava, inferior vena cava, femoral veins, internal jugular veins, etc.). A "clinically significant" event or condition is an event or condition that necessitates a change in treatment.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Systemic vein obstruction dx date

Seq Num: 6830

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompSystVeinObstrDt]

Description: If the patient had a systemic vein obstruction, document the date it was first diagnosed during the CICU encounter.

Low cardiac output syndrome (LCOS)

Seq Num: 6850

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompLCOS]

Description: Did the patient have any episodes of low cardiac output syndrome (LCOS) during the CICU encounter? LCOS is defined by at least one of the following: 1. VIS >15 at any time 2. Addition of a new vasoactive agent (inotrope or pressor or milrinone if note specifies this was started for LCOS, oxygen debt etc; not Esmolol, Nipride) for patients already on inotropic or vasopressor support 3. New initiation of vasoactive support (inotropes or vasopressors or milrinone; i.e. not Esmolol, Nipride, etc.) after a 24 hour period with no support. (For example, if a patient was weaned off low dose (VIS<15) Dopamine and Milrinone on POD 1, but then developed respiratory failure and required an Epinephrine infusion on POD 4, you would record LCOS on POD 4 and note the date and time. If a patient who is on no continuous vasoactive support has vasoactive agents initiated, they would meet the criteria for LCOS) 4. Widened A-V difference noted by physician 5. LCOS documented in physician note (If an attending physician notes an episode of LCOS, oxygen debt, circulatory failure, the date and time of that event should be

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

LCOS date/time

Seq Num: 6860

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompLCOSdtTm]

Description: If the patient did have LCOS, record the date/time the patient first met the criteria.

LCOS timing

Seq Num: 6880

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompLCOStiming]

Description: If the patient underwent cardiothoracic surgery during or immediately before this encounter, indicate whether this first episode of LCOS occurred preop or postop. If the initial episode was prior to the first cardiothoracic surgery for this encounter, select "Preop". If it was after the first cardiothoracic surgery for this encounter, select "Postop." If the patient did not have cardiothoracic surgery immediately before or during this encounter, select "N/A." Please do not select this answer until the patient has been discharged from the CICU to be sure that no cardiothoracic surgery ever took place.

Values	*Code*	*Text*
Retired	1	Preop
Retired	2	Postop
Retired	3	N/A
Retired	9	Unk

Additional postop LCOS

Seq Num: 6900

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompLCOSpostop]

Description: If the initial LCOS episode recorded was preop, was there a subsequent episode of LCOS during the postoperative period of this CICU encounter?

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Postop LCOS date/time

Seq Num: 6910

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompLCOSpostopDtTm]

Description: If the patient did have a subsequent postop LCOS episode, record the date/time the patient first met the criteria in the postoperative period.

Inhaled iloprost for PHTN

Seq Num: 7020

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[PHTNilo]

Description: Was inhaled iloprost used for treatment of pulmonary hypertension during this CICU encounter.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Listed for heart transplant

Seq Num: 7160

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHeartTxListed]

Description: During the CICU encounter, was the patient placed on the transplant list or transferred to another institution with the expressed intent to list (e.g., the current hospital has no transplant program). If there was an active transplant evaluation during the CICU encounter but the listing occurred at the same hospital after CICU discharge, code Yes.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Date listed for heart transplant

Seq Num: 7180

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHeartTxListedDt]

Description: If the patient was placed on the heart transplant list, document the date of listing. If the actual listing took place after CICU discharge, use the CICU discharge date.

Medical Events and Complications-Operative/Procedural

Bleeding requiring reoperation

Seq Num: 7200

Required for case closure: Yes

Registry field: [Complications].[CompReopBleed]

Description: Did the patient have any postoperative or postprocedural bleeding requiring reexploration during the CICU encounter

Clarification 6/1/2023: If the patient is taken to the OR by the CT surgeons and re-opened to drain blood in the pericardial and/or pleural space, record as a reoperation for bleeding only (i.e., do not need to also code hemothorax or hemopericardium).

Do not record an event if the bleeding complication was due to a procedure or surgery that was not performed by the CT surgeons.

Clarification 2/1/2025: If the reoperation is primarily for ECMO decannulation, and hemostatic control is done as a part of that procedure, do not code reoperation for bleeding.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Date/time first reop for bleeding

Seq Num: 7220

Required for case closure: Yes

Registry field: [Complications].[CompReopBleedDtTm]

Description: Date/time of the first reop for bleeding.

Sternum left open or reopened

Seq Num: 7280

Required for case closure: Yes

Registry field: [Complications].[CompSternumOpen]

Description: Was the sternum left open postoperatively, whether planned or unplanned, with the goal of delayed sternotomy closure? Code Yes if the sternum was left open at any time. This includes patients who return from the OR with an open chest as well as those who are re-opened following an initial closure. Record every time the sternum was opened or re-opened during this CICU encounter.

Clarification 6/1/2023: This field is designed to capture all patients with an open sternum in the ICU and to calculate the days of open chest in the ICU. All patients whose sternum was left open in the ICU – whether planned or unplanned – must be coded as Yes.

This includes patients who return from the OR with an open chest (#9210) as well as those reopened following an initial closure.

All patients coded as Yes on #9210 must also be coded as Yes to this complication.

Values	*Code*	*Text*
	1	Yes
	0	No

Date sternum left open or reopened

Seq Num: 7288

Required for case closure: Yes

Registry field: [CompSternum].[SternumDt]

Description: Record the date the sternum was left open or re-opened. If this was before the CICU admission, use the CICU admit date.

Venue opened

Seq Num: 7290

Required for case closure: Yes

Registry field: [CompSternum].[SternumVenue]

Description: Record the venue in which the sternum was opened

Values	*Code*	*Text*
	1	OR
	2	CICU
	8	Other
	9	Unk

Closed during this encounter

Seq Num: 7292

Required for case closure: Yes

Registry field: [CompSternum].[SternumClosed]

Description: For this instance of open sternum, was it closed before the end of this CICU encounter?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Date sternum closed

Seq Num: 7294

Required for case closure: Yes

Registry field: [CompSternum].[SternumClosedDt]

Description: Record the date the sternum was closed.

Intraoperative death or intraprocedural death

Seq Num: 7300

Required for case closure: Yes

Registry field: [Complications].[CompIntraopDeath]

Description: Did the patient die in the operating room or procedure room (such as catheterization laboratory or hybrid suite) during an operation or procedure

Values	*Code*	*Text*
	1	Yes
	0	No

Unplanned reoperation or reintervention

Seq Num: 7240

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompReopUnplan]

Description: Did the patient have any additional unplanned cardiac reoperation, unplanned EP, or unplanned interventional cardiac catheterization during the CICU encounter? These include interventions for infection, hemodynamic instability, and residual or recurrent lesion. Delayed sternal closure, ECMO decannulation, VAD decannulation, and removal of Broviac catheter should not be included. Reoperation for bleeding should be documented in the "Bleeding requiring reoperation" field.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Date/time first unplanned reop/reintervention

Seq Num: 7260

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompReopUnplanDtTm]

Description: Date/time of first unplanned reoperation/reintervention (not for bleeding).

Chylothorax requiring intervention

Seq Num: 7320

Required for case closure: Yes

Registry field: [Complications].[CompChyloIntv]

Description: Was the patient diagnosed with a chylothorax requiring intervention during the CICU encounter? Chylothorax can be determined by clinical status as documented in a note or by laboratory data (fluid with elevated triglyceride, cholesterol and/or lymphocyte count). For purposes of this definition, a change in diet is considered an intervention.

Clarification 6/1/2023: A patient who returned to the CICU from the OR with a chest tube in place, has chylous drainage, but no change in diet should not be coded as chylothorax requiring intervention. There was no intervention directly related to the chylothorax. If a new chest tube had been placed, or the patient's diet was changed, that would be coded as Yes to this field.

A patient who has a chest tube placed in the CICU to treat a pleural effusion, has chylous fluid the next day, and is then started on a low-fat diet, should be coded as chylothorax treated with both a chest tube (#7401) and diet change (#7320).

Clarification 2/1/2025: Chyle drained from the pericardial space should be coded as a pericardial effusion only, not a chylothorax.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Chylothorax treatment date

Seq Num: 7341

Required for case closure: Yes

Registry field: [Complications].[CompChyloIntvDt]

Description: Document the date chylothorax treatment was initiated during this CICU encounter

Chest tube for chylothorax

Seq Num: 7360

Required for case closure: Yes

Registry field: [Complications].[CompChyloChestTube]

Description: If the patient was diagnosed with a chylothorax, indicate whether it required placement of a chest tube during this CICU encounter

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Initial chylothorax chest tube date

Seq Num: 7381

Required for case closure: Yes

Registry field: [Complications].[CompChyloChestTubeDt]

Description: Document the date the first chest tube was placed to treat the chylothorax

Multiple chest tubes for chylothorax

Seq Num: 7382

Required for case closure: Yes

Registry field: [Complications].[CompChyloChestTubeMult]

Description: Were multiple chest tubes placed specifically for chylothorax during this encounter

Clarification 6/1/2023: Code Yes both for patients who had multiple tubes placed at the same time, and patients where a new tube was placed a few days after the first one.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Diet change for chylothorax

Seq Num: 7383

Required for case closure: Yes

Registry field: [Complications].[CompChyloDiet]

Description: At any time during this encounter, was the chylothorax treated with a change in diet?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

NPO for chylothorax

Seq Num: 7384

Required for case closure: Yes

Registry field: [Complications].[CompChyloNPO]

Description: At any time during this encounter, was the patient made NPO specifically due to the chylothorax?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Octreotide for chylothorax

Seq Num: 7385

Required for case closure: Yes

Registry field: [Complications].[CompChyloOctreotide]

Description: At any time during this encounter, was the chylothorax treated with an octreotide infusion?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Sildenafil for chylothorax

Seq Num: 7386

Required for case closure: Yes

Registry field: [Complications].[CompChyloSildenafil]

Description: At any time during this encounter, was sildenafil used specifically to treat the chylothorax?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Other treatment for chylothorax

Seq Num: 7387

Required for case closure: Yes

Registry field: [Complications].[CompChyloOther]

Description: At any time during this encounter, was another therapy used specifically to treat the chylothorax?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Other treatment for chylothorax - specify

Seq Num: 7388

Required for case closure: No

Registry field: [Complications].[CompChyloOtherSpec]

Description: Specify the other chylothorax treatment

Pleural effusion/hemothorax requiring chest tube

Seq Num: 7401

Required for case closure: Yes

Registry field: [Complications].[CompEffusionTube]

Description: Was the patient diagnosed with a pleural effusion requiring placement of a chest tube during this CICU encounter? Pleural effusion is defined as an abnormal accumulation of fluid in the pleural space requiring drainage with a chest tube. Pleural effusions include hemothorax (blood accumulation in the pleural space)

Clarification 6/1/2023: If the patient is taken to the OR by the CT surgeons and re-opened to drain blood in the pericardial and/or pleural space, record as a reoperation for bleeding only (#7200). You do not need to also code hemothorax or hemopericardium.

Clarification 2/1/2025: Do not code as pleural effusion if patient has thoracentesis without placement of a chest tube.

Do not code as pleural effusion if drain placed under the silastic patch in a patient with an open chest. (These can be coded as "other complication.)

Chylothorax does not also need to be captured as a pleural effusion. If it meets the definition of a chylothorax, only code as chylothorax. If a drain is placed but no treatment is initiated for chylothorax, capture as pleural effusion even if labs suggest fluid was chyle.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Initial pleural effusion/hemothorax chest tube date

Seq Num: 7405

Required for case closure: Yes

Registry field: [Complications].[CompEffusionTubeDt]

Description: Document the date the first chest tube was placed to treat the pleural effusion / hemothorax.

Multiple chest tubes for pleural effusion/hemothorax

Seq Num: 7407

Required for case closure: Yes

Registry field: [Complications].[CompEffusionTubeMult]

Description: Were multiple chest tubes placed specifically for pleural effusion/hemothorax during this encounter?

Clarification 6/1/2023: Code Yes for both patients who had multiple tubes placed at the same time, and patients where a new tube was placed a few days after the first one.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Pneumothorax requiring chest tube

Seq Num: 7481

Required for case closure: Yes

Registry field: [Complications].[CompPneumothoraxTube]

Description: Was the patient diagnosed with a pneumothorax requiring placement of a chest tube during the CICU encounter? Pneumothorax is defined as a collection of gas in the pleural space resulting in collapse of some or all of the lung on the affected side.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Initial pneumothorax chest tube date

Seq Num: 7485

Required for case closure: Yes

Registry field: [Complications].[CompPneumothoraxTubeDt]

Description: Document the date the first chest tube was placed to treat pneumothorax

Multiple chest tubes for pneumothorax

Seq Num: 7487

Required for case closure: Yes

Registry field: [Complications].[CompPneumothoraxTubeMult]

Description: Were multiple chest tubes placed specifically for pneumothorax during this encounter?

Clarification 6/1/2023: Code Yes for both patients who had multiple tubes placed at the same time, and patients where a new tube was placed a few days after the first one.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Pulmonary embolism

Seq Num: 7680

Required for case closure: Yes

Registry field: [Complications].[CompPulmEmbol]

Description: Was the patient diagnosed with a pulmonary embolism during this CICU encounter? Pulmonary embolism is defined as the embolization of a clot or other foreign material to the pulmonary vasculature documented by CT angiogram, nuclear medicine scan, MRI or angiography. A thrombus in a cavopulmonary anastomosis pathway should be coded as a pulmonary embolism.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Pulmonary embolism date

Seq Num: 7682

Required for case closure: Yes

Registry field: [Complications].[CompPulmEmbolDt]

Description: Document the date the pulmonary embolism was first diagnosed during this CICU encounter

Chylothorax treatment date/time

Seq Num: 7340

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompChyloIntvDtTm]

Description: If the patient was diagnosed with a chylothorax, document the date/time treatment was initiated during this CICU encounter

Chest tube date/time

Seq Num: 7380

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompChyloChestTubeDtTm]

Description: If the patient had a chylothorax requiring a chest tube, document the date/time the chest tube was placed

Pleural effusion requiring drainage

Seq Num: 7400

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPleuralEff]

Description: Was the patient diagnosed with a pleural effusion requiring drainage during this CICU encounter? Pleural effusion is defined as an abnormal accumulation of fluid in the pleural space requiring drainage by any technique.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Pleural effusion drainage date/time

Seq Num: 7420

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPleuralEffDrainDtTm]

Description: If the patient was diagnosed with a pleural effusion, document the date/time drainage was initiated during this CICU encounter

Chest tube for pleural effusion

Seq Num: 7440

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPleuralEffChestTube]

Description: If the patient was diagnosed with a pleural effusion, did it require placement of a chest tube during this CICU encounter?

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Chest tube date/time

Seq Num: 7460

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPleuralEffChestTubeDtTm]

Description: If the patient had a pleural effusion requiring a chest tube, document the date/time the chest tube was placed

Pneumothorax requiring intervention

Seq Num: 7480

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPneumo]

Description: Was the patient diagnosed with a pneumothorax requiring intervention during the CICU encounter? Pneumothorax is defined as a collection of gas in the pleural space resulting in collapse of some or all of the lung on the affected side, requiring intervention.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Pneumothorax date/time

Seq Num: 7500

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPneumoDtTm]

Description: If the patient was diagnosed with a pneumothorax, document the date/time intervention was initiated during this CICU encounter

Chest tube for pneumothorax

Seq Num: 7520

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPneumoChestTube]

Description: If the patient was diagnosed with a pneumothorax, did it require placement of a chest tube during this CICU encounter?

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Chest tube date/time

Seq Num: 7540

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPneumoChestTubeDtTm]

Description: If the patient had a pneumothorax requiring a chest tube, document the date/time the chest tube was placed

Hemothorax requiring intervention

Seq Num: 7560

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHemo]

Description: Was the patient diagnosed with a hemothorax requiring intervention during the CICU encounter? Hemothorax is defined as the presence of blood in the pleural space requiring drainage by any technique.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Hemothorax date/time

Seq Num: 7580

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHemoDtTm]

Description: If the patient was diagnosed with a hemothorax, document the date/time intervention was initiated during this CICU encounter

Chest tube for hemothorax

Seq Num: 7600

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHemoChestTube]

Description: If the patient was diagnosed with a hemothorax, did it require placement of a chest tube during this CICU encounter?

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Chest tube date/time

Seq Num: 7620

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHemoChestTubeDtTm]

Description: If the patient had a hemothorax requiring a chest tube, document the date/time the chest tube was placed

ARDS

Seq Num: 7640

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompARDS]

Description: Was the patient diagnosed with acute respiratory distress syndrome (ARDS) during this CICU encounter? ARDS is defined as a clinical syndrome with a variety of etiologies characterized by refractory hypoxemia and bilateral diffuse interstitial infiltrates on chest radiography (CXR), as well as stiff lungs with decreased compliance, increased intrapulmonary shunting, and decreased airway dead space.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

ARDS date/time

Seq Num: 7660

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompARDSDtTm]

Description: If the patient was diagnosed with ARDS, document the date/time it was diagnosed during this CICU encounter

Pulmonary embolism date/time

Seq Num: 7700

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPulmEmbolDtTm]

Description: If the patient did have a pulmonary embolism, document the date/time it was first diagnosed during this CICU encounter

Medical Events Complications-Infectious

Superficial surgical site infection (SSI)

Seq Num: 7880

Required for case closure: Yes

Registry field: [Complications].[CompSupWoundInf]

Description: Did the patient have a superficial surgical site infection (superficial SSI), as defined by the CDC, during this CICU encounter or within 48 hours of discharge? These procedure-related infections must be adjudicated by local infection control for newly acquired infections in the CICU (i.e., not present on admission). Code clear examples of these infections present on admission that could not be adjudicated to the CICU by local infection control.

Clarification 6/1/2023: If a patient is admitted to the CICU with an infection from the floor or an outside hospital, please code these as events on arrival even though your infection control team would not adjudicate these as attributable to the CICU. We will filter such events out on the reporting platform, but if they are entered we can understand how to account for them in other analyses.

Clarification 2/1/2025: If infection control designates the site infection as non-reported/non-scored, do not code as SSI. It can be coded under "other complication."

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Superficial SSI date

Seq Num: 7900

Required for case closure: Yes

Registry field: [Complications].[CompSupWoundInfDt]

Description: Initial date a superficial SSI was diagnosed. If the infection was present on admission, use the CICU admit date.

Deep surgical site infection (SSI)

Seq Num: 7920

Required for case closure: Yes

Registry field: [Complications].[CompWoundInf]

Description: Was the patient diagnosed with a deep incisional infection or organ space infection (mediastinitis), as defined by the CDC, during this CICU encounter or within 48 hours of discharge? These procedure-related infections must be adjudicated by local infection control for newly acquired infections in the CICU (i.e., not present on admission). Code clear examples of these infections present on admission that could not be adjudicated to the CICU by local infection control.

Clarification 6/1/2023: If a patient is admitted to the CICU with an infection from the floor or an outside hospital, please code these as events on arrival even though your infection control team would not adjudicate these as attributable to the CICU. We will filter such events out on the reporting platform, but if they are entered we can understand how to account for them in other analyses.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Deep SSI date

Seq Num: 7960

Required for case closure: Yes

Registry field: [CompWoundInfection].[WoundInfDt]

Description: Date this deep SSI was diagnosed during the CICU encounter. If it was present on admission, use the CICU admit date.

Deep SSI organism

Seq Num: 7980

Required for case closure: Yes

Registry field: [CompWoundInfection].[WoundInfOrgism]

Description: Type of organism associated with this deep SSI.

Values	*Code*	*Text*
	1	Gram negative
	2	Gram positive
	3	Mixed
	4	Fungal
	9	Unk

CLABSI

Seq Num: 7760

Required for case closure: Yes

Registry field: [Complications].[CompCABSI]

Description: Did the patient have central line-associated blood stream infection (CLABSI), as defined by the CDC, during this CICU encounter or within 48 hours of discharge? If yes, document every CLABSI that occurred. These device-related infections must be adjudicated by local infection control for newly acquired infections in the CICU (i.e., not present on admission). Code clear examples of these infections present on admission that could not be adjudicated to the CICU by local infection control.

Clarification 6/1/2023: If a patient is admitted to the CICU with an infection from the floor or an outside hospital, please code these as events on arrival even though your infection control team would not adjudicate these as attributable to the CICU. We will filter such events out on the reporting platform, but if they are entered we can understand how to account for them in other analyses.

Please follow the rules your local infection control is using for post-transfer CLABSIs. They may say you should only include infections through 1 calendar day following transfer off the unit. On the PC4 reporting platform, we will exclude infections that occur more than 1 calendar day after transfer to ensure that data from all sites are comparable.

We will also remove intracardiac line days from the denominator of the CLABSI/line day metric, since intracardiac lines are not included in the CDC CLABSI definition.

Clarification 2/1/2025: Patients on ECMO cannot be adjudicated to have a CLABSI. They can be coded as Yes to sepsis if they meet criteria, or as "other infection" if bacteremic when on ECMO.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

CLABSI date

Seq Num: 7800

Required for case closure: Yes

Registry field: [CompCABSI].[CABSIDt]

Description: Date this CLABSI was diagnosed.

CLABSI organism

Seq Num: 7820

Required for case closure: Yes

Registry field: [CompCABSI].[CABSIOrganism]

Description: Type of organism associated with the CLABSI

Values	*Code*	*Text*
	1	Gram negative
	2	Gram positive
	3	Mixed
	4	Fungal
	9	Unknown

UTI

Seq Num: 8040

Required for case closure: Yes

Registry field: [Complications].[CompUTI]

Description: Was the patient diagnosed with a urinary tract infection (UTI), as defined by the CDC, during the CICU encounter or within 48 hours of CICU discharge? This includes both catheter-associated and non-catheter-associated UTIs. If Yes, document ever UTI that occurred. CAUTIs must be adjudicated by local infection control for newly acquired infections in the CICU (i.e., not present on admission). Code clear examples of these infections present on admission that could not be adjudicated to the CICU by local infection control. Non-CAUTI UTIs need not be adjudicated by local infection control.

Clarification 6/1/2023: If a patient is admitted to the CICU with an infection from the floor or an outside hospital, please code these as events on arrival even though your infection control team would not adjudicate these as attributable to the CICU. We will filter such events out on the reporting platform, but if they are entered we can understand how to account for them in other analyses.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

UTI date

Seq Num: 8080

Required for case closure: Yes

Registry field: [CompUTI].[UTIDt]

Description: Date this UTI was diagnosed

UTI organism

Seq Num: 8100

Required for case closure: Yes

Registry field: [CompUTI].[UTIOrganism]

Description: Type of organism associated with this UTI

Values	*Code*	*Text*
	1	Gram negative
	2	Gram positive
	3	Mixed
	4	Fungal
	9	Unk

CAUTI

Seq Num: 8101

Required for case closure: Yes

Registry field: [CompUTI].[CAUTI]

Description: Was this a catheter-associated UTI as defined by the CDC? These device-related infections must be adjudicated by local infection control for newly acquired infections in the CICU (i.e., not present on admission). Code clear examples of these infections present on admission that could not be adjudicated to the CICU by local infection control.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

VAP

Seq Num: 7721

Required for case closure: Yes

Registry field: [Complications].[CompVAP]

Description: Did the patient have ventilator-associated pneumonia, as defined by the CDC, during this CICU encounter or within 48 hours of discharge? These device-related infections must be adjudicated by local infection control for newly acquired infections in the CICU (i.e., not present on admission). Code clear examples of these infections present on admission that could not be adjudicated to the CICU by local infection control.

Clarification 6/1/2023: If a patient is admitted to the CICU with an infection from the floor or an outside hospital, please code these as events on arrival even though your infection control team would not adjudicate these as attributable to the CICU. We will filter such events out on the reporting platform, but if they are entered we can understand how to account for them in other analyses.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

VAP date

Seq Num: 7722

Required for case closure: Yes

Registry field: [Complications].[CompVAPdt]

Description: Record the earliest date VAP was diagnosed during the CICU encounter. If it was present on admission, use the CICU admit date.

Non-VAP pneumonia

Seq Num: 7741

Required for case closure: Yes

Registry field: [Complications].[CompNonVAP]

Description: Did the patient have non-VAP pneumonia as defined by the CDC, during this CICU encounter?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Non-VAP pneumonia date

Seq Num: 7742

Required for case closure: Yes

Registry field: [Complications].[CompNonVAPDt]

Description: Record the date the non-VAP pneumonia was first diagnosed during this CICU encounter. If it was present on admission, use the CICU admit date.

Sepsis

Seq Num: 7840

Required for case closure: Yes

Registry field: [Complications].[CompSepsis]

Description: Was the patient diagnosed with sepsis during the CICU encounter? Sepsis is defined as temperature instability and abnormal WBC (leukopenia or leukocytosis) and either (1) initiation or escalation of inotropic support or (2) initiation or escalation of mechanical ventilation. In addition the patient must be treated with antibiotics for > 6 days.

Clarification 6/1/2023: Criteria #2, initiation or escalation of mechanical ventilation, refers only to invasive ventilation.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Sepsis date

Seq Num: 7860

Required for case closure: Yes

Registry field: [Complications].[CompSepsisDt]

Description: If the patient had sepsis, document the date it was first diagnosed during the CICU encounter.

Positive culture for sepsis

Seq Num: 7862

Required for case closure: Yes

Registry field: [Complications].[CompSepsisCulture]

Description: Did the patient have a positive culture suggesting a pathogenic organism during a sepsis episode? This organism would be presumed as the cause of sepsis.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Endocarditis

Seq Num: 6520

Required for case closure: Yes

Registry field: [Complications].[CompEndocard]

Description: Indicate whether the patient had endocarditis, as defined by the modified Duke criteria, during the CICU encounter.

Clarification 2/1/2025: Patient must meet criteria for DEFINITIVE endocarditis by Duke criteria to code this complication and/or medical diagnosis.

Patient may have multiple admissions/encounters for same episode of endocarditis while antibiotic treatment is ongoing. Apply Duke criteria to each encounter to decide if endocarditis should be included as a complication.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Endocarditis dx date

Seq Num: 6522

Required for case closure: Yes

Registry field: [Complications].[CompEndocardDt]

Description: Record the date endocarditis was diagnosed during the CICU encounter. If it was present on admission, use the CICU admit date.

Pneumonia

Seq Num: 7720

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPneumonia]

Description: Was the patient diagnosed with pneumonia, as defined by the CDC, during the CICU encounter? Pneumonia is defined as a "respiratory disease characterized by inflammation of the lung parenchyma (including alveolar spaces and interstitial tissue), most commonly caused by infection". Pneumonia is diagnosed by appropriate clinical findings (such as fever, leukopenia or leukocytosis, and new onset of purulent sputum) and one or more of the following: positive cultures (of sputum or pulmonary secretions) and/or pulmonary infiltrate on chest x-ray. An endotracheal tube culture may or may not be positive. Patients commonly demonstrate an evolving area of focal lung consolidation accompanied by fever (>38.5). Pneumonia (pneumonitis) may affect an entire lobe (lobar pneumonia), a segment of a lobe (segmental or lobular pneumonia), alveoli contiguous to bronchi (bronchopneumonia), or interstitial tissue (interstitial pneumonia). These distinctions are generally based on x-ray observations. If the infection began during the CICU encounter, mark Yes only if it has been adjudicated by the local infection control personnel. If the institution does not have infection control personnel, the clinician responsible for adjudicating infections for the purpose of external reporting must confirm the presence of the infection. If the infection began prior to CICU admission, code this complication and use the CICU admit date/time as the start date/time. These infections may not be adjudicated by the local infection control personnel or person responsible for adjudicating infections because they would not be attributed to the CICU.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Pneumonia date

Seq Num: 7740

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPneumoniaDt]

Description: If the patient did have pneumonia, document the date it was first diagnosed during this CICU encounter

Meningitis

Seq Num: 8000

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompMeningitis]

Description: Was the patient diagnosed with meningitis, as defined by the CDC, during the CICU encounter or within 48 hours of CICU discharge. If the infection began during the CICU encounter, mark Yes only if it has been adjudicated by the local infection control personnel. If the institution does not have infection control personnel, the clinician responsible for adjudicating infections for the purpose of external reporting must confirm the presence of the infection. If the infection began prior to CICU admission, code this complication and use the CICU admit date/time as the start date/time. These infections may not be adjudicated by the local infection control personnel or person responsible for adjudicating infections because they would not be attributed to the CICU.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Meningitis date

Seq Num: 8020

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompMeningitisDt]

Description: If the patient had meningitis during the CICU encounter, document the date it was first diagnosed.

Medical Events and Complications-Neuro

Stroke

Seq Num: 8120

Required for case closure: Yes

Registry field: [Complications].[CompStroke]

Description: Was the patient diagnosed with a stroke during the CICU encounter? A stroke is defined as any confirmed neurological deficit of abrupt onset caused by a disturbance in blood flow to the brain, when the neurologic deficit does not resolve within 24 hours. If the patient is chemically sedated and/or neuromuscularly blocked or is unable to undergo imaging, physician documentation of stroke (e.g., a neurologic consultation) is sufficient for coding this event. Record each new stroke diagnosed during the encounter. The stroke must be in a new territory to be considered a distinct event.

Clarification 6/1/2023: Code HIE (hypoxic-ischemic encephalopathy) or other diffuse anoxic brain injury here as Stroke.

If routine brain imaging (e.g., many centers do MRIs on all neonates after bypass) detects a minor abnormality that was not suspected clinically prior to the study and which does not result in any intervention, the finding does not need to be documented as a complication. Adjudicate with the clinical champion as needed.

Please see the Stroke/Intracranial Hemorrhage Scenarios table in the Appendix at the end of this document for coding examples.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Stroke date/time

Seq Num: 8142

Required for case closure: Yes

Registry field: [CompStroke].[StrokeDtTm]

Description: Document the date/time this stroke was diagnosed

Clarification 6/1/2023: For patients who exhibit clear clinical symptoms of a stroke, but who do not receive a confirmation via MRI until several days later, use the date/time the symptoms were noted. Code the method of diagnosis (#8144) as both clinical and imaging.

If there are no symptoms, use the imaging date/time.

How was this stroke diagnosed

Seq Num: 8144

Required for case closure: Yes

Registry field: [CompStroke].[StrokeDx]

Description: Indicate whether this stroke was diagnosed through clinical findings, imaging, or both.

Values	*Code*	*Text*
	1	Clinical findings
	2	Imaging
	3	Both
	9	Unk

Cranial ultrasound to diagnose stroke

Seq Num: 8146

Required for case closure: Yes

Registry field: [CompStroke].[StrokeDxUS]

Description: Was cranial ultrasound used to diagnose this stroke?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

MRI to diagnose stroke

Seq Num: 8148

Required for case closure: Yes

Registry field: [CompStroke].[StrokeDxMRI]

Description: Was an MRI used to diagnose this stroke?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

CT to diagnose stroke

Seq Num: 8150

Required for case closure: Yes

Registry field: [CompStroke].[StrokeDxCT]

Description: Was a CT scan used to diagnose this stroke?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Primarily hemorrhagic

Seq Num: 8152

Required for case closure: Yes

Registry field: [CompStroke].[StrokeHemorrhage]

Description: Was this stroke hemorrhagic at the time of diagnosis?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Hemorrhagic conversion

Seq Num: 8154

Required for case closure: Yes

Registry field: [CompStroke].[StrokeConvert]

Description: If this stroke was not primarily hemorrhagic, was there hemorrhagic conversion during this encounter?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Conversion date/time

Seq Num: 8156

Required for case closure: Yes

Registry field: [CompStroke].[StrokeConvertDtTm]

Description: Record the date/time of hemorrhagic conversion.

Seizure

Seq Num: 8220

Required for case closure: Yes

Registry field: [Complications].[CompSeizure]

Description: Was the patient diagnosed with a seizure during the CICU encounter? A seizure is defined as the clinical and/or electroencephalographic recognition of epileptiform activity.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Seizure date/time

Seq Num: 8240

Required for case closure: Yes

Registry field: [Complications].[CompSeizureDtTm]

Description: If the patient was diagnosed with a seizure, document the date/time of the first occurrence during the CICU encounter.

Clarification 6/1/2023: For patients admitted to the CICU with a known seizure disorder, this date/time is still the date/time of the first seizure.

Clarification 2/1/2025: If difficult to ascertain the timing of the initial seizure (e.g., seizures electrographic only and no clear timing can be found in the medical record), use the date/time of initial anti-epileptic medication administration.

IVH grade II or higher

Seq Num: 8260

Required for case closure: Yes

Registry field: [Complications].[CompIVH]

Description: Did the patient have a new finding of intraventricular hemorrhage (IVH) grade II or higher on cranial ultrasound during the CICU encounter? If using another nomenclature for IVH grading, determine the equivalent grade.

Clarification 6/1/2023: If routine brain imaging (e.g., many centers do MRIs on all neonates after bypass) detects a minor abnormality that was not suspected clinically prior to the study and which does not result in any intervention or further testing, the finding does not need to be documented as a complication. Adjudicate with the clinical champion as needed.

Please see the Stroke/Intracranial Hemorrhage Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

IVH date/time

Seq Num: 8280

Required for case closure: Yes

Registry field: [Complications].[CompIVHDtTm]

Description: If the patient was diagnosed with IVH, document the date/time of the first occurrence during the CICU encounter.

Maximum IVH grade

Seq Num: 8282

Required for case closure: Yes

Registry field: [Complications].[CompIVHmax]

Description: Record the highest IVH grade diagnosed during the CICU encounter.

Values	*Code*	*Text*
	2	II
	3	III
	4	IV
	9	Unk

Max IVH grade date

Seq Num: 8284

Required for case closure: Yes

Registry field: [Complications].[CompIVHmaxDt]

Description: Record the date the highest grade was documented.

Intracranial hemorrhage (non-stroke)

Seq Num: 8302

Required for case closure: Yes

Registry field: [Complications].[CompIntracranial]

Description: Did the patient have an intracranial hemorrhage during the CICU encounter? This includes subdural hemorrhage, subarachnoid hemorrhage, and IVH not captured by the IVH complication. An intracranial hemorrhage is defined as the existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury consistent with hemorrhage. Intracranial bleeding found on routine or research imaging studies should not be included. Hemorrhagic strokes, strokes with hemorrhagic conversion, and IVH grade 2 or higher should be coded as "No" and documented in the appropriate complication field.

Clarification 6/1/2023: If routine brain imaging (e.g., many centers do MRIs on all neonates after bypass) detects a minor abnormality that was not suspected clinically prior to the study and which does not result in any intervention or further testing, the finding does not need to be documented as a complication. Adjudicate with the clinical champion as needed.

Please see the Stroke/Intracranial Hemorrhage Scenarios table in the Appendix at the end of this document for coding examples.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Intracranial hemorrhage date/time

Seq Num: 8304

Required for case closure: Yes

Registry field: [Complications].[CompIntracranialDtTm]

Description: Document the date/time of the first occurrence of intracranial hemorrhage during the CICU encounter.

Brain death

Seq Num: 8340

Required for case closure: Yes

Registry field: [Complications].[CompBrainDeath]

Description: Was the patient declared brain dead by treating physician during this CICU encounter?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Brain death date/time

Seq Num: 8360

Required for case closure: Yes

Registry field: [Complications].[CompBrainDeathDtTm]

Description: If the patient was declared brain dead, document the date/time of declaration.

Stroke date/time

Seq Num: 8140

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompStrokeDtTm]

Description: If the patient was diagnosed with a stroke, document the date/time of the first occurrence during the CICU encounter.

Cranial ultrasound to diagnose stroke

Seq Num: 8160

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompStrokeDxUS]

Description: If the patient had a stroke, was cranial ultrasound used to diagnose it

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

CT to diagnose stroke

Seq Num: 8180

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompStrokeDxCT]

Description: If the patient had a stroke, was a CT scan used to diagnose it

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

MRI to diagnose stroke

Seq Num: 8200

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompStrokeDxMRI]

Description: If the patient had a stroke, was an MRI used to diagnose it

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Intracranial hemorrhage

Seq Num: 8300

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHemorrage]

Description: Did the patient have an intracranial hemorrhage during the CICU encounter? Intracranial hemorrhage is defined as a stroke (i.e., any confirmed neurological deficit of abrupt onset caused by a disturbance in blood flow to the brain, when the neurologic deficit does not resolve within 24 hours) plus the existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury with an appearance consistent with hemorrhage.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Intracranial hemorrhage date/time

Seq Num: 8320

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHemorrageDtTm]

Description: If the patient had an intracranial hemorrhage, document the date/time of the first occurrence during the CICU encounter.

Paralyzed diaphragm

Seq Num: 8380

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompParalyzedDiaphragm]

Description: Was the patient diagnosed with a paralyzed diaphragm during the CICU encounter? A paralyzed diaphragm is defined as the presence of elevated hemi-diaphragm(s) on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Paralyzed diaphragm dx date

Seq Num: 8400

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompParalyzedDiaphragmDt]

Description: If the patient had a paralyzed diaphragm, document the date it was first diagnosed during the CICU encounter.

Vocal cord dysfunction

Seq Num: 8420

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompVocalCordDys]

Description: Was the patient diagnosed with vocal cord dysfunction during the CICU encounter? Vocal cord dysfunction is defined as the presence of poor or no vocal cord movement assessed by endoscopy. Patient may or may not have stridor, hoarse voice or poor cry, in conjunction with endoscopic findings.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Vocal cord dysfunction dx date

Seq Num: 8440

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompVocalCordDysDt]

Description: If the patient had vocal cord dysfunction, document the date/time it was first diagnosed during the CICU encounter.

Medical Events and Complications-Gastrointestinal

Hepatic injury (ALT>500)

Seq Num: 8462

Required for case closure: Yes

Registry field: [Complications].[CompHepaticInj]

Description: Was the patient diagnosed with hepatic injury, defined as an ALT > 500, during the CICU encounter?

Clarification 6/1/2023: If a patient did not have a liver panel done, please discuss with your clinical champion whether specific patients should be coded as No or Unknown. In general, if the patient had an uneventful ICU stay and there is no reason to suspect there were any issues with their liver function, you can code this as No.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Hepatic injury date

Seq Num: 8464

Required for case closure: Yes

Registry field: [Complications].[CompHepaticInjDt]

Description: Document the earliest date the patient had an ALT>500.

NEC - Bell's stage II or III

Seq Num: 8501

Required for case closure: Yes

Registry field: [Complications].[CompNECBell]

Description: Did the patient have NEC meeting Bell's criteria for stage II or III during the CICU encounter? If Yes, document each time a new diagnosis of NEC was made during the encounter. Bell's criteria can be found at the end of this document

Clarification 2/1/2025: For a patient who returns to the CICU while NEC therapy is ongoing, only code NEC as a complication if the patient continues to meet Bell's criteria stage II or III.

While there is no age limit to document this complication, only neonatal NEC is included in PC4 analytics. You may code this complication outside of the neonatal period, but it is not mandatory.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

NEC dx date

Seq Num: 8508

Required for case closure: Yes

Registry field: [CompNECbell].[NECbellDt]

Description: Date this episode of NEC first met Stage II or Stage III criteria.

Surgery for NEC

Seq Num: 8510

Required for case closure: Yes

Registry field: [CompNECbell].[NECbellSurg]

Description: Did the patient require surgery for this episode of NEC

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Date of NEC surgery

Seq Num: 8512

Required for case closure: Yes

Registry field: [CompNECbell].[NECbellSurgDt]

Description: Date of first surgery for this episode of NEC

Hepatic failure

Seq Num: 8460

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHepaticFail]

Description: Was the patient diagnosed with hepatic failure during the CICU encounter? Hepatic failure is defined as dysfunction of the liver that results in hypoalbuminemia, coagulopathy, and hyperbilirubinemia. Select Yes if the patient develops all 3 of these laboratory abnormalities, or if the patient develops 2 out of these 3 laboratory abnormalities and at least one of the following complications: ascites, cirrhosis, encephalopathy, esophageal varices, and gastrointestinal bleeding.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Hepatic failure date

Seq Num: 8480

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompHepaticFailDt]

Description: If the patient had hepatic failure, document the date it was first diagnosed during the CICU encounter.

NEC

Seq Num: 8500

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompNEC]

Description: Did the patient have NEC during the CICU encounter? If Yes, document each time a new diagnosis of NEC was made during the encounter. NEC is defined as an acute reduction in the supply of oxygenated blood to the small intestine or large intestine, typically resulting in acidosis, abdominal distention, pneumatosis, and/or intestinal perforation, that prompts initiation of antibiotics or exploratory laparotomy.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

NEC date

Seq Num: 8540

Retired in version 2.0

Required for case closure: Yes

Registry field: [CompNEC].[NECDt]

Description: Date this episode of NEC was diagnosed

Medical Events and Complications-Dermatologic

Pressure ulcer Seq Num: 8560

Retired in version 2.0

Required for case closure: Yes

Registry field: [Complications].[CompPressUlcer]

Description: Did the patient have a pressure ulcer during the CICU encounter? A pressure ulcer is defined as a wound that occurs from tissue breakdown as a result of unrelieved pressure with the pressure usually occurring over an underlying bony prominence. Pressure ulcers may be caused by a mechanical device or other factors.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Medical Events and Complications-Other

Pressure ulcer stage III or higher

Seq Num: 8562

Required for case closure: Yes

Registry field: [Complications].[CompUlcer]

Description: Did the patient have a pressure ulcer stage III, stage IV, or unstageable during the CICU encounter? Stage III is full thickness skin loss with subcutaneous fat visible but not bone, tendon or muscle. Stage IV is full thickness tissue loss exposing bone, tendon or muscle. Unstageable is full thickness tissue loss but due to slough or eschar the depth cannot be determined.

Clarification 2/1/2025: The pressure wound must be diagnosed in the CICU. A wound that is discovered after transfer out of the CICU cannot be coded here as a complication.

If you have a wound care team that assesses and stages pressure ulcers, use their assessment as the primary source of truth.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Pressure ulcer date

Seq Num: 8564

Required for case closure: Yes

Registry field: [Complications].[CompUlcerDt]

Description: Record the earliest date a pressure ulcer stage III or higher was noted

Max pressure ulcer stage

Seq Num: 8566

Required for case closure: Yes

Registry field: [Complications].[CompUlcerMax]

Description: Record the maximum pressure ulcer stage as per international NPUAP pressure ulcer classification system.

Values	*Code*	*Text*	
	3	III	Full thickness skin loss with subcutaneous fat visible but not bone, tendon, or muscle
	4	IV	Full thickness tissue loss exposing bone, tendon, or muscle
	8	Unstageable	Full thickness tissue loss but, due to slough or eschar, the depth cannot be determined.
	9	Unk	

Hypoglycemia

Seq Num: 8580

Required for case closure: Yes

Registry field: [Complications].[CompHypoglycemia]

Description: Did the patient ever have a blood glucose value of < 40 mg/dL during the CICU encounter? Indicate Yes independent of whether or not patient received treatment.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Narcotic dependence requiring wean

Seq Num: 8600

Required for case closure: Yes

Registry field: [Complications].[CompNarcotic]

Description: Was the patient exposed to narcotic therapy that ultimately warranted transition to a narcotic weaning strategy? This could be exposure during this CICU encounter or those on a wean at admission to treat previous narcotic withdrawal. This does not include patients being treated for neonatal abstinence syndrome.

Clarification 6/1/2023: Do not code patients weaning from dexmedetomidine or from barbiturates as “Narcotic dependence requiring wean.” This field only captures patients weaning from narcotics. You may track these other weans if you wish in the 'Other complication' field.

Clarification 2/1/2025: Possible medications used in a weaning strategy are methadone, morphine and oxycodone, among others. Please do NOT include patients who are transitioned to an oral narcotic as a part of their pain control regimen.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Other complication

Seq Num: 8700

Required for case closure: No

Registry field: [Complications].[CompOther]

Description: Did the patient have any other complication during the CICU encounter

Clarification 6/1/2023: Please use this field to capture a positive COVID19 diagnosis.

Values	Code	Text
	1	Yes
	0	No
	9	Unk

Other complication - specify

Seq Num: 8701

Required for case closure: No

Registry field: [Complications].[CompOtherSpec]

Description: Specify the other complication(s)

Unplanned return to CICU care

Seq Num: 6411

Retired in version 1.0

Required for case closure: Yes

Registry field: [Complications].[CompCICUReturnUnpln]

Description: Did the patient have an unplanned return to CICU service<48 hours after the end of an

Values	Code	Text
Retired	0	No
Retired	1	Yes

Narcotic dependence

Seq Num: 6420

Retired in version 2.0

Required for case closure: No

Registry field: [Complications].[CompNarcDep]

Description: During the CICU encounter, was the patient exposed to either a significant amount or duration of narcotic therapy warranting long-term opiate therapy for the prevention of withdrawal

Values	Code	Text
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Encounter type

Cardiac surgery immediately before or during CICU encounter Seq Num: 8900

Required for case closure: Yes

Registry field: [CICUEncounter].[RiskGroup]

Description: Did the patient have any cardiothoracic surgery of type "CPB Cardiovascular" or "No CPB Cardiovascular" either during or immediately prior to the start of the encounter? Please do not answer this question until (a) the patient has a qualifying surgery or (b) the patient has been discharged from the CICU without any qualifying surgeries.

Clarification 6/1/2023: Only surgeries coded as type = “CPB cardiovascular” or “No CPB cardiovascular” are eligible for the Surgical Risk section. If a patient had a VAD placement with CPB, but no qualifying surgeries of type CPB/No-CPB cardiovascular, you would code the encounter as medical.

All the questions on the subsequent surgical risk tab are related to the first surgery of type CPB cardiovascular or no-CPB cardiovascular during or immediately before this CICU encounter.

If the list of surgeries to choose from is either empty or incomplete, the patient may not have had a qualifying surgery, or the ICU/PACU arrival date/time may be missing from one or more surgeries.

Values	*Code*	*Text*
	1	Yes
	0	No

Cardiac surgical encounters

Preop factor

Seq Num: 9000

Required for case closure: Yes

Registry field: [PreopFactor].[PreopFactor]

Description: Indicate all factors that are present preoperatively or code "No preoperative factors identified". The definitions and response options for this field are specified by the STS Congenital Heart Surgery Database.

Clarification 2/1/2025: The risk factors in this group are pulled in from STS and are meant to mirror the STS data. Please discuss any discrepancies you find with your STS counterpart to ensure data is accurate and congruent.

Values

Code	*Text*
10	No preoperative factors identified
200	Cardio-pulmonary resuscitation
210	Preoperative complete AV block (AgeDays<6575)
220	Preoperative/Preprocedural mechanical circulatory support (IABP, VAD, ECMO, or CPS)
230	Shock, Persistent at time of surgery
240	Shock, Resolved at time of surgery
250	Diabetes mellitus, Insulin dependent
260	Diabetes mellitus, Non-insulin dependent
270	Hypothyroidism
280	Currently taking steroids as treatment for adrenal insufficiency
290	Currently taking steroids for any reason other than treatment of adrenal insufficiency
295	Colostomy present
300	Enterostomy of small intestine present
305	Esophagostomy present
307	Gastrostomy present
310	Hepatic dysfunction
320	Necrotizing entero-colitis, Treated medically
330	Necrotizing entero-colitis, Treated surgically
340	Coagulation disorder, Hypercoagulable state
350	Coagulation disorder, Hypocoagulable state not secondary to medication (intrinsic

350	hypocoagulable state)
360	Coagulation disorder, Hypocoagulable state secondary to medication
590	Dyslipidemia
370	Endocarditis
650	Immunocompromised
580	Family history of coronary artery disease
680	Chronic lung disease (not associated with premature birth)
700	Hypertension (AgeDays>=6575)
720	Liver disease (AgeDays>=6575)
740	Cancer within 5 years (AgeDays>=6575)
760	Syncope (AgeDays>=6575)
780	Cerebrovascular disease (AgeDays>=6575)
380	Sepsis
390	Sepsis with positive blood culture
400	Preoperative neurological deficit
410	Seizure during lifetime
420	Seizure within 48 hours prior to surgery
430	Stroke, CVA, or Intracranial hemorrhage > Grade 2 during lifetime (AgeDays<6575)
440	Stroke, CVA, or Intracranial hemorrhage > Grade 2 within 48 hours prior to surgery (AgeDays<6575)
450	Renal dysfunction
460	Renal failure requiring dialysis
470	Invasive mechanical ventilation to treat cardiorespiratory failure
600	Non-Invasive respiratory support to treat cardiorespiratory failure
480	Respiratory Syncytial Virus
490	Single lung
500	Tracheostomy present
510	Asthma
520	Bronchopulmonary dysplasia (BPD)
530	ICD (AICD) ([automatic] implantable cardioverter defibrillator) present

540	Pacemaker present
570	Tobacco use
610	Transferred from another hospital after undergoing cardiac surgical operation at that hospital during this episode of care
620	Admitted from home after undergone a cardiac surgical operation within the past 30 days
630	Preoperative dysrhythmia requiring anti- dysrhythmia medication
640	Illicit drug use within one year
660	Mediastinal radiation
670	Heart failure
690	Cardiac Dysrhythmia (AgeDays>=6575)
710	Sleep apnea (AgeDays>=6575)
730	Liver Cirrhosis (AgeDays>=6575)
750	Peripheral artery disease (AgeDays>=6575)
770	Unresponsive state (AgeDays>=6575)
790	Prior myocardial infarction (AgeDays>=6575)
777	Other preoperative factors

Preop PHTN

Seq Num: 9005

Required for case closure: Yes

Registry field: [RiskSurg].[RSphtnPre]

Description: Was the patient on treatment for pulmonary hypertension (PHTN) at the time of this surgery? Indicate Yes, if the patient was receiving inhaled, subcutaneous, IV, or oral therapy for PHTN. Exclude patients on therapy for other reasons, such as PLE.

Clarification 6/1/2023: Patients on home oxygen therapy for pulmonary hypertension should not be coded as having preop PHTN. The patient must be receiving continuous therapy as described above, and/or enteral meds for PHTN.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Preop PLE

Seq Num: 9006

Required for case closure: Yes

Registry field: [RiskSurg].[RSplePre]

Description: Did the patient have a preoperative diagnosis of protein losing enteropathy (PLE)?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Preop chronic lung disease of prematurity

Seq Num: 9007

Required for case closure: Yes

Registry field: [RiskSurg].[RScldPre]

Description: Indicate Yes, if patient was born preterm and carries a diagnosis of chronic lung disease or bronchopulmonary dysplasia requiring home oxygen therapy which is persistent at the time of surgery.

Clarification 2/1/2025: Code No if patient has never been discharged from the hospital, even if still receiving oxygen and/or mechanical ventilation.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Preop arrhythmia

Seq Num: 9008

Required for case closure: Yes

Registry field: [RiskSurg].[RSarrhythmiaPre]

Description: Did the patient have a preop arrhythmia? Indicate Yes, if the patient had a known diagnosis of arrhythmia and was receiving temporary pacing or medication (IV or enteral) for arrhythmia at the time of surgery.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Preop creatinine available

Seq Num: 9020

Required for case closure: Yes

Registry field: [RiskSurg].[RSCrPreKnown]

Description: Is a preoperative creatinine available within 30 days of this surgery?

Values	*Code*	*Text*
	1	Yes
	0	No

Preop creatinine (mg/dL)

Seq Num: 9030

Required for case closure: Yes

Registry field: [RiskSurg].[RSCrPre]

Description: If preop creatinine is available, record the value closest in time to this surgery.

Any ECMO prior to surgery

Seq Num: 9050

Required for case closure: Yes

Registry field: [RiskSurg].[RSECMOpre]

Description: Prior to this surgery, was the patient on ECMO at any time during this hospitalization? This includes ECMO at time of OR entry.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Any CPR prior to surgery

Seq Num: 9150

Required for case closure: Yes

Registry field: [RiskSurg].[RSCPRpre]

Description: Prior to this surgery, did the patient undergo CPR at any time during this hospitalization?

Clarification 2/1/2025: If CPR occurs in the cardiac OR, code No for any CPR prior to surgery (#9150), but Yes to CPR during surgery (#9180) if the CPR was >10 minutes.

If the arrest began and ended in the ED prior to admission to the CICU, code "no". (Arrest could be used as the medical diagnosis if appropriate.)

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Preop viral respiratory infection

Seq Num: 9170

Required for case closure: Yes

Registry field: [RiskSurg].[RSViralRespPre]

Description: Record Yes if patient had a documented viral respiratory infection at any time during the hospitalization prior to surgery. This could be a clinical diagnosis or confirmed by a PCR test.

Clarification 6/1/2023: Code Yes if a patient has a positive respiratory viral panel at an outside hospital and is directly admitted to the CICU and goes to surgery.

Also code Yes if a patient tested positive for RSV at the preop clinic visit prior to admission for surgery, even if the patient is asymptomatic.

Clarification 2/1/2025: Code Yes if patient tested positive on respiratory viral panel in preop clinic within 5 days of admission for surgery, even if patient is asymptomatic.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Arrest during surgery

Seq Num: 9180

Required for case closure: Yes

Registry field: [RiskSurg].[RSarrestIntra]

Description: During this operation, did the patient have a cardiac arrest requiring at least 10 minutes of CPR ?

Clarification 2/1/2025: If CPR occurs in the cardiac OR, code No for any CPR prior to surgery (#9150), but Yes to CPR during surgery (#9180) if the CPR was >10 minutes.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Left OR with open sternum

Seq Num: 9210

Required for case closure: Yes

Registry field: [RiskSurg].[RSOpenChest]

Description: Was the patient admitted to the CICU from the operating room with an open sternum (with or without skin closure).

Clarification 6/1/2023: This field is referring to a very specific point in time: Was the patient's sternum open (whether planned or unplanned) when they arrived to the ICU following the first CPB/No CPB Cardiovascular surgery for this ICU encounter (i.e., the surgery selected for the Surgical Risk section.)

If you code "left the OR with an open chest" as Yes, you must answer Yes to the complication 'Sternum left open' (#7280) as well. That field captures patients whose chests were left open at any time in the ICU.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Postop lactate available (first 2 hrs postop)

Seq Num: 9260

Required for case closure: Yes

Registry field: [RiskSurg].[RSLactKnown]

Description: Is a lactate available during the first 2 postop hours in the CICU?

Clarification 6/1/2023: For patients who required a cardiac reoperation before 2 hours postop, code this and subsequent surgical risk fields still pertain to the first surgery, and are based on the time period from the initial postop arrival through the return to the operating room.

Values	*Code*	*Text*
	1	Yes
	0	No

Max postop lactate (mmol/L)

Seq Num: 9270

Required for case closure: Yes

Registry field: [RiskSurg].[RSLact]

Description: If it is available, record the highest lactate, in mmol/L, during the first 2 postop hours in the CICU

2 hour postop chest tube output (cc)

Seq Num: 9320

Required for case closure: Yes

Registry field: [RiskSurg].[RSChestOutput]

Description: Record the total output from all chest tubes, in cc, within the first 2 postop hours in the CICU. This should not include output from the operating room or transfer to the CICU.

Clarification 6/1/2023: Do not include fluid accumulated in the OR or on transfer from the OR (which may appear as the initial chest tube output on arrival).

Mech vent at 2 hours postop

Seq Num: 9420

Required for case closure: Yes

Registry field: [RiskSurg].[RSintub]

Description: Was the patient mechanically ventilated at 2 hours postop in the CICU?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

FiO2 available

Seq Num: 9440

Required for case closure: Yes

Registry field: [RiskSurg].[RSFIO2known]

Description: If the patient was ventilated, is the FiO2 at 2 hours postop in the CICU available?

Values	*Code*	*Text*
	1	Yes
	0	No

FiO2

Seq Num: 9450

Required for case closure: Yes

Registry field: [RiskSurg].[RSFIO2]

Description: If it is available, record the FiO2 closest to 2 hours postop in the CICU

Clarification 6/1/2023: The valid range for the FiO is between 0.00 and 1.00. For example, for a patient with postop FiO of 40%, enter 0.40.

Postop mean airway pressure available

Seq Num: 9460

Required for case closure: Yes

Registry field: [RiskSurg].[RSAirPressKnown]

Description: If the patient was ventilated, is the mean airway pressure (MAP) available at 2 hours postop in the CICU?

Values	*Code*	*Text*
	1	Yes
	0	No

Postop mean airway pressure

Seq Num: 9465

Required for case closure: Yes

Registry field: [RiskSurg].[RSAirPress]

Description: If it is available, record the mean airway pressure closest to 2 hours postop in the CICU

POD0 or POD1 Cr available

Seq Num: 9520

Required for case closure: Yes

Registry field: [RiskSurg].[RSCrAdmitAvail]

Description: Were any postop creatinines recorded in the CICU on postop day 0 or postop day 1?

Values	*Code*	*Text*
	1	Yes
	0	No

First postop Cr (mg/dL)

Seq Num: 9522

Required for case closure: Yes

Registry field: [RiskSurg].[RSCrAdmitValue]

Description: Record the first postop creatinine in the CICU, in mg/dL. This must be from POD0 or POD1

Any CICU postop Cr (through POD7)

Seq Num: 9524

Required for case closure: Yes

Registry field: [RiskSurg].[RSCr7avail]

Description: Were any postop creatinines recorded in the CICU through postop day 7?

Values	*Code*	*Text*
	1	Yes
	0	No

Max postop Cr (mg/dL)

Seq Num: 9526

Required for case closure: Yes

Registry field: [RiskSurg].[RSCr7value]

Description: Maximum postop creatinine, in mg/dL, recorded in the CICU through POD7.

Clarification 6/1/2023: If the patient's maximum postop creatinine was immediately after surgery (#9522), record that value in this question as well.

Max postop Cr date

Seq Num: 9528

Required for case closure: Yes

Registry field: [RiskSurg].[RSCr7date]

Description: Date on which the maximum postop Cr was recorded in the CICU. If this maximum value was recorded more than once, use the earliest date.

Clarification 6/1/2023: If the patient's maximum postop creatinine was immediately after surgery (#9522), record that value in this question as well.

This field is intended to capture the maximum postop creatinine through POD7 or ICU discharge, whichever is earlier.

ECMO initiated in OR

Seq Num: 9190

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskSurg].[RSECMOintra]

Description: Was ECMO initiated in the OR during this surgery?

Values	Code	Text
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Postop core temp available

Seq Num: 9230

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskSurg].[RSTempKnown]

Description: Is a core temperature (rectal, bladder, esophageal or intracardiac) available during the first 2 postop hours in the CICU?

Values	Code	Text
Retired	1	Yes
Retired	0	No

Postop core temp (Celsius)

Seq Num: 9240

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskSurg].[RSTemp]

Description: If it is available, record the highest core temperature, in Celsius, during the first 2 postop hours in the CICU

Postop systolic BP

Seq Num: 9480

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskSurg].[RSSBP]

Description: Find the time during the first 2 postop hours in the CICU where the difference between the systolic and diastolic blood pressure is smallest. Record the systolic BP, in mmHg, at that time.

Postop diastolic BP

Seq Num: 9490

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskSurg].[RSDBP]

Description: Find the time during the first 2 postop hours in the CICU where the difference between the systolic and diastolic blood pressure is smallest. Record the diastolic BP, in mmHg, at that time.

Surgical encounters - Neonatal feeding

First surgical encounter

Seq Num: 9322

Required for case closure: Yes

Registry field: [RiskSurg].[RSfirstNeonate]

Description: Is this the patient's first surgical encounter (i.e., the first encounter during which the patient underwent CPB or No CPB Cardiovascular surgery) during this hospitalization?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Any preop enteral feeding

Seq Num: 9324

Required for case closure: Yes

Registry field: [RiskSurg].[RSfeedPreop]

Description: During this hospital admission, did the patient receive any enteral feeds (oral or tube) prior to this surgery? This includes feeding prior to or during this CICU encounter.

Clarification 6/1/2023: Anything caloric that passes into the gut counts as enteral feeding, including oral intake, tube feeding, and trophic feeding.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Preop feed in CICU

Seq Num: 9326

Required for case closure: Yes

Registry field: [RiskSurg].[RSfeedPreopCICU]

Description: During this hospitalization, did the patient receive any preop enteral feeds in the CICU?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Preop feed in NICU

Seq Num: 9328

Required for case closure: Yes

Registry field: [RiskSurg].[RSfeedPreopNICU]

Description: During this hospitalization, did the patient receive any preop enteral feeds in the NICU?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Preop feed in another location

Seq Num: 9330

Required for case closure: Yes

Registry field: [RiskSurg].[RSfeedPreopOther]

Description: During this hospitalization, did the patient receive any preop enteral feeds in any other inpatient location?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Any postop enteral feeding in the CICU

Seq Num: 9332

Required for case closure: Yes

Registry field: [RiskSurg].[RSfeedPostop]

Description: During this encounter, did the patient receive any postoperative enteral feeds (oral or tube) prior to CICU discharge?

Clarification 6/1/2023: Anything caloric that passes into the gut counts as enteral feeding, including oral intake, tube feeding, and trophic feeding.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Earliest postop feed date

Seq Num: 9334

Required for case closure: Yes

Registry field: [RiskSurg].[RSfeedPostopDt]

Description: What was the earliest date the patient received any postoperative enteral feeds prior to CICU discharge.

Nutrition at CICU discharge

Seq Num: 9336

Required for case closure: Yes

Registry field: [RiskSurg].[RSfeedDisch]

Description: At the time of CICU discharge, how was the child fed?

Clarification 6/1/2023: For patients not receiving any feedings, please code as 'Unknown.' (An option for 'None' will be added to version 4.)

Values	*Code*	*Text*
	1	Enteral
	2	TPN
	3	Both
	9	Unk

Surgical encounters - VIS

Inotropic/vasopressor infusion at time of surgery

Seq Num: 9070

Required for case closure: Yes

Registry field: [RiskSurg].[RSVISpre]

Description: Immediately prior to transfer to the operating room, was the patient on an infusion of any of the following inotropes or vasopressors: dopamine, dobutamine, epinephrine, norepinephrine, milrinone, vasopressin?

Clarification 2/1/2025: Do not include vasopressin used to treat diabetes insipidus (DI) or GI bleeding.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Dopamine (mcg/kg/min) at surgery

Seq Num: 9080

Required for case closure: Yes

Registry field: [RiskSurg].[RSDopaPre]

Description: Record the dopamine dose (mcg/kg/min) at time of surgery; if the patient was not on dopamine, enter 0.

Dobutamine (mcg/kg/min) at surgery

Seq Num: 9090

Required for case closure: Yes

Registry field: [RiskSurg].[RSDobutPre]

Description: Record the dobutamine dose (mcg/kg/min) at time of surgery; if the patient was not on dobutamine, enter 0

Epinephrine (mcg/kg/min) at surgery

Seq Num: 9100

Required for case closure: Yes

Registry field: [RiskSurg].[RSEpiPre]

Description: Record the epinephrine dose (mcg/kg/min) at time of surgery; if the patient was not on epinephrine, enter 0.

Norepinephrine (mcg/kg/min) at surgery

Seq Num: 9110

Required for case closure: Yes

Registry field: [RiskSurg].[RSNorepiPre]

Description: Record the norepinephrine dose (mcg/kg/min) at time of surgery; if the patient was not on norepinephrine, enter 0.

Milrinone (mcg/kg/min) at surgery

Seq Num: 9120

Required for case closure: Yes

Registry field: [RiskSurg].[RSMilrinPre]

Description: Record the milrinone dose (mcg/kg/min) at time of surgery; if the patient was not on milrinone, enter 0

Vasopressin (units/kg/min) at surgery

Seq Num: 9130

Required for case closure: Yes

Registry field: [RiskSurg].[RSVasopressPre]

Description: Record the vasopressin dose (units/kg/min) at time of surgery; if the patient was not on vasopressin, enter 0. Please note, this must be recorded in units/kg/min.

Inotropic/vasopressor infusion in first 2 postop hrs

Seq Num: 9340

Required for case closure: Yes

Registry field: [RiskSurg].[RSVIS]

Description: Was the patient on an infusion of any of the following within the first 2 postop hours in the CICU: dopamine, dobutamine, epinephrine, norepinephrine, milrinone, vasopressin? If yes, find the time where the vasoactive inotrope score (VIS) is highest and record the doses at that time.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Postop dopamine (mcg/kg/min)

Seq Num: 9350

Required for case closure: Yes

Registry field: [RiskSurg].[RSDopa]

Description: Record the dopamine dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on dopamine, enter 0

Clarification 6/1/2023: Looking only at the first 2 postop hours in the CICU, find the time when the vasoactive inotrope score (VIS) is highest and record the dose at that time.

Postop dobutamine (mcg/kg/min)

Seq Num: 9360

Required for case closure: Yes

Registry field: [RiskSurg].[RSDobut]

Description: Record the dobutamine dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on dobutamine, enter 0

Clarification 6/1/2023: Looking only at the first 2 postop hours in the CICU, find the time when the vasoactive inotrope score (VIS) is highest and record the dose at that time.

Postop epinephrine (mcg/kg/min)

Seq Num: 9370

Required for case closure: Yes

Registry field: [RiskSurg].[RSEpi]

Description: Record the epinephrine dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on epinephrine, enter 0

Clarification 6/1/2023: Looking only at the first 2 postop hours in the CICU, find the time when the vasoactive inotrope score (VIS) is highest and record the dose at that time.

Postop norepinephrine (mcg/kg/min)

Seq Num: 9380

Required for case closure: Yes

Registry field: [RiskSurg].[RSNorepi]

Description: Record the norepinephrine dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on norepinephrine, enter 0

Clarification 6/1/2023: Looking only at the first 2 postop hours in the CICU, find the time when the vasoactive inotrope score (VIS) is highest and record the dose at that time.

Postop milrinone (mcg/kg/min)

Seq Num: 9390

Required for case closure: Yes

Registry field: [RiskSurg].[RSMilrin]

Description: Record the milrinone dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on milrinone, enter 0

Clarification 6/1/2023: Looking only at the first 2 postop hours in the CICU, find the time when the vasoactive inotrope score (VIS) is highest and record the dose at that time.

Postop vasopressin (units/kg/min)

Seq Num: 9400

Required for case closure: Yes

Registry field: [RiskSurg].[RSVasopress]

Description: Record the vasopressin dose (units/kg/min) at the time of maximum VIS; if the patient was not on vasopressin, enter 0. Please note, this must be recorded in units/kg/min.

Clarification 6/1/2023: Looking only at the first 2 postop hours in the CICU, find the time when the vasoactive inotrope score (VIS) is highest and record the dose at that time.

Postop VIS timepoint

Seq Num: 9502

Required for case closure: Yes

Registry field: [RiskSurgVIS].[RSVISpoint]

Description: Record the inotropic/vasopressor support information for each timepoint listed. Only record data for the timepoints prior to CICU discharge.

Values

Code	*Text*
6	6 hrs postop
12	12 hrs postop
18	18 hrs postop
24	24 hrs postop
30	30 hrs postop
36	36 hrs postop
42	42 hrs postop
48	48 hrs postop
72	06:00 on POD3
96	06:00 on POD4
120	06:00 on POD5
144	06:00 on POD6
168	06:00 on POD7

Postop VIS date/time

Seq Num: 9504

Required for case closure: Yes

Registry field: [RiskSurgVIS].[RSVISdttm]

Description: Postop VIS date/time

On support at this postop timepoint

Seq Num: 9506

Required for case closure: Yes

Registry field: [RiskSurgVIS].[RSVISsupport]

Description: Was the patient receiving an infusion of any of the 6 listed agents at this timepoint. If the patient is not on any of these infusions at this specific time, answer No.

Clarification 6/1/2023: If the patient is back in surgery during one of the VIS timepoints (e.g., 6 hrs post-initial op, 12 hrs post, etc.), please code 'On support at this timepoint' as No.

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Dopamine (mcg/kg/min) at this postop timepoint

Seq Num: 9508

Required for case closure: Yes

Registry field: [RiskSurgVIS].[RSVISdopa]

Description: Record the dopamine dose (mcg/kg/min) at this timepoint; if the patient was not on dopamine, enter 0

Dobutamine (mcg/kg/min) at this postop timepoint

Seq Num: 9510

Required for case closure: Yes

Registry field: [RiskSurgVIS].[RSVISdobut]

Description: Record the dobutamine dose (mcg/kg/min) at this timepoint; if the patient was not on dobutamine, enter 0

Epinephrine (mcg/kg/min) at this postop timepoint

Seq Num: 9512

Required for case closure: Yes

Registry field: [RiskSurgVIS].[RSVISepi]

Description: Record the epinephrine dose (mcg/kg/min) at this timepoint; if the patient was not on epinephrine, enter 0

Norepinephrine (mcg/kg/min) at this postop timepoint

Seq Num: 9514

Required for case closure: Yes

Registry field: [RiskSurgVIS].[RSVISnorepi]

Description: Record the norepinephrine dose (mcg/kg/min) at this timepoint; if the patient was not on norepinephrine, enter 0

Milrinone (mcg/kg/min) at this postop timepoint

Seq Num: 9516

Required for case closure: Yes

Registry field: [RiskSurgVIS].[RSVISmilrin]

Description: Record the milrinone dose (mcg/kg/min) at this timepoint; if the patient was not on milrinone, enter 0

Vasopressin (units/kg/min) at this postop timepoint

Seq Num: 9518

Required for case closure: Yes

Registry field: [RiskSurgVIS].[RSVISvasopress]

Description: Record the vasopressin dose (units/kg/min) at this timepoint; if the patient was not on vasopressin, enter 0. Please note, this must be recorded in units/kg/min.

Non-surgical encounters

High-risk diagnoses on admission

Seq Num: 9700

Required for case closure: Yes

Registry field: [RiskMedDiag].[RiskMedDiag]

Description: Select all conditions that were present at time of CICU admission. If none of them were present, select "None"

Clarification 2/1/2025: To code Yes to this question, one of the treatments listed must be initiated within one hour of CICU admission.

Additional clarifications below between asterisks.

Values	Code	Text	
	1	None	
	5	Arrhythmia	Arrhythmia requiring ICU-level therapy **(Clarification 6/1/2023) This also applies to arrhythmia present within 1 hour of admission. If an arrythmia occurs that requires ICU-level therapy prior to the CICU admission, whether in an outside hospital, ED, or inpatient unit, it can be captured as a high risk diagnosis on admission even if the therapy did not continue into the ICU, if the arrhythmia was part of the reason for the CICU admission. Both bolus and continuous infusions qualify as ICU-level therapy, with the exception of Digoxin and adenosine used exclusively to diagnose and arrhythmia. Lidocaine is considered ICU-level therapy.**
	2	Cardiomyopathy	
	6	CPR reason for CICU admit	This could be a resolved cardiopulmonary arrest or a patient receiving active compressions. Patients receiving active compressions at the time of admission should also have the arrest recorded in the Complications section. **(Clarification 6/1/2023) This is intended to flag patients whose primary reason for CICU admission is an arrest. This is not limited to patients receiving compressions on admission. For example, a teen who arrested playing basketball who is treated by EMTs and then brought to the unit would also be coded with this diagnosis.**
	9	Heart failure, acute decompensated	Systolic or diastolic cardiac dysfunction that requires at least one of the following therapies: 1) continuous infusion of a vasoactive agent or diuretic agent, 2) respiratory support (HFNC, CPAP/BiPAP, or mechanical ventilation), 3) Mechanical circulatory support. **(Clarification 2/1/2025) Can code for both chronic

	9		heart failure and acute decompensated heart failure if meets criteria for both. **
	10	Heart failure, chronic	Pre-admission diagnosis of heart failure requiring medications or VAD support prior to admission. **(Clarification 2/1/2025) Patient MUST be receiving medications or on mechanical circulatory support to be coded Yes. Can code for both chronic heart failure and acute decompensated heart failure if meets criteria for both. Code No if patient is on digoxin solely as a part of your site's standard of care for interstage patients. **
	11	Heart transplant rejection	Treatment with anti-rejection medical therapy, or biopsy or explant documented heart transplant rejection (before or after therapy). If patient has acute decompensated heart failure due to rejection, use this diagnosis not acute decompensated heart failure.
	3	Myocarditis	New diagnosis of cardiac dysfunction and/or rhythm disturbance suspected to be secondary to acute myocarditis requiring at least one of the following therapies: (1) continuous infusion of a vasoactive agent; (2) respiratory support (HFNC, CPAP/BiPAP, mechanical ventilation); (3) mechanical circulatory support. **(Clarification 6/1/2023) Myocarditis that does not meet the criteria above should NOT be coded here. (You could code the CICU CT diagnosis as myocarditis, and the medical diagnosis could be Other -myocarditis.) **
	7	Pulmonary hypertension	Initiation of pulmonary antihypertensive therapy or management of pulmonary hypertension in a patient currently being treated with medical (e.g., NO, sildenafil, bosentan) therapy.
	4	Systemic AVVR - moderate or worse	Moderate or worse systemic AV valve regurgitation confirmed at or soon after CICU admission
Retired	8	Hospice care and/or DNR	DNR/DNI order at admission or created within 1 hour

BNP available (18hr window)

Seq Num: 9761

Required for case closure: Yes

Registry field: [RiskMed].[RMBNPavail]

Description: Is a BNP or NT-proBNP available from 12 hours pre-CICU admission through 6 hours post-CICU admission?

Clarification 2/1/2025: Lab results from outside hospitals can be used as long as they fall within the appropriate time range.

Values	*Code*	*Text*
	1	Yes
	0	No

BNP type

Seq Num: 9762

Required for case closure: Yes

Registry field: [RiskMed].[RMBNPtype]

Description: Record the BNP type

Values	*Code*	*Text*
	1	BNP
	2	NT-proBNP
	9	Unk

Max BNP (pg/mL)

Seq Num: 9763

Required for case closure: Yes

Registry field: [RiskMed].[RMBNPvalue]

Description: If it is available, record the highest BNP, in pg/mL, from 12 hours pre-CICU admission through 6 hours post-CICU admission.

Creatinine available (18hr window)

Seq Num: 9791

Required for case closure: Yes

Registry field: [RiskMed].[RMCrAvail]

Description: Is a creatinine available from 12 hours pre-CICU admission through 6 hours post-CICU admission?

Clarification 2/1/2025: Lab results from outside hospitals can be used as long as they fall within the appropriate time range.

Values	*Code*	*Text*
	1	Yes
	0	No

First creatinine (mg/dL)

Seq Num: 9794

Required for case closure: Yes

Registry field: [RiskMed].[RMCrFirst]

Description: If it is available, record the earliest creatinine value, in mg/dL, from 12 hours pre-CICU admission through 6 hours post-CICU admission.

Max creatinine (mg/dL)

Seq Num: 9792

Required for case closure: Yes

Registry field: [RiskMed].[RMCrValue]

Description: If it is available, record the highest creatinine value, in mg/dL, from 12 hours pre-CICU admission through 6 hours post-CICU admission.

Creatinine available through CICU day 7

Seq Num: 9796

Required for case closure: Yes

Registry field: [RiskMed].[RMCr7avail]

Description: Were any creatinines recorded in the CICU through day 7?

Clarification 6/1/2023: If there are any creatinine values from CICU admission through CICU discharge (for patients in the ICU<7d) or through day 7 (for patients in the ICU 7+ days), you must answer these questions – even if the only creatinine was shortly after ICU admission.

Values	*Code*	*Text*
	1	Yes
	0	No

Max CICU creatinine (mg/dL)

Seq Num: 9798

Required for case closure: Yes

Registry field: [RiskMed].[RMCr7value]

Description: Record the highest creatinine value, in mg/dL, through CICU day 7

Clarification 6/1/2023: This may be the same value entered in #9792.

Max Cr date

Seq Num: 9801

Required for case closure: Yes

Registry field: [RiskMed].[RMCr7Date]

Description: Date on which the maximum Cr was recorded in the CICU. If this maximum value was recorded more than once, use the earliest date.

Clarification 6/1/2023: This field is intended to capture the maximum creatinine in the ICU through day 7 or ICU discharge, whichever is earlier.

Hepatic injury (18hr window)

Seq Num: 9821

Required for case closure: Yes

Registry field: [RiskMed].[RMHepInj]

Description: Did the patient have transaminitis (AST or ALT >500) from 12 hours pre-CICU admission through 6 hours post-CICU admission?

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Lactate available (4hr window)

Seq Num: 9840

Required for case closure: Yes

Registry field: [RiskMed].[RMLactKnown]

Description: Is a lactate available within 2 hours (plus or minus) of CICU admission?

Values	*Code*	*Text*
	1	Yes
	0	No

Max lactate (mmol/L)

Seq Num: 9850

Required for case closure: Yes

Registry field: [RiskMed].[RMLact]

Description: If it is available, record the highest lactate, in mmol/L, within 2 hours (plus or minus) of CICU admission

Pupil reflex on admission

Seq Num: 9901

Required for case closure: Yes

Registry field: [RiskMed].[RMPupilAdmit]

Description: Record the pupil reflex on admission to the CICU

Values	*Code*	*Text*
	1	Both reactive
	2	One fixed/one reactive
	3	Both fixed
	9	Unk

Any prior cardiothoracic surgery

Seq Num: 9640

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMPrevSurg]

Description: Prior to this CICU admission, did the patient ever have any cardiothoracic (heart or great vessels) surgical procedures with or without cardiopulmonary bypass (CPB). Also include lung procedures utilizing CPB or tracheal procedures utilizing CPB.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Current surgical status

Seq Num: 9660

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMStatusPost]

Description: If the patient had prior cardiothoracic surgery, select the category that represents the patient's current status.

Values	Code	Text	
Retired	1	S/P stage I palliation - Norwood	Status post Norwood stage I palliation
Retired	2	S/P stage I palliation - Hybrid	Status post hybrid stage I palliation
Retired	3	S/P stage II palliation	Status post stage II palliation (bi-directional Glenn, hemi-Fontan or Kawashima procedure)
Retired	4	S/P stage III palliation	Status post stage III palliation (fenestrated or non-fenestrated Fontan procedure)
Retired	5	S/P aortopulmonary shunt	Status post aortopulmonary shunt (including MBTS, RVPAS or central shunt) for 1V or 2V palliation
Retired	6	S/P other 1V surgery	Patient with single ventricle anatomy status post other surgery
Retired	7	S/P 2V surgery	Patient with two ventricle anatomy status post other palliative or reparative surgery
Retired	8	S/P thoracic surg (never had cardiac surg)	Patient never had cardiac surgery; status post thoracic surgery, including tracheal reconstruction, with or without CPB.

BNP available

Seq Num: 9760

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMBNPknown]

Description: Is a BNP available within 2 hours (plus or minus) of CICU admission

Values	Code	Text
Retired	1	Yes
Retired	0	No

BNP (pg/mL)

Seq Num: 9770

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMBNP]

Description: If it is available, record the highest BNP, in pg/mL, within 2 hours (plus or minus) of CICU admission

Creatinine available

Seq Num: 9790

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMCrKnown]

Description: Is a creatinine available within 2 hours (plus or minus) of CICU admission?

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No

Creatinine (mg/dL)

Seq Num: 9800

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMCr]

Description: If it is available, record the highest creatinine value within 2 hours (plus or minus) of CICU admission

Hepatic injury

Seq Num: 9820

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMHepFail]

Description: Did the patient have transaminitis (AST or ALT >500) within 2 hours (plus or minus) of CICU admission.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Pupil reflex at 2 hrs

Seq Num: 9900

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMPupil]

Description: Record the pupil reflex at 2 hours post CICU admission

Values	*Code*	*Text*
Retired	1	Both reactive
Retired	2	One fixed/one reactive
Retired	3	Both fixed
Retired	9	Unk

Inotropic/vasopressor infusion

Seq Num: 9920

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMVIS]

Description: Was the patient on an infusion of any of the following during the first 2 hours of CICU admission: dopamine, dobutamine, epinephrine, norepinephrine, milrinone, vasopressin? If yes, find the time where the vasoactive inotrope score (VIS) is highest and record the doses at that time.

Values	*Code*	*Text*
Retired	1	Yes
Retired	0	No
Retired	9	Unk

Dopamine (mcg/kg/min)

Seq Num: 9930

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMDopa]

Description: Record the dopamine dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on dopamine, enter 0.

Dobutamine (mcg/kg/min)

Seq Num: 9940

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMDobut]

Description: Record the dobutamine dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on dobutamine, enter 0.

Epinephrine (mcg/kg/min)

Seq Num: 9950

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMEpi]

Description: Record the epinephrine dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on epinephrine, enter 0.

Norepinephrine (mcg/kg/min)

Seq Num: 9960

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMNorepi]

Description: Record the norepinephrine dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on norepinephrine, enter 0.

Milrinone (mcg/kg/min)

Seq Num: 9970

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMMilrin]

Description: Record the milrinone dose (mcg/kg/min) at the time of maximum VIS; if the patient was not on milrinone, enter 0.

Vasopressin (units/kg/min)

Seq Num: 9980

Retired in version 2.0

Required for case closure: Yes

Registry field: [RiskMed].[RMVasopress]

Description: Record the vasopressin dose (units/kg/min) at time of maximum VIS; if the patient was not on vasopressin, enter 0. Please note, this must be recorded in units/kg/min.

Non-surgical encounters - VIS

Inotropic/vasopressor infusion on admission

Seq Num: 9921

Required for case closure: Yes

Registry field: [RiskMed].[RMVISadmit]

Description: At the time of CICU admission, was the patient on an infusion of any of the following: dopamine, dobutamine, epinephrine, norepinephrine, milrinone, vasopressin? If yes, record the doses of each of these infusions at the time of CICU admission.

Clarification 2/1/2025: Do NOT include vasopressin used to treat diabetes insipidus (DI) or GI bleeding.

DO include:

- vasoactives used to drive up cardiac output to improve flow across a shunt or conduit
- dopamine used to improve splanchic function
- esmolol used to reverse a tet spell

Values	*Code*	*Text*
	1	Yes
	0	No
	9	Unk

Dopamine (mcg/kg/min) on admission

Seq Num: 9931

Required for case closure: Yes

Registry field: [RiskMed].[RMDopaAdmit]

Description: Record the dopamine dose (mcg/kg/min) at the time of CICU admission; if the patient was not on dopamine, enter 0.

Dobutamine (mcg/kg/min) on admission

Seq Num: 9941

Required for case closure: Yes

Registry field: [RiskMed].[RMDobutAdmit]

Description: Record the dobutamine dose (mcg/kg/min) at the time of CICU admission; if the patient was not on dobutamine, enter 0.

Epinephrine (mcg/kg/min) on admission

Seq Num: 9951

Required for case closure: Yes

Registry field: [RiskMed].[RMEpiAdmit]

Description: Record the epinephrine dose (mcg/kg/min) at the time of CICU admission; if the patient was not on epinephrine, enter 0.

Norepinephrine (mcg/kg/min) on admission

Seq Num: 9961

Required for case closure: Yes

Registry field: [RiskMed].[RMNorepiAdmit]

Description: Record the norepinephrine dose (mcg/kg/min) at the time of CICU admission; if the patient was not on norepinephrine, enter 0.

Milrinone (mcg/kg/min) on admission

Seq Num: 9971

Required for case closure: Yes

Registry field: [RiskMed].[RMMilrinAdmit]

Description: Record the milrinone dose (mcg/kg/min) at the time of CICU admission; if the patient was not on milrinone, enter 0.

Vasopressin (units/kg/min) on admission

Seq Num: 9981

Required for case closure: Yes

Registry field: [RiskMed].[RMVasopressAdmit]

Description: Record the vasopressin dose (units/kg/min) at time of CICU admission; if the patient was not on vasopressin, enter 0. Please note, this must be recorded in units/kg/min.

Post-admit VIS timepoint

Seq Num: 10002

Required for case closure: Yes

Registry field: [RiskMedVIS].[RMVISpoint]

Description: Record the inotropic/vasopressor support information for each post-admit timepoint listed. Only record data for the timepoints prior to CICU discharge.

Values

Code	*Text*
6	6 hrs post-admit
12	12 hrs post-admit
18	18 hrs post-admit
24	24 hrs post-admit
30	30 hrs post-admit
36	36 hrs post-admit
42	42 hrs post-admit
48	48 hrs post-admit
72	06:00 on ICU day 4
96	06:00 on ICU day 5
120	06:00 on ICU day 6
144	06:00 on ICU day 7

Post-admit VIS date/time

Seq Num: 10004

Required for case closure: Yes

Registry field: [RiskMedVIS].[RMVISdttm]

Description: Post CICU admission VIS date/time

On support at this post-admit timepoint

Seq Num: 10006

Required for case closure: Yes

Registry field: [RiskMedVIS].[RMVISsupport]

Description: Was the patient receiving an infusion of any of the 6 listed agents at this timepoint. If the patient is not on any of these infusions at this specific time, answer No.

Values

Code	*Text*
1	Yes
0	No
9	Unk

Dopamine (mcg/kg/min) at this post-admit timepoint Seq Num: 10008

Required for case closure: Yes

Registry field: [RiskMedVIS].[RMVISdopa]

Description: Record the dopamine dose (mcg/kg/min) at this timepoint; if the patient was not on dopamine, enter 0

Dobutamine (mcg/kg/min) at this post-admit timepoint Seq Num: 10010

Required for case closure: Yes

Registry field: [RiskMedVIS].[RMVISdobut]

Description: Record the dobutamine dose (mcg/kg/min) at this timepoint; if the patient was not on dobutamine, enter 0

Epinephrine (mcg/kg/min) at this post-admit timepoint Seq Num: 10012

Required for case closure: Yes

Registry field: [RiskMedVIS].[RMVISepi]

Description: Record the epinephrine dose (mcg/kg/min) at this timepoint; if the patient was not on epinephrine, enter 0

Norepinephrine (mcg/kg/min) at this post-admit timepoint Seq Num: 10014

Required for case closure: Yes

Registry field: [RiskMedVIS].[RMVISnorepi]

Description: Record the norepinephrine dose (mcg/kg/min) at this timepoint; if the patient was not on norepinephrine, enter 0

Milrinone (mcg/kg/min) at this post-admit timepoint Seq Num: 10016

Required for case closure: Yes

Registry field: [RiskMedVIS].[RMVISmilrin]

Description: Record the milrinone dose (mcg/kg/min) at this timepoint; if the patient was not on milrinone, enter 0

Vasopressin (units/kg/min) at this post-admit timepoint

Seq Num: 10018

Required for case closure: Yes

Registry field: [RiskMedVIS].[RMVISvasopress]

Description: Record the vasopressin dose (units/kg/min) at this timepoint; if the patient was not on vasopressin, enter 0. Please note, this must be recorded in units/kg/min.

Appendix: Calculating the Vasoactive-Inotropic Score (VIS)

Vasoactive-Inotropic Score (VIS)

To calculate the vasoactive-inotropic score (VIS), multiply the dose of each agent by the factor listed below then sum the results:

Agent	Units	Multiply by
Dopamine	mcg/kg/min	1
Dobutamine	mcg/kg/min	1
Epinephrine	mcg/kg/min	100
Norepinephrine	mcg/kg/min	100
Milrinone	mcg/kg/min	10
Vasopressin*	units/kg/min	10,000

***PLEASE NOTE:** Vasopressin must be in units/kg/min. If your MAR records it in any other way (e.g., milliunits/kg/min, units/kg/hour, etc.), you must convert it to units/kg/min.

Example:

A patient is on 5 mcg/kg/min of dopamine, 0.08 mcg/kg/min of epi, and 0.25 mcg/kg/min of milrinone. Her VIS is 15.5

	Units	Multiply by	Dose	Score
Dopamine	mcg/kg/min	1	5	5
Dobutamine	mcg/kg/min	1	0	0
Epinephrine	mcg/kg/min	100	0.08	8
Norepinephrine	mcg/kg/min	100	0	0
Milrinone	mcg/kg/min	10	0.25	2.5
Vasopressin	units/kg/min	10,000	0	0
VIS				**15.5**

The VIS reflects the total support at that point in time. The calculation should only include drugs/doses the patient is receiving concurrently.

Example:

Patient returned to the CICU from the OR on milrinone. Epinephrine was added briefly. When the epinephrine was discontinued, the milrinone dose was increased. The VIS calculations only include the drugs/doses the patient is on concurrently.

			Time 1		Time 2		Time 3	
	Units	Multiply by	Dose	Score	Dose	Score	Dose	Score
Dopamine	mcg/kg/min	1	0	0	5	5	0	0
Dobutamine	mcg/kg/min	1	0	0	0	0	0	0
Epinephrine	mcg/kg/min	100	0	0	0	0	0	0
Norepinephrine	mcg/kg/min	100	0	0	0	0	0	0
Milrinone	mcg/kg/min	10	0.5	5	0.5	5	0.7	7
Vasopressin	units/kg/min	10,000	0	0	0	0	0	0
VIS				**5**		**10**		**7**

Appendix: Modified Duke criteria for endocarditis

The following information is adapted from:

Li JS, Sexton DJ, Mick N, et al. Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. *Clin Infect Dis.* 2000;30(4):633-638.

Definite infective endocarditis

Pathologic criteria

1) Microorganisms demonstrated by culture or histologic examination of a vegetation, a vegetation that has embolized, or an intracardiac abscess specimen; or
2) Pathologic lesions; vegetation or intracardiac abscess confirmed by histologic examination showing active endocarditis

Clinical criteria*

1) 2 major criteria; or
2) 1 major criterion and 3 minor criteria; or
3) 5 minor criteria

Possible infective endocarditis

1) 1 major criterion and 1 minor criterion; or
2) 3 minor criteria

Rejected

1) Firm alternate diagnosis explaining evidence of infective endocarditis; or
2) Resolution of infective endocarditis syndrome with antibiotic therapy for <4 days; or
3) No pathologic evidence of infective endocarditis at surgery or autopsy, with antibiotic therapy for <4 days; or
4) Does not meet criteria for possible infective endocarditis, as above

* See following page for definitions of major and minor criteria

Major criteria

- Blood culture positive for IE - blood cultures can be from another institution.
  - Typical microorganisms consistent with IE from 2 separate blood cultures:
    - Viridans streptococci, Streptococcus bovis, HACEK group, Staphylococcus aureus; or
    - Community-acquired enterococci, in the absence of a primary focus; or
  - Microorganisms consistent with IE from persistently positive blood cultures, defined as follows:
    - At least 2 positive cultures of blood samples drawn **1**12 h apart; or
    - All of 3 or a majority of **>**4 separate cultures of blood (with first and last sample drawn at least 1 h apart)
  - Single positive blood culture for Coxiella burnetii or antiphase I IgG antibody titer **>**1 : 800

- Evidence of endocardial involvement

- Echocardiogram positive for IE (TEE (transesophageal echocardiography) recommended in patients with prosthetic valves, rated at least "possible IE" by clinical criteria, or complicated IE [paravalvular abscess]; TTE (transthoracic echocardiography) as first test in other patients), defined as follows:
  - Oscillating intracardiac mass on valve or supporting structures, in the path of regurgitant jets, or on implanted material in the absence of an alternative anatomic explanation; or
  - Abscess; or
  - New partial dehiscence of prosthetic valve

- New valvular regurgitation (worsening or changing of pre-existing murmur not sufficient)

Minor criteria

- Predisposition, predisposing heart condition or injection drug use

- Fever, temperature >38 C

- Vascular phenomena, major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial hemorrhage, conjunctival hemorrhages, and Janeway's lesions

- Immunologic phenomena: glomerulonephritis, Osler's nodes, Roth's spots, and rheumatoid factor

- Microbiological evidence: positive blood culture but does not meet a major criterion as noted above** or serological evidence of active infection with organism consistent with IE

**Excludes single positive cultures for coagulase-negative staphylococci and organisms that do not cause endocarditis.

Appendix: Modified Bell's Staging Criteria for Necrotizing Enterocolitis (NEC)

Modified Bell's Staging Criteria for Necrotizing Enterocolitis (NEC)

Stage	Systemic signs	Intestinal signs	Radiographic signs	Treatment
I: Suspected				
A	Temperature instability, apnea, bradycardia	Elevated pregavage residuals, mild abdominal distension, occult blood in stool	Normal or mild ileus	NPO, antibiotics x 3 days
B	Same as IA	Same as IA, plus gross blood in stool	Same as IA	Same as IA
II: Definite				
A: Mildly ill	Same as IA	Same as I, plus absent bowel sounds, abdominal tenderness	Ileus, pneumatosis intestinalis	NPO, antibiotics x 7 to 10 days
B: Moderately ill	Same as IA, plus mild metabolic acidosis and thrombocytopenia	Same as I, plus absent bowel sounds, definite abdominal tenderness, abdominal cellulitis, right lower quadrant mass	Same as IIA, plus portal vein gas, with or without ascites	NPO, antibiotics x 14 days
III: Advanced				
A: Severely ill, bowel intact	Same as IIB, plus hypotension, bradycardia, respiratory acidosis, metabolic acidosis, disseminated intravascular coagulation, neutropenia	Same as I and II, plus signs of generalized peritonitis, marked tenderness and distension of abdomen	Same as IIB, plus definite ascites	NPO, antibiotics x 14 days, fluid resuscitation, inotropic support, ventilator therapy, paracentesis
B: Severely ill, bowel perforated	Same as IIIA	Same as IIIA	Same as IIB, plus pneumoperitoneum	Same as IIA, plus surgery

Appendix: Stroke/Intracranial Hemorrhage Scenarios

Stroke/Intracranial Hemorrhage Scenarios

Scenario 1

Patient is in the CICU on ECMO after stage one palliation for HLHS. The patient is paralyzed and sedated, with cEEG in place. On ECMO day 3, there are HR and BP increases that do not correlate with seizure on cEEG. On day 4, there is left sided electrographic seizure noted and antiepileptic medications are started. An ultrasound is concerning for hypoperfusion in the left hemisphere. The patient is successfully decannulated on ECMO day 6, and an MRI done 2 days later reveals perfusion defect in the distribution of the left MCA without hemorrhage.

Follow up imaging to assess the MCA stroke prior to discharge reveals a small incidental subdural hemorrhage on the left with evolving MCA stroke without hemorrhagic conversion. No intervention was required for the subdural hemorrhage.

Seq #	Field	Correct Response
	CICU Encounter Fields	
2560	Medical diagnosis	None (surgical diagnosis only)
	Complication/Neuro Fields	
8120	Stroke (yes/no)	Yes
8142	Diagnosis date/time	Date/time of cEEG seizure
8144	How diagnosed (clinical findings/imaging/both/unk)	Both (clinical and EEG)
	-If imaging = yes:	
8146	• ultrasound (yes/no)	Yes
8148	• MRI (yes/no)	Yes
8150	• CT (yes/no)	No
8152	Primarily hemorrhagic (yes/no)	No
8154	- If primarily hemorrhagic = no: Hemorrhagic conversion? (yes/no)	No
8156	› if yes, date/time	--
8220	Seizure (yes/no)	Yes
8240	- If yes, date/time	Date/time of cEEG seizure
8260	IVH (≥ grade II)	No
8280	- If yes, date/time	--
8282	- Max grade with date	--
8302	Intracranial hemorrhage, non-stroke (yes/no)	Yes
8304	- If yes, first event date/time	Date/time of study that revealed subdural hemorrhage

Stroke/Intracranial Hemorrhage Scenarios

Scenario 2

A fenestrated Fontan patient presents to an outside hospital with new onset left sided weakness. An MRI done at the outside hospital reveals a right sided intracranial hemorrhage in the right parietal area. The patient is transferred to your CICU where an MRI/MRA reveals a right MCA thrombus. The patient is started on Keppra and no further interventions are planned for the thrombus. On CICU day 3 the patient has a left-sided seizure and is loaded with fosphenytoin.

Seq #	Field	Correct response
	CICU Encounter Fields	
2560	Medical diagnosis	Stroke
	Complication/Neuro Fields	
8120	Stroke (yes/no)	Yes
8142	Diagnosis date/time	CICU admit date/time
8144	How diagnosed (clinical findings/imaging/both/unk)	Both
	-If imaging = yes:	
8146	• ultrasound (yes/no)	No
8148	• MRI (yes/no)	Yes
8150	• CT (yes/no)	No
8152	Primarily hemorrhagic (yes/no)	Yes
8154	- If primarily hemorrhagic = no: Hemorrhagic conversion? (yes/no)	--
8156	› if yes, date/time	--
8220	Seizure (yes/no)	Yes
8240	- If yes, date/time	Date/time of clinical seizure on day 3
8260	IVH (≥ grade II)	No
8280	- If yes, date/time	--
8282	- Max grade with date	--
8302	Intracranial hemorrhage, non-stroke (yes/no)	No
8304	- If yes, first event date/time	--

Stroke/Intracranial Hemorrhage Scenarios

Scenario 3

A 12 year old patient with a prosthetic mitral valve who is on coumadin at baseline is admitted to the CICU after a fall. He presented to the ED with altered mental status but no focal findings and a head CT revealed a small to moderate sized intraparenchymal hemorrhage in the right frontal cortex with minimal midline shift. There is a small amount of blood in right frontal horn of the right lateral ventricle which is ungradable per the radiologist. An echo is concerning for an increased gradient across the prosthetic valve; the patient is transferred to the CICU for monitoring where studies on the valve are reassuring. An MRI/MRA confirms the intraparenchymal hemorrhage but is negative for thrombus. He is transferred to the floor, where coumadin is reinitiated prior to discharge.

Seq #	Field	Correct Response
	CICU Encounter Fields	
2560	Medical diagnosis	Intracranial hemorrhage
	Complication/Neuro Fields	
8120	Stroke (yes/no)	No
8142	Diagnosis date/time	--
8144	How diagnosed (clinical findings/imaging/both/unk)	--
	-If imaging = yes:	
8146	• ultrasound (yes/no)	--
8148	• MRI (yes/no)	--
8150	• CT (yes/no)	--
8152	Primarily hemorrhagic (yes/no)	--
8154	- If primarily hemorrhagic = no: Hemorrhagic conversion? (yes/no)	--
8156	› if yes, date/time	--
8220	Seizure (yes/no)	No
8240	- If yes, date/time	--
8260	IVH (≥ grade II)	No
8280	- If yes, date/time	--
8282	- Max grade with date	--
8302	Intracranial hemorrhage, non-stroke (yes/no)	Yes
8304	- first event date/time	CICU admit date/time

Stroke/Intracranial Hemorrhage Scenarios

Scenario 4

A patient is in the unit recovering after stage II palliation with atrial septectomy for HLHS. OnPOD#3, the patient is noted to have rhythmic movement of the right leg. It resolves spontaneously and a cEEG is subsequently placed. Over 48 hours, no seizure activity is noted. An MRI shows a few punctate hemorrhages consistent with exposure to bypass. The neurology consult team recommends initiating therapy with Keppra given the clinical event.

Seq #	Field	Correct Response
	CICU Encounter Fields	
2560	Medical diagnosis	None (surgical dx only)
	Complication/Neuro Fields	
8120	Stroke (yes/no)	No
8142	Diagnosis date/time	--
8144	How diagnosed (clinical findings/imaging/both/unk)	--
	-If imaging = yes:	
8146	• ultrasound (yes/no)	--
8148	• MRI (yes/no)	--
8150	• CT (yes/no)	--
8152	Primarily hemorrhagic (yes/no)	--
8154	- If primarily hemorrhagic = no: Hemorrhagic conversion? (yes/no)	--
8156	› if yes, date/time	--
8220	Seizure (yes/no)	Yes
8240	- If yes, date/time	Date of clinical even
8260	IVH (≥ grade II)	No
8280	- If yes, date/time	--
8282	- Max grade with date	--
8302	Intracranial hemorrhage, non-stroke (yes/no)	No
8304	- first event date/time	--

Stroke/Intracranial Hemorrhage Scenarios

Scenario 5

A patient is in the unit awaiting stage I palliation for HLHS. Per protocol, the patient undergoes a brain MRI which reveals bilateral grade III IVH. The patient is neurologically intact and hemodynamically stable on low dose prostaglandin and room air, so the decision is made to delay surgery for 5-7 days in order to assess the evolution of the IVH. One week later, a follow up MRI demonstrates no further bleeding and evolution of the previously noted IVH. The patient undergoes stage I palliation and recovers uneventfully.

Seq #	Field	Correct Response
	CICU Encounter Fields	
2560	Medical diagnosis	None (surgical dx only)
	Complication/Neuro Fields	
8120	Stroke (yes/no)	No
8142	Diagnosis date/time	--
8144	How diagnosed (clinical findings/imaging/both/unk)	--
	-If imaging = yes:	
8146	• ultrasound (yes/no)	--
8148	• MRI (yes/no)	--
8150	• CT (yes/no)	--
8152	Primarily hemorrhagic (yes/no)	--
8154	- If primarily hemorrhagic = no: Hemorrhagic conversion? (yes/no)	--
8156	› if yes, date/time	--
8220	Seizure (yes/no)	No
8240	- If yes, date/time	--
8260	IVH (≥ grade II)	Yes
8280	- If yes, date/time	Date of initial imaging
8282	- Max grade with date	Grade III, date of initial imaging
8302	Intracranial hemorrhage, non-stroke (yes/no)	No
8304	- first event date/time	--

Appendix: Tracheostomy/Ventilation Scenarios

Tracheostomy/Ventilation Scenarios

In these tables, rows in italics show coding for a patient who has an interventional cath rather than surgery.

Scenario 1

Patient trached and vented at baseline, comes in from home and has surgical intervention. In the OR, trach is replaced with ETT and patient returns to the CICU ventilated via the ETT. While still being ventilated, ETT is removed and trach recannulated. Patient weans to trach collar and is discharged home.

Seq #	Field	Correct Response
	Hospitalization fields	
1021	Trach at hospital admission	Yes
1022	Home resp support at hospital admission	Yes
	Cardiothoracic Surgery (or Cardiac Catheter) Fields	
1670	Intubated for surgery	Yes
1671	If yes, extubated in OR or upon arrival	No
2272	*Intubated for cath procedure*	*Yes*
2273	*If yes, extubated in cath lab or upon arrival*	*No*
	Respiratory Support Fields	
3040	Invasive ventilation	Yes
3210	Invasive vent began at CICU start	No
3223	Ventilated for procedure	No
3240	Invasive vent at CICU end	No
3260	If yes, end date known	--
3226	Initial airway	ETT
3229	Final airway	trach
3280	Vent end time	Time patient transitioned to trach collar
3232	If initial airway is ETT and final is trach, trach date/time	Date/time of recannulation

Tracheostomy/Ventilation Scenarios

Scenario 2

Patient trached and on heat moisture exchanger (HME) during the day and trach collar at night at baseline, comes in from home and has surgical intervention. Ventilated via the trach during the procedure and returns to the ICU being ventilated via the trach. Patient weaned to trach collar during the day and CPAP at night initially, and subsequently to trach collar around the clock. Discharged home on trach collar only.

Seq #	Field	Correct Response
	Hospitalization fields	
1021	Trach at hospital admission	Yes
1022	Home resp support at hospital admission	No
	Cardiothoracic Surgery (or Cardiac Catheter) Fields	
1670	Intubated for surgery	Yes
1671	If yes, extubated in OR or upon arrival	No
2272	*Intubated for cath procedure*	*Yes*
2273	*If yes, extubated in cath lab or upon arrival*	*No*
	Respiratory Support Fields	
3040	Invasive ventilation	Yes
3210	Invasive vent began at CICU start	Yes
3223	Ventilated for procedure	Yes
3240	Invasive vent at CICU end	No
3260	If yes, end date known	--
3226	Initial airway	trach
3229	Final airway	trach
3280	Vent end time	Time patient transitioned to trach collar
3232	If initial airway is ETT and final is trach, trach date/time	--

Tracheostomy/Ventilation Scenarios

Scenario 3

Patient trached and vented at baseline, admitted to the floor pre-operatively. Went to OR for surgical intervention, and trach is removed and patient is orally intubated for the case. Returns to the CICU with the ETT in place, being mechanically ventilated. Trach recannulated and ETT removed later in the CICU stay. Discharged home from the CICU with trach in place and receiving mechanical ventilation.

Seq #	Field	Correct Response
	Hospitalization fields	
1021	Trach at hospital admission	Yes
1022	Home resp support at hospital admission	Yes
	Cardiothoracic Surgery (or Cardiac Catheter) Fields	
1670	Intubated for surgery	Yes
1671	If yes, extubated in OR or upon arrival	No
2272	*Intubated for cath procedure*	*Yes*
2273	*If yes, extubated in cath lab or upon arrival*	*No*
	Respiratory Support Fields	
3040	Invasive ventilation	Yes
3210	Invasive vent began at CICU start	No (start time=hospital admission)
3223	Ventilated for procedure	No
3240	Invasive vent at CICU end	Yes
3260	If yes, end date known	Yes (please enter hosp discharge dt)
3226	Initial airway	trach
3229	Final airway	trach
3280	Vent end time	CICU discharge date/time
3232	If initial airway is ETT and final is trach, trach date/time	--

Tracheostomy/Ventilation Scenarios

Scenario 4

Patient admitted to the floor, trached and vented at baseline. Goes to OR for surgical intervention and ventilated via the trach throughout the procedure. Returns to the CICU vented via the trach, and then is transferred to the floor still receiving mechanical ventilation via the trach. Discharged home still receiving mechanical ventilation via the trach.

Seq #	Field	Correct Response
	Hospitalization fields	
1021	Trach at hospital admission	Yes
1022	Home resp support at hospital admission	Yes
	Cardiothoracic Surgery (or Cardiac Catheter) Fields	
1670	Intubated for surgery	Yes
1671	If yes, extubated in OR or upon arrival	No
2272	*Intubated for cath procedure*	*Yes*
2273	*If yes, extubated in cath lab or upon arrival*	*No*
	Respiratory Support Fields	
3040	Invasive ventilation	Yes
3210	Invasive vent began at CICU start	No (start time=hospital admission)
3223	Ventilated for procedure	No
3240	Invasive vent at CICU end	Yes
3260	If yes, end date known	Yes (please enter hosp discharge dt)
3226	Initial airway	trach
3229	Final airway	trach
3280	Vent end time	Hospital discharge date
3232	If initial airway is ETT and final is trach, trach date/time	--

Tracheostomy/Ventilation Scenarios

Scenario 5

Patient with trach but not ventilated at baseline, admitted pre-op to the floor. Goes to OR for surgical intervention where trach is removed and ETT placed. Returns to the CICU mechanically ventilated via the ETT. Is later recannulated while still requiring mechanical ventilation and subsequently is weaned to trach collar and discharged home.

Seq #	Field	Correct Response
	Hospitalization fields	
1021	Trach at hospital admission	Yes
1022	Home resp support at hospital admission	No
	Cardiothoracic Surgery (or Cardiac Catheter) Fields	
1670	Intubated for surgery	Yes
1671	If yes, extubated in OR or upon arrival	No
2272	*Intubated for cath procedure*	*Yes*
2273	*If yes, extubated in cath lab or upon arrival*	*No*
	Respiratory Support Fields	
3040	Invasive ventilation	Yes
3210	Invasive vent began at CICU start	Yes
3223	Ventilated for procedure	Yes
3240	Invasive vent at CICU end	No
3260	If yes, end date known	--
3226	Initial airway	ETT
3229	Final airway	trach
3280	Vent end time	Time patient transitioned to trach collar
3232	If initial airway is ETT and final is trach, trach date/time	Date/time of recannulation

Tracheostomy/Ventilation Scenarios

Scenario 6

Patient intubated and on the vent in the NICU. Goes to OR for surgical intervention, returns to the CICU with ETT in place and mechanically ventilated. Fails extubation attempt and is reintubated. Tracheostomy done and patient weaned first to CPAP at night and trach collar during the day, and eventually to around the clock trach collar. Discharged to home.

Seq #	Field	Correct Response
	Hospitalization fields	No
1021	Trach at hospital admission	No
1022	Home resp support at hospital admission	
	Cardiothoracic Surgery (or Cardiac Catheter) Fields	
1670	Intubated for surgery	Yes
1671	If yes, extubated in OR or upon arrival	No
2272	*Intubated for cath procedure*	*Yes*
2273	*If yes, extubated in cath lab or upon arrival*	*No*
	Respiratory Support Fields	
3040	Invasive ventilation	Yes
3210	Invasive vent began at CICU start	No
3223	Ventilated for procedure	No
3240	Invasive vent at CICU end	No
3260	If yes, end date known	--
3226	Initial airway	ETT
3229	Final airway	trach
3280	Vent end time	Time patient transitioned to trach collar
3232	If initial airway is ETT and final is trach, trach date/time	Admit time to CICU after trach

Scenario 7 – new 2/1/2025

A Fontan patient has a tracheostomy and is chronically ventilated at home. While at home she has a cardiac arrest and is taken to an outside hospital where the trach is changed out for an oral ETT. She is transferred to your CICU and several days into the encounter the trach stoma is recannulated and the ETT is removed. She is discharged home with the trach in place and mechanically ventilated.

Sequence Number	Field	Correct Response
	Hospitalization Fields	
1021	Trach at hospital admission	No
1022	Home respiratory support at hospital admission	Yes
	Cardiothoracic Surgery (or Catheterization) Fields	
1670	Intubated for surgery	N/A
1671	If yes, extubated in OR or on arrival	N/A
2272	Intubated for cath	N/A
2273	If yes, extubated in cath lab or on arrival	N/A
	Respiratory Support Fields	
3040	Invasive ventilation	Yes
3210	Invasive ventilation began at CICU start	Yes
3223	Ventilated for procedure	No
3240	Invasive vent at CICU end	Yes
3260	If yes, end date known	Yes
3280	Vent end date/time	CICU end date/time*
3226	Initial airway	ETT
3229	Final airway	trach
3232	Tracheostomy date/time	Date/time that trach recannulated

*If patient was transferred to another unit and then discharged home on mechanical ventilation, vent end date/time would be at the time of hospital discharge

NOTE: If the trach is removed and an ETT is placed *in the trach stoma*, this should be considered a trach and the questions regarding the airway answered accordingly.