Chapter 4

ACS NSQIP PEDIATRIC

VARIABLES & DEFINITIONS

4.1 PATIENT & CASE IDENTIFIERS

*IDN: The identification number (IDN) is a unique number, which permanently identifies the patient in the ACS NSQIP database. This number can be used to look up the patient in the ACS NSQIP workstation. If a patient appears in subsequent samplings (operative logs) and meets criteria, a new case form should be added to that existing patient IDN, instead of creating a new IDN. The IDN used is at the discretion of the participating hospital, although it is common to enter the patient’s Medical Record Number (MRN) in this field. If the IDN or MRN are not available, a site may elect to assign a permanent number, which is distinct to that particular patient. The IDN is transmitted securely to the ACS NSQIP database.

Note: The IDN and Birth Date are the two required fields used to establish the patient in the ACS NSQIP database.

Local Medical Record Number (LMRN): It is common to enter the patient’s medical record number in this field. The LMRN is a distinct number representing the patient and is assigned by the hospital. For hospitals with a web-based version of the workstation, both the IDN and LMRN are transmitted securely to the ACS database. For hospitals with a local workstation, the LMRN is stored in the local workstation and the IDN is transmitted securely to the ACS database.

Cycle Number: A number assigned to every eight consecutive days in a calendar year. If ‘Cycle 1’ begins on Monday, January 1st, it will continue for an 8-day period of time. This period is referred to as the 8-Day Cycle in the ACS NSQIP. The next cycle, ‘Cycle 2’ will begin on Tuesday, January 9th and continue for the next eight consecutive days. ‘Cycle 3’ would then begin on January 17th and so on. There are a total of 46 8-day cycles in a calendar year.

Case Number: A website generated case ID number to show that a case has been entered into the ASC NSQIP. The minimal information needed to set up a case in the database is:

- Patient’s Medical Record Number
- Date of the Patient’s Birth
- Date of Operation
- Surgical Subspecialty

Note: The case number is the identifier for a patient's particular surgical procedure, whereas the identification number (IDN) is the identifier for a particular patient in the ACS NSQIP database. Important: Record the case number on your data collection form. The case number is utilized by Outcome Sciences to identify and resolve any data entry issues you may encounter. It is also utilized to identify cases for inter-rater reliability reviews.
**4.2 DEMOGRAPHICS**

**Date of Birth:** Enter patient’s date of birth in format of mm/dd/yyyy.

*Note:* The IDN and Birth Date are the two required fields used to establish the patient in the ACS NSQIP database.

**Gestational Age:** Enter the patient’s gestational age in weeks at time of birth, if applicable.

**Gender:** Report the patient’s gender as either:
- Male
- Female

**Race:** Select from the following choices of race. If documentation indicates the patient has more than one race (e.g. Black-White or Indian-White), select the first listed race. Although the terms Hispanic and Latino are actually descriptions of the patient’s ethnicity, it is not uncommon to find them referenced as race. If the patient's race is documented only as Hispanic/Latino, select ‘White’. If the patient’s race is documented as mixed Hispanic/Latino with another race, use whatever race is listed (e.g. Black-Hispanic – select Black). Hispanic/Latino Ethnicity is a separate variable (listed below) where you can report the patient’s ethnicity.

- **White:** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.
- **Black or African American:** A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" can be used in addition to "Black or African American".
- **American Indian or Alaska Native:** 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.
- **Native Hawaiian or Other Pacific Islander:** A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
- **Asian:** 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.
- **Unknown/Not Reported:** if documentation does not state patient’s race, report as “Unknown”.

*Note:* Hispanic Ethnicity is required in addition to this data element.
**Hispanic Ethnicity:** Document if the patient is of Hispanic ethnicity or Latino. Hispanic or Latino is defined as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. The term, “Spanish origin”, can be used in addition to "Hispanic or Latino".

- **Yes:** Patient is of Hispanic ethnicity or Latino
- **No:** Patient is not Latino, not of Hispanic ethnicity, or unable to determine from medical record documentation.

**Note:** Race is required in addition to this data element.

**Preferred Language:** The preferred language field has two options: English and Spanish. This field is linked to the 30 day follow-up letter function. The follow-up letter will be generated in the selected language.

Report the patient’s language as either:

1. English
2. Spanish

### 4.3 SURGICAL PROFILE

**In/Out-Patient Status:** Follow your hospital’s definition of inpatient and outpatient status. (If the patient does not meet your hospital’s criteria of an inpatient, then they would be considered an outpatient.)

**Elective Surgery:** The patient is brought to the hospital or facility for a scheduled (elective) surgery from their home or normal living situation.

**Note:** Patients that are inpatient at an acute care hospital, those transferred from an ED and/or emergent cases should be excluded.

**Transfer / Origin Status:** Was the patient transferred directly from another health care facility and admitted to this hospital or admitted directly from home? Please select from the choices listed below. If the patient was transferred from another facility and was considered an *inpatient* at that facility, please select #3.

1. Admitted from home/clinic/doctor’s office
2. Admitted through the ER, including outside ER with direct hospital admission
3. Transferred from an outside hospital (NICU, PICU, Inpatient on general floor, adult ICU)
4. Chronic Care, Rehabilitation, Intermediate Care or Spinal Cord Unit
5. Other

**Hospital Admission Date:** The date the patient was admitted to this hospital. If the patient came through the Emergency Department, or an ‘elective surgery’ program, went directly to the operating room, and then was admitted to the hospital, use the date the patient enters the operating room or the date that anesthesia care begins (whichever comes
first) as the date of admission. Do not use the date the patient came into the Emergency 
Department.

**Admitting service:** Select the hospital admitting service from the list below.

| 4. Pediatric Otolaryngology (ENT) | 11. Pediatric Medical Service | 18. Orthopedics |

**Payor Status:** Select the form of medical coverage/reimbursement (3rd Party Payor). Select all that apply:

- Commercial Blue Cross/Blue Shield
- HMO/PPO
- Medicare
- Medicaid
- Champus
- Workman’s Comp/Auto
- Self-Pay
- Unknown
- Other

**Operation Date:** Enter the date the surgical procedure is performed. If the date of 
operation runs over into the next day enter either the date that anesthesia care begins or the 
date the patient enters the operating room, whichever comes first.

**Note:** The IDN and Birth Date are the two required fields used to establish patient in the 
NSQIP database. Once established in the ACS NSQIP database, the Operation Date and 
Surgical Specialty are required to generate a Case Number.

**CPT Code:** Provide the CPT code of the principal operative procedure as reported in the 
OR Report, Operative Note, Operating Room log, or surgical billing.

GUIDANCE-If the intended surgical procedure was not performed or was aborted, capture 
the performed procedure if the CPT code meets inclusion criteria.

**EXCEPTION:** If the intended procedure was not completed due to an intraoperative 
complication the case should still be captured. See examples listed below.

Examples:
Intended surgical procedure is a Whipple. Patient enters the OR, surgeon enters the 
abdomen and discovers unresectable disease, the Whipple is aborted (not performed) and
the surgeon documents that he/she performs a biopsy and a gastrojejunostomy/hepaticojejunostomy. This case would be coded for review in NSQIP under the biopsy or gastrojejunostomy/hepaticojejunostomy, and not the Whipple.

Intended surgical procedure is an open colectomy. Patient enters the OR, surgeon enters the abdomen and the case is aborted (not performed); however the surgeon documents a laparotomy is performed. This case would be reviewed for NSQIP under the laparotomy and not the open colectomy.

Patient enters the OR for a ruptured AAA repair, patient codes during surgery; the procedure is stopped (aborted) to administer CPR. The patient expires in the OR. This case would be reviewed as the AAA and the intraoperative occurrence of death would be assigned to the intended AAA procedure.

Guidance:
For all operations that involve minimally invasive approaches (laparoscopic/thoracoscopic/endoscopic/robotic/hybrid/etc.—hereafter referred to as “Minimally Invasive Surgery Codes” or “MIS Codes”) for which there are no specific MIS CPT codes, determine what procedure was performed from the operative note and enter the equivalent open CPT code into the “CPT Code” field. If the CPT code is specific for the minimally invasive approach, leave the code as is.

Examples:
• Laparoscopic pyloromyotomy, coded as “Unlisted laparoscopic procedure, stomach”, CPT code 43659 cutting of pyloric muscle (Freder-Ramstedt type operation). Enter the open CPT code for the pyloromyotomy if performed laparoscopically/robotically/hybridly.

Principal Operative Procedure: The principal procedure is most complex of all the procedures performed by the primary operating team during this trip to the operating room. Do not enter an additional procedure if it is covered by a single CPT code. (Note that a single CPT code can cover more than one procedure, for example cholecystectomy and common bile duct exploration have a single CPT code). Additional procedures requiring separate CPT codes and/or concurrent procedures will be entered separately in the “Other Procedures” or “Concurrent Procedures” categories on the Operation page of the website. An exploratory laparotomy should be entered as the principal operative procedure only when no other procedure eligible for assessment has been performed in that particular surgical case.

Laparoscopic/MIS Procedure: Indicate the surgical approach.
• Laparoscopic/MIS Only: Procedure was performed with a laparoscopic or other MIS approach alone. Include procedures that were changed to an open CPT code (using the coding change described above), and were performed entirely with a laparoscopic/or other MIS approach.
• Laparoscopic/MIS and Open: all procedures that were performed using both laparoscopic/MIS AND open approaches together, laparoscopic/MIS-assisted procedures, laparoscopic/MIS procedures converted to open, regardless of reason...
- Open Only or N/A: all procedures performed entirely using an open approach and all procedures for which MIS techniques are not applicable (e.g. extremity tumor resection)

**Laparoscopic/MIS Code:** Original CPT assigned to a Laparoscopic/MIS procedure.

<table>
<thead>
<tr>
<th>Procedure Name</th>
<th>Open CPT code</th>
<th>Description</th>
<th>MIS CPT code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrotomy; foreign body removal</td>
<td>43500</td>
<td>GASTROTOMY; WITH EXPLORATION OR FOREIGN BODY REMOVAL</td>
<td>43659</td>
<td>UNLISTED LAPAROSCOPY PROCEDURE, STOMACH</td>
</tr>
<tr>
<td>Pyloromyotomy</td>
<td>43520</td>
<td>PYLOROMYOTOMY, CUTTING OF PYLORIC MUSCLE (FREDET-RAMSTEDT TYPE OPERATION)</td>
<td>43659</td>
<td>UNLISTED LAPAROSCOPY PROCEDURE, STOMACH</td>
</tr>
<tr>
<td>Stomach biopsy</td>
<td>43605</td>
<td>BIOPSY OF STOMACH; BY LAPAROTOMY</td>
<td>43659</td>
<td>UNLISTED LAPAROSCOPY PROCEDURE, STOMACH</td>
</tr>
<tr>
<td>Excision - ulcer, benign tumor of stomach</td>
<td>43610</td>
<td>EXCISION, LOCAL; ULCER OR BENIGN TUMOR OF STOMACH</td>
<td>43659</td>
<td>UNLISTED LAPAROSCOPY PROCEDURE, STOMACH</td>
</tr>
<tr>
<td>Excision - malignant tumor of stomach</td>
<td>43611</td>
<td>EXCISION, LOCAL; MALIGNANT TUMOR OF STOMACH</td>
<td>43659</td>
<td>UNLISTED LAPAROSCOPY PROCEDURE, STOMACH</td>
</tr>
<tr>
<td>Pyloroplasty</td>
<td>43800</td>
<td>PYLOROPLASTY</td>
<td>43659</td>
<td>UNLISTED LAPAROSCOPY PROCEDURE, STOMACH</td>
</tr>
<tr>
<td>Gastrorrhaphy</td>
<td>43840</td>
<td>GASTRRHAPHY, SUTURE OF PERFORATED DUODENAL OR GASTRIC ULCER, WOUND, OR INJURY</td>
<td>43659</td>
<td>UNLISTED LAPAROSCOPY PROCEDURE, STOMACH</td>
</tr>
<tr>
<td>Gastrostomy closure</td>
<td>43870</td>
<td>CLOSURE OF GASTROSTOMY, SURGICAL</td>
<td>43659</td>
<td>UNLISTED LAPAROSCOPY PROCEDURE, STOMACH</td>
</tr>
<tr>
<td>Gastroclic fistula closure</td>
<td>43880</td>
<td>CLOSURE OF GASTROCOLIC FISTULA</td>
<td>43659</td>
<td>UNLISTED LAPAROSCOPY PROCEDURE, STOMACH</td>
</tr>
</tbody>
</table>

Guidance: Currently only code 43659 (UNLISTED LAPAROSCOPY PROCEDURE, STOMACH) is being captured under the Laparoscopic/MIS Code variable.
**Principal Anesthesia Technique:** Select from the list below the principal anesthesia technique used. The technique employed may be found on the anesthesia record. General anesthesia should take precedence over all other forms of anesthesia.

(1) General – (including IV anesthesia with intubation or Laryngeal Mask Airway) (LMA)
(2) Spinal
(3) Epidural
(4) Caudal
(5) Regional
(6) Local – (usually performed by the surgeon)
(7) None
(8) Other
(9) Unknown

**Surgical Specialty:** Select the surgical specialty of the primary surgeon performing the procedure.

1. Pediatric Cardiovascular-Thoracic
2. Pediatric Neurosurgery
3. Pediatric Orthopedic Surgery
4. Pediatric Otolaryngology
5. Pediatric Surgery
6. Pediatric Urology
7. Pediatric Plastics
8. Plastics
9. Cardiovascular-Thoracic
10. General Surgery
11. Gynecology
12. Neurosurgery
13. Orthopedics
14. Otolaryngology (ENT)
15. Urology

**Attending Surgeon ID Number (IDN):** A number assigned to each surgeon so that the hospital may track the surgeons surgical cases. This variable will **not** be transmitted. It is for the hospital’s internal use **only**.

**LCN:** The local case number (LCN) is an optional number the hospital can assign for this patient’s encounter or visit. You may wish to utilize this field for internal tracking purposes.

**Encounter Number:** The encounter number is an additional optional number the hospital can assign for this patient’s encounter or visit. You may wish to utilize this field for internal tracking purposes.

**4.4 PREOPERATIVE INFORMATION**

**4.4.1 GENERAL**

**Height:** Report the patient’s most recent height documented in the medical record in either inches (in) or centimeters (cm). Select ‘unknown’ if value option is not known.

**Weight:** Report the patient’s most recent weight documented in the medical record in either pounds (lbs.), or kilograms (kg). Select ‘unknown’ if value option is not known.

**Diabetes mellitus requiring therapy with non-insulin agents, or insulin:** Diabetes mellitus is a metabolic disorder of the pancreas whereby the individual requires daily dosages
of exogenous parenteral insulin, or a non-insulin hypoglycemic agent to prevent a hyperglycemia/metabolic acidosis. Report the treatment regimen of the patient’s chronic, long-term management (>2 weeks). Do not include a patient if diabetes is controlled by diet alone.

- **No:** No diagnosis of diabetes or diabetes controlled by diet alone
- **Non-insulin:** A diagnosis of diabetes requiring therapy with a non-insulin antidiabetic agent (such as oral agents or other non-insulin agents).
- **Insulin:** a diagnosis of diabetes requiring daily insulin therapy

**DNR status:** If the patient has had a Do-Not-Resuscitate (DNR) order written in the physician’s order sheet of the patient’s chart and it has been signed or co-signed by an attending physician in the 30 days prior to surgery, enter “YES”. There must be active DNR order at the time the patient is going to the OR. If the DNR order as defined above was rescinded immediately prior to surgery in order to operate on the patient, enter “YES”. Answer “NO” if DNR discussions are documented in the progress note, but no official DNR order has been written in the physician order sheet or if the attending physician has not signed the official order. Advanced Directives are not DNR orders.

**Premature Birth:** Prematurity is defined as a birth prior to 37 weeks of gestation. If the medical record documents the patient as a premature birth, indicate the completed weeks of gestation listed below. If the number of weeks is not documented, select ‘Unknown’.

<table>
<thead>
<tr>
<th>Weeks Gestation</th>
<th>ICD-9 Code</th>
<th>Weeks Gestation</th>
<th>ICD-9 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 24</td>
<td>765.21</td>
<td>29 – 30</td>
<td>765.25</td>
</tr>
<tr>
<td>24</td>
<td>765.22</td>
<td>31 – 32</td>
<td>765.26</td>
</tr>
<tr>
<td>25 – 26</td>
<td>765.23</td>
<td>33 – 34</td>
<td>765.27</td>
</tr>
<tr>
<td>27 – 28</td>
<td>765.24</td>
<td>35 – 36</td>
<td>765.28</td>
</tr>
<tr>
<td>29 – 30</td>
<td>765.25</td>
<td>Unknown</td>
<td>765.20</td>
</tr>
</tbody>
</table>

### 4.4.2 Pulmonary

**Ventilator Dependence:** A preoperative patient requiring ventilator-assisted respirations at any time during the 48 hours preceding surgery. Include patients on BiPAP and CPAP.

**Current Pneumonia:** Enter “Yes” if the patient has a new pneumonia or recently diagnosed pneumonia on current antibiotic treatment at the time the patient is brought to the OR.

Patients with pneumonia must meet criteria from both Radiology and Signs/Symptoms/Laboratory sections listed as follows (NOTE: for children ≤12 years, may use “Any Patient” or the age-appropriate “Alternate” criteria):
<table>
<thead>
<tr>
<th>Radiology</th>
<th>Signs/Symptoms/Laboratory</th>
</tr>
</thead>
</table>
| **One** definitive chest radiological exam (x-ray or CT) with at least **one** of the following:  
- New **or** progressive and persistent infiltrate  
- Consolidation or opacity (e.g., air-space disease, patchy areas of increased density, focal opacification)  
- Cavitation  
- Pneumatoceles, in infants ≤ 1 year old  
**NOTE:** In patients with underlying pulmonary or cardiac disease (e.g., respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema or COPD, **two or more serial** chest radiological exams (x-ray or CT) are **required**. | **FOR ANY PATIENT**, at least **one** of the following:  
- Fever (>38°C or >100.4°F) with no other recognized cause  
- Leukopenia (<4000 WBC/mm³) or leukocytosis (≥12,000 WBC/mm³)  
**AND**  
At least **one** of the following:  
- 5% Bronchoalveolar lavage (BAL) -obtained cells containing ≥10,000 cfu/mL intracellular bacteria on direct microscopic exam (e.g., Gram stain)  
- Positive growth in blood culture not related to another source of infection  
- Positive growth in culture of pleural fluid  
- Positive quantitative culture from minimally contaminated lower respiratory tract (LRT) specimen (e.g., BAL or protected specimen brushing) - ≥10,000 cfu/mL  
**OR**  
At least **two** of the following:  
- New onset of purulent sputum (with repeated notations over 24 hours), or change in character of sputum (e.g., color, consistency, odor, or quality), or increased respiratory secretions, or increased suctioning requirements  
- New onset or worsening cough, or dyspnea, or tachypnea (see age-defined parameters below)  
- Rales or bronchial breath sounds  
- Worsening gas exchange (e.g., O₂ desaturations (e.g., PaO₂/FiO₂ ≤ 240), increased oxygen requirements, or increased ventilator demand)  
**ALTERNATE CRITERIA, for infants ≤ 1 year old:**  
Worsening gas exchange (e.g., O₂ desaturations, increased oxygen requirements, or increased ventilator demand)  
**AND**  
at least **three** of the following: |
- Documentation of temperature instability with no other recognized cause
- Leukopenia ($<4000 \text{ WBC/mm}^3$) or leukocytosis ($\geq 15,000 \text{ WBC/mm}^3$) and left shift ($\geq 10\%$ band forms)
- New onset of purulent sputum (with repeated notations over 24 hours), or change in character of sputum (e.g. color, consistency, odor, or quality), or increased respiratory secretions or increased suctioning requirements
- Apnea, tachypnea (see age-defined parameters below), nasal flaring with retraction of chest wall or grunting
- Wheezing, rales, or rhonchi
- Cough
- Bradycardia ($<100 \text{ bpm}$ for $<30$ day old, $< 90 \text{ bpm}$ for $30$ day old - $1$ year) or tachycardia ($>180 \text{ bpm}$)

**ALTERNATE CRITERIA, for child $> 1$ year old or $\leq 12$ years old:**

At least **three** of the following:

- Fever ($>38.4 \, ^\circ \text{C} \, \text{or} \, > 101.1 \, ^\circ \text{F}$) or hypothermia ($<36.5 \, ^\circ \text{C} \, \text{or} \, <97.7 \, ^\circ \text{F}$) with no other recognized cause
- Leukopenia ($<4000 \text{ WBC/mm}^3$) or leukocytosis ($\geq 15,000 \text{ WBC/mm}^3$)
- New onset of purulent sputum or change in character of sputum or increased respiratory secretions or increased suctioning requirements
- New onset or worsening cough, or dyspnea, apnea, or tachypnea (see age-defined parameters below)
- Rales or bronchial breath sounds
- Worsening gas exchange [e.g. $\text{O}_2$ desaturations (e.g. pulse oximetry $<94\%$), increased oxygen requirements or increased ventilation demand]
Age Defined Tachypnea

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Respiratory Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Premature infant</strong> &lt;37 weeks corrected gestational age</td>
<td>&gt;50</td>
</tr>
<tr>
<td>Term infant &lt;7 days</td>
<td>&gt;50</td>
</tr>
<tr>
<td>7 days to &lt;30 days</td>
<td>&gt;40</td>
</tr>
<tr>
<td>30 days to &lt;1 yr.</td>
<td>&gt;34</td>
</tr>
<tr>
<td>1 yr. to &lt;2 yrs.</td>
<td>&gt;30</td>
</tr>
<tr>
<td>2 yrs. to &lt;6 yrs.</td>
<td>&gt;22</td>
</tr>
<tr>
<td>6 yrs. to &lt;13 yrs.</td>
<td>&gt;18</td>
</tr>
<tr>
<td>13 yrs. to &lt;18 yrs.</td>
<td>&gt;14</td>
</tr>
</tbody>
</table>

**Note:** For more information about pneumonia definition, please see CDC document “Clinically-Defined Pneumonia” at: http://www.cdc.gov/nhsn/PDFs/pscManual/6pscVAPcurrent.pdf

**History of Asthma:** Patient has a history of chronic reactive airway disease (RAD) resulting in functional disability in daily activities, chronic medication requirement, or hospitalization (not including ER visit or 23 hour observation) for treatment of RAD within one year prior to surgery. Record ‘Yes’ for the patient who is on scheduled daily medications for asthma or RAD (e.g., Advair, Pulmacort) but does not have a formal diagnosis in the chart. Do not include patients taking medicine on a prn basis only.

**History of Cystic Fibrosis:** Patient has a diagnosis of cystic fibrosis with or without respiratory compromise.

**Bronchopulmonary Dysplasia/Chronic Lung Disease:** Patient has a documented diagnosis of Bronchopulmonary Dysplasia (BPD) or Chronic Lung Disease. Patients with a diagnosis of Cystic Fibrosis should be included under this variable only if their disease has a Chronic Lung Disease component.

**Oxygen Support:** The patient requires supplemental oxygen support at the time of surgery. Oxygen can be delivered by any modality for any reason. Include patients requiring supplemental oxygen at night. Do not include patients who only receive oxygen in the operating room.

**Tracheostomy:** A patient with a tracheostomy present at time of surgery. The patient may or may not be receiving ventilator breaths through the tracheostomy.

**Structural Pulmonary/Airway Abnormalities:** Presence of structural pulmonary and/or airway abnormality with or without respiratory compromise. Include pneumothorax or pleural effusion with respiratory compromise only if present within 7 days of surgery. Include patients with a diagnosis of obstructive sleep apnea that is supported by a documented abnormal sleep study.
Some examples would include but are not limited to: tracheo-, larngo-, or broncho-
malacia/stenosis, pulmonary cyst, pulmonary abscess, empyema, lobar emphysema,
pneumothorax, or congenital diaphragmatic hernia. Do not include granulomas.

4.4.3 GASTROINTESTINAL

**Biliary /Liver /Pancreatic Disease:** Patient has a diagnosis of chronic congenital,
acquired, or structural liver, biliary, or pancreatic disease resulting in a functional
abnormality. Functional abnormalities may include cholelithiasis (if symptomatic),
esophageal varices, malabsorption, or coagulopathy. Patients with a diagnosis of Cystic
Fibrosis should be included under this variable only if their disease has a liver or biliary
disease component. Exclude patients undergoing cholecystectomy for acute cholecystitis.

**Esophageal/Gastric Disease /Intestinal:** Patient has a diagnosis of congenital, acquired,
or structural intestinal tract disorder involving esophagus, stomach, small intestine, or colon,
such as gastroschisis, atresias of the esophagus, duodenum, jejunum, and or ileum. This may
result in a functional disorder including achalasia, inflammatory bowel disease,
malabsorption, polyposis. Include Gastroesophageal reflux only if requiring medication at
the time of surgery. Patients with a diagnosis of Cystic Fibrosis should be included under
this variable only if their disease has an intestinal/esophageal/gastric disease component.
Include patients with pyloric stenosis only if unrepaired.

4.4.4 CARDIAC

**Previous Cardiac Surgery/Cardiac Intervention:** Cardiac surgery or a catheter-based
intervention for the repair/replacement/reconstruction of a congenital or acquired structural
or functional lesion of the heart and/or great vessels.

**Cardiac Risk Factors:** Classify the cardiac risk factors into one of the following categories
based on present cardiac disease or a history of cardiac disease. Record cardiac diagnosis
and ICD-9 diagnosis codes only from the list provided.

- No risk factors No pre-existing cardiac condition or compromise of cardiac
  function requiring medication.
- Minor
- Major
- Severe

Provided List (Chart) of Cardiac Risk Factor Descriptions and ICD-9 Codes

<table>
<thead>
<tr>
<th>No cardiac risk factors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pre-existing cardiac condition</td>
</tr>
</tbody>
</table>
### Minor cardiac risk factors:

<table>
<thead>
<tr>
<th>Description</th>
<th>ICD-9 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aortic valve stenosis</td>
<td>746.3 CONGENITAL STENOSIS AORTIC VALVE</td>
</tr>
<tr>
<td>Atrial septal defect (ASD) secundum type</td>
<td>745.5 OSTIUM SECUNDUM AT/SEPTAL DEFECT</td>
</tr>
<tr>
<td>Benign neoplasm of the heart</td>
<td>212.7 BENIGN NEOPLASM HEART</td>
</tr>
<tr>
<td>Bicuspid aortic valve</td>
<td>746.4 CONGENITAL INSUFFIC AORTIC VALVE</td>
</tr>
<tr>
<td>Cardiac pacemaker in place</td>
<td>V45.01 CARDIAC PACEMAKER IN SITU</td>
</tr>
<tr>
<td>Conduction abnormalities / Cardiac dysrhythmias</td>
<td></td>
</tr>
<tr>
<td>Anomalous AV excitation</td>
<td>426.7 ANOMALOUS AV EXCITATION</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>427.3 ATRIAL FIBRILLATION</td>
</tr>
<tr>
<td>Atrioventricular block</td>
<td>426.6 ATRIOVENTRICULAR BLOCK COMPLETE</td>
</tr>
<tr>
<td>Long QT syndrome</td>
<td>426.8 LONG QT SYNDROME</td>
</tr>
<tr>
<td>Sinoatrial node dysfunction</td>
<td>427.8 SINOATRIAL NODE DYSFUNCTION</td>
</tr>
<tr>
<td>Supraventricular premature beats</td>
<td>427.6 SUPRAVENTRICULAR PREMATURE BEATS</td>
</tr>
<tr>
<td>Supraventricular tachycardia</td>
<td>427.8 OTHER CARDIAC DYSRHYTHMIA</td>
</tr>
<tr>
<td>Wolff-Parkinson-White syndrome</td>
<td>426.7 ANOMALOUS AV EXCITATION</td>
</tr>
<tr>
<td>Essential hypertension</td>
<td>401.0 MALIGNANT ESSENTIAL HYPERTENSION</td>
</tr>
<tr>
<td>Mitral valve insufficiency / regurgitation</td>
<td>746.6 CONGENITAL MITRAL INSUFFICIENCY</td>
</tr>
<tr>
<td>Mitral valve prolapse</td>
<td>424.0 MITRAL VALVE DISORDERS</td>
</tr>
<tr>
<td>Mitral valve stenosis</td>
<td>394.0 MITRAL VALVE STEN AORTIC VALVE STEN</td>
</tr>
<tr>
<td><strong>Patent ductus arteriosus (PDA) repaired</strong></td>
<td></td>
</tr>
<tr>
<td>Patent foramen ovale (PFO)</td>
<td>745.5 OSTIUM SECUNDUM AT/SEPTAL DEFECT</td>
</tr>
<tr>
<td>Vascular ring</td>
<td>747.2 ANOMALIES AORTIC ARCH</td>
</tr>
<tr>
<td>Ventricular septal defect (VSD)</td>
<td>745.4 VENTRICULAR SEPTAL DEFECT</td>
</tr>
</tbody>
</table>

### Major cardiac risk factors:

<table>
<thead>
<tr>
<th>Description</th>
<th>ICD-9 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aneurysm of the heart wall</td>
<td>414.10 ANEURYSM OF HEART (WALL)</td>
</tr>
<tr>
<td>Anomalous pulmonary venous drainage total or partial</td>
<td>747.41 TOTAL ANOMALOUS PULM VENOUS CONN</td>
</tr>
<tr>
<td>Aortic / aortic valve insufficiency / regurgitation</td>
<td>746.4 CONGENITAL INSUFFIC AORTIC VALVE</td>
</tr>
<tr>
<td>Coarctation of the aorta</td>
<td>747.3 COARCTATION OF AORTA</td>
</tr>
<tr>
<td>Interrupted aortic arch</td>
<td>747.11 INTERRUPTION AORTIC ARCH</td>
</tr>
<tr>
<td>Aortic stenosis – subvalvular, subaortic, or supravalvular</td>
<td>747.22 ATRESIA/STENOSIS AORTA</td>
</tr>
<tr>
<td>Atrial septal defect (ASD) – ostium primum type</td>
<td>745.5 OSTIUM PRIMUM DEFECT</td>
</tr>
<tr>
<td>Atrial septal defect (ASD) – sinus venosus type</td>
<td>745.9 OTHER DEFECTS SEPTAL CLOSURE</td>
</tr>
<tr>
<td>Arterioventricular canal defects</td>
<td>745.6 OTHER ENDOCARDIAL CUSHION DEFECTS</td>
</tr>
<tr>
<td>Bacterial endocarditis – acute or subacute</td>
<td>421.0 ACUTE AND SUBACUTE ENDOCARDITIS</td>
</tr>
<tr>
<td>Cardiomyopathy</td>
<td>425.0 CARDIOMYOPATHY</td>
</tr>
<tr>
<td>Double outlet right ventricle</td>
<td>745.12 DOUBLE OUTLET RIGHT VENTRICLE</td>
</tr>
<tr>
<td>Ebstein’s anomaly</td>
<td>746.2 EBSTEIN’S ANOMALY</td>
</tr>
<tr>
<td>Endocardial cushion defects</td>
<td>745.69 OTHER ENDOCARDIAL CUSHION DEFECTS</td>
</tr>
<tr>
<td>Noonan syndrome</td>
<td>759.89 OTHER ANOMALIES</td>
</tr>
<tr>
<td><strong>Patent ductus arteriosus (PDA) – not repaired</strong></td>
<td></td>
</tr>
<tr>
<td>Pericarditis – acute</td>
<td>420.0 ACUTE PERICARDITIS</td>
</tr>
<tr>
<td>Pulmonary valve, or pulmonic stenosis</td>
<td>746.02 STENOSIS PULMONARY VALVE CONGENITAL</td>
</tr>
<tr>
<td>Pulmonary hypertension</td>
<td>416.8 OTHER CHRONIC PULMONARY HEART DISEASE</td>
</tr>
<tr>
<td>Pulmonary valve insufficiency or regurgitation</td>
<td>746.09 OTHER ANOMALIES PULMONARY VALVE</td>
</tr>
<tr>
<td>Sinus of valsalva fistula / aneurysm</td>
<td>747.29 OTHER ANOMALIES AORTA</td>
</tr>
<tr>
<td>Tetralogy of Fallot</td>
<td>745.2 TETRALOGY FALLOT</td>
</tr>
<tr>
<td>Transposition of the great vessels</td>
<td>745.19 OTHER TRANSPOSITION GREAT VESSELS</td>
</tr>
</tbody>
</table>

### Severe cardiac risk factors:

<table>
<thead>
<tr>
<th>Description</th>
<th>ICD-9 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double inlet right ventricle</td>
<td>745.3 DOUBLE INLET RIGHT VENTRICLE</td>
</tr>
<tr>
<td>Hypoplastic left heart syndrome</td>
<td>746.7 HYPOPLASTIC LEFT HEART SYNDROME</td>
</tr>
<tr>
<td>Hypoplastic right ventricle</td>
<td>746.8 OTHER CONGENITAL ANOMALIES HEART</td>
</tr>
<tr>
<td>Mitral or mitral valve atresia</td>
<td>746.9 UNS ANOMALY HEART</td>
</tr>
<tr>
<td>Pulmonary or pulmonary valve atresia</td>
<td>747.3 PULM ARTERY COARCT/ATRESIA</td>
</tr>
<tr>
<td>Pulmonary vascular obstructive disease</td>
<td>424.3 PULMONARY VALVE DISORDERS</td>
</tr>
<tr>
<td>Single ventricle</td>
<td>745.3 COMMON VENTRICLE</td>
</tr>
<tr>
<td>Tricuspid atresia</td>
<td>746.3 TRICUSPID ATRESIA/STENOSIS CONGEN</td>
</tr>
<tr>
<td>Truncus arteriosus</td>
<td>745.0 COMMON TRUNCUS</td>
</tr>
</tbody>
</table>
Additional Guidance

If the type of Atrial Septal Defect (ASD) is not specified:

Code as Atrial septal defect (ASD) secundum defect, 745.5 Minor cardiac risk factor

Atrial septal defect (ASD) secundum type 745.5
Atrial septal defect (ASD) – ostium primum type 745.6
Atrial septal defect (ASD) – sinus venosus type 745.6

Code Patent Ductus Ateriosus as repaired and unrepaired code with the same code 747 but assign Minor cardiac risk factor to repaired and Major cardiac risk factor to unrepaired.

Patent Ductus Arteriosus (PDA) repaired 747 is a Minor Cardiac Risk Factor 747
Patent Ductus Arteriosus (PDA) unrepaired 747 is a Major Cardiac Risk Factor 747

Examples:
A Patient with a VSD (745.4), ASD (745.61), and a Single Ventricle (745.3) should be placed in the severe category due to the single ventricle.
An infant with Tetralogy of Fallot (745.2) and pulmonary atresia (747.3) should be placed in the severe category due to the pulmonary atresia.
An infant with bicuspid aortic valve (747.22) and a VSD (745.69) should be placed in the minor category due to VSD and bicuspid valve.

Cardiac ICD-9 Code: Record all cardiac ICD-9 diagnosis codes for all documented cardiac conditions on the list provided.

4.4.5 RENAL

Acute Renal Failure: Patient has experienced acute renal failure within 7 days prior to surgery. Acute renal failure is defined as a rising creatinine above 2.0 mg/dl within 7 days prior to surgery.

Note: For patients with a chronically elevated creatinine, determine baseline level and only include if current level is further elevated by 2.0 mg/dl above their normal baseline.

Currently requiring or on Dialysis: Acute or chronic renal failure requiring treatment with peritoneal dialysis, hemodialysis, hemofiltration, hemodiafiltration, or ultrafiltration within 2 weeks prior to surgery.
**4.4.6 CENTRAL NERVOUS SYSTEM**

**Coma:** Patient is unconscious, postures to painful stimuli, or is unresponsive to all stimuli entering surgery. Do not include drug-induced coma.

**CVA/ Stroke or Traumatic/Acquired Brain Injury with resulting Neurological Deficit:** History of a cerebrovascular accident (embolic, thrombotic, or hemorrhagic) or traumatic/acquired brain injury resulting in persistent residual motor or sensory dysfunction (e.g., hemiplegia, hemiparesis, paraplegia, quadriplegia, aphasia, sensory deficit, impaired memory). Record patients with central apnea under this variable.

Some examples would include but are not limited to: CVA/stroke, birth asphyxia, encephalopathy, stroke in utero, and resections of portions of the brain.

**Tumor Involving CNS:** Space-occupying tumor of the brain and spinal cord which may be benign (e.g., meningiomas, ependymoma, oligodendroglioma) or primary (e.g., astrocytoma, glioma, glioblastoma multiforme) or secondary malignancies. Other tumors that may involve the CNS include lymphomas in the brain and sarcomas. Answer "Yes" even if the tumor was not treated ‘OR’ if the tumor was removed.

- **No:** patient does not have a tumor involving the CNS
- **Yes, Not Treated:** patient has a tumor involving the CNS but it has not been treated with chemotherapy, radiation, or surgical resection.

**OR**

- **Yes, Treated:** patient currently has or has had a tumor involving the CNS and it has been treated with chemotherapy, radiation, and/or surgical resection.

**Developmental Delay/Impaired Cognitive Status:** Developmental status and/or cognitive ability impairment is defined when a child does not reach his/her developmental milestones at the expected times. It is an ongoing delay in the process of development. Delays can occur in one or many areas, such as gross or fine motor, language, social or thinking skills. Delays may result from any etiology, including congenital malformations, acquired structural lesions, traumatic injury, birth asphyxia and metabolic or unknown causes. Medical record documentation should state the patient is not appropriate for developmental age. Include patients who are blind and/or deaf. Do not include patients with attention deficit disorders (ADD or ADHD) or psychiatric disorders.

**Seizure Disorder:** Patient has chronic seizure disorder requiring medical and/or dietary management with or without control. Do not include febrile seizures.

**Cerebral Palsy:** Patient diagnosed with cerebral palsy with associated motor and/or cognitive deficits due to known or unknown etiology.
Structural CNS Abnormality: Any structural CNS abnormality documented in the medical record. This may also be noted in a visual or radiologic exam.

Some examples would include but are not limited to: myelomeningocele (spina bifida), microcephaly, macrocephaly, hydrocephalus, hypotelorism, trigonocephaly, Dandy-Walker malformation, Arnold-Chiari malformation, syrinx, tethered cord, gray or white matter changes, absent corpus callosum, fused ventricles, aqueductal stenosis, other neural tube defects, or other cystic or degenerative lesions of the CNS.

Neuromuscular Disorder: Congenital or acquired degenerative neuromuscular disorder that result in a slow, progressive deterioration in motor function. Answer ‘Yes’ if there is documentation in the medical record; radiological studies are not required to verify presence of a neuromuscular disorder. Include patients with decreased muscle tone or significant contractures which affect motor function. Patients with neuromuscular scoliosis should be included under this variable.

Some examples would include but are not limited to: degenerative disorders of gray and white matter (dystrophies), demyelinating disorders, and peripheral neuromuscular disorders.

Intraventricular Hemorrhage (IVH) Grade: Indicate the most severe grade of IVH documented on any age patient in the medical record or as noted on CT scan or ultrasound.

- No IVH
- Grade 1
- Grade 2
- Grade 3
- Grade 4
- IVH reported but no grade assigned.

4.4.7 IMMUNOLOGY

Immune Diseases/Immunosuppressant Use: Answer “Yes” if the patient has a disease of the immune system documented in the medical record such as Severe Combined Immunodeficiency (SCID), Common Variable Immunodeficiency (CVID), Hypogammaglobulinemia, IgG, IgM, IgA. Also answer ‘Yes’ if the patient regularly takes immunosuppressant medications (for example, Remicade, IVIG) such as those utilized for chemotherapy patients, transplant patients or patients with chronic inflammatory conditions. Do not utilize lab values to determine the answer to this variable.

Steroid Use (within 30 days): Answer ‘Yes’ if the patient has required the administration of oral or parenteral corticosteroid medication in the 30 days prior to surgery. This would include patients who receive short course oral or IV steroids. Do not include corticosteroids applied topically or administered rectally or by inhalation.
**Bone Marrow Transplant:** Patient has received a bone marrow transplant with or without engraftment at any time prior to surgery. Also include patients receiving a stem cell transplant.

**Solid Organ Transplant:** Patient has received a solid organ (heart, lung, thymus, liver, kidney, pancreas, intestine) transplant with or without immunosuppression at any time prior to surgery.

### 4.4.8 NUTRITIONAL / IMMUNE / ONCOLOGY / OTHER

**Childhood Malignancy (select one)**

A. **No current or prior history of cancer.**
   If patient has no current diagnosis of cancer and no history of a cancer diagnosis documented in the medical record. If a biopsy is done of a suspicious lesion such as a liver nodule or a lymph node and pathology shows no cancer, the answer is also A.

B. **Past history of cancer.**
   If patient has a history of malignancy but no evidence of active disease. The patient has a history of childhood malignancy treated with surgery, chemotherapy, and/or radiotherapy, but there is no current evidence of active disease documented in the medical record and there is no plan for ongoing treatment.

C. **Current cancer or active treatment of cancer.**
   If patient has a childhood malignancy that is currently present and documented in the medical record. Include patients for whom this is the diagnostic/definitive cancer surgery. Examples: if a child undergoes biopsy of a lymph node and the postoperative diagnosis from the biopsy is established as lymphoma, the answer is C. If a child has a nephrectomy for a suspected tumor and the diagnosis on pathology is Wilms tumor, the answer is C. Include those with a current cancer diagnosis who are actively undergoing treatment and also those who have not yet begun treatment. Also include patients whose treatment may be delayed for any reason (for example, planned chemotherapy is delayed for active infection or neutropenia).

**Open wound (with or without infection):** Evidence of an open wound (including surgical wounds) that communicates to the air by direct exposure, with or without cellulitis or purulent exudate. This does not include osteomyelitis or localized abscesses. The wound must communicate to the air by direct exposure. Some examples would include but are not limited to: decubitus, gastroschisis, omphalocele, or meningomyelocele or wounds covered with a VAC dressing.
(Open drains should be considered an open wound: i.e. Penrose drains)
(An ostomy would not be considered an open wound).
**Weight Loss or Failure to Thrive:** A >10% weight decrease in body weight in the six month interval immediately preceding surgery as manifested by serial weight loss documented in the medical record. Include patients with a current diagnosis in the medical record of Failure to Thrive. Exclude patients who have intentionally lost weight as part of a weight reduction program.

**Nutritional Support:** Requirement for intravenous total parenteral nutrition (TPN) or enteral feeding support via gastrostomy, nasogastric, or jejunal feeding devices at the time of surgery.

**Bleeding Disorder:** Any condition that places the patient at risk for excessive bleeding requiring hospitalization due to a deficiency of blood clotting elements (e.g., vitamin K deficiency, hemophilia, platelet function defects, Von Willebrands Disease, congenital antithrombin III deficiency, congenital protein C or S deficiency, DIC, Factor II, V, VII, X, XII deficiencies, or chronic anticoagulation therapy that has not been discontinued or reversed prior to surgery). Do not include patients on chronic aspirin therapy. Do not include patients with reported “family history or trait” of a Bleeding Disorder. Do not utilize the lab values to determine the answer to this variable.

Following is a list of medications that impact the patient’s risk for bleeding. Please utilize the associated time frames for discontinuation of medication to determine your answer to this variable. The time frames are up to and including the day or hour listed. If there is no documentation of discontinuation of medication, answer ‘YES’ for bleeding disorder.

### Anticoagulants

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Generic</th>
<th>Stop before procedure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coumadin</td>
<td>Warfarin</td>
<td>4 days</td>
</tr>
<tr>
<td>Fragmin</td>
<td>Dalteparin</td>
<td>24 hours</td>
</tr>
<tr>
<td>Heparin – standard</td>
<td></td>
<td>6 hours</td>
</tr>
<tr>
<td>Heparin – unfractionated</td>
<td></td>
<td>6 hours</td>
</tr>
<tr>
<td>Heparin- Low molecular weight</td>
<td></td>
<td>24 hours</td>
</tr>
<tr>
<td>Lovenox</td>
<td>Enoxaparin</td>
<td>28 hours</td>
</tr>
</tbody>
</table>

### Antiplatelet Agents

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Generic</th>
<th>Stop before procedure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggrastat</td>
<td>Tirofiban</td>
<td>12 hours</td>
</tr>
<tr>
<td>Persantine</td>
<td>Dipyridamole</td>
<td>48 hours</td>
</tr>
<tr>
<td>Plavix</td>
<td>Clopidogrel</td>
<td>5 days</td>
</tr>
</tbody>
</table>

### Thrombin Inhibitors

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Generic</th>
<th>Stop before procedure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argatroban, Novastan</td>
<td>Argatroban</td>
<td>4 hours</td>
</tr>
</tbody>
</table>
Hematologic Disorder: Underlying acquired or congenital hematologic disorder such as sickle cell disease, thalassemia, hereditary spherocytosis, thrombocytopenia, idiopathic thrombocytopenic purpura (ITP), neutropenia, Henock-Schonlein disease, anemia (hemolytic, hypoproliferative, macrocytic, microcytic, normocytic, pernicious), basophilia, dysfibrinogenemia, eosinophilia. Include patients on chemotherapy that are neutropenic or thrombocytopenic. Do not include patients with reported “family history or trait” of a hematologic disorder. Do not utilize the lab values to determine the answer to this variable.

Chemotherapy for Malignancy within 30 days prior to surgery: Enter "Yes" if the patient had any chemotherapy treatment for cancer in the 30 days prior to surgery. Chemotherapy may include, but is not restricted to, oral and parenteral treatment with chemotherapeutic agents for malignancies such as head and neck, and gastrointestinal solid tumors (e.g. neuroblastoma and wilms), lymphatic and hematopoietic malignancies (e.g. lymphoma, leukemia), and multiple myeloma and sarcomas (e.g. Ewing’s, osteosarcoma, and rhabdomyosarcoma).

Radiotherapy for Malignancy within 90 days prior to surgery: Enter "Yes" if the patient had any radiotherapy treatment for cancer in the 90 days prior to surgery.

Sepsis within 48 hours prior to surgery (SIRS/Sepsis/Septic Shock): Sepsis is a vast clinical entity that takes a variety of forms. The spectrum of disorders spans from relatively mild physiologic abnormalities to septic shock. Please report the most significant level using the criteria below:

A. Pediatric Systemic Inflammatory Response Syndrome (SIRS): The presence of at least two of the following criteria, one of which must be abnormal temperature or leukocyte count (WBC).

- Temperature of $>38^\circ$C or $<36^\circ$C (axillary, temporal, tympanic, oral, rectal, bladder or central catheter probe)
- Tachycardia (Table below) in the absence of drugs, external or painful stimuli which persists for $>30$ minutes. For children $<1$ yr. of age: Bradycardia (Table below), in the absence of deep sedation, beta blockers, or other cardioactive drugs which persists for $>30$ minutes.
- Respiratory rate elevation (Table below) in the absence of external or painful stimuli which persists for $>30$ minutes OR mechanical ventilation not related to underlying neuromuscular disease.
- Leukocyte count (Table below) elevated or depressed for age with leukopenia not secondary to chemotherapy.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Tachycardia</th>
<th>Bradycardia</th>
<th>Respiratory Rate</th>
<th>Leukocyte Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premature infant &lt;37 weeks corrected</td>
<td>$&gt;180$</td>
<td>$&lt;100$</td>
<td>$&gt;50$</td>
<td>$&gt;34$ or $&lt;5$</td>
</tr>
</tbody>
</table>
### B. Sepsis:
To be assigned as sepsis, criteria from both A. **Pediatric Systemic Inflammatory Response Syndrome**, AND **Suspected or Proven Infection** must be met.

**Suspected or Proven Infection:** Infection caused by any pathogen, or Clinical Syndrome associated with a high probability of infection.

**Note:** Do not use positive screening tests that are done to determine the presence of organisms that may increase the risk of infection. Positive screening tests are not acceptable as proof of infection. Examples include: throat screens for beta hemolytic Streptococcus, swabs for Methicillin-resistant Staphylococcus Aureus (MRSA) and Vancomycin-Resistant Enterococci (VRE). There must be a positive culture from an affected site or a positive blood culture.

Must meet **at least one** of the following preoperative or intraoperative criteria:

**Preoperative:**
- Positive blood culture
- Positive culture from any site thought to be causative
- Positive findings on clinical exam such as purulent drainage at site
- Imaging evidence of abscess

**OR**

**Intraoperative:**
- Confirmed tissue or organ infarction/devitalization requiring resection
- Purulence in the operative site
- Perforated bowel or other viscus (for example, ruptured appendix)
- Positive intraoperative cultures

### C. Septic Shock:
To be assigned as septic shock criteria for **Sepsis** must be met AND the patient must have documented **Cardiovascular dysfunction**.

**Cardiovascular dysfunction:**

1) The use of a vasoactive drug to maintain perfusion (Dopamine, Dobutamine, Epinephrine, Norepinephrine, Vasopressin, Isoproterenol, Ephedrine, Inamrinone, Milrinone).
OR

2) An increase in the dosage of a vasoactive drug or the addition of a second vasoactive drug in a patient receiving a vasoactive drug prior to the diagnosis of sepsis.

**Inotropic Support at time of surgery:** Intravenous inotropic pharmacologic support required at time of surgery. Include low dose Dopamine (<5 mcg). Inotropic medications include: Dopamine, Dobutamine, Epinephrine, Norepinephrine, Vasopressin, Isoproterenol, Ephedrine, Inamrinone, Milrinone.

**Previous CPR within 7 days prior to surgery:** Initiation of cardiac compressions required within 7 days prior to surgery. Include patients receiving ECMO (Extracorporeal membrane oxygenation) within 7 days prior to surgery.

**Prior Operation within 30 days:** The patient has had a major surgical procedure performed within 30 days prior to the assessed operation that is listed on the CPT Code Inclusion List. Also, include any transplant procedures or trauma procedures if performed within 30 days prior to the assessed operation.

**Congenital Malformations:** A congenital defect present in a neonate at the time of surgery, or infants, children, teenagers with a history of congenital defect at the time of the surgery. Congenital malformations may include syndromes, chromosomal disorders, metabolic disorders, skeletal and organ system disorders. These malformations can involve many different or multiple organ systems including the brain, heart, lungs, liver, bones, endocrine, and intestinal tract. Malformations may be caused by genetic factors or by prenatal events that are not genetic. These defects can occur for many reasons including inherited (genetic) conditions, toxic exposure of the fetus (e.g. ETOH), and birth injury or for unknown reasons.

Record the ICD-9 code(s) corresponding to the congenital malformation(s) reported in the patient’s medical record. Assess according to:

- Neonates < 1500 grams at the time of surgery
- Neonates ≥ 1500 grams at the time of surgery or infants/children/teenagers with a history of a congenital defect at the time of surgery

**Note:** If a Congenital Malformation is recorded under another preoperative risk factor, do not record under this variable. Any defects not captured in another variable can be recorded in this variable.

**Blood Transfusions within 48 hours prior to surgery:** Any transfusion of whole blood or packed red cells during the 48 hours prior to surgery. Include any blood transfused in the emergency room. Do not include transfusions of fresh frozen plasma, platelets, cryoprecipitate, or albumin.
4.4.9 Neonatal Information

If the patient is a neonate at the time of surgery, answer the following variables.

**Neonate Type:** Select if the patient was a neonate from the following options:

- **Term Neonate:** All babies described as term birth, 37 weeks gestation or greater or gestational age not specified. They will be included up to 28 full days of age.
- **Premature Neonate:** A patient born at less than 37 weeks gestation. They will be included up to 50 full weeks post-conceptual age.
- **N/A**

**Small for gestational age:** If the patient is reported as Small for Gestational Age (SGA), report the patient’s weight, length, and head circumference as documented in the medical record at birth.

- **Birth Weight:** Enter the neonate’s birth weight in either pounds (lbs.) or kilograms (kg). Select ‘unknown’ option if value is not known.
- **Birth Length:** Enter the neonate’s birth length in either inches (in) or centimeters (cm). Select ‘unknown’ option if value is not known.
- **Head circumference:** Enter the neonate’s head circumference at birth in either Inches (in) or centimeters (cm). Select ‘unknown’ option if value is not known.

**Location of Birth:**

- **Inborn:** Neonate was born in your hospital
- **Outborn:** Neonate was born at another hospital and transferred in. This category includes patients born at home.

**Mode of Delivery:**

- Vaginal delivery
- Scheduled cesarean-section
- Unscheduled cesarean-section: Include emergent or urgent C-sections for maternal or fetal indications.
- Unknown/Not Documented

**APGAR score at 1 minute:** Report the APGAR score at 1 minute after delivery as listed on the medical chart. Score ranges from 0 to 10. Select ‘unknown’ option if value is not known.

**APGAR score at 5 minutes:** Report the APGAR score at 5 minutes after delivery as listed on the medical chart. Score ranges from 0 to 10. Select ‘unknown’ option if value is not known.

### 4.5 Preoperative Laboratory Data
All of the following preoperative lab values are to be reported if they are drawn within 30 days prior to the surgical procedure. Report the lab value drawn closest to the documented Procedure/Surgery Start date and time (PST).

- Serum Sodium (Na)
- Blood Urea Nitrogen (BUN)
- Creatinine (Cr)
- Serum Albumin (Alb)
- Total Bilirubin (T.Bili)
- Serum Glutamic-Oxaloacetic Transaminase (SGOT) / (may also be noted as AST)
- Alkaline Phosphatase (Alk Phos)
- White Blood Count (WBC)
- Hematocrit (Hct)
- Platelets (Plt)
- Prothrombin Time (PT)
- International Normalized Ratio (INR)
- Partial Thromboplastin Time (PTT)

### 4.6 OPERATIVE INFORMATION

**Case Status:** Report if the case was scheduled for the OR as elective, urgent, or emergent based upon the following:

- **Elective:** Surgical case is scheduled and performed on an elective basis with no time constraints.
- **Urgent:** Surgical case is scheduled and usually performed within 24 hours of surgical evaluation. Report the case as urgent if the anesthesiologist and surgeon report the case as urgent.
- **Emergent:** Surgical case is scheduled and usually performed within 12 hours of surgical evaluation. Report the case as emergent if the anesthesiologist and surgeon report the case as emergent.

**Wound Classification:** Indicate whether the primary surgeon has classified the wound as:

Multiple surgical procedures performed with different incision sites = Assign wound classification based on the Principal Operative Procedure being reviewed in NSQIP.

Example:
Principal Operative Procedure: Carotid Endarterectomy (clean) Other Procedure: I & D of an infected right big toe (dirty/infected). The wound class assigned to this case would be clean.
Multiple surgical procedures performed through one incision (same operative space) =
Assign wound classification based on the assessment of the overall operative space.

Example:
Principal Operative Procedure:  Lysis of adhesions (clean) Other Procedure:
cholecystectomy with gross bile spillage (contaminated). The wound class would be
contaminated, as the spillage is in the same operative space as the Principal Operative
Procedure.

- **Clean**: An uninfected operative wound in which no inflammation is encountered
  and the respiratory, alimentary, genital, or uninfected urinary tract is not entered. In
  addition, clean wounds are primarily closed and, if necessary, drained with closed
  drainage. Operative incisional wounds that follow nonpenetrating (blunt) trauma
  should be included in this category if they meet the criteria.

  *Examples of “Clean” cases include mastectomy, exploratory laparotomy, and hernia
  repair, thyroidectomy, knee arthroscopy.*

  **Note:** Placement of any drain at the time of surgery does not change the classification
  of the wound.

- **Clean/Contaminated**: An operative wound in which the respiratory, alimentary,
genital or urinary tracts are entered under controlled conditions and without unusual
contamination. Specifically, operations involving the biliary tract, appendix, vagina,
and oropharynx are included in this category, provided no evidence of infection or
major break in technique is encountered.

  *Examples of “Clean/Contaminated” cases include cholecystectomy, colectomy,
colostomy reversals, roux-en-Y, laryngectomy, small bowel resection, routine
appendectomy.*

- **Contaminated**: Open, fresh, accidental wounds. In addition, operations with
  major breaks in sterile technique or gross spillage from the gastrointestinal tract,
  and incisions in which acute, nonpurulent inflammation is encountered including
  necrotic tissue without evidence of purulent drainage (for example dry gangrene)
  are included in this category.

  *Examples of “Contaminated” cases include appendectomy for inflamed
appendicitis, bile spillage during cholecystectomy or open cardiac massage. Open
surgical wounds returning to the OR.*

  *Examples of major break in sterile technique include but are not limited to non-
sterile equipment or debris found in the operative field.*

- **Dirty/Infected**: Old traumatic wounds with retained devitalized tissue and
  those that involve existing clinical infection or perforated viscera. This definition
  suggests that the organisms causing postoperative infection were present in the
  operative field before the operation.
Examples of “Dirty/Infected” cases include excision and drainage of abscess, perforated bowel, peritonitis, ruptured appendix.

**ASA classification:** Record the American Society of Anesthesiology (ASA) Physical Status Classification of the patient’s present physical condition on a scale from 1-6 as it appears on the anesthesia record. Most likely, there will be a second assessment of the ASA class prior to anesthesia induction. If this is available, report this most recent assessment.

- ASA 1 - A normal healthy patient
- ASA 2 - A patient with mild systemic disease
- ASA 3 - A patient with severe systemic disease
- ASA 4 - A patient with severe systemic disease that is a constant threat to life
- ASA 5 - A moribund patient who is not expected to survive without the operation
- ASA 6 – Declared brain-dead patient whose organs are being removed for donor purposes *(ASA 6 cases should be excluded)*
- None assigned – For cases performed under local anesthesia and do not have an ASA class assigned, report as ‘none assigned’.

**Location of Procedure:** Indicate the location where the procedure was performed:

- OR
- NICU
- PICU
- Other Location

### 4.6.1 Operative Times

**Patient In Room (PIR):** Time when patient enters the OR, or time when the operative team arrives in the NICU, PICU or other location

**Anesthesia Start (AS):** Time when a member of the anesthesia team or intensivist begins preparing the patient for an anesthetic.

**Procedure/Surgery Start Time (PST):** Time the procedure is begun (for example, incision for a surgical procedure).

**Procedure/Surgery Finish (PF):** Time when all instrument and sponge counts are completed and verified as correct; all postoperative radiological studies to be done in the procedure location are completed; all dressings and drains are secured; and the physician/surgeons have completed all procedure-related activities on the patient. Should the patient expire in the operating room, indicate the time the patient was pronounced dead.
**Patient Out of Room (POR):** Time at which anesthesiologist or intensivist returns the patient to the prior care team.

**Anesthesia Finish (AF):** Time at which anesthesiologist turns over care of the patient to a post anesthesia care team (either PACU or ICU) or time at which anesthesiologist or surgical team leaves the NICU, PICU or other location. If there is a separate anesthesia document, the end time for anesthesia will be the time that vital sign charting returns to the patient flowsheet. If all charting remains on the pre-existing patient flow sheet, the end time for the procedure will also be used for the end of anesthesia time.

### 4.7 Other Procedures

**Other Procedure:** An additional operative procedure performed by the *same surgical team* (e.g., the same specialty/service) *under the same anesthetic* which has a CPT code different from that of the Principal Operative Procedure (for example, a splenectomy performed in the course of a cholecystectomy). **Report ALL additional procedures/CPT codes for this OR visit.**

**Concurrent Procedure:** An additional operative procedure performed by a *different surgical team* (e.g., a different specialty/service) *under the same anesthetic* which has a CPT code different from that of the Principal Operative Procedure. Examples would include:

- Bilateral myringotomy with tube insertion by an ENT surgeon on a patient undergoing a cleft lip and palate repair by a Plastics surgeon;
- Baclofen pump insertion by a neurosurgeon on a patient undergoing a spinal fusion by an orthopedic surgeon
- Tonsillectomy by an ENT surgeon on a patient undergoing a hernia repair by Pediatric surgeon

If a different subspecialty is performing an additional procedure with the same CPT code as the principal operative procedure (for example, Neurosurgery and Pediatric Surgery performing a shunt revision), record the same CPT code under Concurrent Procedure to reflect the two subspecialties performing the same procedure.
4.8 Occurrences

4.8.1 Intraoperative Occurrences

Cardiac Arrest requiring CPR: The absence of cardiac rhythm or presence of chaotic cardiac rhythm that results in loss of pulse and/or blood pressure requiring the initiation of chest compressions. Include patients requiring initiation of ECMO (extracorporeal membrane oxygenation).

Death During Operation (Intraoperative Death): Any death, regardless of cause, noted during the intraoperative period. The intraoperative period is defined from the time the patient arrives in the OR (Patient In Room time) to the time the patient is transported out of the OR (Patient Out of Room time). Enter the date of death for the patient. If patient enters the OR and death occurs intraoperatively, but on the following day, document the actual date the death occurred if different from Patient In Room (PIR).

Unplanned Extubation: Inadvertent or unplanned removal or dislodgement of airway device resulting in loss of airway control and requiring reinsertion or repositioning of airway device.

4.8.2 Postoperative Occurrences

The following postoperative occurrences are to be reported if they present within 30 days of the assessed index procedure and meet the corresponding definition. If a postoperative occurrence is reported, it must be accompanied by the date of occurrence. Optional fields of Treatment, Outcome, and Comments have been provided for your internal use.

4.8.2.1 Wound Occurrences

Superficial Incisional SSI: Superficial incisional SSI is an infection that occurs within 30 days after the operation and infection involves only skin or subcutaneous tissue of the incision and at least one of the following:

- Purulent drainage, with or without laboratory confirmation, from the superficial incision.
- Organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.
- At least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat and superficial incision is deliberately opened by the surgeon, unless incision is culture-negative.
• Diagnosis of superficial incisional SSI by the surgeon or attending physician.

Do not report the following conditions as SSI:
• Stitch abscess (minimal inflammation and discharge confined to the points of suture penetration).
• Infected burn wound.
• Incisional SSI that extends into the fascial and muscle layers (see deep incisional SSI).

**Deep Incisional SSI:** Deep incisional SSI is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and infection involved deep soft tissues (e.g., fascial and muscle layers) of the incision and at least one of the following:

• Purulent drainage from the deep incision but not from the organ/space component of the surgical site.
• A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (> 38 C), localized pain, or tenderness, unless site is culture-negative.
• An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.
• Diagnosis of a deep incision SSI by a surgeon or attending physician.

**Note:** Report infection that involves both superficial and deep incision sites as deep incisional SSI. Report an organ/space SSI that drains through the incision as a deep incisional SSI.

**Organ/Space SSI:** Organ/Space SSI is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and the infection involves any part of the anatomy (e.g., organs and spaces), other than the incision, which was opened or manipulated during an operation and at least one of the following:

• Purulent drainage from a drain that is placed through a stab wound into the organ/space
• Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space.
• An abscess or other evidence of infection involving the organ/space that is found on direct examination, during operation, or by histopathologic or radiologic examination.
• Diagnosis of an organ/space SSI by a surgeon or attending physician

*The diagram on the following page may help to clarify the anatomic distinctions of these infections.
Figure 1: Cross-section of abdominal wall depicting classifications of surgical site infection.

<table>
<thead>
<tr>
<th>Site-Specific Classifications of Organ/Space Surgical Site Infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial or venous infection</td>
</tr>
<tr>
<td>Breast abscess or mastitis</td>
</tr>
<tr>
<td>Disc space</td>
</tr>
<tr>
<td>Ear, mastoid</td>
</tr>
<tr>
<td>Endocarditis</td>
</tr>
<tr>
<td>Eye, other than conjunctivitis</td>
</tr>
<tr>
<td>Gastrointestinal tract</td>
</tr>
<tr>
<td>Intra-abdominal, not specified elsewhere</td>
</tr>
<tr>
<td>Intracranial, brain abscess or dura</td>
</tr>
<tr>
<td>Joint or bursa</td>
</tr>
</tbody>
</table>

**Wound Disruption/Dehiscence:** Separation of the layers of a surgical wound, which may be partial or complete, with disruption of the fascia.

**Pneumonia:** Patients with pneumonia must meet criteria from both Radiology and Signs / Symptoms / Laboratory sections listed as follows (NOTE: for children ≤12 years may use “Any Patient” or the age-appropriate “Alternate” criteria):
### Radiology

<table>
<thead>
<tr>
<th>One definitive chest radiological exam (x-ray or CT) with at least one of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• New or progressive and persistent infiltrate</td>
</tr>
<tr>
<td>• Consolidation or opacity (e.g. air-space disease, patchy areas of increased density, focal opacification)</td>
</tr>
<tr>
<td>• Cavitation</td>
</tr>
<tr>
<td>• Pneumatoceles, in infants ≤ 1 year old</td>
</tr>
</tbody>
</table>

**Note:** In patients with underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or COPD, **two or more serial** chest radiological exams (x-ray or CT) are **required**.

### Signs/Symptoms/Laboratory

**FOR ANY PATIENT,** at least one of the following:

- Fever (>38°C or >100.4°F) with no other recognized cause
- Leukopenia (<4000 WBC/mm³) or leukocytosis (≥12,000 WBC/mm³)

**AND**

At least one of the following:

- 5% Bronchoalveolar lavage (BAL) - obtained cells containing ≥10,000 cfu/mL intracellular bacteria on direct microscopic exam (e.g., Gram stain)
- Positive growth in blood culture not related to another source of infection
- Positive growth in culture of pleural fluid
- Positive quantitative culture from minimally contaminated lower respiratory tract (LRT) specimen (e.g. BAL or protected specimen brushing) - ≥10,000 cfu/mL

**OR**

At least two of the following:

- New onset of purulent sputum (with repeated notations over 24 hours), or change in character of sputum (e.g. color, consistency, odor, or quality), or increased respiratory secretions, or increased suctioning requirements
- New onset or worsening cough, or dyspnea, or tachypnea (see age-defined parameters below)
- Rales or bronchial breath sounds
- Worsening gas exchange (e.g. O₂ desaturations (e.g., PaO₂/FiO₂ ≤ 240), increased oxygen requirements, or increased ventilator demand)
**ALTERNATE CRITERIA, for infants ≤ 1 year old:**
Worsening gas exchange (e.g., O₂ desaturations, increased oxygen requirements, or increased ventilator demand)

**AND**

at least **three** of the following:

- Documentation of temperature instability with no other recognized cause
- Leukopenia (<4000 WBC/mm³) or leukocytosis (≥15,000 WBC/mm³) and left shift (≥10% band forms)
- New onset of purulent sputum (with repeated notations over 24 hours), or change in character of sputum (e.g. color, consistency, odor, or quality), or increased respiratory secretions or increased suctioning requirements
- Apnea, tachypnea (see age-defined parameters below), nasal flaring with retraction of chest wall or grunting
- Wheezing, rales, or rhonchi
- Cough
- Bradycardia (<100 bpm for <30 day old, <90 bpm for 30 day old - 1 year) or tachycardia (>180 bpm)

**ALTERNATE CRITERIA, for child > 1 year old or ≤ 12 years old:**

At least **three** of the following:

- Fever (>38.4 °C or >101.1°F) or hypothermia (<36.5 °C or <97.7°F) with no other recognized cause
- Leukopenia (<4000 WBC/mm³) or leukocytosis (≥15,000 WBC/mm³)
- New onset of purulent sputum or change in character of sputum or increased respiratory secretions or increased suctioning requirements
- New onset or worsening cough, or dyspnea, apnea, or tachypnea (see age-defined parameters below)
- Rales or bronchial breath sounds
- Worsening gas exchange [e.g. O₂ desaturations (e.g. pulse oximetry <94%), increased oxygen requirements or increased ventilation demand]
Age-defined tachypnea

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Respiratory rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Premature infant &lt;37 weeks corrected gestational age</strong></td>
<td>&gt;50</td>
</tr>
<tr>
<td>Term infant &lt;7 days</td>
<td>&gt;50</td>
</tr>
<tr>
<td>7 days to &lt;30 days</td>
<td>&gt;40</td>
</tr>
<tr>
<td>30 days to &lt;1 yr.</td>
<td>&gt;34</td>
</tr>
<tr>
<td>1 yr. to &lt;2 yrs.</td>
<td>&gt;30</td>
</tr>
<tr>
<td>2 yrs. to &lt;6 yrs.</td>
<td>&gt;22</td>
</tr>
<tr>
<td>6 yrs. to &lt;13 yrs.</td>
<td>&gt;18</td>
</tr>
<tr>
<td>13 yrs. to &lt;18 yrs.</td>
<td>&gt;14</td>
</tr>
</tbody>
</table>

Note: For more information about pneumonia definition, please see CDC document “Clinically Defined Pneumonia” (http://www.cdc.gov/nhsn/PDFs/pscManual/6pscVAPcurrent.pdf).

Unplanned Intubation: Patient required placement of an endotracheal tube or other similar breathing tube [Laryngeal Mask Airway (LMA), nasotracheal tube, etc.] and ventilator support which was not intended or planned.

• The variable intent is to capture all cause unplanned intubations, including but not limited to unplanned intubations for refractory hypotension, cardiac arrest, inability to protect airway.

• Accidental self extubation requiring reintubation would be assigned.

• Emergency tracheostomy would be assigned.

• Conversion from local or MAC anesthesia to general anesthesia with placement of a breathing tube and ventilator support, secondary to the patient not tolerating local or MAC anesthesia, in the absence of an emergency, would not be assigned.

Example: Patient undergoes an inguinal hernia repair under MAC. Patient doesn’t tolerate the procedure well and is not cooperating; anesthesia switches to general and the patient is intubated; this scenario would not be assigned as an unplanned intubation; it is considered part of the normal safe management of anesthesia for the case.
**Pulmonary Embolism:** Lodging of a blood clot in a pulmonary artery with subsequent obstruction of blood supply to the lung parenchyma. The blood clots usually originate from the deep leg veins or the pelvic venous system. Enter "YES" if the patient has a V-Q scan interpreted as high probability of pulmonary embolism or a positive CT exam, TEE, pulmonary arteriogram, CT angiogram, or any other definitive modality. Treatment usually consists of:

- Initiation of anticoagulation therapy
- Placement of mechanical interruption (for example Greenfield Filter), for patients in whom anticoagulation is contraindicated or already instituted.

### 4.8.2.3 Urinary Tract Occurrences

**Progressive Renal Insufficiency:** The reduced capacity of the kidney to perform its function as evidenced by a rise in creatinine of > 1 mg/dl from preoperative value, but with no requirement for dialysis.

**Acute Renal Failure Requiring Dialysis:** In a patient who did not require dialysis preoperatively, worsening of renal dysfunction postoperatively requiring hemodialysis, ultrafiltration, or peritoneal dialysis. If the patient refuses dialysis you would still answer ‘Yes’ to this variable because he/she did require dialysis.

**Urinary Tract Infection:** Postoperative urinary tract infection must meet the criteria from one of the following algorithm charts below AND urinary tract infection was not present preoperatively.

- Symptomatic UTI (> 1 year old) - No indwelling urinary catheter within 48 hours of specimen collection
- Symptomatic UTI (> 1 year old) - Urinary catheter within 48 hours of specimen collection
- Symptomatic UTI – Infant (≤ 1 Year of Age)

Urine cultures must be obtained using appropriate technique, such as clean catch collection or catheterization. Specimens from indwelling catheters should be aspirated through the disinfected sampling ports.

In infants, urine cultures should be obtained by bladder catheterization or suprapubic aspiration; positive urine cultures from bag specimens are unreliable and should be confirmed by specimens aseptically obtained by catheterization or suprapubic aspiration.

Please refer to the algorithms.
Symptomatic UTI (> 1 year old) - No indwelling urinary catheter within 48 hours of specimen collection

Patient did not have an indwelling urinary catheter at the time of specimen collection nor within 48 hours prior to specimen collection

**Signs and Symptoms**

At least one of the following with no other recognized cause:
- Fever (>38 °C)
- Urgency
- Frequency
- Dysuria
- Suprapubic tenderness
- Costovertebral angle pain or tenderness

**Urinalysis**

A positive urinalysis demonstrated by at least 1 of the following findings:
- Positive dipstick for leukocyte esterase and/or nitrite
- Pyuria (urine specimen with ≥10 WBC/mm³ or ≥3 WBC/high-power field of unspun urine
- Microorganisms seen on Gram stain of unspun urine

**Culture Evidence**

- A positive urine culture of ≥10⁶ CFU/ml with no more than 2 species of microorganisms
- A positive urine culture of ≥10⁵ and <10⁶ CFU/ml with no more than 2 species of microorganisms

SUTI-Criterion 1b

SUTI-Criterion 2b

For additional information, see http://www.cdc.gov/nhsn/pdfs/pscManual/7pscCAUTIcurrent.pdf
Symptomatic UTI (> 1 year old) - Urinary catheter within 48 hours of specimen collection

Patient had an indwelling urinary catheter discontinued within 48 hours prior to specimen collection

At least one of the following with no other recognized cause:
- Fever (>38 °C)
- Dysuria
- Urgency
- Suprapubic tenderness
- Frequency
- Costovertebral angle pain or tenderness

If catheter not present at time of specimen collection

Signs and Symptoms

A positive urinalysis demonstrated by at least 1 of the following findings:
- Positive dipstick for leukocyte esterase and/or nitrite
- Pyuria (urine specimen with ≥10 WBC/mm³ or ≥3 WBC/high power field of unspun urine
- Microorganisms seen on Gram stain of unspun urine

OR

A positive urine culture of ≥10³ and <10⁵ CFU/ml with no more than 2 species of microorganisms

For additional information, see http://www.cdc.gov/nhsn/pdfs/pscManual/7pscCAUTIcurrent.pdf
Symptomatic UTI – Infant (≤ 1 Year of Age)

Patient ≤1 year of age (with or without indwelling catheter)

At least one of the following with no other recognized cause:
- Fever >38 °C
- Hypothermia <36 °C
- Apnea
- Bradycardia (<100 for 0 to <30 day old, <90 for 30 day to 1 year old)
- Dysuria
- Lethargy
- Vomiting

A positive urinalysis demonstrated by at least 1 of the following findings:
- Positive dipstick for leukocyte esterase and/or nitrite
- Pyuria (urine specimen with ≥10 WBC/mm³ or ≥3 WBC/high power field of unspun urine
- Microorganisms seen on Gram stain of unspun urine

A positive urine culture of ≥10⁵ CFU/ml with no more than 2 species of microorganisms

SUTI-Criterion 3

Was an indwelling urinary catheter in place within the last 48 hours?
- Yes
- No

CAUTI

SUTI

A positive urine culture of ≥10³ and <10⁵ CFU/ml with no more than 2 species of microorganisms

SUTI-Criterion 4

Was an indwelling urinary catheter in place within the last 48 hours?
- Yes
- No

CAUTI

SUTI

For additional information, see http://www.cdc.gov/nhsn/pdfs/pscManual/7pscCAUTIcurrent.pdf
4.8.2.4 CENTRAL NERVOUS SYSTEM OCCURRENCES

Cerebral Vascular Accident (CVA)/Stroke or Intracranial Hemorrhage: Patient develops an embolic, thrombotic, or intra-parenchymal hemorrhagic event with motor, sensory, or cognitive dysfunction (e.g., hemiplegia, hemiparesis, aphasia, sensory deficit, impaired memory) within the 30 day postoperative period.

Coma > 24 hours: Patient is unconscious, postures to painful stimuli, or is unresponsive to all stimuli (exclude transient disorientation or psychosis) for greater than 24 hours. Include patients in a persistent vegetative state. Do not include drug-induced coma.

Seizure: Any seizure event occurring within the 30-day postoperative period due to any etiology. Do not include patients with documented preoperative seizure disorders.

Peripheral Nerve Injury: Peripheral nerve damage may result from damage to the nerve fibers, cell body, or myelin sheath during surgery. Peripheral nerve injuries which result in motor deficits to the cervical plexus, brachial plexus, ulnar plexus, lumbar-sacral plexus (sciatic nerve), peroneal nerve, and/or the femoral nerve should be included.

Neonatal Patients add:
Intraventricular Hemorrhage (IVH) Grade: If the neonatal patient had an intraventricular hemorrhage, enter the most severe grade documented within the 30-day postoperative period, from radiology reports or attending physician documentation in the medical record.

- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Unknown/Specific grade not documented

4.8.2.5 CARDIAC OCCURRENCES

Cardiac Arrest requiring CPR: The absence of cardiac rhythm or presence of chaotic cardiac rhythm that results in loss of pulse and/or blood pressure requiring the initiation of chest compressions. Include patients requiring initiation of ECMO (extracorporeal membrane oxygenation).

4.8.2.6 OTHER POSTOPERATIVE OCCURRENCES

Transfusion Intraop / Postop (RBC within the First 72 Hours of the Surgery Start Time): Indicate the number in mls of packed or whole red blood cells given from the surgical start time up to and including 72 hours postoperatively. If no blood was given intra-operatively, record the number of mls given postoperatively, within 72 hrs. from the surgery start time. If the patient receives shed blood, autologous blood, cell saver blood or pleurovac intraoperatively or postoperatively, count this blood in terms of equivalent mls.
The amount infused from cell saver should also be noted in this total; this is considered a transfusion. The blood may be given for any reason. Do not include transfusions of fresh frozen plasma, platelets, cryoprecipitate or albumin.

**Graft/Prosthesis/Flap Failure:** Mechanical failure of an extracardiac vascular graft or prosthesis including myocutaneous flaps and skin grafts requiring return to the operating room, interventional radiology, or a balloon angioplasty.

**Vein Thrombosis Requiring Therapy:** The identification of a new blood clot or thrombus within the venous system which may be coupled with inflammation. The clot can be described in studies as present in the superficial or deep venous systems but requires therapy. This diagnosis is confirmed by a duplex, venogram, or CT scan, **AND** the patient **must be treated** with anticoagulation therapy and/or placement of a vena cava filter or clipping of the vena cava.

**Note:** Example of clots that should be considered for this variable include internal jugular (IJ) line clots, PICC line clots and those found in the abdomen (portal vein).

Clarification: the vein must be thrombosed to assign this occurrence. If only the catheter is thrombosed and the vein is not, the occurrence of Vein Thrombosis Requiring Therapy would not be assigned.

**Postoperative Systemic Sepsis or Septic Shock:** Sepsis is a vast clinical entity that takes a variety of forms. The spectrum of disorders spans from relatively mild physiologic abnormalities to septic shock.

**Note:** For an event to be considered a Postoperative Occurrence of Systemic Sepsis when sepsis was present preoperatively, there has to be a new source of infection. If Sepsis was present preoperatively, progression to Septic Shock should be considered a Postoperative Occurrence of Septic Shock.

**Systemic Sepsis:** To be assigned as sepsis, criteria from both Pediatric Systemic Inflammatory Response Syndrome, **AND** Suspected or Proven Infection must be met.

**Pediatric Systemic Inflammatory Response Syndrome:** The presence of at least two of the following criteria, **one** of which **must be** abnormal temperature or leukocyte count (WBC).

- Temperature of $>38^{\circ}\text{C}$ or $<36^{\circ}\text{C}$ (axillary, temporal, tympanic, oral, rectal, bladder or central catheter probe)
- Tachycardia (Table below) in the absence of drugs, external or painful stimuli which persists for $>30$ minutes. For children $<1$ yr. of age: Bradycardia (Table below), in the absence of deep sedation, beta blockers, or other cardioactive drugs which persists for $>30$ minutes.
- Respiratory rate elevation (Table below) in the absence of external or painful stimuli which persists for $>30$ minutes OR mechanical ventilation not related to underlying neuromuscular disease.
• Leukocyte count (Table below) elevated or depressed for age with leukopenia not secondary to chemotherapy.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Tachycardia</th>
<th>Bradycardia</th>
<th>Respiratory rate</th>
<th>Leukocyte Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premature infant &lt;37 weeks corrected gestational age</td>
<td>&gt;180</td>
<td>&lt;100</td>
<td>&gt;50</td>
<td>&gt;34 or &lt;5</td>
</tr>
<tr>
<td>Term infant &lt;7 days</td>
<td>&gt;180</td>
<td>&lt;100</td>
<td>&gt;50</td>
<td>&gt;34 or &lt;5</td>
</tr>
<tr>
<td>7 days to &lt;30 days</td>
<td>&gt;180</td>
<td>&lt;100</td>
<td>&gt;40</td>
<td>&gt;19.5 or &lt;5</td>
</tr>
<tr>
<td>30 days to &lt;1 yr.</td>
<td>&gt;180</td>
<td>&lt;90</td>
<td>&gt;34</td>
<td>&gt;17.5 or &lt;5</td>
</tr>
<tr>
<td>1 yr. to &lt;2 yrs.</td>
<td>&gt;160</td>
<td>NA</td>
<td>&gt;30</td>
<td>&gt;15.2 or &lt;6</td>
</tr>
<tr>
<td>2 yrs. to &lt;6 yrs.</td>
<td>&gt;140</td>
<td>NA</td>
<td>&gt;22</td>
<td>&gt;15.2 or &lt;6</td>
</tr>
<tr>
<td>6 yrs. to &lt;13 yrs.</td>
<td>&gt;130</td>
<td>NA</td>
<td>&gt;18</td>
<td>&gt;13.5 or &lt;4.5</td>
</tr>
<tr>
<td>13 yrs. to &lt;18 yrs.</td>
<td>&gt;110</td>
<td>NA</td>
<td>&gt;14</td>
<td>&gt;11 or &lt;4.5</td>
</tr>
</tbody>
</table>

Suspected or Proven Infection: Infection caused by any pathogen, or Clinical Syndrome associated with a high probability of infection.

Note: Do not use positive screening tests that are done to determine the presence of organisms which may increase the risk of infection. Positive screening tests are not acceptable as proof of infection. Examples include: throat screens for beta hemolytic Streptococcus, swabs for Methicillin-Resistant Staphylococcus Aureus (MRSA) and Vancomycin-Resistant Enterococci (VRE). There must be a positive culture from an affected site or a positive blood culture.

Must meet at least one of the following:
• Positive blood culture
• Positive culture from any site thought to be causative
• Positive findings on clinical exam such as purulent drainage at site
• Imaging evidence of abscess
• Perforated bowel or other viscus

Septic Shock: To be assigned as septic shock, criteria for Systemic Sepsis must be met AND the patient must have documented Cardiovascular dysfunction.

Cardiovascular dysfunction:
• The use of a vasoactive drug to maintain perfusion (Dopamine, Dobutamine, Epinephrine, Norepinephrine, Vasopressin, Isoproterenol, Ephedrine, Inamrinone, Milrinone).

OR

• An increase in the dosage of a vasoactive drug or the addition of a second vasoactive drug in a patient receiving a vasoactive drug prior to the diagnosis of sepsis.
Central-Line Associated Bloodstream Infection: Bloodstream infections are considered to be associated with a central line if the line was in use during the 48-hour period before the development of the bloodstream infection. If the time interval between the onset of infection and device use is greater than 48 hours, there should be compelling evidence that the infection is related to the central line not related to an infection at another site. Report this occurrence if the patient meets the following criteria from both Signs & Symptoms and Clinical Findings. For patients of any age, utilize Section A, criterion 1 or 2. For patients ≤ 1 year of age, may also utilize Section B.

Section A: Patients any age

Criterion 1:
- Patient has a recognized pathogen (such as S. aureus, Enterococcus spp., E. coli, Pseudomonas spp., Klebsiella spp., Candida spp., etc.) cultured from one or more blood cultures (at least one bottle from a blood draw is reported by the laboratory as having grown organisms – i.e., is a positive blood culture and not considered common skin contaminants) – preferably drawn from a peripheral site

AND

- Organism cultured from blood is not related to an infection at another site.

OR

Criterion 2: Must meet criteria from both Signs & Symptoms and Clinical Findings and is not related to infection at another site:

Signs & Symptoms: One or more of the following:
- Fever > 38°C (core)
- Chills
- Hypotension

AND

Clinical Findings: At least two positive blood cultures, drawn on separate occasions (within 2 days of each other), with growth of the same organism obtained through catheter, with no other identifiable source of infection. May include common skin contaminant (i.e., diphtheroids [Corynebacterium spp.], Bacillus [not B. anthracis] spp., Propionibacterium spp., coagulase-negative staphylococci [including S. epidermidis], viridans group streptococci, Aerococcus spp., Micrococcus spp.)
Section B: Additional Criteria for Patients ≤ 1 year of age

- Must meet criteria from both Signs & Symptoms and Clinical Findings and is not related to infection at another site:

  **Signs & Symptoms:** One or more of the following:
  - Fever (>38°C core)
  - Hypothermia (<36°C core)
  - Apnea
  - Bradycardia

  **AND**

  **Clinical Findings:** At least two positive blood cultures, drawn on separate occasions (within 2 days of each other), with growth of the same organism obtained through catheter, with no other identifiable source of infection. May include common skin contaminant (i.e., diphtheroids [Corynebacterium spp.], Bacillus [not B. anthracis] spp., Propionibacterium spp., coagulase-negative staphylococci [including S. epidermidis], viridans group streptococci, Aerococcus spp., Micrococcus spp.)

### 4.9 Postoperative Information

**Oxygen at Discharge or at 30 days if still in hospital:** Enter “Yes” if oxygen was required at the time of discharge. Oxygen can be delivered by any modality for any reason. Include patients requiring supplemental oxygen at night. If the patient remains in the hospital at 30 days, record if oxygen was utilized at 30 days.

**Nutritional Requirement at Discharge or at 30 days if still in hospital:** Patient has a requirement for intravenous total parenteral nutrition (TPN) at the time of hospital discharge. If the patient remains in the hospital at 30 days, record if the patient was receiving IV TPN at 30 days.

**Total Days Mechanical Ventilation:** Enter the total number of days of mechanical ventilator support in the 30 day postoperative period. Ventilator support is defined as receiving breaths from a mechanical ventilator. Includes patients on CPAP and BiPAP. This total number is cumulative, not consecutive. For the patient who is extubated within 12 hours of leaving the OR, count as ‘0’ days. If extubated after 12 hours on POD ‘0’, count as 1 day. Beyond POD ‘0’, count the day of extubation as one day, even if it is a partial day of ventilation.

**Acute Hospital Discharge Date:** The date when the patient is discharged or transferred from the acute hospital stay. If the patient remains in the acute hospital setting at 30 days, record as ‘still in-hospital at 30 days’. If the patient dies in the acute hospital setting, record the date of death as the hospital discharge date.
**Hospital Discharge Destination:** Designate whether the patient was discharged to home or to another type of facility. Choose the patient's discharge destination from the following selections:

1. Chronic care, not home (e.g., transitional care unit, subacute hospital, ventilator bed, skilled nursing home)
2. Unskilled facility, not home (e.g., nursing home or assisted facility)
3. Facility which was home (e.g., **return** to a chronic care or unskilled facility which was the patient's home preoperatively)
4. Home
5. Separate acute care (e.g., transfer to another acute care facility)
6. Unknown
7. Rehab
8. Expired

**Postoperative Diagnosis (ICD 9):** Enter the appropriate ICD-9-CM code corresponding to the condition noted as the postoperative diagnosis in the brief operative note, operative report, and/or after the return of the pathology reports.

**Still in Hospital at 30 Days:** If patient has a continuous stay in the acute care setting for 30 days after the surgery, check ‘YES’. However, if the patient was discharged from the acute care setting, but remained in the hospital (rehab or hospice unit), check ‘NO’, since the stay in the acute care setting was no longer continuous.

**Note:** If patient remains in hospital > 30 days, but not in acute care setting, do not record date of death in this field.

**Postoperative Death within 30 days:** Any death occurring within the 30 days following surgery, regardless of cause, in or out of the hospital.

**Postoperative Death > 30 days if in acute care:** Death occurring later than 30 days following surgery, as a direct result of the surgery and/or associated with postoperative complications and the patient has remained in the hospital in the acute care setting. Report the postoperative date of death in mm/dd/yyyy.

**Date of Death:** Enter the date of death for the patient. If patient enters the OR and death occurs intraoperatively, but on the following day, document the actual date the death occurred if different from Patient In Room (PIR). If patient still in hospital >30 days, remained in acute care and death occurred while patient in acute care setting, record date of death. Report the postoperative date of death in mm/dd/yyyy. If date of death is not reported or is unknown, select ‘Unknown’.
**Hospital Readmission:** Please enter each hospital readmission separately. Multiple readmissions can be entered, similar to how multiple postoperative occurrences can be entered.

1. **Readmission for any reason within 30 days of principal procedure:** Any readmission (to the same or another hospital), for any reason, within 30 days of the principal surgical procedure. The readmission has to be classified as an “inpatient” stay by the readmitting hospital, or reported by the patient/family as such.
   - Answer: “Yes” or “No”
   - If yes, date of readmission (if known) or Unknown: __/__/__
   - Information Source: Medical Record, Patient/Family Report, Other

2. **If a readmission, was this readmission likely related to the principal surgical procedure?**
   - Answer: “Yes” or “No”
     Select “Yes” if the readmission (to the same or another hospital) was for a postoperative occurrence likely related to the principal surgical procedure within 30 days of the procedure.
   - If the readmission is likely related to the principal surgical procedure, choose the primary suspected reason (post-operative occurrence) for the readmission. If “Other” post-operative occurrence is selected, choose the ICD9 code. If ICD9 code is unknown, please describe the reason.
   - If the readmission is unrelated to the principal operative procedure, please choose ICD9 code. If ICD9 code is unknown, please describe the reason.

**Unplanned Reoperation:** Any unplanned return to the operating room for a surgical procedure, for any reason, within 30 days of the principal operative procedure. The return to the OR may occur at any hospital or surgical facility (i.e. your hospital or at an outside hospital).

If an unplanned reoperation occurred, was the return to the OR for a post-operative occurrence possibly related to the principal operative procedure or concurrent procedure?

*Note:* This definition is not meant to capture patients who go back to the operating room within 30 days for a follow-up procedure based on the pathology results from the principal operative procedure or concurrent procedure. Examples: Exclude breast biopsies which return for re-excisions; insertion of port-a-caths for chemotherapy.
1. Did the patient have an unplanned return to the OR for a surgical procedure within the 30 day postoperative period?

a) If “Yes”, record:
   • Surgery Date or Unknown
   • Source (select one) – Medical Record, Patient/Family Report, or Other
   • CPT code(s) - if CPT is not documented, describe the surgery.

b) If yes, was the return to the OR for a post-operative occurrence possibly related to the principal operative procedure or concurrent procedure performed under the same anesthesia as the principal procedure?
   • If “Yes”, record the ICD-9 code; provide a diagnosis description if ICD-9 code is not documented

2. Did the patient have a second unplanned return to the OR for a surgical procedure within the 30 day postoperative period?

a) If “Yes”, record:
   • Surgery Date or Unknown
   • Source (select one) – Medical Record, Patient/Family Report, or Other
   • CPT code(s) - if CPT is not documented, describe the surgery.

b) If yes, was the return to the OR for a post-operative occurrence possibly related to the principal operative procedure or concurrent procedure performed under the same anesthesia as the principal procedure?
   • If “Yes”, record the ICD-9 code; provide a diagnosis description if ICD-9 code is not documented

3. Were there more than two unplanned re-operations for a post-operative occurrence likely related to the principal surgery within 30 days?

   • Answer: “Yes” or “No”

Note: A Return to OR must occur either in a Main OR of the facility, or in the ICU setting [NICU, PICU, SICU, etc.]. Other settings will not qualify for RTOR." This specifically excludes procedures done in radiology suites, other procedure rooms, etc., from RTOR, even though these settings might otherwise be eligible for index cases.
4.10 FOLLOW-UP

30 Days Follow-up: The ACS NSQIP requires the reporting of mortality and morbidity data through to 30 days after the surgical procedure date on all cases entered into the Program. All reasonable attempts to obtain complete follow-up data should be made by the SCR and documented in this section. The SCR will incorporate some or all of the strategies for obtaining follow-up data recommended in the ACS NSQIP Pediatric Operations Manual: Appendix H – Policies & Procedures.

Patient Contact Management: This is an optional field to assist the SCR in managing patient follow up activities.