Clinical Pathway: Ventricular Septal Defect (VSD) or Atrial Septal Defect (ASD) Repair

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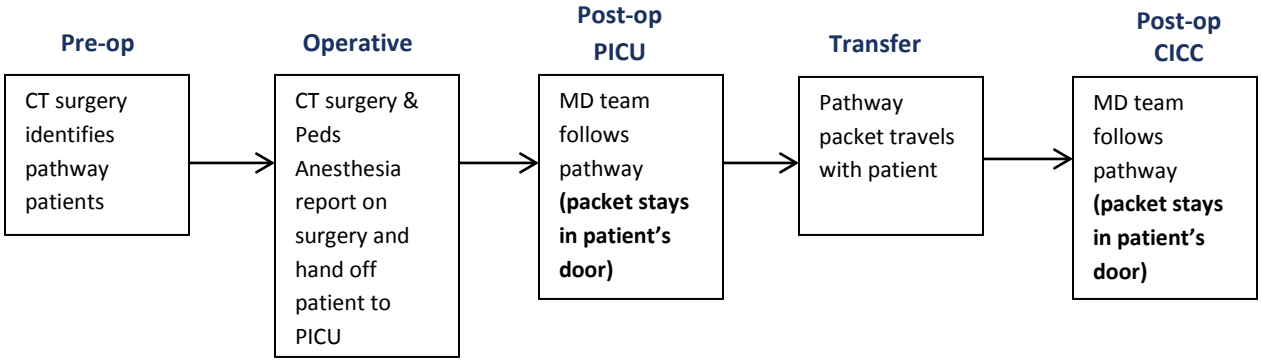
Eligibility Criteria

- No significant co-morbidities
- Expected length of stay 3-5 days

Circumstances when a patient should come *off pathway* (examples, not an exhaustive list):

- Expected length of stay is longer than 5 days (e.g., patient has cardiogenic shock, infection, sepsis, JET, or other clinical problem)

Pathway Process



Note to PICU physician team: The daily goals pathway sheets should be fully completed each day, including the quality measures and family communication sections located on the back of sheets for post-op days 1 and 2. The pathway sheets take the place of the standard daily goals communication sheets and should stay in the patient doors when not being filled out.

Instructions for HUCs

- Obtain most recent version of pathway packet here: http://www.med.unc.edu/ticker/the-project/implementation
- When making copies of the packets, copy post-op days 1 and 2 double-sided
- Entire pathway packet should be stapled together
- Copies of packets are kept in the file drawer of secretary desk at high end
- When pulling packet for a patient, include a date stamp on the Day of Surgery sheet
- Make note of each TICKER patient on the daily census assignment sheet
- ***Make sure the pathway packet accompanies patient through transfer to CICC***

Project TICKER is funded by a grant from the Agency for Healthcare Research and Quality (AHRQ), award number R18 HS019638

For use in PICU only **(packet should stay in patient's door when not being filled out)**

VSD/ASD Daily Goals Sheet: Day of Surgery

Path initiated on ___/___/___ at ___:_____ Expected LOS: 3 days

History:

Patient Barcode Label

Primary Surgical Service: Pediatric CT Surgery

Consulting Services: Pediatric Cardiology

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Suggested Guidelines	**Time of Arrival to PICU**	**PM Rounds**
System	**Plan/Goals**	**Plan/Goals**
PULM: ▪Wean off mechanical vent support ▪Complete Post Op Orders ▪Review CXR and Labs	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐
CV: ▪Assess risk of Low Cardiac Output Syndrome. Increased risk includes long CPB times and complicated repairs. ▪Review ECG ▪Echo completed at 48 hrs post op (unless clinically indicated sooner)	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
RENAL: + ▪Diuretic plan POD #1 = furosemide IV Q6-Q12h depending on prior exposure and fluid balance - can write order on pm rounds for next day. Follow UOP for goal of 1 ml/kg/h	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐
FEN/GI: ▪Goal 75% maintenance Total Fluids (standard maint IVF = D5 1/2NS +/- KCL pending labs results) ▪Complete Post Op Orders ▪Famotidine ▪Discuss plan for clears tonight or tomorrow and advance as tolerated	☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐
HEME: ▪***verify transfusion goals with surgical team at handoff***	☐ ☐	☐ ☐
ID: Antibiotics/ day ____ of ____ ▪Complete Post Op Orders; empiric cefuroxime	☐ ☐	☐ ☐
NEURO/SEDATION: ▪***Verify regional anesthesia use with surgical team at handoff (if yes, then see separate sheet for regional anesthesia plan)*** ▪If extubated or weaning for extubation AVOID BENZODIAZEPINES due to respiratory depression risk ▪***Verify indications for Toradol with surgical team at time of handoff***, if approved start Toradol 6 hours after admission to PICU only with normal renal function and no significant bleeding. 72h max course ▪PRN Fentanyl or Morphine for breakthrough pain. ▪Scheduled Tylenol (IV or PO/PR) ***Timing of last dose in OR*** _____	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
LINES/TUBES/MONITORING: ☐ Foley ☐ tubes ☐ art-line ☐ central line ☐ wires ☐ CT	☐ ☐	☐ ☐
SCHEDULED LABS: ▪Complete Post Op Orders	☐ ☐	☐ ☐

Update family with current status and expectations overnight

Does the patient require care deviating from this pathway? ☐ Yes ☐ No

Describe reason here and document in WEBCIS:

Goal Parameters: SBP_____ pH_____ Net -/+ MAP_____ O2 Sats_____

Day Shift PICU MD/DO ___ RN ___ RT ___ Peds Cardiology ___ CT Surgery___

Night Shift PICU MD/DO ___ RN ___ RT ___

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VSD/ASD Daily Goals Sheet: POD #1

Patient Barcode Label

Today's Date: _____ Expected LOS: _____ days
(Typical Expected LOS 3 days)

History:

Primary Surgical Service: Pediatric CT Surgery
Consulting Services: Pediatric Cardiology

Notes: (1) This pathway is a general guideline and does not represent a professional care standard governing providers' obligations to patients. Care is revised to meet the individual patient needs. (2) This is a quality improvement document and should not be a part of the patient's medical record.

Suggested Guidelines	**AM Rounds**	**PM Rounds**	**Goals for transfer to CICC**
System	**Plan/Goals**	**Plan/Goals**	**Discuss with cardiology**
PULM: ▪CXR Review ▪Pulmonary Toilet	☐ ☐ ☐	☐ ☐ ☐	Only requiring NC O2 or less pulmonary support.
CV: ▪Plan for post op ECHO tomorrow (POD #2) or sooner if clinically indicated	☐ ☐ ☐	☐ ☐ ☐	Cardiology team accepts patient for transfer
RENAL: ▪Uncomplicated VSD repair = furosemide IV Q6h-q12h starting today (POD #1) with goal of UOP of ≥ 1 ml/kg/hr and diuresis	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	
FEN/GI: ▪Nutrition: advance as tolerated – discuss "goal" (volume and calories for feeds) on rounds and time to get to full feeds	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	
HEME: ▪Review current indications for transfusion with team	☐ ☐	☐ ☐	
ID: Antibiotics/ day ____ of ____ ▪Most commonly 6 doses cefuroxime (48 hours post op)	☐ ☐	☐ ☐	
NEURO/SEDATION: ▪Continue Scheduled Tylenol (and Toradol if normal renal function and no signif bleeding) ▪Transition from IV to PO narcotic PRN ▪Wean off precedex if started ▪Transition Tylenol to PO if previously IV	☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐	Decreasing requirements for IV narcotics for pain
LINES/TUBES/MONITORING: ☐ Foley ☐ tubes ☐ art-line ☐ central line ☐ wires ☐ CT Can anything be removed? Foley removal on POD #1 unless otherwise contraindicated	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	Desirable to have tubes and lines out if no longer necessary. May go to CICC with CVL or CT if needed.
SCHEDULED LABS:	☐ ☐ ☐	☐ ☐ ☐	Family aware of transfer and received CICC caregiver booklet

Does the patient require care deviating from this pathway? ☐ Yes ☐ No
Describe reason here and document in WEBCIS:

Turn page to complete other side

Goal Parameters: SBP_____ pH_____ Net -/+ MAP_____ O2 Sats_____

Day Shift PICU MD/DO ___ RN ___ RT ___ Peds Cardiology ___ CT Surgery___
Night Shift PICU MD/DO ___ RN ___ RT ___

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Quality Control Measures (mandatory)

Events or deviations? *Incident Report?* ☐ *Yes* ☐ *No* (Ex.unplanned extubation; medication error; near miss)	Y	N	n/a
HOB elevated 30 deg, OOB, inc spirom?	Y	N	
Pharmacist on rounds?	Y	N	
Over 30kg requiring adult doses?	Y	N	
Antibiotic levels due?	Y	N	
Respiratory weaning goals?	Y	N	n/a
Ulcer prophylaxis?	Y	N	n/a
Glucose control?	Y	N	n/a
DVT prophylaxis?	Y	N	n/a
Isolation? Reason: _____	Y	N	
Sedation/paralytic holiday?	Y	N	n/a
Can anything be removed?	Y	N	
PT/OT/Speech/Rehab consulted?	Y	N	
DNR	Y	N	
Staff concerns addressed? Nursing, Respiratory Therapy	Y	N	
Pressure ulcers?	Y	N	
Medication reconciliation? CPOE vs. MAR Time: ____	Y	N	

PICU MD – please complete for family

At the end of rounds – include the main goals to be communicated with the family for the day – even if they are already on rounds.

Examples:

Up and walking, turning down the ventilator, taking out chest tubes, tolerate feeds.

RN PLEASE TRANSCRIBE TO WHITE BOARD

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VSD/ASD Daily Goals Sheet: POD #2

Patient Barcode Label

Today's Date: _____ Expected LOS: 3 days

History:

Primary Surgical Service: Pediatric CT Surgery
Consulting Services: Pediatric Cardiology

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Suggested Guidelines	**AM Rounds**	**PM Rounds**	**Goals for transfer to CICC**
System	**Plan/Goals**	**Plan/Goals**	**Discuss with cardiology**
PULM: ▪CXR Review ▪Pulmonary Toilet	☐ ☐ ☐	☐ ☐ ☐	Only requiring NC O2 or less pulmonary support.
CV: ▪Plan for post op ECHO today (POD #2) if not already complete	☐ ☐ ☐	☐ ☐ ☐	Cardiology team accepts patient for transfer
RENAL: ▪Uncomplicated VSD repair = furosemide IV Q6-Q12h, consider transition to PO furosemide and dose based on fluid status and UOP	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	
FEN/GI: ▪Full enteral feeds ▪Continue famotidine while on Toradol	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	
HEME: ▪ Review indications for transfusion and decrease phlebotomy as possible	☐ ☐ ☐	☐ ☐ ☐	
ID: Antibiotics/ day ____ of ____ ▪Completed periop antibiotics ▪Decrease risk of healthcare acquired infections – assess needs for tubes/lines	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	
NEURO/SEDATION: ▪Continue PO acetaminophen scheduled /PO narcotic PRN/Toradol as long as stable renal function and no bleeding	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	Decreasing requirements for IV narcotics for pain
LINES/TUBES/MONITORING: ☐ Foley ☐ tubes ☐ art-line ☐ central line ☐ wires ☐ CT Can anything be removed today? Foley should already be discontinued	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	Desirable to have tubes and lines out if not longer necessary. May go to CICC with CVL or CT if needed.
SCHEDULED LABS: Minimize as possible	☐ ☐	☐ ☐	Family aware of transfer and received CICC caregiver booklet

Does the patient require care deviating from this pathway? ☐ Yes ☐ No
Describe reason here and document in WEBCIS:

Goal Parameters: SBP_____ pH_____ Net -/+ MAP_____ O2 Sats_____

Day Shift PICU MD/DO _____ RN_____ RT_____ Peds Cardiology_____ CT Surgery_____
Night Shift PICU MD/DO _____ RN_____ RT_____

Turn page to complete other side

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Quality Control Measures (mandatory)

Events or deviations? *Incident Report?* □ *Yes* □ *No* (Ex.unplanned extubation; medication error; near miss)	Y	N	n/a
HOB elevated 30 deg, OOB, inc spirom?	Y	N	
Pharmacist on rounds?	Y	N	
Over 30kg requiring adult doses?	Y	N	
Antibiotic levels due?	Y	N	
Respiratory weaning goals?	Y	N	n/a
Ulcer prophylaxis?	Y	N	n/a
Glucose control?	Y	N	n/a
DVT prophylaxis?	Y	N	n/a
Isolation? Reason: _____	Y	N	
Sedation/paralytic holiday?	Y	N	n/a
Can anything be removed?	Y	N	
PT/OT/Speech/Rehab consulted?	Y	N	
DNR	Y	N	
Staff concerns addressed? Nursing, Respiratory Therapy	Y	N	
Pressure ulcers?	Y	N	
Medication reconciliation? CPOE vs. MAR Time: ____	Y	N	

PICU MD – please complete for family

At the end of rounds – include the main goals to be communicated with the family for the day – even if they are already on rounds.

Examples:

Transfer to CICC, Up and walking, taking out chest tubes, taking feeds without using feeding tube

RN PLEASE TRANSCRIBE TO WHITE BOARD

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For use in CICC (or if CICC transfer orders have been written)

CICC (Cardiology) Goals for Discharge

History:

Patient Barcode Label

Primary Service: Pediatric Cardiology
Consulting Services:

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Goals (please indicate if patient has met goals (y/n)	Date:	Date:	Date:
FEN/GI: ▪ On defined full feeds and tolerating *(define with nutrition support)* ▪ No need for IV fluids or nutrition			
CV: ▪ On all enteral medications ▪ No complex arrhythmias ▪ Normal BP for age ▪ Pre-discharge echocardiogram and ECG completed if indicated			
PULM: ▪ Off oxygen 24 hours or on home therapy			
RENAL: ▪ Voiding well			
HEME: ▪ stable clinically appropriate hemoglobin			
ID: ▪ afebrile with no evidence of wound infection			
NEURO/SEDATION: ▪ appropriate exam for age or at baseline ▪ need for PO medications only for pain			
LINES/TUBES: ▪No lines or tubes in place with exception of peripheral IV or if going home with central access all services in place with case management coordination			
Psychosocial: ▪ *(define with case management support)*			
Family Education: ▪ Start CICC Teaching Packet on day of arrival to CICC (or if stays in PICU with CICC unit orders and no bed available in CICC) ▪ Housestaff to contact primary care MD and arrange for appointment to see primary care MD in 48 after discharge ▪Complete Discharge Instructions			
Family Communication (daily): *At the end of rounds – include the main goals to be communicated with the family for the day – even if they are already on rounds. Examples: tolerating goal calories, get rid of NG tube, taking all feeds by mouth, family teaching* **RN PLEASE TRANSCRIBE TO WHITE BOARD**			
Day Shift	MD ___RN ___	MD ___RN ___	MD ___RN ___
Night Shift	MD ___RN ___	MD ___RN ___	MD ___RN ___

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