Preop and Postop Considerations in Cardiac Patients

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Objective

- Define preop and postop considerations for patients undergoing cardiac procedures.

- I have no disclosures.

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Pre-Procedure Restrictions

- Cardiac cath versus surgery
- Regardless:
  - Herbal medications
    - Hold for 2 weeks before procedure
  - Immunizations
    - No live vaccines within 2 weeks of procedure
    - No routine vaccines within 3 days of procedure
      - Policy 10998: Vaccination-Immunization Guidelines for Perioperative/Procedural Patients
    - Consider longer restriction for patients undergoing CPB?

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Cath Patients

- Medication administration
  - Aspirin – only held for day of procedure
  - Adults – undergoing PFO device closure due to CVA
    - Hold Coumadin (warfarin) for 5 days prior to cath
    - Place on Aspirin 325 mg daily while holding warfarin
  - No oral medications morning of cath
  - May have inhaled and seizure medications
  - Recent TSH and Free T4
    - Known hypothyroidism
    - Trisomy 21 patients with no prior levels

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Surgery Patients

- Medication administration
  - Aspirin – DO NOT STOP on BT shunt dependent patients
  - No oral medications morning of cath
  - May have inhaled and seizure medications
- Recent TSH and Free T4
  - Known hypothyroidism
  - Trisomy 21 patients with no prior levels

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Pre-Procedure Illness

- Respiratory Tract Infections
  - Upper RTI: 2 weeks after symptoms resolve
  - Lower RTI:
    - RSV – ideally 6-8 weeks after a negative result
    - In setting of significant CHF: Case by case basis – no sooner than 2 weeks after symptoms resolve
      - There isn't much data on ideal timing
- OM
  - Must complete antibiotics prior to procedure
- Dental abscess
  - Complete antibiotics prior to procedure

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Other considerations

- Rashes
  - Chest or groin
- Thrush
- Antibiotics preop

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Surgery Patients

- Warfarin - for patients with mechanical valves
  - We have a bridging protocol to transition our patients
  - Exact plan will vary based on procedure, patient and starting INR
  - PRE OP (Assuming INR is currently in therapeutic range)
    - Day 6 (prior to surgery) – take last dose of warfarin
    - Day 5 – NO warfarin
    - Day 4 – NO warfarin
    - Day 3 – Begin Lovenox (enoxaparin) 1 mg/kg SQ BID
    - Day 2 – Enoxaparin 1 mg/kg SQ BID
    - Day 1 – Enoxaparin 1 mg/kg SQ in AM

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Surgery Patients

- DAY OF SURGERY – No warfarin or enoxaparin in AM
- Restart warfarin evening of POD #0
  - Often 10 mg
- POD #1 – warfarin 10 mg and enoxaparin SQ BID
- POD #2 – warfarin (regular dose) and enoxaparin SQ BID
- POD #3 – warfarin (regular dose) and enoxaparin SQ BID
  - Check INR
- POD #4 – warfarin (regular dose) – NO enoxaparin

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Post-op

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Post-op Restrictions

- Sternal precautions
  - All median sternotomies approximated with wires
  - Takes 6-8 weeks for complete healing
    - First 4 weeks post-op are most crucial
      - No picking up under/by the arms
      - No bike riding
      - No lap swimming
      - No driving
    - No tummy time for 1st 2 weeks

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Return to school/sports/etc

- Return to School
  - 2 wks after surgery
- Gym class/sports
  - 8 wks after surgery
- Travel/visiting
  - Hold off for at least 2 weeks
    - Should be seen postop & cardiologist
  - Avoid large crowds for 2 weeks
  - No going in pools until incision is well healed

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Post-op Restrictions

- Thoracotomy precautions
  - Make sure patient is moving arm on that side
  - Encourage gentle ROM exercises/stretching
  - Will likely be on pain meds longer than MSI

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Care of Incision

- Keep dry for 6 days post-op
- No special creams needed
- Allow steri strips to fall off
- Apply sunscreen to incision for 2 yrs
- Post-op wound checks – MyChart at 30 days

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Routine Immunizations

- Inactivated vaccines
  - Wait 4 weeks (minimum 2 wks)
  - Exceptions: Influenza and Synagis (palivizumab)
- Live vaccines
  - Wait time determined by blood products given intraoperatively

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Live Vaccine Administration

Table 1.13. Suggested Intervals Between Immune Globulin Administration and Active Immunization with MMR, MMRV, or Monovalent Varicella Vaccines

Indications or Product	Route	Dose		Interval, mo[a]
		U or mL	mg IgG/kg	
Blood transfusion				
Washed RBCs	IV	10 mL/kg	Negligible	0
RBCs, adenine-saline added	IV	10 mL/kg	10	3
Packed RBCs	IV	10 mL/kg	20 -60	6
Whole blood	IV	10 mL/kg	80–100	6
Plasma or platelet products	IV	10 mL/kg	160	7

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Standardized Discharge Pain Meds

- Encourage ATC acetaminophen/ibuprofen (alternating, if needed)
- Cath patients
  - Only device (ICD, pacemakers) pts need more than acetaminophen
- Surgery patients
  - Typically thoracotomies need more pain meds than sternotomies
- Divided based on age / weight
- Limited to 3 day supply of narcotics

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Follow up

- Post-op visit
  - CT surgery APP within 1 week of discharge
- Cardiologist
  - within 2 weeks of discharge
- PCP / pediatrician
  - within 1-3 wks of discharge (depending upon date of most recent visit)
- Referral to HMG and CND Clinic

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Referral to CND Clinic

Table 3. Categories of Pediatric CHD Patients at High Risk for Developmental Disorders or Disabilities

1. Neonates or infants requiring open heart surgery (cyanotic and acyanotic types), for example, HLHS, IAA, PA/IVS, TA, TAPVC, TGA, TOF, tricuspid atresia.
2. Children with other cyanotic heart lesions not requiring open heart surgery during the neonatal or infant period, for example, TOF with PA and MAPCA(s), TOF with shunt without use of CPB, Ebstein anomaly.
3. Any combination of CHD and the following comorbidities:
   - 3.1. Prematurity (<37 wk)
   - 3.2. Developmental delay recognized in infancy
   - 3.3. Suspected genetic abnormality or syndrome associated with DD
   - 3.4. History of mechanical support (ECMO or VAD use)
   - 3.5. Heart transplantation
   - 3.6. Cardiopulmonary resuscitation at any point
   - 3.7. Prolonged hospitalization (postoperative LOS >2-wk in the hospital)
   - 3.8. Perioperative seizures related to CHD surgery
   - 3.9. Significant abnormalities on neuroimaging or microcephaly*
4. Other conditions determined at the discretion of the medical home providers

CHD indicates congenital heart disease; HLHS, hypoplastic left heart syndrome; IAA, interrupted aortic arch; PA/IVS, pulmonary atresia with intact ventricular septum; TA, truncus arteriosus; TAPVC, total anomalous pulmonary venous connection; TGA, transposition of the great arteries; TOF, tetralogy of Fallot; PA, pulmonary atresia; MAPCA, major aortopulmonary collateral arteries; CPB, cardiopulmonary bypass; DD, developmental disorder or disability; ECMO, extracorporeal membrane oxygenation; VAD, ventricular assist device; and LOS, length of stay.

*Normative data by sex, including percentiles and *z* scores, are available from the World Health Organization (www.who.int/childgrowth; accessed February 2010).

- Referral placed at time of discharge
- Typically seen 6 months post-op (sooner if identified delays)
- Metric for US News and World Report for our single ventricle patients
- Dr. Kristen Stefanski

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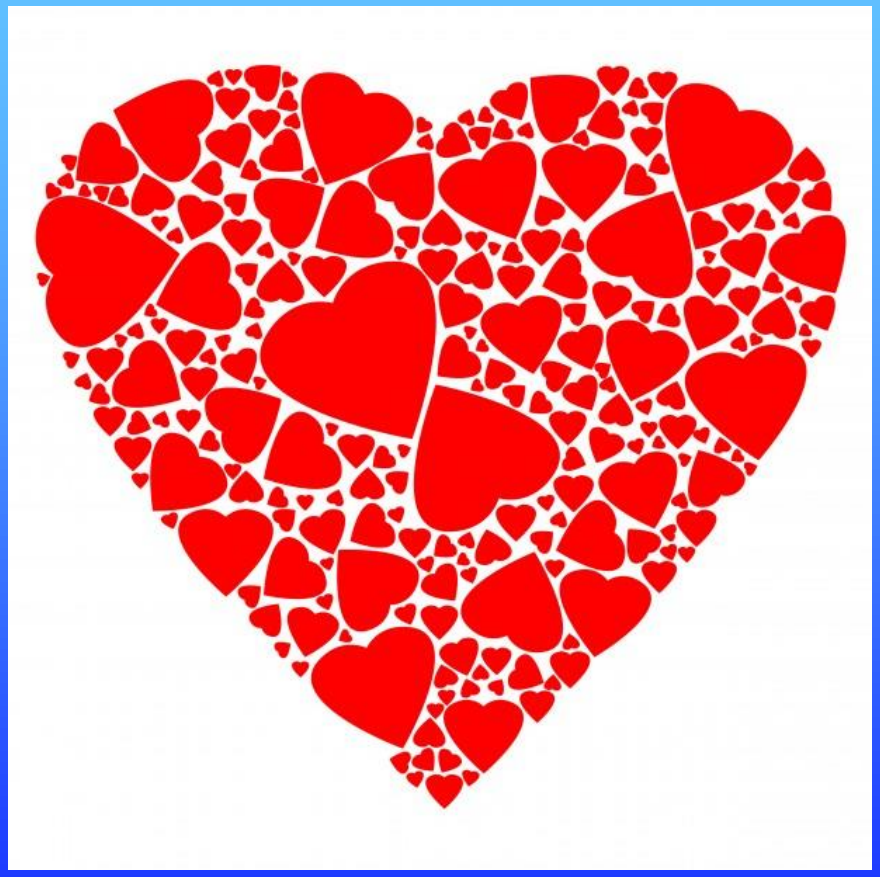
Post-cath



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Post-cath issues

- Diagnostic / interventional procedures
  - Typically have arterial access
- Electrophysiology procedures
  - Typically only venous access
- Restriction based on access

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Post-cath restrictions

- Diagnostic / interventional procedures
  - Typically FV and FA access
  - No tub baths/swimming for 5 days
  - No strenuous activity, no heavy lifting/straining, and nothing that would hit that sight for 5 days
  - Need to know about signs of infection
  - Bleeding typically an issue right afte

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Post-cath restrictions

- Diagnostic / interventional procedures
  - Ballooning – no additional precautions
  - Stent placement – often on ASA (5 mg/kg) daily for 6 months
  - ASD/PFO devices – ASA for 6 months +/- Plavix (clopidogrel) for 1 month
  - CVA patients may stay on warfarin

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Post-cath restrictions

- Devices/stents/coils –
  - Get 3 doses of antibiotics after placement
    - IV cefazolin every 8 hours if in-house
    - IV cefazolin and then 2 doses of cephalexin if SDR
  - No dental work / dental cleaning for 6 wks
  - SBE prophylaxis needed for 6 months

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Post-cath

- Follow up
  - Diagnostic procedures: will discuss at Thurs cath conf
  - Interventional procedures: 1 month after intervention with primary cardiologist

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Post-cath instructions

- EP study/Ablation
  - Typically FV access only
  - No tub baths/swimming for 3 days
  - No strenuous activity, no heavy lifting/straining, and nothing that would hit that sight for 3 days
  - Need to know about signs of infection
  - Bleeding not typically an issue

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Post-cath instructions

- Ablations –
  - No dental work / dental cleaning for 6 wks
  - SBE prophylaxis needed for 1 year
  - Follow up with cardiologist at 2 mos and 1 year

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Post-cath restrictions

- ICD/Pacemaker placement
  - May/may not have access
  - Pain is usually the issue
    - Acetaminophen / ibuprofen ATC
    - Oxycodone every 6 hours PRN (based on wt)
  - Return to Dr. Clark in 2 weeks for wound check and device check

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Any Questions?

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