The Working Pediatric Cardiac Catheterization Lab:

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With new thinking, more is possible.
Thank you

• SCAI
• Dr. Hijazi and Dr. Cheatham
December in Vegas

With new thinking, more is possible.
Las Vegas
hourly

Friday  39°  28°
Saturday  48°  25°
Sunday  39°  25°
Monday  39°  25°
Tuesday  43°  30°
Wednesday  46°  34°

Updated 12/6/13 3:05 PM
Easter 2008 in Minnesota

With new thinking, more is possible.
Don’t Complain – Someone always has it worse

My feet are just freezing!

Buddy, You think You have problems!
Commentary on next 4 days:

• My Approach
• Suggestion for your approach
Every Doctor thinks they’re

- A great physician
- A great communicator

But few are both
When talking to patients (or even physician colleagues) about interventions

• We cannot assume the “basics” are understood
• Majority of time is spent in explaining background
  – normal anatomy
  – how patient’s anatomy differs from normal
  – indications for intervention
  – Basic concept of how intervention is performed
  – Technique, materials, decision-making, trouble-shooting, dealing with expected or unexpected complications are not usually part of the discussion
SCAI Fellow Conference is: Unique

- You are our colleagues
- We share:
  - a common vocabulary
  - a basic knowledge base of anatomy (normal, abnormal, and post-surgical)
  - a thought process
  - Technique, materials, decision-making, troubleshooting, dealing with expected or unexpected complications are exactly what our discussions are about
SCAI Fellow Conference is:

Drinking from a fire hose:

- > 50 lectures in 3 ½ days
- Each 15-30 minute discussion could be the topic of a ½ day breakout session, or entire meeting
- 100% of talks are 100% applicable to the work you will do everyday
My (free) advice:

• Try and take one “pearl” from each lecture
• Information is coming rapid-fire:
• I will give objectives and point out my “pearls” (technical, career) – but decide for yourselves
Topics for me to discuss:

- The Working Pediatric Catheterization Lab
- Glenn and Fontan Catheterization
- ASD device case discussion
- Perventricular VSD closure
- Retrieval of embolized devices
- Hybrid for HLHS
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Components of a Working Pediatric Cath Lab

- Environment
- Team
- Process
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University of Minnesota Amplatz Children’s Hospital

Opportunity!!!
U of M Hybrid Evolution

• 2006 – Arrived

• Spring 2011 – Amplatz Children’s Hospital slated to open with “State-of-the-Art” Hybrid Lab, Cardiac OR, & Cath/EP Suite
  – Investigated vendor options
  – Travelled to other centers with recently built hybrid labs
  • Chance to see what new things we like… and what they didn’t

Pearl: You will continually be asked to, or want to start something new (lab, service, team), but will almost never be the first to ever create it. Learn about successful models, discuss short-comings, and adapt to your needs/resources (save time, avoid mistakes, and use to support what you envision as what is ideal)
Components of a Working Pediatric Cath Lab

• Environment
  – Location
“Children’s Hospital within a Hospital”
General Hospital with Pediatric Floor/PICU

Pediatric Cath/Hybrid Lab
Located in Suite of Cath Labs
– 1 floor below ORs
Pediatric Hospital

All resources are dedicated to Pediatric Care

With new thinking, more is possible.
Location in OR suites
- Anesthesia
- Versatility
- Improved usage

Hybrid Cath/OR
EP/Cath/OR
Sterile Core
CV OR
Environment – Location Requirements

• Facility that is able to handle newborn – adult
• Includes Intensive Care
• Proximity to surgical space
• Is part of a tertiary pediatric center, or able to perform pediatric transports to tertiary pediatric center
Components of a Working Pediatric Cath Lab

• Environment
  – Location
  – Space (size, shape, flexibility)
Strange "triangular" shape

620 ft²

“close quarters”

Successful program:
• Diagnostics
• Interventions
• Hybrids
• Valves
Area >900 ft²

Rectangular
• Why?
  
  • Case specific carts optimizes space/flexible space
  • Mobile carts improve positioning and access to patient
  • Ability to remove all cath supplies adds versatility to room (improved utilization)
• Equipment suspended from multi-position booms
Limited Visibility

Limited Space
Components of a Working Pediatric Cath Lab

• Environment
  – Location
  – Space
  – Equipment (specific to Peds)
Little people are adults.

With new thinking, more is possible.
Kids are NOT little adults!

With new thinking, more is possible.
Biplane Imaging
Toshiba
Equipment

- Biplane imaging w/ moveable C-arm
- Immediate replay capabilities
- Physiologic recorder
- Blood gas analyzer
- Pulse oximeter
- Infant warmer device
- Pediatric pacing catheters and external pacer
- Comprehensive stock of Peds catheters and expendables
Components of a Working Pediatric Cath Lab

- Environment
- Team
- Process
Guidelines for Pediatric Cardiovascular Centers
Pediatrics: Vol. 109; No. 3; March 2002; pg 544-549

Personnel

– Director – BC/BE Pediatric Cardiologist w/ additional fellowship training (or qualifying experience)

– Every procedure

  - BC/BE Peds Cardiologist

  - Peds RN w/ airway/sedation experience

  - Techs trained in peds catheterizations
Interventional Cardiology is a Team Sport!!!

• Designate Specific Personnel (do not accept “everyone needs to feel comfortable”)
  • Select them AND let them select you
• Educate the team – regularly and completely
  • The more they understand, the more they’ll be interested and the better care your patients will get
• Empower each member of the team
  • Insights and suggestions improve care and buy-in builds ownership and loyalty
• Protect, support, encourage, and congratulate
  • They will do the same for you
Anesthesia

“...and this is Ralph, your anesthesiologist.”

With new thinking, more is possible.
Cardiology Colleagues

"Yes! That was very loud Sir, but I said I wanted to hear your HEART!"
Surgeons

“ALL RIGHT, SO HE DROPPED THE HEART. THE FLOOR IS CLEAN.”

With new thinking, more is possible.
Components of a Working Pediatric Cath Lab

- Environment
- Team
- Process
Components of a Working Pediatric Cath Lab

• Process
  – Intake
    • Check-in
    • Pre-procedure screening
    • Transportation into room
  – Procedure
  – Output
    • Transportation
    • Communication to accepting unit/team
    • Recovery and patient/family education
  – All with primary goal of safety and mechanisms for checks and quality improvement
  – Successful system is dependent on COMMUNICATION
## Safety is Our Top Priority

**Expectation:** A Brief, Time Out, Debrief are done for every patient.

Any participant in the OR has the responsibility and authority to call a Patient Safety Time Out if concerned.

<table>
<thead>
<tr>
<th>Brief</th>
<th>Time Out</th>
<th>Debrief</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occurs pre-induction and involves all 4 team members together.</td>
<td>Occurs after fire risk mitigation has occurred and after surgeon has scrubbed/gowned-just prior to incision.</td>
<td>Occurs before the surgeon leaves the OR</td>
</tr>
<tr>
<td>2. Team focuses on the brief discussion.</td>
<td>2. Team ceases all other activity.</td>
<td>1. Verifies procedure.</td>
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</tbody>
</table>
| 3. Introductions/greetings. | 3. Circulating Nurse:
   a. Reads the following from the patient’s Affirmation of Informed Consent:
      i. Patient Name
      ii. Procedure
      iii. Laterality of procedure (and level) as appropriate.
| 4. **Required** content from circulator: fire risk assessment score (if 2 or 3, discuss mitigation); x-rays and implants/grafts availability (as appropriate). | 4. Team Verification:
   a. **Anesthesia Care Professional:**
      i. Reads patient’s name from the Anesthesia Record and states shorthand version of procedure.
      b. States antibiotic name, dose, minutes from start of administration time (if greater than 60 minutes calls for an antibiotic Hold Stop), and time next dose is due. | 3. Confirms wound class*. |
| 5. **Suggested** content for developing the team’s shared mental model:
   - **Surgeon:** type of case, sequence for multi-surgeon cases, equipment review, critical times, positioning, VTE, specimens, other
   - **Circulator:** allergies, skin care plan, other
   - **Scrub:** instruments/supply concerns, medications on the sterile field, other
   - **Anesthesia Care Professional:** physiologic concerns, blood availability, pre-op block placed, Beta Blockers, antibiotic(s), other | 4. Scrub:
   a. States shorthand version of procedure for which he/she has set up.
   b. Verbally confirms he/she sees the surgical site marking (if applicable). (Circulator and team verbally confirm surgical site location on anatomical diagram if diagram is used in lieu of physical site marking.)
   - **Surgeon:**
      a. States patient’s name, complete procedure, and site. | 5. Confirms blood loss. |
| 6. Surgeon invites team members to ask questions. | Note:
   - Conduct another time out immediately after repositioning the patient from supine to prone or prone to supine.
   - Conduct additional time out immediately prior to initiation of each procedure for multiple procedure cases with different attending surgeons. | 6. Discusses clinical concerns and issues for handoffs. |
| 7. Surgeon encourages team members to speak up if they become aware of a safety issue. | Note:
   - Conduct another time out immediately after repositioning the patient from supine to prone or prone to supine.
   - Conduct additional time out immediately prior to initiation of each procedure for multiple procedure cases with different attending surgeons. | 7. Discusses process issues: What went well, what should change, what should improve. |

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*Wound Class
- Class I-Clean
- Class II-Clean, contaminated
- Class III-Contaminated
- Class IV-Dirty, Infected
Pearls:
• Interventional Cardiology is a team sport:
  • Develop a multi-disciplinary team – TREAT THEM WELL
  • Create an atmosphere of open communication and cooperation – it WILL save patients
  • Don’t complain (too much or TOO EARLY)
  • Don’t say no to…