American Heart Association Scientific Sessions 2014: Ask the Experts:
To Err is Human: How to Optimize Patient Safety in Children Undergoing Cardiac Procedures

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Strategies that impact the quality of patient care by improving patient safety and patient outcomes are key hospital quality improvement targets. This AHA session, moderated by Melissa B. Jones from Children’s National Health System in Washington, D.C. and Mary Rummell from Doernbecher Children’s Hospital/Oregon Health & Science University, addressed the safety and quality improvement concerns for pediatric cardiology and cardiac surgery patients at several touch points within hospitals: the operating room, the cardiac cath lab, during hand-offs between units, and across all ages.

The session was introduced by James O’Brien, Chief of Cardiovascular Surgery at Children’s Mercy Hospital, Kansas City. As a leading surgeon in both pediatric and adult congenital and acquired heart disease, his research interest focuses on improving outcomes by developing best practice models and safety in the operating room. External influences impact both quality improvement and change. The Institute of Medicine (IOM), The Joint Commission (TJC), the Centers for Medicare & Medicaid Services (CMS), and the Society of Thoracic Surgery (STS) all publically report patient care outcomes, thus providing motivation for hospitals to commit to high-quality care. He discussed Crew Resource Management (CRM) and Team STEPPS to organize and manage resources, both technical and interpersonal, to improve outcomes. Dr. O’Brien emphasized team work to build safer, more effective teams. He used the examples of the pre-operative checklist and Procedural Time-out as examples. He identified the circulating nurse in the OR as the key leader in ensuring that these processes are followed and indicated that everyone must be on-board with the plan, including the lead surgeon. One factor, identified as a potential failure in the implementation of this measure, was the arrogance of lead personal including the surgeon or primary practitioner.

Although the cath lab is a procedural area, falling out of perioperative policies and procedures, expectations generated by the same external societies and regulatory bodies have led to the development of standards for sterile procedures, time-outs, and hand-offs specific to the cath lab. Sharon Cheatham, an interventional cardiology nurse practitioner from Nationwide Children’s Hospital, Columbus, Ohio, presented measures adapted from both surgical and cath lab registries of STS, C3PO and IMPACT pediatric cardiac catheterization data bases to minimize risk and vulnerability for adverse events, as well as focusing on reducing radiation exposure and pressure ulcers. The tools used at Nationwide for the Pre-procedure Time-out (Attachment A) and Radiation Safety monitoring (Attachment B) are attached to this newsletter. Nationwide uses Z-Flo fluidized positioners (Sundance Solutions, Inc. White Plains, NY) to prevent pressure ulcers as they do not distort the images necessary in the cath lab.

The process identified by the Joint Commission to develop a targeted solution is the Targeted Solution Process or TSP tool found online at: http://www.centerfortranfrominghealthcare.org/tst.aspx. The TSP tool, as discussed by Dorothy (Dot) Beke, Clinical Nurse Specialist and nurse practitioner at Boston Children’s Hospital, was developed by ten hospitals in collaboration with TJC to examine handoff communication problems, identify specific causes for failures and barriers to improvement, and to identify/implement/validate solutions to improve performance and target specific areas of communication failure. The Hallmarks of a successful handoff include:
  o S: standardize critical content
  o H: hardware within system
  o A: allow opportunity to ask questions
R: reinforce quality & measurement  
E: educate & coach

Dot used this tool to create processes and Hand-off Forms necessary for standardization of the transition from OR to CICU and from CICU to floor (lower acuity inpatient unit). Attachment C includes these processes and important hand-off data.

Lisa Hom, the collaborative practice facilitator at Children’s National Health System in Washington D.C, and team at Children’s National has redesigned the Morbidity & Mortality (M&M) Quality Improvement process by integrating the concepts contained in the STS quality metrics paper and quality module. The M&M conference, originally structured as a physician-only conference, has been redesigned into a weekly Critical Event Review (CER) with multidisciplinary, collaborative discussion of safety events and is designed to foster a safer system with high quality care for the Heart Institute patients. Disciplines include (but not limited to) cardiac critical and acute care providers and nurses, clinic nurses, respiratory therapists, surgeons, social workers and pharmacists. Mandatory discussion topics include: CPR, rapid deployment of ECMO, unplanned transfer to ICU < 24 hours, mortalities, heart transplant and VAD implants and safety events that implicate systems or management issues. Data from CER is used to manage rapid cycle changes. Action items are identified for nursing as well as other disciplines and include opportunities for improving safe delivery of care, identification of common cause events, and development / implementation/ evaluation/communication of action plan outcomes. The management of “Tet Spells,” unit hand-offs, and pre-cath huddles are nursing led improvements resulting from this process. A poster originally presented at PCICs capturing nurse involvement in this Heart Institute wide quality improvement initiative is Attachment D.

The adult with congenital heart disease (ACHD) has special needs in terms of quality outcomes. Care for the adult congenital may be provided at both pediatric and adult facilities. These patients are held to the adult standards for TJC and CMS reimbursement for hospital care where Medicare payments are linked to the value (quality and efficiency) of care provided. Care for hospital acquired complications (Central line infections (CLABSI), hospital acquired pressure ulcers, urinary catheter infections (CAUTI), and pulmonary embolism (VTE) are not reimbursed. At this point, hospital acquired complications have not impacted the reimbursement of pediatric care.

Research shows that it is safe to care for adults with CHD in pediatric hospitals, but who decides which patient goes to which facility. David Drajpu, a nurse practitioner in the Philadelphia Adult Congenital Heart Center, provides care for the ACHD patient both at Children’s Hospital of Philadelphia (CHOP) and Penn Medicine. Since PACHC uses both CHOP and Penn for both surgical and cardiac catheterization, they have developed an algorithm to decide upon the site of care. This algorithm consists of both patient and facility characteristics. Some resources, such as a Melody valve, are only available at one location (CHOP), whereas equipment for large adults (X-ray, OR, and Cath tables) may be limited in a pediatric facility. Adult specialists who manage adult comorbidities may be only available in an adult care hospital. The algorithm, a list of comorbidities, and weight capacity of hospital equipment is available in the Attachment E.

David also identified several areas that are quality concerns for adult patients in pediatric facilities. Included are: errors in medication choice/dosing, fluid management/administration, poor understanding of comorbid conditions, ill-equipped facilities, and lack of psychosocial support. Pediatric facilities providing care for adult CHD patients need to have the appropriate sizes of gowns, socks, surgical bras,
lateral transfer equipment, recliners/commodes/walkers, and emergency equipment. David also cautioned pediatric facilities to provide literature that is appropriate for adults. Check the pre-procedure education for information such as: Eating and drinking before anesthesia can cause problems….supervise your child closely…check cars and car seats for food that may be within your child’s reach… Examples of Clear Liquids: a clear liquid is any liquid that does not contain pulp – water, Pedialyte, apple juice, breast milk that does not contain fortifier… or encourage the family to bring an empty bottle, Sippy cup, or special toy or blanket…. The majority of data shows that it is safe to care for ACHD patients in pediatric facilities, but the availability of adult providers (practitioners and nurses) is invaluable.

This was an exciting session with many topics for study, discussion and debate at future sessions.