Quality Improvement in Action

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Learning Objectives

• Discuss the ethical responsibility of healthcare professionals to evaluate processes within their work environment and make improvements that lead to efficient and effective patient care.
• Review current and ongoing quality improvement projects implemented in the department and correlate these projects to increased patient safety and/or improved health outcomes.
• Describe how effective communication between healthcare providers and patients can lead to a reduction in medical errors and patient non-compliance, and an increase in patient satisfaction and improved health outcomes.

Definitions

• Family-Centered Care (FCC) – An approach to health care that shapes policies, programs, facility design, and day-to-day interactions among patients, families, physicians, and other health care professionals. In pediatrics, this is based on the understanding that the family is the child’s primary source of support and strength and provide information that is important in clinical decision making.

Family-Centered Rounds (FCRs) – Conducting attending physician rounds, including patient presentations and rounds discussions, in the patients’ rooms with the family present to facilitate exchange of information between the family and other members of the health care team.

Core Elements

• The family decides how rounds are conducted
• Introduction of team and family members
• Assign roles
• Nurse and ancillary staff presence
• Intern or student briefly clarifies the purpose of rounds and welcomes family involvement
• Intern or student briefly summarizes medical status and treatment options using lay language and sharing honest information
• Family and patient (if appropriate) are active participants in decision-making
• Provide closure

Why?

• Institute of Medicine – Patient-centered care is one of the 6 aims for quality improvement.
• AAP policy statement – “Standard practice”
• ACGME – Patient Care
  – Professionalism
  – Interpersonal Skills and Communication
Aim Statement

We aimed to improve our patient and nurse satisfaction ratings measured by Press Ganey survey questions relevant to physician communication and teamwork by implementing FCR protocol.

Methods

- We established the flow of rounds based on the core elements of FCRs.
- FCRs were implemented on the 3rd floor at CHRISTUS Santa Rosa Children’s Hospital in August 2008.
- The percentile rank for specific patient satisfaction questions of the Press Ganey survey of the pilot floors were compared for fiscal years 07-08 (pre-intervention), 08-09 (transition), and 09-10 (post-intervention).
- We also compared the nurse satisfaction scores before and after FCR implementation for fiscal years 07-08 and 08-09.
- There was minimal turnover in physician and nurse staff during the study periods.

Results

Percentile Rank for Physician-Related Press Ganey Survey Questions
Fiscal Years 07-08, 08-09, 09-10

Percentile Rank for Nurse-Related Press Ganey Survey Questions
Fiscal Years 07-08, 08-09, 09-10

Press Ganey Associate Satisfaction Scores
Fiscal Years 07-08, 08-09, 09-10

Conclusions

- After implementation of FCRs, most Press Ganey mean scores and percentile rank related to physician communication and personal issues improved, with the exception of the question related to the time the physician spent with the child.
- Nurse satisfaction scores also improved. One of the core elements of FCRs is to include input from the nursing staff in the medical-decision making, which leads to improved sense of team work and autonomy.
References


Decreasing Unplanned Extubations in the CHRISTUS Santa Rosa PICU
Curt Froehlich, MD and Dana Rohman, RN

Background

• Endotracheal tubes (ETT) and maintenance of ETT is key to the treatment of respiratory failure
• Respiratory failure accounts for 12-24% of admits to the PICU.
• Untimely removal of the ETT can add morbidity (increased LOS, increased vent days) and can lead to increased mortality (inability to replace ETT)
• Recent studies show an ability to decrease extubations to 0.2 to 0.8/100 vent days
• Target benchmark: <1 UE per 100 vent days

OUR AIM STATEMENT

To decrease the number of unplanned extubations at CHRISTUS Santa Rosa Children’s PICU by 50% (1.6/100 to 0.8/100) by Jan 2011

“Save” the ETT Campaign

• Each child with an ETT will have a card posted at the head of the bed with size and location/last re-taped
• Each shift (Q12 hours) charge nurse will assess all ETT’s to verify the tape is dry/secure and taped at the correct depth
• Each day the charge nurse will assess each intubated patient to determine if restraints should be considered and if in place, ensure appropriate restraint orders are in effect

“Save” the ETT Campaign

• The date of our last unplanned extubation will be posted at the front of the unit
• Each child with an ETT will have a physician order stating a sedation goal
• Nursing will document patient sedation level Q2 and notify physician when sedation is “out of range”
• Addressed timing and interpretation of AM X-rays for ETT verification
Results

- Charge Nurse assess each ETT every shift
  - During our 90 day period 32 ETT's were identified which required re-taping or re-positioning
  - We believe this had a significant impact upon our unplanned extubations
  - We appreciate all of the extra work performed by the charge nurses

Return on Investment

- Since Oct 559 vent days
- At previous rate (1.41/100) predicted 8 extubations for Oct-Jan
- During study 5 unplanned extubations (0.91/100)
- Prevented 3 unplanned extubations during the study period
- Assuming unintentional extubation adds 4 ICU days and 3 vent days (each ICU day $3993 +2014 vent day)
- Savings: $66,042 ($22,014 per patient)

Conclusions

- Current Unplanned Extubation rate below benchmark of 1/100
- Prevented 3 unplanned extubations thus far
- If continues at current rate will prevent 9 unplanned extubations this year
- Project saves $198,126/year
- Increased vigilance by patient care team created 32 “saves”

Future Directions

- Explore whether other institutions use an “extubation protocol” and consider its development at CSRCH
- Develop a standard for ETT maintenance during procedures
- Improved education about ETT maintenance during medical student/resident/fellow education
- Refine education for new RN’s
- Work with anesthesia/ER to standardize ETT maintenance practices
REDUCING THE CHILDREN'S ED BLOOD CULTURE CONTAMINATION RATE BY 50%

Vanessa Hill, MD
Michelle Arandes, MD
Michael Howard, RN

BACKGROUND DATA

Blood Culture Contaminants Lead To:
- Increased lengths of stay
- Increased costs of care (ie. Antibiotics, unintended consequences of therapy)

Benchmark rate is 2-3%

AIM STATEMENT

• The aim of our project was to reduce the blood culture contamination rate by 50% in the Children’s Emergency Department at CHRISTUS Santa Rosa Children’s Hospital by 1st May 2010

PRIMARY INTERVENTION

• EDUCATION/ POSTERS
  - Standardize sterilization of skin with chlorhexidine; including allowing for proper “drying time”.
  - Avoid contamination of sterilized site prior to blood draw.
  - Prep Blood Culture bottle tops with alcohol swabs.
  - Need physician order prior to drawing culture.

SECONDARY INTERVENTION

• BLOOD CULTURE BUNDLES
  - Use standardized kits that have all supplies ready for the nurses along with the instruction sheet.
IMPLEMENTING THE CHANGE

Education and Poster displays were rolled out 7 Feb. 2010. Education was covered in multiple settings. After each sample period, results were shared with all. Super users were identified and performed staff observations. Info. was well received; but, initially was thought not to be an “issue”.

RETURN ON INVESTMENT

Contaminant Blood Cultures and Resource Utilization


Prospective study; evaluated charge and LOS data

Results: false positive blood cultures vs. negative culture results (unadjusted) – Total Costs
Pharmacy/lab charges ($13,000 vs. $8,000) - LOS (12.5 vs. 8 days)

RETURN ON INVESTMENT

Average culture number drawn per month = 50
False Positive/contaminant culture = $5000
Baseline mean rate of contamination pre-intervention= 4%

Current mean rate of contamination = 8%
thus = $200,000 in extra costs per 1000 cultures drawn (20 months)

Bronchiolitis: Decreasing Unnecessary Therapies

Shawn Ralston, MD
Marissa Martinez, MD
Mike Martinez, RT
Pediatrics Grand Rounds
11 March 2011
University of Texas Health Science Center at San Antonio

Background

• Bronchiolitis is the most common lower respiratory tract infection in children resulting in $500 million a year in healthcare expenditures

• Bronchiolitis is currently the most common diagnosis resulting in hospitalization in pediatrics according to the AHRQ database

Commonly used therapies for bronchiolitis which are not evidence-based

• Albuterol

• Steroids

• Chest physiotherapy

• Antibiotics

AIM Statement

Our aim was to reduce the usage of non-evidence based medical therapy for bronchiolitis by 50% on the 3rd and 9th floors of Christus Santa Rosa Children’s Hospital from 12/15/2008 to 3/15/2009 using a protocol order set and respiratory therapist driven scoring system

Intervention

• Evidence-based order set developed based on Cincinnati Children’s published orders but also incorporating new evidence

• Respiratory therapist driven scoring tool for bronchiolitis also adapted from CHMCC chosen

• Parent handout created specific to our project

Pre and Post-Intervention Usage of Targeted Therapies

![Graph showing pre and post-intervention usage of targeted therapies for bronchiolitis therapies over a 12-month period from December 2007 to February 2009. The graph compares the usage of Albuterol, Steroids, Chest Physiotherapy (CPT), and Antibiotics. There is a noticeable decrease in the usage of these therapies after the intervention period.]
RESULTS

### Preintervention 2008 (n=157) vs. Postintervention 2009 (n=155)

<table>
<thead>
<tr>
<th></th>
<th>Preintervention</th>
<th>Postintervention</th>
<th>Fisher’s test as appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008 (n=157)</td>
<td>2009 (n=155)</td>
<td></td>
</tr>
<tr>
<td>Albuterol</td>
<td>70%</td>
<td>21%</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>Steroids</td>
<td>22%</td>
<td>12%</td>
<td>p=0.01</td>
</tr>
<tr>
<td>CPT</td>
<td>22%</td>
<td>4%</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>Albuterol doses/Patient</td>
<td>8.1</td>
<td>2.5</td>
<td>p&lt;0.001</td>
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<tr>
<td>LOS</td>
<td>2.7</td>
<td>2.4</td>
<td>NS</td>
</tr>
<tr>
<td>Readmits</td>
<td>1.3%</td>
<td>1.9%</td>
<td>NS</td>
</tr>
</tbody>
</table>

### 2009 Data

<table>
<thead>
<tr>
<th></th>
<th>No Protocol (n=54)</th>
<th>Protocol (n=101)</th>
<th>Fisher’s test as appropriate</th>
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<tbody>
<tr>
<td>Albuterol</td>
<td>55% (29/54)</td>
<td>8% (8/101)</td>
<td>p&lt;0.001</td>
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<tr>
<td>Steroids</td>
<td>28% (15/54)</td>
<td>3% (3/101)</td>
<td>p&lt;0.001</td>
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<tr>
<td>CPT</td>
<td>2% (1/54)</td>
<td>1% (1/101)</td>
<td>p=0.66</td>
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<tr>
<td>LOS</td>
<td>2.8</td>
<td>2.2</td>
<td>p=0.05</td>
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<tr>
<td>Patients receiving “supportive care”</td>
<td>24% (13/54)</td>
<td>53% (53/101)</td>
<td>p&lt;0.01</td>
</tr>
<tr>
<td>Patients receiving any 3% saline nebs</td>
<td>68% (36/54)</td>
<td>92% (94/101)</td>
<td>NS</td>
</tr>
<tr>
<td>Transferred to higher level of care</td>
<td>0% (0/54)</td>
<td>2% (2/101)</td>
<td>NS</td>
</tr>
<tr>
<td>Readmits &lt;72 hrs</td>
<td>2% (1/54)</td>
<td>0.1% (1/101)</td>
<td>NS</td>
</tr>
<tr>
<td>Albuterol doses/Patient</td>
<td>4.6</td>
<td>0.7</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>All Neb doses/Patient</td>
<td>5.8</td>
<td>2.9</td>
<td>p&lt;0.001</td>
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</tbody>
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**Return on Investment**

- Potential cost savings of over $400,000 per year
  - $35,000 in decreased nebulization costs
  - $375,000 estimated for a 0.5 day decrease in LOS
- Over $1 million using unreimbursed charges

**Follow-Up Analysis**

<table>
<thead>
<tr>
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<th>Preintervention (n=321)</th>
<th>Intervention (n=155)</th>
<th>Second Year (n=409)</th>
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<tr>
<td>Albuterol</td>
<td>89%</td>
<td>21%*</td>
<td>34%*</td>
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<tr>
<td>Steroids</td>
<td>37%</td>
<td>12%*</td>
<td>16%*</td>
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<tr>
<td>CPT</td>
<td>35%</td>
<td>4%*</td>
<td>4%*</td>
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<td>“Supportive Care” only</td>
<td>19%</td>
<td>43%*</td>
<td>45%*</td>
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<tr>
<td>LOS</td>
<td>3.1</td>
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<tr>
<td>Readmits</td>
<td>1.1%</td>
<td>1.9%</td>
<td>1.7%</td>
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</tbody>
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