Examining implementation of a commercial pediatric inpatient EMR

Improving Quality of Care for Children through Health IT
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Topics

- Children’s EMR Implementation
- Outcomes measurement approach
- Results: Nurse perceptions & acceptance
Children’s Healthcare of Atlanta

- Pediatric healthcare system in metro-Atlanta
  - Three inpatient hospital
    - 450+ staffed beds
  - 16 satellite locations
  - 6,000+ employees
  - 1,400+ physicians

- Study setting
  - 2 largest hospitals during EMR implementation
    - 1 academic, 1 community
    - 23,000 hospital admissions
    - 128,000+ inpatient days
Children’s EMR implementation

Phased implementation employing user-centered methods
Measurement Approach

- **Patient Safety**
  - Medication error rates
    - Trigger-based chart review
    - Self-reporting trends
- **Efficiency**
  - Pharmacy order turnaround time study
  - Physician & staff self-reports
- **Quality**
  - Physician & staff self-reports
- **Satisfaction & acceptance**
  - Users
    - Surveys
    - Qualitative interviews
  - Customers
    - Press Ganey trends
Nurse satisfaction and acceptance surveys

- Survey distributed before and after each go-live
  - Survey items based on Technology Acceptance Model (TAM) measured perceived usefulness
  - Open-ended questions: advantages & disadvantages

- Survey population: inpatient nursing staff
  - Before eMAR (n=245), after eMAR (n=268)
  - ~45% work in ICU
  - ~50% have worked 1-5 years in their current work area
Children’s EMR implementation

- 2005: Pharmacy System
- Q1-Q4:
  - eMAR, Clinical Ancillary Orders
  - Nursing staff before surveys
- 2006: eMAR, Clinical Ancillary Orders
  - Nursing staff after eMAR surveys
- 2007: Nursing Doc; Non-clinical Ancillary Orders
  - Nursing staff after RN Doc surveys
- 2008: CPOE

Surveys:
- Nursing staff before surveys
- Nursing staff after eMAR surveys
- Nursing staff after RN Doc surveys
Perceived usefulness ratings

<table>
<thead>
<tr>
<th>Work Area</th>
<th>Pre-eMAR</th>
<th>Post-eMAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Staff</td>
<td>Very good</td>
<td>Very good</td>
</tr>
<tr>
<td>General Care</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>ICU</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
Perceived advantages

- Efficiency: 26% Pre-eMAR, 16% Post-eMAR
- Improved Communication: 5% Pre-eMAR, 7% Post-eMAR
- Legibility: 9% Pre-eMAR, 13% Post-eMAR
- Paper: 12% Pre-eMAR, 15% Post-eMAR
- Patient Care: 8% Pre-eMAR, 2% Post-eMAR
- Patient/Clinical Info: 41% Pre-eMAR, 23% Post-eMAR
- Reduce Errors: 23% Pre-eMAR, 9% Post-eMAR
- Safety: 6% Pre-eMAR, 2% Post-eMAR
- Generally Better: 6% Pre-eMAR, 2% Post-eMAR

Pre-eMAR and Post-eMAR responses.
Perceived disadvantages

Disadvantages

- Accessing Patient Info
- Errors
- Flexibility
- General Disadvantage
- Learning Curve
- Less Efficient/More Time
- Medication Problem
- Patient Care
- PC Availability
- PC Problems
- Quality of Patient Info
- Training

% Responses

Pre-eMAR
Post-eMAR
Next Steps

- CPOE!
- Post-Nursing Documentation surveys
- Continue iterative improvements to the system
  - Focus on problem areas identified through the surveys and other feedback
- Physician Documentation surveys