ICU Rounds Redesign

Amy O'Brien MSIV; Kristin O'Reilly RN, MPH; Kathryn Zieja BA; Juliann Corey RN, MSN; Veronica Kelly RN, BSN; Lynn Mackinson RN, MSN, CCRN; Jennifer Stevens MD, MS; Michael N Cocchi MD

INTRODUCTION

Multidisciplinary daily rounds (MDR) are an essential part of the development of a culture of team cohesion and interdisciplinary communication in the intensive care unit (ICU). MDR represent a mechanism by which providers from different professions and specialties can meet as a cohesive group to synthesize data, think collectively, and form thoughtful and complete patient care plans.

MDR and interdisciplinary collaboration in the ICU mean safer care for patients:

- MDR are associated with decreased patient mortality, decrease length of stay (LOS), and lower cost of care without affecting rates of readmission [1-3].
- MDR also significantly improve adherence to core quality measures and evidence based care, optimize resident education, and improve relationships between providers [4].
- Increased inclusion of non-physician providers and encouragement of open communication between all providers during decision making processes on rounds are associated with decreased adverse event rates [5].

Rounds vary widely between ICUs and between ICU providers but standardization can help:

- Structured interdisciplinary rounds, which create mandatory stopping points for nursing input, are associated with early recognition of patients at risk for adverse events, as well as improved communication, higher ratings of teamwork culture, and possibly increased nurse retention [6-9].
- Success in standardizing rounds has previously been demonstrated by a PICU team at a major academic center through the lean-inspired development of structured rounds which ultimately lead to decreased time spent rounding on each patient as well as decreased healthcare associated infections, LOS and mortality [10].

OBJECTIVES

- To understand the process of rounding in BIDMC ICUs
- To utilize objective and subjective data to identify inefficiencies and suboptimal processes in rounds
- To build a team of frontline staff and test interventions to address identified suboptimal processes
- To disseminate a simple, flexible, effective, and easy to implement intervention to all BIDMCs ICUs
METHODS

Our methods were developed using Lean principles, which prioritizes engaging ICU frontline staff to identify problems and create solutions to optimize rounds and patient care.

1. **Fishbone diagram** was displayed daily in each ICU for one month: “Barriers to efficient rounds promoting optimal patient care, staff communication and satisfaction.” Staff were asked to fill the fishbone diagram with specific concerns or examples of issues leading to suboptimal rounds in their ICU.

2. Based on the results of this feedback, an 18-question survey was designed to further elucidate the identified themes. Survey questions investigated themes around presence on rounds, barriers to being present on rounds, inclusion of non-MD providers, inclusion of patients and families, interruptions, noise level, protection of patient privacy and development and communication of the plan of care.

3. The basic structure of rounds in each ICU was mapped and then trained nurse observers conducted 120 direct observations of rounds across the seven ICU types (MICU, SICU, Trauma SICU, CCU, CVICU, Finard ICU).

Data was then informally analyzed for trends and themes for presentation to a large group of frontline staff who would then be involved in developing and driving interventions in their home units to address identified problems.

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**Data Collection**

Fishbone data used to inform development of 18 question survey sent to 900 staff (236 respondents)

**Research and Baseline Data Collection**

Development of rounds observation tool

**Objective**

Baseline observations of rounds in each ICU

**Subjective**

Fishbone Diagram (free text data)

**What is a Fishbone Diagram?**

A Fishbone diagram is used to brainstorm and identify the potential causes of a problem. The Fishbone diagram is also known as an Ishikawa diagram, named after its creator, a quality control statistician. You can use this visual aid to rank alternatives and to measure improvement.

1. **How do I use it?**
   - **Ishikawa diagram:** A Fishbone diagram is used to brainstorm and identify the potential causes of a problem. The Fishbone diagram is also known as an Ishikawa diagram, named after its creator, a quality control statistician. You can use this visual aid to rank alternatives and to measure improvement.

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**INTERVENTION DEVELOPMENT**

- **Reviewed** reason for action, patient/family perspective, Lean principles and subjective and objective baseline data
- Convened group of 30-40 multidisciplinary frontline providers (RN, PA, NP, MD, PT, RT, PharmD, PCA, Social Work)
- Divided into 3 groups: each task with tackling a themed group of problems
  1. Organization of rounds: Ordering, minimizing distractions, and meeting standards of care
  2. Presence and contribution on rounds
  3. The plan of care: communication, understanding and coordination
- Each group took their list of individual problems from the problem list and plotted them on an impact difficulty matrix (plot impact of fixing a problem against the difficulty of fixing that problem, with the goal of identifying high impact, low difficulty problems for intervention)
- Each group selected a high impact, lower difficulty problem to further explore with an experimental intervention tool.
  - Used tool to dissect the impact, potential solution, and impact of the proposed solution
- PDSA cycles (rapid experiments) to refine final intervention with input from frontline staff
  - Met frequently in groups to review data and refine interventions
  - Met again as large group to review data and formulate final intervention to be rolled out across all ICUs
- Rolled out across all ICUs, then preformed post intervention subjective and objective data collection

**Impact Difficulty Matrix**

<table>
<thead>
<tr>
<th>High difficulty</th>
<th>Low difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem</td>
<td>Impact</td>
</tr>
<tr>
<td>1. Complex patients</td>
<td>1. Tasks to be done and by whom not clear</td>
</tr>
<tr>
<td>2. Lack of information from primary or consulting teams</td>
<td>2. Orders entered or changed without telling RN</td>
</tr>
<tr>
<td>3. Delay in communication of plan to nursing</td>
<td>3. No clear time for RN to register opinion or concerns about plan</td>
</tr>
<tr>
<td>4. Care plan unclear to team</td>
<td></td>
</tr>
</tbody>
</table>

**Final Intervention Components**

Preliminary data from rapid experiments helped inform a simple 3 part intervention for roll out into all 7 units:

1. The overnight resident will write a predetermined order of rounds on the white board (patient census board) before rounds. He or she will incorporate RN input, patient acuity, and new patient status into selection of the order.
2. There will be a designated hard stop for RN input at the end of the patient presentation and before the patient presentation in which the RN will be asked if she or he has any questions, concerns or information to add.
3. There will be a summary of the major actionable items in the plan of care at the end of rounds on every patient performed by the presenting resident.
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RESULTS

Pre and Post Intervention Presence and Participation

<table>
<thead>
<tr>
<th>Pre intervention</th>
<th>Post intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order of rounds communicated before rounds</td>
<td>64%</td>
</tr>
<tr>
<td>Nurse present whole time</td>
<td>66%</td>
</tr>
<tr>
<td>Nurse participated during presentation</td>
<td>40%</td>
</tr>
<tr>
<td>Nurse participated during plan</td>
<td>33%</td>
</tr>
</tbody>
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Figure a: Objective Observational results. Pre intervention N=120 individual observations of patient rounds and post intervention N=292. *p<0.0001, **p=0.0001. Figure b: Post intervention analysis of content of RN contributions. N=228 and N=202 respectively.

Pre and post intervention survey results: All providers

<table>
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<tr>
<td>0%  10%  20%  30%  40%  50%  60%</td>
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<tr>
<td>I am notified of the order of rounds before rounds begin.</td>
</tr>
<tr>
<td>I am notified when rounds begins on my patient(s).</td>
</tr>
<tr>
<td>I am present for the entire rounds process on my patient(s).</td>
</tr>
<tr>
<td>The plan of care is clearly developed during rounds.</td>
</tr>
<tr>
<td>A clear plan of care is communicated to the entire team at the end of rounds.</td>
</tr>
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<td>My input during rounds is respectfully considered</td>
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Figure a: Analysis of survey data from all responding providers pre and post intervention. Pre-intervention N=236 and post intervention N=203. Figure b: Analysis of survey data from all responding providers who identified themselves as RNs. Pre-intervention N=107, post intervention N=91. *p<0.05. **p<0.05

RESULTS CONTINUED

Pre and post intervention survey results: RN

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In conclusion our study has demonstrated frontline-provider driven culture shift in 7 heterogeneous ICUs with a simple three-step intervention. By mandating a degree of standardization of organization and participation during rounds, we set expectations for inclusion and interdisciplinary closed-loop communication. Though this is initially scripted into rounds, over time this results in new generations of trainees adopting these expectations as culture, moving ICU teams toward teamwork that promotes patient safety.

ACKNOWLEDGEMENTS

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REFERENCES