

A Resident-led PICU Morbidity and Mortality Conference

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HARVARD MEDICAL SCHOOL



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EXCEPTIONAL CARE. WITHOUT EXCEPTION.

Background

- Morbidity and mortality conferences (MMCs) are traditional educational forums focused on evaluating care and management within a department
- Recent reports suggest that structured MMCs are useful for assessing quality of care and patient safety
- Personal *mea culpa* → Identifying system level deficiencies in care

From a Residency Perspective

- MMCs can provide an opportunity to address Practice-based Learning and Improvement and Systems-based Practice competencies
- Variation in resident involvement and role in residency education
 - Resident focused vs. non-resident focused, residents as active participants versus residents as non-participants
- Unique learning opportunity: Patient Safety and Quality
 - How does one approach learning from safety events, what is the purpose at the Departmental level?

A Win-Win

- We created a monthly resident-led MMC as part of the Pediatric Intensive Care Unit (PICU) rotation at the Boston Medical Center that allows for systematic review of adverse events and increases resident understanding of Patient Safety and Quality
- Questions we started with:
 - Can residents appropriately identify and perform chart review of adverse events?
 - Can residents identify real solutions from care delivery problems?
 - Can residents add value to the review process?
 - How does this affect their self-reflection and understanding of errors made at the personal level and at the system level?

Clinical Setting

- 6 bed, Level 3-PICU in an urban tertiary care center
- MD Providers:
 - Attendings, change weekly
 - Senior Residents, 2 per 1 month rotation
 - No fellows

Curricular Objectives

- Recognize potential sources of error in pediatric critical care medicine and consider systems-based approaches to avoiding future errors.
- List the most common causes of preventable harm in the Pediatric ICU setting.
- Describe the role of latent conditions, contributory factors, and active failures in organizational safety.
- Identify care delivery problems and system deficiencies and work with a multidisciplinary team to address those issues.

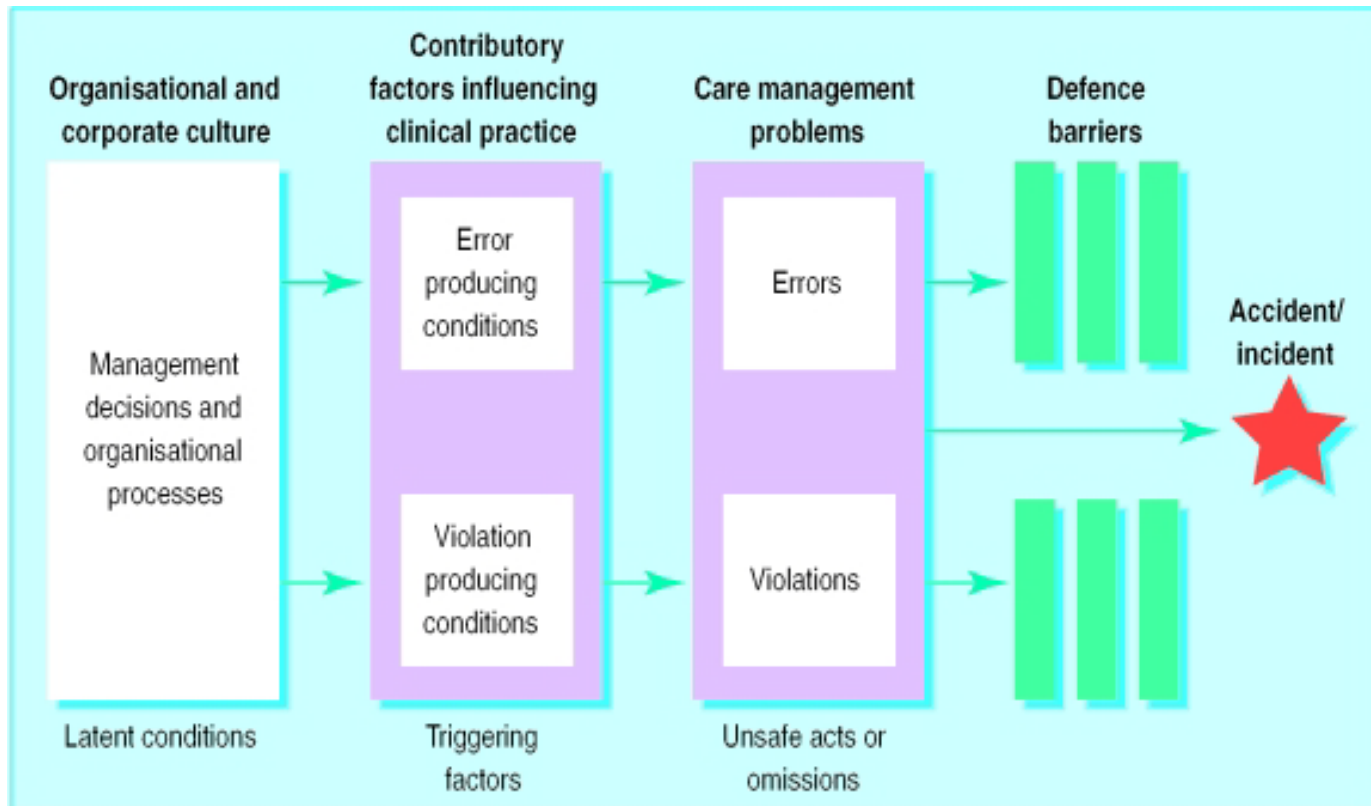
Curricular Design

- PICU Safety Didactic: Review background information on leading causes of preventable PICU morbidities and mortalities and theory of organizational safety
- Adverse Event Intake Form: Chart review tool used by senior residents if case meets screening criteria
- MMC Presentation Template: Presentation template used by senior residents for Morbidity and Mortality multidisciplinary review
- MMC Format: PICU Director, Director of Patient Safety and Quality, PICU Nurse Manager, Pediatric Pharmacy Specialist, Rotating Senior Residents

Measures

- All mortalities
- Unplanned extubations
- Pediatric code blue calls/cardiac arrest
- All hospital acquired infections (UTI, VAP, BSI)
- 24 hour PICU readmissions
- Adverse Events Voluntary Reports

Safety Event Framework



Figure

Model of organisational causes of accidents (adapted from Reason⁹)

[BMJ. 2000 March 18; 320\(7237\): 777-781.](#)

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Care Delivery Problems

- Active Failures=Care Delivery Problems
 - Actions/Omissions by members of staff
 - Have following characteristics
 - Care deviated beyond safe limits of practice
 - Deviation had at least a potential direct/or indirect effect on eventual adverse outcome
- Contributory Factors
 - Many factors may contribute to single CDP

Contributory Factor Types

| <u>Factor types</u> | <u>Influencing contributory factors</u> | <u>Examples</u> |
|---|--|--|
| Patient factors ↓ | Condition (complexity and seriousness); language and communication; personality and social factors | Distressed patient or language problem |
| Task factors ↓ | Task design and clarity of structure; availability and use of protocols; availability and accuracy of test results | Non-availability of test results or protocols |
| Individual (staff) factors ↓ | Knowledge and skills; competence; physical and mental health | Lack of knowledge or experience of specific staff |
| Team factors ↓ | Verbal communication; written communication; supervision and seeking help; team structure (consistency, leadership, etc) | Poor communication between staff |
| Work Environment factors ↓ | Staffing levels and skills mix; workload and shift patterns; design, availability, and maintenance of equipment; administrative and managerial support | High workload, inadequate staffing, or limited access to essential equipment |
| Organisational and management factors ↓ | Financial resources and constraints; organisational structure; policy standards and goals; safety culture and priorities | Lacking senior management procedure for risk reduction |
| Institutional context | Economic and regulatory context; national health service executive; clinical negligence scheme for trusts | Inconsistent policies, funding problems |

Safety Event Investigation Process

Determine Incident and
Chronology of Event



Identify Care Delivery
Problems



Identify Contributory
Factors



Make
Recommendations and
Develop Action Plan

Adverse Event Intake Form

BOSTON MEDICAL CENTER - PICU M&M INTAKE FORM

****Confidential- For Peer Review ONLY****

Patient Summary:

Patient Name:

MRN:

Admission Date:

LOS:

Attending Physician: (for the date of incident)

Incident Date:

Time: (or Shift)

Mechanism of Death:

Summary of Clinical incident:

Contributory Factors:

Clinical condition, communication, social factors:

Work Environment (staffing, skills, workload, shift, equipment):

Team (communication, leadership, structure):

Task (avail/use of protocols, avail/accuracy of test results, decision making aids):

Organizational Management and Institutional Context Factors (structure, policy, safety culture, priorities):

Example Cases

- CASE #1: 10x dosing error in Methadone Dosing
 - Guideline revised, CPOE calculator created as part of sedation order set and implemented
- CASE #2: Unplanned extubation in patient s/p brain tumor resection
 - Process defined for improved communication with PICU Attending, Surgery, and Anesthesia per post-OR plan regarding timing of extubation
- CASE #3: 14yo male admitted with pneumonia with acute respiratory failure and emergent intubation by anesthesia.
 - Code blue reviewed, system deemed safe, no changes identified

Conclusions

- Residents are able to appropriately identify care delivery problems and contribute to systems based solutions for PICU associated adverse events during a 1 month rotation
- Resident leadership of PICU MMCs presents a novel approach to actively address and assess the ACGME competencies of Practice-based Learning and Improvement and Systems-based Practice.

Next Steps

- Formal Evaluation of curriculum