Characteristics of an ad hoc trauma resuscitation team and patient outcomes
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LIVE eye Video Review: An analysis of clinician involvement
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Agenda

I. LIVE eye: SICU Study Overview

II. Characterization of *ad hoc* team: Trauma Bay Study Overview

III. Lessons Learned
LIVE eye Video Review: An analysis of clinician involvement

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LIVE eye: SICU Study Overview

- Using video in SICU rooms to evaluate the extent of clinician’s interaction with nurses, patients, and family members
Too many TLAs*

ICU
Intensive Care Unit

SICU
Surgical

MICU
Medical

NICU
Neurosurgical

Other specialties
Neonatal

*Dr. Rob Burns
What is a SICU?

- Area where patients who need constant attention for life threatening conditions are cared for
  - SICU → pre- and post-operative recovery for critical patients
  - Multi-disciplinary team

Beginnings stem from advancements in critical care:

- Patient triage, infection-control
- Artificial ventilation & its automation
- Resuscitation, anesthesiology
Research Process*

*Simplified

1. Identify Study
2. Define Study
3. Study Preparation
4. IRB & other necessary approvals
5. Participant Enrollment
6. Data Collection
7. Peer-review
8. Publish
9. Data Analysis

We are here
Aims of Study

- Video record events (procedures/emergent) when a Nurse Practitioner or Physician is needed: e.g. central line
- Part of other observational studies — use same video
- Analyze extent of clinician interaction
- Based on latest research literature, determine if factors that could affect the following are present:
  - Links between communication and patient outcomes & satisfaction\(^2,3\)
  - Links between nurses’ and other co-workers’ job satisfaction, collaboration, and decision-making inclusion; hospital hierarchies\(^4,5,6\)

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Study Population & Data Collection Methods

- HUP Rhodes 5 SICU care providers and patients
  - All are consented to participate
- Use existing eICU system with real-time patient monitoring
- Bedside nurse hits eICU button in room
  - UPHS eICU team receives request
- Receive phone call from eICU to commence
- Record live-video through eICU room cameras and real-time patient vital signs w/ secure computer
Methodology

Checklist to evaluate the extent of clinician’s interaction:

- Reason for clinician request: e.g. respiratory issues
- Did eICU team intervene?
- If and how the clinician speaks w/ nurse, patient, & visitors
- What the clinician does: e.g. performs physical examination
- If patient has specific intervention, does the clinician evaluate it: e.g. patient has a central line, clinician does not evaluate it
- Whether and to whom does the clinician verbalizes a plan of action?
What does it look like?
Significance

Methodology

- New use of video analysis in ICU patient rooms
- Previous studies focus on interactions outside of patient rooms\(^7\), non-emergent activities (ICU rounds)\(^8\), or in the trauma bay\(^9\)

Topic

- Provide insight on the extent of clinicians interaction with nurses, patients, and family members — real behaviors
- Patient/family satisfaction;
- Patient/family anxiety\(^10\)
- Other observations while study is in progress

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Characteristics of an *ad hoc* trauma resuscitation team and patient outcomes

**Mentor:**
**Dr. Maureen McCunn**
*HUP Department of Anesthesiology and Critical Care*
Trauma Bay Research Overview

- Identify characteristics and qualities of high functioning teams in the trauma bay

- Then, whether they affect patient outcome

- Using two instrument-questionnaires
What is unique about work in the trauma bay?
Characteristics of Trauma Bay

- Part of a Trauma Network
  - PENNStar Flight program
- In-house trauma surgeons & ED physicians, trauma nurses, & others
- Most seriously injured patients
  - Wide range: from car crashes to assaults
- High intensity environment
- Access to multi-disciplinary teams
  - e.g. Anesthesia, orthopedics, neurosurgery
Research Process

- Identify Study
- Define Study
- Study Preparation
- Data Collection
- Participant Enrollment
- IRB & other necessary approvals
- Data Analysis
- Peer-review
- Publish

* Simplified

We are here
Aims of Study

- Determine how *ad hoc* team functioning and team dynamics affect patient outcome

- Pilot Study: Identify characteristics of high functioning teams in the trauma bay
  - Subgroup analyses of responses of different team member positions: nurse, resident, fellow, attending

- Long-term: Develop a training model for physician, nurse, and student trauma team members
  - To foster collaboration and teamwork\(^6,^{11,12,13}\), and to improve patient outcomes\(^2,3\)

References:


Model for Study

- An ad hoc crisis group:
  - Team comes together for this one time, interacts in a high-intensity environment, then disperses

- Seek to determine the characteristics of this group that are not part of a fixed team

- Trauma evaluation is measurable since:
  - Everyone should know their role and everyone else’s role.
Specific Aim #1 & Background

- To assess the views of collaboration of trauma team members
- Better patient outcome has been associated with better nurse-physician collaboration\(^2,3\)
- Pilot Study showed a disparity between team members (nurses, attendings, fellows, residents) in perceived composition of the trauma team (McCunn)
- The role a team hierarchy\(^6\) plays in the functioning of a trauma team and patient outcome

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Methods to Evaluate Aim #1

- Assessment Tool: Collaboration and Satisfaction About Care Decisions Instrument (CSACD)
  - Has been used to measure physician-nurse collaboration and satisfaction
  - Originally used in the ICU → has been adapted for use in the trauma bay
  - Validity and reliability metrics have been established\(^{13,14}\)

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Wheelan’s Integrated Model of Group Development

- Implies a team has been working together for an extended period of time
- Gradual linear development through 4 stages
- Stage 1: Dependency and inclusion
- Stage 2: Counterdependency and fight
- Stage 3: Trust and structure
- Stage 4: Work
Specific Aim #2 & Background

- To determine if ad hoc trauma teams exhibit the four stages of group development
  - If teams exhibit the same developmental characteristics of fixed groups
- One marker of a high-functioning group → common goal
- Groups at last stage of development experience a time of intense team productivity and effectiveness
  - Focus its energy on goal achievement and task accomplishment
Methods to Evaluate Aim #2

- **Group Development Questionnaire (GDQ)**
  - Integrated Model: Groups move through stages of development as they continue to work together
  - Measures members’ perceptions of clarity of group goals, individual goals, effectiveness of conflict-resolution, and other quantifiable small group characteristics
  - Extensively tested for both validity and reliability; used in many industries including healthcare\(^7\)

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Subject Population — Recruitment

- Population: Trauma team members
  - Nurses, attendings, fellows, residents, and ED techs
- Site: Hospital of the University of Pennsylvania trauma bay
- By completing survey, a member consents to participate in this research protocol
- Team member and group demographics will be collected along with each instrument
Methods of Data Collection

- Team members are asked to fill questionnaire following a resuscitation.
- Responses are collected with the other team members in the group for the respective resuscitation.
- Subjects may participate in more than one survey if they are a member of multiple resuscitation teams.
- Each member will be given a Participant Information Sheet.
  - By completing survey, a member consents to participate in this research protocol.
Significance

Methodology

- 1st time either Collaboration and Group Development Questionnaires are used in Trauma Bay teams

Patient Care

- High stakes environment: team leadership, communication, and collaboration → vital
- Characteristics of team with better outcomes
  - Develop training model for future care givers
Trauma Bay Study—Summary

- The composition and high-intensity characteristics of trauma teams create a unique environment for group dynamics & development.

- Using two separate instruments to:
  1) Assess views of collaboration of trauma team members
  2) Determine if ad hoc team exhibit the four stages of group development

- Studies will elucidate the characteristics of trauma resuscitation teams and patient outcomes
  - Help develop a research-based training model for trauma bay nurses, physicians, technicians, and students
Lessons Learned

● Role of camera: empowering or disempowering for participants
  ● Importance of the way video is incorporated in a hospital setting
  ● Video: capture *actual* behavior rather than simplified behavior
  ● Fine line between video use as a surveillance and objectification method, and use as quality improvement

● Difficulty of administering questionnaires in trauma bay
  ● Difficulties of their repeated use

● Patience with the research process
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References


