In-Situ Clinical Simulation and the Acute Stroke:

A method to educate and improve quality of care of the Acute Stroke Patient

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Stroke Symposium
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Objectives

• Describe the best practices for ensuring optimal transfer of knowledge using in situ clinical simulation as an instructional methodology.

• Identify the benefits of utilizing in situ simulation in the training of hospital staff who are confronted with a patient experiencing symptoms of an acute stroke.

• Describe the application of utilizing in situ clinical simulation in the identification of opportunities for performance improvement in the care of the acute stroke patient.
Why Clinical Simulation?

“Today in the United States, the professional health workforce is not consistently prepared to provide high quality health care and assure patient safety, even as the nation spends more per capita on health care than any other country.”
In-Situ Clinical Simulation
Educational Benefits

- Adult Learning Theory (David Kolb)
- Training efficiency
- Opportunities for clinical teams to rehearse infrequent and/or high risk scenarios in a safe and realistic environment.
- Individual participant technical proficiency is improved.
- Better transference
- Relevance
- Ability to problem solve in the clinical environment
- Reinforce their skills

Patterson, M., Blike, G., Nadkarni, V. In Situ Simulation: Challenges and Results. 2008
Team Building

Improved interdisciplinary collaboration

Improved interdisciplinary communication

System Analysis

Ability to study “latent conditions”

- Mostly hidden workplace factors that become the central cause of or an exacerbating factor in adverse patient outcomes.

Can be a catalyst for change in clinical care systems and improved clinical outcomes.

Challenges

- Dynamic
  - Competing clinical demands (patient acuity and patient volume)
  - Medical Staff limitations

- Labor Intensive for Simulation Staff
  - Time
  - Lots of “moving parts”

- Patient Perceptions
- Performance Anxiety
- Participant’s motivation
Patient Safety

- Staff to Patient Ratio
- Awareness of hospital wide emergencies
- Facilitators/Evaluators
- Nurse Supervisor/Charge RN/Nurse Manager
- Training equipment
Logistical Planning

- Don’t underestimate the time
- Buy In
- Scheduling
Standardized Patients

- “A person who has been carefully coached to simulate an actual patient so accurately that the simulation cannot be detected by a skilled clinician”  H.S. Barrows

- Cost
- Preparations
- Safe word/card
- Signaling

- Golden Rule: “Do not volunteer information and do not interrupt a participant during an encounter.”

Cantrell M, Deloney L, Integration of standardized patients into simulation. Anesthesiology Clinics 2007; 25.2
Methods of Success

- Pre-Brief
- Buy-In from stakeholders
- Realistic Scenario for your participants
- Review by Subject Matter Experts (SMEs)
- Facilitation
Methods of Success: Pre-Brief

- Information
- Thank You
- Goals
- Rules of Simulation
- Questions/Concerns
- Tone
- Delivery
Methods of Success: Buy-In

- Buy-In from stakeholders
  - With stakeholder involvement, implementing change based upon data collected from the simulation is relatively easy.
Methods of Success: Scenario

- Realism
- Utilizing Subject Matter Experts (SME)
- Preparation
  - Review of Best Practices
  - Review of facility’s policies and procedures
Methods of Success: Facilitation
Methods of Success: Debriefing

• A facilitator-led participant discussion of events, reflection, and assimilation of activities into the participants’ cognition to produce long-lasting learning.
Skills Needed Successful Debrief

- Subject Matter Expert
- Listen!
- Open-Ended Questions
- Non-Judgmental
- Mediate

Structure of the Debrief

- Thank You!
- Review Goals
- Review Rules of Debriefing
  - Confidentiality/Privacy
  - Constructive Criticism
- Sandwich method
- Incorporate Objective Data
- Redirect the conversation to remain focused on goals of the simulation.

Methods of Success: Reporting

- “It is prudent to establish a mechanism to have critiques that identify and forward extreme competency issues and/or system flaws into existing QA systems that are structured to track threat information and take corrective action.”

- Need to collaborate with hospital patient safety leaders and risk managers.
Program Utilized by Washington Adventist Hospital
What did we want to accomplish?

- Maryland Institute of Emergency Medical Services Systems (MIEMSS) Stroke Center Designation
  - Are we prepared?
  - What needs to be improved?
  - Have changes to the Stroke Protocol been implemented successfully?
General Program Statistics

- Two 90 minute simulations completed.
- A total of 37 participants documented.
- Performed on a weekday and weekend day shift.
- Followed a patient through three separate patient care areas within the hospital.
Several Months Prior:
CVA Walk-Thru
**Patient: Exhibiting signs of Acute Ischemic Stroke:** slurred speech and Left sided weakness.

S+S identified by Primary RN  
RRT is activated (No specified instructions needed for Operators)  
RRT Responds

Time of RRT "called" overhead is documented  
RRT IDs Stroke S and S and notifies Intensivist

Primary and RRT RN prepare pt for tx to CT suite.  
Unit Secretary Orders Non-Contrast Head CT.

Calls CT Tech and reads script.  
Unit Secretary Notifies RN Supervisor for ICU bed.

Calls RN Supervisor and reads script.  
CT tech reads script to Radiologist.

Radiologist notifies Intensivist results of CT scan.  
No evidence of hemorrhage, mesial, or abscess by cranial scan.

Pt transported to CT suite with Primary RN, RRT RN, monitor and O2 as needed.  
Pt moved to CT table, monitored appropriately.

CT tech will simulate for 3 min. acquiring head CT of pt, in that time CT tech will notify Radiologist.

Pt tx to 4300 ICU if bed available.

**Determined Pt is tPA eligible: Intensivist**

NIHSS completed by RN/MD  
Dysphagia Screen completed by RN

Obtain consent from Pt for tPA  
Administer tPA per stroke tPA protocol

Calculates tPA correctly

**Patient Care**

12 lead EKG  
Cardiac Monitoring

D-Stick  
Vitals q 15-30 min

2 Large Bore IVs  
Oxygen

Blood Draw
Several Months Prior: Logistical Prep

- Prior to the scenario build.
- After the scenario build.
Development of Scenario

- Preparation
- Development of the Scenario
- Determination of re-direction points.
- Review by SME.
One Week Prior:
Training of Standardized Patient
Day Of: Pre-Brief

Shift Change Script to be Read to Nursing Floor by the Nurse Manager/Charge RN

At some point during this shift we will be running a Mock Rapid Response training exercise. The exercise will use clinical simulation of a newly admitted ED patient onto our unit. For those of you who will be asked to participate in the training drill, you will be notified prior to meeting the “patient” in question. The goals of this training session are to identify areas that can be improved from a hospital wide, unit, and health care provider level. It is our hope that through this training exercise we will ultimately be able to increase our health care knowledge, and improve hospital response, therefore improving patient outcomes.

If you are asked to participate in this training exercise, know that your performance during the drill will be kept confidential. It is asked that you treat your “patient” the SAME way you would an actual patient. During the simulation if you have any questions at all, you will have a facilitator that will be available to you.

Your participation in this training exercise is vital to be able to properly evaluate current system processes. You are all thanked in advance for your participation, and I hope that each of you are able to learn something from the training provided to our unit today.
Meet Ms. Geraldine Wells
Scenario
Redirection
## Mock Rapid Response Simulation Drill
### Acute Stroke

<table>
<thead>
<tr>
<th>Facility:</th>
<th>Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>Time:</td>
</tr>
<tr>
<td>Manager:</td>
<td>Educator:</td>
</tr>
<tr>
<td>Facilitators:</td>
<td>Patient:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Event</th>
<th>Vital Signs</th>
<th>Pulse</th>
<th>B/P</th>
<th>Pulse Ox</th>
<th>Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Time (RN Arrives to room)</td>
<td>Vital Signs #1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RN identifies Signs/Symptoms of Stroke</td>
<td>Vital Signs #2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time RRT called (Overhead Announcement)</td>
<td>Vital Signs #3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Must be completed within 10 minutes of RRT activation</strong></td>
<td><strong>Vital Signs #4</strong></td>
<td><strong>[Overhead announcement]</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRT arrival time (within 10 minutes of call per policy)</td>
<td>Vital Signs #5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRT RN identifies Stroke Signs and Symptoms</td>
<td>Vital Signs #6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-Stick Completed</td>
<td>Vital Signs #7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRT RN notifies intensivist</td>
<td>Vital Signs #8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Must be completed within 30 minutes of RRT activation</strong></td>
<td><strong>[Overhead Announcement]</strong></td>
<td><strong>Must be completed within 60 minutes of RRT activation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Secretary orders CT and calls CT tech (time from form)</td>
<td>#PA eligible?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Secretary notifies RN Supervisor to get an ICU bed.</td>
<td>#PA Consent form signed?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIHSS completed by RN/MD</td>
<td>Dysphagia screen completed by RN?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient to CT</td>
<td>#PA calculated?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient on CT table (3 minutes pause for realism)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT Tech calls Radiologist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiologist calls intensivist</td>
<td></td>
<td></td>
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<tr>
<td>Patient transported back up to ICU bed.</td>
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</tbody>
</table>

Date: ________________
Pulse B/P Pulse Ox Temp
Start Time (RN Arrives to room) Vital Signs #1
RN identifies Signs/Symptoms of Stroke Vital Signs #2
Time RRT called (Overhead Announcement) Vital Signs #3
**Must be completed within 10 minutes of RRT activation** Vital Signs #4
[Overhead announcement]
RRT arrival time (within 10 minutes of call per policy) Vital Signs #5
RRT RN identifies Stroke Signs and Symptoms Vital Signs #6
D-Stick Completed Vital Signs #7
RRT RN notifies intensivist Vital Signs #8
**Must be completed within 30 minutes of RRT activation** [Overhead Announcement] #PA eligible?
Unit Secretary orders CT and calls CT tech (time from form) #PA Consent form signed?
Unit Secretary notifies RN Supervisor to get an ICU bed. NIHSS completed by RN/MD
Patient to CT Dysphagia screen completed by RN?
Patient on CT table (3 minutes pause for realism) #PA calculated?
CT Tech calls Radiologist
Radiologist calls intensivist
Patient transported back up to ICU bed.

Developed by Camie Bruhweiler Education Institute, Adventist Healthcare 2010
Data Collected

- Three evaluators
- Evaluator notes
- Debriefing notes
- Debriefing sheets
Debriefing: Verbal

1) Thanked each participant.
2) Reviewed the goals of the simulation.
3) Empowered participants.
4) Questions Asked
5) Debriefing Forms
**Debriefing Worksheet**

(Instructions: Please complete this worksheet and a facilitator will collect it from you at the conclusion of the training simulation.)

*Thank You!*

<table>
<thead>
<tr>
<th>Clinical Simulation Event</th>
<th>Mock Rapid Response: Acute Stroke Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>December 28, 2010</td>
</tr>
</tbody>
</table>

What worked well for patient care in this simulation?

What did you feel created a challenge to good patient care during the simulation?

Do you have any suggestions on how to improve patient care of the Acute Stroke Patient?

(Circle One)

<table>
<thead>
<tr>
<th>Have you completed basic training about the possible signs and symptoms of stroke?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Were you aware of the InPatient Stroke Process?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you feel this simulation was realistic?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did this simulation/information packet clarify the specific role you play during the care of the Acute Stroke patient? Will your practice change or be effected by what you learned in the simulation today?</th>
<th>Yes</th>
<th>Yes</th>
<th>No</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Thinking of implementing clinical simulation?? Some great resources:

- Society for Simulation in Healthcare; https://ssih.org/
- SimLearn: US Department of Veteran Affairs; http://www.simlearn.va.gov/SIMLEARN/index.asp
- Center for Medical Simulation: Harvard University; http://www.harvardmedsim.org/index.php
- TuPASS Germany: http://www.tupass.de/downloads/TuPASS_Scenario_Script.doc
- The Work of Elizabeth A. Hunt MD, MPH, PhD and Pamela R. Jeffries, DNS, RN, FAAN, ANEF

• www.ahrq.gov/qual/advances2/

• Patterson, M. Blike, G., Nadkarni, V. In Situ Simulation: Challenges and Results. 2008

• Maxson, P. Dozois, E. et al. Enhancing nurse and physician collaboration in clinical decision making through high fidelity interdisciplinary simulation training. Mayo Clinic Proceedings; vol 86.1. 2011


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• Moffett HE; Orr & Reno, PA. One Eagle Square, PO Box 3550, Concord, NH 03301-3550. Legal review for Dartmouth Hitchcock Medical Center.

• Bruhweiler, C. Summary Report Mock Rapid Response: Acute CVA requiring tPA Administration. 2010

• Jeffries PR. A framework for designing, implementing, and evaluating simulations used as teaching strategies in nursing. Nurs Educ Perspect 2005; 26:96-103

Bibliography: Images

- “To Err is Human: Building a Safer Health System” Institutes of Medicine
- Interventional Radiology: Mt Siani Medical Center
- Getty Images
- San Francisco Chronicle
- Bangs Ambulance Service
- www.society.ezinemark.com “Doctor’s in Istanbul”
- http://www.lifenets.org/malawi/blueprints.htm
- Microsoft Clip Art