Merging Education, Research, & Simulation Innovation at Intermountain Healthcare

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I. Marlene Summers, MEd, MSS, MSNED, RN

Disclosure Slide

Nancy A. Bardugon & I. Marlene Summers – employed by and partially sponsored by Intermountain Healthcare to attend 44th Biennial Convention

Deborah Morris – formerly employed by Intermountain Healthcare; currently employed by Blue Mountain Hospital. Partially sponsored by the Nu Nu Chapter to attend 44th Biennial Convention

None of these three presenters have commercial relationships or support that would create a Conflict of Interest.

Objectives

- Describe key events over the past decade that have resulted in rapid simulation growth, educational needs for patient safety, & evaluation of simulation facilitators throughout Intermountain Healthcare in Utah and Idaho.
- List two major patient safety issues identified through simulation.
- Identify the best person to conduct evaluations of simulation facilitators.

Creating Buy-in to Support Growth of Simulation

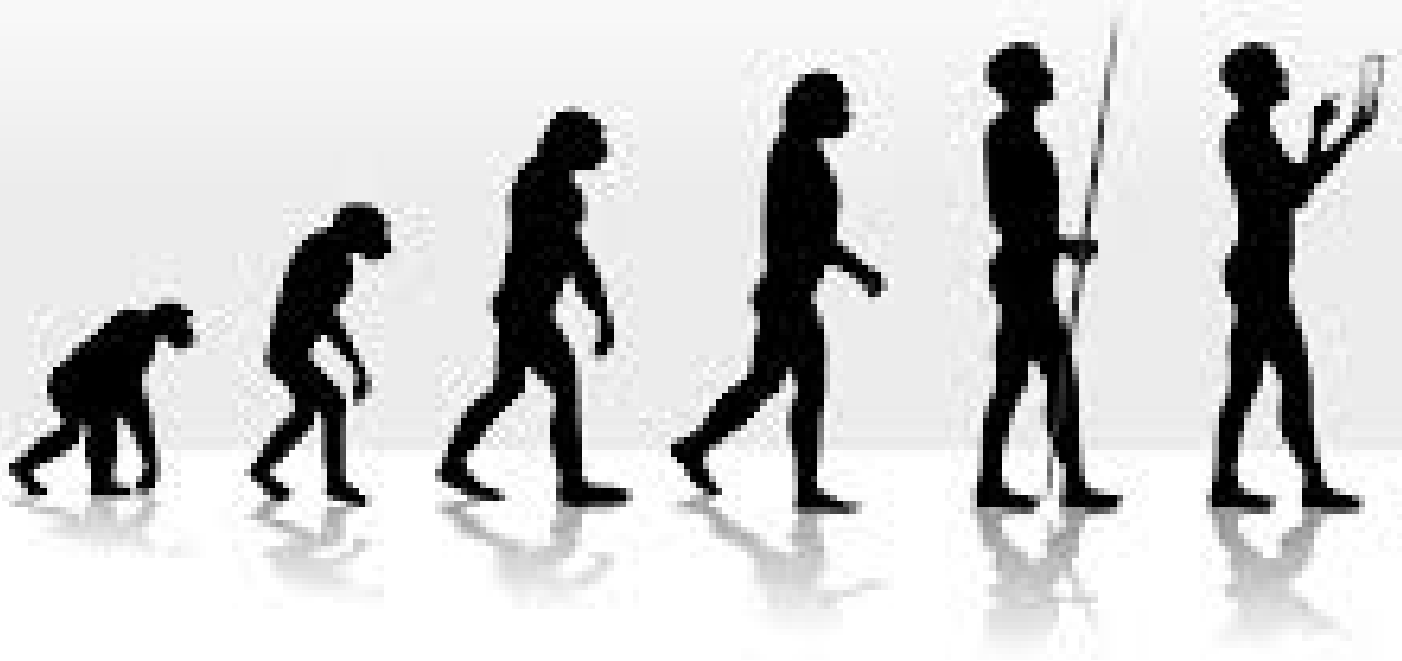
Nancy A Bardugon RN MSN CHSE
Intermountain Simulation Director

Objectives

- Provide history of simulation growth across large healthcare system
- Describe benefits of simulation training beyond improving staff education
- Provide examples of high profile programs marketed to increase support for simulation resources


Medical
Error

Evolution of Simulation at Intermountain



Intermountain Simulation Facilitator Course

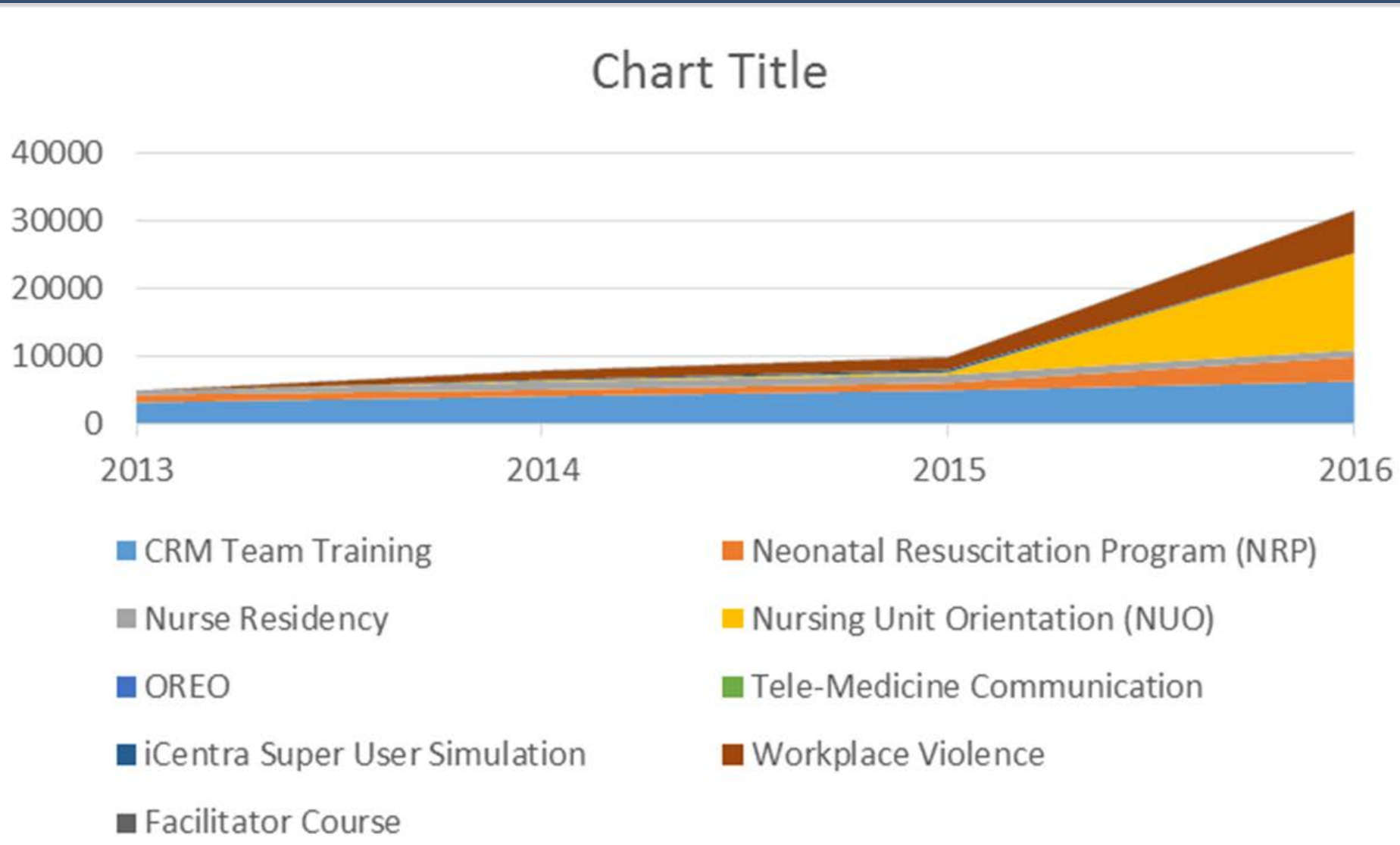


Chart Title
40000
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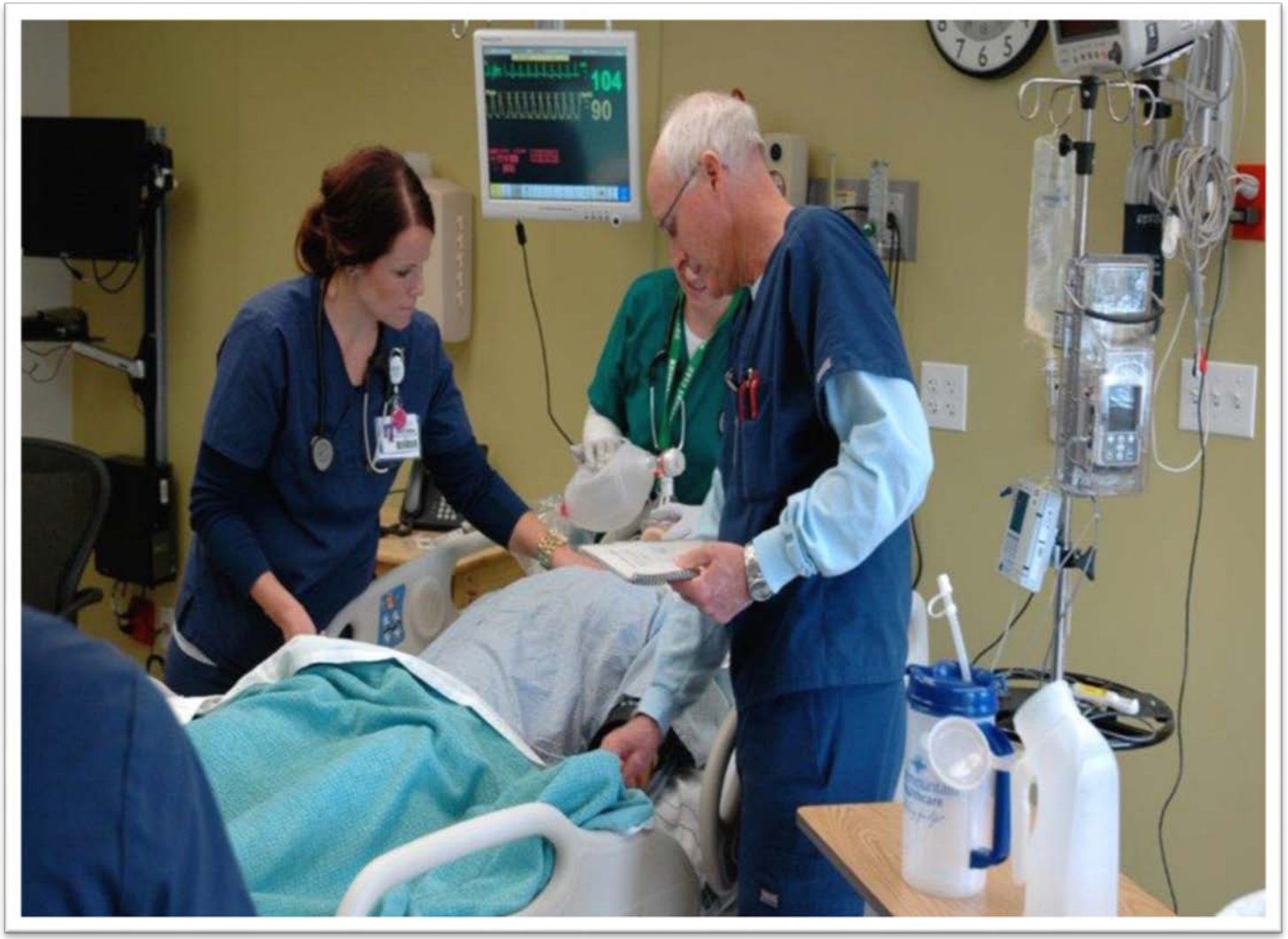
2013
2014
2015
2016
CRM Team Training
Neonatal Resuscitation Program (NRP)
Nurse Residency
Nursing Unit Orientation (NUO)
OREO
Tele-Medicine Communication
iCentra Super User Simulation
Workplace Violence
Facilitator Course

Simply providing education without ensuring quality and showing benefits and value is dangerous.


SHARE
YOUR
STORY

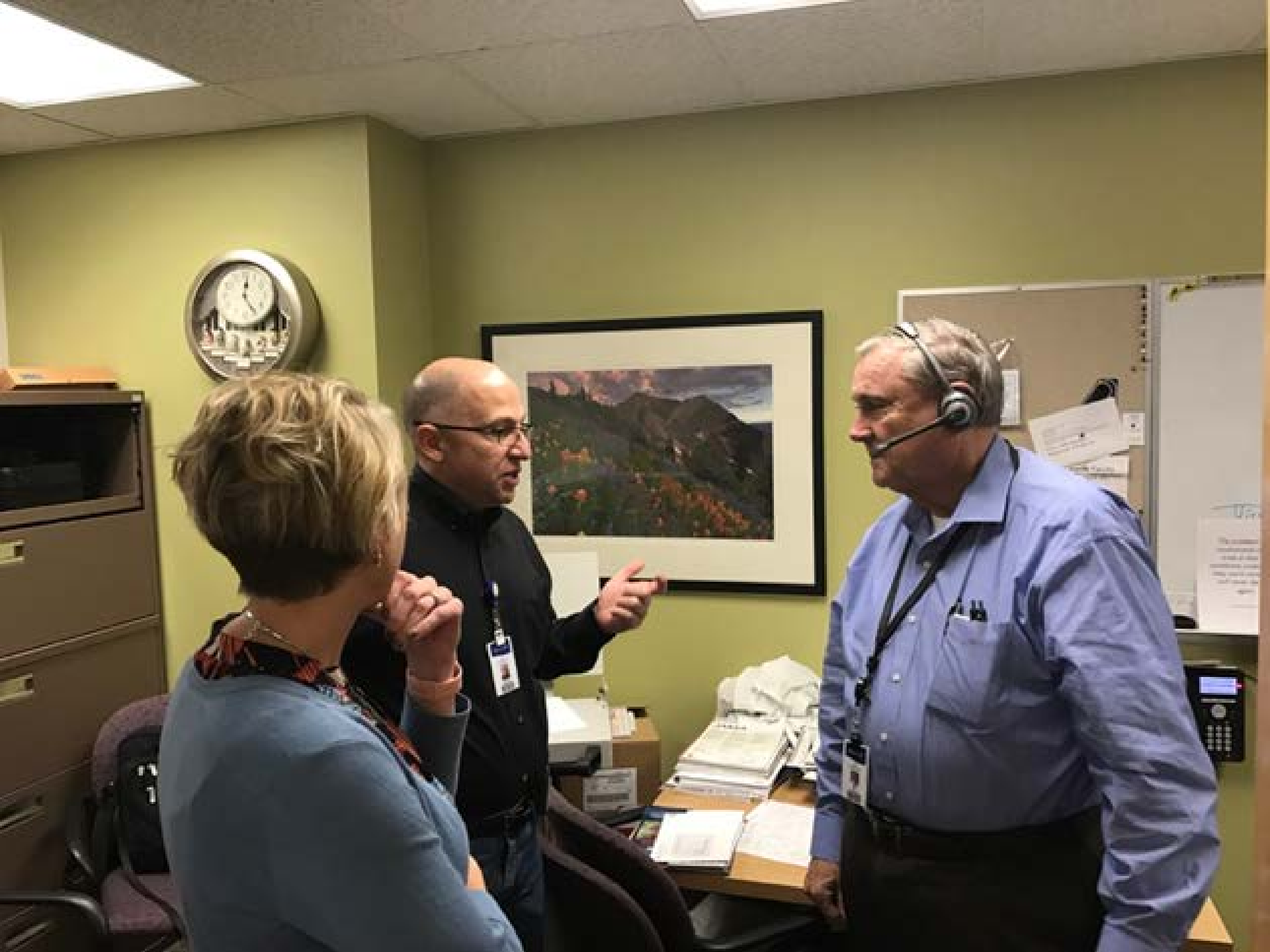
Testing Workflow

Novel Application of Simulation for Rapid Cycle Testing



Problem:

- Evidence supports that having a Rapid Response system in place to manage the deteriorating patient will help decrease the amount of Code Blue's in a hospital system.
- Evidence **does not** support that having a Rapid Response System decreases mortality.

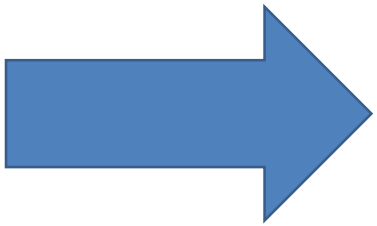


Goal of Rapid Response Simulation Project

- Bring together engaged representatives from across system
- Use simulation to rapid-cycle test/modify tools
- Refine the assessment/recording tool
- Integrate clinical IS systems to support standardization


Volume
TeleStroke Protoc
Neurological S
Epilepticus / Seizure A
Shock / Sep
Adult Initial Algorithm
Assess Patient

EMR Integration



Heart Failure Simulation (HFSimEd)

HFSimEd Simulation

- "Simulation is hands-on instruction & learning which is far better than being *told* what to do or *reading* what to do. You get to simulation and find out your own little habits that work against you. It was educational […] and much appreciated." HFSimEd Patient

Preliminary Results

Self-care of Heart Failure (Schfi) and Quality of Life (KCCQ)

- Positive trends are noted in self-care management, confidence and quality of life scores for patient's attending simulation training.

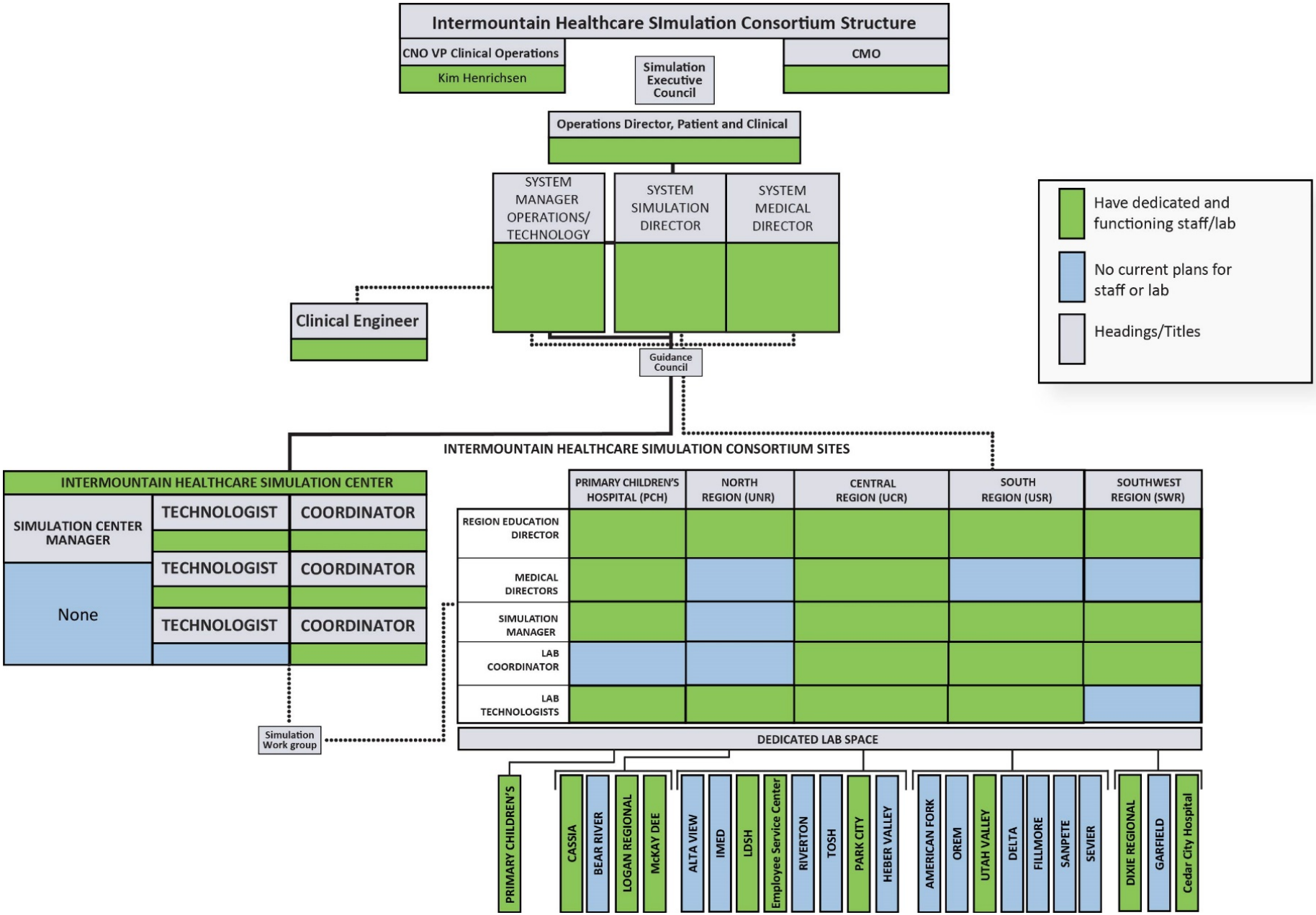
Healthcare Utilization

2 readmissions within 30 days for patients attending simulation

- Readmissions for reasons other than HF.
- No HF readmissions.

2 readmissions within 30 days for patients who missed simulation.

- One with HF readmission.


Intermountain Healthcare SImulation Consortium Structure
CNO VP Clinical Operations
Kim Henrichsen
Simulation Executive Council
CMO
Operations Director, Patient and Clinical
SYSTEM MANAGER OPERATIONS/ TECHNOLOGY
SYSTEM SIMULATION DIRECTOR
SYSTEM MEDICAL DIRECTOR
Clinical Engineer
Guidance Council
Have dedicated and functioning staff/lab
No current plans for staff or lab
Headings/Titles
INTERMOUNTAIN HEALTHCARE SIMULATION CONSORTIUM SITES
INTERMOUNTAIN HEALTHCARE SIMULATION CENTER
SIMULATION CENTER MANAGER
None
TECHNOLOGIST
COORDINATOR
TECHNOLOGIST
COORDINATOR
TECHNOLOGIST
COORDINATOR
PRIMARY CHILDREN'S HOSPITAL (PCH)
NORTH REGION (UNR)
CENTRAL REGION (UCR)
SOUTH REGION (USR)
SOUTHWEST REGION (SWR)
REGION EDUCATION DIRECTOR
MEDICAL DIRECTORS
SIMULATION MANAGER
LAB COORDINATOR
LAB TECHNOLOGISTS
Simulation Work group
DEDICATED LAB SPACE
PRIMARY CHILDREN'S
CASSIA
BEAR RIVER
LOGAN REGIONAL
McKAY DEE
ALTA VIEW
IMED
LDSH
Employee Service Center
RIVERTON
TOSH
PARK CITY
HEBER VALLEY
AMERICAN FORK
OREM
UTAH VALLEY
DELTA
FILLMORE
SANPETE
SEVIER
DIXIE REGIONAL
GARFIELD
Cedar City Hospital

"Growth is never by mere chance; it is the result of forces working together." *— James Cash Penney, founder, JC Penney*

References

Phillips, P.P., Phillips, J.J. (2007) *The Value of Learning: How Organizations Capture Value and ROI and Translate Them Into Support, Improvement and Funds.* San Francisco, CA: Pfeiffer

Improvement, I. f. (2012). IHI Improvement Map. Retrieved June 21, 2012, from Institute of Healthcare Improvement: http://app.ihi.org/imap/tool/#Process=f7a57213-3446-4539-befb-66f8269c67fb

Riegel, B., et al., *An update on the self-care of heart failure index.* J Cardiovasc Nurs, 2009. **24**(6): p. 485-97.

Spertus, J.A. and P.G. Jones, *Development and Validation of a Short Version of the Kansas City Cardiomyopathy Questionnaire.* Circulation: Cardiovascular Quality and Outcomes, 2015. **8**(5): p. 469-476.

Simulation Revelations for Research
Deborah J. Morris, BSN, RN

It all started with a business proposal…

Then we needed to find space

Logan Regional Hospital welcomes nurse simulation lab

After a year of planning and preparation, Logan Regional Hospital has opened its first simulation lab to give nurses a chance to practice procedures that occur with real patients.

"It puts you in a real-life setting and prepares you in a way that's more realistic and unlike anything that a textbook could teach you," says Lacy Anderson, RN, Logan Regional Hospital.

According to Deborah Morris, Central Education Program Coordinator, the simulation lab helps nurses learn to think critically while learning in a safe environment. The simulation lab is identical to an actual patient room so that nurses can have a realistic learning experience. Nurses can then take these skills and apply them to real patients.

Kylie Williams, RN, explains how she had a real patient who she was able to help because she had practiced a similar situation in the simulation lab:

"The simulation reflected a real-life situation I encountered," Kylie says. "I truly believe that we are making a difference in patient safety by practicing on mannequins instead of people."

Deborah has worked to implement the lab for the last year. The project began last December when she and her team approached Neil Perkes, CNO, during a Christmas dinner at the hospital.

Deborah and her team dressed a mannequin as a homeless man with a sign around his neck that read "I need a home," indicating how the simulation lab needed a permanent space. The mannequin was then left in Neil's office as a business proposal.

"Space is limited at the hospital," Deborah says. "We had to clean out rooms that were being used as storage, but we had a lot of help from many departments from the hospital."

With the success that the simulation lab has had with nurses, other units at the hospital, including ICU, the GI Lab, Mother/Baby Unit, and Cath Lab, are now using the lab to train staff.

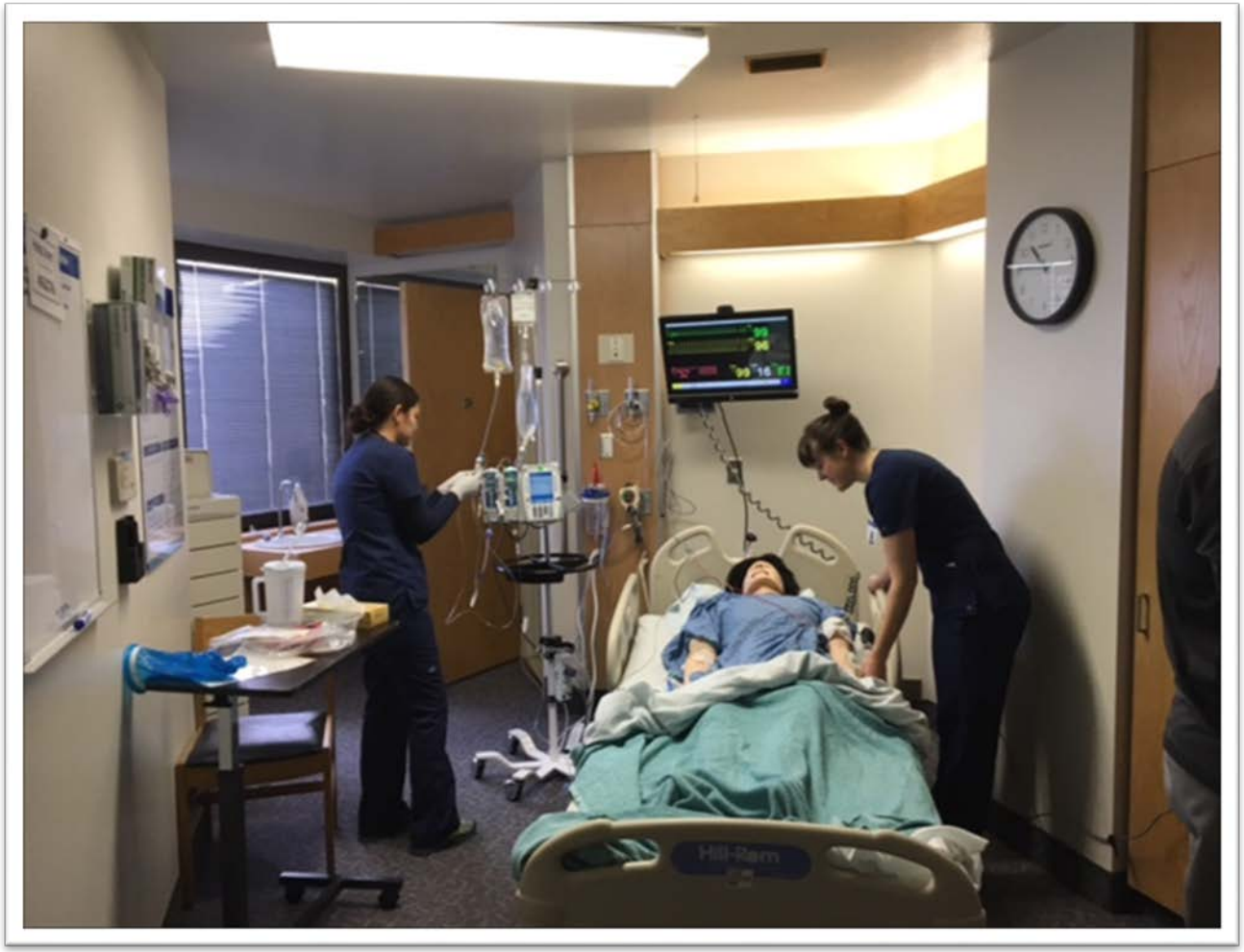
"I am a believer in the simulation lab," Deborah says. "I'm grateful that we were able to have the lab because we have seen so many benefits from it already."

"The simulation represented a real life situation I encountered. I truly believe that we are making a difference in patient safety by practicing on mannequins instead of people."

Kylie Williams RN

(Simulation Lab Grand Opening)

Simulation began with Nurse Residency



Next, we decided to try simulation with departmental skills days

❖**Knowledge gaps and process problems can be identified during simulation**

❖Airway management of the sedated patient in the GI lab became a concern after a simulation.

Nurses were relying on SPO2 monitoring to determine adequate ventilation.

End-tidal CO2 monitoring was discussed during debriefing after a simulation. Nurses were unfamiliar with technology but did have a module for it in their cardiac monitor.

A Nursing Research Grant was offered in our corporation.

Intermountain Healthcare

Nursing Research Fellowship Award 2015

Deborah Morris

In recognition of your commitment to nursing research at Intermountain Healthcare

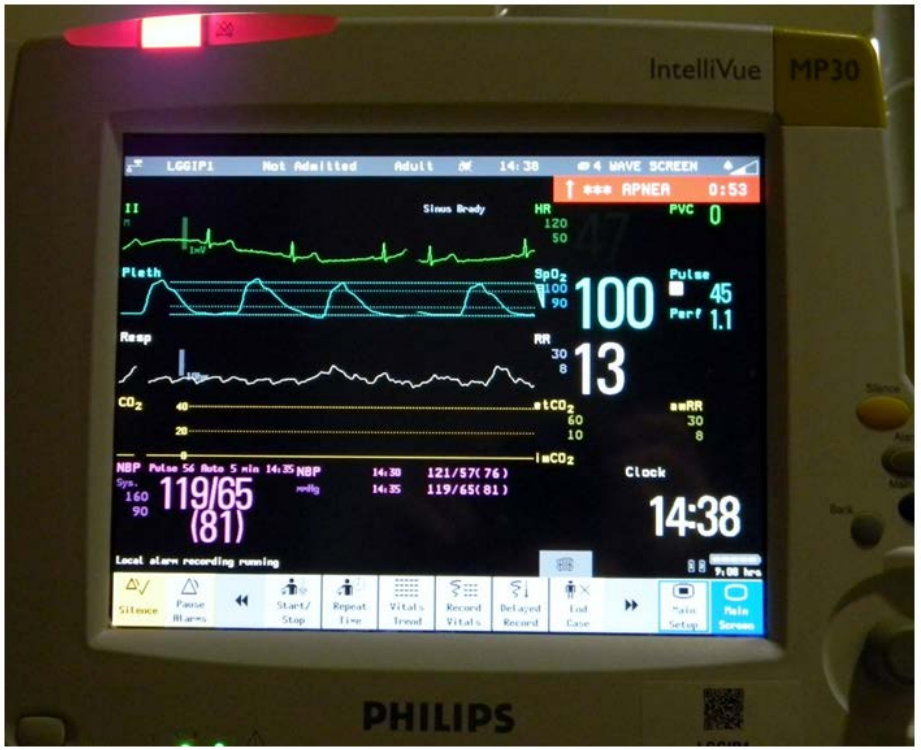
Bonnie Jacklin
Chief Nursing Officer
North Region

Kim Henrichsen
Vice President & Chief Nursing Officer
Intermountain Healthcare

Use of Continuous End-Tidal Carbon Dioxide Monitoring in Sedated Patients

By
Deborah Morris BSN, RN
Dani Larsen BS, RRT-NP


IntelliVue
MP30
LGGIP1
Not Admitted
Adult
14:36
4 WAVE SCREEN
*** APNEA 0:30
Sinus Rhythm
HR
61
PVC 0
Pleth
SpO2
96
Pulse 66
Perf 0.59
Resp
RR
10
CO2
etCO2
awRR
0
inCO2
NBP Pulse 56 Auto 5 min 14:35
NBP
14:30 121/57(76)
14:35 119/65(81)
119/65
(81)
Clock
14:36
PHILIPS
LGGIP1


IntelliVue
MP30
LGGIP1
Not Admitted
Adult
14:38
4 WAVE SCREEN
*** APNEA 0:53
Sinus Brady
HR
PVC 0
Pleth
SpO2
100
Pulse 45
Perf 1.1
Resp
RR
13
CO2
etCO2
awRR
inCO2
NBP Pulse 56 Auto 5 min 14:35
NBP
14:30 121/57(76)
14:35 119/65(81)
119/65
(81)
Clock
14:38
Local alarm recording running
Silence
Pause Alarms
Start/ Stop
Repeat Time
Vitals Trend
Record Vitals
Delayed Record
End Case
Main Setup
Main Screen
PHILIPS

40 sedated patients were studied during their GI lab procedure.

Observations of GI lab Staff and Researchers:

- Procedure rooms are dimly lit and the patient is covered with a blanket. Respiratory rate and effort is very difficult to see.
- ETCO2 detector stops working if oral or gastric secretions are on it.
- Oxygen saturation can stay above 90% for several minutes with apnea, especially with oxygenation.
- Movement of the scope can mimic respiratory waveform.

Additional Findings–Patient Safety Concerns:

Nurse has too many tasks:

- Gives medications
- Monitors vital signs
- Charts in computer throughout procedure
- Assists physician, holds pressure on abdomen etc.
- Airway management

Computer charting added a physical barrier to the nurse managing the airway and is an additional distraction.

Study Conclusions:

End-tidal CO2 monitoring is a tool that can alert the nurse to apnea and hypoventilation prior to oxygen saturation dropping. In our study, it alerted the nurse 97% of the time prior to oxygen saturation dropping.

Unable to support airway adequately with current process.

Recommendations:

- Use end tidal CO2 monitoring as a standard monitoring tool on all sedated patients.
- There needs to be one trained individual who is dedicated to supporting the patients airway **with no additional tasks**.

North Region nurses share their research on "unlocking best practice" at the Intermountain Nursing Research Conference

More than 200 nurses, nursing students, and nursing administrators participated in this year's Nursing Research Conference at Intermountain Medical Center, Doty Education Center in Murray. "This conference provided an amazing opportunity for nurses, nursing students, and leaders in nursing to network and to learn from one another while increasing their skills and knowledge on best practices in nursing," says Linda Hofmann, Intermountain's Assistant Vice President of Nursing.

Unlocking Best Practice was the theme of the conference and five healthcare organizations collaborated to provide this opportunity to attendees: Intermountain Healthcare, University of Utah College of Nursing, Sigma Theta Tau International Honor Society of Nursing, University of Utah Healthcare, and Veterans Administration Healthcare.

Kim Klinkowski, Surgical Services Director at Logan Regional Hospital, attended the conference. She says, "It's inspiring to see the amount of research people are involved with and how they seek to improve patient care. My colleagues did a study demonstrating positive outcomes related to the use of CO_2 monitoring in the GI lab. I was excited to see this study shared and recognized."

Deborah Morris, RN, BSN, (left) and Dani Larsen, RRT, (right) from Logan Regional presented their research work at the podium regarding GI patients and oxygenation during sedation.

About the North Region's GI lab research. The North Region was well represented by many participants, including Deborah Morris, RN, BSN, and Dani Larsen, RRT, from Logan Regional Hospital. Deborah and Dani presented their work on identifying hypoventilation in patients who are sedated for a procedure in the GI lab. Hypoventilation, or breathing at a slow rate, can occur during sedation because of increased carbon dioxide in the blood.

Through simulation with the GI lab in 2014, Deborah and Dani began investigating the ability of sedated patients to sustain adequate ventilation throughout a GI procedure, including while sedated and recovering from a procedure.

Currently, the GI lab at Logan Regional Hospital uses an oxygen saturation monitor to determine adequate oxygenation levels, but Deborah and Dani proposed that a CO_2 monitor is a better indicator of

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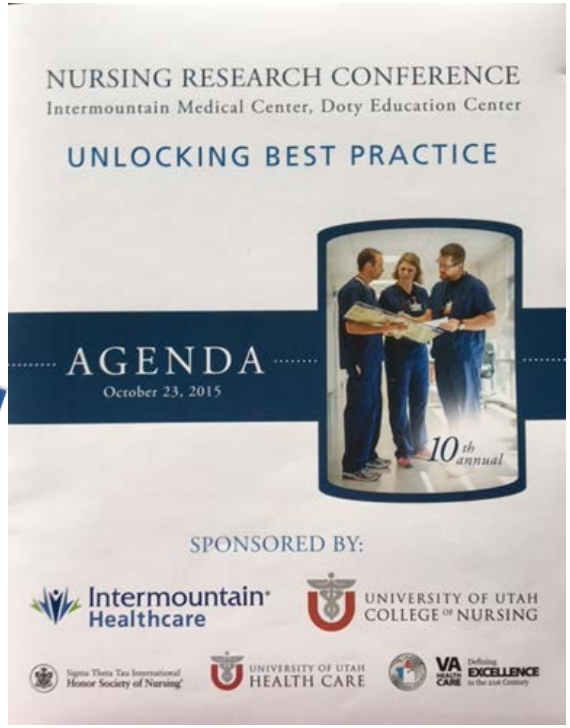

Changes Instituted Since Study

- End tidal CO2 is now standard of care for all sedated GI lab patients

- One trained individual managing airway (Extra nurse for low risk cases, anesthesia for high risk cases)

- Previously, insurance would not pay for anesthesia services in GI lab. That is now changed.

Skin Assessment and Wound Training

Skin breakdown in the gluteal cleft on two patients had been missed on the admission skin assessment.

Wound Care manager did a root cause analysis and determined nurses needed more training. She asked for help from simulation facilitators.

Ninety-nine nurses attended this training

"Spread the Cheeks" Campaign

Skin assessment training

This training with the make-shift buttocks led to an idea for an invention!

Patent application has been submitted for Spreadable Cheeks Wound Trainer

You never know where simulation may take you, what issues may be uncovered, or what ideas may be sparked.

You do not need to be an expert researcher or educator. You only need to feel passion for what you are doing and have a desire to make patient care safer.

You can make a difference!!!

Who Should Do DASH Evaluations for Simulation Facilitators?

Number of Facilitators Required to complete DASH Evaluation in first 6 Months of 2016

Started year with 69 facilitators –

- 2 who left the North Region
- 1 on medical leave
- 7 new facilitators (exempt)

59

Number who completed DASH Evaluation in first 6 months:

53

Number that completed a DASH in third quarter:

3

Total number completed by North Region second facilitator update:

56 95%

Number used in statistics:

57

Element 1 Averages

Set stage for engaging learning experience (Prebrief)

Component	Self Evaluation	Peer Evaluation	REC Evaluation
A What would be expected, objectives, & confidentiality,	5.9	6.7	6.7
B Strengths & weakness of simulation – what participants can do to get the most out of SIM	5.8	6.6	6.4
C Logistical details	5.9	6.7	6.6
D Thoughts & questions about SIM & debriefing – reassured wouldn't be shamed or humiliated	5.9	6.5	6.1

Element 2 Averages

Maintained engaging context for learning

Component	Self Evaluation	Peer Evaluation	REC Evaluation
A Clarified purpose of debriefing, what's expected, & instructor's role	5.2	6.1	4.9
B Acknowledge concerns about realism	5.5	6.4	6.5
C Showed respect to participants	6.3	6.8	6.9
D Ensure focus on learning - not making people feel bad about making mistakes	5.9	6.8	6.8
E Empowered participants to share thoughts & emotions without fear of shame or humiliation	5.7	6.7	6.8

Element 3 Averages

Structured debriefing in organized way

Component	Self Evaluation	Peer Evaluation	REC Evaluation
A Guide conversation so it progressed logically vs jumping around	5.2	6.3	5.8
B Near beginning of debriefing, encouraged participants to share genuine reactions	5.6	6.5	5.8
C In the middle, analyzed actions & thought processes	5.4	6.3	5.6
D At the end, had a summary phase to tie observations together & relate ways to improve future clinical practice	5.5	6.5	6.1

Element 4 Averages

Provoked in-depth discussions that led to reflecting on performance

Component	Self Evaluation	Peer Evaluation	REC Evaluation
A Used concrete examples to get participants to think about performance	5.4	6.3	6.1
B Point of view clear; didn't force to guess what I was thinking	5.2	6.2	6.1
C Made people feel heard – include everyone, nonverbal actions	5.6	6.6	6.1
D Used video to support analysis & learning	5.8	6.5	6.7
E If someone upset, respectful & constructive	5.7	6.8	5.4

Element 5 Averages

Identified what they did well or poorly & why

Component	Self Evaluation	Peer Evaluation	REC Evaluation
A Provided concrete feedback on performance based on accurate statement of fact & honest point of view	5.6	6.5	6.3
B Explore what participants were thinking/trying to accomplish at key moments	5.6	6.3	6.2

Element 6 Averages

See how to improve or sustain good performance

Component	Self Evaluation	Peer Evaluation	REC Evaluation
A Helped participants learn how to improve weak areas or repeat good performance	5.4	6.4	6.1
B Knowledgeable and used that knowledge to help participants see how to perform well in future	5.5	6.6	6.7
C Made sure covered most important topics	5.7	6.6	6.1

Comparison Results

7 = Extremely Effective/Outstanding

Self evaluations – saw rating of 7 - 199 times

Peer evaluations – saw rating of 7 - 685 times

REC evaluations – saw rating of 7 - 511 times

6 = Consistently Effective/Very Good

Self evaluations – saw rating of 6 - 486 times

Peer evaluations – saw rating of 6 - 349 times

REC evaluations – saw rating of 6 - 334 times

5 = Mostly Effective/Good

Self evaluations – saw rating of 5 – 346 times

Peer evaluations – saw rating of 5 – 88 times

REC evaluations – saw rating of 5 – 180 times

4 = Somewhat Effective/Average

Self evaluations – saw rating of 4 – 129 times

Peer evaluations – saw rating of 4 – 18 times

REC evaluations – saw rating of 4 - 56 times

Conclusion:

Who should do the next DASH evaluation in 2018?

Most accurate?

Least accurate?

Survey Monkey Results:

Who should do the next DASH evaluation in 2018?

Most accurate?

Least accurate?

Questions