

Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.

eMethods 1. Pre-briefing script for simulation

Welcome and thank you for participating in this medical simulation. I am _____, a PI on this investigational study of medical teams.

Your participation is completely voluntary, and you may elect to leave the simulation at any time.

This simulation is being used to help us understand components of medical care, and there is no “right answer” to the clinical scenario presented to you.

You will be videotaped for research purposes only and as such we ask that you sign this waiver.

We believe that each of you is competent and talented. This simulation is not meant to be a reflection of your clinical acumen. You may feel uncomfortable during the clinical scenario, this is normal.

We ask that the simulation performed today not be discussed outside of this simulation event, as we do not want future participants to know components of the case. We also ask that you do not compare the notes you are given before the simulation begins with your simulation team.

The case presented to you is meant to reflect a real-life clinical scenario on the Bigelow medical service. We have done our best to make this engaging and we ask you try your best and play the roles as you would in the course of a normal day of work. Again, you may feel uncomfortable during the simulation, this is normal.

Shortly I will give you detailed information about the case, I ask you not share notes with the other members of your simulation team until the simulation starts. Once the simulation begins, you should share clinical information as you would in the course of normal medical care. You will reprise your existing roles as you would on the medical unit – if you are a physician, you will be given the role of a physician, if you are a nurse you will be given a role as an RN. We ask that you behave as you normally would in the care of a patient on the medical service.

Following completion of the simulation we will give you time to debrief your experience with both the research staff and your simulation team. The totality of the simulation and debrief should be approximately 45 minutes.

Any questions?

eMethods 2. Simulation 1 - Managing Anaphylaxis

Case Description: Four participants (two MDs, two RNs) unite to manage a patient experiencing acute respiratory distress with hypoxemia. Prior to the scenario, participants are provided with role descriptions and patient information, each containing a unique set of pertinent clinical details that are necessary to develop a differential diagnosis. Participants are sequestered until the scenario begins, at which time they are free to share any information they feel may be relevant as the case unfolds. Simulator vital signs, physical exam findings, progression of symptoms, response to interventions, and answers to participant questions are scripted and protocolized. All teams are provided with the same vital sign monitor, physical chart (previous vital signs and medication administration record) and equipment (EKG leads, supplemental oxygen, IV fluids). Requested medications are immediately delivered to the participants by an observer. The scenario ends after recognition of the underlying diagnosis (anaphylaxis) and initiation of appropriate management, OR twelve minutes of simulation time, whichever occurs first.

Patient:

66 year old male with h/o ESLD, COPD, hypothyroidism, who presents with altered mental status; found to have hepatic encephalopathy possibly triggered by lower extremity cellulitis; stable on lactulose, rifaximin, and antibiotics.

Participants:

- **MD #1:** Covering MD #1 during lunch, knows little about the patient other than a brief summary in the EMR and a task list for the day
- **RN #1:** Covering for primary RN #2 during lunch; has relevant information about patient's mental status and oral intake
- **MD #2:** Post-call MD who admitted the patient has relevant information about patient's reasons for presentation, Emergency Room treatment course, and antibiotic management plan
- **RN #2:** Primary RN, gave several medications to patient before lunch break including a new antibiotic

Case begins with RN #1 asking MD #1 to evaluate patient for acute hypoxemia. MD #2 and RN #2 are cued to enter room after two minutes of simulation time.

Clinical Progression / Operator Instructions:

- Simulator operator provides predetermined answers to participant questions about symptoms
- If not spontaneously asked by participants, operator provides specific symptoms at predetermined time points emphasize progression of symptoms, each increasingly classic for anaphylaxis
 - *Ex: **Three minutes:** Crampy abdominal pain ("my belly hurts")*
- Physical exam findings unable to be demonstrated with fidelity by the simulator (e.g. rash, JVP) are provided by an observer using scripted language, when asked for
 - *Ex: "10cm by 8cm patch of erythema over R shin"*
- In response to any medical interventions, operator changes vital signs and expresses clinical symptoms in accordance with a predetermined algorithm; example:

<u>Intervention</u>	<u>HR</u>	<u>BP</u>	<u>RR</u>	<u>SpO2</u>	<u>Symptom</u>
Supplemental O2	--	--	--	Increase by 4	No change in SOB/wheezing

eMethods 3. Simulation 2 – Diabetes Management

Case Description: Four participants (two MDs, two RNs) unite to discuss insulin management with a diabetic patient. Prior to the scenario, participants are provided with role descriptions and background information about the patient's recent clinical course. At the start of the scenario, the four participants are given the opportunity to exchange information about the patient and develop a plan for speaking with her, before entering the patient's room. The participants are cued to enter the patient's room after 8 minutes of simulation time, if they have not done so already. The patient, played by a trained standardized actor, is a diabetic patient with strong opinions on her insulin dosing, influenced in part by a hypoglycemic episode earlier in the day. The actor takes an angry tone with the team and shares specific scripted complaints about insulin dosing, food, and communication. After three minutes of simulation time, the actor specifically accuses one nurse of trying to harm her with too much insulin. From there, the actor's tone modulates in response to specific team behaviors, as determined by the case protocol. Three predetermined outcomes are possible: no compromise (patient takes the insulin dose she wants), partial compromise (patient takes more insulin than she wants but less than the team recommends), or full agreement with plan (patient takes the full insulin dose recommended by the team). The case ends after 10 minutes of simulation time OR final decision by the patient, whichever comes first.

Patient: 28 year old female with longstanding Type 1 diabetes managed at home with pre-mixed insulin pens; frequently misses appointments with endocrine and several prior admissions for DKA. Admitted currently for DKA triggered by a severe urinary tract infection but unhappy with how the inpatient team is managing diet and insulin. Had an episode of symptomatic hypoglycemia after lunch and now refusing to take the full evening dose of insulin (22 units) that has been recommended by the team.

Participants:

- **MD #1:** Incoming overnight MD who will be caring for patient overnight
- **MD #2:** Outgoing day MD who has been communicating with endocrine and changing insulin orders throughout the day
- **RN #1:** Incoming overnight RN who will be caring for the patient overnight, responsible for giving evening dose of long-acting insulin
- **RN #2:** Outgoing daytime RN who administered morning and mealtime insulin, including lunchtime dose that resulted in symptomatic hypoglycemia.

Case begins with RN#1 and RN#2 approaching MD#1 and MD#2 in a separate workroom (outside the patient's room) to discuss the overnight plan for insulin management.

Clinical Progression / Actor Instructions:

- Actor begins with angry tone; accusatory to medical team, specific complaints about insulin dosing that is different from home regimen, restricted diet, poor communication regarding overall care plan, and feeling like no one is listening.
- After three minutes of sim time (cued by observer), actor directly accuses the daytime nurse of trying to kill her with too much insulin; point with finger for clarity.
- During negotiation with team, actor modifies tone in response to the presence or absence of:
 - Acknowledgement of actor's specific concerns
 - Acknowledgement of actor's emotional state
 - Invitation to express patient's opinions
 - Willingness to compromise with patient and engage in continuous reassessment of the care plan throughout the night
 - Speaking to patient in a way that acknowledges her diabetes knowledge but is not overly complex
 - Reassurance that team has patient's best interests in mind
- Based on above, actor determines no compromise, partial compromise, or full acceptance of team's recommendation

eMethods 4: Intern Survey

All these questions relate to your LAST Clinical Rotation

Nursing Relations

1. How often did nurses participate in goals of care discussions about the family/patient?

Very Seldom Seldom Moderate Frequently Very Frequently

2. How frequently was there disagreement between your resident team and nursing?

Very Seldom Seldom Moderate Frequently Very Frequently

3. How would you describe your relationship with nurses on the floor that you worked?

Inferior Below average Average Excellent Outstanding

4. I know the names of all the nurses on the unit

Strongly Disagree Disagree Neutral Agree Strongly Agree

For the following questions please rate the degree to which you agree with the statements.

5. While working on this unit, I felt safe to admit I did not know something.

Strongly Disagree Disagree Neutral Agree Strongly Agree

6. While working on this unit, I felt safe to ask questions.

Strongly Disagree Disagree Neutral Agree Strongly Agree

7. While working on this unit, I felt safe to voice my opinion

Strongly Disagree Disagree Neutral Agree Strongly Agree

8. While working on this unit, I was afraid of being judged

Strongly Disagree Disagree Neutral Agree Strongly Agree

The questions refer to ALL the clinical providers on the last Bigelow medical floor you worked on. Clinical providers include physicians, nursing, case management, pharmacy and other ancillary staff

9. While working on this unit, when a clinical provider made a mistake it was often held against them.

Strongly disagree Disagree Neutral Agree Strongly agree

10. When hurdles were encountered, all the clinical providers were able to work through them together

Strongly Disagree Disagree Neutral Agree Strongly Agree

11. The input of all clinical providers is valued when making decisions about patient care.

Strongly Disagree Disagree Neutral Agree Strongly Agree

12. All clinical providers share information that enables timely decision making.

Strongly Disagree Disagree Neutral Agree Strongly Agree

13. Clinical providers on the unit were free to raise concerns they had about team plans or decisions.

Strongly Disagree Disagree Neutral Agree Strongly Agree

14. It was easy to discuss difficult issues and problems with clinical providers on this unit.

Strongly disagree Disagree Neutral Agree Strongly agree

15. Working on this unit I understood the different clinical roles of colleagues on this floor

Strongly Disagree Disagree Neutral Agree Strongly Agree

16. While working on this unit, it was difficult to ask other clinical providers on the floor for help.

Strongly disagree Disagree Neutral Agree Strongly agree

17. Clinical providers on this unit cautioned each other about challenging patients and situations.

Strongly Disagree Disagree Neutral Agree Strongly Agree

18. On this unit, feedback between individual clinical providers was delivered in a way that promotes positive interaction.

Strongly Disagree Disagree Neutral Agree Strongly Agree

The following two questions refer to your job in general (not your recent rotation)

19. I feel burned out from my work.

Never A few times a year or less Once a Month or less A few times a month Once a week A few
times a week Every day

20. I have become more callous toward people since I took this job

Never A few times a year or less Once a Month or less A few times a month Once a week A few
times a week Every day

21. Please discuss your overall impressions of your recent Bigelow rotation on this clinical floor.

eMethods 5: Nursing Survey

All these questions relate to the last 6 months

Resident Relations

In the last 6 months:

1. How often did you participate in goals of care discussions about the family/patient with the resident team?

Very Seldom Seldom Moderate Frequently Very Frequently

2. How frequently was there disagreement between you and the resident team

Very Seldom Seldom Moderate Frequently Very Frequently

3. How would you describe your relationship with the Bigelow resident team on the floor?

Inferior Below average Average Excellent Outstanding

4. In the last 6 months I consistently knew the names of all the residents on the Bigelow A team I worked with?

Strongly Disagree Disagree Neutral Agree Strongly Agree

For the following questions please rate the degree to which you agree with the statements.

In the last 6 months:

5. I felt safe to admit I did not know something.

Strongly Disagree Disagree Neutral Agree Strongly Agree

6. I felt safe to ask questions.

Strongly Disagree Disagree Neutral Agree Strongly Agree

7. I felt safe to voice my opinion

Strongly Disagree Disagree Neutral Agree Strongly Agree

8. I was afraid of being judged

Strongly Disagree Disagree Neutral Agree Strongly Agree

The questions refer to ALL the clinical providers on the medical floor you worked on. Clinical providers include Bigelow A team physicians, nursing, case management, pharmacy and other ancillary staff

9. When a clinical provider made a mistake it was often held against them.

Strongly disagree Disagree Neutral Agree Strongly agree

10. When hurdles were encountered, all the clinical providers were able to work through them together

Strongly Disagree Disagree Neutral Agree Strongly Agree

11. The input of all clinical providers is valued when making decisions about patient care.

Strongly Disagree Disagree Neutral Agree Strongly Agree

12. All clinical providers share information that enables timely decision making

Strongly Disagree Disagree Neutral Agree Strongly Agree

13. Clinical providers on the unit were free to raise concerns they had about team plans or decisions.

Members of the team often raised concerns they had about team plans or decisions.

Strongly Disagree Disagree Neutral Agree Strongly Agree

14. . It was easy to discuss difficult issues and problems with clinical providers on this unit.

Strongly disagree Disagree Neutral Agree Strongly agree

15. Working on this unit I understood the different clinical roles of colleagues on this floor.

Strongly Disagree Disagree Neutral Agree Strongly Agree

16. It was difficult to ask other clinical providers on the floor for help.

Strongly disagree Disagree Neutral Agree Strongly agree

17. Clinical providers on this unit cautioned each other about challenging patients and situations.

Strongly Disagree Disagree Neutral Agree Strongly Agree

18. On this unit, feedback between individual clinical providers was delivered in a way that promotes positive interaction.

Strongly Disagree Disagree Neutral Agree Strongly Agree

The following two questions refer to your job in general

19. I feel burned out from my work.

Never A few times a year or less Once a Month or less A few times a month Once a week A few
times a week Every day

20. I have become more callous toward people since I took this job

Never A few times a year or less Once a Month or less A few times a month Once a week A few
times a week Every day

21. What is your gender?

Male

Female

Non-binary

Prefer to self-describe

Do not wish to provide

22. How long have you been working on White 8?

< 1 year

1-3 years

3-5 years

6-10 years

11-15 years

>15 years

23. How long have you been working as a nurse in general?

< 1 year

1-3 years

3-5 years

6-10 years

11-15 years

> 15 years

24. Control: Please discuss your overall impressions of having different teams of interns rotate on your clinical floor for the past 6 months?

24. Intervention: Please discuss your overall impressions of having a group of interns co-localized on your clinical floor for the past 6 months?

eTable: Time Motion Results

Observation of Physician and Nurse Work Rounds				
	Control	Intervention	Difference or z-statistic	P-Value
Total number of days team was observed	5	5		
Total time observed (min)	782	761		
Time observed per day, mean (95% CI), min	156 (107-206)	152 (99-206)		
Total number of patients rounded on by resident team	61	57		
Total number of patients rounded on where RN was physically present	17	27		
Percent of patients rounded on that RN was present	17/61 (27.9%)	27/57 (47.4%)	19.5	.03
Observation of PGY-1 during Clinical Work				
Total Time observed (min)	2,770	2,496		
Total number of pages received	96	68		
Total number of clinical phone messaging texts	273	294		
Total number of RN-PGY-1 interactions	72	77		
RN initiated interaction, No.(%)	45 (62.5)	51 (66.2)	3.7	.63
RN used PGY-1 name, No. (%)	8 (11.1)	15 (20.8)	9.7	.11
PGY-1 used RN name, No. (%)	6 (8.5)	13 (16.9)	8.4	.13
Personal conversation occurred, No. (%)	3 (4.2)	11 (14.3)	10.1	.03