

Supplementary Online Content

Bonafide CP, Roberts KE, Weirich CM, Paciotti B, Tibbetts KM, Keren R, Barg FK, Holmes JH. Beyond statistical prediction: Qualitative evaluation of the mechanisms by which pediatric early warning scores impact patient safety.

Elements included in this document:

- Paper early warning score form in use at the time of this study.
- Interview guide for nurse subjects.
- Interview guide for physician subjects.

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

**Paper early warning score form
in use at the time of this study**

Date:		TIME:				
Neuro		2	1	0	1	2
		Neurologic Status Change	Irritable	Appropriate/ at Baseline	Lethargic	Confused/ Disoriented
	Temp.(°C)	<35	35-35.9	36-38.4	38.5-40	>40
Cardiovascular	Heart Rate (beats/min)	2	1	0	1	2
	<3 mos.	<90	90-109	110-160	161-180	>180
	3 - <12 mos.	<80	80-99	100-150	151-170	>170
	1 - <4 yrs.	<70	70-89	90-130	131-150	>150
	4 - <12 yrs.	<60	60-69	70-120	121-130	>130
	>= 12 yrs.	<50	50-59	60-110	111-120	>120
	Systolic BP (mmHg)	2	1	0	1	2
	<3 mos.	<50	50-59	60-90	91-110	>110
	3 - <12 mos.	<70	70-79	80-110	111-120	>120
	1 - <4 yrs.	<75	75-89	90-120	121-130	>130
	4 - <12 yrs.	<80	80-89	90-120	121-130	>130
	>= 12 yrs.	<85	85-99	100-130	131-150	>150
			2	1	0	1
	Capillary Refill (sec)			<2 sec.	2-3 sec.	>3 sec.
	Central Venous Line			No	Yes	
	IV Bolus Fluid or blood product within past 4 hrs.			none	≤20ml/kg	>20ml/kg
Respiratory	Resp Rate (breaths/min)	2	1	0	1	2
	<3 mos.	<20	20-29	30-60	61-80	>80
	3 - <12 mos.	<20	20-24	25-50	51-70	>70
	1 - <4 yrs.	<15	16-19	20-40	41-60	>60
	4 - <12 yrs.	<12	12-19	20-30	31-40	>40
	>= 12 yrs.	<8	8-11	12-16	17-24	>24
			2	1	0	1
	Respiratory Effort			Nonlabored	Moderate (accessory muscle use, or retractions)	Severe (nasal flaring or grunting)
	O ₂ Sat	<90%	90-94%	≥95%		
	Oxygen Therapy			Room Air	<4L or <50% FiO ₂	≥4L or ≥50% FiO ₂
TOTAL RISK FACTORS SCORE:						
TOTAL MPEW SCORE:						
Clinician Notified: (When Applicable)						Printed Name (Last name, First initial)
Charge nurse/Nursing supervisor/Leadership Nurse						
Respiratory Therapist						
Resident/House Physician/NP						
Fellow						
Attending CCU CICU						
RN INITIALS:						

Adapted from: Duncan H. Hutchison J. Parshuram C. The pediatric early warning system score: A severity of illness score to predict urgent medical need in hospitalized children. Journal of Critical Care. 2006;21(3):271-278. And Children's Hospital & Regional Medical Center, Seattle, WA, Modified Pediatric Early Warning Score (MPEWS).

Risk Factors	Score a (1) for Each Risk Factor
Abnormal airway or positive pressure ventilation (such as CPAP, BiPAP, tracheostomy, or difficult intubation)	
Baseline supplemental FiO ₂ Requirement (Uses oxygen at home)	
Previous ICU Admission (If known, any ICU stay including NICU at birth)	
Pre/Post any Transplant	
Active acquired or congenital heart disease or history of heart surgery	
Severe developmental, neurologic or neuromuscular disease (such as spinal muscular atrophy, static encephalopathy, or severe autism)	
Presence of gastrostomy or jejunostomy tube (not NG or NJ)	
TOTAL RISK FACTORS SCORE	

**INTERVIEW GUIDE
for nurse subjects**

False negative call with urgent ICU transfer

False negative (score low, urgent transfer occurred)

Today I am going to ask you some questions about your shift on DATE when you were caring for THIS PATIENT (DO NOT USE PATIENT NAME). Since the [event] happened _____ days ago, I have brought a copy of the nursing documentation for the 24 hours leading up to the time when your patient was transferred to the ICU with me. Feel free to refer to it during the interview if it helps jog your memory about the event.

Please answer the questions with your honest opinions, because your honest opinions will help us the most in designing the system to work best for you in the future. There are no “right” or “wrong” answers. If you are uncomfortable answering any of the questions, you can ask us to “pass” and we will move on to the next question. The study is completely voluntary, and you can stop the interview at any point and if you should choose to stop the interview, you will not be penalized in any way, and you will still receive your gift card.

One last thing before we start, I do not have a medical background, so if you could respond to the questions as if you are talking to someone who doesn’t understand much of the medical terminology that would be greatly appreciated.

- First I am going to ask you some general questions about MPEWS and CAT. Feel free to use examples from situations you may have experienced since your unit started using the MPEWS and CAT systems.

MPEWS

- How are things going with MPEWS on your unit?
- What do you see as the role of the MPEWS?
- Probe if RN says it “backs them up” (in what way, does it back up your decision, does it back you up in communication with our members of the care team? Etc.)
 - Do you feel MPEWS makes you more or less able to recognize deterioration?
 - Are there any factors that make recognition even easier? For example, are there certain aspects of an assignment, team, atmosphere in the patient room, specific patient illnesses/red flags, etc?
 - Are there any situations when it’s more difficult to recognize deterioration? Could you describe those situations?
- Is there anything about the MPEWS that you would want to change or modify? (if needed, probe to ask what would you change) (if someone says that they don’t think MPEWS are necessary, ask them to explain further)
- Since going live with MPEWS scoring, has the atmosphere changed on your unit? (if so, how?)
 - (If yes...) Can you tell me a little bit about what the atmosphere was like before and what the atmosphere is like now?

False negative call with urgent ICU transfer

- Has it affected how you work with residents? (if so, how?)
 - Has it affected how you work with nurse Practitioners (if so, how?)
 - Has it affected how you work with your charge RN? (if so, how?)
 - Has it affected how you work with RT? (if so, how?)
 - Has it affected how you work with your fellows? (if so, how?)
 - Has it affected how you work with your attendings? (if so, how?)
 - Has it affected how you work with your manager? (if so, how?)
 - Has it affected how you work with parents/families? (if so, how?)
- When you call a physician about a concern about a patient, do you include the MPEWS in the conversation? If so, how?
 - Is having the MPEWS included in the conversation helpful?
 - Are there times when the MPEWS are not helpful? When, how, and why?

CAT

- Have you had to call CAT in the past? If so, how did things go with those calls?
 - Have there been any times when you have had a challenging or negative experience with the CAT team?
- Do you feel comfortable making final decisions on calling the CAT team?
 - Do you feel comfortable making final decisions on NOT calling the CAT team?
 - Do you feel that making decisions to call or not call the CAT team are part of your role as a nurse? (Omit if discussed earlier)
- Does the idea of calling CAT for one of your patients make you nervous or uncomfortable at all?
- Do you think your unit calls CAT too much, not enough, or just the right amount? Why do you think so?
- Which is worse, missing a patient who is deteriorating and not calling CAT, resulting in a code, or calling CAT for a patient who is not deteriorating, resulting in a false alarm? Why?
 - How much worse: 2x, 10x, 20x, 50x, 100x
- How many false alarms, defined as CAT activation that do not result in any significant changes in management, are you willing to put up with for every 1 patient who is rescued by CAT and goes to the ICU urgently?

False negative call with urgent ICU transfer

- 2 false alarms for every 1 rescue?
 - 5?
 - 10?
 - 20?
 - 50?
 - 100?
 - Why?
- How many CAT calls per week do you think your unit makes?
 - What percent of those calls do you think end up being transferred to the ICU?
 - Do you know of anyone who has had a negative experience calling CAT? It could be a negative experience with the CAT team itself, other nurses, your charge nurse, your manager, the residents, your fellow, your attending, or the parents. Could you tell me a little bit about those experiences? (you can probe by asking “so what did this nurse say?”) How did you feel?
 - We have all been in situations when our gut told us to ask for help, but our brain made us hesitate. Have there been any factors that you can identify that have discouraged you or your co-workers from calling for help in the past, even when you or they had concerns?
 - Do you ever worry about what a physician will say, feel, or do if you call CAT without their knowledge and/or approval?
 - Does that influence whether you call the physician or the CAT team?
 - Are there any doctors that you would be sure to call before doing something like calling the CAT team? And again, please refrain from using names. You can just use roles.
 - I’m going to give you two hypothetical situations and I want to hear how you would react if you were in these situations.
 - The first situation- Imagine you are caring for a patient who you are worried about and think is deteriorating. Do you think it’s important for everyone on the care team to agree that a CAT call should be made or are you comfortable calling even if some on the team do not feel a call should be made?
 - Probes:
 - Can you tell me more about that?
 - Are there any situations or factors that would make calling independently, so without having a group agreement, more difficult?
 - What if everyone else disagreed with you and didn’t think that a CAT call was necessary?
 - What if your charge nurse didn’t agree, would you still call?

False negative call with urgent ICU transfer

- What if the intern or resident didn't agree, would you still call?
- What if the attending didn't agree?
- Would anyone's opinion about whether or not to call make you change your mind or question your decision about calling?
 - Probe: If RN says she would need a good reason to not call:
 - What sort of reasons might make you change your mind and/or decisions about calling?
- Now for the second situation- Imagine you are caring for a patient who has a high score but you're not concerned or worried about the patient. Do you think it's important for everyone on the care team to agree that a CAT call does not need to be made, even if the MPEWS is high, or do you think making that decision independently is part of your role as a nurse?
 - Probes:
 - Can you tell me more about that?
 - Are there any situations where you might try to convince someone on the care team that a call isn't needed even if they thought it was? For example, what if you knew that this happened every time the patient got a fever, or received a blood transfusion?
 - What if this patient had had multiple visits from CAT and they always said the patient was fine?
 - What if the family was not concerned and said the patient was at his or her baseline?
 - Would your response be any different based on WHO was concerned? So for example:
 - What if a parent was the only one who was concerned?
 - What if a nursing student was the only one concerned?
 - What if your charge nurse was the one who wanted to call, would you try to talk her out of wanting to call?
 - What if it was the intern or resident who was also caring for the patient who wanted to call, would you try to talk him or her out of calling?
- What if the attending was the one who wanted to call, would you try to talk him/her out of wanting to call?
- Have you ever felt like you needed to or have you ever called the CAT team without the approval of a physician, charge nurse, resident, or anyone else on the team?
- We all know that systems do not always work exactly the way they are planned to work. In your opinion, how do you think your unit leadership feels about using MPEWS and CAT?
- So we've talked about the expectation of your leadership. What do you think the expectations of your co-workers are about using MPEWS and CAT?

False negative call with urgent ICU transfer

- And real quickly, I have a quick question about your unit. What is it like on the unit when the census is very high and you are caring for a sick patient whom you are worried about? What do you do in those situations?
 - (getting at asking for help, pulling people from other units, and who makes those decisions).
- **We are about halfway through the interview questions. I'm going to switch from asking you general questions about MPEWS and CAT to some questions about your experience with this patient.** When answering the remainder of questions, please feel free to use examples from other situations you may have experienced at other times since your floor started using MPEWS and CAT.
- Could you walk me through what your shift was like in general, from the time you arrived at the hospital? For example:
 - What was your assignment like?
 - How many patients were you assigned to care for?
 - How busy were you?
- Have you cared for him/her before? If so, when?
- To your knowledge, has this patient had CAT calls before?
 - Have they been to the ICU?
- What was the atmosphere like in the patient's room?
 - Who was there?
 - What did you talk about?
 - (goal is to find out if others in the room such as parents expressed concern, and what the response was)
- I'd like to talk about the nursing notes that you made during your shift, while caring for this patient. Could we go through the notes that you made, entry by entry? Let's start with this note that you entered at XX:XX. Could you read it out loud? And again, if there are any names that I missed, try to skip over them or again just use their role and not their real name.
 - (For sections that sound like they may be expressing concern such as MD notified, probe deeper to find out what was concerning. For example, "We see that there was a jump here in the MPEWS but nothing was noted. Was this because you were busy?" Probe without questioning their judgment or the notes that they entered.)
- What interactions did you have with the other members of the care team for this patient? To ensure confidentiality, please just mention their role, such as charge nurse or attending. How did those interactions go? What did you discuss?
 - (Probe, if appropriate): Did you feel you were able to get your point across?

False negative call with urgent ICU transfer

- *[beginning of scenario-specific questions]*

- Who was in the patient's room at the time that the CODE was called? And again, please remember to use roles instead of actual names.
- How did the decision to call the CODE team come about?
- Who made the decision to call?
 - How did people on the team interact with each other during that process?
 - How did that process go? (If it was the respondent who made the decision, ask them how they felt making that decision, if they were comfortable doing that, and if they see that as part of their role).
- What specifically worried you about the situation with this patient? (Spend some time probing on what specific factors made this situation concerning)
- How comfortable were you that calling was the right thing to do?
 - What made you more comfortable and what made you less comfortable?
 - How important was the MPEWS in making the decision to call the CODE team?
 - (want to get at if there are specific types of decompensation, specific patients, specific illnesses that some nurses are better/more comfortable at recognizing than others, also specific factors not included in the MPEWS)
- We all see situations a little differently. Was anyone hesitant to call? So for example, was your charge nurse,, residents, attending, or anyone else hesitant to call? Is so,why do you think they were hesitant?
 - What factors did those people say were reassuring about the patient?
 - What did others find worrisome?
- Are there any situations in which your co-workers may have approached the situation you faced with this patient in a different way?
 - Why?
 - What kind of situations may they be?
- What did you expect to happen when the CODE team arrived?
 - Tell me about what actually did happened when the CODE team arrived.
- How did you feel when the CODE team recommended transfer to the ICU?
 - How would you have felt if they had not recommended transfer?

False negative call with urgent ICU transfer

- Sometimes we change our minds about how we might handle situations after we have had some time to think about them. But then again, there are times when we remain confident in our decisions. If you had it to do over again, would you call the CODE team for this patient? Why/Why not?
- Sometimes our past experiences affect the way we see certain situations. Have you had any past experiences similar to this one with any of the patients that you have cared for? (if they say yes, ask them to discuss one.)
 - Did those past experiences impact your actions in this situation?
- Thank you so much for all of your thoughtful responses. Is there anything else that you would like to add to help our research team better understand the use of MPEWS and CAT?
 - Have I missed anything in the interview that you think I should have gone over or is there anything that you would like to share with me?
 - What did you think about this process, sitting in here and interviewing with me? Did it make you uncomfortable in any way?
 - Is there anything that you would like to have seen go differently in order to make you feel more comfortable?

Thank you for your time. If you have any questions or concerns about the study, please do not hesitate to contact our principal investigator, Kathryn Roberts. Her contact information is available on your copy of the consent form.

False positive, CAT call, no ICU transfer

False positive (CAT called NO ICU Transfer)

Today I am going to ask you some questions about your shift on DATE when you were caring for THIS PATIENT (DO NOT USE PATIENT NAME). Since the CAT call happened _____ days ago, I have brought a copy of the nursing documentation for the 24 hours leading up to the time when a CAT call was made for this patient with me. Feel free to refer to it during the interview if it helps jog your memory about the event.

Please answer the questions with your honest opinions, because your honest opinions will help us the most in designing the system to work best for you in the future. There are no “right” or “wrong” answers. If you are uncomfortable answering any of the questions, you can ask us to “pass” and we will move on to the next question. The study is completely voluntary, and you can stop the interview at any point. If you should choose to stop the interview, you will not be penalized in any way, and you will still receive your gift card.

One last thing before we start, I do not have a medical background, so if you could respond to the questions as if you are talking to someone who doesn’t understand much of the medical terminology that would be greatly appreciated.

- First I am going to ask you some general questions about MPEWS and CAT. Feel free to use examples from situations you may have experienced since your unit started using the MPEWS and CAT systems.

MPEWS

- How are things going with MPEWS on your unit?
- What do you see as the role of the MPEWS?
 - Probe if RN says it “backs them up” (in what way, does it back up your decision, does it back you up in communication with our members of the care team? Etc.)
 - Do you feel MPEWS makes you more or less able to recognize deterioration? Are there any factors that make recognition even easier? For example, are there certain aspects of an assignment, team, atmosphere in the patient room, specific patient illnesses/red flags, etc?
- Are there any situations when it’s more difficult to recognize deterioration? Could you describe those situations? Is there anything about the MPEWS that you would want to change or modify? (if needed, probe to ask what would you change) (If someone says that they don’t think MPEWS are necessary, ask them to explain further)
- Since going live with MPEWS scoring, has the atmosphere changed on your unit? (if so, how?)
 - (If yes...) Can you tell me a little bit about what the atmosphere was like before and what the atmosphere is like now?

False positive, CAT call, no ICU transfer

- Has it affected how you work with residents? (if so, how?)
 - Has it affected how you work with Nurse Practitioners (if so, how?)
 - Has it affected how you work with your Charge RN? (if so, how?)
 - Has it affected how you work with RT? (if so, how?)
 - Has it affected how you work with your fellows? (if so, how?)
 - Has it affected how you work with your attendings? (if so, how?)
 - Has it affected how you work with your manager? (if so, how?)
 - Has it affected how you work with parents/families? (if so, how?)
- When you call a physician about a concern about a patient, do you include the MPEWS in the conversation? If so, how?
 - Is having the MPEWS included in the conversation helpful?
 - Are there times when the MPEWS are not helpful? When, how, and why?

CAT

- Have you had to call CAT in the past? If so, how did things go with those calls?
 - Have there been any times when you have had a challenging or negative experience with the CAT team?
- Do you feel comfortable making final decisions on calling the CAT team?
 - Do you feel comfortable making final decisions on NOT calling the CAT team?
 - Do you see making these decisions as part of your role? Do you feel that making decisions to call or not call the CAT team are part of your role as a nurse? (Omit if discussed earlier)
- Does the idea of calling CAT for one of your patients make you nervous or uncomfortable at all?
- Do you think your unit calls CAT too much, not enough, or just the right amount? Why do you think so?
- Which is worse, missing a patient who is deteriorating and not calling CAT, resulting in a code, or calling CAT for a patient who is not deteriorating, resulting in a false alarm? Why?
 - How much worse: 2x, 10x, 20x, 50x, 100x
- How many false alarms, defined as CAT activation that do not result in any significant changes in management, are you willing to put up with for every 1 patient who is rescued by CAT and goes to the ICU urgently?

False positive, CAT call, no ICU transfer

- 2 false alarms for every 1 rescue?
- 5?
- 10?
- 20?
- 50?
- 100?
- Why?
- How many CAT calls per week do you think your unit makes?
- What percent of those calls do you think end up being transferred to the ICU?
- Do you know of anyone who has had a negative experience calling CAT? It could be a negative experience with the CAT team itself, other nurses, your charge nurse, your manager, the residents, your fellow, your attending, or the parents. Could you tell me a little bit about those experiences? (you can probe by asking “so what did this nurse say?”) How did you feel?
- We have all been in situations when our gut told us to ask for help, but our brain made us hesitate. Have there been any factors that you can identify that have discouraged you or your co-workers from calling for help in the past, even when you or they had concerns?
- I’m going to give you two hypothetical situations and I want to hear how you would react if you were in these situations.
 - The first situation- Imagine you are caring for a patient who you are worried about and think is deteriorating. Do you think it’s important for everyone on the care team to agree that a CAT call should be made or are you comfortable calling even if some on the team do not feel a call should be made?
 - Probes:
 - Can you tell me more about that?
 - Are there any situations or factors that would make calling independently, so without having a group agreement, more difficult?
 - What if everyone else disagreed with you and didn’t think that a CAT call was necessary?
 - What if your charge nurse didn’t agree, would you still call?
 - What if the intern or resident didn’t agree, would you still call?
 - What if the attending didn’t agree?
 - Would anyone’s opinion about whether or not to call make you change your mind or question your decision about calling?
 - Probe: If RN says she would need a good reason to not call:
 - What sort of reasons might make you change your mind and/or decisions about calling?

False positive, CAT call, no ICU transfer

- Now for the second situation- Imagine you are caring for a patient who has a high score but you're not concerned or worried about the patient. Do you think it's important for everyone on the care team to agree that a CAT call does not need to be made, even if the MPEWS is high, or do you think making that decision independently is part of your role as a nurse?
 - Probes:
 - Can you tell me more about that?
 - Are there any situations where you might try to convince someone on the care team that a call isn't needed even if they thought it was? For example, what if you knew that this happened every time the patient got a fever, or received a blood transfusion?
 - What if this patient had had multiple visits from CAT and they always said the patient was fine?
 - What if the family was not concerned and said the patient was at his or her baseline?
 - Would your response be any different based on WHO was concerned? So for example:
 - What if a parent was the only one who was concerned?
 - What if a nursing student was the only one concerned?
 - What if your charge nurse was the one who wanted to call, would you try to talk her out of wanting to call?
 - What if it was the intern or resident who was also caring for the patient who wanted to call, would you try to talk him or her out of calling?
- What if the attending was the one who wanted to call, would you try to talk him/her out of wanting to call?
- Do you ever worry about what a physician will say, feel, or do if you call CAT without their knowledge and/or approval?
 - Does that influence whether you call the physician or the CAT team?
 - Are there any doctors that you would be sure to call before doing something like calling the CAT team? And again, please refrain from using names. You can just use roles.
- Have you ever felt like you needed to or have you ever called the CAT team without the approval of a physician, charge nurse, resident, or anyone else on the team?
- We all know that systems do not always work exactly the way they are planned to work. In your opinion, how do you think your unit leadership feels about using MPEWS and CAT?
- And real quickly, I have a quick question about your unit. What is it like on the unit when the census is very high and you are caring for a sick patient whom you are worried about? What do you do in those situations?

False positive, CAT call, no ICU transfer

- (getting at asking for help, pulling people from other units, and who makes those decisions)

So we've talked about the expectation of your leadership. As you know, sometimes the expectations of leadership are different than the expectations of your co-workers. What do you think the expectations of your co-workers are about using MPEWS and CAT?

- **We are about halfway through the interview questions. I'm going to switch from asking you general questions about MPEWS and CAT to some questions about your experience with this patient.** When answering the remainder of questions, please feel free to use examples from other situations you may have experienced at other times since your floor started using MPEWS and CAT.
- Could you walk me through what your shift was like in general, from the time you arrived at the hospital? For example:
 - What was your assignment like?
 - How many patients were you assigned to care for?
- How busy were you? Have you cared for him/her before? If so, when?
- To your knowledge, has this patient had CAT calls before?
 - Have they been to the ICU?
- What was the atmosphere like in the patient's room?
 - Who was there?
 - What did you talk about?
 - (goal is to find out if others in the room such as parents expressed concern, and what the response was)
- I'd like to talk about the nursing notes that you made during your shift, while caring for this patient. Could we go through the notes that you made, entry by entry? Let's start with this note that you entered at XX:XX. Could you read it out loud? And again, if there are any names that I missed, try to skip over them or again just use their role and not their real name.
 - (For sections that sound like they may be expressing concern such as MD notified, probe deeper to find out what was concerning. For example, "We see that there was a jump here in the MPEWS but nothing was noted. Was this because you were busy?" Probe without questioning their judgment or the notes that they entered.)
- What interactions did you have with the other members of the care team for this patient? To ensure confidentiality, please just mention their role, such as charge nurse or attending. How did those interactions go? What did you discuss?
 - (Probe, if appropriate): Did you feel you were able to get your point across?

False positive, CAT call, no ICU transfer

- *[beginning of scenario-specific questions]*
- Let's start by reviewing the MPEWS scoring of this patient. As we look at the scoring, what parts of the score were elevated? What contributed to the higher scores?
- How did the decision to call the CAT team come about?
- Who made the decision to call?
 - How did people on the team interact with each other during that process?
 - How did that process go? (If it was the respondent who made the decision, ask them how they felt making that decision, if they were comfortable doing that, and if they see that as part of their role).
- What specifically worried you about the situation with this patient? (Spend some time probing on what specific factors made this situation concerning)
- How comfortable were you that calling was the right thing to do?
 - What made you more comfortable and what made you less comfortable?
 - How important was the MPEWS in making the decision to call the CAT team?
 - (want to get at if there are specific types of decompensation, specific patients, specific illnesses that some nurses are better/more comfortable at recognizing than others, also specific factors not included in the MPEWS)
- We all see situations a little differently. Was anyone hesitant to call? So for example, was your charge nurse, residents, attending or anyone else hesitant to call? If so, why do you think they were hesitant?
 - What factors did those people say were reassuring about the patient?
 - What did others find worrisome?
- Are there any situations in which your co-workers may have approached the situation you faced with this patient in a different way?
 - Why?
 - What kind of situations may they be?
- What did you expect to happen when CAT arrived?
 - Tell me about what actually did happen when CAT arrived.
- How did you feel when CAT did not recommend transfer to the ICU?
 - How would you have felt if they had recommended transfer?

False positive, CAT call, no ICU transfer

- Sometimes we change our minds about how we might handle situations after we have had some time to think about them. But then again, there are times when we remain confident in our decisions. If you had it to do over again, would you call the CAT for this patient? Why/Why not?
- Sometimes our past experiences affect the way we see certain situations. Have you had any past experiences similar to this one with any of the patients that you have cared for? (if they say yes, ask them to discuss one.)
 - Did those past experiences impact your actions in this situation?
- Thank you so much for all of your thoughtful responses. Is there anything else that you would like to add to help our research team better understand the use of MPEWS and CAT?
 - Have I missed anything in the interview that you think I should have gone over or is there anything that you would like to share with me?
 - What did you think about this process, sitting in here and interviewing with me? Did it make you uncomfortable in any way?
 - Is there anything that you would like to have seen go differently in order to make you feel more comfortable?
- **Thank you for your time. If you have any questions or concerns about the study, please do not hesitate to contact our principal investigator, Kathryn Roberts. Her contact information is available on your copy of the consent form.**

False positive – no CAT Call

Today I am going to ask you some questions about your shift on DATE when you were caring for THIS PATIENT (DO NOT USE PATIENT NAME). Since you cared for this patient _____ days ago, I have brought with me a copy of the nursing documentation that you wrote for this patient. Feel free to refer to it during the interview if it helps jog your memory about the event.

Please answer the questions with your honest opinions, because your honest opinions will help us the most in designing the system to work best for you in the future. There are no “right” or “wrong” answers. If you are uncomfortable answering any of the questions, you can ask us to “pass” and we will move on to the next question. The study is completely voluntary, and you can stop the interview at any point and if you should choose to stop the interview, you will not be penalized in any way, and you will still receive your gift card.

One last thing before we start, I do not have a medical background, so if you could respond to the questions as if you are talking to someone who doesn’t understand much of the medical terminology that would be greatly appreciated.

- First I am going to ask you some general questions about MPEWS and CAT. Feel free to use examples from situations you may have experienced since your unit started using the MPEWS and CAT systems.

MPEWS

- How are things going with MPEWS on your unit?
- What do you see as the role of the MPEWS?
 - Probe if RN says it “backs them up” (in what way, does it back up your decision, does it back you up in communication with our members of the care team? Etc.)
 - Do you feel MPEWS makes you more or less able to recognize deterioration? Are there any factors that make recognition even easier? For example, are there certain aspects of an assignment, team, atmosphere in the patient room, specific patient illnesses/red flags, etc?
 - Are there any situations when it’s more difficult to recognize deterioration? Could you describe those situations?
- Is there anything about the MPEWS that you would want to change? (if needed, probe to ask what would you change) (If someone says that they don’t think MPEWS are necessary, ask them to explain further)
- Since going live with MPEWS scoring, has the atmosphere changed on your unit?

False positive, no CAT Call

- (If yes...) Can you tell me a little bit about what the atmosphere was like before and what the atmosphere is like now?
- Has it affected how you work with residents? (if so, how?)
- Has it affected how you work with Nurse Practitioners (if so, how?)
- Has it affected how you work with your Charge RN? (if so, how?)
- Has it affected how you work with RT? (if so, how?)
- Has it affected how you work with your fellows? (if so, how?)
- Has it affected how you work with your attendings? (if so, how?)
- Has it affected how you work with your manager? (if so, how?)
- Has it affected how you work with parents/families? (if so, how?)
- When you call a physician about a concern about a patient, do you include the MPEWS in the conversation? If so, how?
 - Is having the MPEWS included in the conversation helpful?
 - Are there times when the MPEWS are not helpful? When, how, and why?

CAT

- Have you had to call CAT in the past? If so, how did things go with those calls?
 - Have there been any times when you have had a challenging or negative experience with the CAT team?
- Do you feel comfortable making final decisions on calling the CAT team?
 - Do you feel comfortable making final decisions on NOT calling the CAT team?
 - Do you feel that making decisions to call or not call the CAT team as part of your role as a nurse? (Omit if discussed earlier)
- Does the idea of calling CAT for one of your patients make you nervous or uncomfortable at all?
- Do you think your unit calls CAT too much, not enough, or just the right amount? Why do you think so?
- Which is worse, missing a patient who is deteriorating and not calling CAT, resulting in a code, or calling CAT for a patient who is not deteriorating, resulting in a false alarm? Why?
 - How much worse: 2x, 10x, 20x, 50x, 100x

False positive, no CAT Call

- How many false alarms, defined as CAT activation that do not result in any significant changes in management, are you willing to put up with for every 1 patient who is rescued by CAT and goes to the ICU urgently?
 - 2 false alarms for every 1 rescue?
 - 5?
 - 10?
 - 20?
 - 50?
 - 100?
 - Why?
- How many CAT calls per week do you think your unit makes?
- What percent of those calls do you think end up being transferred to the ICU?
- Do you know of anyone who has had a negative experience calling CAT? It could be a negative experience with the CAT team itself, other nurses, your charge nurse, your manager, the residents, your fellow, your attending, or the parents. Could you tell me a little bit about those experiences? (you can probe by asking “so what did this nurse say?”)
- We have all been in situations when our gut told us to ask for help, but our brain made us hesitate. Have there been any factors that you can identify that have discouraged you or your co-workers from calling for help in the past, even when you or they had concerns?
- Do you ever worry about what a physician will say, feel, or do if you call CAT without their knowledge and/or approval?
 - Does that influence whether you call the physician or the CAT team?
 - Are there any doctors that you would be sure to call before doing something like calling the CAT team? And again, please refrain from using names. You can just use roles.
 - Have you ever felt like you needed to or have you ever called the CAT team without the approval of a physician, charge nurse, resident, or anyone else on the team?
- I’m going to give you two hypothetical situations and I want to hear how you would react if you were in these situations.
 - The first situation- Imagine you are caring for a patient who you are worried about and think is deteriorating. Do you think it’s important for everyone on the care team to agree that a CAT call should be made or are you comfortable calling even if some on the team do not feel a call should be made?

False positive, no CAT Call

- Probes:
 - Can you tell me more about that?
 - Are there any situations or factors that would make calling independently, so without having a group agreement, more difficult?
 - What if everyone else disagreed with you and didn't think that a CAT call was necessary?
 - What if your charge nurse didn't agree, would you still call?
 - What if the intern or resident didn't agree, would you still call?
 - What if the attending didn't agree?
 - Would anyone's opinion about whether or not to call make you change your mind or question your decision about calling?
 - Probe: If RN says she would need a good reason to not call:
 - What sort of reasons might make you change your mind and/or decisions about calling?
- Now for the second situation- Imagine you are caring for a patient who has a high score but you're not concerned or worried about the patient. Do you think it's important for everyone on the care team to agree that a CAT call does not need to be made, even if the MPEWS is high, or do you think making that decision independently is part of your role as a nurse?
 - Probes:
 - Can you tell me more about that?
 - Are there any situations where you might try to convince someone on the care team that a call isn't needed even if they thought it was? For example, what if you knew that this happened every time the patient got a fever, or received a blood transfusion?
 - What if this patient had had multiple visits from CAT and they always said the patient was fine?
 - What if the family was not concerned and said the patient was at his or her baseline?
 - Would your response be any different based on WHO was concerned? So for example:
 - What if a parent was the only one who was concerned?
 - What if a nursing student was the only one concerned?
 - What if your charge nurse was the one who wanted to call, would you try to talk her out of wanting to call?
 - What if it was the intern or resident who was also caring for the patient who wanted to call, would you try to talk him or her out of calling?
 - What if the attending was the one who wanted to call, would you try to talk him/her out of wanting to call?
- We all know that systems do not always work exactly the way they are planned to work. In your opinion, how do you think your unit leadership feels about using MPEWS and CAT?

False positive, no CAT Call

- So we've talked about the expectation of your leadership. What do you think the expectations of your co-workers are about using MPEWS and CAT?
- And real quickly, I have a quick question about your unit. What is it like on the unit when the census is very high and you are caring for a sick patient whom you are worried about? What do you do in those situations?
 - (getting at asking for help, pulling people from other units, and who makes those decisions)
- **We are about halfway through the interview questions. I'm going to switch from asking you general questions about MPEWS and CAT to some questions about your experience with this patient.** When answering the remainder of questions, please feel free to use examples from other situations you may have experienced at other times since your floor started using MPEWS and CAT.
- Could you walk me through what your shift was like in general, from the time you arrived at the hospital? For example:
 - What was your assignment like?
 - How many patients were you assigned to care for?
- How busy were you? Have you cared for him/her before? If so, when?
- To your knowledge, has this patient had CAT calls before?
 - Have they been to the ICU?
- What was the atmosphere like in the patient's room?
 - Who was there?
 - What did you talk about?
 - (goal is to find out if others in the room such as parents expressed concern, and what the response was)
- I'd like to talk about the nursing notes that you made during your shift, while caring for this patient. Could we go through the notes that you made, entry by entry? Let's start with this note that you entered at XX:XX. Could you read it out loud? And again, if there are any names that I missed, try to skip over them or again just use their role and not their real name.
 - (For sections that sound like they may be expressing concern such as MD notified, probe deeper to find out what was concerning. For example, "We see that there was a jump here in the MPEWS but nothing was noted. Was this because you were busy?" Probe without questioning their judgment or the notes that they entered.)
- What interactions did you have with the other members of the care team for this patient? To ensure confidentiality, please just mention their role, such as charge nurse or attending. How did those interactions go? What did you discuss?

False positive, no CAT Call

- (Probe, if appropriate): Did you feel you were able to get your point across?
- ***[beginning of scenario-specific questions]***
- In some situations, the MPEWS is high, but the team caring for the patient assesses the situation and decides that they do not need assistance from the CAT. Let's start by reviewing the MPEWS flowsheet. Did you recognize that the MPEWS changed to the "red zone" at this point? Were there items that seemed to falsely elevate the MPEWS? What was reassuring about the patient's condition? How did you use both of those factors, the MPEWS and the patient's condition, in your decision-making process about whether to call CAT?
- How did the decision not to call the CAT team come about? Did you discuss as a team? How did people on the team interact with each other during that process? How did that process go? (If it was the respondent who made the decision, ask them how they felt making that decision, if they were comfortable doing that, and if they see that as part of their role).
- Was there agreement? Were you comfortable with this decision? Why/Why not?
- What specifically made the situation with this patient not concerning to you?
- How comfortable were you that not calling was the right thing to do?
 - What made you more comfortable and what made you less comfortable?
 - (want to get at if there are specific types of decompensation, specific patients, specific illnesses that some nurses are better/more comfortable at recognizing than others, also specific factors not included in the MPEWS)
- We all see situations a little differently. Was anyone hesitant to call? So for example, was your charge nurse, residents, attending, or anyone else hesitant to call?
 - Why do you think they were hesitant? What factors did those people say were reassuring about the patient?
 - What did others find worrisome?
- Are there any situations in which your co-workers may have approached the situation you faced with this patient in a different way?
 - Why?
 - What kind of situations may they be?
- Sometimes we change our minds about how we might handle situations after we have had some time to think about them. But then again, there are times when we remain confident in our decisions. If you had it to do over again, would you call the CAT for this patient? Why/Why not?

False positive, no CAT Call

- Sometimes our past experiences affect the way we see certain situations. Have you had any past experiences similar to this one with any of the patients that you have cared for? (if they say yes, ask them to discuss one.)
 - Did those past experiences impact your actions in this situation?
- Thank you so much for all of your thoughtful responses. Is there anything else that you would like to add to help our research team better understand the use of MPEWS and CAT?
 - Have I missed anything in the interview that you think I should have gone over or is there anything that you would like to share with me?
 - What did you think about this process, sitting in here and interviewing with me? Did it make you uncomfortable in any way?
 - Is there anything that you would like to have seen go differently in order to make you feel more comfortable?
- **Thank you for your time. If you have any questions or concerns about the study, please do not hesitate to contact our principal investigator, Kathryn Roberts. Her contact information is available on your copy of the consent form.**

General questions only

Today I am going to ask you some **general questions about MPEWS and CAT**. Feel free to use examples from situations you may have experienced since your floor started using MPEWS and CAT.

Please answer the questions with your honest opinions, because your honest opinions will help us the most in designing the system to work best for you in the future. There are no “right” or “wrong” answers. If you are uncomfortable answering any of the questions, you can ask us to “pass” and we will move on to the next question. The study is completely voluntary, and you can stop the interview at any point and if you should choose to stop the interview, you will not be penalized in any way, and you will still receive your gift card.

One last thing before we start, I do not have a medical background, so if you could respond to the questions as if you are talking to someone who doesn’t understand much of the medical terminology that would be greatly appreciated.

- I am going to ask you some general questions about MPEWS and CAT. Feel free to use examples from situations you may have experienced since your floor started using the MPEWS and CAT systems.

MPEWS

- How are things going with MPEWS on your unit?
- What do you see as the role of the MPEWS?
 - Probe if RN says it “backs them up” (in what way, does it back up your decision, does it back you up in communication with our members of the care team? Etc.)
- Do you feel MPEWS makes you more or less able to recognize deterioration?
 - Are there any factors that make recognition even easier? For example, are there certain aspects of an assignment, team, atmosphere in the patient room, specific patient illnesses/red flags, etc?
 - Are there any situations when it’s more difficult to recognize deterioration? Could you describe those situations?
- Is there anything about the MPEWS that you would want to change or modify? (if needed, probe to ask what would you change) (if someone says that they don’t think MPEWS are necessary, ask them to explain further)
- Since going live with MPEWS scoring, has the atmosphere changed on your unit? (if so, how?) Has it affected how you work with residents? (if so, how?) Charge RN? (if so, how?) RT? (if so, how?) Fellows? (if so, how?) Attendings? (if so, how?) Your manager? (if so, how?) Parents? (if so, how?)

General questions only

- When you call a physician about a concern about a patient, do you include the MPEWS in the conversation? If so, how? Is having the MPEWS included in the conversation helpful? Are there times when the MPEWS are not helpful? When, how, and why?

CAT

- Have you had to call CAT in the past? If so, how did things go with those calls? Have there been any times when you have had a challenging or negative experience with the CAT team?
- Do you feel comfortable making final decisions on calling the CAT team? Do you feel comfortable making final decisions on NOT calling the CAT team? Do you feel that making decisions to call or not call the CAT team as part of your role as a nurse? (Omit if discussed earlier)
- Does the idea of calling CAT for one of your patients make you nervous or uncomfortable at all?
 -
- Do you think your unit calls CAT too much, not enough, or just the right amount? Why do you think so?
- Which is worse, missing a patient who is deteriorating and not calling CAT, resulting in a code, or calling CAT for a patient who is not deteriorating, resulting in a false alarm? Why?
 - How much worse: 2x, 10x, 20x, 50x, 100x
- How many false alarms, defined as CAT activation that do not result in any significant changes in management, are you willing to put up with for every 1 patient who is rescued by CAT and goes to the ICU urgently?
 - 2 false alarms for every 1 rescue?
 - 5?
 - 10?
 - 20?
 - 50?
 - 100?
 - Why?
- How many CAT calls per week do you think your unit makes?
- What percent of those calls do you think end up being transferred to the ICU?

General questions only

- Do you know of anyone who has had a negative experience calling CAT? It could be a negative experience with the CAT team itself, other nurses, your charge nurse, your manager, the residents, your fellow, your attending, or the parents. Could you tell me a little bit about those experiences? (you can probe by asking “so what did this nurse say?”)
- We have all been in situations when our gut told us to ask for help, but our brain made us hesitate. Have there been any factors that you can identify that have discouraged you or your co-workers from calling for help in the past, even when you or they had concerns?
- Do you ever worry about what a physician will say, feel, or do if you call CAT without their knowledge and/or approval? Does that influence whether you call the physician or the CAT team? Are there any doctors that you would be sure to call before doing something like calling the CAT team? Have you ever felt like you needed to or have you ever called the CAT team without the approval of a physician, charge nurse, resident, or anyone else on the team?
- I’m going to give you two hypothetical situations and I want to hear how you would react if you were in these situations.
 - The first situation- Imagine you are caring for a patient who you are worried about and think is deteriorating. Do you think it’s important for everyone on the care team to agree that a CAT call should be made or are you comfortable calling even if some on the team do not feel a call should be made?
 - Probes:
 - Can you tell me more about that?
 - Are there any situations or factors that would make calling independently, so without having a group agreement, more difficult?
 - What if everyone else disagreed with you and didn’t think that a CAT call was necessary?
 - What if your charge nurse didn’t agree, would you still call?
 - What if the intern or resident didn’t agree, would you still call?
 - What if the attending didn’t agree?
 - Would anyone’s opinion about whether or not to call make you change your mind or question your decision about calling?
 - Probe: If RN says she would need a good reason to not call:
 - What sort of reasons might make you change your mind and/or decisions about calling?
 - Now for the second situation- Imagine you are caring for a patient who has a high score but you’re not concerned or worried about the patient. Do you think it’s important for everyone on the care team to agree that a CAT call does not need to be made, even if the MPEWS is high, or do you think making that decision independently is part of your role as a nurse?
 - Probes:
 - Can you tell me more about that?
 - Are there any situations where you might try to convince someone on the care team that a call isn’t needed even if they thought it was? For

General questions only

- example, what if you knew that this happened every time the patient got a fever, or received a blood transfusion?
- What if this patient had had multiple visits from CAT and they always said the patient was fine?
 - What if the family was not concerned and said the patient was at his or her baseline?
 - Would your response be any different based on WHO was concerned? So for example:
 - What if a parent was the only one who was concerned?
 - What if a nursing student was the only one concerned?
 - What if your charge nurse was the one who wanted to call, would you try to talk her out of wanting to call?
 - What if it was the intern or resident who was also caring for the patient who wanted to call, would you try to talk him or her out of calling?
 - What if the attending was the one who wanted to call, would you try to talk him/her out of wanting to call?
-
- What is it like on the unit when the census is very high and you are caring for a sick patient who you are worried about? What do you do in those situations?
 - (getting at asking for help, pulling people from other units, and who makes those decisions)
 - We all know that systems do not always work exactly the way they are planned to work. In your opinion, how do you think your unit leadership feels about using MPEWS and CAT?
 - So we've talked about the expectation of your leadership. What do you think the expectations of your co-workers are about using MPEWS and CAT?
 - Thank you so much for all of your thoughtful responses. Is there anything else that you would like to add to help our research team better understand the use of MPEWS and CAT?
 - Have I missed anything in the interview that you think I should have gone over or is there anything that you would like to share with me?
 - What did you think about this process, sitting in here and interviewing with me?
 - Did it make you uncomfortable in any way?
 - Is there anything that you would like to have seen go differently in order to make you feel more comfortable?
 - **Thank you for your time. If you have any questions or concerns about the study, please do not hesitate to contact our principal investigator, Kathryn Roberts. Her contact information is available on your copy of the consent form.**

INTERVIEW GUIDE
for physician subjects

Physicians: False positive- no CAT call

Today I am going to ask you some questions about your shift on DATE when you were caring for THIS PATIENT (DO NOT USE PATIENT NAME). Since the [event] happened _____ days ago, I have brought a copy of the documentation that you completed on this patient. Feel free to refer to it during the interview if it helps jog your memory about the event. I also have Epic available on my computer if you would like to look at their problem list or hospital course. Feel free to login and take a look.

Please answer the questions with your honest opinions, because your honest opinions will help us the most in designing the system to work best for you in the future. There are no “right” or “wrong” answers. If you are uncomfortable answering any of the questions, you can say “pass” and we will move on to the next question. The study is completely voluntary, and you can stop the interview at any point. If you should choose to stop the interview, you will not be penalized in any way, and you will still receive your gift card.

One last thing before we start, I do not have a medical background, so if you could respond to the questions as if you are talking to someone who doesn’t understand much of the medical terminology that would be greatly appreciated.

First I am going to ask you some general questions about MPEWS and CAT. Feel free to use examples from situations you may have experienced since the hospital started using the MPEWS and CAT. As you may know, we have also interviewed nurses on this topic, so for some of the questions I will ask you to react to some of the themes that came up in those interviews.

MPEWS

1. In general, how are things going with MPEWS?
2. What do you see as the role of the MPEWS?
3. Is there anything about the MPEWS that you would want to change or modify if you could? If so, what?
4. Were you working at the hospital before the hospital went live with MPEWS and CAT?
 - o If so, has the atmosphere changed at all since going live with MPEWS and CAT? How?
5. When we spoke with nurses, they mentioned that there was an adjustment period when CAT and MPEWS first went live in February 2010. What was your experience?
 - o Probe:
 - What was it like getting used to the fact that nurses could contact the ICU by themselves, without your agreement?
 - How is that working now?
 - Are there any issues with that?
6. I understand that residents and some attendings often rotate among the non-ICU inpatient units.
 - o Do you find that some units rely on or use MPEWS more often than others? If so, could you tell me a little bit more about that?
7. Do you find that certain nurses use and rely on MPEWS more often than others?
8. There were three ways that nurses said the MPEWS helped them.
 - o The first way was that it opened their eyes up to new information they might not have noticed on their own. What do you think about that?

- Probe: Has it ever opened your eyes to something you may not have noticed otherwise?
 - Probe: Has it ever helped you prioritize the order in which you see patients when you are on call? Can you tell me more about that?
 - The second way was that it helped to confirm or validate concerns that they already had about some patients. What do you think about that?
 - Has it ever validated your concerns?
 - The third way is that it helped them communicate their concerns to their charge nurses and physicians on the care team in a way that is objective and provides evidence that a patient has changed. What do you think about that?
9. A few nurses said they were sometimes frustrated with the MPEWS guidelines because they had to notify you for changes that they did not feel were clinically concerning. How do you feel about that?
- Have these calls been burdensome?

CAT

10. In general, how are things going with the Critical Assessment Team?
11. Has the CAT team ever been called on a patient that you were caring for?
- Tell me a little bit about that experience.
 - How did the decision to call the CAT team come about?
 - Who suggested calling the CAT team?
12. Imagine that a bedside nurse is taking care of a patient and has concerns that he/she is deteriorating and will need ICU-level care in the next hour or two. How do you think the nurse should approach that? What should he or she do?
- Probe:
 - Should they call CAT right away and then call the intern?
 - Should they call the intern and ask them to come evaluate the patient before calling CAT?
 - Should the intern evaluate and then run it by their senior resident before the nurse calls? Etc..
 - If the residents are all busy, how long should the nurse wait before independently calling CAT?
 - Probe (if resident says at least one resident should not be busy): What if it was a nurse on a surgical unit who could not get a hold of the physicians because they were in the operating room?
 - How would you feel if you walked into a patient's room and found that the critical assessment team had already been called without your knowledge?
 - How would you handle this?
13. Most of the nurses we spoke with felt comfortable making final decisions on calling or not calling the CAT team and saw that as part of their role as a nurse. How do you feel about that?
14. Another one of the themes that nurses have brought up is the importance of families being at the bedside. They told us that families often are very helpful in determining whether patients are at their baseline or are beginning to change for the worse. What do you think about that?
- How much weight do you give to family input when making decisions about managing deterioration?
15. Do you think families should be able to activate CAT independently?

- Tell me more about why you feel that way.
 - Probe: I've heard that from a few people and most people are surprised when I tell them that a lot of other hospitals like CHOP already have family activation in place. And it turns out that families call pretty rarely. [pause].
 - a) Does that change your opinion at all?
16. Do you get a sense that nurses want you to assess a patient before they call the CAT team?
 17. Does the idea of calling CAT for one of your patients make you nervous or uncomfortable at all?
 18. On average, how many calls do you think the Critical Assessment Team receives each day?
 - How many of those patients do you think end up being transferred to an ICU setting?
 19. Do you think that we call CAT too much, not enough, or just the right amount? Why?
 20. How many false alarms, defined as CAT activation that do not result in any significant changes in management, are you willing to put up with for every 1 patient who is rescued by CAT and goes to the ICU urgently?
 - Probe (only if needed): 2, 5, 10, 20, 50, or 100 false alarms for every 1 rescue? Why?
 21. Do you know of anyone who has had a negative experience calling CAT? It could be a negative experience with the CAT team itself, families, or other members of the non-ICU care team, including physicians, nurses, and charge nurses?
 22. We have all been in situations when our gut told us to ask for help, but our brain made us hesitate. Have there been any factors that you can identify that have discouraged you or your co-workers from calling for help in the past, even when you or they may have had concerns?
 23. Do you ever worry about what another member of the care team will say, feel, or do if you call CAT without their knowledge and/or approval? If so, who would you worry about?
 - Probes:
 - Does that influence whether you would call the CAT team?
 - Have you ever felt like you needed to or have you ever called CAT without the approval of another physician, charge nurse, bedside nurse, or anyone else on the team?
 24. One of the themes that came up for the nurses was that sometimes when they had concerns, it was difficult for them to ask for help, because they were worried they might be seen as unable to handle the situation or inadequate. What do you think about that?
 - Is that something that physicians feel sometimes too?
 25. I'm going to give you two hypothetical situations and I want to hear how you would react if you were in these situations:
 - For the first situation: Imagine that you are caring for a patient who you are worried about and think is deteriorating. Do you think that it is important for everyone on the care team to agree that a CAT call should be made? Or are you comfortable calling even if there are members of the care team that do not think a call is necessary?
 - Can you tell me more about that?
 - Are there any situations or factors that would make calling independently, so without having a group agreement, more difficult?
 - What if everyone else disagreed with you and didn't think that a CAT call was necessary?
 - a) What if the bedside nurse caring for the patient didn't agree, would you still call?
 - b) What if the charge nurse on the unit didn't agree, would you still call?
 - c) What if the resident (omit if they are a resident) didn't agree, would you still call?

- d) What if the senior resident (omit if they are a senior resident) didn't agree, would you still call?
- e) What if the attending (omit if they are an attending) didn't agree, would you still call?
- f) Would anyone's opinion about whether or not to call make you change your mind about calling or question your decision about calling?
 - i. What sort of reasons might make you change your mind and/or decision about calling?
- o Now for the second situation: Imagine that you are caring for a patient who has a high MPEW score but you're not concerned or worried about him/her. Do you think that it is important for everyone on the care team to agree that a CAT call does not need to be made, even if the MPEWS is high, or do you think making that decision independently is part of your role as a physician?
 - Can you tell me more about that?
 - Are there any situations where you might try to convince someone on the care team that a call isn't necessary even if they thought that it was? For example, what if you knew that the patient's score increased every time the patient had a fever or received a blood transfusion?
 - What if you knew that this patient had had multiple visits from CAT and they always said that the patient was fine, would you try to talk someone out of wanting to call?
 - What if the family said that they were not concerned and that the patient was his or her baseline, would you try to talk someone out of wanting to call?
 - Would your response be any different based on who was concerned and wanted to call? For example,
 - a) What if a parent was the only one who was concerned and wanted to call?
 - b) What if a bedside nurse was the only one concerned and wanted to call?
 - c) What if a nursing student was the only one concerned and wanted to call?
 - d) What if a charge nurse was the only one concerned and wanted to call?
 - e) What if it was the intern (omit if they are the resident) who was concerned and wanted to call?
 - f) What if it was the senior resident (omit if they are the senior resident) who was concerned and wanted to call?
 - g) What if it was the fellow (omit if they are the fellow) who was concerned and wanted to call?
 - h) What if it was the attending (omit if they are the attending) who was concerned and wanted to call?

Scenario Specific Questions

We are more than halfway through the interview questions. I'm going to switch from asking you general questions about MPEWS and CAT to some questions about your experience with this patient.

26. Could you walk me through what your shift was like in general, from the time you arrived at the hospital? For example:
 - How many patients were you taking care of?
 - How busy were you?
27. When was the first time that you met this patient?
 - Did you actually see and/or assess the patient or did you just talk about the patient with other members of the care team?
28. Could you tell me a little bit about what rounds were like on this patient?
 - Did anyone raise any concern during rounds about him/her?
29. What other interactions did you have with this patient, his/her family, nurses, or with other members of the care team?
30. What was the atmosphere like in the patient's room (omit if they say that they had never been in to assess the patient)?
 - Who was there?
 - What did you talk about?
31. I'd like to talk about the documentation that you made during your shift, while caring for this patient. You don't have to read the documentation word-for-word, but if you could read it to yourself and then just give me an overview of what was going on with this patient, that would be great.
32. What interactions did you have with the other members of the care team for this patient? To ensure confidentiality, please just mention their role, such as charge nurse or attending.
 - How did those interactions go?
 - What did you discuss?
 - Do you and/or they feel you were able to get your point across?
33. In some situations, the MPEWS is high, but the team caring for the patient assesses the situation and decides that they do not need assistance from the CAT. Were there any discussions with the RN or anyone else on the care team about the MPEWS changing?
 - If so, do you remember what elevated the patient's score?
34. Let's review the MPEWS scoring for this patient. As we look at the scoring, what parts of the score were elevated? What contributed to the higher scores?
35. How did the decision not to call the CAT team come about?
 - Did you discuss as a team?
 - How did the process go?
 - How did people on the team interact with each other during that process?
 - If it was the respondent who made the decision, ask them how they felt making that decision. Were you comfortable making that decision?
 - Was there agreement regarding the decision not to call?
36. Were you comfortable with this decision? Why/why not?
37. What specifically made the situation with this patient not concerning to you?
38. Are there any situations in which your co-workers may have approached the situation that you faced with this patient in a different way?
 - Why?
 - What kind of situations may they be?
39. Sometimes we change our minds about how we might handle situations after we have had some time to think about them. But then again, there are times when we remain confident in our decisions. If you had to do it over again, would you call the CAT for this patient? Why/why not?

40. Sometimes our past experiences affect the way we see certain situations. Have you had any past experiences similar to this one with any of the patients that you have cared for? (if they say yes, ask them to discuss one.)

- Did those past experiences impact your actions in this situation?

That's the end of our interview. Thank you so much for all of your thoughtful responses. Is there anything else that you would like to add to help our research team better understand the use of MPEWS and CAT?

Thank you for your time. If you have any questions or concerns about the study, please do not hesitate to contact Chris Bonafide or Kathryn Roberts. Their contact information is available on your copy of the consent form.

Physicians: False negative- CAT/CODE (score low, urgent transfer)

Today I am going to ask you some questions about your shift on DATE when you were caring for THIS PATIENT (DO NOT USE PATIENT NAME). Since the [event] happened _____ days ago, I have brought a copy of the documentation that you completed on this patient. Feel free to refer to it during the interview if it helps jog your memory about the event. I also have Epic available on my computer if you would like to look at their problem list or hospital course. Feel free to login and take a look.

Please answer the questions with your honest opinions, because your honest opinions will help us the most in designing the system to work best for you in the future. There are no “right” or “wrong” answers. If you are uncomfortable answering any of the questions, you can say “pass” and we will move on to the next question. The study is completely voluntary, and you can stop the interview at any point. If you should choose to stop the interview, you will not be penalized in any way, and you will still receive your gift card.

One last thing before we start, I do not have a medical background, so if you could respond to the questions as if you are talking to someone who doesn't understand much of the medical terminology that would be greatly appreciated.

First I am going to ask you some general questions about MPEWS and CAT. Feel free to use examples from situations you may have experienced since the hospital started using the MPEWS and CAT. As you may know, we have also interviewed nurses on this topic, so for some of the questions I will ask you to react to some of the themes that came up in those interviews.

MPEWS

1. In general, how are things going with MPEWS?
2. What do you see as the role of the MPEWS?
3. Is there anything about the MPEWS that you would want to change or modify if you could? If so, what?
4. Were you working at the hospital before the hospital went live with MPEWS and CAT?
 - o If so, has the atmosphere changed at all since going live with MPEWS and CAT? How?
5. When we spoke with nurses, they mentioned that there was an adjustment period when CAT and MPEWS first went live in February 2010. What was your experience?
 - o Probe:
 - What was it like getting used to the fact that nurses could contact the ICU by themselves, without your agreement?
 - How is that working now?
 - Are there any issues with that?
6. I understand that residents and some attendings often rotate among the non-ICU inpatient units.
 - o Do you find that some units rely on or use MPEWS more often than others? If so, could you tell me a little bit more about that?
7. Do you find that certain nurses use and rely on MPEWS more often than others?
8. There were three ways that nurses said the MPEWS helped them.
 - o The first way was that it opened their eyes up to new information they might not have noticed on their own. What do you think about that?
 - Probe: Has it ever opened your eyes to something you may not have noticed otherwise?

- Probe: Has it ever helped you prioritize the order in which you see patients when you are on call? Can you tell me more about that?
 - The second way was that it helped to confirm or validate concerns that they already had about some patients. What do you think about that?
 - Has it ever validated your concerns?
 - The third way is that it helped them communicate their concerns to their charge nurses and physicians on the care team in a way that is objective and provides evidence that a patient has changed. What do you think about that?
- 9. A few nurses said they were sometimes frustrated with the MPEWS guidelines because they had to notify you for changes that they did not feel were clinically concerning. How do you feel about that?
 - Have these calls been burdensome?

CAT

10. In general, how are things going with the Critical Assessment Team?
11. Has the CAT team ever been called on a patient that you were caring for?
 - Tell me a little bit about that experience.
 - How did the decision to call the CAT team come about?
 - Who suggested calling the CAT team?
12. Imagine that a bedside nurse is taking care of a patient and has concerns that he/she is deteriorating and will need ICU-level care in the next hour or two. How do you think the nurse should approach that? What should he or she do?
 - Probe:
 - Should they call CAT right away and then call the intern?
 - Should they call the intern and ask them to come evaluate the patient before calling CAT?
 - Should the intern evaluate and then run it by their senior resident before the nurse calls? Etc..
 - If the residents are all busy, how long should the nurse wait before independently calling CAT?
 - Probe (if resident says at least one resident should not be busy): What if it was a nurse on a surgical unit who could not get a hold of the physician because they were in the operating room?
 - How would you feel if you walked into a patient's room and found that the critical assessment team had already been called without your knowledge?
 - How would you handle this?
13. Most of the nurses we spoke with felt comfortable making final decisions on calling or not calling the CAT team and saw that as part of their role as a nurse. How do you feel about that?
14. Another one of the themes that nurses have brought up is the importance of families being at the bedside. They told us that families often are very helpful in determining whether patients are at their baseline or are beginning to change for the worse. What do you think about that?
 - How much weight do you give to family input when making decisions about managing deterioration?
15. Do you think families should be able to activate CAT independently?
 - Tell me more about why you feel that way.

- Probe: I've heard that from a few people and most people are surprised when I tell them that a lot of other hospitals like CHOP already have family activation in place. And it turns out that families call pretty rarely. [pause].
 - a) Does that change your opinion at all?
- 16. Do you get a sense that nurses want you to assess a patient before they call the CAT team?
- 17. Does the idea of calling CAT for one of your patients make you nervous or uncomfortable at all?
- 18. On average, how many calls do you think the Critical Assessment Team receives each day?
 - How many of those patients do you think end up being transferred to an ICU setting?
- 19. Do you think that we call CAT too much, not enough, or just the right amount? Why?
- 20. How many false alarms, defined as CAT activation that do not result in any significant changes in management, are you willing to put up with for every 1 patient who is rescued by CAT and goes to the ICU urgently?
 - Probe (only if needed): 2, 5, 10, 20, 50, or 100 false alarms for every 1 rescue? Why?
- 21. Do you know of anyone who has had a negative experience calling CAT? It could be a negative experience with the CAT team itself, families, or other members of the non-ICU care team, including physicians, nurses, and charge nurses?
- 22. We have all been in situations when our gut told us to ask for help, but our brain made us hesitate. Have there been any factors that you can identify that have discouraged you or your co-workers from calling for help in the past, even when you or they may have had concerns?
- 23. Do you ever worry about what another member of the care team will say, feel, or do if you call CAT without their knowledge and/or approval? If so, who would you worry about?
 - Probes:
 - Does that influence whether you would call the CAT team?
 - Have you ever felt like you needed to or have you ever called CAT without the approval of another physician, charge nurse, bedside nurse, or anyone else on the team?
- 24. One of the themes that came up for the nurses was that sometimes when they had concerns, it was difficult for them to ask for help, because they were worried they might be seen as unable to handle the situation or inadequate. What do you think about that?
 - Is that something that physicians feel sometimes too?
- 25. I'm going to give you two hypothetical situations and I want to hear how you would react if you were in these situations:
 - For the first situation: Imagine that you are caring for a patient who you are worried about and think is deteriorating. Do you think that it is important for everyone on the care team to agree that a CAT call should be made? Or are you comfortable calling even if there are members of the care team that do not think a call is necessary?
 - Can you tell me more about that?
 - Are there any situations or factors that would make calling independently, so without having a group agreement, more difficult?
 - What if everyone else disagreed with you and didn't think that a CAT call was necessary?
 - a) What if the bedside nurse caring for the patient didn't agree, would you still call?
 - b) What if the charge nurse on the unit didn't agree, would you still call?
 - c) What if the resident (omit if they are a resident) didn't agree, would you still call?

- d) What if the senior resident (omit if they are a senior resident) didn't agree, would you still call?
- e) What if the attending (omit if they are an attending) didn't agree, would you still call?
- f) Would anyone's opinion about whether or not to call make you change your mind about calling or question your decision about calling?
 - i. What sort of reasons might make you change your mind and/or decision about calling?
- o Now for the second situation: Imagine that you are caring for a patient who has a high MPEW score but you're not concerned or worried about him/her. Do you think that it is important for everyone on the care team to agree that a CAT call does not need to be made, even if the MPEWS is high, or do you think making that decision independently is part of your role as a physician?
 - Can you tell me more about that?
 - Are there any situations where you might try to convince someone on the care team that a call isn't necessary even if they thought that it was? For example, what if you knew that the patient's score increased every time the patient had a fever or received a blood transfusion?
 - What if you knew that this patient had had multiple visits from CAT and they always said that the patient was fine, would you try to talk someone out of wanting to call?
 - What if the family said that they were not concerned and that the patient was his or her baseline, would you try to talk someone out of wanting to call?
 - Would your response be any different based on who was concerned and wanted to call? For example,
 - a) What if a parent was the only one who was concerned and wanted to call?
 - b) What if a bedside nurse was the only one concerned and wanted to call?
 - c) What if a nursing student was the only one concerned and wanted to call?
 - d) What if a charge nurse was the only one concerned and wanted to call?
 - e) What if it was the intern (omit if they are the resident) who was concerned and wanted to call?
 - f) What if it was the senior resident (omit if they are the senior resident) who was concerned and wanted to call?
 - g) What if it was the fellow (omit if they are the fellow) who was concerned and wanted to call?
 - h) What if it was the attending (omit if they are the attending) who was concerned and wanted to call?

Scenario Specific Questions

We are about halfway through the interview questions. I'm going to switch from asking you general questions about MPEWS and CAT to some questions about your experience with this patient.

26. Could you walk me through what your shift was like in general, from the time you arrived at the hospital? For example:
 - How many patients were you taking care of?
 - How busy were you?
27. When was the first time that you met this patient?
 - Did you actually see and/or assess the patient or did you just talk about the patient with other members of the care team?
28. Could you tell me a little bit about what rounds were like on this patient?
 - Did anyone raise any concern during rounds about him/her?
29. What other interactions did you have with this patient, his/her family, nurses, or with other members of the care team?
30. What was the atmosphere like in the patient's room (omit if they say that they had never been in to assess the patient)?
 - Who was there?
 - What did you talk about?
31. I'd like to talk about the documentation that you made during your shift, while caring for this patient. You don't have to read the documentation word-for-word, but if you could read it to yourself and then just give me an overview of what was going on with this patient, that would be great.
32. What interactions did you have with the other members of the care team for this patient? To ensure confidentiality, please just mention their role, such as charge nurse or attending.
 - How did those interactions go?
 - What did you discuss?
 - Do you and/or they feel you were able to get your point across?

[Beginning of scenario-specific questions]

33. How did the decision to call the CAT/CODE team come about?
 - Did you discuss as a team?
 - How did the process go?
 - How did people on the team interact with each other during that process?
 - If it was the respondent who made the decision, ask them how they felt making that decision. Were you comfortable making that decision?
 - Was there agreement regarding the decision to call?
34. Were you comfortable with this decision? Why/why not?
35. What specifically made the situation with this patient concerning to you?
36. Are there any situations in which your co-workers may have approached the situation that you faced with this patient in a different way?
 - Why?
 - What kind of situations may they be?
37. Sometimes we change our minds about how we might handle situations after we have had some time to think about them. But then again, there are times when we remain confident in our decisions. If you had to do it over again, would you call a CAT/CODE for this patient? Why/why not?
38. Sometimes our past experiences affect the way we see certain situations. Have you had any past experiences similar to this one with any of the patients that you have cared for? (if they say yes, ask them to discuss one.)
 - Did those past experiences impact your actions in this situation?

That's the end of our interview. Thank you so much for all of your thoughtful responses. Is there anything else that you would like to add to help our research team better understand the use of MPEWS and CAT?

Thank you for your time. If you have any questions or concerns about the study, please do not hesitate to contact Chris Bonafide or Kathryn Roberts. Their contact information is available on your copy of the consent form.

Physicians: False Positive- (CAT called, NO ICU transfer)

Today I am going to ask you some questions about your shift on DATE when you were caring for THIS PATIENT (DO NOT USE PATIENT NAME). Since the [event] happened _____ days ago, I have brought a copy of the documentation that you completed on this patient. Feel free to refer to it during the interview if it helps jog your memory about the event. I also have Epic available on my computer if you would like to look at their problem list or hospital course. Feel free to login and take a look.

Please answer the questions with your honest opinions, because your honest opinions will help us the most in designing the system to work best for you in the future. There are no “right” or “wrong” answers. If you are uncomfortable answering any of the questions, you can say “pass” and we will move on to the next question. The study is completely voluntary, and you can stop the interview at any point. If you should choose to stop the interview, you will not be penalized in any way, and you will still receive your gift card.

One last thing before we start, I do not have a medical background, so if you could respond to the questions as if you are talking to someone who doesn't understand much of the medical terminology that would be greatly appreciated.

First I am going to ask you some general questions about MPEWS and CAT. Feel free to use examples from situations you may have experienced since the hospital started using the MPEWS and CAT. As you may know, we have also interviewed nurses on this topic, so for some of the questions I will ask you to react to some of the themes that came up in those interviews.

MPEWS

1. In general, how are things going with MPEWS?
2. What do you see as the role of the MPEWS?
3. Is there anything about the MPEWS that you would want to change or modify if you could? If so, what?
4. Were you working at the hospital before the hospital went live with MPEWS and CAT?
 - If so, has the atmosphere changed at all since going live with MPEWS and CAT? How?
5. When we spoke with nurses, they mentioned that there was an adjustment period when CAT and MPEWS first went live in February 2010. What was your experience?
 - Probe:
 - What was it like getting used to the fact that nurses could contact the ICU by themselves, without your agreement?
 - How is that working now?
 - Are there any issues with that?
6. I understand that residents and some attendings often rotate among the non-ICU inpatient units.
 - Do you find that some units rely on or use MPEWS more often than others? If so, could you tell me a little bit more about that?
7. Do you find that certain nurses use and rely on MPEWS more often than others?
8. There were three ways that nurses said the MPEWS helped them.
 - The first way was that it opened their eyes up to new information they might not have noticed on their own. What do you think about that?
 - Probe: Has it ever opened your eyes to something you may not have noticed otherwise?

- Probe: Has it ever helped you prioritize the order in which you see patients when you are on call? Can you tell me more about that?
 - The second way was that it helped to confirm or validate concerns that they already had about some patients. What do you think about that?
 - Has it ever validated your concerns?
 - The third way is that it helped them communicate their concerns to their charge nurses and physicians on the care team in a way that is objective and provides evidence that a patient has changed. What do you think about that?
- 9. A few nurses said they were sometimes frustrated with the MPEWS guidelines because they had to notify you for changes that they did not feel were clinically concerning. How do you feel about that?
 - Have these calls been burdensome?

CAT

10. In general, how are things going with the Critical Assessment Team?
11. Has the CAT team ever been called on a patient that you were caring for?
 - Tell me a little bit about that experience.
 - How did the decision to call the CAT team come about?
 - Who suggested calling the CAT team?
12. Imagine that a bedside nurse is taking care of a patient and has concerns that he/she is deteriorating and will need ICU-level care in the next hour or two. How do you think the nurse should approach that? What should he or she do?
 - Probe:
 - Should they call CAT right away and then call the intern?
 - Should they call the intern and ask them to come evaluate the patient before calling CAT?
 - Should the intern evaluate and then run it by their senior resident before the nurse calls? Etc..
 - If the residents are all busy, how long should the nurse wait before independently calling CAT?
 - Probe (if resident says at least one resident should not be busy): What if it was a nurse on a surgical unit who could not get a hold of the physicians because they were in the operating room?
 - How would you feel if you walked into a patient's room and found that the critical assessment team had already been called without your knowledge?
 - How would you handle this?
13. Most of the nurses we spoke with felt comfortable making final decisions on calling or not calling the CAT team and saw that as part of their role as a nurse. How do you feel about that?
14. Another one of the themes that nurses have brought up is the importance of families being at the bedside. They told us that families often are very helpful in determining whether patients are at their baseline or are beginning to change for the worse. What do you think about that?
 - How much weight do you give to family input when making decisions about managing deterioration?
15. Do you think families should be able to activate CAT independently?
 - Tell me more about why you feel that way.

- Probe: I've heard that from a few people and most people are surprised when I tell them that a lot of other hospitals like CHOP already have family activation in place. And it turns out that families call pretty rarely. [pause].
 - a) Does that change your opinion at all?
- 16. Do you get a sense that nurses want you to assess a patient before they call the CAT team?
- 17. Does the idea of calling CAT for one of your patients make you nervous or uncomfortable at all?
- 18. On average, how many calls do you think the Critical Assessment Team receives each month?
 - How many of those patients do you think end up being transferred to an ICU setting?
- 19. Do you think that we call CAT too much, not enough, or just the right amount? Why?
- 20. How many false alarms, defined as CAT activation that do not result in any significant changes in management, are you willing to put up with for every 1 patient who is rescued by CAT and goes to the ICU urgently?
 - Probe (only if needed): 2, 5, 10, 20, 50, or 100 false alarms for every 1 rescue? Why?
- 21. Do you know of anyone who has had a negative experience calling CAT? It could be a negative experience with the CAT team itself, families, or other members of the non-ICU care team, including physicians, nurses, and charge nurses?
- 22. We have all been in situations when our gut told us to ask for help, but our brain made us hesitate. Have there been any factors that you can identify that have discouraged you or your co-workers from calling for help in the past, even when you or they may have had concerns?
- 23. Do you ever worry about what another member of the care team will say, feel, or do if you call CAT without their knowledge and/or approval? If so, who would you worry about?
 - Probes:
 - Does that influence whether you would call the CAT team?
 - Have you ever felt like you needed to or have you ever called CAT without the approval of another physician, charge nurse, bedside nurse, or anyone else on the team?
- 24. One of the themes that came up for the nurses was that sometimes when they had concerns, it was difficult for them to ask for help, because they were worried they might be seen as unable to handle the situation or inadequate. What do you think about that?
 - Is that something that physicians feel sometimes too?
- 25. I'm going to give you two hypothetical situations and I want to hear how you would react if you were in these situations:
 - For the first situation: Imagine that you are caring for a patient who you are worried about and think is deteriorating. Do you think that it is important for everyone on the care team to agree that a CAT call should be made? Or are you comfortable calling even if there are members of the care team that do not think a call is necessary?
 - Can you tell me more about that?
 - Are there any situations or factors that would make calling independently, so without having a group agreement, more difficult?
 - What if everyone else disagreed with you and didn't think that a CAT call was necessary?
 - a) What if the bedside nurse caring for the patient didn't agree, would you still call?
 - b) What if the charge nurse on the unit didn't agree, would you still call?
 - c) What if the resident (omit if they are a resident) didn't agree, would you still call?

- d) What if the senior resident (omit if they are a senior resident) didn't agree, would you still call?
- e) What if the attending (omit if they are an attending) didn't agree, would you still call?
- f) Would anyone's opinion about whether or not to call make you change your mind about calling or question your decision about calling?
 - i. What sort of reasons might make you change your mind and/or decision about calling?
- o Now for the second situation: Imagine that you are caring for a patient who has a high MPEW score but you're not concerned or worried about him/her. Do you think that it is important for everyone on the care team to agree that a CAT call does not need to be made, even if the MPEWS is high, or do you think making that decision independently is part of your role as a physician?
 - Can you tell me more about that?
 - Are there any situations where you might try to convince someone on the care team that a call isn't necessary even if they thought that it was? For example, what if you knew that the patient's score increased every time the patient had a fever or received a blood transfusion?
 - What if you knew that this patient had had multiple visits from CAT and they always said that the patient was fine, would you try to talk someone out of wanting to call?
 - What if the family said that they were not concerned and that the patient was his or her baseline, would you try to talk someone out of wanting to call?
 - Would your response be any different based on who was concerned and wanted to call? For example,
 - a) What if a parent was the only one who was concerned and wanted to call?
 - b) What if a bedside nurse was the only one concerned and wanted to call?
 - c) What if a nursing student was the only one concerned and wanted to call?
 - d) What if a charge nurse was the only one concerned and wanted to call?
 - e) What if it was the intern (omit if they are the resident) who was concerned and wanted to call?
 - f) What if it was the senior resident (omit if they are the senior resident) who was concerned and wanted to call?
 - g) What if it was the fellow (omit if they are the fellow) who was concerned and wanted to call?
 - h) What if it was the attending (omit if they are the attending) who was concerned and wanted to call?

Scenario Specific Questions

We are about halfway through the interview questions. I'm going to switch from asking you general questions about MPEWS and CAT to some questions about your experience with this patient.

26. Could you walk me through what your shift was like in general, from the time you arrived at the hospital? For example:
 - How many patients were you taking care of?
 - How busy were you?
27. When was the first time that you met this patient?
 - Did you actually see and/or assess the patient or did you just talk about the patient with other members of the care team?
28. Could you tell me a little bit about what rounds were like on this patient?
 - Did anyone raise any concern during rounds about him/her?
29. What other interactions did you have with this patient, his/her family, nurses, or with other members of the care team?
30. What was the atmosphere like in the patient's room (omit if they say that they had never been in to assess the patient)?
 - Who was there?
 - What did you talk about?
31. I'd like to talk about the documentation that you made during your shift, while caring for this patient. You don't have to read the documentation word-for-word, but if you could read it to yourself and then just give me an overview of what was going on with this patient, that would be great.
32. What interactions did you have with the other members of the care team for this patient? To ensure confidentiality, please just mention their role, such as charge nurse or attending.
 - How did those interactions go?
 - What did you discuss?
 - Do you and/or they feel you were able to get your point across?

[Beginning of scenario-specific questions]

33. Let's review the MPEWS scoring of this patient. As we look at the scoring, what parts of the score were elevated? What contributed to the higher scores?
34. How did the decision to call the CAT team come about?
 - Did you discuss as a team?
 - How did the process go?
 - How did people on the team interact with each other during that process?
 - If it was the respondent who made the decision, ask them how they felt making that decision. Were you comfortable making that decision?
 - Was there agreement regarding the decision to call?
35. Were you comfortable with this decision? Why/why not?
36. How important were the MPEWS in making the decision to call the CAT team?
37. What specifically made the situation with this patient concerning to you?
38. We all see situations a little differently. Was anyone hesitant to call? So for example, was the bedside or charge nurse, residents, attending, or anyone else hesitant to call? If so, why do you think they were hesitant?
39. Are there any situations in which your co-workers may have approached the situation that you faced with this patient in a different way?
 - Why?
 - What kind of situations may they be?
40. Sometimes we change our minds about how we might handle situations after we have had some time to think about them. But then again, there are times when we remain confident in

our decisions. If you had to do it over again, would you call a CODE/CAT for this patient?
Why/why not?

41. Sometimes our past experiences affect the way we see certain situations. Have you had any past experiences similar to this one with any of the patients that you have cared for? (if they say yes, ask them to discuss one.)
- Did those past experiences impact your actions in this situation?

That's the end of our interview. Thank you so much for all of your thoughtful responses. Is there anything else that you would like to add to help our research team better understand the use of MPEWS and CAT?

Thank you for your time. If you have any questions or concerns about the study, please do not hesitate to contact Chris Bonafide or Kathryn Roberts. Their contact information is available on your copy of the consent form.

Purposively selected nurses for SA#2 general questions only

Today I am going to ask you some **general questions about MPEWS and CAT**. Feel free to use examples from situations you may have experienced since your floor started using MPEWS and CAT.

Please answer the questions with your honest opinions, because your honest opinions will help us the most in designing the system to work best for you in the future. There are no “right” or “wrong” answers. If you are uncomfortable answering any of the questions, you say “pass” and we will move on to the next question. The study is completely voluntary, and you can stop the interview at any point. If you should choose to stop the interview, you will not be penalized in any way, and you will still receive your gift card.

One last thing before we start, I do not have a medical background, so if you could respond to the questions as if you are talking to someone who doesn't understand much of the medical terminology that would be greatly appreciated.

I am going to ask you some general questions about MPEWS and CAT. Feel free to use examples from situations you may have experienced since the hospital started using the MPEWS and CAT. As you may know, we have also interviewed nurses on this topic, so for some of the questions I will ask you to react to some of the themes that came up in those interviews.

MPEWS

1. In general, how are things going with MPEWS?
2. What do you see as the role of the MPEWS?
3. Is there anything about the MPEWS that you would want to change or modify if you could? If so, what?
4. Were you working at the hospital before the hospital went live with MPEWS and CAT?
 - If so, has the atmosphere changed at all since going live with MPEWS and CAT? How?
5. When we spoke with nurses, they mentioned that there was an adjustment period when CAT and MPEWS first went live in February 2010. What was your experience?
 - Probe:
 - What was it like getting used to the fact that nurses could contact the ICU by themselves, without your agreement?
 - How is that working now?
 - Are there any issues with that?
6. I understand that residents and some attendings often rotate among the non-ICU inpatient units.
 - Do you find that some units rely on or use MPEWS more often than others? If so, could you tell me a little bit more about that?
7. Do you find that certain nurses use and rely on MPEWS more often than others?
8. There were three ways that nurses said the MPEWS helped them.
 - The first way was that it opened their eyes up to new information they might not have noticed on their own. What do you think about that?
 - Probe: Has it ever opened your eyes to something you may not have noticed otherwise?
 - Probe: Has it ever helped you prioritize the order in which you see patients when you are on call? Can you tell me more about that?

- The second way was that it helped to confirm or validate concerns that they already had about some patients. What do you think about that?
 - Has it ever validated your concerns?
 - The third way is that it helped them communicate their concerns to their charge nurses and physicians on the care team in a way that is objective and provides evidence that a patient has changed. What do you think about that?
9. A few nurses said they were sometimes frustrated with the MPEWS guidelines because they had to notify you for changes that they did not feel were clinically concerning. How do you feel about that?
- Have these calls been burdensome?

CAT

10. In general, how are things going with the Critical Assessment Team?
11. Has the CAT team ever been called on a patient that you were caring for?
- Tell me a little bit about that experience.
 - How did the decision to call the CAT team come about?
 - Who suggested calling the CAT team?
12. Imagine that a bedside nurse is taking care of a patient and has concerns that he/she is deteriorating and will need ICU-level care in the next hour or two. How do you think the nurse should approach that? What should he or she do?
- Probe:
 - Should they call CAT right away and then call the intern?
 - Should they call the intern and ask them to come evaluate the patient before calling CAT?
 - Should the intern evaluate and then run it by their senior resident before the nurse calls? Etc..
 - If the residents are all busy, how long should the nurse wait before independently calling CAT?
 - Probe (if resident says at least one resident should not be busy): What if it was a nurse on a surgical unit who could not get a hold of the physician because they were in the operation room?
 - How would you feel if you walked into a patient's room and found that the critical assessment team had already been called without your knowledge?
 - How would you handle this?
13. Most of the nurses we spoke with felt comfortable making final decisions on calling or not calling the CAT team and saw that as part of their role as a nurse. How do you feel about that?
14. Another one of the themes that nurses have brought up is the importance of families being at the bedside. They told us that families often are very helpful in determining whether patients are at their baseline or are beginning to change for the worse. What do you think about that?
- How much weight do you give to family input when making decisions about managing deterioration?
15. Do you think families should be able to activate CAT independently?
- Tell me more about why you feel that way.
 - Probe: I've heard that from a few people and most people are surprised when I tell them that a lot of other hospitals like CHOP already have family activation in place. And it turns out that families call pretty rarely. [pause].

- a) Does that change your opinion at all?
16. Do you get a sense that nurses want you to assess a patient before they call the CAT team?
 17. Does the idea of calling CAT for one of your patients make you nervous or uncomfortable at all?
 18. On average, how many calls do you think the Critical Assessment Team receives each month?
 - o How many of those patients do you think end up being transferred to an ICU setting?
 19. Do you think that we call CAT too much, not enough, or just the right amount? Why?
 20. Which is worse, missing a patient who is deteriorating and not calling CAT, resulting in a code, or calling CAT for a patient who is not deteriorating, resulting in a false alarm? Why?
 - o How much worse: 2x, 10x, 20x, 50x, 100x?
 21. How many false alarms, defined as CAT activation that do not result in any significant changes in management, are you willing to put up with for every 1 patient who is rescued by CAT and goes to the ICU urgently?
 - o Probe (only if needed): 2, 5, 10, 20, 50, or 100 false alarms for every 1 rescue? Why?
 22. Do you know of anyone who has had a negative experience calling CAT? It could be a negative experience with the CAT team itself, families, or other members of the non-ICU care team, including physicians, nurses, and charge nurses?
 23. We have all been in situations when our gut told us to ask for help, but our brain made us hesitate. Have there been any factors that you can identify that have discouraged you or your co-workers from calling for help in the past, even when you or they may have had concerns?
 24. Do you ever worry about what another member of the care team will say, feel, or do if you call CAT without their knowledge and/or approval? If so, who would you worry about?
 - o Probes:
 - Does that influence whether you would call the CAT team?
 - Have you ever felt like you needed to or have you ever called CAT without the approval of another physician, charge nurse, bedside nurse, or anyone else on the team?
 25. One of the themes that came up for the nurses was that sometimes when they had concerns, it was difficult for them to ask for help, because they were worried they might be seen as unable to handle the situation or inadequate. What do you think about that?
 - o Is that something that physicians feel sometimes too?
 26. I'm going to give you two hypothetical situations and I want to hear how you would react if you were in these situations:
 - o For the first situation: Imagine that you are caring for a patient who you are worried about and think is deteriorating. Do you think that it is important for everyone on the care team to agree that a CAT call should be made? Or are you comfortable calling even if there are members of the care team that do not think a call is necessary?
 - Can you tell me more about that?
 - Are there any situations or factors that would make calling independently, so without having a group agreement, more difficult?
 - What if everyone else disagreed with you and didn't think that a CAT call was necessary?
 - a) What if the bedside nurse caring for the patient didn't agree, would you still call?
 - b) What if the charge nurse on the unit didn't agree, would you still call?
 - c) What if the resident (omit if they are a resident) didn't agree, would you still call?
 - d) What if the senior resident (omit if they are a senior resident) didn't agree, would you still call?

- e) What if the attending (omit if they are an attending) didn't agree, would you still call?
- f) Would anyone's opinion about whether or not to call make you change your mind about calling or question your decision about calling?
 - i. What sort of reasons might make you change your mind and/or decision about calling?
- o Now for the second situation: Imagine that you are caring for a patient who has a high MPEW score but you're not concerned or worried about him/her. Do you think that it is important for everyone on the care team to agree that a CAT call does not need to be made, even if the MPEWS is high, or do you think making that decision independently is part of your role as a physician?
 - Can you tell me more about that?
 - Are there any situations where you might try to convince someone on the care team that a call isn't necessary even if they thought that it was? For example, what if you knew that the patient's score increased every time the patient had a fever or received a blood transfusion?
 - What if you knew that this patient had had multiple visits from CAT and they always said that the patient was fine, would you try to talk someone out of wanting to call?
 - What if the family said that they were not concerned and that the patient was his or her baseline, would you try to talk someone out of wanting to call?
 - Would your response be any different based on who was concerned and wanted to call? For example,
 - a) What if a parent was the only one who was concerned and wanted to call?
 - b) What if a bedside nurse was the only one concerned and wanted to call?
 - c) What if a nursing student was the only one concerned and wanted to call?
 - d) What if a charge nurse was the only one concerned and wanted to call?
 - e) What if it was the intern (omit if they are the resident) who was concerned and wanted to call?
 - f) What if it was the senior resident (omit if they are the senior resident) who was concerned and wanted to call?
 - g) What if it was the fellow (omit if they are the fellow) who was concerned and wanted to call?
 - h) What if it was the attending (omit if they are the attending) who was concerned and wanted to call?

That's the end of our interview. Thank you so much for all of your thoughtful responses. Is there anything else that you would like to add to help our research team better understand the use of MPEWS and CAT?

Thank you for your time. If you have any questions or concerns about the study, please do not hesitate to contact Chris Bonafide or Kathryn Roberts. Their contact information is available on your copy of the consent form.