

Supplemental Figure 1 – Interview Guide

Thank you for agreeing to speak with me today. I wanted to interview you to learn about how pediatric residents respond to a hospital disaster, specifically in the NICU. I will ask you a few questions about your role, your training, and give you a few hypothetical scenarios as a pediatric resident (and chief) at Children's National. Your insights will help me to learn about disaster response and training in the NICU and will help the NICU team develop better training programs for the residents.

Demographics

1. What is your current year of pediatric training?
2. Have you participated in prior disaster training courses? If yes, which ones?
3. Have you participated in a NICU evacuation drill?
4. Have you participated in a NICU surge drill? A surge is when 10 or more patients are admitted to the NICU in a very short period of time in the event of a disaster.
5. Have you had any previous experiences with NICU evacuations or surges?

NICU Evacuation Scenario

In this scenario you are in the NICU at its maximum capacity of 60 occupied beds due to a threat in the NICU. At least 10 patients need to be transferred out of the NICU, but you still know that more may be moved either within the hospital or to another hospital.

6. Do you feel prepared to respond to this scenario? Why or why not?
7. What would make you feel more prepared?
8. What role would you play in an evacuation?
9. Do you know if there is an evacuation plan for the NICU?
10. Who would you ask to look for the evacuation plan?
11. Do you feel comfortable with your NICU's level of preparedness for an evacuation? Why or why not?

NICU Surge Response

In this scenario, you are in a NICU at its maximum capacity of 60 occupied beds. Due to a threat of a sewage pipe breakage in the neighboring NICU, at least 10 patients will be transferred to the Children's National NICU.

12. Do you feel prepared to respond to this scenario? Why or why not?

13. What would make you feel more prepared?
14. What role would you play in a surge?
15. Do you know if there is a surge plan for the NICU?
16. Who would you ask to look for the surge plan?
17. Do you feel comfortable with your NICU's level of preparedness for a surge?

Why or why not? Emergency Preparedness Training

18. Do you feel that preparedness training is an important part of your education? Why or why not?
19. How should the NICU go about preparing or training you for disasters?
20. How often should the NICU train you?
21. What role should the pediatric residency program play in training you for disasters?
22. Is there anything that the residents can do to contribute to this part of their

education? Wrap up

23. Is there anything that you would like to add that I may have missed or not asked you about?

NICU Resident Emergency Preparedness

Would you feel prepared to respond to a disaster in our NICU?

Our research aims to assess how prepared residents are for disasters by looking at two very possible disaster scenarios in the NICU at Children's National Medical Center (CNMC).

This survey should take less than 15 minutes to complete, and your participation and responses will be anonymous. Completing this survey is voluntary and implies your consent. No personal information or identifiers will be recorded as part of this study and only de-identified and aggregate data will be reported, presented, and published.

This study has been approved by the CNMC Institutional Review Board (IRB). The extent of your involvement will be limited to completing the survey.

If you have any questions or comments, please contact Dr. Joelle Simpson at JnSimpso@childrensnational.org or (202) 476-2080.

If you have questions about your rights as a research subject at any time, please call the Office for the Protection of Human Subjects at (301) 565-8452, the Chief Academic Officer, or the Chair of the IRB of CNMC. The last two parties may be reached at (202) 476-5000.

NICU Emergency Preparedness Training

Have you had previous training in NICU evacuations? Yes
 No

List your previous training(s). (Example: Name of a course or location of training)

Have you had previous training in NICU surges*? Yes
 No
*A surge is when 10 or more patients are admitted to the NICU in a very short period of time in the event of a disaster.

List your previous training. (Example: Name of a course or location of training)

Have you experienced a real NICU evacuation? Yes
 No

Please share your role with that experience:

Have you experienced a real NICU surge? Yes
 No

Please share your role with that experience:

Have you taken any disaster preparedness training course(s)?

- Yes
- No

Check the type of disaster preparedness training course(s) you have participated in (check all that apply)

- FEMA Online Course
- Pediatric focused disaster preparedness course
- General Disaster Preparedness Course through medical school
- General Disaster Preparedness Course through residency program
- Other

Please list the type of disaster training course(s).

EVACUATION RESPONSE

In this scenario, you are in the NICU at its maximum capacity of 60 occupied beds. Due to a threat, at least 10 patients need to be transferred to another area, either within the hospital or to another hospital within a very limited time frame.

Please respond to the following questions and statements:

I feel prepared to participate in this EVACUATION scenario.

- Strongly Agree
 Slightly Agree
 Neither Agree nor Disagree
 Slightly Disagree
 Strongly Disagree

What NICU factors made you feel prepared to manage this scenario? Check all that apply.

- NICU team has an evacuation protocol
 NICU team is prepared for an evacuation scenario
 Sufficient amount of skilled staff
 Sufficient NICU resources in the region e.g. space, equipment, medication
 Sufficient transportation resources

What personal factors made you feel prepared to manage this scenario? Check all that apply.

- Knowledge about my role in a scenario requiring a NICU evacuation
 Knowledge about other team members' roles in a scenario requiring a NICU evacuation
 Sufficient training and/or skills in disaster preparedness
 Sufficient clinical training and/or skills working with neonates
 Previous experience

What NICU factors made you feel UNprepared for this scenario? Check all that apply.

- No NICU evacuation protocol
 No hospital evacuation protocol
 No staff available
 Don't know NICU equipment
 Unstable or complex patients
 Not enough transportation

What personal factors made you feel UNprepared for this scenario? Check all that apply.

- Don't know NICU evacuation protocol
 Don't know hospital evacuation protocol
 Don't know my role in a NICU evacuation
 Don't know other team members' roles in a NICU evacuation
 Insufficient training and/or skills in disaster preparedness
 Insufficient clinical training and/or skills working with neonates
 Don't know available NICU resources (e.g. beds, equipment, medications) within the region

Which of the following option(s) would make you more prepared for a NICU evacuation? Check all that apply.

- Education about NICU evacuation protocols
- Having neonatal resuscitation skills
- NICU disaster preparedness planning discussions
- Transport experience
- Flexible team that works together to meet the demands of the evacuation
- Sufficient NICU staff or a protocol to call in staff reinforcements
- Someone on the team with NICU evacuation experience
- Review patient cases as a team at beginning of shift to see which patients can be transferred in the event of evacuation
- Evacuation protocols readily visible and available
- Early involvement or forewarning of disaster
- Sufficient NICU resources e.g. space, equipment, medication
- Other

Please list.

Indicate how strongly you agree or disagree with each statement below.

	Strongly Agree	Slight Agree	Neither Agree not Disagree	Slightly Disagree	Strongly Disagree
I am familiar with the NICU evacuation plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know where to find the NICU evacuation plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know who to ask about the NICU evacuation plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are you comfortable with the NICU's current level of preparedness for an evacuation?

- Yes
 No
 Don't know

Why? Check all that apply.

- NICU has an evacuation protocol
 NICU staff has evacuation experience
 Have seen or experienced working in the NICU in similar situations
 Other

Please list.

Why NOT? Check all that apply.

- Don't know NICU evacuation protocol
 Insufficient staff
 Insufficient transport resources
 Other

Please list.

SURGE RESPONSE

In this scenario, you are in the NICU at its maximum capacity of 60 occupied beds. Due to a threat in your affiliated hospitals' NICU, at least 10 patients will need to be transferred to your NICU.

Please answer the following statements and questions:

I feel prepared to participate in this SURGE scenario.

Indicate how strongly you agree or disagree with the statement.

- Strongly Agree
 Slightly Agree
 Neither Agree nor Disagree
 Slightly Disagree
 Strongly Disagree

What NICU factors made you feel prepared for this scenario? Check all that apply.

- NICU team has a surge management protocol
 NICU team is prepared for a patient surge scenario
 Sufficient amount of skilled staff
 Sufficient available resources (e.g. space, equipment, medication) within the NICU

What personal factors made you feel prepared for this scenario? Check all that apply.

- Knowledge about my role in a NICU surge scenario
 Knowledge about my team members' roles in a NICU surge scenario
 Sufficient training and/or skills in disaster preparedness
 Sufficient clinical training and/or skills working with neonates
 Previous experience

What NICU factors made you feel UNprepared for this scenario? Check all that apply.

- No NICU protocol for patient surge management
 No staff available
 Don't know HOSPITAL patient surge management protocol
 Don't know NICU equipment
 Unstable or complex patients
 Not enough transportation

What personal factors made you feel UNprepared? Check all that apply.

- Don't know NICU patient surge management protocol
 Don't know hospital patient surge management protocol
 Unfamiliarity with NICU equipment
 Don't know my role in NICU patient surge scenario
 Don't know team members' roles in a disaster
 Insufficient training and/or skills in disaster preparedness
 Insufficient clinical training and/or skills working with neonates
 Don't know available NICU resources (e.g. beds, equipment, medications) within the region

Which of the following would make you more prepared for a NICU surge? Check all that apply.

- Education about NICU patient surge management protocols
- Having neonatal resuscitation skills
- Emergency preparedness planning discussions
- Transport experience
- Flexible team that works together to meet the demands of a NICU patient surge scenario
- Sufficient NICU staff or a protocol to call in staff reinforcements
- Someone on the team with NICU surge management experience
- Review patient cases as a team at the beginning of the shift to see which patients can be moved to make space in the event of surge
- Protocols readily visible and available
- Early involvement or forewarning of disaster
- Sufficient NICU resources e.g. space, equipment, medication
- Other

Please list.

	Strongly Agree	Slightly Agree	Neither Agree nor Disagree	Slightly Disagree	Strongly Disagree
I am familiar with the NICU surge protocol.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know where to find the NICU surge protocol.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know who to ask about the NICU surge protocol.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are you comfortable with the NICU's level of preparedness for a patient surge scenario?

- Yes
 No
 Don't know

Why? Check all that apply.

- NICU has a surge management protocol
 NICU staff has relevant experience
 Have seen or experienced working in the NICU in similar situations
 Other

Please list.

Why NOT? Check all that apply.

- Don't know NICU surge management protocol
 Insufficient staff
 Not sufficient NICU resources e.g. space, equipment, medication
 Other

Please list.

Evacuation vs. Surge

Do you feel more prepared for an evacuation or a surge in the NICU?

- Evacuation
- Surge
- Neither
- Both

Why evacuation? Check the choices that apply

- Less arrangements (e.g. do not need to look for extra space)
- Decreased burden from high volume and high acuity patients in unit (e.g. less prone to errors)
- Need less NICU resources e.g. space, equipment, medications, personnel
- Easy to complete

Why surge? Check the choices that apply

- No or less transportation coordination compared to patient evacuation scenario
- No need to triage patients for transportation
- Insufficient training in transferring or triaging patients
- Previous experience with high volumes in the NICU
- Utilize skills of current resident role in day to day operations

I know my role in a NICU evacuation or surge.

Indicate how strongly you agree or disagree with the statement.

- Strongly Agree Slightly Agree Neither Agree nor Disagree Slightly Disagree
 Strongly Disagree

What role would you feel most comfortable performing in a NICU evacuation or surge? Rank the options from 1, most likely, to 11, least likely.

	1	2	3	4	5	6	7	8	9	10	11
Stabilize patients / perform ABCs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform procedures e.g. intubation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Triage patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Help transport team move patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform blood draws on NICU patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clerical work and orders e.g. transfer medical records, ready documents, medication orders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicate with other hospital departments or other NICUs on the phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicate with families	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform duties within my current skill set that are requested of me by the supervisor in charge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicate with hospital incident command center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recruit resident support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

NICU Disaster Education

Do you feel that disaster preparedness training is an important part of your education?

- Yes
 No

Why?
Check all that apply

- Residents do not know what their roles are in a disaster
 Residents have an important role to play in a disaster
 Location of hospital increases probability of disasters (e.g. Washington D.C., New York City)
 I work in a high acuity children's hospital
 Training will reduce stress during the disaster event
 Training will improve performance during the disaster event

Why NOT?
Check all that apply

- It is not important for my future career.
 There are other more important aspects of my education that we could focus on.
 A disaster is a rare event.

Would you like to receive NICU disaster preparedness training?

- Yes No

Why? Check all that apply

- It is important for my career.
 I am interested in disaster preparedness.
 It is good general knowledge for any pediatrician.
 Residents have valuable skill sets that should be used in a disaster.

Why NOT? Check all that apply

- It is not important for my career.
 It is not important for every general pediatrician to know.
 I am not interested in disaster preparedness.
 I have too many other responsibilities.

What are the best modalities to prepare you for a large scale emergency (ie disaster scenario) in the NICU? Check all that apply.

- Multidisciplinary simulation
 Visible description of resident role in NICU disaster
 NICU disaster protocols in orientation hand book
 NICU disaster preparedness planning discussions
 Online disaster preparedness resources
 Mandatory disaster preparedness courses
 Disaster preparedness electives

How often should this training occur?

- Annually
 Biannually
 Once a month
 Every NICU rotation
 Only during the first NICU rotation
 Only during pediatric residency orientation

What role(s) should the pediatric residency program and the NICU play in preparing you for disasters?
Check all that apply.

- Advocate for disaster preparedness training during intensive care unit rotations (e.g. NICU, PICU, ER)
- Make disaster preparedness training mandatory
- Offer more disaster preparedness electives
- Include disaster protocols in orientation as an introduction to the intensive care unit rotations (e.g. NICU, PICU, ER)
- Post disaster protocols in the intensive care units (e.g. NICU, PICU, ER)
- Encourage residents to join disaster preparedness volunteer organizations e.g. pediatric medical corps reserve
- Explain role of residents in a disaster
- No role
- Other

Please list.

What role(s) should residents play in preparing themselves for disasters?

- Know the hospital disaster protocols
- Tell other residents about the hospital disaster protocols
- Advocate for disaster preparedness training
- Volunteer in disaster preparedness organization (e.g. pediatric medical reserve corps)
- No role
- Other

Please list.

Are you willing to respond to a hospital disaster scenario (eg surge management or emergency evacuation)?

- Yes
- No

What additional training would you like to prepare you for a disaster in the NICU?

Demographics

What is your current year of training?

- PGY1
- PGY2
- PGY3
- PGY4

What is your gender?

- Male
- Female
- Prefer not to respond

How old are you?

- Under 25
- 25 - 30
- 31 - 35
- 36 - 40
- 41 - 45
- Over 45