

Trainee Perspectives on Manikin Death During Mock Codes

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abstract

BACKGROUND: The acceptability of simulated death has been debated by experts, but there is scarce information regarding trainees' perspective.

METHODS: Trainees in a large pediatric program were invited to perform mock codes, including pre and post questionnaires. Participants were exposed to 2 mock codes of neonates born pulseless. In the RESUSC scenario, the manikin responded to adequate resuscitation; in the DEATH scenario, the manikin remained pulseless. Mock codes were videotaped and evaluated by using the Neonatal Resuscitation Program score sheet. Debriefing was analyzed by using qualitative methodology.

RESULTS: Fifty-nine of 62 trainees answered the questionnaire, and 42 performed a total of 84 mock codes. All trainees found mock codes beneficial and would appreciate being exposed to more. Most found them realistic and 78% agreed with the following statement: "During mock codes the manikin improves when adequate resuscitation steps are provided." The scenario or order of scenario did not affect performance (RESUSC versus DEATH). Only 1 trainee stopped resuscitation after 10 minutes of asystole; 31% had not ceased resuscitation efforts by 20 minutes. During debriefing and post questionnaire, trainees found the DEATH scenario more stressful than RESUSC. Trainees all answered the following question during debriefing: "How did this go for you?" Two themes were identified in their answers: (1) the manikin does not die; and (2) death equals inadequate resuscitation.

CONCLUSIONS: The death of the manikin was stressful, but trainees thought this was acceptable and prepared them for their future. Trainees did not state that "death disclosures" were necessary before a simulated death.

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WHAT'S KNOWN ON THIS SUBJECT: The acceptability of the "death of the manikin" during mock codes has been debated by experts, but there is scarce information regarding trainees' experience and perspective. Many experts recommend a "death disclosure" before trainees are exposed to simulated death.

WHAT THIS STUDY ADDS: Participants found the death of the manikin beneficial for their training. They report death does not occur during simulation in their curriculum: they doubted their skills and provided prolonged resuscitation. None of them thought a death disclosure was important.

Clinicians in pediatrics are regularly exposed to resuscitation situations. Simulation-based medical education enables providers to hone their resuscitation skills on manikins instead of critically ill patients.¹ Simulation of life-threatening situations has been prevalent in the military and aviation industry for almost 100 years. On the other hand, the integration of medical simulation in training programs is rather recent.² Many trainees are now exposed to diverse simulation-based educational activities, including mock codes. During a mock code, a critical scenario is presented and a manikin is resuscitated. Mock codes also are used as evaluation tools. The Neonatal Resuscitation Program (NRP),³ supported by the American Academy of Pediatrics, is the largest formal neonatal resuscitation program in the world. It offers structured resuscitation guidelines, a mock code structure, and a mega-code evaluation sheet. In recent years, an increasing amount of practical information has been published regarding optimization of mock codes in pediatrics.⁴

Realism is an important concept in medical simulation: for participants to engage in a mock code, a certain “suspension of belief” is necessary. In a recent study, the use of high-fidelity simulators, displaying breathing movements and palpable pulses, resulted in improved cognitive performance by pediatric providers.⁵ On the other hand, other aspects of realism have been neglected. Indeed, the manikin generally improves when adequate resuscitation is provided, and the manikin rarely dies, whereas in real life, death may still occur despite optimal resuscitation.⁶ There is considerable controversy over whether to allow the manikin to die during mock codes.^{7,8} This academic debate consists mainly of expert opinion, lacking empirical information about trainees’ opinions and experience. The goal of this study was to evaluate trainees’ perspectives regarding neonatal mock codes and to

examine the effects of the simulated death of the manikin.

METHODS

This study consisted of a pre-mock code questionnaire and a videotaped medical simulation session followed by two debriefing sessions (individual and group debriefing) and post-mock code questionnaire. Two pediatric residents were collaborators in this study (MHL and VL).

Pre-Mock Code Questionnaire

This anonymous questionnaire was created and optimized by using 2 pilot studies each involving 7 medical residents. The questions covered demographic data, exposure to resuscitation, clinical experience, and perspectives regarding medical simulation.

Medical Simulation Session

Trainees were invited to the simulation center and were exposed to 2 neonatal mock codes that used the SimNewB manikin (Laerdal, Norway, Stavanger, Norway).⁹ This high-fidelity manikin can be intubated, has a realistic chest rise, and a palpable umbilical pulse. The mock codes took place behind a 1-way mirror, and participants knew they were being observed but were unable to see the observers. Participants were assisted by a provider who had NRP training (neonatal nurse or respiratory therapist), but were informed that they were responsible for all the resuscitation decisions. After a demonstration of the materials, including an oxygen saturation monitor/pulse oximeter, they were given a clinical scenario, displayed on the monitor, and had 2 minutes to prepare for the birth of the neonate. The mock codes had no listed objectives.

Scenarios

In both scenarios, a term neonate was born pulseless after an urgent

cesarean delivery performed for fetal distress. In one of the scenarios, the manikin was programmed to respond to resuscitation (RESUSC). A clinical response to adequate resuscitation occurred only after appropriate endotracheal intubation, adequate ventilation, 1 minute of cardiac massage, 1 dose of epinephrine, and 1 fluid bolus of 10 mL/kg. If resuscitation was inadequate, the manikin could deteriorate. In the other scenario, the manikin “died” (DEATH) and was programmed to remain pulseless despite adequate resuscitation. In either scenario, participants could evaluate the response to resuscitation by using clinical signs (chest rise, auscultation, pulses) and by examining the monitor for heart rate and saturation. By using randomization software, trainees were randomly assigned to start with either one scenario or the other. The DEATH scenario was over when participants declared resuscitation efforts were discontinued or after 20 minutes of resuscitation, in which case they were informed by an overhead speaker that the mock code was over. In the RESUSC scenario, resuscitation was interrupted after 2 minutes of stability with adequate ventilation (saturation above 90% and heart rate above 100), or, if the resuscitation was inadequate and the manikin deteriorated, it would also be interrupted after 20 minutes of asystole.

Debriefing Session and Post-Mock Code Questionnaire

Immediately after the 2 scenarios, one of the investigators (AM, VL, or MHL) engaged in a debriefing session with the participant. Residents were debriefed by residents (MHL and VL) and neonatal fellows by a junior neonatologist. All the trainees were asked this open-ended question: “How was this experience for you?” They were then reassured that the manikin in scenario DEATH was programmed to remain pulseless despite adequate resuscitation. They

were instructed not to inform the other participants of this until the end of the research. Participants received debriefing regarding optimal skills they displayed as well as skills they could improve. They were then asked to fill in another short questionnaire. The length of the debriefing session was not predetermined.

After all trainees had participated, they were invited for a group debriefing session during which snacks were provided. All the trainees were asked to discuss their experience and to provide investigators with suggestions to improve the experience of participants in future similar research.

Recruitment and Participants

From March to November 2011, all the pediatric trainees at Sainte-Justine Hospital were invited to complete a pen-and-paper questionnaire. Participants included all residents and fellows in critical care (emergency medicine, neonatology, and intensive care). Fellows in other specialties, such as pediatric oncology or rheumatology, were not included. In this article, trainees in their first 2 years of residency are referred to as junior trainees, whereas residents with more than 2 years of training (including fellows) are referred to as senior trainees. Sainte-Justine Hospital is a tertiary-care academic mother-child hospital affiliated with University of Montreal. The NICU has 67 beds with up to 30 ventilated patients at any time.

Participants were then invited to the simulation center for the hands-on session. They were informed of the length of the session and the fact that they would be observed and videotaped. Trainees who were absent during this period (eg, maternity leave, rural rotation) did not participate. Trainees provided written consent before their participation.

Analysis of Data

In the questionnaire, 18 questions were reported on a 4-point Likert scale (never, rarely, often, always); never and rarely were counted as negative answers and often and always as positive answers; χ^2 analysis was used to compare proportions between groups.

Evaluation of the Mock Codes

Videotapes were independently viewed and scored by 2 investigators; 1 of the evaluators had to be an NRP master instructor. The standardized NRP mega-code evaluation sheet, currently used to evaluate NRP providers, was used to score the mock codes.¹⁰ An average of the 2 scores was used as the participant's final score.

Analysis of Open-Ended Question

All trainees were asked the following open-ended question: "How was this experience for you?" Answers to this question were viewed by 2 separate investigators and analyzed by using thematic analysis: the development of themes by the investigators, and the applications of those themes to the responses; discrepancies were resolved by consensus.¹¹⁻¹³

This study was approved by the ethics committee of Sainte-Justine's hospital research center.

RESULTS

Demographics and Clinical Exposure

Of a total of 62 trainees, 59 answered the questionnaire (95% response rate); 34 (58%) were junior residents, 90% were women (Table 1). All trainees had been exposed to mock codes. Most had performed >5 intubations on neonatal patients and 42% had witnessed an unsuccessful neonatal resuscitation leading to death (Table 1). Exposure to medical simulation and clinical resuscitations was greater among senior trainees (Table 1).

Trainees' Perspectives on Medical Simulation

All residents reported that the mock codes they had done during their curriculum were beneficial to their training (Table 2). Most trainees reported that mock codes were realistic (81%), that when the appropriate resuscitative steps were provided the manikin improved, and that the mock code ended when the manikin became stable (Table 2). All trainees thought mock codes increased their performance during real resuscitations. These perspectives were not influenced by years of training or other demographic factors.

Medical Simulation Session: Exposure to the "Dying Manikin"

Forty-two trainees who had answered the questionnaire were involved in the mock codes, each performed both scenarios (RESUSC and DEATH), for a total of 84 mock codes.

Performance

The average performance score for the 84 mock codes was 81%. Level of training, scenario (DEATH versus RESUSC), or order of scenario were not associated with performance scores.

Decision to Stop Resuscitation Efforts

In the DEATH scenario, only 1 trainee followed the NRP recommendations and stopped resuscitation efforts after 10 minutes of asystole; 31% had not ceased resuscitation efforts by 20 minutes, in which case resuscitation was interrupted.

Debriefing Session

Trainees thought the DEATH scenario was more stressful than the RESUSC scenario: 52% of trainees reported their stress was higher than 7 on a scale of 0 to 10 during the DEATH scenario.

TABLE 1 Participants' Experience With Mock Codes and Clinical Neonatal Resuscitation

	All Trainees	Junior Trainees	Senior Trainees	P
Total n	59	34	25	—
Exposure to <5 neonatal mock codes, %	70	82	52	< .05
Exposure to >10 neonatal mock codes, %	10	0	24	< .05
<5 neonatal clinical intubations during residency, %	49	47	4	< .05
>10 intubations, %	46	21	80	< .05
"I feel confident to lead a neonatal resuscitation," % who agree	47	29	72	< .05

Trainees all answered the open-ended question ("How was this experience for you?"), and 2 themes were identified:

1. The manikin does not die. Several trainees stated that something was unusual about the scenario: "The manikin never dies"; "It is difficult because it is unusual and how unsettling"; "It is rare that they allow us to let the infant die"; "The infant is not supposed to die! [...] I didn't think manikins could die during mock codes."
2. A dying manikin equals inadequate resuscitation. This was the most common comment made by trainees: "What did I miss?"; "What was the trick, what was I supposed to do?"; "The mock code where the infant dies is more stressful because it does not respond to simulation, which makes us doubt ourselves and our skills"; "I missed something for the infant who died, what was it?"; "What happened? What should I have done? Should I have asked for an X-ray?"

Trainees stated that they mainly wanted feedback on their performance for the DEATH scenario. They felt they had missed something. The main reason for their distress was the perception that their resuscitation skills were inadequate. For them, reassurance that the manikin was supposed to die was essential.

During the group debriefing session, all trainees agreed that this experience was beneficial to their

training. During this session, participants also spoke about intense real-life experiences and mortality of their patients (with and without resuscitation). When they were asked to provide investigators with suggestions to improve the experience of participants in future similar research, none of the participants recommended a "death disclosure" before similar mock codes, nor that death be a predefined learning objective.

DISCUSSION

This study examined pediatric trainees' perspectives regarding neonatal mock codes, specifically when the manikin dies; as far as we are aware, this is the first time that this has been empirically investigated.

Our first finding is that all trainees appreciate mock codes and find them realistic. On the other hand, they report that during mock codes, the manikin usually improves with appropriate resuscitation and deteriorates with inadequate resuscitation, and that the mock code is over when the manikin is stable. Unfortunately, in real life, many patients do not respond to appropriate resuscitation.

Realism is an important component of medical simulation.¹⁴ The fidelity of manikins has evolved tremendously in the past decade, but the physical aspect of the manikin is only one important aspect of realism.^{10,15} The aviation industry, which has led the path in simulation

science, can be a source of inspiration. In an article about flight simulation fidelity requirements, Rehmann and colleagues¹⁶ describe a 3-dimensional typology of simulation fidelity: equipment, environmental, and psychological fidelity. Physical realism during neonatal mock codes has been demonstrated to have an impact on cognitive performance.⁴ For mock codes, physical realism will be mainly optimized by further improving the simulator and simulation environment. In the aviation simulation world, equipment and environmental realism were optimized years ago, and in the past decades, the focus has been to optimize psychological realism. For example, some technical shorter "flight codes" have been replaced by full flights and crew management in life-threatening situations.¹⁶

Other dimensions of realism have been underinvestigated in pediatrics. Indeed, a "hidden mock code curriculum" seems to prevail in which manikins improve or deteriorate depending on the skills of the individuals providing the resuscitation. Other important

TABLE 2 Trainees' Perspective Regarding Mock Codes

Trainees Who Agree With The Following Statements, Total n = 59	%
Mock codes are beneficial to my training	100
I would appreciate being exposed to more mock codes during my training	100
Mock codes are realistic and reflect situations that occur during clinical service	81
During mock codes, the manikin improves when adequate resuscitation steps are provided (following the steps of the NRP protocol)	78
During mock codes, the manikin deteriorates when inadequate resuscitation steps are provided	78
When resuscitation is optimal, the mock code ends when the manikin is stable	78
During most mock codes, an umbilical line needs to be inserted and epinephrine needs to be given	31

aspects of fidelity, for example the dimension of time, are also described in the literature. A “hidden curriculum” also exists in adult medicine, in which recommended 2-minute cardiopulmonary resuscitation cycles are often deliberately decreased to increase the number of scenarios.¹⁷ In a recent study, participants who were randomized to real-time cardiopulmonary resuscitation performed better months after the mock code intervention.¹⁶

Our second finding is that this “hidden mock code curriculum” leads to cognitive distortions among trainees. Trainees think that manikins do not die when the resuscitation is adequate. They jump to the conclusion that their skills are inadequate when the manikin does not improve and that they are to blame then the manikin dies. that they are to blame for the death. On the other hand, their measured performance scores were very good when evaluated and were not associated with whether the manikin died or not. Interestingly, only one trainee followed the NRP recommendations to stop resuscitation efforts after 10 minutes of asystole and 31% had to be interrupted after 20 minutes of resuscitation. This element could not be evaluated by using the NRP score sheet, because the NRP textbook does not provide practical information regarding how to incorporate death in mock codes. Even in a comprehensive and user-friendly mock code manual, death is not covered in a practical fashion: it is listed only as an anticipated complication.⁴

Our third finding is that our participants did not agree with many experts in simulation who recommend that if death is a possibility, trainees should be informed of this before each mock code^{7,10}; this is supposed to ensure that trainees perform in

a nonthreatening environment. A study in medical students has indeed shown that participants exposed to a simulated patient death reported increased cognitive load.¹⁸ Other authors believe that simulated death negatively affects performance: “Mock codes should not end in death. When they do, the participants become so focused on the act of dying that the objectives of the scenario become secondary and the learning experience is compromised.”¹⁹ In our study, the death of the manikin did not have an impact on performance. On the other hand, all residents had high performance scores, making statistical comparisons limited. Interestingly, although the death of the manikin was stressful to our participants, none of the trainees in our study recommended a prophylactic death warning for future studies. One participant even said that such a disclosure would be “infantilizing, like when it is written on the cup of coffee that the contents are hot.” On the other hand, all agreed that shortly after a simulated death, trainees should be informed that the manikin was programmed to remain pulseless despite adequate resuscitation and that a safe and noncritical environment was essential. The capacity to engage trainees during mock codes is critical.²⁰ As eloquently written by Truog, an ethicist, anesthesiologist and intensive care physician: “Learners (must feel) that it is safe for them to make themselves psychologically and emotionally vulnerable. Trust is embedded into the ‘ground rules’ of many simulation programs, as an expectation that participants can trust others to be genuine and constructive in their feedback and criticism and to create a space of collaborative not competitive learning.”⁸ We have found that when the manikin dies during simulation, trust may be achieved without a previous death disclosure or learning objectives. Several elements of our protocol may

have contributed to trainees feeling they were in a safe environment. This project was the research project of 2 senior residents, feedback and debriefing sessions were an integral part of the protocol. Feedback was structured and led by trainees for trainees at a similar level. Participants were also informed of the results of the study and were asked for their input. Finally, the general debriefing period also enabled trainees to speak together about their emotions, how they feel toward death, and to discuss mortality as experienced by trainees, which is also seldom done systematically in clinical practice.²¹ Providing a safe environment is critical: further research exploring how to optimize debriefing sessions and skills is necessary.

This research has several limitations. The questionnaire part has the limitations inherent to all questionnaires, but, with a high response rate, selection bias is minimized. Also, the research was conducted in a single center and the ability to extrapolate to other settings is uncertain. On the other hand, these results are internally valid because of our high participation rate. It is also unknown whether being exposed to simulated death during training affects participants’ acquisition of new knowledge or skills.

Fortunately, the death of a neonate during resuscitation is infrequent, but this leads to a minority of trainees having witnessed at least 1 resuscitation followed by death before becoming pediatricians. Psychological fidelity will be achieved only when the simulator realistically responds to resuscitation, including the possibility of death despite adequate resuscitation.

CONCLUSIONS

In our institution, a “hidden mock code curriculum” was prevalent; but we have empirically demonstrated

that trainees find the death of the manikin acceptable and beneficial to their training, and that a previous death disclosure was not necessary. Although in the aviation industry excellent skills and teamwork can virtually eliminate plane crashes, excellent skills in neonatal resuscitation will never prevent all deaths: infants are not airplanes. To

be an excellent pediatrician is to recognize when death is inevitable and to acknowledge that it is part of our clinical world. Experiencing simulated death in a safe environment with psychological fidelity may give future pediatricians an opportunity to prepare for end-of-life decisions they will face in real life.

ABBREVIATIONS

DEATH: manikin programmed to remain pulseless despite adequate resuscitation
NRP: Neonatal Resuscitation Program
RESUSC: manikin programmed to respond to resuscitation

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REFERENCES

1. Ziv A, Wolpe PR, Small SD, Glick S. Simulation-based medical education: an ethical imperative. *Acad Med.* 2003;78(8):783–788
2. Owen H. Early use of simulation in medical education. *Simul Healthc.* 2012; 7(2):102–116
3. American Academy of Pediatrics. *Textbook of Neonatal Resuscitation.* 6th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006
4. Hansen AR, Quinn M, Ambrosino M, Lloyd JS. *Manual of Neonatal Mock Codes.* Shelton, CT: PMPH-USA; 2006
5. Donoghue AJ, Durbin DR, Nadel FM, Stryjewski GR, Kost SI, Nadkarni VM. Effect of high-fidelity simulation on Pediatric Advanced Life Support training in pediatric house staff: a randomized trial. *Pediatr Emerg Care.* 2009;25(3):139–144
6. Janvier A. I think it is time to stop. *Pediatr Crit Care Med.* 2010;11(5):624–625
7. Corvetto MA, Taekman JM. To die or not to die? A review of simulated death. *Simul Healthc.* 2013;8(1):8–12
8. Truog RD, Meyer EC. Deception and death in medical simulation. *Simul Healthc.* 2013;8(1):1–3
9. SimNewB simulator. Product information. Available at: www.laerdal.com/us/doc/88/SimNewB. Accessed December 1, 2014
10. Mega code evaluation sheet. In: *American Academy of Pediatrics. Textbook of Neonatal Resuscitation.* 6th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006
11. Creswell JW. *Research Design: Qualitative, Quantitative, and Mixed Method Approaches.* Thousand Oaks, CA: Sage Publications; 2003
12. Denzin NK, Lincoln YS. *Handbook of Qualitative Research.* 2nd ed. Thousand Oaks, CA: Sage Publications; 2000
13. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* 2005;15(9):1277–1288
14. Dieckmann P, Gaba D, Rall, M. Deepening the theoretical foundations of patient simulation as social practice. *Simul Healthc.* 2007;2(3):183–193
15. Beaubien JM, Baker DP. The use of simulation for training teamwork skills in health care: how low can you go? *Qual Saf Health Care.* 2004;13(suppl 1):i51–i56
16. Rehmann A, Mitman R, Reynolds M. *A Handbook of Flight Simulation Fidelity Requirements for Human Factors Research.* Wright-Patterson AFB, OH: Crew Systems Ergonomics Information Analysis Center; 1995
17. Krogh KB, Høyer CB, Ostergaard D, Eika B. Time matters—realism in resuscitation training. *Resuscitation.* 2014;85(8): 1093–1098
18. Fraser K, Huffman J, Ma I, et al. The emotional and cognitive impact of unexpected simulated patient death: a randomized controlled trial. *Chest.* 2014;145(5):958–963
19. Roback MG. Guidelines for conducting the mock code. In: Roback MG, Teach SJ, eds. *Pediatric Resuscitation: A Practical Approach.* Dallas, TX: American College of Emergency Physicians Publishing; 2005:20
20. Rudolph JW, Simon R, Raemer DB. Which reality matters? Questions on the path to high engagement in healthcare simulation. *Simul Healthc.* 2007;2(3): 161–163
21. Janvier A. End-of-life vignette. No time for death. *Am J Hosp Palliat Care.* 2010; 27(2):163–164

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