

Raising the Bar: Enhancing the Fidelity of In-situ Simulation in a Collaborative, Multi-institutional Team Training Project

Anna Torricelli, Olivia Ross MPH, Nicholas Seivert, Walter Eppich MD MEd,
Donna Woods EdM PhD, Ranna Rozenfeld MD, Jane L. Holl MD MPH
Feinberg School of Medicine, Northwestern University, Chicago, IL

INTRODUCTION & HYPOTHESIS

- ❖ In-Situ Simulations conducted in the clinical operational environment can create a high fidelity experience and promote psychological reality for participants
- ❖ This collaborative, multi-institutional project was designed to:
 - improve teamwork and communication;
 - identify operational systems and process issues; and
 - increase patient safety.
- ❖ Four risk-informed scenarios of pediatric emergency inter-facility transfers were developed by a multidisciplinary team of clinicians
- ❖ Logistical processes adopted to increase realism of the in-situ experience



Hypothesis: Fidelity of the participant experience is significantly enhanced by integrating previously-identified risks within the scenario and using the “live” operational systems and processes during the simulation.

METHODS

Study Sites and Project Coordination:

- ❖ Five hospitals in Chicago, IL with comprehensive pediatric services: 2 public, 2 suburban, and 1 free-standing children’s hospital
- ❖ Two Project Coordinators (PCs) managed logistics across institutions, including liaising with site collaborators and coordinating participant recruitment
- ❖ Each site had a clinician who served as simulation “Medical Control,” in case participants requested unanticipated data or lab values that needed to be provided mid-simulation

High-Fidelity Simulation Implementation:

- ❖ Participation
 - Clinicians recruited to take part in their professional role (e.g. transport team, attending physician, nursing, etc.)
 - Ancillary staff and consulting services (e.g. neurology, trauma) pre-notified and asked to respond as for a “real” case
- ❖ Hospital-wide Involvement
 - Using the entire hospital as the simulation environment
 - All systems and departments (e.g. EMR, Laboratory, Medical Imaging) pre-notified to achieve “real-time” access and response
- ❖ Examples of Processes to Increase Fidelity:
 - **Blood Draws:** Use of EMR order-entry, Printing patient labels, Utilizing the tube system; Laboratory staff enter results* in real time
 - **Imaging:** Use of EMR order-entry, Technicians participation, Simulating process with correct equipment; Imaging staff uploaded results* and representative images*



*Values and images for each scenario were developed by research team and provided in advance by the PCs

RESULTS

Participant Characteristics:

- ❖ 352 clinicians and clinical staff participated in 42 simulations
- ❖ 201 “core” participants recruited to fill essential team roles (e.g. ED/PICU attending physician, resident physician, respiratory therapist)
- ❖ 151 ancillary clinicians/staff joined the simulation as a result of clinical investigation or consultation (e.g. trauma surgeons, imaging technicians)

Participant Satisfaction:

- ❖ 193 participants completed a *Satisfaction Survey* (Table 1)
 - 98% rated their simulation experience as both “relevant” and “useful”
 - Clinicians cited the experience as “feeling real” and “relevant to their practice” because the operational systems and processes were utilized in their typical care settings

Table 1. Satisfaction Survey Responses

Site	# of Surveys	Experience Relevant & Useful (%)
Site 1	36	97
Site 2	31	100
Site 3	75	99
Site 4	33	97
Site 5	19	100
TOTAL	193	98

5 Keys to High-Fidelity In-Situ Simulation Implementation:

1. Collaborative, multidisciplinary participation
2. Risk-informed scenario design
3. Institutional “buy-in”
4. Incorporation of hospital operational systems and processes
5. Ensuring participant satisfaction



CONCLUSIONS AND IMPLICATIONS

Importance of High-fidelity In-Situ Simulation in Team Training and Patient Safety:

- ❖ In-situ simulation that ensures the highest level of fidelity is logistically intensive but results in significantly enhanced clinical realism.
- ❖ Participants cited the experience as “relevant” and “useful” largely because the simulation effectively integrated the operational systems and departments which:
 - Resulted in a high fidelity and clinically relevant experience for participants; and
 - Created a **safe** environment for clinicians to review and practice team roles and skills.

Although logistically intensive, creating the most “real time” comprehensive in-situ simulation experience, including coordination with hospital systems, elevates the fidelity and value for participants.