Connecting the Dots: Identifying Simulation Resources in Ohio

A Survey of Colleges of Nursing and Hospitals

Summary Results

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Acknowledgements

Introduction & Purpose

The Ohio Network for Nursing Workforce commissioned a survey to quantify and qualify the nursing education simulation assets and services in Ohio. Both colleges of nursing and hospitals were included in the study.

The objectives of the survey were to:

- Quantify the level of use of health care training simulation technology among colleges of nursing and hospitals;
- Catalogue the type of technology (simulation types) used;
- Outline the workforce used to provide simulation services;
- Inventory the specific types of simulation equipment owned and operated by simulation centers;
- Describe the types of services simulation centers offer, and how the centers are funded;
- Outline the types of educational needs met by simulation centers (pediatrics, medical-surgical training, etc.) and the types of professionals-in-training who use the centers;
- Describe how simulation scenarios are developed and used on a day-to-day basis, and;
- Identify existing needs of simulation centers and barriers to their growth and increased ability to serve the healthcare community.

Methods & Sampling

All data were collected online from September to December, 2011. The Ohio Network for Nursing Workforce was identified as the sponsor of the study.

A total of 175 colleges of nursing and 112 hospitals were contacted, via a targeted email, to participate in the study. All data were collected via a secure and confidential survey for each responding organization.

A total of 65 colleges of nursing (37% response) and 43 hospitals (38% response) throughout Ohio completed surveys.

The survey instrument used contains both quantitative and qualitative measures. It is found under separate cover.

Hospital Findings

Responding Institutions

Type of Hospital/Facility
(n=43)
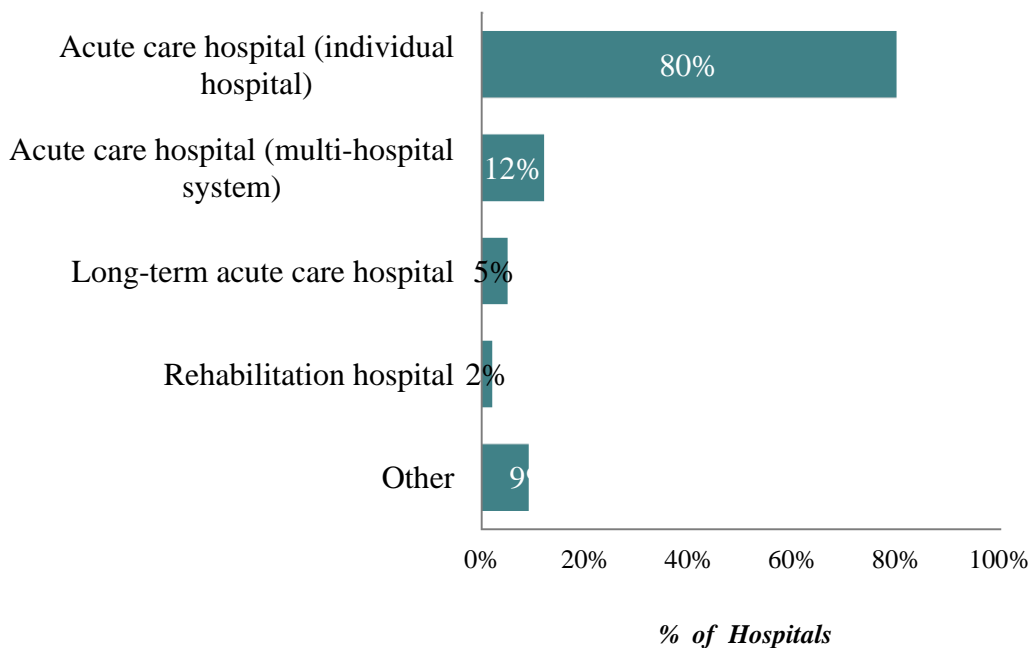
% of Hospitals

- Most (80%) of the responding health care facilities were individual hospitals (as opposed to multi-hospital systems – 12%).

Q1facility: Type of Hospital/Facility: (select all that apply)

Type of Simulations Used

Hospitals: Type of Simulation
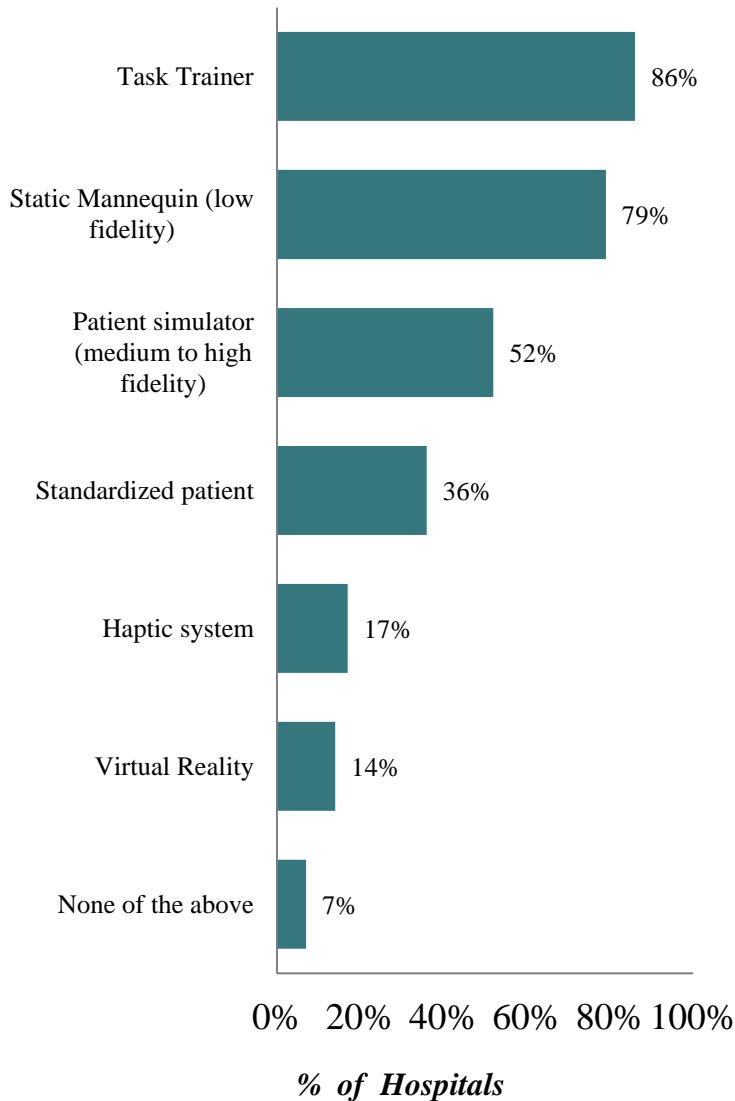
- All but 7% of the responding hospitals use at least one of simulation technologies captured in this survey.
- The most common types of simulator used were task trainers static mannequins (low fidelity), task trainers – both used by about 8 in 10 hospitals.

Task Trainer — 86%
Static Mannequin (low fidelity) — 79%
Patient simulator (medium to high fidelity) — 52%
Standardized patient — 36%
Haptic system — 17%
Virtual Reality — 14%
None of the above — 7%

0% 20% 40% 60% 80% 100%

% of Hospitals

Q2: To gain an assessment of simulation in your hospital/facility, please complete the following table. Which of the following simulations do you use (equipment may be owned, rented, or borrowed) in teaching/learning activities? (Select all that apply)

Personnel: Coordinator

Hospitals: % With a Simulation Coordinator
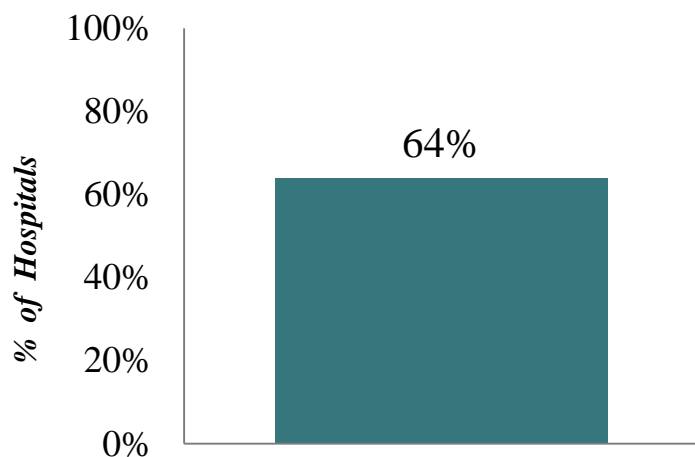
- Most hospitals with simulation centers employ simulation coordinators.
- Most center coordinators are RNs, and most (64%) work full-time.
- As a group, center coordinators are highly educated: more than half have graduate degrees.

Coordinator Characteristics

	% of Hospitals
% Coordinator is an RN	64%
% Coordinator is Full Time	64%
Highest degree earned by Coordinator:	
Some college/Technical Training	7%
Associate Degree	0%
BA/BS	21%
M.S.	50%
Doctorate	21%

Coordinator's Professional Title

- Simulation Center Coordinator (3)
- Medical Director for Simulation Center (2)
- Administrative Director/Business Manager
- Clinical Research & Simulation Lab Coordinator
- Director, Nursing Simulation
- Director of Education
- Emergency Management - Staff education
- Nurse Facilitator/Nurse Educator
- Professional Development Specialist
- Simulation and Living Laboratory Manager

Q3: Does your hospital/facility have a simulation coordinator?
Q3A: What is the job title for the individual who coordinates simulation?
Q3B: Is the simulation coordinator a registered nurse?
Q3C: Describe the hours worked per week by the simulation coordinator:
Q3D: What is the highest degree of the individual in charge of simulation:

Coordinator's Training

Hospitals: % Coordinator Has Participated in Education/Training Related to Simulation?

93%

% of Hospitals
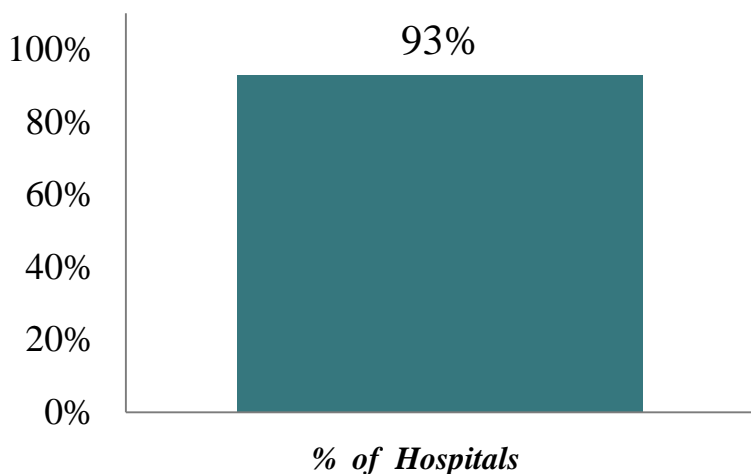
- Nearly all simulator center coordinators have participated in some training or education related to simulation.
- Coordinators have obtained training in a variety of ways: almost all have participated in vendor-sponsored training, and slightly fewer have participated in conference-based training or continuing-education or workshops. Online training appears readily available –just over one third of those in hospital simulation centers have utilized this training method.

Types of Simulation Education/Training

	% Hospitals
Vendor-sponsored training	92%
Conference/Continuing education	85%
Simulation workshop	77%
Online coursework	39%
Other	8%

Q3E: Has the simulation coordinator participated in education and training related to simulation?

Q3E1: In which of the following types of simulation education and training has the simulation coordinator participated? (please select all that apply)

Personnel: Technical Support

Hospitals: % With On-Site Technical Support
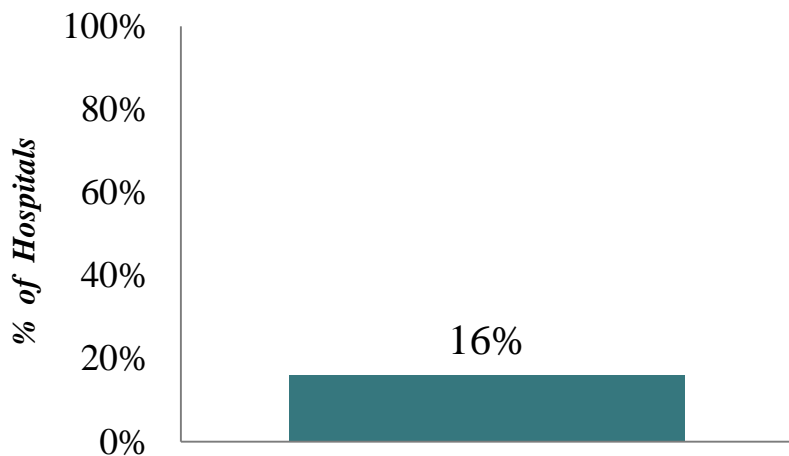
- On-site technical support was rare: only 16% of hospital-based simulation centers employed technical support personnel.
- Of those hospital-based centers with technical support, only one-in-three use that support on a full-time basis.

Technical Support Characteristics

	Hospitals
% Technical Support Personnel is Full Time	33%

Q4: Are technical support personnel assigned to assist with simulation (individuals whose only role is to set up, operate, repair, or program the simulators)?

Q4A: Describe the hours worked per week by the technical support personnel.

Training Levels of Technical Support

Hospitals: % Tech Support Personnel Has Participated in Education/Training Related to Simulation
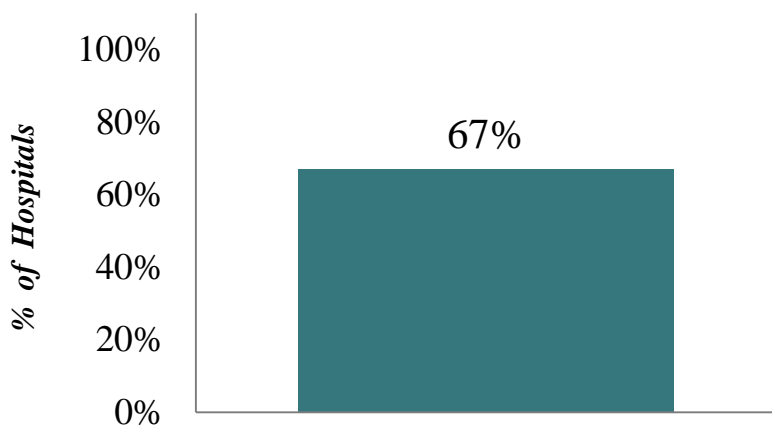
- Two-thirds of technical support personnel for hospital-based centers have participated in some form of training or education related to simulation.
- On the whole, exposure to training/education opportunities was not as varied for tech support personnel as it was for center coordinators; vendor-sponsored training was the most commonly utilized training method (50%).

Types of Simulation Education/Training Utilized by Tech Support

	% Hospitals
Vendor-sponsored training	50%
Conference/Continuing education	33%
Simulation workshop	33%
Online coursework	17%
Other	17%

Q4B: Has the technical support staff participated in education and training related to simulation?
Q4B1: In which of the following types of simulation education and training has the technical support staff participated? (please select all that apply)

Personnel: 'Other'

Hospitals: % With "Other" Simulation Coordinator Personnel

61%

% of Hospitals

100%

80%

60%

40%

20%

0%
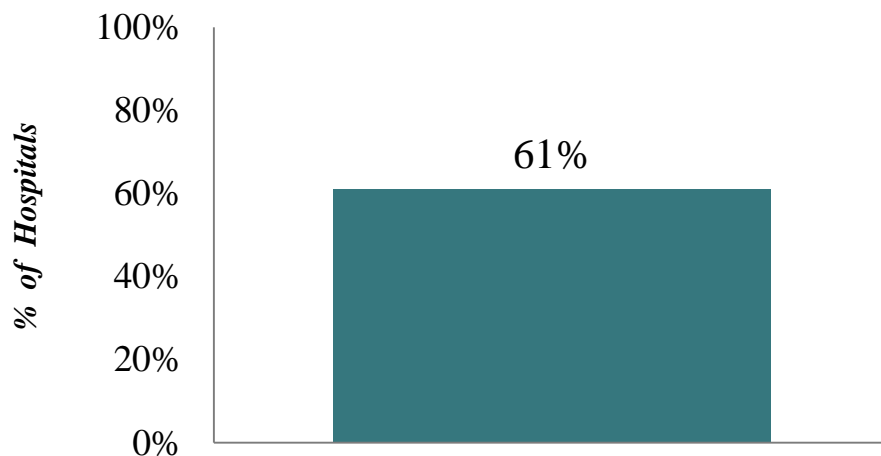
- Almost two-thirds of responding hospitals employed 'other' personnel (in addition to or instead of a center coordinator and/or technical support staff).   These personnel included mostly administrative support staff.

Q5: Are personnel other than a simulation coordinator or technical personnel assigned to support simulation (e.g., faculty/educator)?

Training Levels of 'Other' Personnel

Hospitals: % "Other" Personnel Participated in Education/Training Related to Simulation
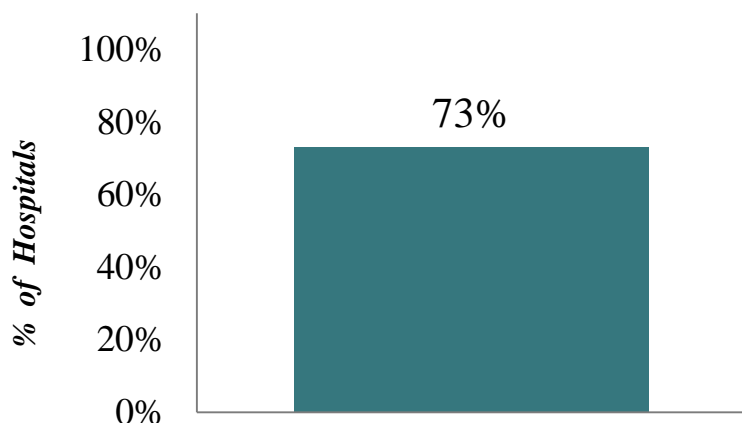
- Three-in-four support personnel (3 in 4) have participated in training related to simulation.
- As we saw with center coordinators and technical support staff, vendor-sponsored training is the most widely used method.

Types of Simulation Education/Training Utilized by Tech Support

	% Hospitals
Vendor-sponsored training	94%
Conference/Continuing education	82%
Simulation workshop	65%
Online coursework	12%
Other	12%

Q5A: Has the additional simulation personnel participated in education and training related to simulation?
Q5A1: In which of the following types of simulation education and training has the additional simulation personnel participated? (please select all that apply)

13

Simulation Center Equipment

Hospitals: % Own/Operate Equipment: *<u>METI</u>*

Total Number (Summed) For All Respondents

Equipment	%	Total
MetiMan	16%	11
PediaSIM	11%	4
BabySIM	11%	4
iStan	8%	3
Emergency Care Simulator (ECS)	5%	2
Human Patient Simulator (HPS)	3%	1
None of the above	83%	
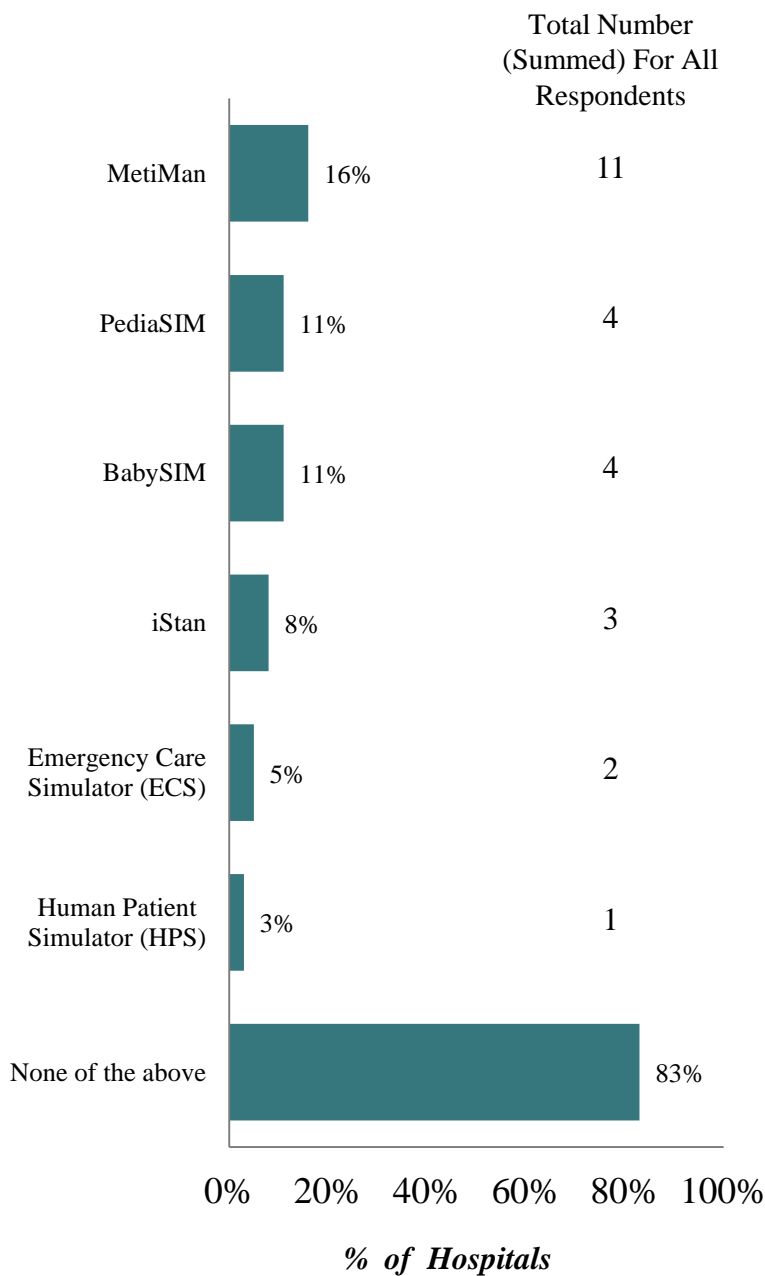
% of Hospitals

- Seventeen percent of hospital-based simulation centers use at least one type of METI equipment.
- While none of the specific METI equipment dominates, MetiMan and PediaSIM are the most commonly owned and operated.

Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device: ***METI***
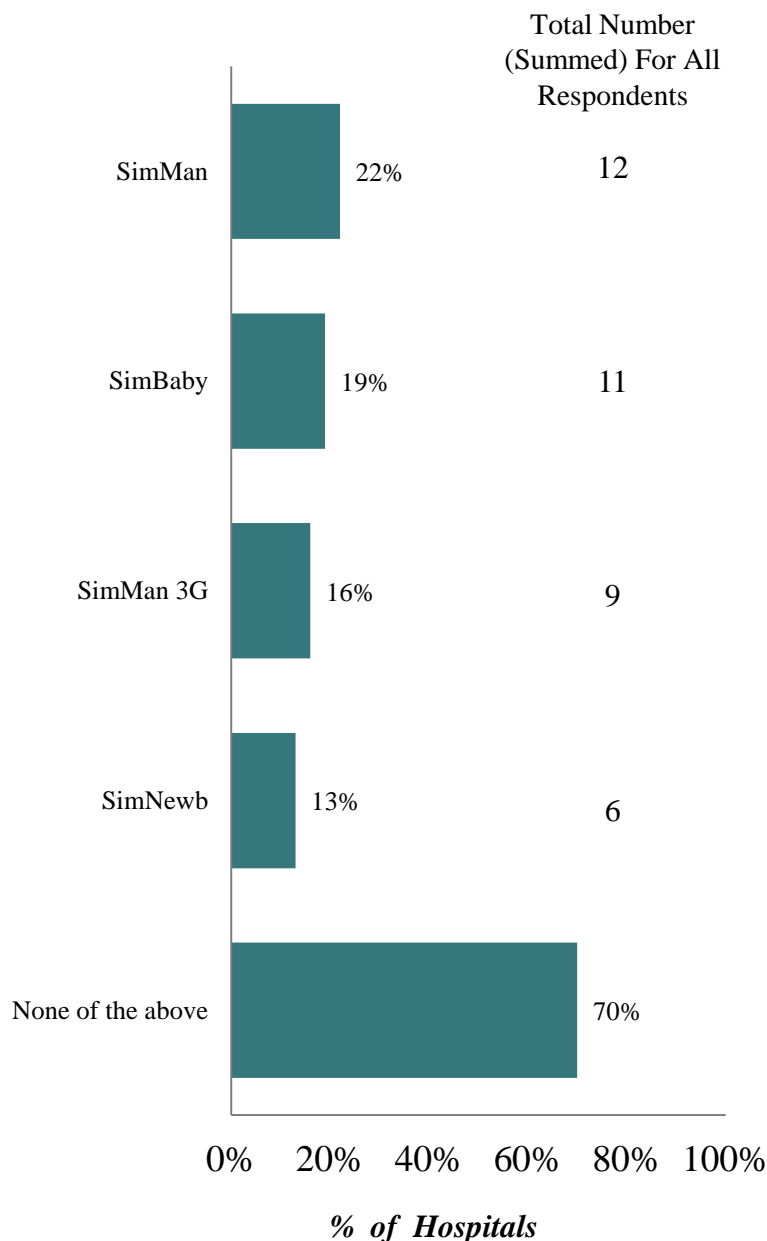
14

Simulation Center Equipment

Hospitals: % Own/Operate Equipment: *Laerdal*

	% of Hospitals	Total Number (Summed) For All Respondents
SimMan	22%	12
SimBaby	19%	11
SimMan 3G	16%	9
SimNewb	13%	6
None of the above	70%	

% of Hospitals

- Thirty percent of hospital-based simulation centers use at least one type of Laerdal equipment.
- SimMan and SimBaby are the most commonly used Laerdal equipment models.

*Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device: **Laerdal***

15

Simulation Center Equipment

Hospitals: % Own/Operate Equipment: Gaumard

Total Number
(Summed) For All
Respondents

Equipment	% of Hospitals	Total
Noelle (S574, S575)	16%	9
Newborn HAL Mobile Team Trainer	8%	3
Pediatric HAL 1 Year S3004	8%	3
Pediatric HAL 5 Year S3005	8%	2
Noelle (S550, S551, S552)	5%	2
Susie S200	3%	1
HAL Mobile Team Trainer S3000	3%	1
Noelle (S560, S565)	0%	0
None of the above	81%	
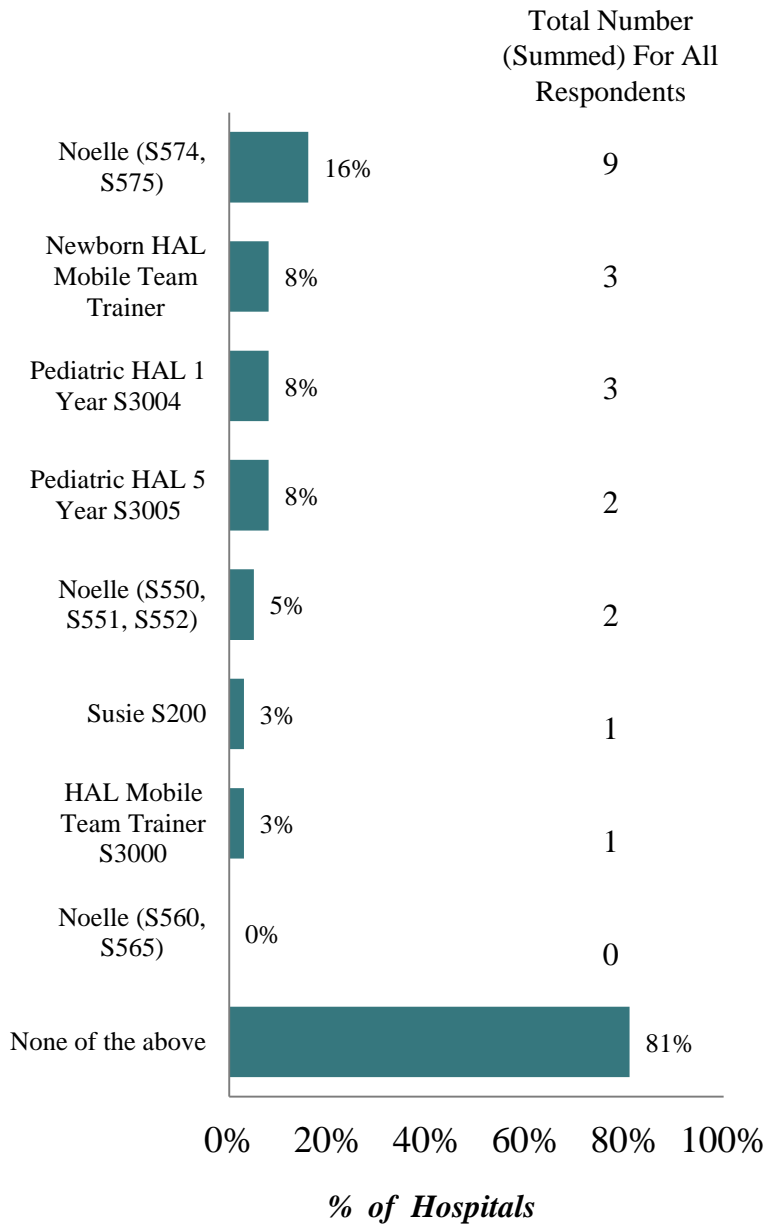
% of Hospitals

- Nineteen percent of hospital-based simulation centers use at least one type of Gaumard equipment.
- Two of the three Noelle models (S574/S575 and S550/S551/S552) were the most commonly used Gaumard equipment models.

*Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device: **Gaumard***

Simulation Center Equipment
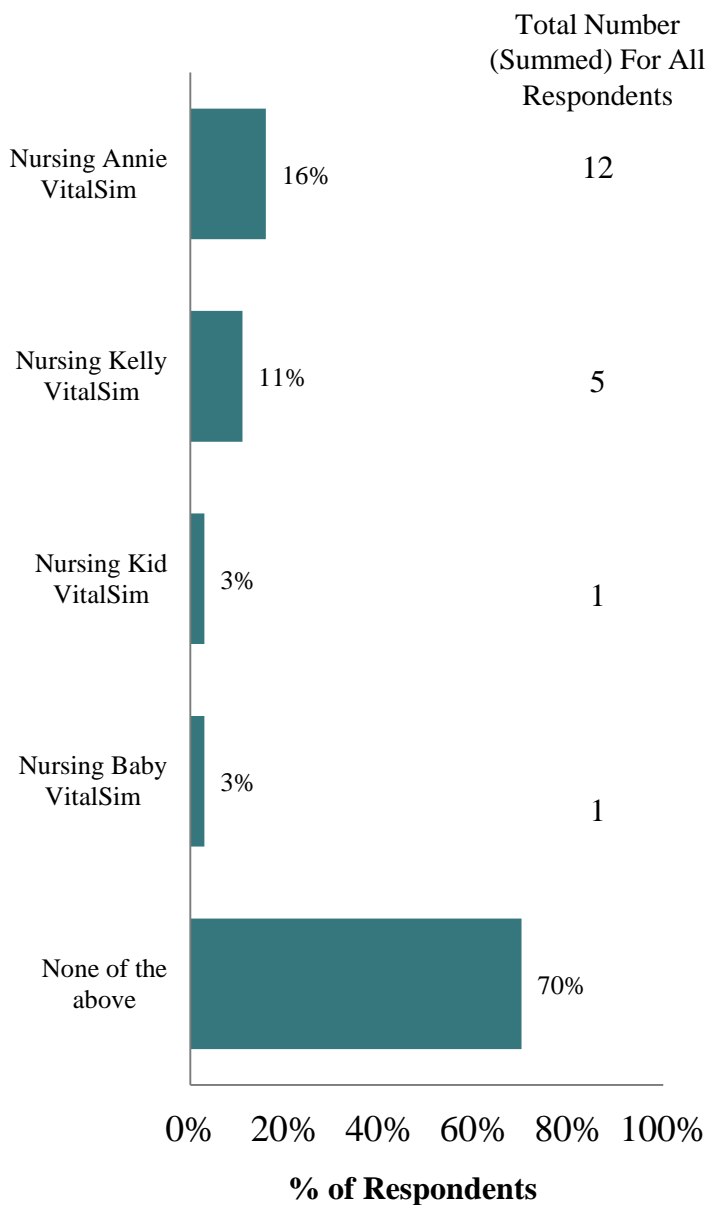
Hospitals: % Own/Operate Equipment: LifeForm

Total Number (Summed) For All Respondents

Equipment	% of Respondents	Total Number (Summed) For All Respondents
Nursing Annie VitalSim	16%	12
Nursing Kelly VitalSim	11%	5
Nursing Kid VitalSim	3%	1
Nursing Baby VitalSim	3%	1
None of the above	70%	

% of Respondents

- Thirty percent of hospital-based simulation centers use at least one type of LifeForm equipment.
- Nursing Annie and Nursing Kelly are the most commonly used VitalSim LifeForm equipment models.

*Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device: **LifeForm***

17

Simulation Center Equipment

Hospitals: "Other" Medium/High Fidelity Simulation Equipment:

- Crisis Child
- Harvey
- Kyoto Sakura
- Laedal Megacode Kid
- Laerdal Intubation Manikins
- Laerdal VitalSim
- NASCO Lifeform
- NASCO Ped Care
- Prompt birthing simulator
- Surgical virtual simulation for residents

*Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device: **Other Equipment***

Simulation Center Equipment

Hospitals: Summary of Medium/High Fidelity Simulation Equipment:

Manufacturer	% of Hospitals Using Manufacturer's Equipment	Total Number of Manufacturer's Equipment in Sample
METI	17%	25 units
Laerdal	30%	38
Gaumard	19%	21
LifeForm	30%	19

Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device

Simulation Center Equipment

Hospitals: Purchase Extended Warranties
% Yes
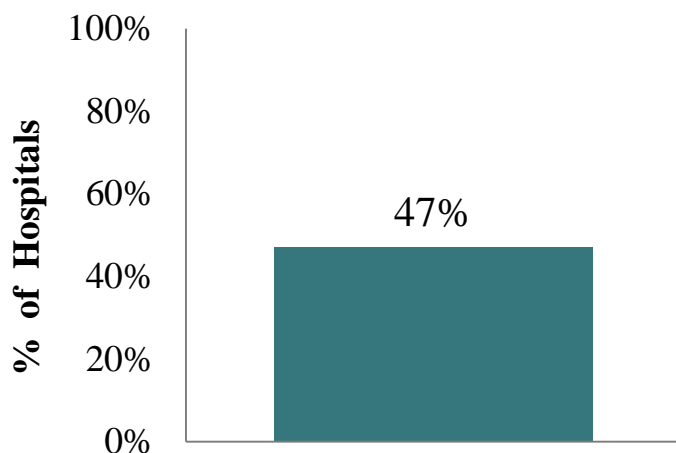
- Extended warranties are popular with hospital-based simulation centers. About half 'usually' purchase the extended warranties for their medium/high fidelity simulation equipment.

Factors Which Influence Purchase of Extended Warranties

Factors	% Hospitals
Cost of warranty	20%
Technical problems are common	14%
Repair/replacement costs	14%
Repairs easier with warranty	11%
Length of warranty	6%
Trained and responsible staff	6%
New/fragile technology	6%
Coverage	3%
Hospital's own budget	3%
History of reliability of equipment	3%
Lack of technical support at hospital	3%
"Loaner" simulators available	3%
None	20%
Other	11%

Q7: Do you usually purchase extended warranties for your medium/high-fidelity simulation equipment?
Q8: What factors influence your decision to purchase/not purchase extended warranties?

Simulation Center: Support Equipment

Hospitals: Use of Support Equipment
% Use

Video Camera(s) — 47%

Microphone(s) for communicating with learners during the simulation — 44%

Control panel for controlling/managing simulation scenarios — 33%

Archival software for storing audio/visual files — 32%

Equipment to transmit/stream simulation to other area — 19%

No additional equipment avaliable — 47%
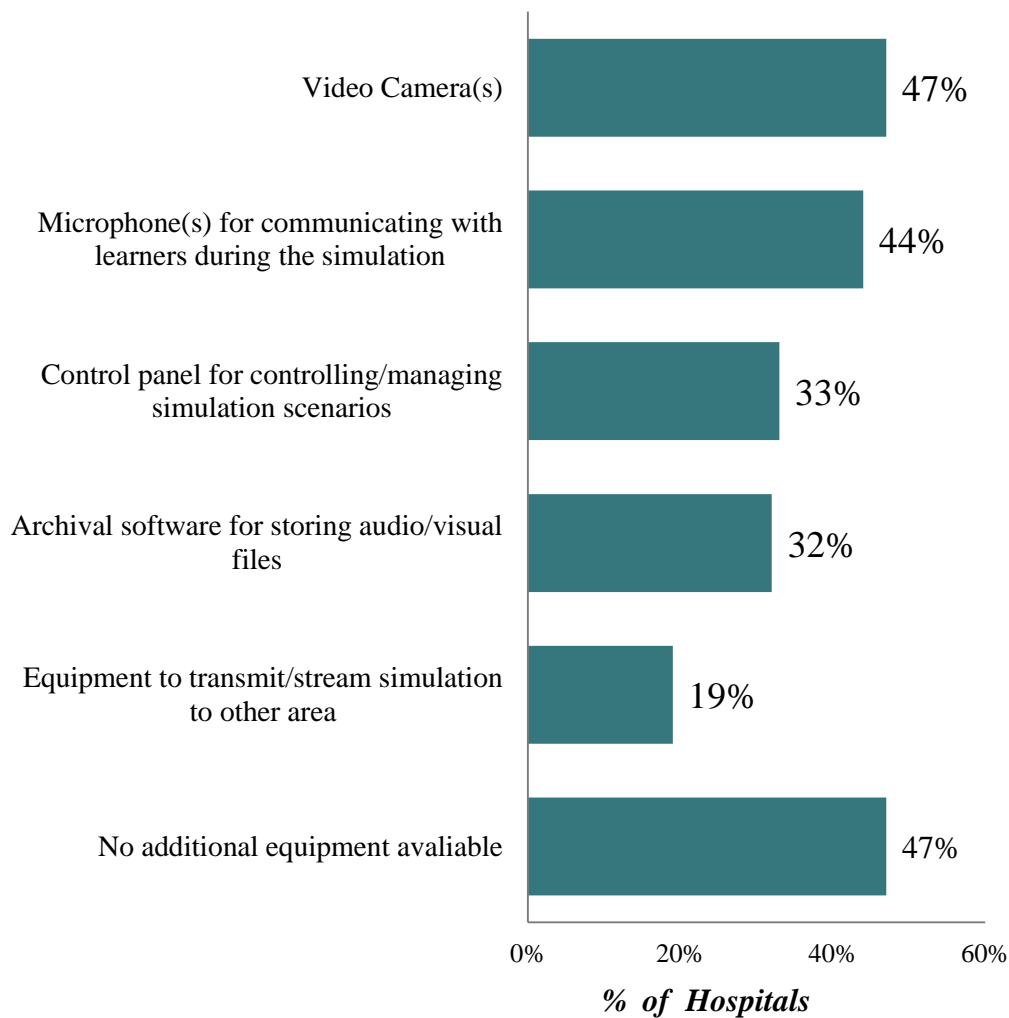
% of Hospitals

- About half of responding hospitals said that they use supporting technology/equipment in their simulation center.
- Just under half of simulation centers use video cameras and microphones for communicating with learners during simulations. One-in-three centers use archival software for storing data files and control panels for managing simulation scenarios.

Q9: What additional equipment do you have to support simulation? (Select all that apply)   21

Dedicated Space for Simulation Center

Hospitals: Is Space Dedicated to Simulation Center Use?
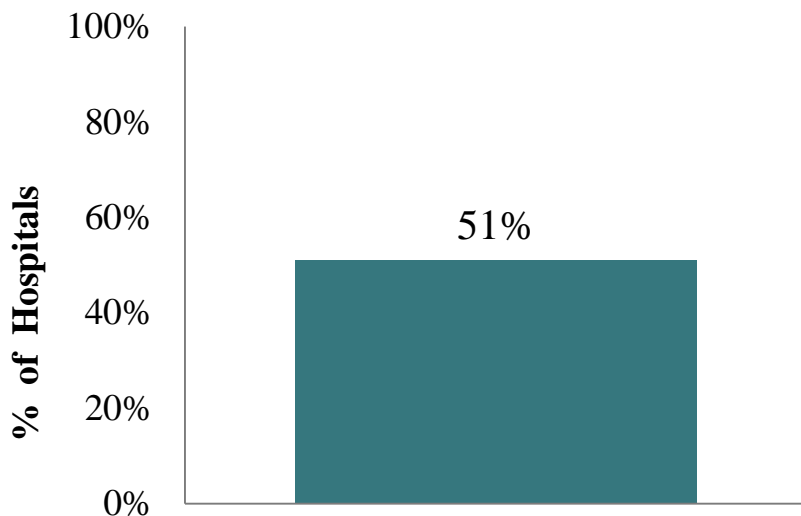
- Slightly more than half (51%) of the responding hospitals have dedicated space for simulation centers.
- On average, hospitals allocate 1000 square feet to simulation centers.

Amount of Space Dedicated to Simulation Laboratory

	Median	Minimum	Maximum
Square footage	1000 s.f.	50	28,000
Number of rooms/suites	2 rooms/suites	1	23

Q10: Do you have a dedicated laboratory/center for simulation?
Q10AB: Dedicated laboratory/center for simulation square footage:
Q10AB: How many rooms/suites do you have for simulation within your lab?

Dedicated Space: Debriefing

Hospitals: Is Space Dedicated to Debriefing?
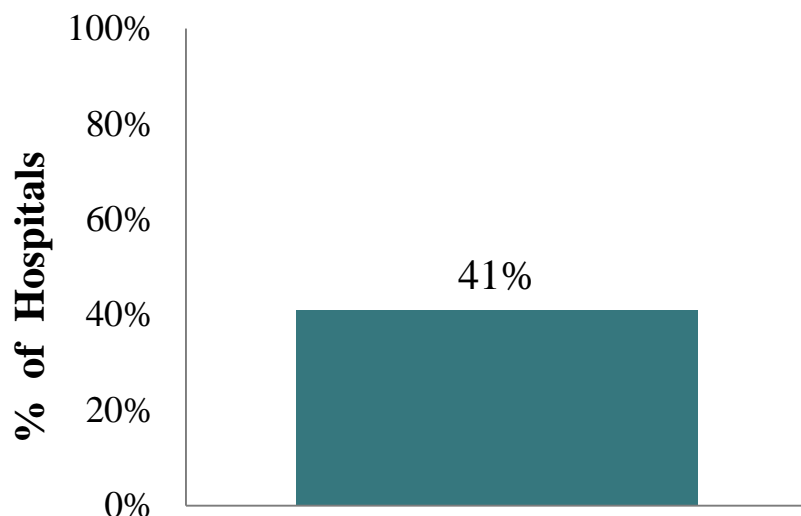
- Forty-one percent of hospitals have space dedicated specifically for debriefing.
- For observation *during* simulations, most centers have a direct observation area. About half have a one-way mirror. Video transmission of simulations to another room or building was available at 59% of hospital-based centers.

Methods of Observation During Simulations
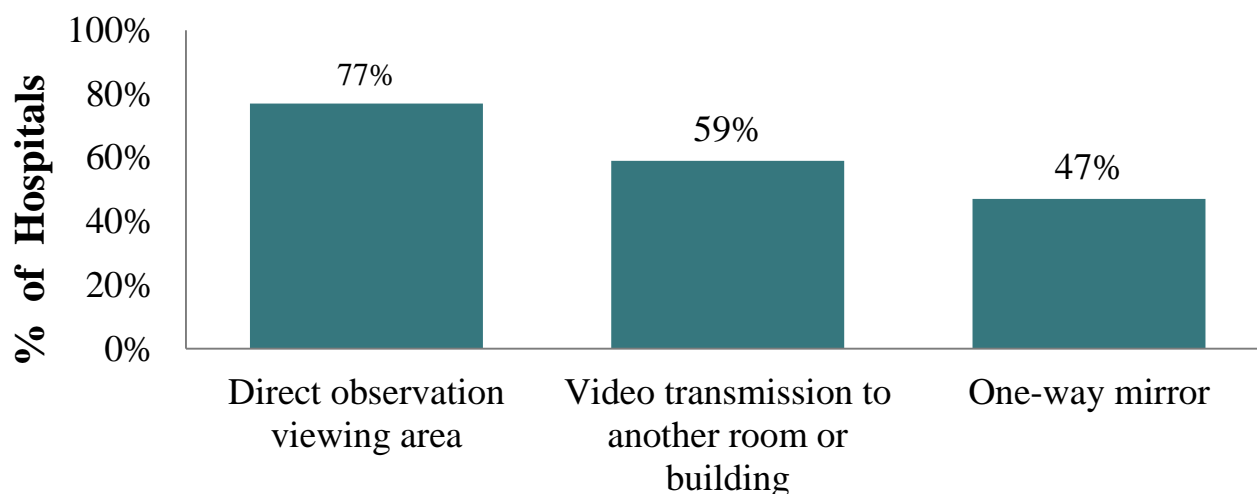
Q10C: Do you have a dedicated room for debriefing?
Q10D: Which of the following are available for observation of simulation by others? (Select all that apply)

23

Level of Use

Hospitals: Hours per week <u>simulation laboratory/center</u> is used ……

	Hospitals
……during weekdays	
Median	25
Minimum	1
Maximum	60
…during weekends	
Median	0
Minimum	0
Maximum	24

- On average, simulation centers in hospitals are active 25 hours per week during weekdays.
- Most simulation centers are inactive on weekends (79%).

Q10EF: How many hours per week is your simulation laboratory/center used during weekdays (Monday-Friday)?
Q10EF: How many hours per week is your simulation laboratory/center used during weekends (Saturday-Sunday)?

Level of Use

Hospitals: Hours per week allocated simulation <u>space</u> is used ……

	Hospitals
……during weekdays	
Median	25
Minimum	1
Maximum	60
…during weekends	
Median	0
Minimum	0
Maximum	24

- On average, simulation space in hospitals is used 25 hours per week during weekdays.
- Most simulation space is inactive on weekends (79%).

Q10Hspacehrs: How many hours per week is your allocated space used for simulations during weekdays (Monday-Friday)? How many hours per week is your allocated space used for simulations during weekends (Saturday-Sunday)?

Level of Use by Outside Groups

Hospitals: Are Outside Groups Allowed to Use Simulation Laboratory?
% 'Yes'
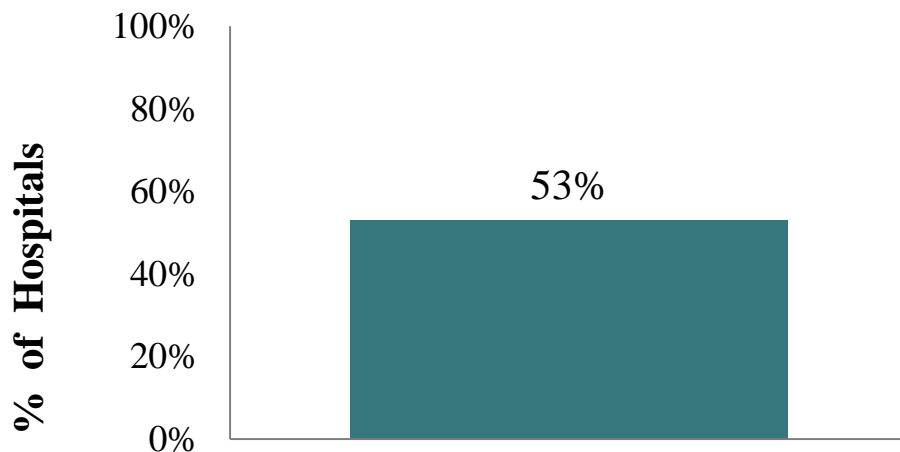
- Only half of responding hospitals allow outside groups to use the simulation center (53%) .
- Those centers which do allow access are used an average of 12 hours per week by outside groups.
- Sixty-seven percent of hospitals which allow access to outside groups charge an hourly fee (on average, $75).

Q10G: Do you allow outside groups to use your simulation space?
Q10gHours: Average number of hours per week that simulation is used by outside groups:
Q10fee: Do you charge a fee?
Q10fee_1_other: Yes [Please specify average hourly rate ($per/hr0):

26

Mobile Simulation Units

Hospitals: Is a Mobile Simulation (Van, Bus, etc.) Available?
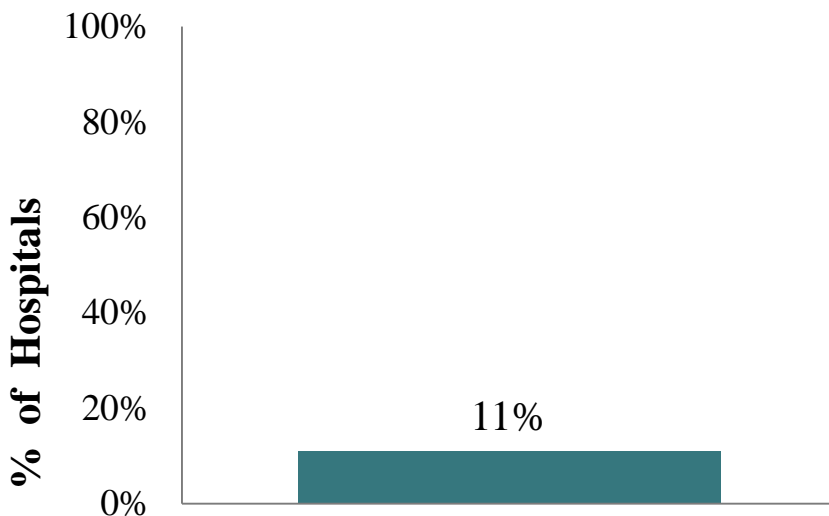
- Only 11% of the responding hospital-based centers have a mobile unit.
- One of the four hospitals which has a mobile unit also allows outside groups to use it. That unit is used, on average, 5 hours per week.

% of Hospitals — bar chart, values 0% to 100%. Single bar labeled **11%**

Uses of Mobile Unit

- *17 foot bus. Used at all facilities.*
- *Cart to transport from sim center to unit based simulation*
- *They are low tech mechanical more than computerized models. They are Laerdal products (child and adult) and a Noelle (maternal) mannequin. It is funded and used by our transport network division and is housed on a mobile rig.*
- *We contract with regional EMS transport companies to transport large simulators. We also use university shipping & receiving transport. Smaller simulators and control stations we can transport in our private vehicles - usually mini vans or SUVs. Once we establish ourselves at the remote location, we conduct simulation education as we would at our Living Laboratory. Or, we send our educator, and use the remote facility's simulators.*

Q11: Do you have a mobile simulation unit, e.g., van, bus?
Q11A: Describe how your unit is used.

Loaning Equipment to Outside Groups

Hospitals: Loan Equipment
% 'Yes'
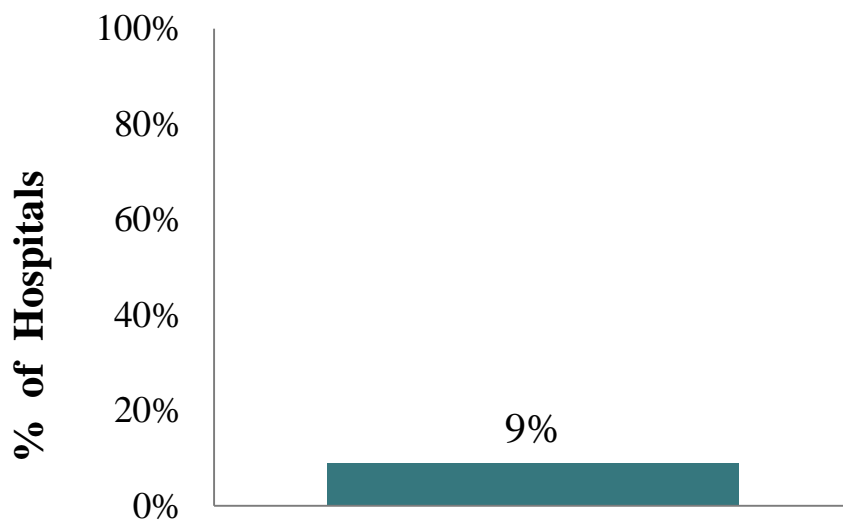
- The lending of mannequins/equipment by hospitals to outsiders was very uncommon (9%).
- None of the hospitals that loan equipment to outsiders charged a fee for its use.

Q12: Do you loan your simulation mannequins/equipment?
Q12fee: Do you charge a fee?
Q12fee_1_other: Yes [Please specify average hourly rate ($per/hr)]

28

Services Related to Simulation

Hospitals: Other Services Offered
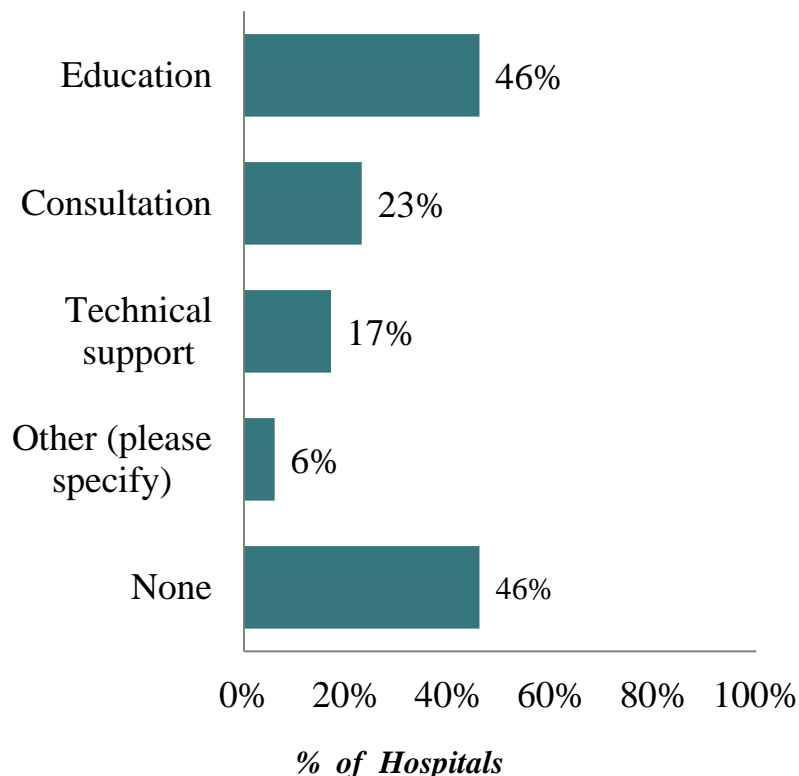
% of Hospitals

- Half (54%) of the responding hospitals said that they offered 'other services' at their simulation centers. Most commonly, they provided educational services. Many (23%) offered consultation, and about as many offered technical support (17%).
- Few of these respondents (20%, not shown) "purchase services from others related to simulation."

*Other:
- Clarification: we are actively building our sim lab to open August 2012
- Depending on load, we contract educators or operators. Simulator vendors often donate services.
- Just beginning a relationship with a university in town.
- Mt. Sinai Simulation Center, Cleveland Ohio
- Promedica Defiance Hospital is part of the Promedica System. We have recently become partners with University of Toledo. I am on the committee to determine how Promedica is going to take advantage of this technology and utilize it in the hospital setting for staff development.
- Send our nurse to one of the other hospitals in our system that has a simulation lab for critical care orientation.
- We are purchasing the education program with the i Stan
- We have the ability to purchase services but do not at this time.
- We send our nurses to larger hospital in our system for completing Essentials of Critical Care course with skills practiced in simulation lab.

Q13: Which of the following services related to simulation (e.g., consultation/education) do you offer?

Q15: Do you purchase services from others related to simulation (e.g., consultation/education)?

29

Use of Simulation To Teach Assessment Skills

Hospitals: Teach Health Assessment Skills With Simulation?
% 'Yes'

[Bar chart showing 60% with y-axis labeled "% of Hospitals" ranging from 0% to 100%]
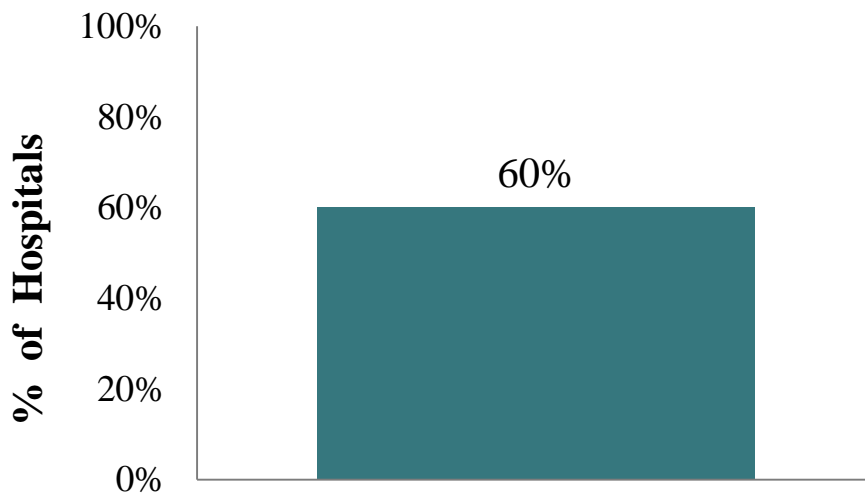
- Simulation resources are used to teach assessment skills by more than half of responding hospitals (60%).

Q16: Do you use simulation to teach health assessment skills?

Source of Funding

Hospitals: Funding Sources

- Hospital Budget — 71%
- Grants — 23%
- Private foudation — 14%
- Fee for service — 11%
- Federal funding — 9%
- State funding — 6%
- Collaborative agreement with other agency(ies) — 6%
- Other — 26%

0% 20% 40% 60% 80% 100%
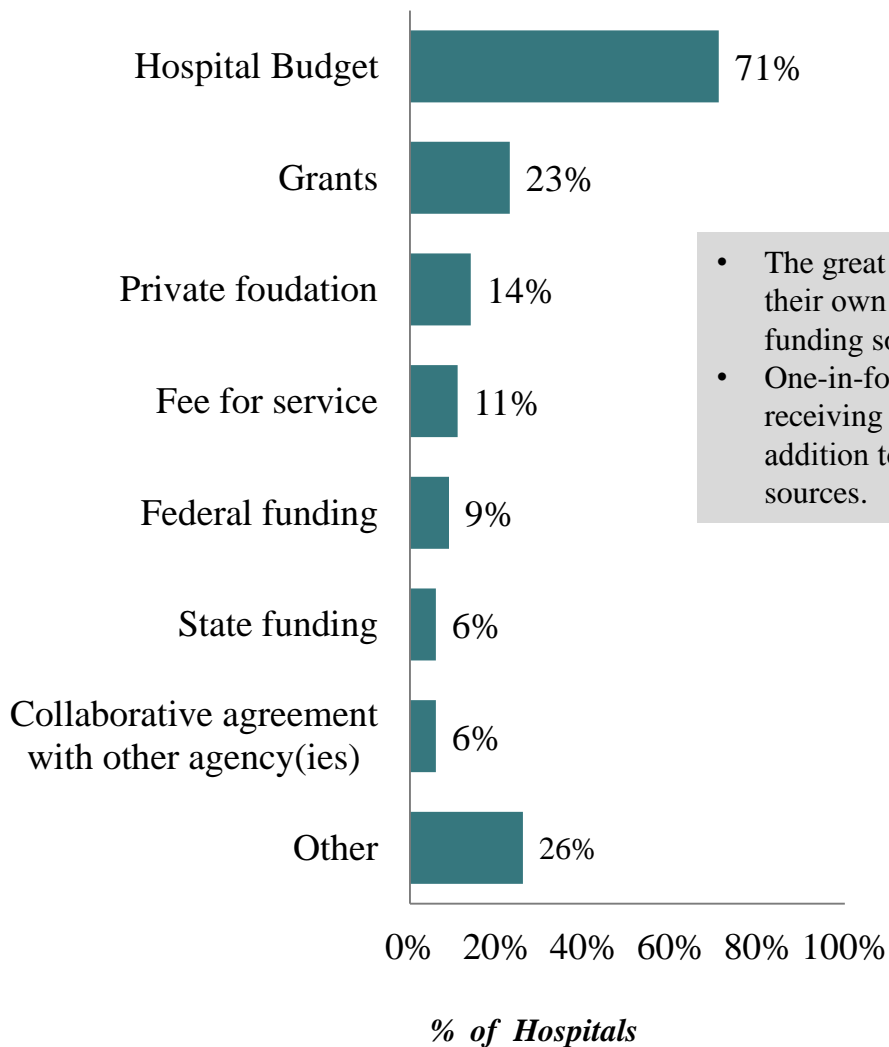
% of Hospitals

- The great majority of hospitals cited their own institution's budget as a funding source (71%).
- One-in-four hospitals reported receiving some federal funding, in addition to funding from "other" sources.

Q14: How is your simulation center and equipment funded (select all that apply)

31

Uses of Simulation: By Clinical Category

Hospitals: Clinical Categories Simulation is Applied To

Category	% of Hospitals
Critical care	95%
Medical-surgical	91%
Maternal-newborn	67%
ED/trauma/disaster preparedness	67%
Pediatrics	62%
Perioperative/anesthesia	43%
Outpatient/home health	24%
Mental health	10%
Other	14%

0% 20% 40% 60% 80% 100%
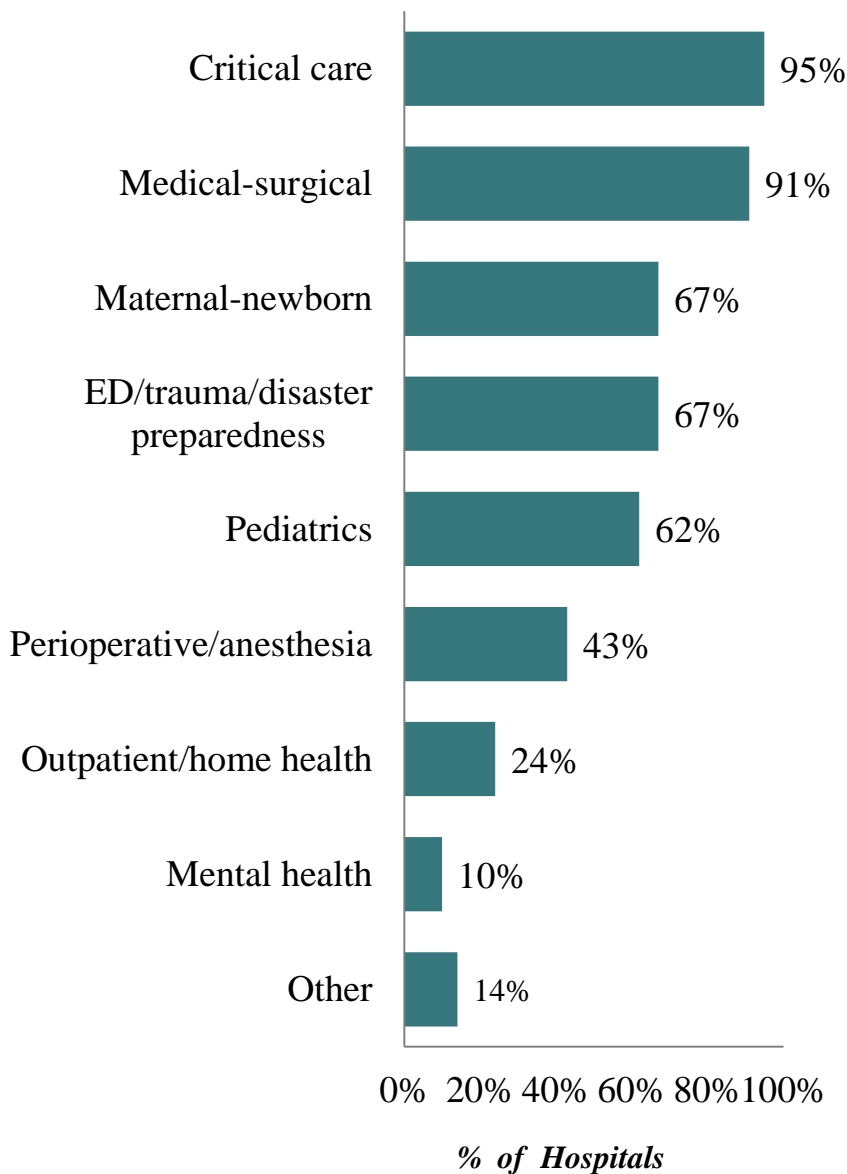
% of Hospitals

- Simulation is used by hospitals primarily in the critical care and medical-surgical clinical categories (95% and 91%, respectively).
- In addition to these primary uses, hospitals do employ simulation in a wide variety of clinical scenarios (at least 5 others, on average).

Q17: In which of the following clinical categories or courses do you use simulation? (Select all that apply)

Uses of Simulation: By Courses

Hospitals: Courses Simulation is Applied To

Course	%
Critical thinking/Decision-Making	83%
Skill practice/ Demonstration/Validation of Competency	83%
Multi-Disciplinary Team Training	79%
Refresher Training	75%
Orientation	71%
Education/Training in New Specialty/New Clinical Unit/New or…	54%
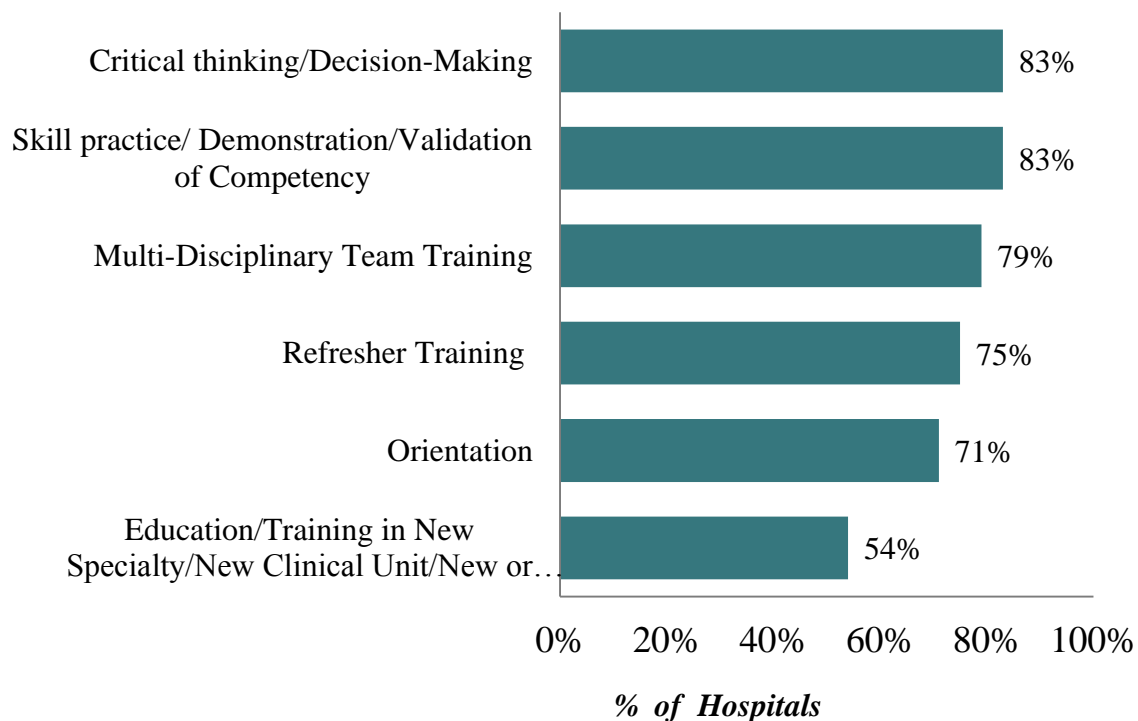
% of Hospitals

- Hospitals utilize simulation in a variety of training scenarios, most frequently in critical thinking/decision-making and skill practice/competency training (83%, respectively).

Q18Courses: For each of the 8 clinical categories shown below, please indicate which courses apply.

Uses of Simulation: By Learners

Hospitals: Learners Simulation is Used With

- RN — 83%
- Physican — 71%
- Nursing Assistant/Tech — 67%
- APN — 54%
- LPN — 42%
- Other — 58%

0%   20%   40%   60%   80%   100%
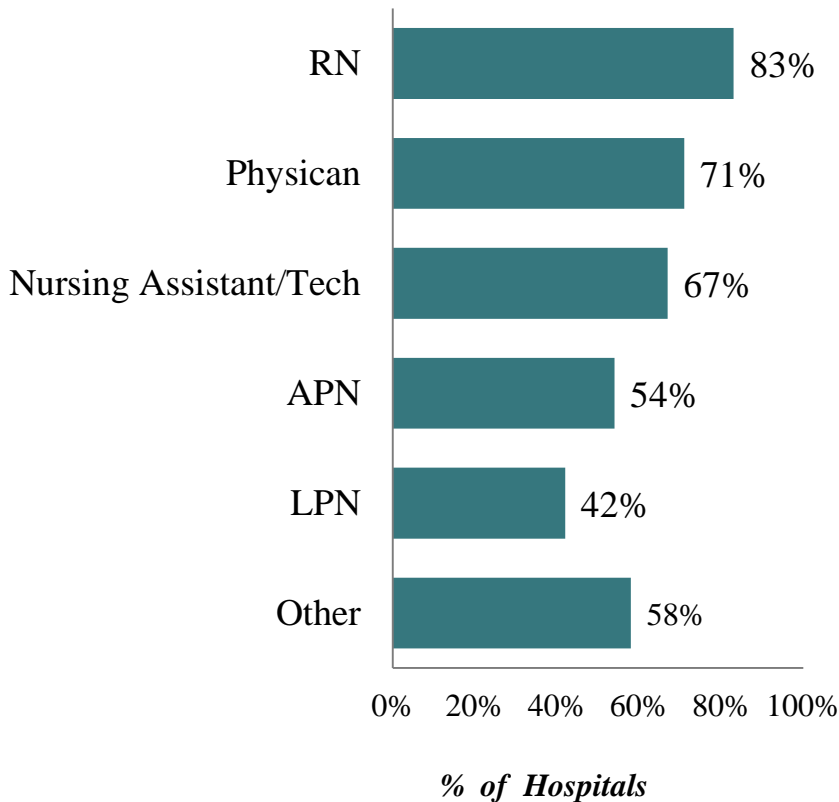
% of Hospitals

- Although used with several categories of "learners", simulation is used primarily with RNs (83%) and physicians (71%) during training .

Q18learners: For each of the 8 clinical categories shown below, please indicate which learners participate at your facility.

34

Uses of Simulation: By Clinical Category & Courses

Hospitals: Clinical Categories Simulation is Applied To: By Course & Clinical Category
% of Schools
Base = Those Who Use Simulation in Category

	Maternal-newborn	Ped-iatrics	Pediatrics Medical-surgical	Peri-operative/ Anesthesia	Critical care	ED/Trauma/ Disaster Prep.	Mental Health	Outpatient/ Home Health	Other
Orientation	57%	77%	68%	67%	65%	71%	50%	80%	33%
Skill practice/ Demonstration/ Validation of Competency	79%	85%	90%	78%	90%	93%	50%	80%	67%
Critical thinking/ Decision-making	79%	85%	90%	71%	95%	93%	50%	100%	100%
Refresher Training	57%	46%	63%	56%	70%	64%	50%	40%	33%
Education/ Training in New Specialty/ New Clinical Unit/ New or Expanding Service Line	43%	31%	47%	33%	55%	64%	50%	20%	0%
Multi-Disciplinary Team Training	57%	62%	74%	33%	80%	86%	50%	60%	67%

Q18course:For each of the clinical/courses shown below, please describe how simulation is used at your school/facility:

Uses of Simulation: By Clinical Category & Learner

Hospitals: Clinical Categories Simulation is Applied To: By Course & Learner
% of Hospitals
Base = Those Who Use Simulation in Category

	Maternal-newborn	Pediatrics	Pediatrics Medical-surgical	Peri-operative/ Anesthesia	Critical care	ED/Trauma / Disaster Prep.	Mental Health	Outpatient/ Home Health	*Other
Nursing Assistant/ Tech	14%	31%	47%	11%	45%	50%	50%	40%	0%
LPN	7%	23%	47%	11%	30%	21%	50%	40%	0%
RN	79%	92%	95%	67%	0%	93%	50%	60%	67%
APN (NP, CRNA, CNS)	43%	54%	42%	22%	45%	50%	50%	20%	33%
Physician	57%	77%	58%	78%	70%	86%	50%	40%	33%
Other healthcare professional with that specialty	36%	54%	42%	0%	0%	50%	50%	50%	20%

Q18learners:For each of the 8 clinical/courses shown below, please describe how simulation is used at your facility:

Simulation Scenario Development

Hospitals: How Scenarios Are Developed

Which BEST describes
majority of time:

	Chart %	Which BEST
Write own scenarios	83%	57%
Use pre-packaged scenarios developed/provided by the vendor	54%	23%
Modify scenarios developed by others (vendors or others)	37%	20%
Use "open source" or shared scenarios developed by others	17%	0%

0% 20% 40% 60% 80% 100%
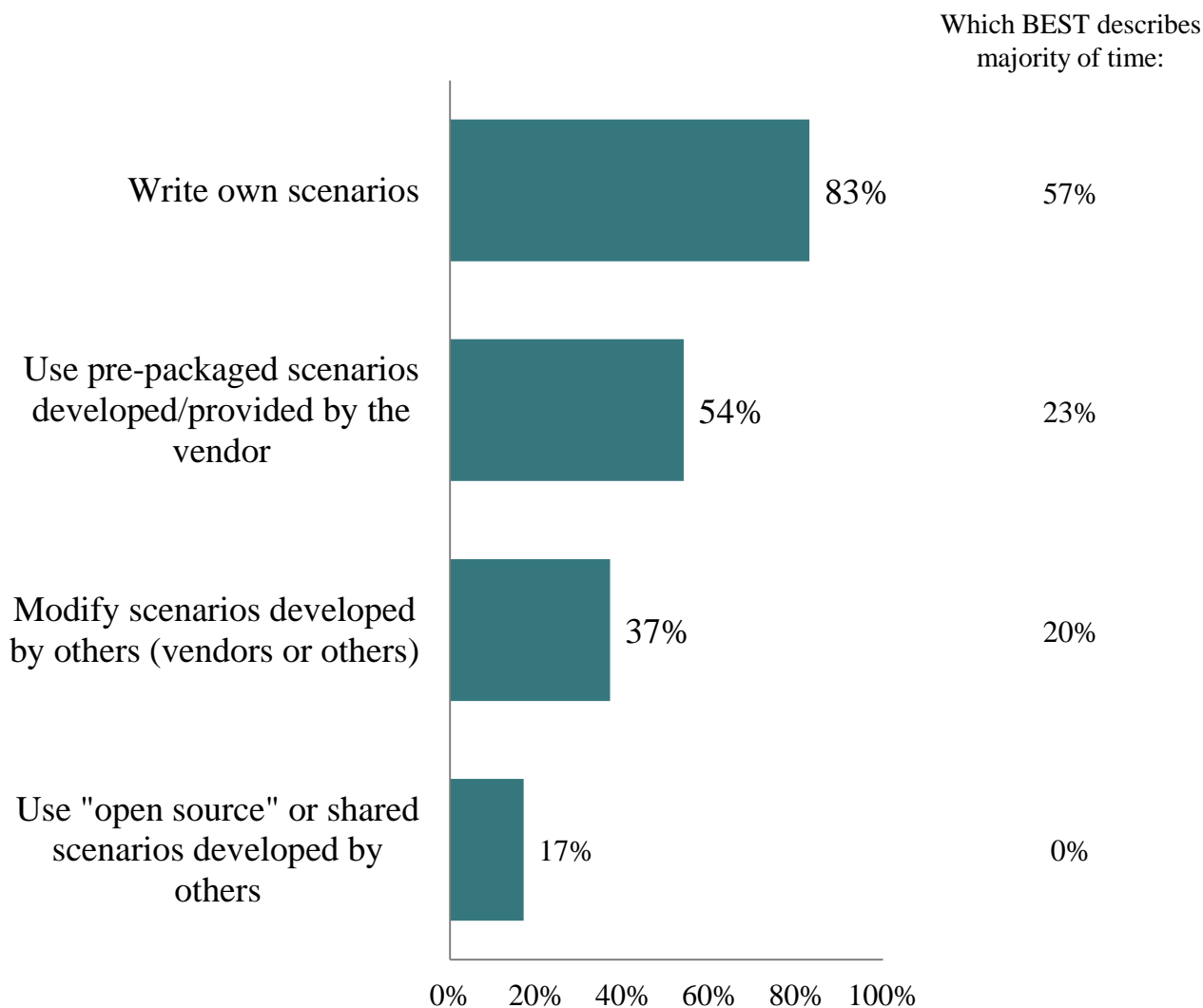
- Most (83%) hospital-based simulation centers 'write' their own scenarios. However, half used 'pre-packaged' scenarios provided by their equipment vendor(s). About one-in-three (37%) modify scenarios developed by others.

Q19: Which of the following describes your use of simulation scenarios and implementation materials? (select all that apply)
Q19A: Which best describes your use of simulation scenarios the majority of the time?

37

Simulation Scenario Development

Hospitals: Biggest Challenges to Scenario Use (Designed by Others)

Challenges	% Hospitals
Adapting scenarios to local environment/Healthcare standards, protocols	34%
Lack of personnel/time	14%
Cost	11%
Don't have equipment	9%
Does not fit our policies/procedures	6%
Changing guidelines	3%
Limitations to scenarios	3%
Newness of simulation	3%
Space limitations	3%
Use own design	3%
Other	9%
Don't use	20%

- Thirty-four percent of respondents say that adapting scenarios written by others to the local environment/standards is the biggest challenge they face.

Q20: What are the biggest challenges/issues in implementing scenarios designed by others?

Simulation Scenario Development

Hospitals: Biggest Challenges to Own Scenario Development

Challenges	% Hospitals
Lack of time	38%
Lack of dedicated personnel	28%
Experience with curriculum development	17%
Creativity/Originality	14%
Development of goals/Objectives	7%
Ease of use for students	3%
Uses a majority of simulation features	3%
Lack of equipment	3%
Lack of standardization	3%
Lack of dedicated space	3%
Cost	3%
Complexity of programming simulators	3%
Other	3%
None/Not applicable	14%

- Lack of time is cited by hospitals as the biggest challenge to developing their own simulation scenarios (38%). Lack of dedicated personnel (28%) and inexperience with curriculum development (17%) are also significant challenges faced by hospitals.

Q21: What are the biggest challenges/issues in developing scenarios of your own?

Implementation of Simulation

Hospitals: Are Simulation Scenarios Developed With Specific Learning Objectives?
% 'Yes'
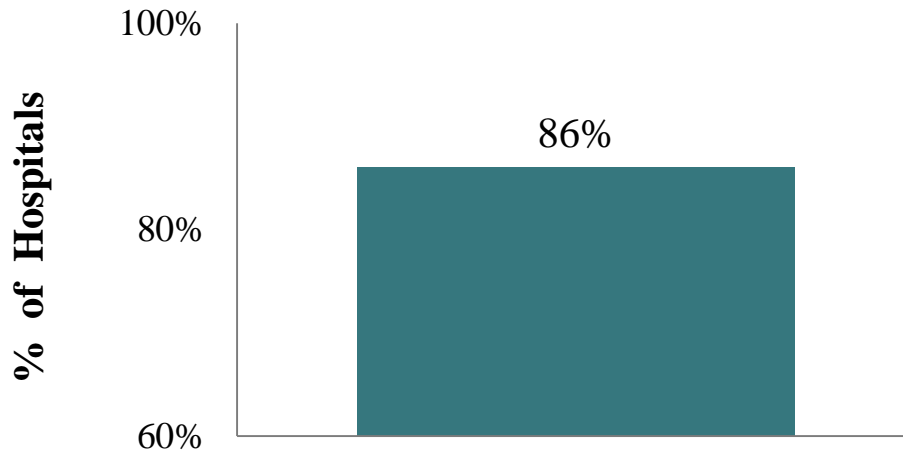
- On the whole, simulation laboratory/centers tie their simulation scenarios to specific learning objectives.

Faculty-to-student ratio = 1 to 5 (median).

Q22: Are the simulation scenarios developed with specific learning objectives?

Q23:On average, what is the faculty to student ratio per simulation scenario? (Ratio 1:)

Implementation of Simulation

Hospitals: Are Simulation Scenarios Video-recorded?
% 'Yes'
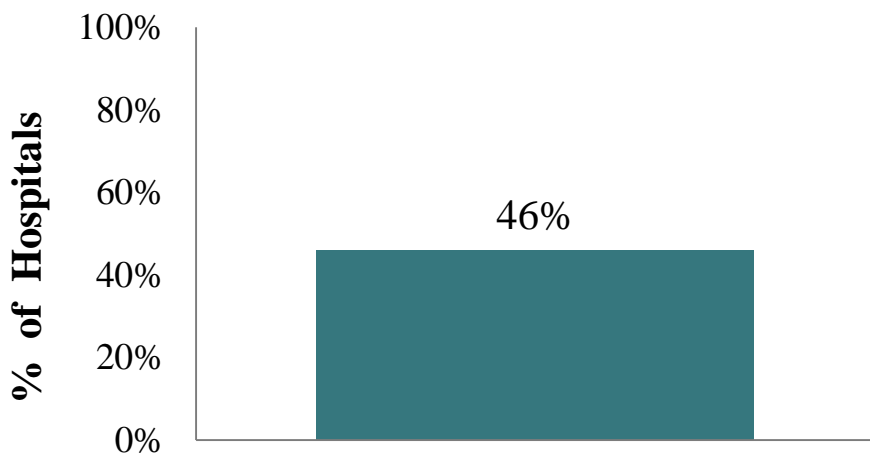
% of Hospitals

- Fewer than half of responding hospitals video record their simulation scenarios. Of those who do, the large majority use the recordings for debriefing.

46%

Purpose of Video-recording

94%

50%

19%

Debriefing   Teaching others   Testing
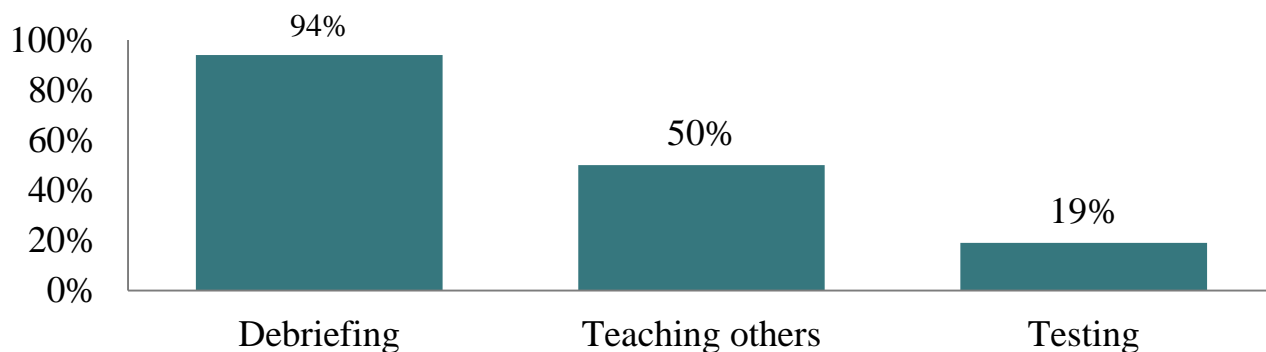
Q24: Do you video record your simulation scenarios?

Q24A: What is the purpose of the video recording? (Select all that apply)

Implementation of Simulation

Hospitals: Are Formal Debriefings Routinely Used?
% 'Yes'
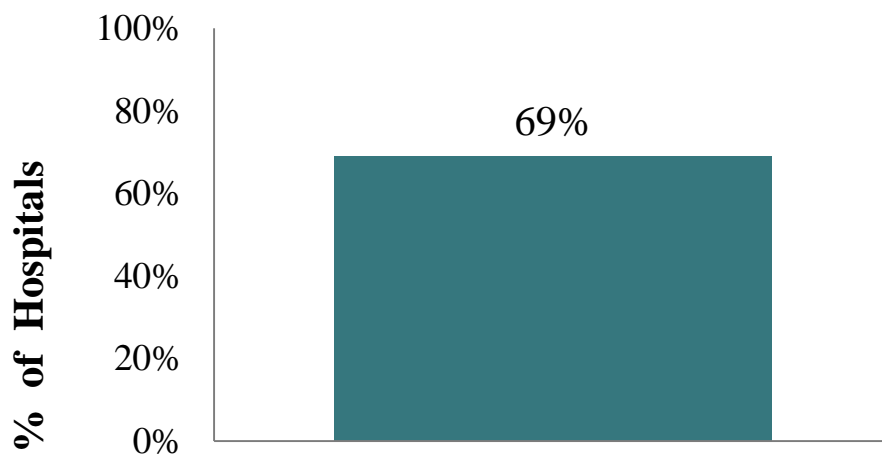
- Most hospital-based (69%) simulation centers routinely debrief with learners after simulation scenarios.
  - On average (median), debriefing sessions last 20 minutes (minimum of 5 minutes, maximum of 90 minutes).
  - Half use video-recordings during their debriefing sessions.

Q25: Do you routinely have a formal debriefing period following the simulation scenario?

Q25A: What is the average amount of minutes allocated for debriefing?

Q25B: Do you review the video recording during the debriefing?

Needs & Plans

Hospitals: Future Plans: Purchasing Materials

Category	%
Medium/high-fidelity simulation mannequin(s)	42%
Equipment to facilitate implementation (e.g., camera, software)	29%
Simulation scenarios	21%
Other	11%
None of the above	45%
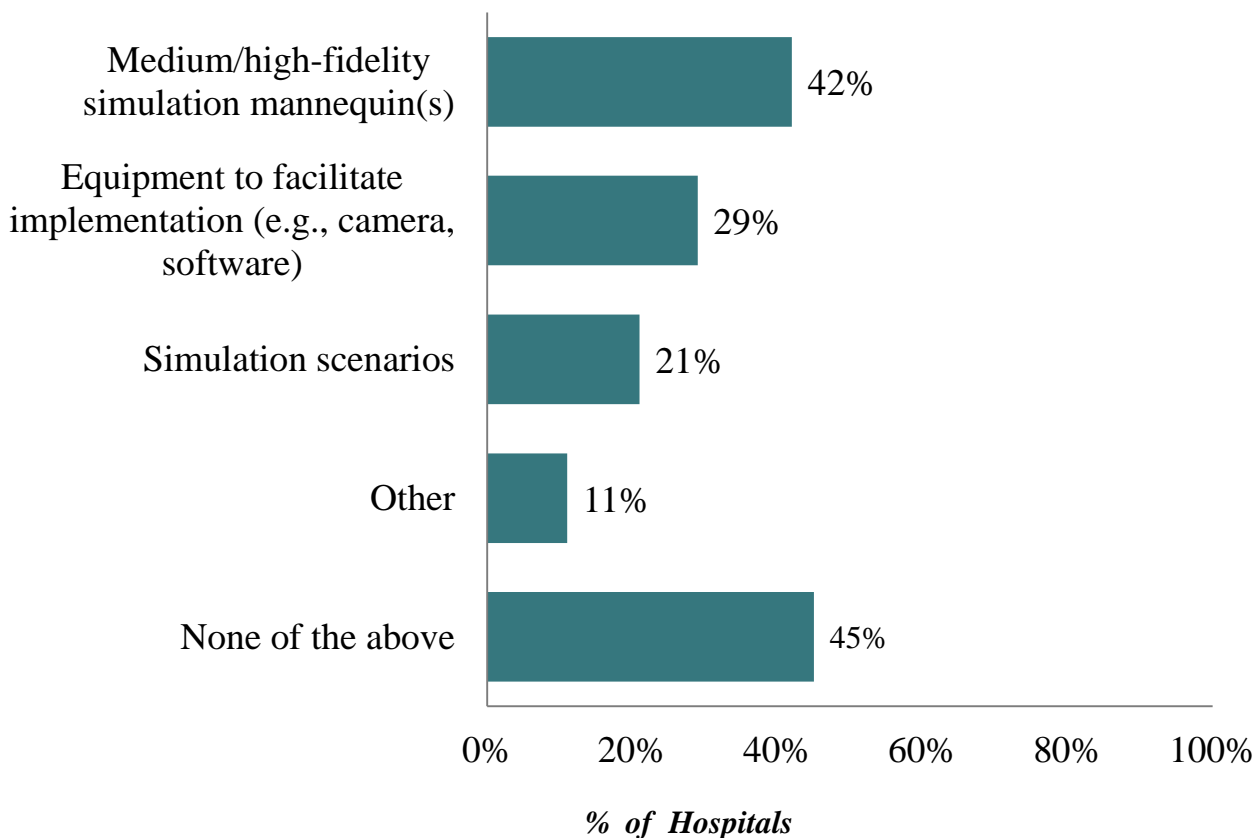
% of Hospitals

- Half of all responding hospitals have 'no plans' to purchase any of these materials in the near future. Those that are planning future purchases are primarily interested in a simulation mannequin (42%), followed by equipment to facilitate simulation implementation (29%).

Q26A: Which of the following describes future plans regarding simulation : purchase materials?

Needs & Plans

Hospitals Future Plans: Hire Additional Personnel

Technical support staff — 24%

Faculty — 21%

Other Personnel — 13%

None of the above — 63%
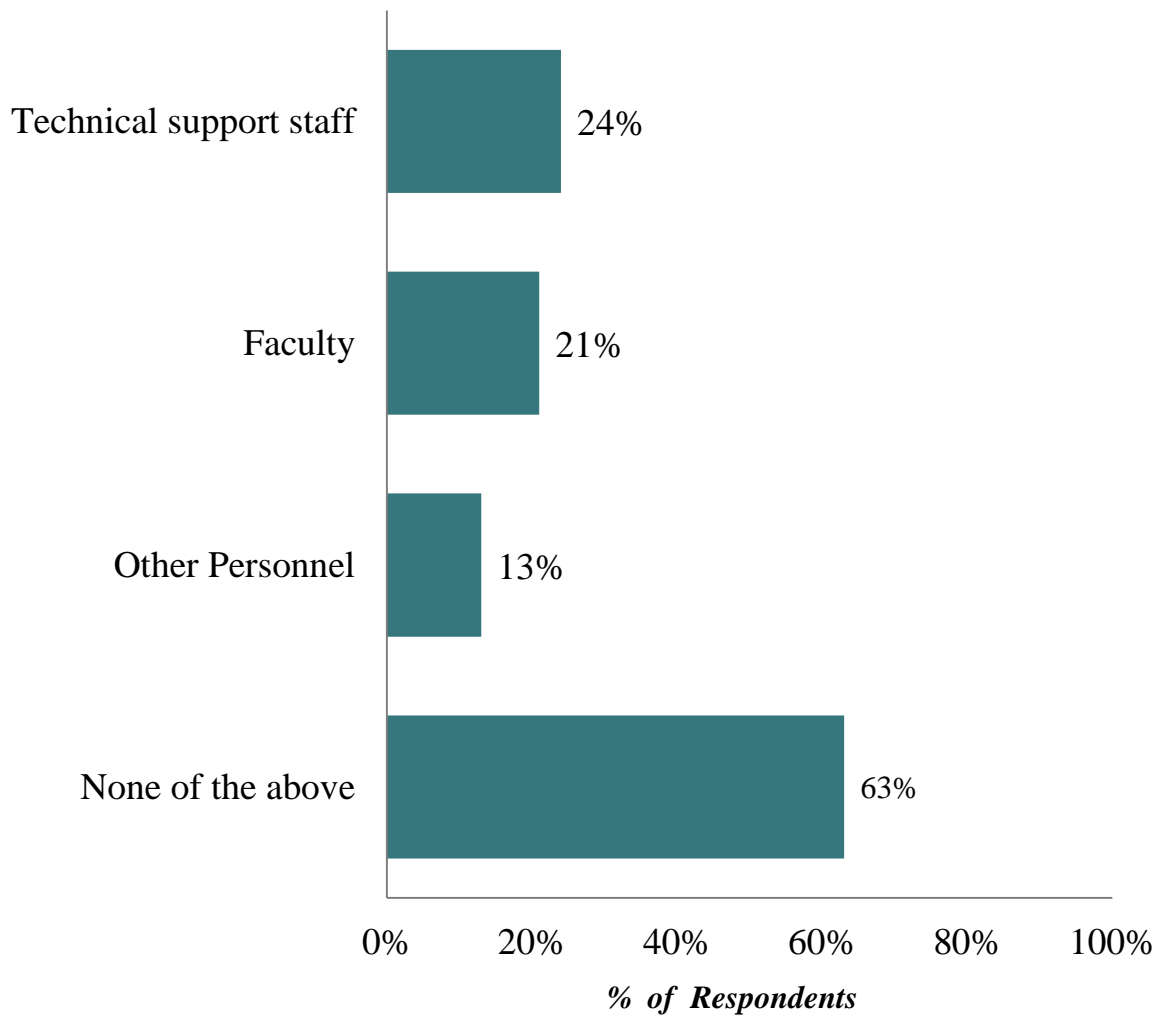
% of Respondents

- About one-third of responding hospitals have plans to add to their simulation center staff. Of these, 24% expect to hire additional technical support staff and 21% expect to hire additional faculty.

Needs & Plans

Hospitals Future Plans: Acquire Additional Space
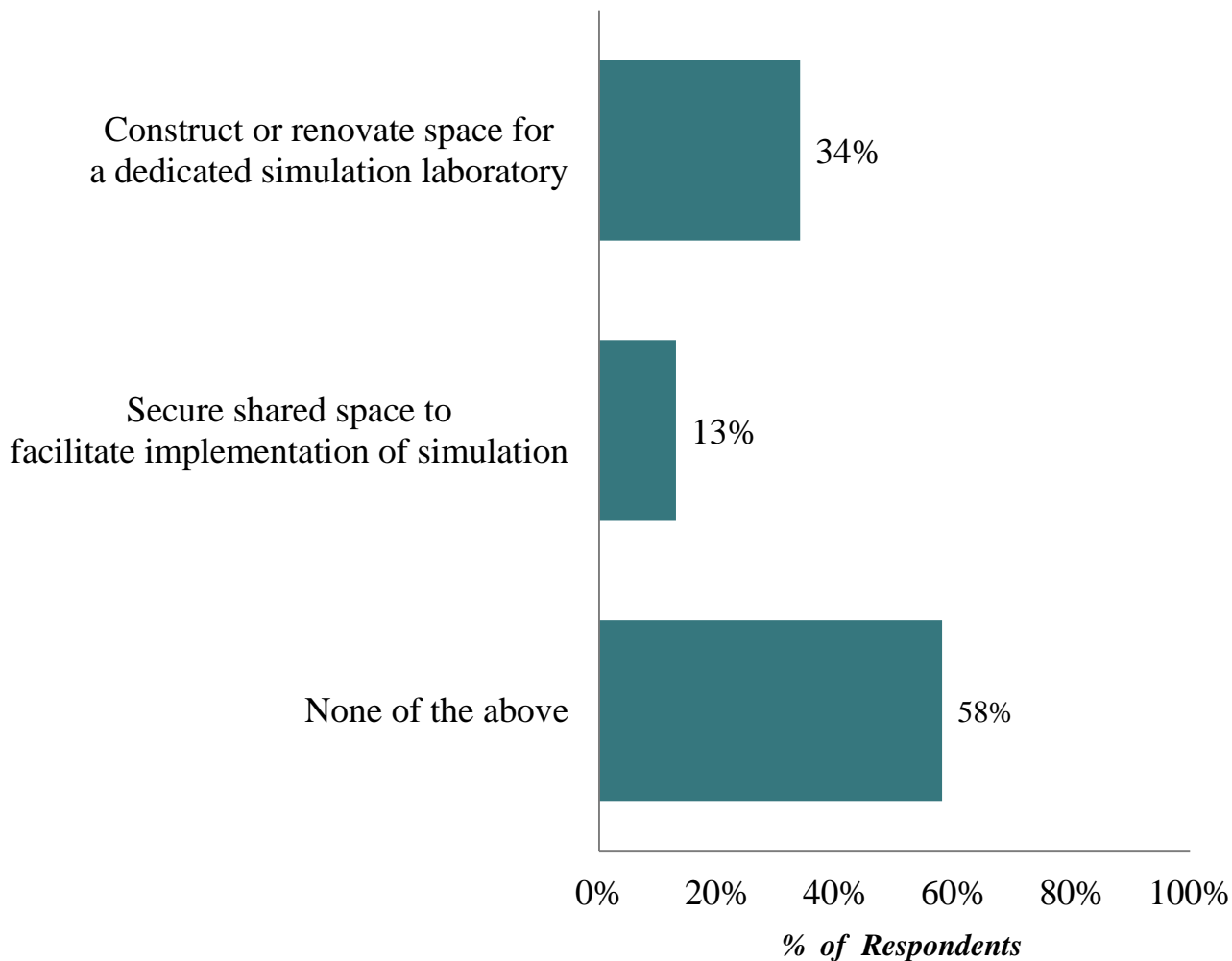
- With the addition of equipment and staff, additional space is likely needed: 42% of hospital- and 45% of school-based simulation centers have plans to expand their footprint. Mostly they expect to expand their existing space (about one-third) while the remaining expect to secure shared space.

Needs & Plans

Hospitals Future Plans: Use of Simulation in Curriculum

Increase use of simulation in the curriculum/clinical education — 58%

No additional plans other than already described — 32%

Other (please specify) — 10%

0%   20%   40%   60%   80%   100%

% of Respondents
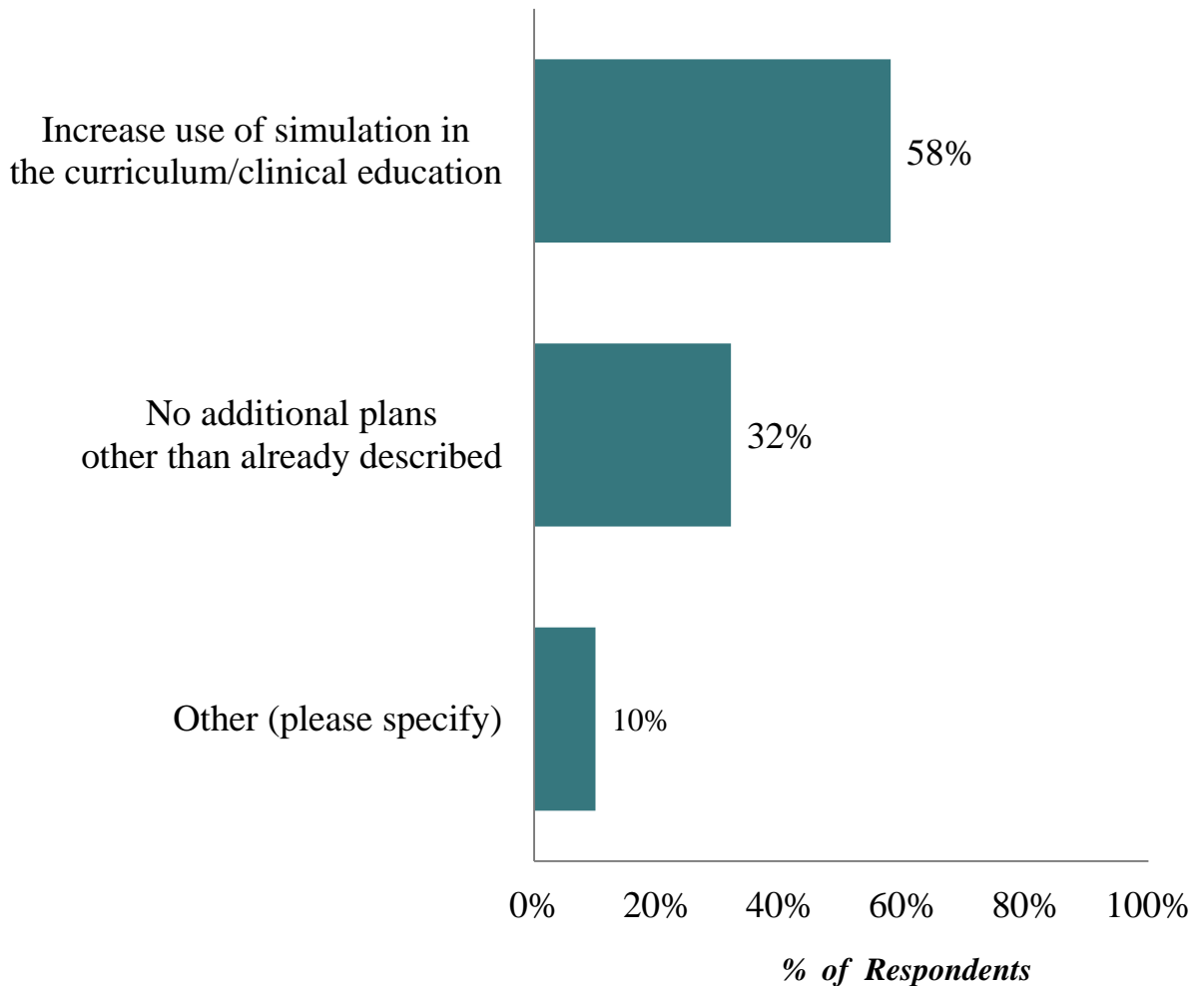
- Over half of the hospitals/facilities surveyed reported planning on expanding the use of simulation in their curriculum.

Needs & Plans: Partnerships

Hospitals: Interest in Partnerships For Simulation Implementation

Category	% of Hospitals
Training/staff development for simulation coordinators/leaders	55%
Develop/edit simulation scenarios	42%
Conduct research related to simulation	37%
Develop partnerships to share simulation equipment	37%
Develop a shared-use simulation laboratory	34%
Training/staff development for those educators in the school	26%
Purchase additional simulation equipment by sharing costs	13%
Purchase a mobile simulation unit	13%
Establish an equipment purchase agreement (e.g., price contract	3%
Other (please specify)	3%
None, not interested in partnering with others	13%

% of Hospitals

- Hospitals' interest in partnerships with other entities/simulation centers is high (74%). Most (55%) are interested in collaborating on training and development opportunities for simulation coordinators/leaders.

Q27: Please specify ways in which your facility would be interested in partnering with other facilities/agencies/private businesses to facilitate implementation of simulation. (please select all that apply)

47

Needs & Plans: Partnerships

Hospitals: Barriers to Partnerships

Challenges to Partnerships	% of Hospitals
Cost	33%
Location of equipment	33%
Coordination of schedules	27%
Time	23%
Contract issues	7%
Lack of interest in collaboration	7%
Funding for purchase of equipment	3%
Consistency of personnel	3%
Supplies	3%
Space constraints	3%
Networking with other institutions	3%
Other	3%
Not applicable	3%

- Respondents report that cost and location of equipment are the largest hurdles they face in partnering with other entities/simulation centers. Coordinating the use of facilities is also a significant challenge for hospitals.

Q28: What are the major challenges regarding partnering with other facilities/agencies/ businesses?

Needs & Plans: Barriers to Simulation

Hospitals: Barriers to Simulation

Inadequate financial resources to support simulation — 71%

Lack of time dedicated to offer simulation — 55%

Lack of equipment — 47%

Lack of technical support to offer simulation — 42%

Lack of knowledge of faculty/clinical educators regarding use of simulation — 40%

Lack of buy-in from faculty/clinical educators to use simulation — 11%

None — 5%

0% 20% 40% 60% 80% 100%

% of Respondents
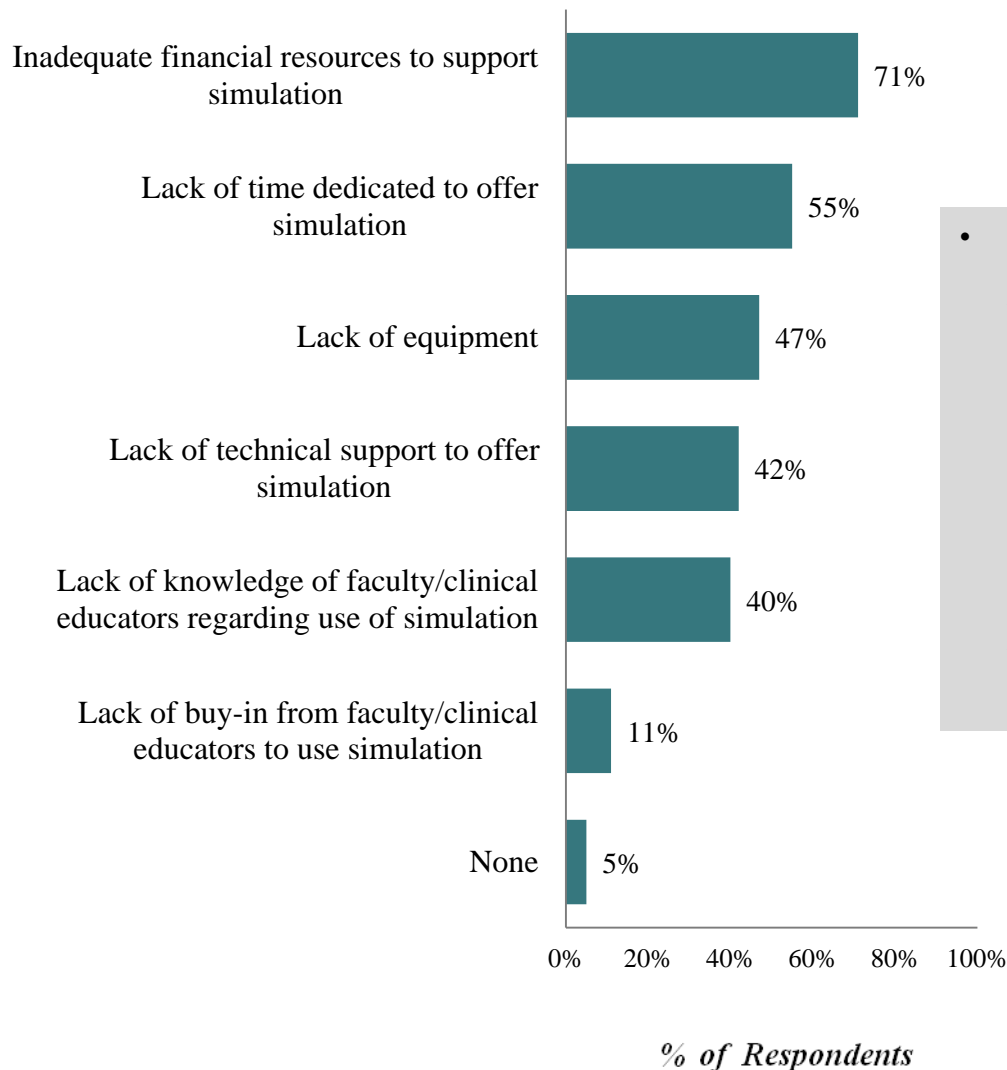
- While interest is high in the use of simulation, barriers to its regular implementation are many. A strong majority of hospitals (71%) report a lack of financial resources to support simulation. Lack of time and equipment were also frequently cited as barriers (55% and 47%, respectively).

Q29: Which of the following are challenges and/or barriers to using simulation in your facility? (select all that apply)

Needs of Simulation Centers

Hospitals: Needs of Simulation Centers

Need	% of Hospitals
Evaluate outcomes related to simulation	58%
Faculty/educator education: Hands-on training for implementing simulation	55%
Faculty/educator education: How to incorporate simulation…	53%
Develop models for funding/sustainability of simulation	53%
Develop multidisciplinary simulations	53%
Availability of mannequins to support simulation	47%
Faculty/educator education: Simulation scenario writing	45%
Research opportunities	34%
Technical support	34%
Faculty/educator education: Simulation scenario editing	16%
Facilitate faculty/educator buy-in regarding using simulation	16%
None	8%
Other (please specify)	5%

0%   20%   40%   60%   80%   100%

% of Hospitals

- The needs of hospital-based simulation centers are many, with the most acute being a way to evaluate educational outcomes. Other most common needs are associated with educator training, cited by over half of the hospitals. The development of multidisciplinary simulations, as well as models for funding/sustainability of simulation are also commonly cited needs (53%).

Q30: Which of the following are needs of your facility regarding simulation? (select all that apply)

50

Needs & Plans: Interest in Collaboration

Hospitals: % Interested in Collaborative Simulation Center
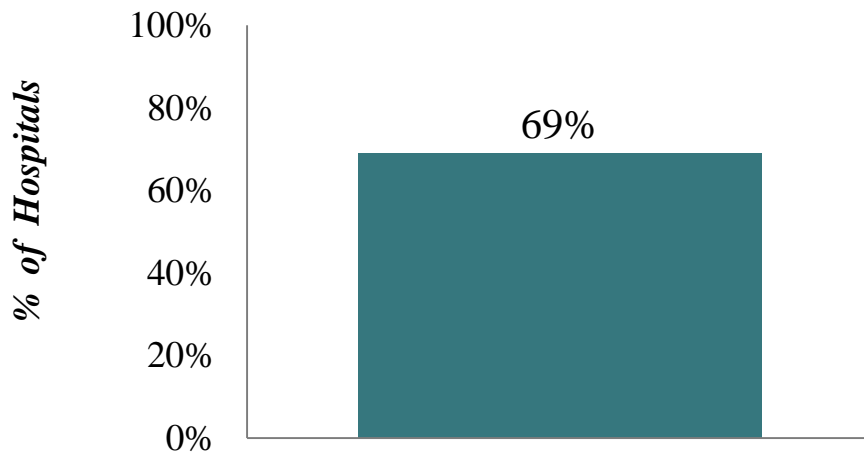
- Interest in a collaborative center is high. Sixty-nine percent of responding hospitals indicated they would participate in a collaborative simulation center if it were available in their region.

Q31 If a collaborative simulation center or alliance were available in your region, would your facility participate?

Needs & Plans: Interest in Collaboration

Hospitals: Reasons To Participate in Collaborative Simulation Center/Alliance

Reasons To Participate	% of Hospitals
Increase resources/sharing of information	46%
Cost effective	25%
Staff education opportunity	21%
Networking opportunity	11%
Improve patient outcomes	4%
Access to beneficial technology	4%
Other	11%
None/Not applicable	7%

Q31yes: If yes, why would your facility participate? (may not exceed 3000 characters)

Needs & Plans: Interest in Collaboration

Hospitals: Reasons Not To Participate in Collaborative Simulation Center/Alliance

Reasons Not To Participate	% of Hospitals
Cost (to use other's equipment/centers)	44%
Already collaborating with another institution	22%
Location	22%
Personnel issues	11%
Facility scheduling issues	11%
Other	22%
Not applicable	11%

Q31no: If no, why would your facility not choose to participate? (may not exceed 3000 characters)

Final Comments

Hospitals: Use For Additional Resources for Simulation

If additional resources for simulation were made available….	% of Respondents
Provide staff education/training opportunities	41%
Build/expand dedicated simulation lab	41%
Hire additional personnel	14%
Increase services offered	8%
Purchase/upgrade simulation equipment	5%
Charge for facility use	3%
Do more community outreach	3%
Do more research	3%
Other	3%

Q32: If my facility had additional resources for simulation (e.g., funding, personnel, equipment), we would:

Final Comments

Hospitals: Key Additional Comments Related to Simulation

Hope our new partnership with the local University Medical Center yields positive results. Very exciting time and much to learn.

I have worked with simulators in the past and definitely am aware of the benefits.

I think Simulation is a great way to teach students and staff and I hope more funding and resources become available in the future.

We are both fixed space for some of our scenarios, programs, but will go to another unit or facility if requested - again based on program

Our facility employs 98 RN's and 28 LPN's... as the Nurse Educator I'm very interested in HiFidelity Sim. I think it has some practical application for mock codes, and reviewing near misses or sentinel events. I'm doubt it's practical for us to invest in these resources for such a small facility.

Simulation is a very useful teaching modality. Have received nothing but positive evaluations.

Simulation should be user friendly with ease of programming/changing programs.

We have a simulation center in the area available to us at a price but we haven't had the financial resource to utilize the center. The mannequins we have are very under utilized due to lack of dedicated personal to the project and competing responsibilities.

The main challenge we face is having our simulation center off-site which makes it difficult for staff to travel to us. We also have a mobile simulator that we take to units at the hospital. This in-situ simulator has become popular because staff do not have to travel. We will be using this simulator to do training for our replacement hospital (transported critical patients, mock codes, etc)

With the increasing need for educating more healthcare providers there needs to be an agreement at the State level that a certain number of simulation training hours can be applied towards the total clinical hours required during training. Simulation needs to expand quickly to provide more competency assessments for current clinicians to ensure we are providing our patients with the highest qualified care providers. State Governments need to recognize the importance of simulation in the training and competency assessment and provide some level of funding allocation.

Q33: Other comments related to simulation that you wish to share with us?

School Findings

Responding Institutions

Type of School/College (n=65)

- LPN/Vocational: 46%
- A D N: 37%
- BSN: 29%
- Master's and higher (other than anesthesia): 20%
- Nurse Anesthesia: 5

0% 20% 40% 60% 80% 100%

% of Schools
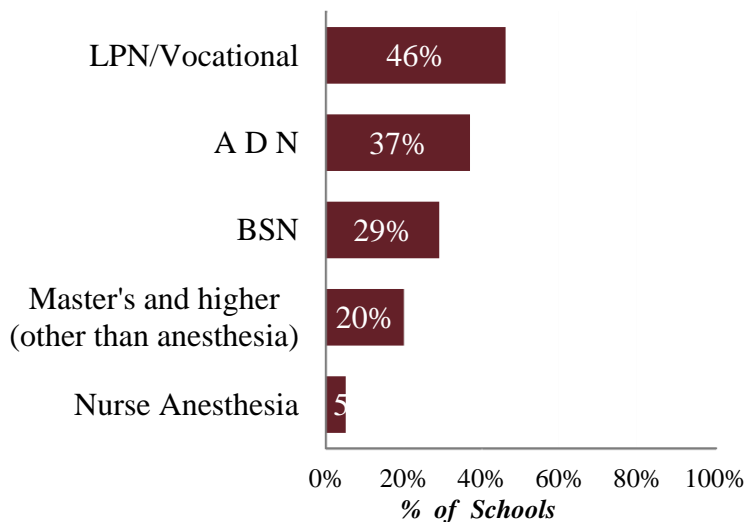
- Of the 65 responding educational institutions, almost half (46%) had LPN/Vocational programs, one-third (37%) ADN programs, and almost as many (29%) had BSN programs. One-in five (20%) had an MS program (or higher), and another 5% specifically were for Nurse Anesthesia.

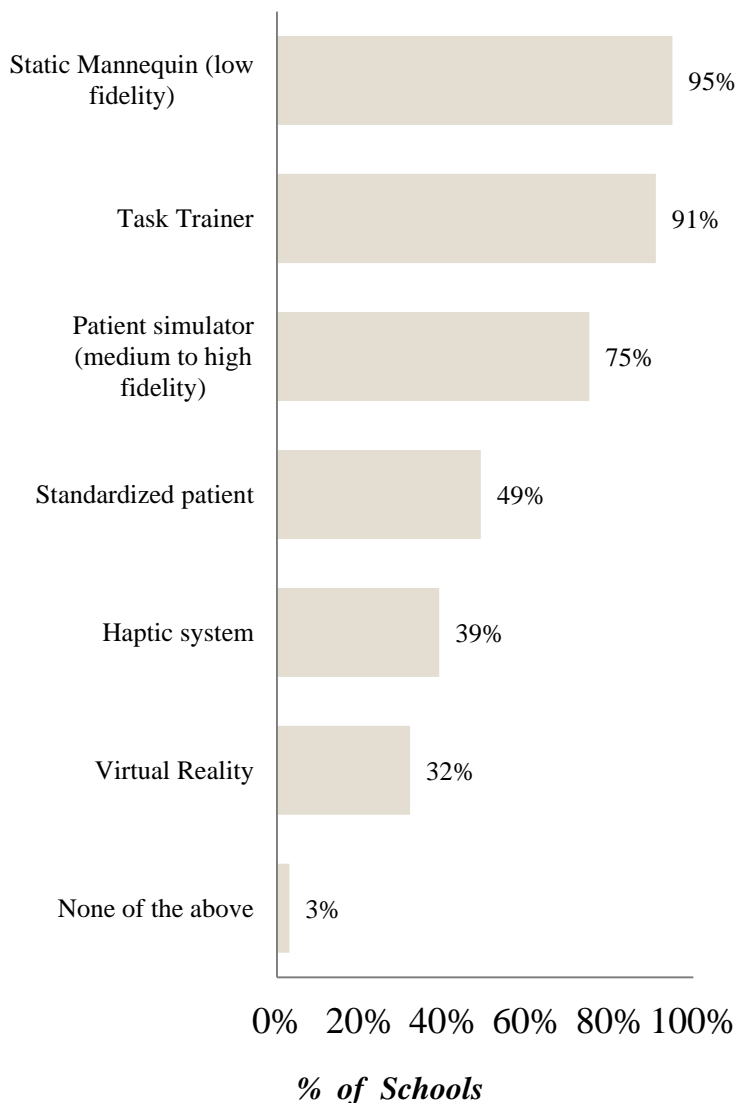*Q1school: Type of School/College of Nursing: (select all that apply)*
Q1facility: Type of Hospital/Facility: (select all that apply)

Type of Simulations Used

Schools: Type of Simulation

Static Mannequin (low fidelity)	95%
Task Trainer	91%
Patient simulator (medium to high fidelity)	75%
Standardized patient	49%
Haptic system	39%
Virtual Reality	32%
None of the above	3%

0%   20% 40% 60% 80% 100%

% of Schools

- All but 3% of the responding colleges of nursing programs use at least one of the simulation technologies captured in this survey.
- The most common types of simulator used were static mannequins (low fidelity) and task trainers – used by about 9 in 10 college nursing programs. Patient simulators (medium to high fidelity) and virtual reality simulations were also favored by colleges (75% and 68%, respectively).   Standardized patient (49%) and haptic system (39%) simulations were less commonly used.

Q2: To gain an assessment of simulation in your facility/school, please complete the following table. Which of the following simulations do you use (equipment may be owned, rented, or borrowed) in teaching/learning activities? (Select all that apply)

Personnel: Coordinator

Schools: % With a Simulation Coordinator

% of Schools
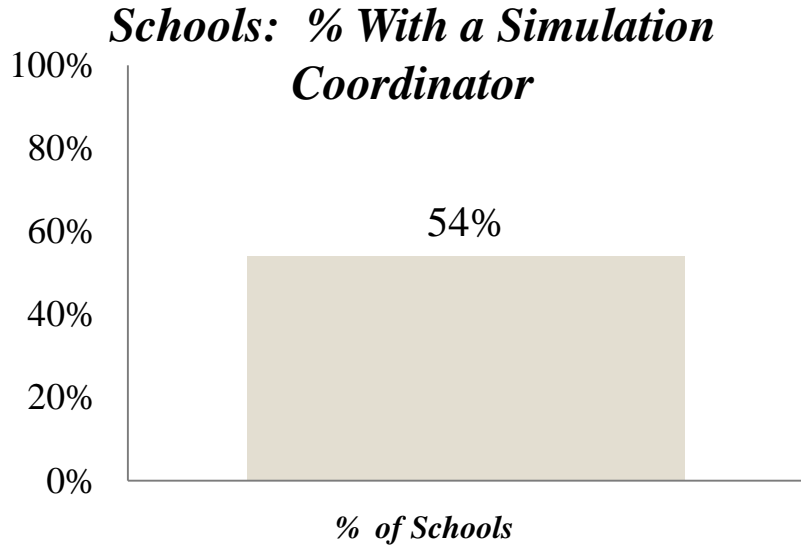
- One-half of college-based simulator centers employ a coordinator.
- Center coordinators are most often RNs (93)%, and most (83%) work full-time.
- As a group, center coordinators are highly educated: two-thirds have graduate degrees.

Coordinator Characteristics

	% of Schools
% Coordinator is an RN	93%
% Coordinator is Full Time	83%
Highest degree earned by Coordinator:	
Some college/Technical Training	0%
Associate Degree	3%
BA/BS	28%
M.S.	66%
Doctorate	3%

Q3: Does your school/facility have a simulation coordinator

Coordinator's Titles

Coordinator's Professional Title

- Simulation Coordinator (5 schools)
- Lab Coordinator (2)
- Assistant Director
- Assistant Professor
- Clinical Labs Supervisor
- Clinical Learning Center Coordinator
- Clinical Simulation Lab Instructor
- Co-Coordinator Simulation Lab
- Coordinator III, Nursing Simulation
- Coordinator of the Learning Resources Center
- Coordinator, Nursing Resource Center
- Coordinator, Patient Simulation Lab
- Director
- Director of Health Arts and Science Lab
- Director of Simulation
- Director, Learning Resource Center
- Educational Specialist
- None - position is part of a faculty workload
- Nursing Simulation & Lab Coordinator
- RN Faculty
- Simulation & Skill's Lab Coordinator
- Simulation Technician
- Skills Lab Coordinator
- Teaching Assistant

Coordinator's Training

Schools: % Coordinator Has Participated in Education/Training Related to Simulation?
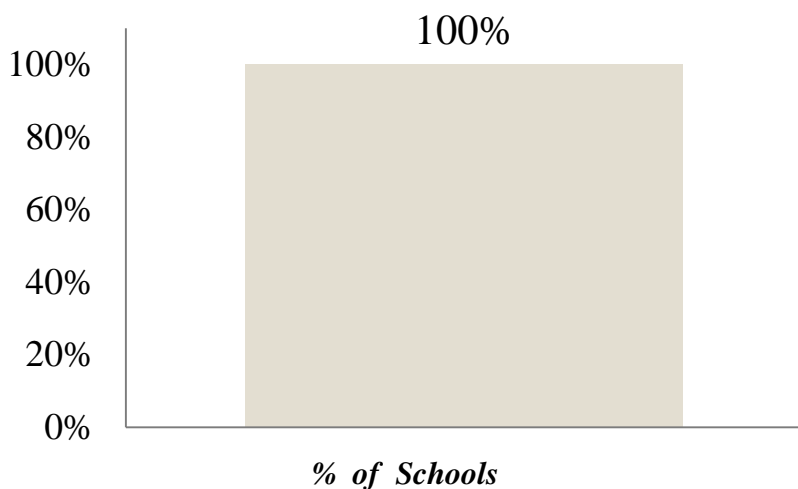
100%

100%
80%
60%
40%
20%
0%

% of Schools

- All simulator center coordinators have participated in some training or education related to simulation.
- Coordinators have obtained training in a variety of ways: almost all have participated in vendor-sponsored training, and slightly fewer have participated in conference-based training or continuing-education or workshops. Online training appears readily available – half of those in school-based centers have participated in online training.

Schools: Types of Simulation Education/Training

	% of Schools
Vendor-sponsored training	97%
Conference/Continuing education	86%
Simulation workshop	86%
Online coursework	52%
Other	17%

Q3E: Has the simulation coordinator participated in education and training related to simulation?

Q3E1: In which of the following types of simulation education and training has the simulation coordinator participated? (please select all that apply)

Personnel: Technical Support

Schools: % With On-Site Technical Support
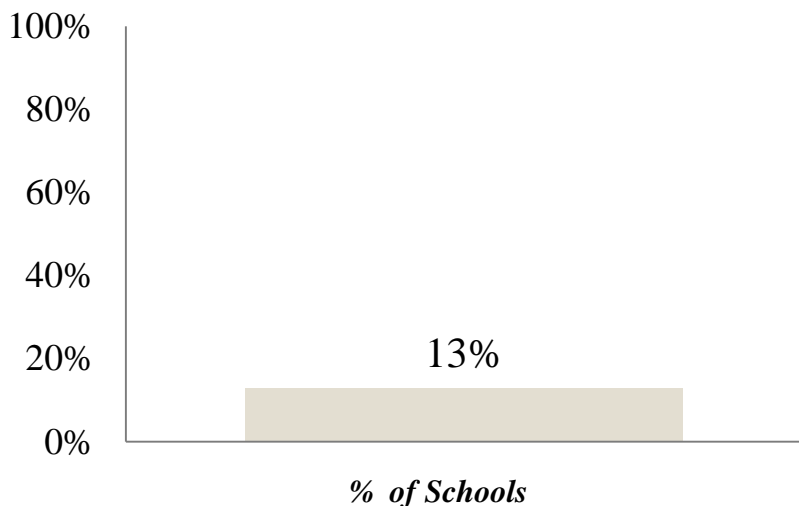
- On-site technical support was rare: only 13% of school-based simulation centers employed technical support personnel.
- Most (88%) of the few school-based centers who do employ technical support personnel have that support full-time.

Schools: Technical Support Characteristics

	Schools
% Technical Support Personnel is Full Time	88%

Q4: Are technical support personnel assigned to assist with simulation (individuals whose only role is to set up, operate, repair, or program the simulators)?

Q4A: Describe the hours worked per week by the technical support personnel.

Training Levels of Technical Support

Schools: % Tech Support Personnel Has Participated in Education/Training Related to Simulation
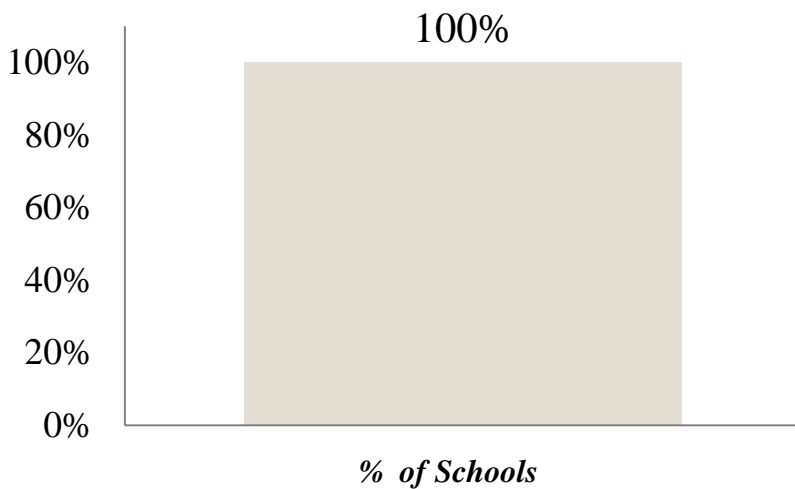
- All school-based simulator center technical support personnel have participated in some training or education related to simulation.
- Exposure to training/education opportunities is not as varied for tech support personnel as it was for center coordinators. Vendor-sponsored training is the most commonly used venue for training tech support personnel (88%).

Schools: Types of Simulation Education/Training Utilized by Tech Support

	% Schools
Vendor-sponsored training	88%
Conference/Continuing education	63%
Simulation workshop	63%
Online coursework	50%
Other	25%

Q4B: Has the technical support staff participated in education and training related to simulation?
Q41: In which of the following types of simulation education and training has the technical support staff participated? (please select all that apply)

63

Personnel: 'Other'

Schools: % With a Simulation Coordinator
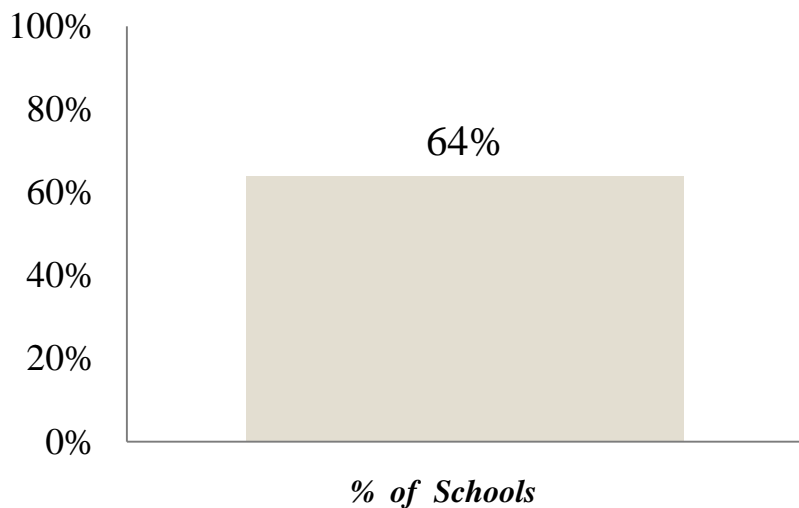
- Sixty-four percent of responding schools employed 'other' personnel (in addition to or instead of a center coordinator and/or technical support staff).

Q5: Are personnel other than a simulation coordinator or technical personnel assigned to support simulation (e.g., faculty/educator)?

Training Levels of 'Other' Personnel

Schools: % Staff Support Personnel Has Participated in Education/Training Related to Simulation

% of Schools
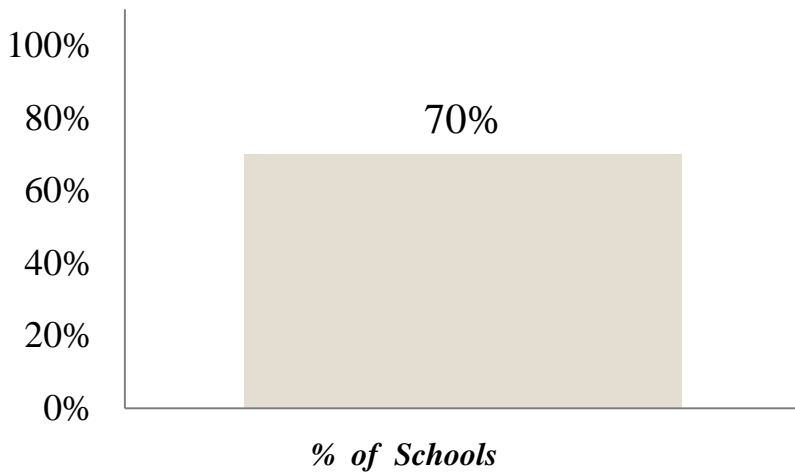
- While virtually all of center coordinators and/or technical support staff have participated in training/education related to simulation, just over one-in-four staff support personnel have received any training.
- Those staff support personnel who are trained receive it primarily via vendor-sponsored training programs (89%).

Types of Simulation Education/Training Utilized by Tech Support

	% Schools
Vendor-sponsored training	89%
Conference/Continuing education	68%
Simulation workshop	64%
Online coursework	25%
Other	18%

Q5A: Has the additional simulation personnel participated in education and training related to simulation?
Q5A1: In which of the following types of simulation education and training has the additional simulation personnel participated? (please select all that apply)

65

Simulation Center Equipment

Schools: *% Own/Operate*
Equipment: METI

Total Number
(Summed) For All
Respondents

Equipment	%	Total
MetiMan	11%	8
PediaSIM	11%	11
iStan	9%	11
Human Patient Simulator (HPS)	11%	9
Emergency Care Simulator (ECS)	9%	7
BabySIM	8%	8
None of the above	77%	

0% 20% 40% 60% 80% 100%
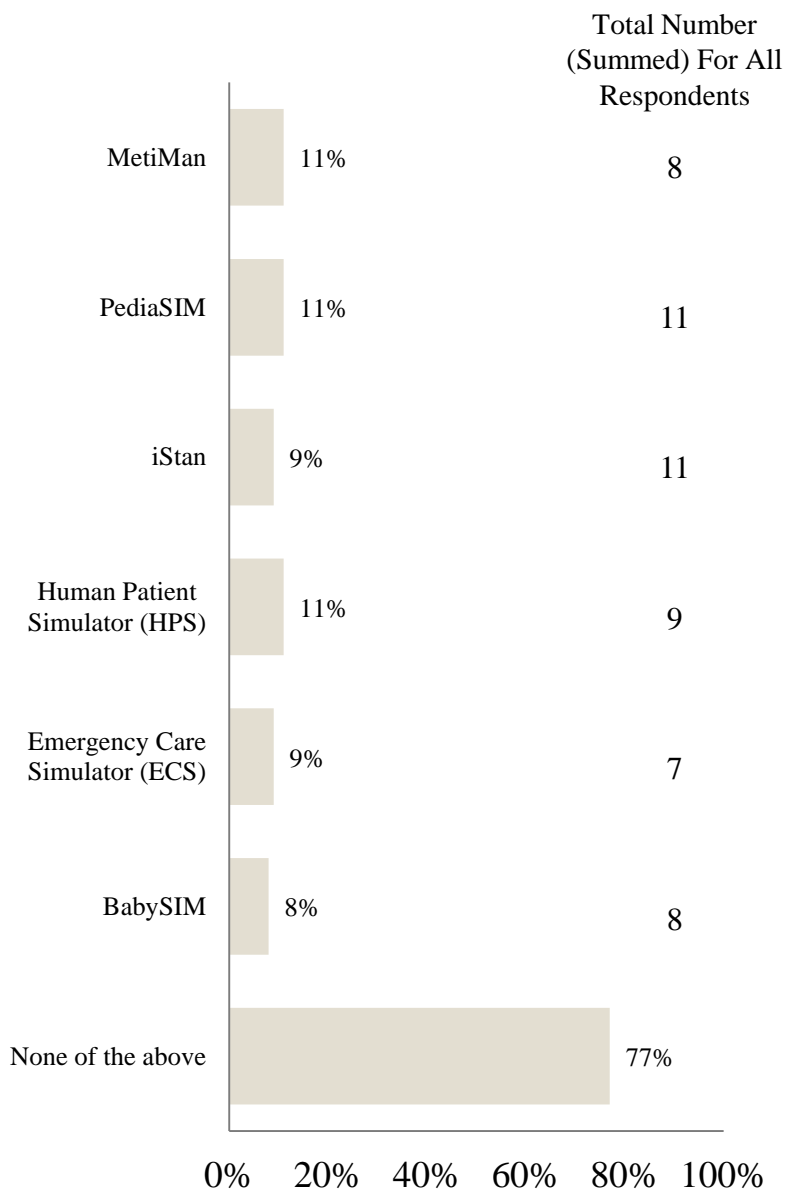
- Twenty-three percent of college-based simulation centers use at least one type of METI equipment.
- While none of the specific METI equipment dominates, MetiMan, PediaSIM, and Human Patient Simulator are the most commonly owned and operated.

Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device.

Simulation Center Equipment

Schools: *% Own/Operate*
Equipment: <u>*Laerdal*</u>

Total Number
(Summed) For All
Respondents

SimMan — 41% — 79

SimBaby — 27% — 19

SimMan 3G — 19% — 14

SimNewb — 9% — 8

None of the above — 53%

0% 20% 40% 60% 80% 100%

- Forty-seven percent of college-based simulation centers use at least one type of Laerdal equipment.
- SimMan and SimBaby are the most commonly used Laerdal equipment models.

Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device.

67

Simulation Center Equipment

Schools: *% Own/Operate*
Equipment: <u>*Gaumard*</u>

Total Number (Summed) For All Respondents

Equipment	%	Total Number
Noelle (S574, S575)	14%	12
Noelle (S550, S551, S552)	14%	9
Newborn HAL Mobile Team Trainer	6%	4
Pediatric HAL 1 Year S3004	3%	2
Pediatric HAL 5 Year S3005	3%	2
Susie S200	5%	6
Noelle (S560, S565)	5%	3
HAL Mobile Team Trainer S3000	2%	1
None of the above	72%	

0%   20%   40%   60%   80%   100%

- Twenty-eight percent percent of college-based simulation centers use at least one type of Gaumard equipment.
- Two of the three Noelle models (S574/S575 and S550/S551/S552) were the most commonly used Gaumard equipment models..

Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device.

Simulation Center Equipment

Schools: *% Own/Operate* Equipment: *LifeForm*

Total Number
(Summed) For All
Respondents

Category	%	Total
Nursing Annie VitalSim	33%	104
Nursing Kelly VitalSim	25%	55
Nursing Kid VitalSim	25%	21
Nursing Baby VitalSim	22%	17
None of the above	53%	

0%   20%   40%   60%   80%   100%

- Forty-seven percent of college-based simulation centers use at least one type of LifeForm equipment.
- Of the four VitalSim models, Nursing Annie is used most often (33%). The other three equipment models (Nursing Kelly, Nursing Kid, and Nursing Baby) are used by about one-in-four schools.

Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device.

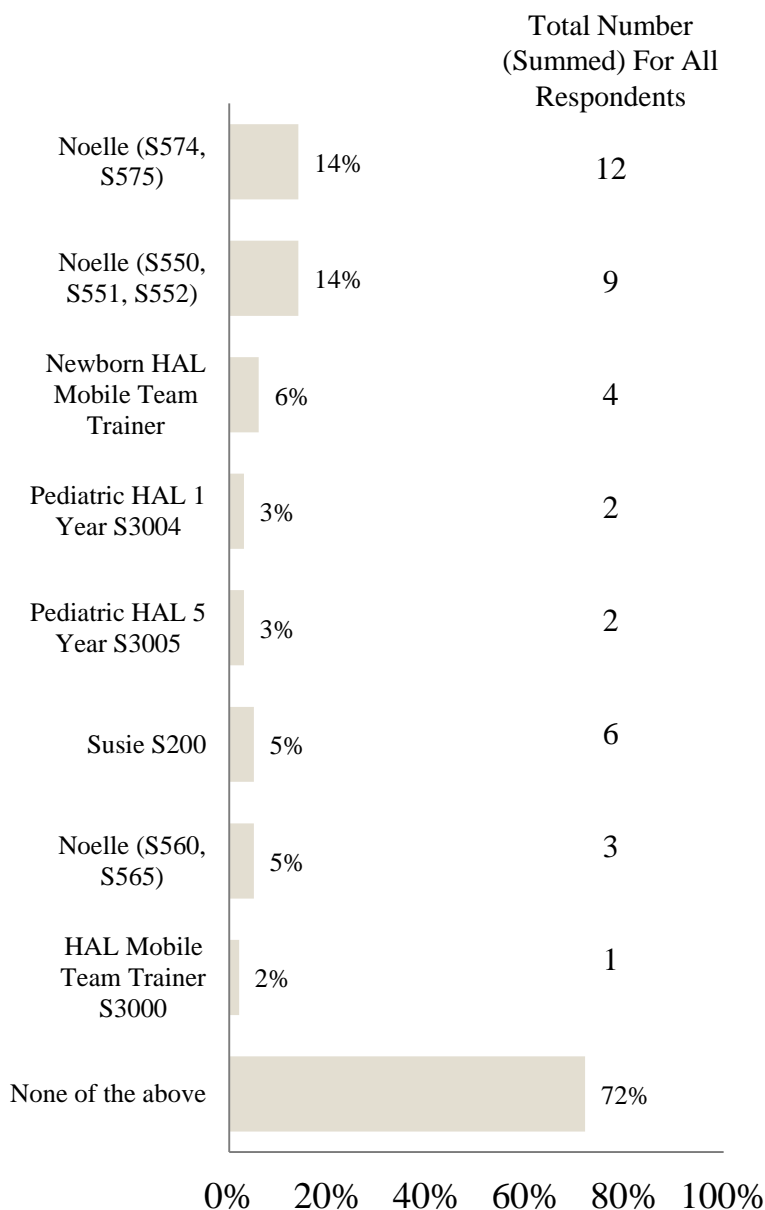# *Simulation Center Equipment*

Schools: "Other" Equipment Used

- Virtual IV (3 schools)
- SAM (2 schools)
- Gaumard BP Training
- Geri mannequin
- Harvey- Cardiology Patient
- Heart Lung Sims
- IV arms
- Laerdal IV Simulator
- Laerdal Kelly Non-vitalsim
- Laerdal Sim Child
- Laerdal Vitasim
- Laerdol IV Program
- Laerdol Microsim online simulation program
- Life form Ausculatation Trainer
- LifeForm Keri
- Nasco Advanced IV Simulator Arm
- Post Partum Vital Sim
- Susie Simon 201
- Vital Sim Baby
- Vital Sim Manniquins -Adult

Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device.
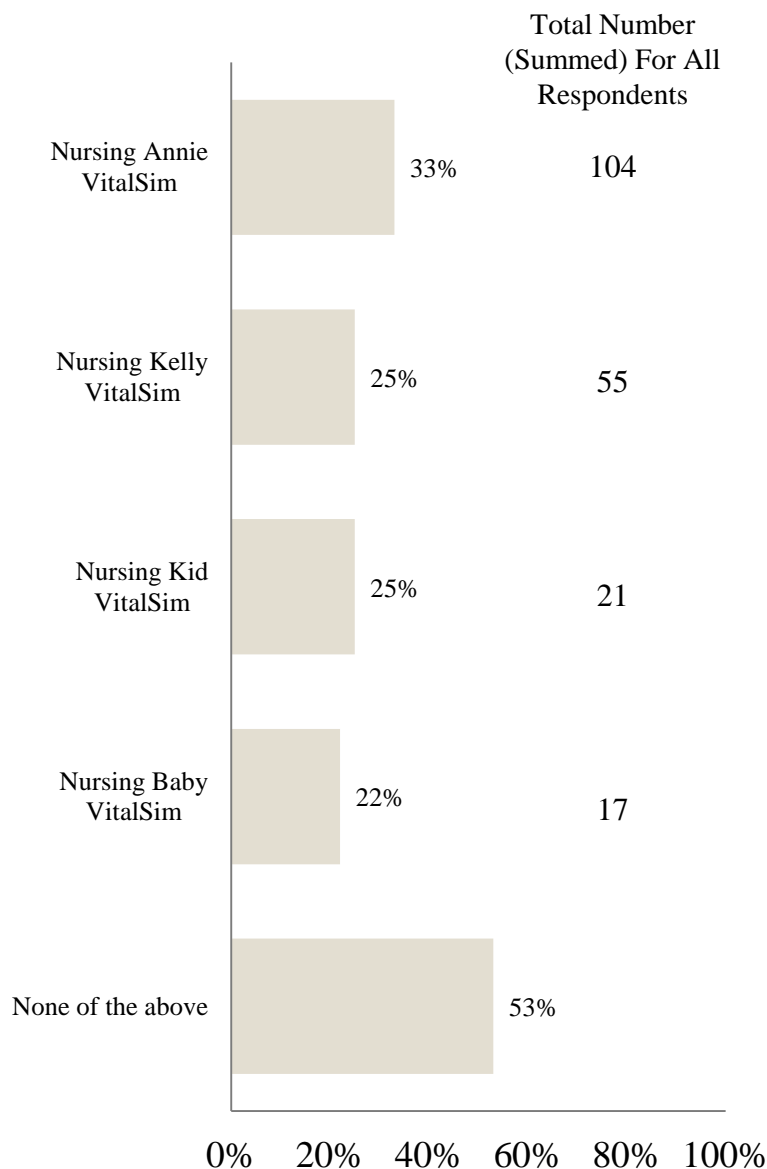
Simulation Center Equipment

Schools: Summary of Medium/High Fidelity Simulation Equipment:

Manufacturer	% of Schools Using Manufacturer's Equipment	Total Number of Manufacturer's Equipment in Sample
METI	23%	54 units
Laerdal	17%	123
Gaumard	28%	39
LifeForm	47%	197

Q6: Please indicate the equipment that you own for each of the following manufacturers by providing your inventory of each manufacturer's device
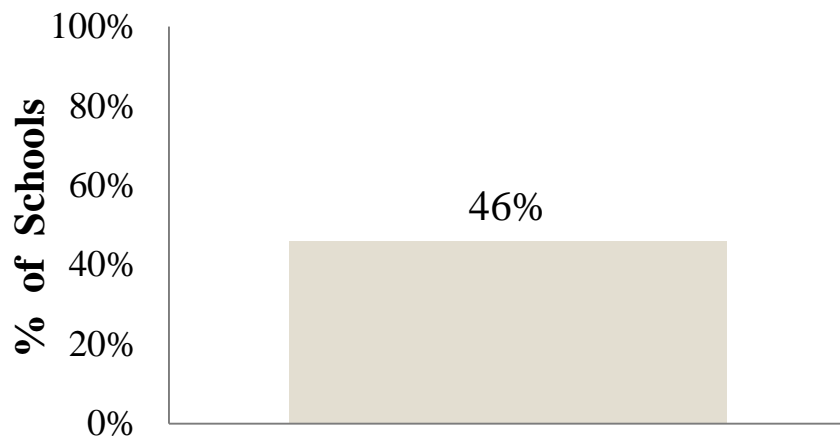
Simulation Center Equipment

Schools: Purchase Extended Warranties

46%

- Extended warranties are popular with college-based simulation centers. About half 'usually' purchase the extended warranties for their medium/high fidelity simulation equipment.

Factors Which Influence Purchase of Extended Warranties

Factors	% Schools
Cost of warranty	42%
School/grant budget limitations	20%
History of equipment poor reliability	17%
Repair/replacement are costly	17%
Includes annual preventive maintenance	7%
Lack of technical support on staff	7%
Repairs easier with warranty	4%
If "loaner" simulators available	4%
Minimizes down time (repairs are faster)	4%
Volume discount (multiple warranties)	4%
Technology is new/fragile	2%
Warranty coverage	2%
If manufacturer already has excellent support	2%
If model will be outdated before repairs are needed	2%
Length of warranty	1%
Lack of technical support	7%
No warranties been available	7%
Other	

72

Q7: Do you usually purchase extended warranties for your medium/high-fidelity simulation equipment?
Q8: What factors influence your decision to purchase/not purchase extended warranties?

Simulation Center: Support Equipment

Schools: Use of Support Equipment
% Use

Additional Simulation Equipment

Equipment	%
Video Camera(s)	51%
Microphone(s) for communicating with learners during the simulation	44%
Archival software for storing audio/visual files	36%
Control panel for controlling/managing simulation scenarios	30%
Equipment to transmit/stream simulation to other area	22%
No additional equipment avaliable	33%
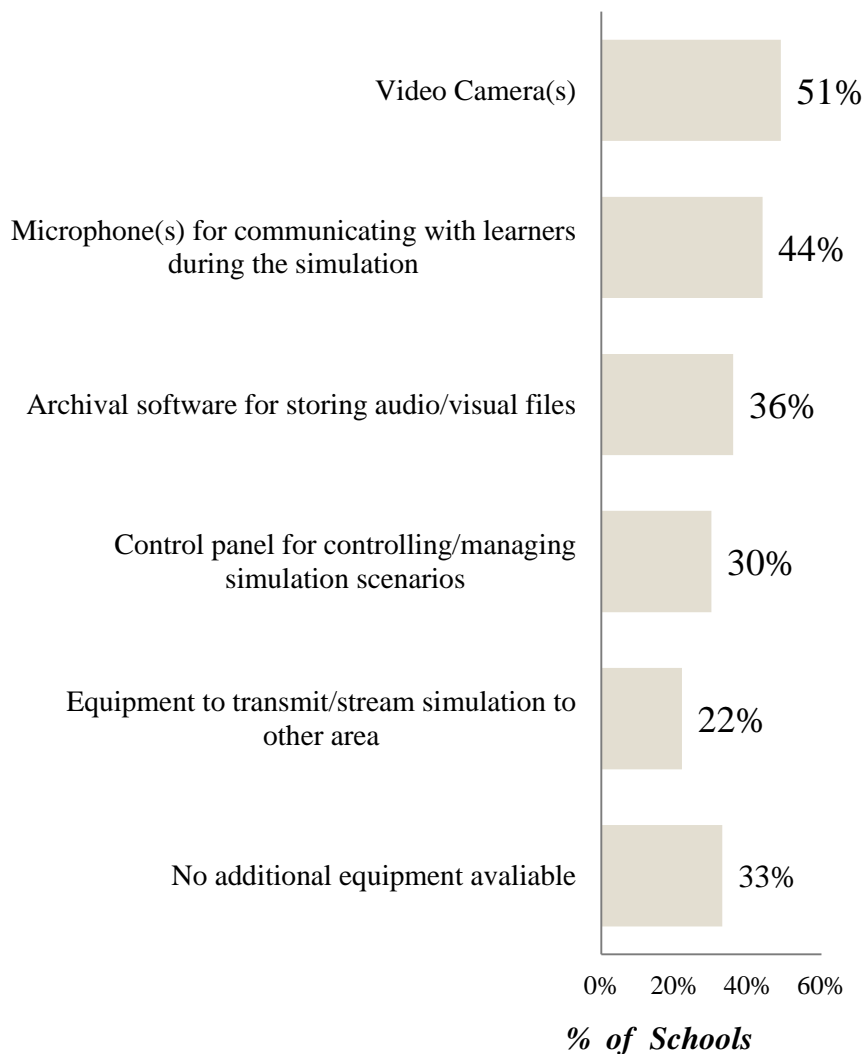
% of Schools

- About two-thirds of responding colleges of nursing said that they use supporting technology/equipment in their simulation center.
- Just under half of school-based simulation centers use video cameras and microphones for communicating with learners during simulations.

Q9: What additional equipment do you have to support simulation? (Select all that apply)

Dedicated Space for Simulation Center

Schools: Is Space Dedicated to Simulation Center Use?
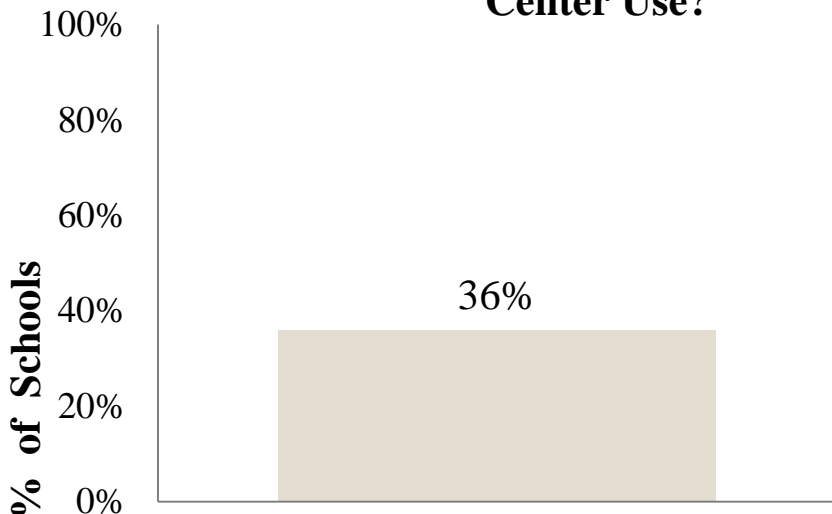
- Only 36% of schools have space dedicated directly for simulation centers. Those schools that do provide space generally allocate a very small area of the facility to the simulation center (400 sq. ft., on average).

Amount of Space Dedicated to Simulation Laboratory

	Median	Minimum	Maximum
Square footage	400 s.f. for schools	20	9,000
Number of rooms/suites	2 rooms/suites	1	20

Q10: Do you have a dedicated laboratory/center for simulation?
Q10EF: How many hours per week is your simulation laboratory/center used during weekdays (Monday-Friday)?
Q10EF: How many hours per week is your simulation laboratory/center used during weekends (Saturday-Sunday)?

Dedicated Space: Debriefing

Schools: Is Space Dedicated to Debriefing?

% of Schools

68%
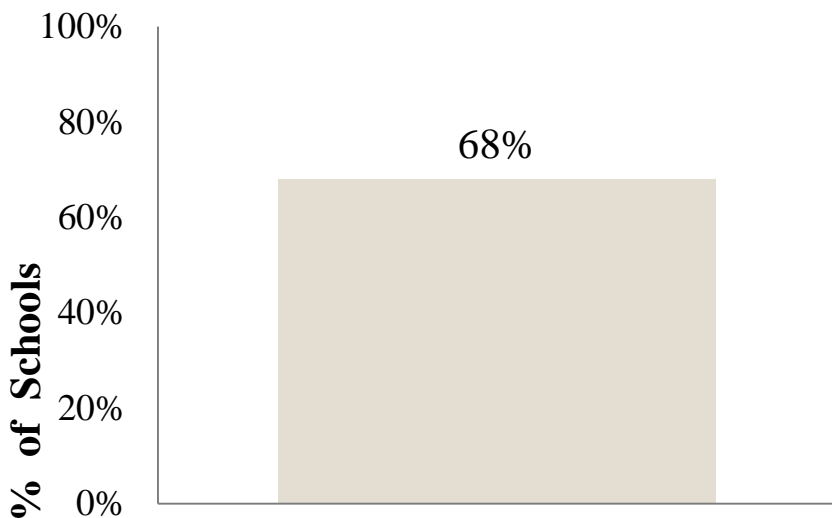
- Most schools (68%) have space that is dedicated specifically for debriefing.
- For observation *during* simulations, most centers have a direct observation area. About half have a one-way mirror. Video transmission is used relatively infrequently (35%).

Methods of Observation During Simulations

■ School

Direct observation viewing area	One-way mirror	Video transmission to another room or building	Other
75%	40%	35%	5%

Q10C: Do you have a dedicated room for debriefing?
Q10D: Which of the following are available for observation of simulation by others? (Select all that apply)

Level of Use

Schools: Hours per week simulation laboratory/center is used ……

	Schools
……during weekdays	
Median	15
Minimum	1
Maximum	80
…during weekends	
Median	0
Minimum	0
Maximum	10

- On average, school-based simulation centers are active 15 hours per week during weekdays.
- Most simulation centers are not operational on weekends (80%).

Q10EF: How many hours per week is your simulation laboratory/center used during weekdays (Monday-Friday)?
Q10EF: How many hours per week is your simulation laboratory/center used during weekends (Saturday-Sunday)?
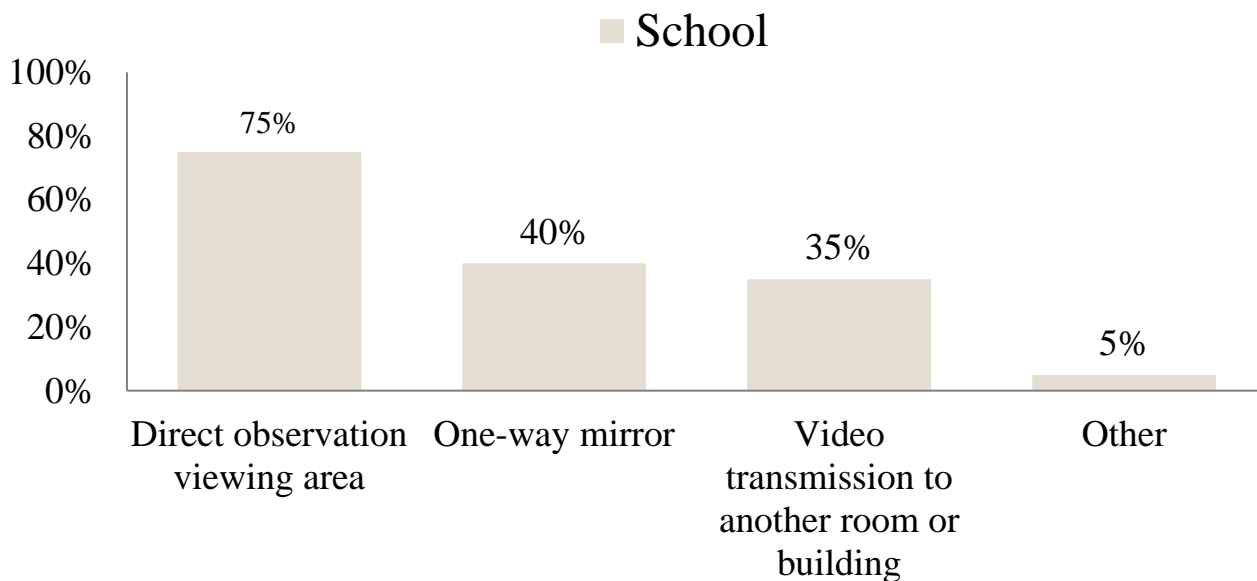
Level of Use by Outside Groups

Schools: Are Outside Groups Allowed to Use
Simulation Laboratory?
% 'Yes'
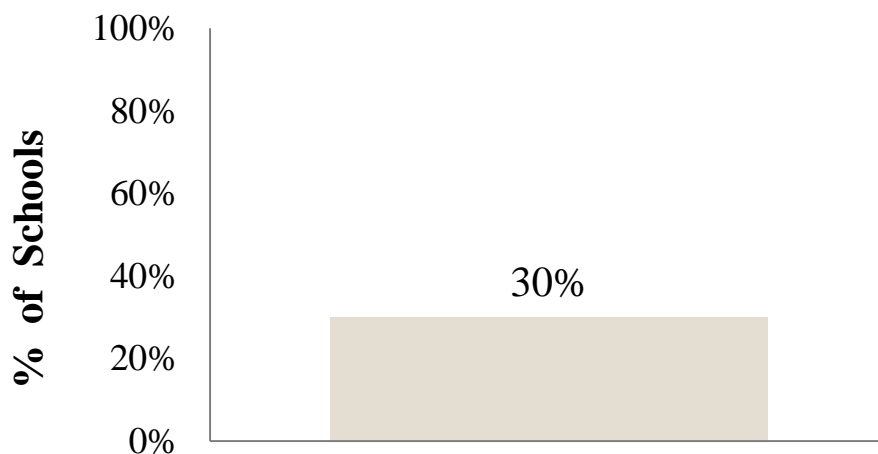
- Only one-in-three school-based simulation centers allow outside groups to use the center.
- Among those schools which do allow outside access, the simulation center is used, on average, 4 hours per week by outside groups.
- Forty-two percent of schools which allow access to their simulation center by outside groups charge an hourly fee (on average, $75).

Q10G: Do you allow outside groups to use your simulation space?
Q10gHours: Average number of hours per week that simulation is used by outside groups:

Mobile Simulation Units

**Schools: Is a Mobile Simulation
(Van, Bus, etc.) Available?**

- None of the responding school-based centers have access to a mobile unit.

100%

80%

60%

% of Schools

40%

20%

0%

0%
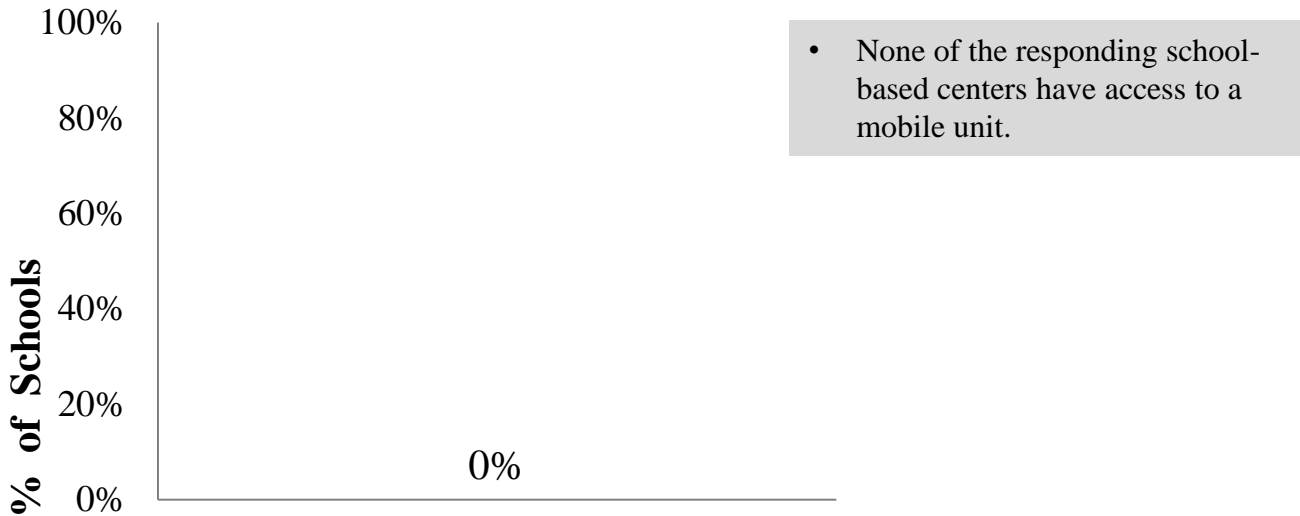
Q11B: Do you allow outside groups to use your mobile simulation unit?

Q11Bfee: Do you charge a fee?

Loaning Equipment to Outside Groups

Schools: Loan Equipment
% 'Yes'

% of Schools

100%

80%

60%

40%

20%

0%

6%
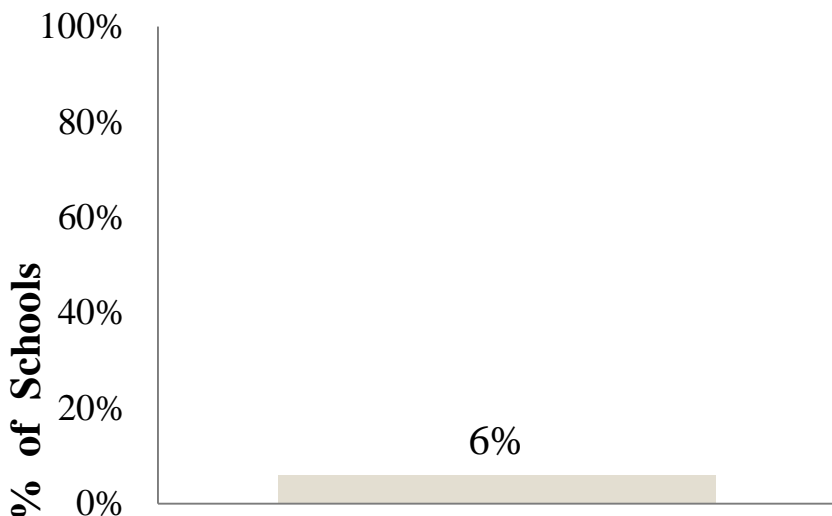
- The lending of mannequins/equipment by schools to outsiders was very uncommon (6%). One school which loans equipment also charges a fee.

Q12: Do you loan your simulation mannequins/equipment?

Q12fee: Do you charge a fee?

Services Related to Simulation

Schools: Other Services Offered

Additional Services

Service	% of Schools
Education	33%
Consultation	14%
Technical support	14%
Other (please specify)	3%
None	62%
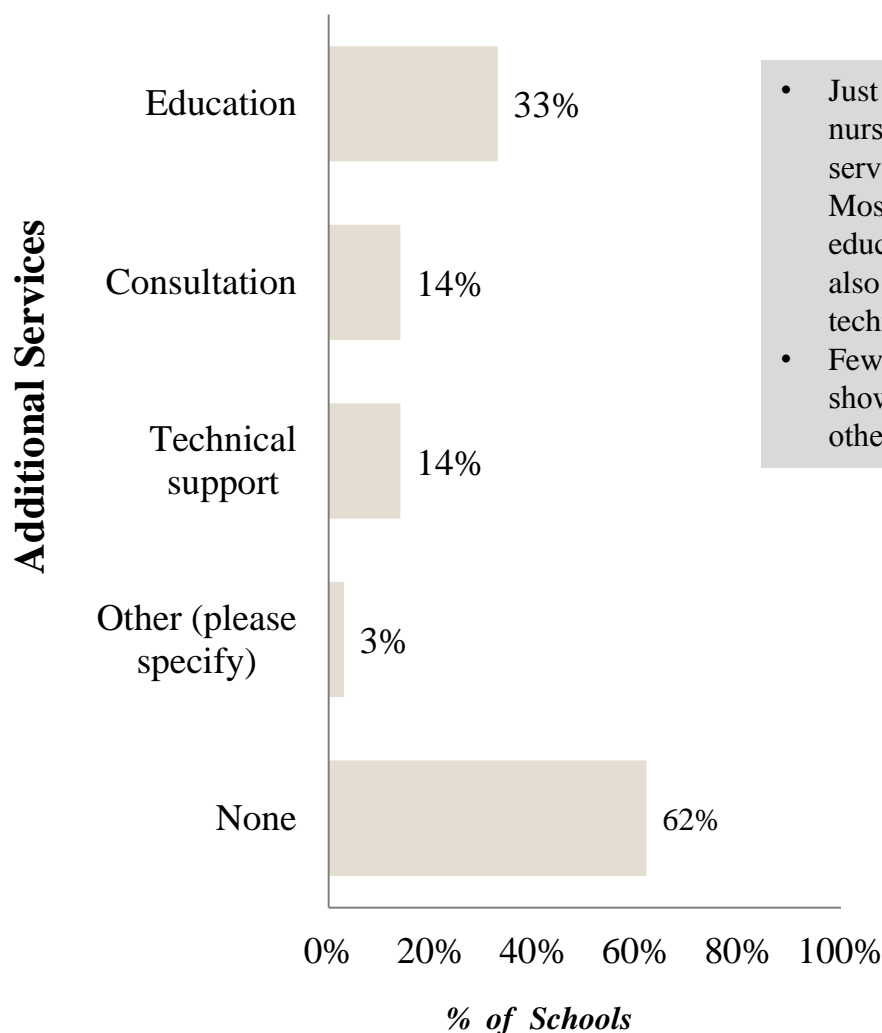
% of Schools

- Just over one-third of the colleges of nursing said that they offered 'other services' at their simulation centers. Most commonly, they provided educational services. Some schools also offered consultation and technical support (14%).
- Few of these respondents (10%, not shown) "purchase services from others related to simulation."

*Other:
  - Tri-State Nursing Simulation & Skill's Lab Consortium
  - Will rent lab out very soon; negotiating contracts now

Q13: Which of the following services related to simulation (e.g., consultation/education) do you offer?

Q15: Do you purchase services from others related to simulation (e.g., consultation/education)?

Use of Simulation To Teach Assessment Skills

Schools: Teach Health Assessment Skills With Simulation?
% 'Yes'
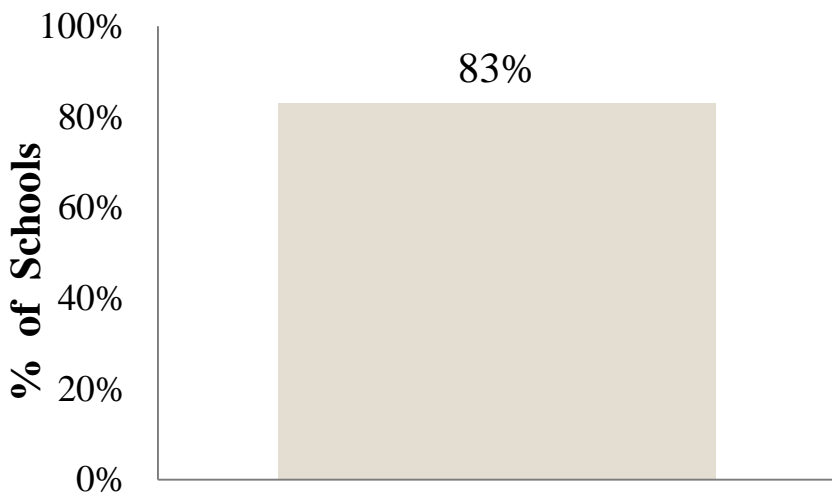
- Simulation resources are frequently used by schools to teach health assessment skills (83%).

% of Schools

83%

Q16: Do you use simulation to teach health assessment skills?

Source of Funding

Schools: Funding Sources

Additional Services

Source	%
School Budget	84%
Grants	30%
Private foudation	19%
State funding	10%
Fee for service	6%
Collaborative agreement with other agency(ies)	5%
Federal funding	3%
Other*	13%

0% 20% 40% 60% 80% 100%

% of Schools

- A large majority(84%) of school-based simulation centers cited their own institution's budget as a funding source. Thirty percent also receive some federal funding. Additional funding comes from a variety of other sources. Earned revenue (fee-for-service) is an uncommon source of funding.

*Other funding sources
- Private donors (2)
- General school budget
- Facility Foundation Grants
- Student fees

Q14: How is your simulation center and equipment funded (select all that apply)

Uses of Simulation: By Clinical Category

Schools: Clinical Categories Simulation is Applied To

Clinical Category

Clinical Category	% of Schools
Medical-surgical	98%
Maternal-newborn	73%
Pediatrics	67%
Critical care	52%
ED/trauma/disaster preparedness	31%
Mental health	23%
Perioperative/anesthesia	14%
Outpatient/home health	10%
Other*	19%

0% 20% 40% 60% 80% 100%
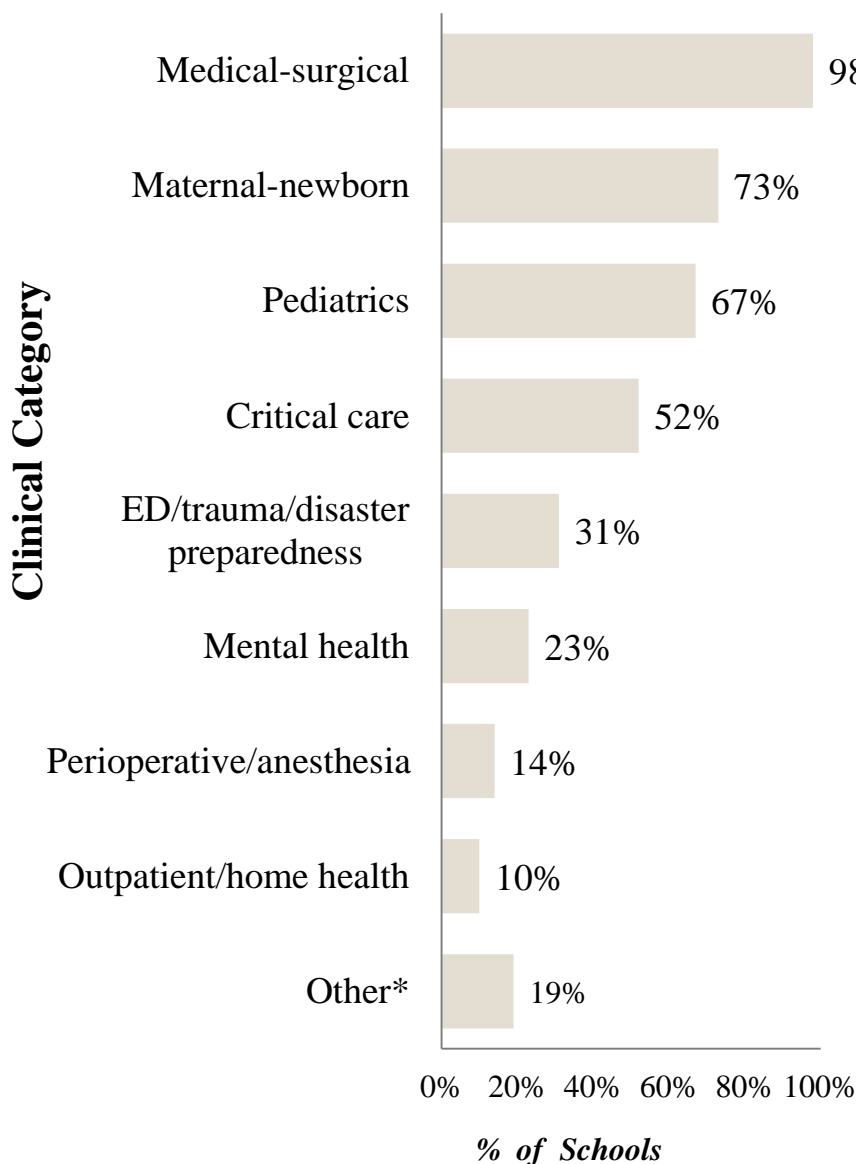
% of Schools

- In schools, simulation is most frequently applied to the medical-surgical clinical category (98%). Simulation is also widely-used in the maternal-newborn (73%) and pediatric (67%) clinical categories.
- On average (median) school-based centers apply simulation to 3 different clinical categories.

*Other clinical categories:
- Fundamentals of Nursing (3)
- ACLS (2)
- Geriatrics (2)
- Physical Therapy
- Nursing foundations
- First responder scenarios in non critical areas
- Data collection
- Basic Skills
- Athletic trainers
- PALS
- TNCC

Q17: In which of the following clinical categories or courses do you use simulation? (Select all that apply)

83

Uses of Simulation: By Courses

Schools: Courses Simulation is Applied To

Course

Course	%
Critical thinking/Decision-Making	94%
Skill practice/Demonstration/Validation of Competency	94%
Orientation	57%
Education/Training in New Specialty/New Clinical Unit/New or Expanding Service	46%
Multi-Disciplinary Team Training	37%
Refresher Training	37%

0% 20% 40% 60% 80% 100%

% of Schools

- In schools, the courses for which simulation is most frequently applied to are Critical Thinking/Decision-Making (94% of schools) and Skill Practice/Demonstration/ Validation of Competency (94%).

Q17: In which of the following clinical categories or courses do you use simulation? (Select all that apply)

84

Uses of Simulation: By Courses

Schools: Learners Simulation is Used With

Learner

RN — 56%

LPN — 48%

Nursing Assistant/Tech — 48%

APN — 13%

0% 20% 40% 60% 80% 100%
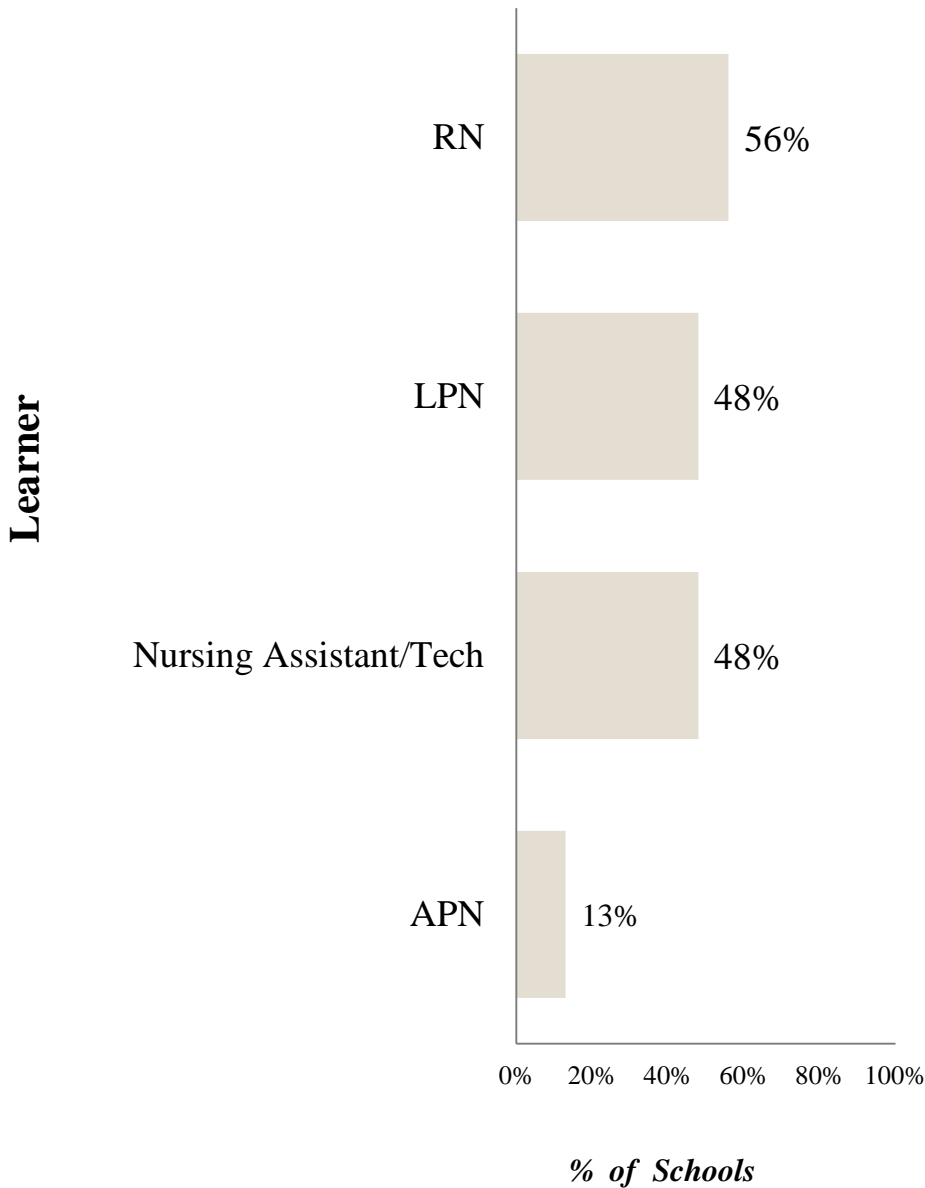
% of Schools

- The most common types of learners within schools are the students within those schools: RNs (56%), LPNs (48%) and Nursing Assistants/Techs (48%).

Q18: For each of the 8 clinical categories/courses shown below, please indicate which learners participate …

85

Uses of Simulation: By Clinical Category & Courses

Schools: Clinical Categories Simulation is Applied To: By Course & Clinical Category
% of Schools
Base = Those Who Use Simulation in Category

	Maternal-newborn	Ped-iatrics	Pediatrics Medical-surgical	Peri-operative/ Anesthesia	Critical care	ED/Trauma/ Disaster Prep.	Mental Health	Outpatient/ Home Health	Other
Orientation	55%	54%	45%	29%	41%	44%	42%	60%	60%
Skill practice/ Demonstration/ Validation of Competency	66%	71%	98%	71%	74%	69%	50%	60%	0%
Critical thinking/ Decision-making	66%	66%	76%	67%	89%	75%	83%	100%	90%
Refresher Training	8%	9%	28%	14%	19%	19%	8%	0%	20%
Education/Training in New Specialty/ New Clinical Unit/ New or Expanding Service Line	45%	40%	37%	43%	52%	50%	33%	20%	20%
Multi-Disciplinary Team Training	11%	17%	29%	43%	41%	44%	17%	0%	10%

Q18course:For each of the 8 clinical/courses shown below, please describe how simulation is used at your facility:

86

Uses of Simulation: By Clinical Category & Learner

Schools: Clinical Categories Simulation is Applied To: By Course & Learner
% Schools
Base = Those Who Use Simulation in Category

	Maternal-newborn	Ped-iatrics	Pediatrics Medical-surgical	Peri-operative/ Anesthesia	Critical care	ED/Trauma/ Disaster Prep.	Mental Health	Outpatient/ Home Health	Other
Nursing Assistant/ Tech	8%	9%	16%	0%	7%	6%	17%	20%	10%
LPN	34%	34%	49%	29%	22%	25%	25%	40%	50%
RN	53%	57%	53%	86%	70%	69%	50%	40%	40%
APN (NP, CRNA, CNS)	0%	9%	6%	43%	15%	25%	8%	0%	0%
Physician	5%	9%	6%	14%	15%	19%	17%	0%	0%
Other healthcare professional with that specialty	3%	3%	6%	14%	7%	19%	8%	20%	10%

Simulation Scenario Development

Schools: How Scenarios Are Developed

Which BEST describes
majority of time:

Write own scenarios	87%	53%
Modify scenarios developed by others (vendors or others)	59%	26%
Use pre-packaged scenarios developed/provided by the vendor	48%	16%
Use "open source" or shared scenarios developed by others	26%	5%

0%   20%   40%   60%   80%   100%
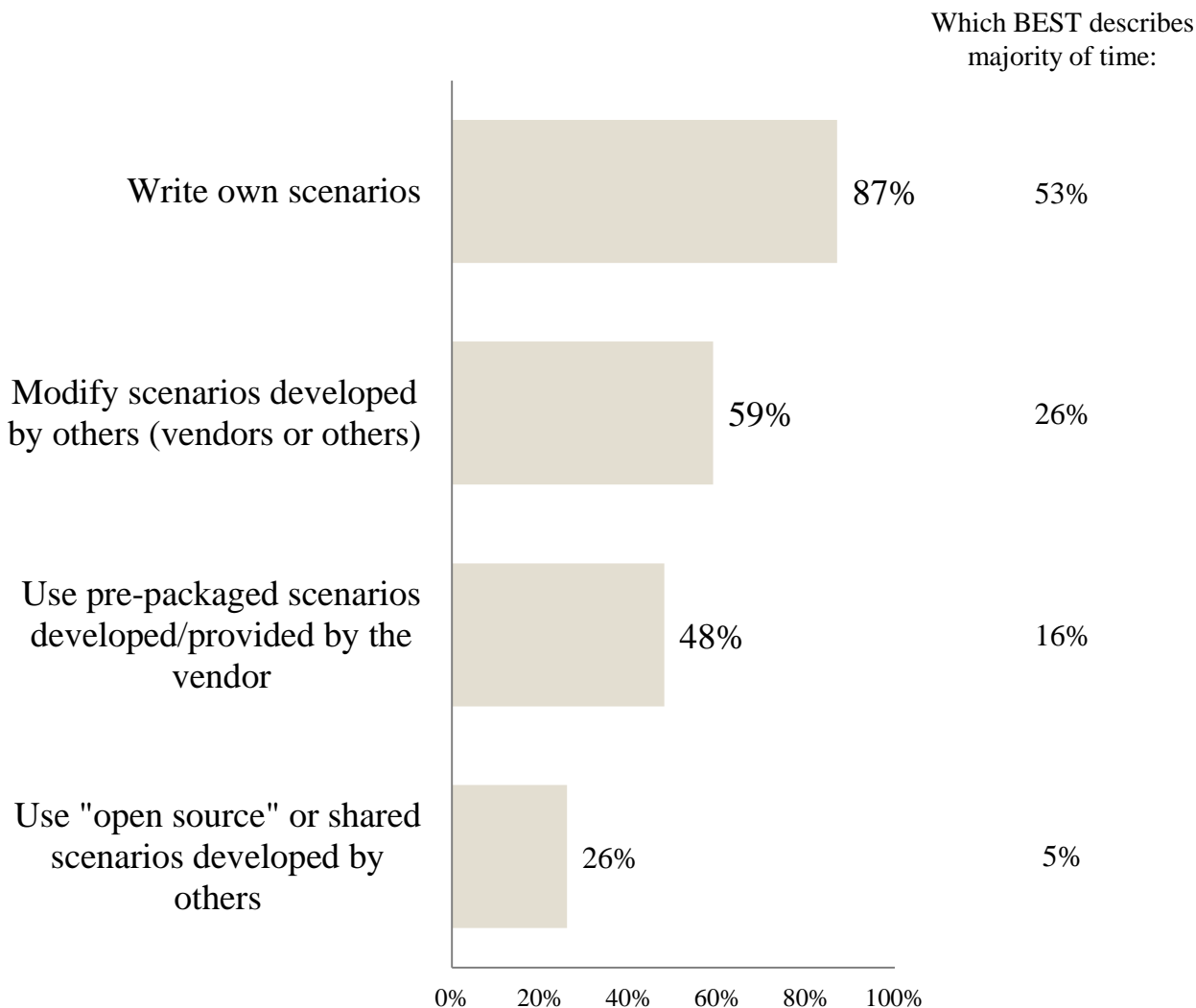
- Most school-based simulation centers 'write' their own scenarios or modify those developed by others. About half of respondents did report using or modifying 'pre-packaged' scenarios provided by their equipment vendor(s) or others.

Q19: Which of the following describes your use of simulation scenarios and implementation materials? (select all that apply)

88

Simulation Scenario Development

Schools: Biggest Challenges to Scenario Use (Designed by Others)

Challenges to Use of Scenarios Written by Others	% of Schools
Adapting scenarios to specific needs/Local medical care standards/Guidelines/Policies	49%
Faculty prefer to do own	11%
Lack of personnel/time who are experts	9%
Cost/Time required	7%
Difficult to learn/Difficult to become proficient	7%
Faculty dislike lack of precision	4%
Protocols on system are outdated	4%
Limitations to scenarios/Lack precision	4%
Lack space to work on scenarios	2%
Must purchase entire set of scenarios, most of which are unneeded	2%
Equipment not flexible enough (won't allow certain scenario modifications)	2%
Other	2%
None	5%

- Forty-nine percent of respondents say that adapting scenarios written by others to the local environment is the biggest challenge they face. Respondent comment suggest that scenarios are often not 'plug and play;' modification of scenarios written by others is often necessary to accommodate schools' specific educational goals.

Q20: What are the biggest challenges/issues in implementing scenarios designed by others?

Simulation Scenario Development

## Schools: Biggest Challenges to Own Scenario Development

Challenges of Scenario Development	% Schools
Lack of time/Is time-consuming to get it right	60%
Balancing level of detail needed with time required to incorporate detail	12%
Lack of internal expertise with equipment	6%
Lack of creativity	4%
Creating complex enough scenarios to challenge students	2%
Lack of dedicated space	2%
Complexity of programming simulators	2%
None	4%
Other	4%

- Scenario development clearly is very time-consuming. Given the relative 'newness' of the centers, personnel are stretched thin and deep expertise in any aspect of the simulation equipment is lacking. Those two together present a large challenge for simulation centers – the faculty require very specific scenarios in order to meet their educational goals, yet obtaining precisely programmed scenarios is time-consuming for already time-strapped personnel.

Q21: What are the biggest challenges/issues in developing scenarios of your own?

Implementation of Simulation

**Schools: Are Simulation Scenarios Developed
With Specific Learning Objectives?
% 'Yes'**
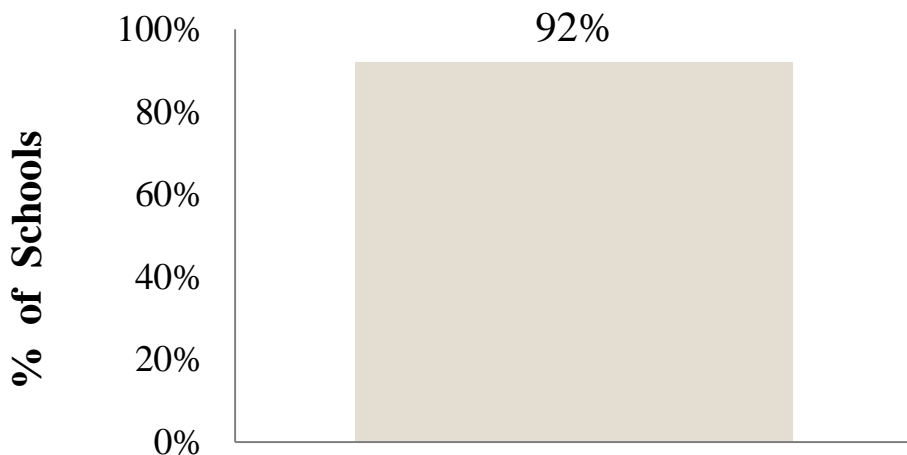
- On the whole, school-based simulation laboratory/centers tie their simulation scenarios to specific learning objectives.

Faculty-to-student ratio = 1 to 6 (median).

Q22: Are the simulation scenarios developed with specific learning objectives?

Q23:On average, what is the faculty to student ratio per simulation scenario? (Ratio 1:)

Implementation of Simulation

Schools: Are Simulation Scenarios Video-recorded?
% 'Yes'
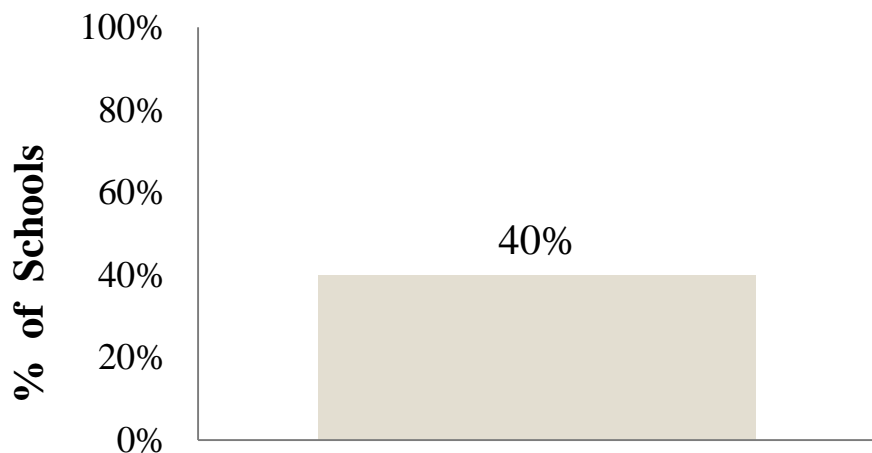
- Fewer than half of schools video record their simulation scenarios. For the most part, those who do use the recordings do so for debriefing (96%).

Purpose of Video-recording

Q23: Do you video record your simulation scenarios?

Q24A: What is the purpose of the video recording? (Select all that apply)

Implementation of Simulation

Schools: Are Formal Debriefings Routinely Used?
% 'Yes'

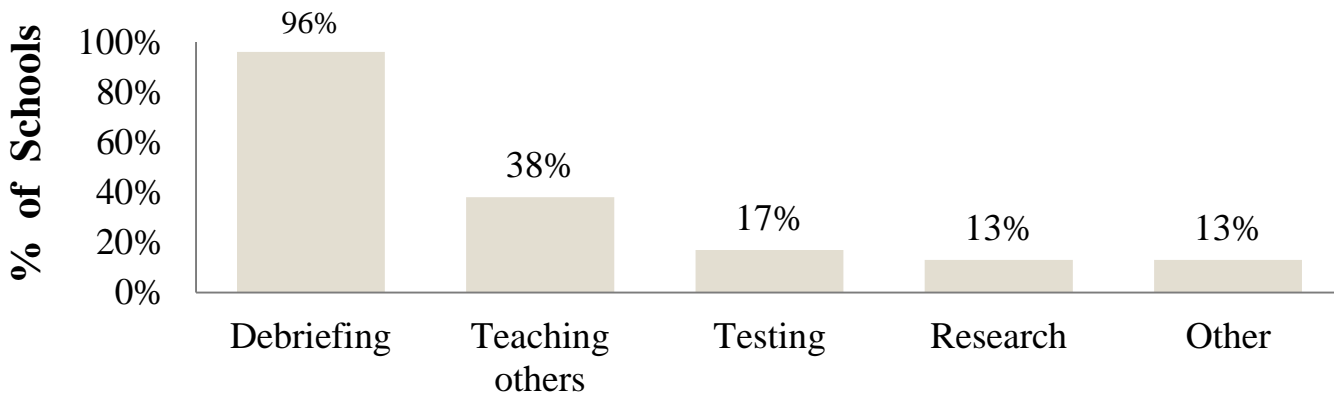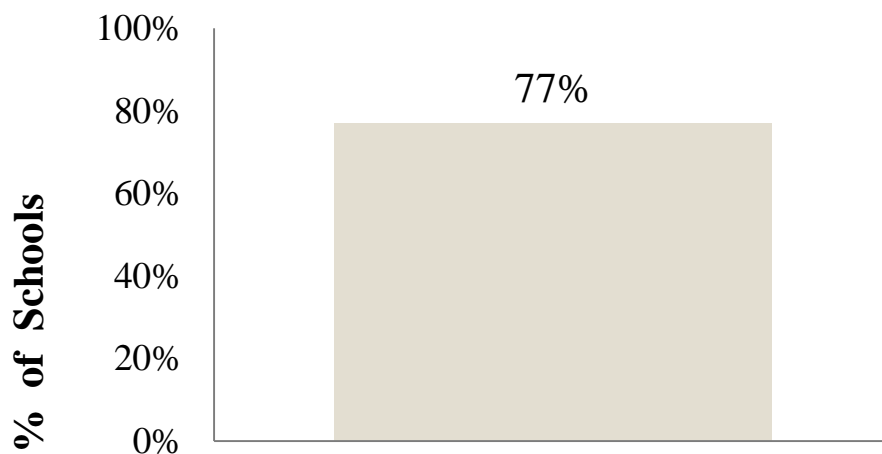- A strong majority of school-based (77%) simulation centers routinely debrief with learners after simulation scenarios.
    - On average (median) debriefing sessions last 20 minutes (minimum of 5 minutes, maximum of 90 minutes).
    - Half use video-recordings during their debriefing sessions.

Q25: Do you routinely have a formal debriefing period following the simulation scenario?
Q25A: What is the average amount of minutes allocated for debriefing?
Q25B: Do you review the video recording during the debriefing?

Needs & Plans

Schools Future Plans: Purchasing Materials

Medium/high-fidelity simulation mannequin(s) — **45%**

Equipment to facilitate implementation (e.g., camera, software) — **37%**

Simulation scenarios — **29%**

Other — **2%**

None of the above — **31%**

0%   20%   40%   60%   80%   100%
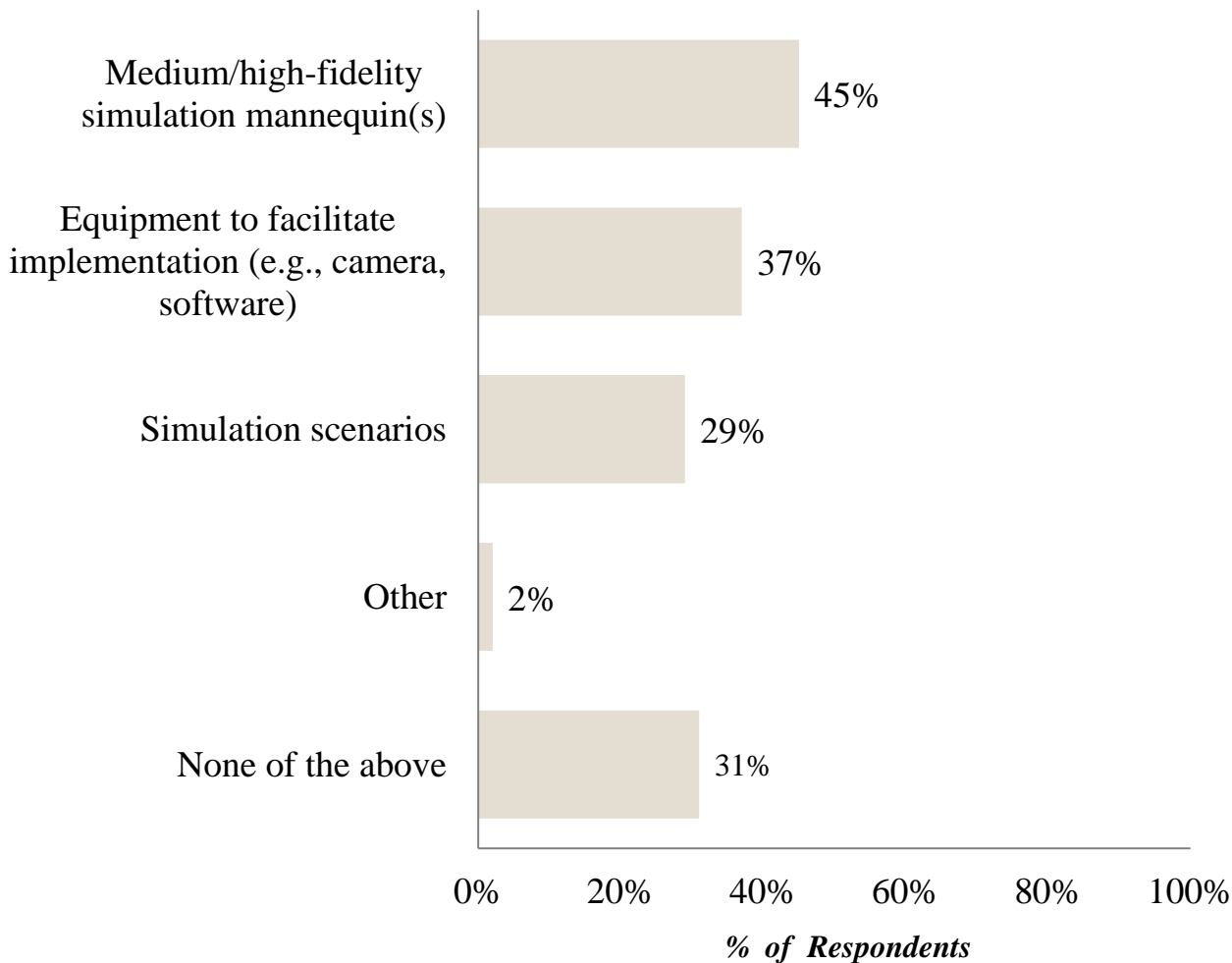
% of Respondents

- Two-thirds of responding schools have 'no plans' to purchase these materials in the near future. The most commonly expected future purchase is a simulation mannequin.

Q26A: Which of the following describes future plans regarding simulation : purchase materials?

Needs & Plans

Schools Future Plans: Hire Additional Personnel
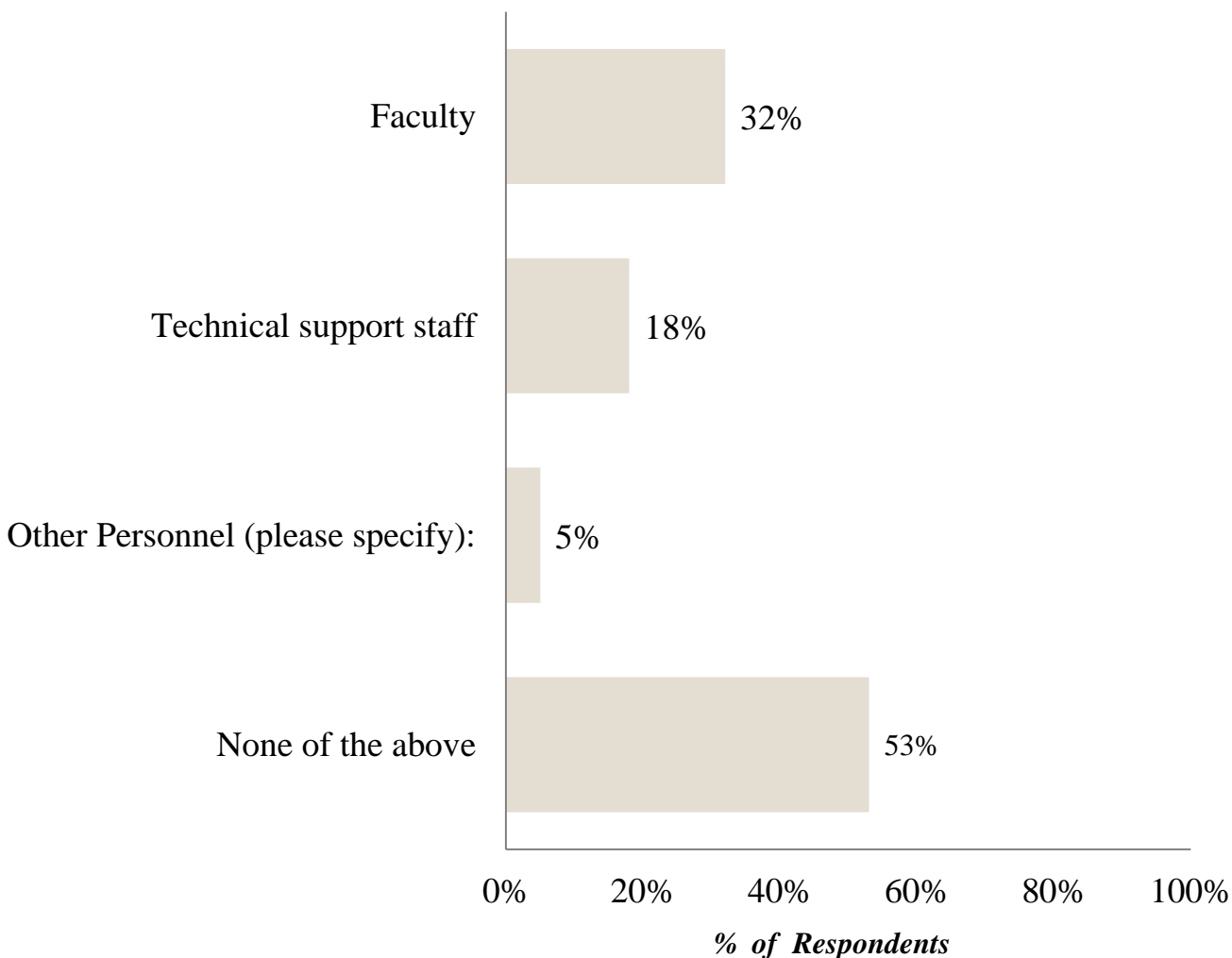
% of Respondents

- Half of responding schools have plans to add to their simulation center staff. Schools were more likely to expect to hire faculty than technical support staff (32% vs. 18%).

Q26A: Which of the following describes future plans regarding simulation : purchase materials?

Needs & Plans

Schools Future Plans: Acquire Additional Space

Construct or renovate space for a dedicated simulation laboratory — 36%

Secure shared space to facilitate implementation of simulation — 15%

None of the above — 55%

% of Respondents
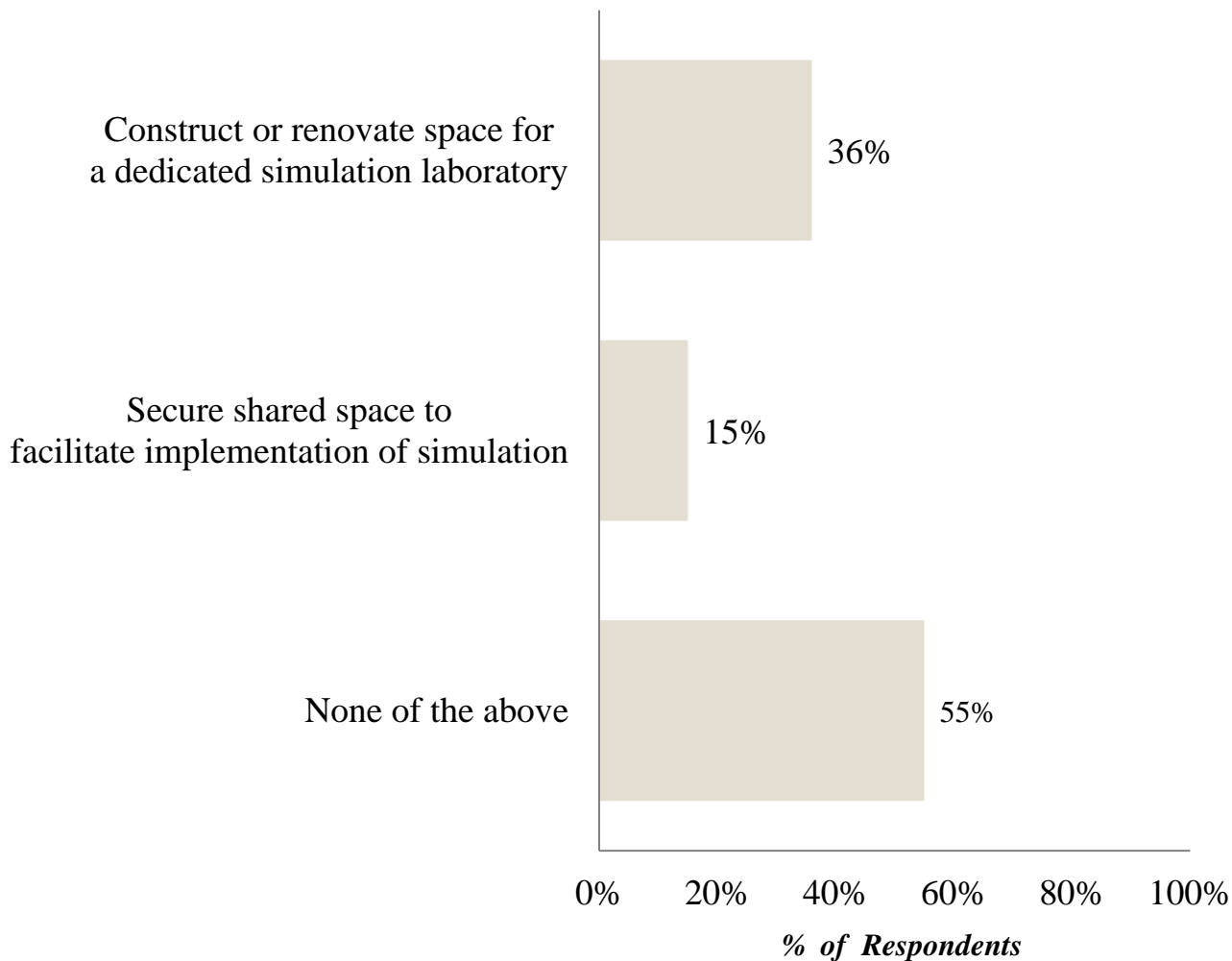
- With the addition of equipment and staff, additional space is likely needed: 45% of school-based simulation centers have plans to expand their footprint. Mostly they expect to expand their existing space (about one-third) while the remaining expect to secure shared space.

Q26A: Which of the following describes future plans regarding simulation : purchase materials?

Needs & Plans

Schools Future Plans: Expanded Use of Simulation in Curriculum

Increase use of simulation in the curriculum/clinical education — 82%

No additional plans other than already described — 13%

Other — 5%

0% 20% 40% 60% 80% 100%

% of Respondents
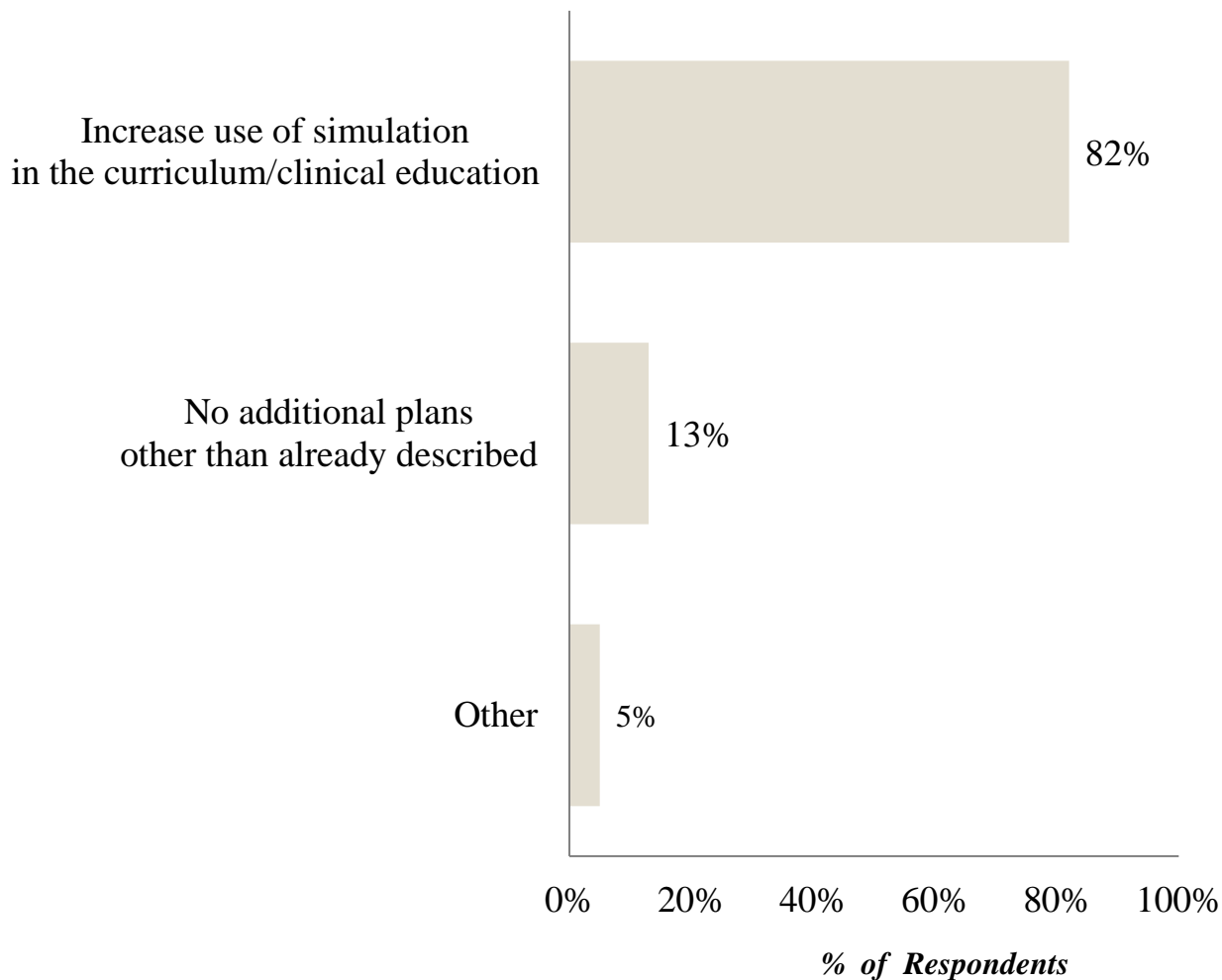
- A great majority of schools (82%) expect to expand their use of simulation in their curriculum.

Q26A: Which of the following describes future plans regarding simulation : purchase materials?

97

Needs & Plans: Partnerships

Schools: Interest in Partnerships For Simulation Implementation

Category	%
Training/staff development for simulation coordinators/leaders	52%
Develop/edit simulation scenarios	48%
Conduct research related to simulation	47%
Develop a shared-use simulation laboratory	37%
Develop partnerships to share simulation equipment	29%
Purchase additional simulation equipment by sharing costs	18%
Purchase a mobile simulation unit	15%
Establish an equipment purchase agreement (e.g., price contract)	11%
Other (please specify)	2%
None, not interested in partnering with others	18%

% of Schools

- Overall, schools expressed a strong interest in collaborating with other entities/simulation centers on a wide variety of issues. Training and development for simulation center personnel was of interest to more than half of responding schools.

Q27: Please specify ways in which your school/facility would be interested in partnering with other schools/facilities/agencies/private businesses to facilitate implementation of simulation. (please select all that apply)

98

Needs & Plans: Partnerships

Schools: Barriers to Partnerships

Challenges to Partnerships	% of Schools
Time (for coordination, collaboration, with students from other facilities)	38%
Coordination of schedules/Fair distribution of use	18%
Distance from potential partners	16%
Space constraints (accommodating more students)	12%
Cost/Lack of funds to use other's facilities	10%
Demands of communications/Coordination	6%
Sharing own equipment	4%
Negotiation of agreements/Legal constraints	4%
Competitive issues	2%
Conflicting goals of partnering organizations	2%
Fear others will damage equipment	2%
Faculty acceptance	2%
Lack expertise to train other degree level nursing students	2%

Q28: What are the major challenges regarding partnering with other schools/agencies/ businesses?

Needs & Plans: Barriers to Simulation

Schools: Barriers to Simulation

Barrier	%
Inadequate financial resources to support simulation	48%
Lack of knowledge of faculty/clinical educators regarding use of simulation	61%
Lack of time dedicated to offer simulation	55%
Lack of equipment	32%
Lack of technical support to offer simulation	32%
Lack of buy-in from faculty/clinical educators to use simulation	26%
None	8%

% of Schools (axis: 0% 20% 40% 60% 80% 100%)
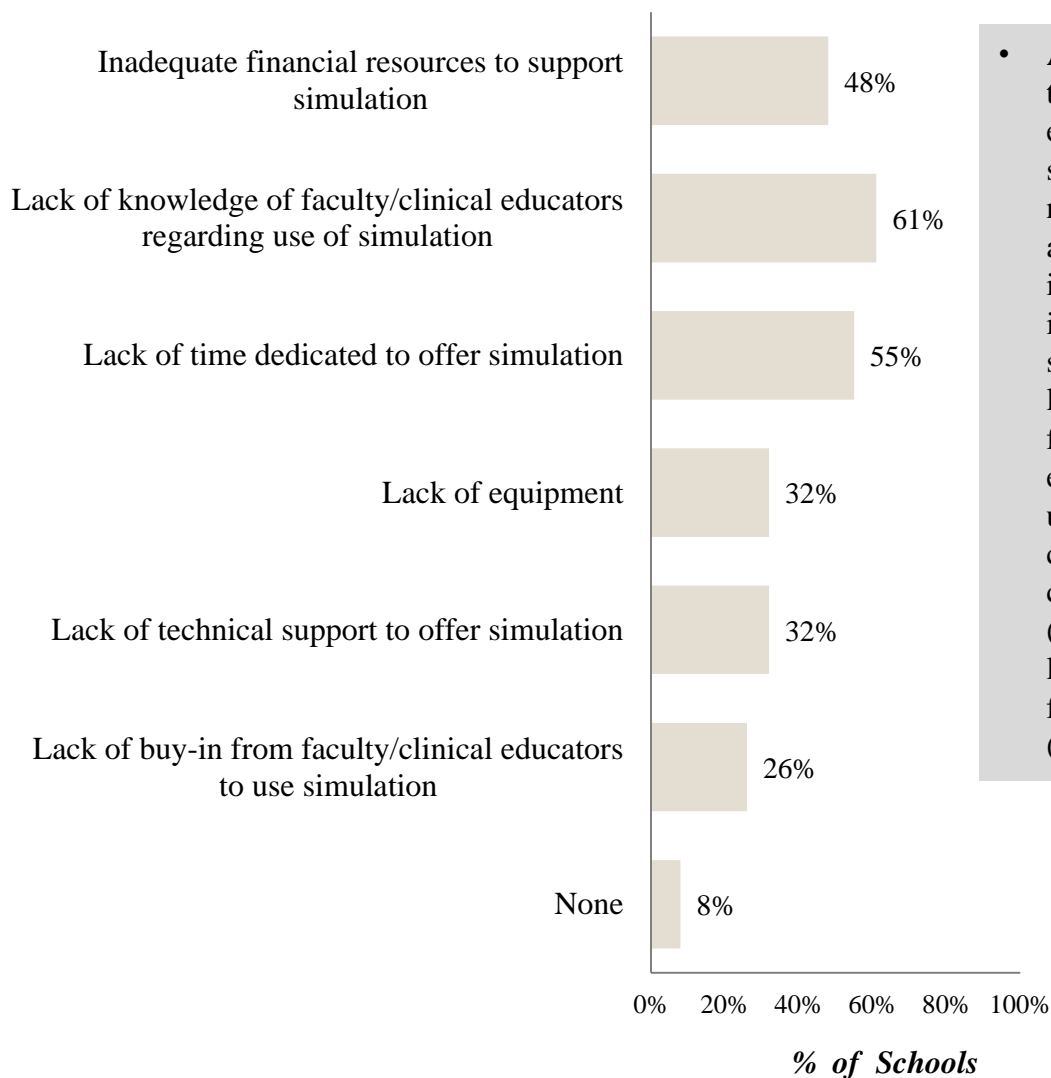
- Although commitment to simulation as an educational tool is strong at colleges of nursing schools, there are many factors that impede the implementation of simulation centers. A lack of knowledge by faculty/clinical educators regarding the use of simulation was cited as the most common challenge (61%), followed by a lack of time (55%) and financial resources (48%).

Q29: Which of the following are challenges and/or barriers to using simulation in your school/facility? (select all that apply)

100

Needs of Simulation Centers

Schools: Needs of Simulation Centers

Need	%
Faculty/educator education: Hands-on training for implementing simulation	68%
Research opportunities	60%
Faculty/educator education: Simulation scenario writing	55%
Evaluate outcomes related to simulation	52%
Develop models for funding/sustainability of simulation	47%
Faculty/educator education: Simulation scenario editing	39%
Develop multidisciplinary simulations	37%
Faculty/educator education: How to incorporate simulation…	36%
Technical support	32%
Facilitate faculty/educator buy-in regarding using simulation	32%
Availability of mannequins to support simulation	27%
Other (please specify)	5%
None	8%

0% 20% 40% 60% 80% 100%

% of Schools

- We saw that the most common barrier to simulation was lack of educator training; here we see schools reporting educator training as their primary need. Schools also identified a wide variety of other needs, including research opportunities (60%), scenario development (55%) and evaluation of outcomes related to simulation (52%).

Q30: Which of the following are needs of your school/facility regarding simulation? (select all that apply)

101

Needs & Plans: Interest in Collaboration

Schools: % Interested in Collaborative Simulation Center

% of Schools

100%	
80%	77%
60%	
40%	
20%	
0%	
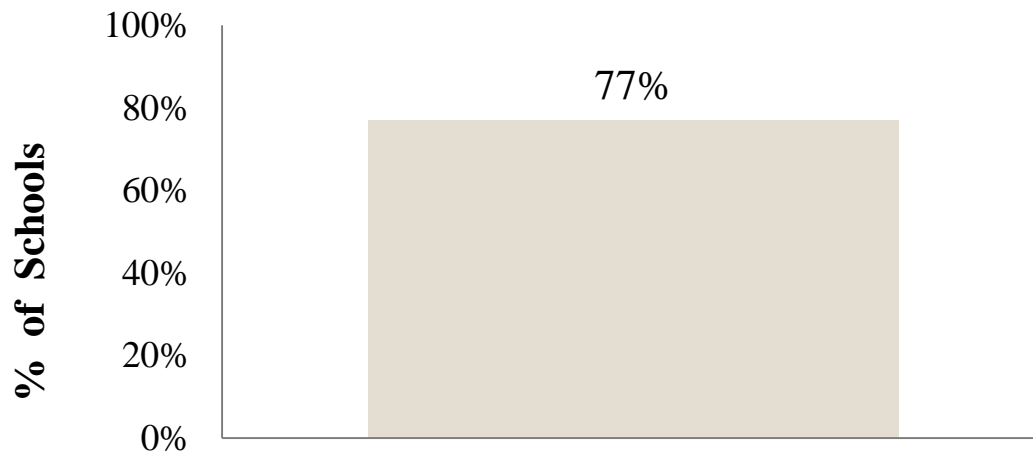
- Schools expressed a strong interest in collaborative centers. Seventy-seven percent indicated they would participate in a collaborative simulation center if it were available in their region.

Q31 If a collaborative simulation center or alliance were available in your region, would your school/facility participate?

Needs & Plans: Interest in Collaboration

Schools: *Reasons To Participate in Collaborative Simulation Center/Alliance*

Reasons To Participate in Collaborative Center	% of Schools
Improves education for students/Gain access to greater variety of equipment, scenarios and faculty knowledge	24%
Cost effective	16%
Increased access to resources/Sharing of information, expertise	14%
Expands/Increases center's use of own equipment	10%
Only way for school to use simulators is via off-site center	8%
Staff education opportunity	6%
Way for center to grow	4%
Networking opportunity	2%
Leverage existing simulation expertise	2%
Is convenient	2%
Other	14%

- The benefits to participation in a collaborative simulation center are many – and center around two things. First, students benefit because they gain experience with a greater variety of equipment and scenarios, and are also exposed to faculty members from other institutions. Second, a collaborative center is efficient; it saves money because costs are shared among many institutions and the operation of the center can be maximized. Third, a collaborative center can simply be better because of a large variety of health care professionals using and developing it .

103

Q31yes: If yes, why would your school/facility participate? (may not exceed 3000 characters)

Needs & Plans: Interest in Collaborative

Schools: *Reasons Not To Participate in Collaborative Simulation Center/Alliance*

Reasons Not To Participate in Collaborative Center	% of Schools
Costs (to use other center)	6%
Lack of time (personnel)	4%
No need to/Have own	4%
Already collaborate with another center	4%
Difficult to schedule convenient times with other center	4%
Time to negotiate agreements	2%
Distance	2%
Other	4%
None; No barrier	75%

- Most (75%) did not report a barrier to participation in a collaborative center. Those who did focused on cost (to pay another center) and the time which would be needed to coordinate with another entity.

Q31yes: If no, why would your school/facility not choose to participate? (may not exceed 3000 characters)

104

Final Comments

Schools: *Use For Additional Resources for*

If Additional Resources Were Made Available….	% of Schools
Purchase/upgrade simulation equipment	30%
Hire additional personnel/dedicated personnel (especially center coordinator)	28%
Use simulation in more courses/Expand in curriculum	22%
Create/expand a simulation lab	20%
Add technology to center (video-recording, Smartboards)	14%
Staff professional development on simulators/scenarios	14%
Expand space	8%
Hire tech support	8%
Write own scenarios	6%
Allow space for multidisciplinary scenarios	6%
Increase number/quality of scenarios	4%
Do more community outreach/Train non-health care personnel (EMTs, Athletic Trainers)	4%
Increase operating hours	4%
Do more research	2%
Improve student-to-faculty ratio	2%
Expand use of center by other schools	2%
Increase services offered	2%
Purchase warranty(ies)	2%
Develop more sophisticated scenarios	2%
Nothing different/Not sure	10%
Other	6%

Q32: If my school/facility had additional resources for simulation (e.g., funding, personnel, equipment), we would:

105

Illustrative Final Comments

Q33: Other comments related to simulation that you wish to share with us?

I believe simulation is vital in nursing education. The Ohio Board of Nursing needs to get on board with allowing us to count some of the time as clinical time. An example. An example - for all the years I have taught nursing and been a clinical instructor I have never had a patient have a seizure. It would be great to simulate this in the lab so the first time a graduate has a patient with a seizure, they would know what to do.

It is becoming increasingly more competitive and difficult to secure clinical facilities for LPN clinical experience in the acute care setting. We are being forced to find alternative teaching techniques such as clinical simulation.

It would be good if the ON allowed us to use some simulation in place of clinical experience.

Needs state support to make it substitute for clinical hours

As of now, we are successful clinically with utilization of these hours with ingenuity and creativity to enhance low fidelity simulation. It would be great to have higher fidelity simulation, but costs are prohibitive. We have investigated alternate methods of delivery and have considered future partnerships.

Professional development in the scholarship of simulation is needed to include curriculum development and research in the pedagogy of simulation.

Simulation is a needed teaching technique.

Simulation is a valuable technology. We purchased our first simulator 9.5 years ago. It is amazing how the technology has advanced in that short period of time. Especially when the newer models have so many more human functions.

Simulation is a vital educational tool which adds additional components to enhance the education and professional development of learners and thereby enhance patient safety and the delivery of effective team-based patient centered care.

Simulation is used as a readiness tool for clinical. It does not take the place of our clinical experience. We also use it to recreate a scenario from clinical for critical thinking or remediation.

The collaborative efforts would be awesome if we were able to perform multi-institutional simulation research!!

This modality will improve patient outcomes and better prepare RN's to practice in today high tech medical environment.

We desperately need funds for simulation.

We have a long way to go with the possibilities of simulation and their use

We realize simulation is the way to go, the way of our future, facilitating the high tech concepts intertwined in teaching/learning principles... enhancing our current program offerings.

We would love to expand on simulations in our program.

Would love to have more simulation. Waiting for finances.