Survey of Simulation Capacity
At VA Health Care Organizations
2009

Employee Education System
Patient Care Services
Office of Nursing Service

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Section 1 - Background:

For centuries, it has been necessary to use live patients in real clinical settings to train practitioners in clinical techniques. But this training technique has had to be balanced with the obligation to ensure high quality care and patient safety. The availability of newer training techniques and new simulation technologies permit training on real clinical events on simulated patients in simulated environments. Healthcare organizations are increasingly compelled to adopt these new training techniques to reduce patient risk while providing improved clinical training. Organizations are equally interested in simulation as a cost effective means to improve task and process efficiencies and treatment effectiveness.

Medical, nursing, and allied health schools are quickly embracing simulation training and education as an essential modality to deliver clinical curricula. Simulations help learners acquire new knowledge and better understand conceptual relations and dynamics. The modality is especially useful in helping individual learners apply their knowledge, skills, and abilities in a teamwork environment. The transition in modality is essential given the increasing complexity of medical care and the interdisciplinary nature of health care. The de-briefing aspect of simulation allows the learner to observe his own technique and behavior and, with consultation from peers and experts, critically evaluate performance.

In July 2009, the Acting Under Secretary for Health (USH) of the U.S. Department of Veterans Affairs approved the establishment of a national simulation training, education, and research program for the Veterans Health Administration (VHA). The basic parameters of the program are outlined in the executive decision memorandum) developed by representatives of Employee Education Systems (EES), the Office of Patient Care Services (PCS), the Office of Nursing Services (ONS), the Office of Academic Affairs (OAA), and the Office of Health Information (OHI). The USH decided to put the program under EES. In late July, a Steering Committee, with representation from the offices above and the VHA Office of Policy and Planning (OPP), was established to advise the Chief Learning Officer (CLO) on matters relating to the new national program. In early August, the program was designated the Simulated Learning Enhancement and Advanced Research Network (SimLEARN) program.

A Steering Committee was established to develop and approve the vision, mission, and goals for the SimLEARN program. One of the primary goals of the program is to develop a VHA strategic plan for simulation process modeling, training, education, and research by continually assessing the current state of VHA simulation process modeling, training, education and research to identify gaps and proposing operational and budget strategies and plans to address those gaps.

Section 2 - Methods:

In September 2009, a survey instrument was developed in a collaborative process by four Veterans Health Administration simulation experts. The survey was shared with members of the SimLEARN Steering Committee to identify opportunities for design improvements. The instrument was automated by EES's National Training and Education Organization (NT&EO) and field tested with one field facility to ensure that the questions were understandable and the automated survey was functional.

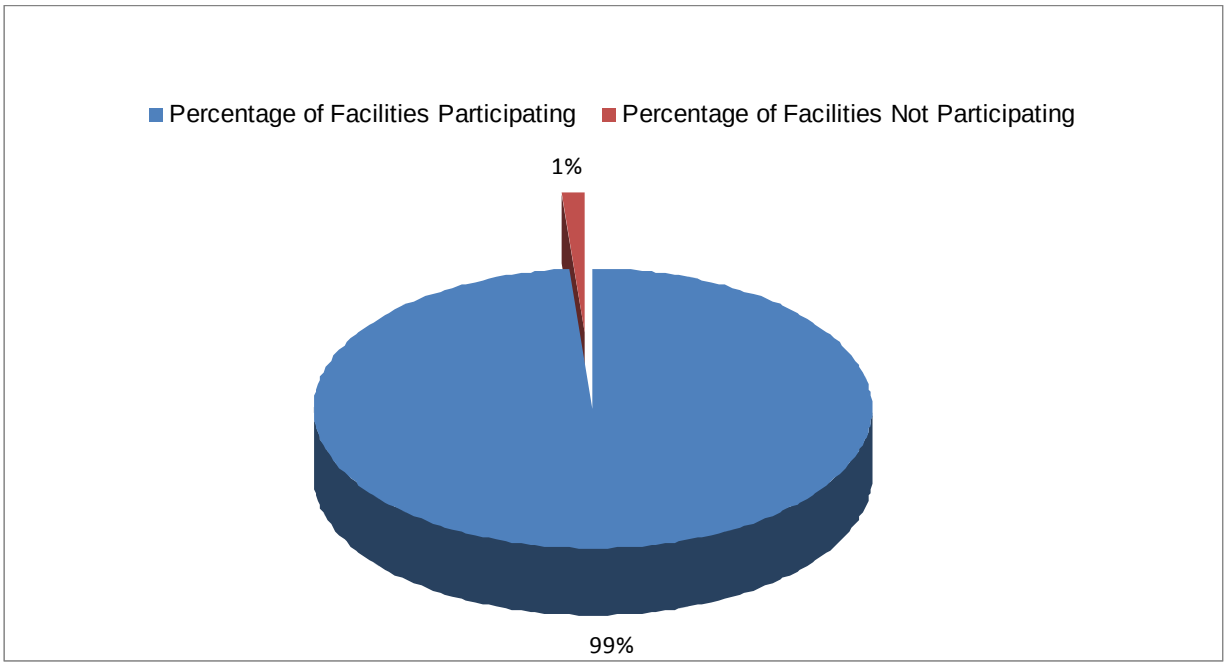
On November 19, 2009 the on-line data call was made available to the field. The field was advised that information would be used to 1) assess the "as is" state of simulation training and education across VHA and 2) evaluate future needs for simulation training and education, and that the information would directly contribute to the development of a national strategic plan. An aggregate report of the results will be shared with the field in late January 2010.

EES recommended that the data call be completed by each facility's designated learning officer (DLO) in collaboration with the person(s) in the facility with the most knowledge about all simulation training and education programs. Initially, submissions were due December 10, 2009; however, the date was extended to December 23, 2009 to permit some facilities to complete their response.

Section 3 - Results:

Response Rate: Responses were received from 169 facilities or health care systems[1] out of a total of 171 facilities or health care systems, representing a 98.8% response rate. Two facilities[2] did not respond despite follow up calls. One national program office, the National Center for Patient Safety (NCPS), was included in the total since it had just initiated a simulation course.

Figure 1. Percentage of facilities participating in survey



Some VHA health care systems responded on behalf of their multiple component health care facilities (e.g., VA Boston Brockton and VA Jamaica Plain were reported under Boston West Roxbury). Therefore, the 169 facilities represented 142 VHA health care organizations and 1 VHA program office.

Needs Assessment: Respondents were asked to identify the top 10 education and training needs at their facilities that could be met through simulation activities. Respondents were provided with ten free text fields to identify those needs. Of the 143 health care organizations, 3 did not respond to the question and 2 health care organizations provided duplicate responses, resulting in 138 responses with sufficient information for analysis.

Many organizations (45 and 20) responded with fewer than 10 or fewer than 5 identified needs, respectively. A single respondent interpreted the question in terms of the types of technology (e.g., “Sim-man”). Some respondents gave very non-specific responses (e.g., “medical resident and specialty fellows therapeutic and management training;” “nursing education;” or “provide a safe, hands-on learning environment for healthcare professionals which will ultimately improve patient safety;” etc.).

[1] Some Veteran Integrated Service Networks (VISNs) have consolidated major medical centers and their support organizations under a broader organizational designation of “health care system.”
[2] El Paso Health Care System and Miami VA Health Care System. Follow up calls revealed that El Paso has no simulation activities and Miami reported simulation training for anesthesiologists.

The responses from the 138 organizations were sorted by general category and priority level to identify highest priority training and education interests (see Table 1).

Table 1. Top three priority topics for training and education

Topic	Priority 1 (n=138)	Priority 2 (n=138)	Priority 3 (n=136)	Total
Cardiac *	51	38	17	106
Verifying Competencies	11	12	11	34
Rapid Response	7	14	11	32
Physical Assessment	11	9	9	29
Intubation	5	4	10	19
Team Communication	6	2	7	15
Central Line Placement	4	6	4	14
All other responses	43	53	67	163

* Includes responses of Cardio-pulmonary resuscitation [CPR], Basic Life Support [BLS] or Advanced Cardiac Life Support [ACLS] and "code" training.

Cardiac life support training (Cardio-pulmonary resuscitation [CPR], Basic Life Support [BLS] or Advanced Cardiac Life Support [ACLS]) was identified in 51 of the first priority responses (n = 138), 38 of the second priority responses (n =138) and 16 of the third priority responses (n = 135).

The next most common topic identified was "rapid response training," which in 7, 13, and 10 responses was identified as first, second, and third priorities, respectively. Other topics occurring with relatively high frequency in the top three priorities included physical assessment, intubation, team communication, and central line placement.

The "all other" category included a broad range of topics with higher specificity and lower frequency of responses (e.g., skin and wound care management; use of virtual reality for post traumatic stress disorder or other mental health diagnoses; performance of invasive thoracentesis; paracentesis, lumbar punctures, tracheostomy; etc.) or lower specificity and lower frequency of responses (e.g., orientation issues, surgical simulation, training for high risk procedures).

Use of Simulation Related Activities

Respondents were asked if their facility used simulation activities (task trainers, standardized patients, hi-fidelity mannequins, etc.) in the training of their staff and/or others. Ninety-seven respondents of the 138 organizations indicated that their organization used simulation activities in training.

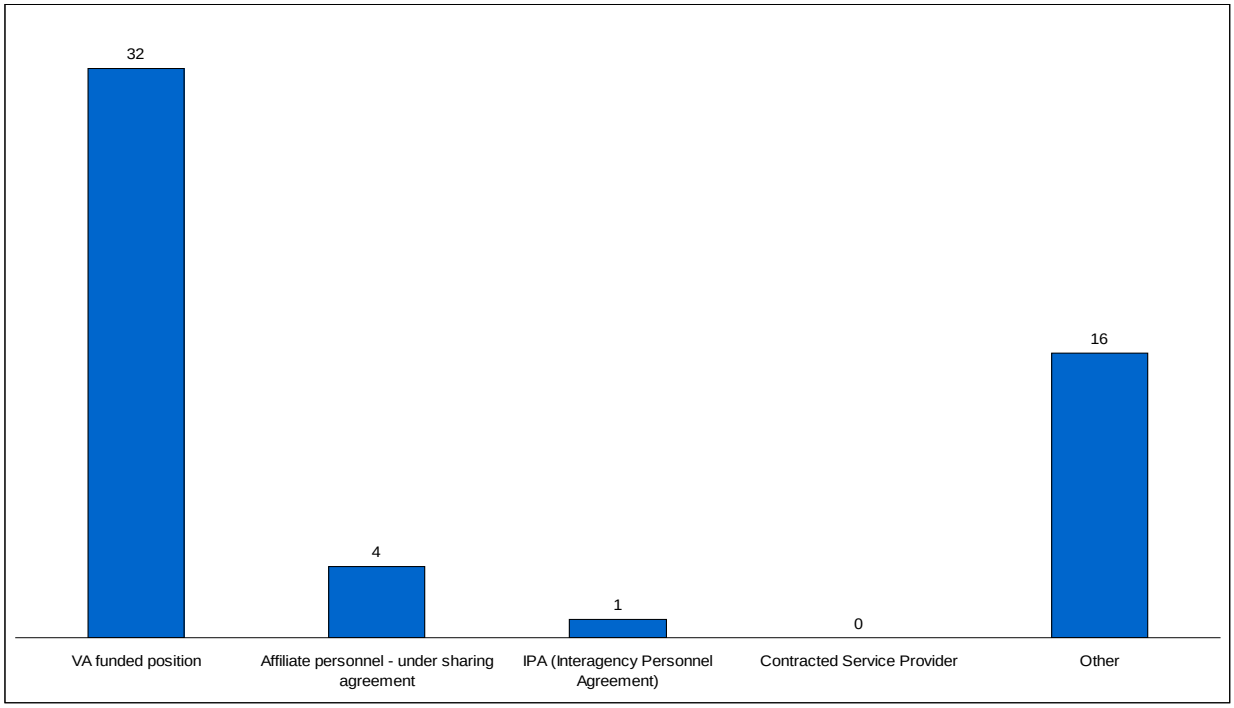
Respondents were also asked if their facility owned or leased space dedicated to the use of simulation education training techniques. Respondents were asked not to include space used for CPR mannequins. Thirty-six organizations indicated that their organization owned or leased space. Respondents were asked if they used someone else's (i.e., non-VA-owned or -leased) space for simulation education training and 19 organizations responded affirmatively.

Simulation Center Information

Facilities *with simulation centers* were asked to respond to more specific questions. The number of respondents to each question should have been the same from question to question, however, the number of respondents varied with each question with a range from 33 to 60. Perhaps some staff missed the prequalifying statement that facilities with simulation centers should respond to the list of questions.

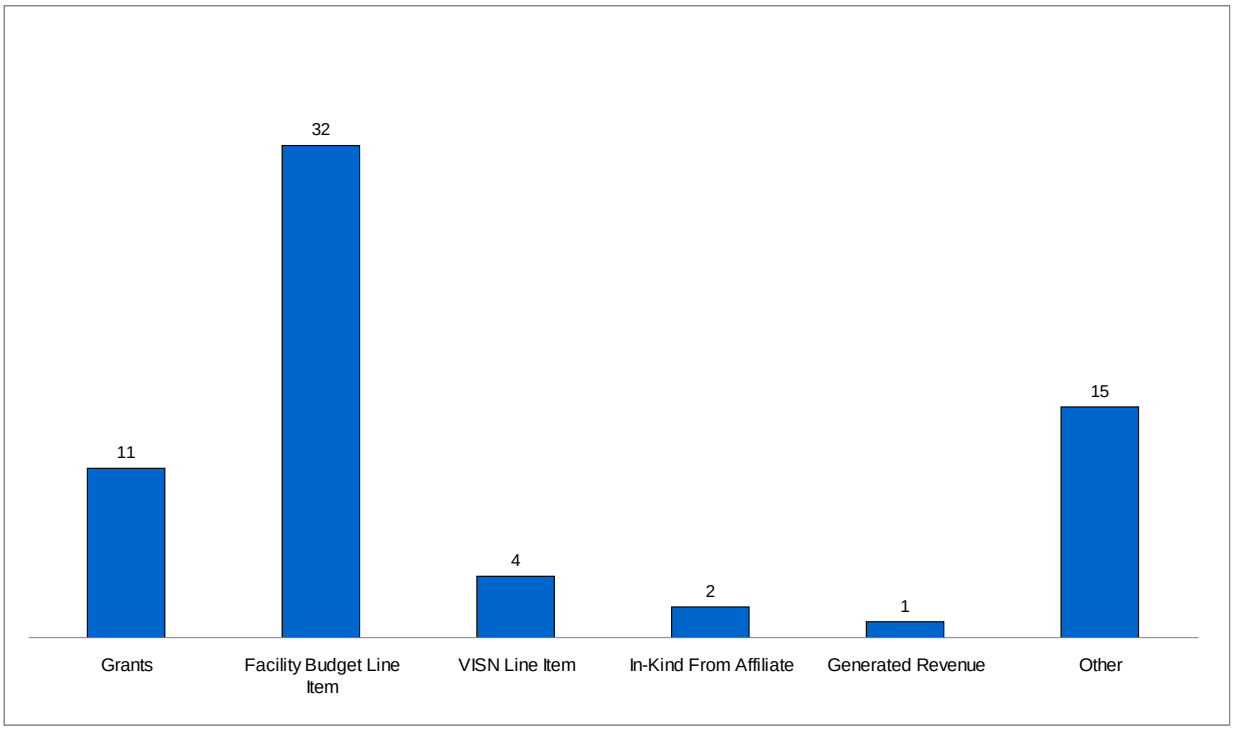
Respondents were asked if the simulation center was staffed using: 1) VA-funded positions, 2) affiliate personnel under a sharing agreement, 3) interagency personnel agreements, 4) a contracted service provider, and/or 5) other arrangements. Forty of the organizations responded to the question. Thirty-two of the 40 organizations indicated that the center was staffed with a VA funded position. Four of these same organizations also used affiliate personnel under a sharing agreement. One of these 4 also used an interagency personnel agreement. No organization reported using contract services. Four organizations reported that staffing was supported through collateral assignment of existing clinical or education staff. (See Figure 2)

Figure 2. Staffing patterns at VHA simulation centers



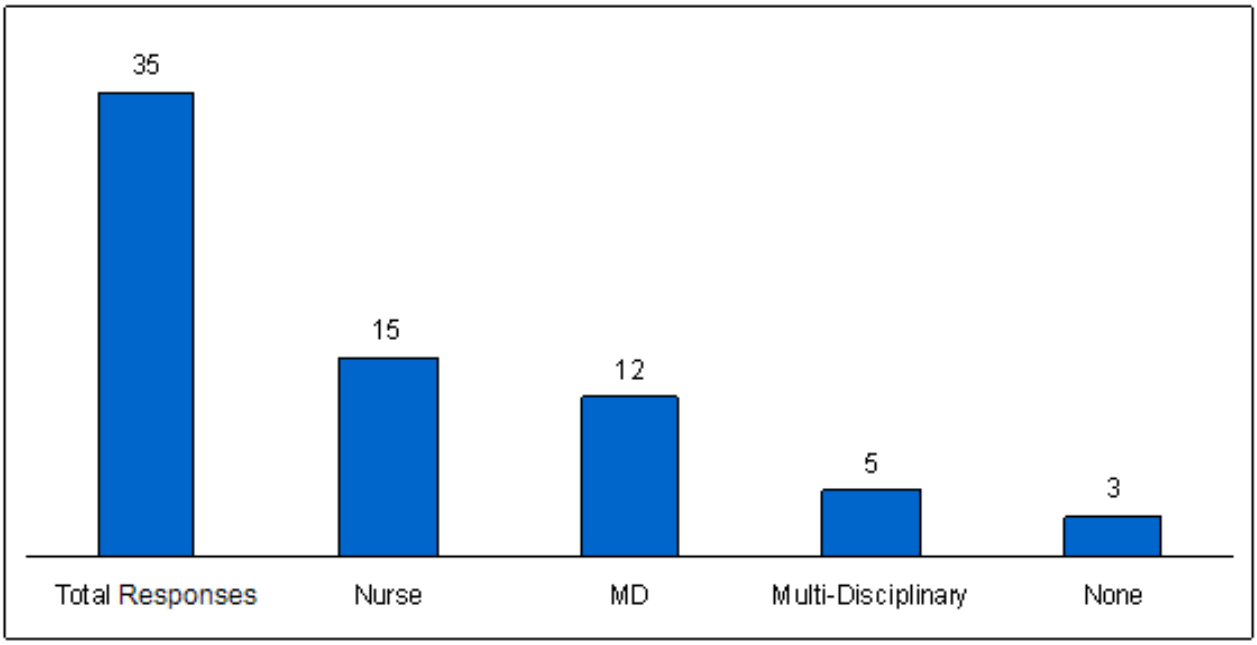
Respondents were also asked to specify if funding for their simulation center was from grants, a facility budget line item, a VISN line item, in-kind support from the affiliate, and/or from generated revenue. Again, forty organizations responded to the question. Eleven organizations indicated that their organization received funding from grants; thirty-two organizations had an organization budget line item, four had a VISN line item, and two received in-kind support from the affiliate. One organization reported support from generated revenue. Two respondents commented that funding requirements were internally absorbed and two organizations commented that they had received one time funding for purchase of equipment. (See Figure 3)

Figure 3. Funding sources for VHA simulation centers



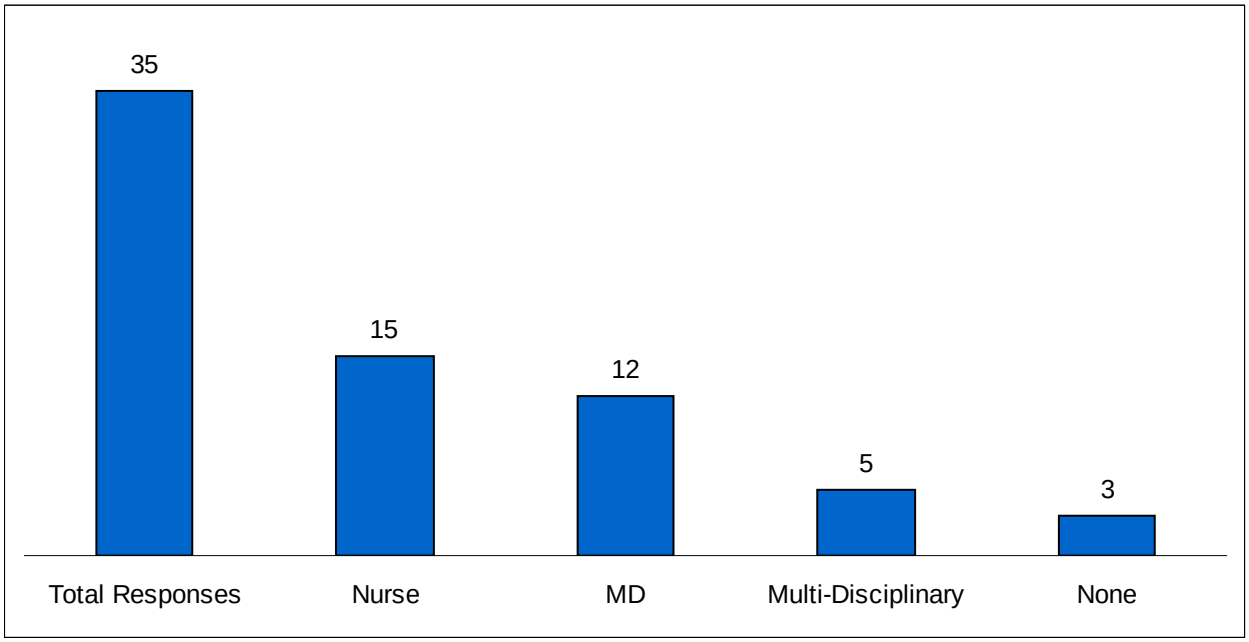
Respondents also were asked to characterize the professional background of the Clinical Director of the Simulation Center who is the clinical leader of the program. Thirty-five organizations responded. Fifteen indicated that the Clinical Director was a nurse (includes all nurse designations and specialties), twelve were physicians (includes all physician designations and specialties). Five organizations indicated that the Clinical Director role was fulfilled through multidisciplinary teams (physicians, nurses, quality manager [profession unspecified], and social worker), and three organizations had not designated a Clinical Director. (See Figure 4)

Figure 4. Professional Background of Clinical Director



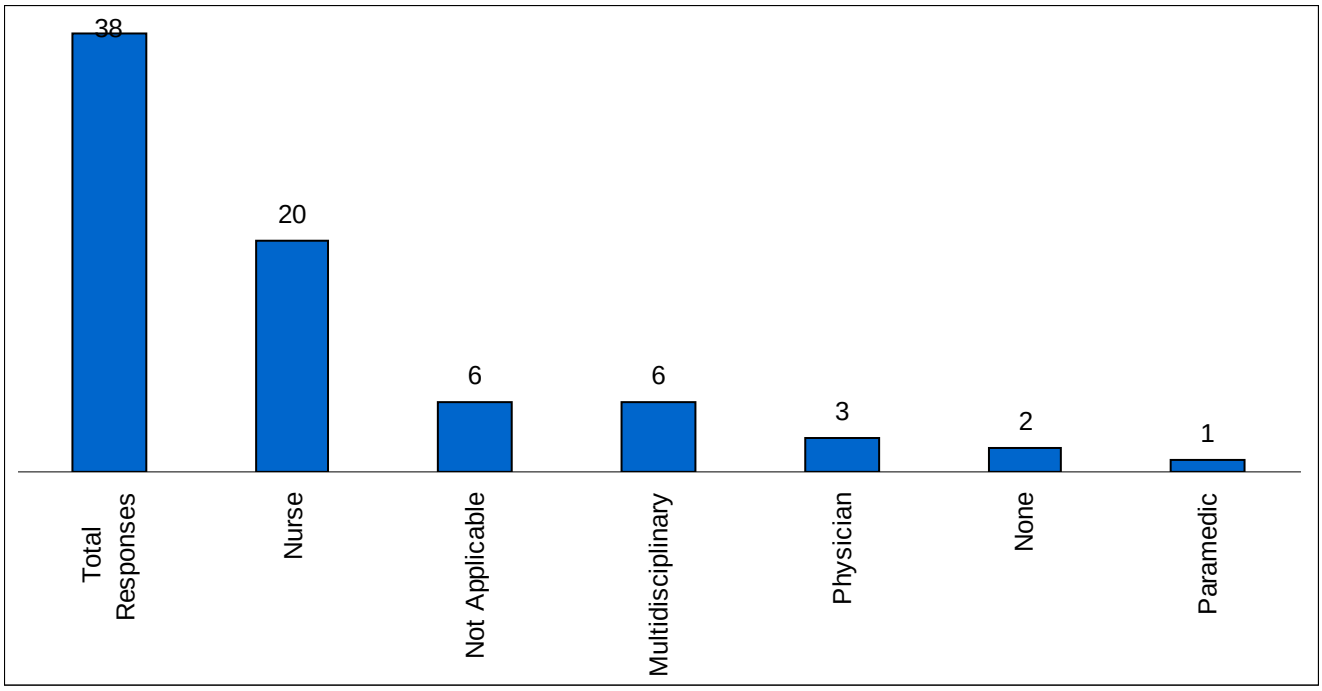
Respondents were then asked to characterize the professional background of the Program Manager. Forty organizations responded. Nineteen indicated that the Program Manager was a nurse (includes all nurse designations and specialties), six fulfilled the role through a multidisciplinary team, five indicated there was no Program Manager, four others used professionals of other backgrounds (paramedic [1], physician assistant [1], counselor [1], and optometrist [1]). Six organizations indicated the question was non-applicable. (See Figure 5)

Figure 5. Professional Background of Program Manager



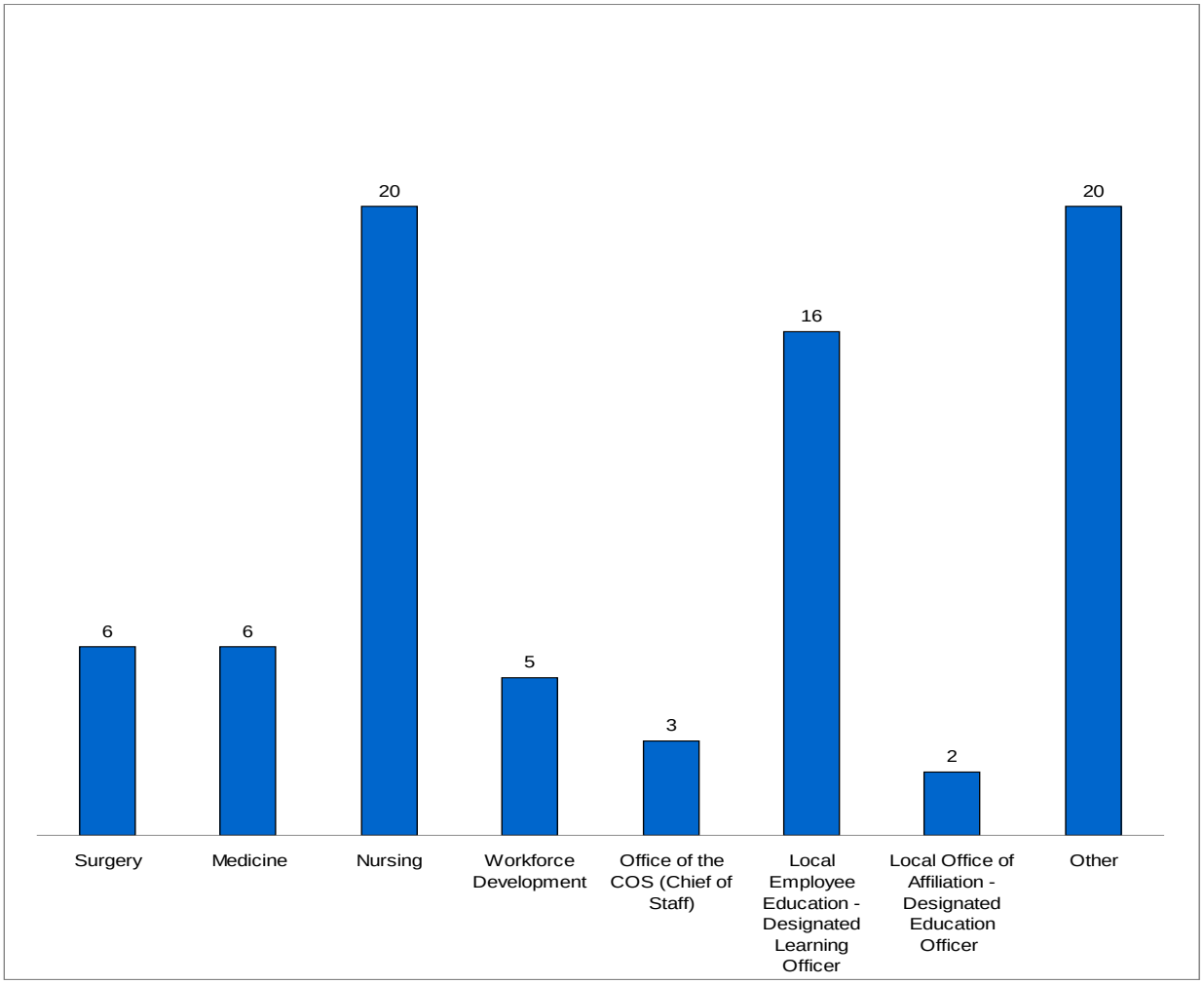
Respondents were next asked to characterize the professional background of the Simulation Specialist, who is the technical staff member supporting the simulation. Thirty-eight organizations responded. Twenty indicated that the Simulation Specialist was a nurse (includes all designations and specialties), 6 fulfilled the role through a multidisciplinary team, 3 used physicians (includes all physician disciplines and specialties), 2 indicated there was no simulation specialist, and one used a physician assistant. Six organizations indicated the question was not applicable. (See Figure 6)

Figure 6. Professional Background of Simulation Specialist



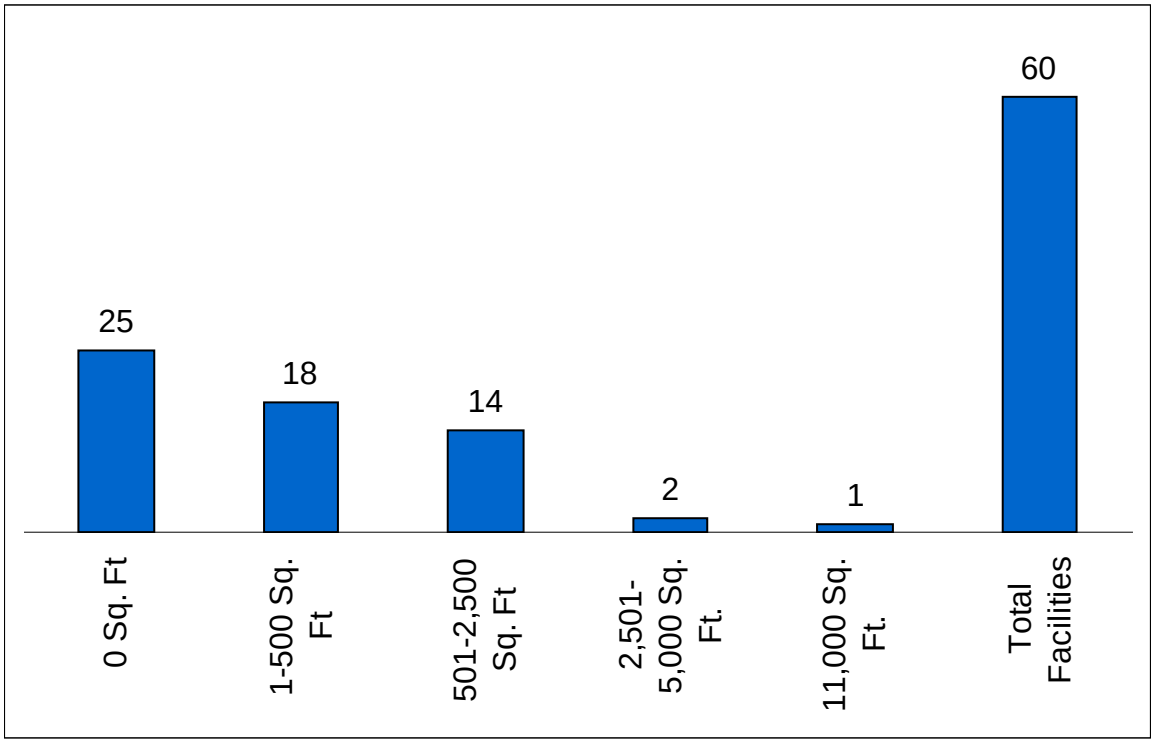
Forty-four respondents reported on their Center's organizational alignment (i.e., "Where does Center sit organizationally [select all that apply]"). Twenty organizations reported an alignment to nursing, 16 to the local employee education office/designated learning officer (DLO), 6 to surgery, 6 to medicine, 6 to workforce development, 3 to the Chief of Staff, and 2 to the local office of affiliation/designated education officer (DEO). Many reporting in the "other" category were simply providing clarification, including two organizations who reported alignment to Anesthesiology Service. One organization reported an alignment to a multi-disciplinary committee. The total number of alignments exceeded the number of respondents: Some organizations reported multiple alignments; perhaps indicative of multiple simulation programs (e.g., San Francisco reported alignments to Surgery, Medicine, Nursing, and Workforce Development). (See Figure 7)

Figure 7. Organizational Alignment of Simulation Center



Sixty organizations responded to a question about the amount of space allocated for their simulation center. Most organizations (n=25) had no space allocated. Two organizations had less than 100 square feet (sq. ft.); sixteen had 100 to 500 sq. ft; seven had 501-1000 sq. ft. and seven had between 1001 and 2500 sq. ft. Only three organizations had more than 2500 sq ft., with one of them[3] reporting 11,000 sq. ft. Four organizations reported that space was leased as opposed to VA-owned. (See Figure 8)

Figure 8. Space Allocation for Simulation Center in Square Feet



Thirty-four organizations responded with information on the start date of their simulation center. One organization started prior to 2000, seven more started between 2000 and 2008, eight started in 2008, 16 started in 2009. One organization reported a planned start of 2010 and another reported a planned start in 2011.

Table 2. Number of Organizations Started by Year

Year Started	Number of Organizations
1995	1
2000	0
2001	0
2002	0
2003	1
2004	1
2005	1
2006	1
2007	3
2008	8
2009	16
2010	1
20011	1

[3] The Louis Stokes (Cleveland – Wade Park) VA Medical Center reported 25,000 sq. ft. In a follow up call, we received clarification that approximately 11,000 sq. ft are occupied by the facility as a dedicated learning exchange space. The remaining space is leased to Case Western University for its simulation lab. The Cleveland VA Medical Center conducts some simulation training for VA employees in the Case Western lab under a sharing agreement.

Thirty-three organizations responded with information on the staff hours utilized per week in simulation training activities. Three organizations reported greater than 40 hours per week, eight reported 11-40 hours per week, and twenty-two reported ten hours per week.

Seventeen (50%) of thirty-four organizations reported that utilization (utilized staffed hours/available staffed hours) was 100% or greater. Another six organizations (17.6%) reported utilization of 50% or greater. The remainder reported utilization of less than 50%.

Sixty organizations reported on the number of full time (FT) and part time (PT) people dedicated to the simulation center. One organization reported 6 FT persons, one reported 4 FT, one reported 3 FT, one reported 2.5 FT, ten reported 1-2 FT, and two reported less than 1 FT persons. The remaining (44) reported no full time people dedicated to the simulation center. Of the sixty organizations, 2 had eight or more PT persons, 4 had 3-5 PT persons, and 14 had 0.5-2 PT persons. The remaining 40 had no PT persons. Thirty-one organizations of the sixty reporting report 0 FT and 0 PT persons dedicated to their simulation center.

Four organizations reported that their center is accredited. Two (Augusta and Palo Alto) report accreditation by the American Society of Anesthesiologists (ASA), one (Cleveland) by the American College of Surgeons (ACS)[4], and one (Denver) did not report the accrediting body.

Facilities with simulation sites were asked to provide the URL for their simulation center's website. Only three responses were received, two of which were for the affiliates' website. The other URL was non-functioning.

Course/Activity Information

In response to a specific part of the survey, respondents provided invaluable information on the courses offered at their facilities. Facilities were asked to provide data on each course and to provide curricula if available. Collectively, organizations provided information on over 365 courses covering a wide range of subjects. A small number of organizations (2) included the coursework conducted by their affiliate.

A large number (n=95) of the course offerings were in the topic area of cardiac resuscitation. Another seventeen of the offerings were specific to training in intravenous techniques, including central line placement.

Some organizations had a high concentration of acute care team-based training (e.g., Palo Alto Health Care System listed Anesthesia Crisis Resource Management [ACRM], Cardiac Surgery Combined Team Simulation, Emergency Room Combined Team Training, and Stanford Course on Active Resuscitation Evaluation Decision-making [SCARED], unannounced mock codes, unannounced rapid response team calls, etc.).

Based on the information provided in the course listings, the types of simulation equipment used to support the course training were predominantly mannequins, task trainers, standardized patients and computer assisted instruction. A number of organizations reported using blended strategies. There is little data to suggest that most VHA organizations have progressed significantly into areas using haptic technologies or 3-D virtual reality.

A small number of organizations have begun to use simulation technology for non-clinical applications. For example, one organization indicated that simulation training was being used for front-line training for clerks in the patient check-in process and another organization used the modality to support fire extinguisher training.

The data collected in this survey on simulation course offerings will be disseminated to the VA medical centers, through the designated learning officers. Medical centers may use this information to contact other organizations about their course offerings.[5]

Section 4 – Discussion

This is VHA's first system-wide needs assessment focused on simulation training and education. Benchmarking VHA's activities to other national systems is challenging due to the lack of evidence on such systems of this scale.

[4] Accreditation is for the Case Western Reserve simulation lab.

[5] Courses created and conducted by the affiliate may require modification of the medical center's sharing agreement to permit sharing of the curricula to other VA sites.

While individual non-VHA institutions have published their experiences, large nationwide surveys are lacking. The need for such national surveys has been recognized and the Society for Simulation in Healthcare (SSIH) is undertaking a survey of its member institutions that is anticipated to be completed in the Fall of 2010. SSIH's objectives are to assess how long and to what extent schools have been using simulation and how simulation is being used. The Department of Defense (DoD) also has not conducted a system wide survey of capacity, though it is widely recognized that DoD has significant expertise in trauma simulation and uses simulation modalities extensively in the training of its clinical staff.

The survey instrument introduced limitations in the ability to analyze the data. The VHA survey did not, for example, attempt to define the minimum requirements for self identification as a Simulation Center but rather left that judgment to the respondent. As a result, organizations had varied responses based on their individual interpretation as to whether their facility had a "Simulation Center." Those responses varied even within subsets of nested questions. It is possible that some medical centers that would not characterize their medical center as having a Simulation Center answered the subset of simulation center questions anyway. This inconsistency in response makes responses suspect and make it impossible for the authors to answer the simple question of how many VHA Simulation Centers there are with a high level of certainty. At least one organization reported its affiliate's simulation center as being its own (i.e., VA Simulation Center) when in fact the affiliate was the recognized governing body and VA was just the landlord. A small number of other organizations provided responses in other sections of the survey that would also suggest ownership by their affiliates.

Another area in which we are unable to provide meaningful analysis was in the responses to research questions. We had hoped to identify the types of research staff and the source of research funds used in simulation education and training. The responses provided were sufficiently sparse that we did not believe we had reliable or consistent information from which we could draw conclusions.

Generally, VHA's results demonstrate the relative immaturity of the VHA simulation training and education efforts. There is system wide variation in capabilities and approaches that appear unrelated to facility complexity and mission. A very small number of organizations (3) appear to be at a mature state of technology and education as evidenced by accreditation. The vast majority of organizations either do not report simulation training and education programs (other than traditional cardiac resuscitation courses) or the programs lack sufficient maturity, structure, or organizational commitment to support accreditation.

Medical centers reported their highest priority needs for simulation training being in cardiac resuscitation, assessment of competencies, rapid response, and physical assessment. The high ranking of cardiac resuscitation is not surprising given that simulation training has a strong historical foundation in this area through protocols by the American Red Cross and the American Heart Association. Though not reported in detail, lower priority needs covered more non-traditional topics, suggesting that organizations are just beginning to understand appreciate the application of simulation training to support both clinical and non-clinical needs.

The responses of those organizations with Simulation Centers varied widely. The profession associated with simulation center leadership positions (both clinical and administrative) appears to be highly varied; however the consistent theme is strong leadership involvement by physicians and nurses, to some degree clinical educators, and to lesser degrees other professionals. Similarly, the organizational alignment of the simulation centers varies from organization to organization, though it is always aligned on the clinical side of the organization indicating the strong clinical roots of VHA's simulation programs.

The relatively small number of staff and space allocated to the simulation training and education function is indicative of the immature state of organization-wide (VHA, VISN, health care system, and facility) simulation education and training. Perhaps this suggests that the degree of enthusiasm and acceptance of simulation education in United States medical schools is not yet mirrored by VHA leadership and staff – or the staff and space required to support such programs have a lower priority compared to other clinical programs in a general environment of capped clinical resources.

This latter point also is supported by the mix of funding approaches, which suggests that simulation training and education may be of a lower priority in terms of VISN or local medical services (or medical administration) expenditures. These data also support anecdotal comments received by the SimLEARN Steering Committee about the challenges of competing for funds given other clinical priorities within a medical center.

The information on the courses available at VA medical centers was difficult to categorize in a meaningful way other than a gross aggregation of topics at a very high level. This was primarily due to the use of free text in this part of the survey and the varied and somewhat generalized topic descriptions. However, we could conclude that the range of topics was rather limited, focused predominantly on acute medical problems, and there was a lack of coursework focused on Veteran-centric clinical issues. For example, there were no courses related to physical examinations that focus on exposure history-taking, military sexual trauma assessment, post traumatic stress disorder assessment, communication and documentation in advance care planning, or clinical/administrative support for Veterans benefits (e.g., compensation and pension examinations, etc.) despite the clear advantages that a simulated training experience could present. These subjects are not traditionally presented in private sector health care or US medical schools curricula.

Section 5 – Conclusion and Recommendations:

This first national survey, even with its limitations, is an important step in understanding the current state of VHA's simulation training and education and will help define the foundation for a system wide strategic plan for those services. The relative immaturity of VHA simulation programs presents a unique opportunity for VHA to chart the direction for its simulation education, training, and research programs in a manner that ensures system wide resources are identified, directed, and executed in a manner that supports VHA's mission to provide the highest quality, safest care for this Nation's Veterans.

To advance that goal, these data should be used, together with information from known best practices, to identify system wide gaps. This information should then form the basis of a system wide strategic plan for simulation training, education, and research. The strategic plan should identify funding gaps, mechanisms to address those gaps, and an execution plan to quickly move VHA into contemporary simulation education practices.

Future surveys should be expanded to include an inventory of higher cost equipment such as high fidelity mannequins to ensure that strategic planning and national curriculum development takes into consideration the types of technologies actually available at facilities and the funding needs to support those curricula.

Future improvements in the survey instrument will permit more meaningful analysis. The data from this first survey will enable VHA to develop a standard taxonomy to support drop down menus in the automated survey, thereby reducing unnecessary variation resulting from the use of free text fields. Ambiguity in questions can also be reduced through wider field testing of the next instrument to identify areas of varied question interpretation. Expansion of the question set to include more information about the nature and extent of sharing agreements for simulation training and education would be desirable and should include information about both academic affiliates and DoD arrangements. Finally, introduction of the next survey should focus on improved communication with respondents prior to the survey to explain the context of questions and to respond to queries on the meanings of questions.

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