



Simulation can offer clinicians a safer training environment

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ORLANDO, FL – The military is no stranger to skill acquisition when preparing its warfighters and other personnel. Training exercises customized towards potential real-world threats are a familiar way in which the men and women of the armed forces obtain mastery in routine and hazardous tasks and missions. Thanks to the efforts of leading VA clinicians and technicians, health care is no longer different.

A 1999 report by the Institute of Medicine, “To Err is Human,” found that between 44,000 and 98,000 people die each year in the U.S. as a result of preventable medical errors. Simulation is a credible teaching tool for both military and civilian populations to practice their skills in a safe, immersive environment in order to be mission ready and save lives. Just as the military uses simulations to train troops the way they would fight in hostile territory, VA uses simulation techniques to train clinicians the way they would practice in the clinical arena.

Where did health care simulation get its start? In the 1980s, a young man named David Gaba completed medical school and, through his interest in the space program, became aware of how pilots and soldiers trained. Dr. David Gaba is now Director, Patient Simulation Center of Innovation at the VA Palo Alto Healthcare System and Associate Dean for Immersive and Simulation-Based Learning at Stanford University. He is considered one of the founders of health care simulation and defines simulation as a “technique – not a technology – to replace or amplify real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner.”

Extent of training: How in-depth does it go?

Typically, simulation is divided into four categories based on different modalities: standardized patients, screen-based simulation, partial-task simulation and high-fidelity mannequin simulation.

Standardized patients have been traditionally used in the medical and nursing school environment to teach



A participant in the SimLEARN Palo Alto Clinical Simulation Instructor Training Course attaches a lead to a mannequin during a simulation exercise. (Photo by Curt Campbell, Medical Media)

history taking, assessment and physical exam skills using trained actors. Some standardized patients are also trained as “gynecological teaching associates” and are skilled in the art of providing feedback to the student

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examiner while undergoing a physical examination.

Screen-based simulation ranges from online virtual patients that allow for the learner to read case histories and select from a variety of possible clinical responses, to avatar-based virtual worlds that enable providers to work as teams in a real time, web-based environment.

Partial task simulation is often divided into two subcategories depending on the technology of the equipment. Task trainers are anatomical body part mannequins used for student practice. Simple task trainers enable learners to practice skills such as the placement of an intravenous line or chest tube. More complex task trainers simulate high-risk procedures, such as colonoscopy or laparoscopic surgery, using haptic technology that gives the learner a sense of physical resistance and touch feedback similar to what they will experience when performing the procedure in a real patient.

Finally, **high-fidelity mannequin simulation**, sometimes called “simulation theater,” reproduces a real clinical environment, such as an operating room, using life-like mannequins that are capable of breathing, sweating, seizing, blinking, speaking and reproducing heart and lung sounds.

Recently, the field of simulation has begun focusing research on where these modalities can best be applied in the health care setting.

One area is in the application of simulation for education. Schools are using simulation labs to provide opportunities for health professions students to become familiar with procedures, evoke critical thinking skills and work with colleagues as a team when interacting with patients. Surgical programs are requiring the use of simulation to teach laparoscopic skills prior to having the resident perform on a patient. Other programs, such as anesthesiology, are using simulation to train residents to use anesthesia machines and troubleshoot equipment. Emergency medicine and internal medicine programs are teaching skills like lumbar puncture on task trainers and code team management on mannequins. The days of “see one, do one, teach one” are increasingly falling out of favor.



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The field of patient safety and quality improvement is researching ways of using simulation to improve patient care. In obstetrics, simulation is used to allow teams of clinical providers to practice managing high-risk, low-frequency events such as post-partum hemorrhage and shoulder dystocia. Studies have demonstrated a significant reduction in neonatal injury after simulation team training. Other hospital systems are training their physicians and nurses in the placement and management of central lines and demonstrating a reduction in central line associated bloodstream infections

This past year, at their annual meeting, the National Patient Safety Foundation dedicated a plenary session on simulation to showcase how simulation can be used to disclose errors.

Apart from provider training, simulation is being used to test units and workflow within medical facilities. Testing entire systems in a health care organization can lead to the identification of latent safety threats. Prior to the opening of a new hospital or clinic, simulation experts can provide common scenarios to the staff of a certain ward or floor.

For example, simulating a transfer from a patient room to other clinical environments, such as radiology, may reinforce a smooth process or expose hazards that need mitigation. A simulation test by the Armed Forces Global Emerging Infections Surveillance and Response System (GEIS) performed in a new satellite hospital found 37 latent safety threats involving equipment, personnel and resources. Because GEIS used simulation to test the new facility prior to opening, they were able to address most

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VISN 6 nurse educators meet; discuss simulation future

By Brenda French, MSN, CRRN, CBIS, VHA-CM
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RICHMOND, VA – VISN 6 educators recently met at the Hunter Holmes McGuire VA Medical Center for its annual meeting to assess, plan, implement and evaluate the latest and greatest in educational resources in order to determine what could be put into practice at individual VA medical centers.

The group was hosted by VISN 6 Simulation Champion Lenora Joseph, MD, Associate Chief of Staff Education; and by Kristin Windon, Ed.D, Associate Chief of Nursing Services and Education. During this year's meeting, Lygia Arcaro, Ph.D, RN, BC, SimLEARN National Director for Nursing

Programs, spoke to the group of 28 VISN 6 nurses via video teleconference.

The staff was able to interact and share information as it relates to simulation, including information brand new to many of them as they learned about SimLEARN and its program structure, mission, vision and recent accomplishments. The group was excited to learn about "Medical City" and all of the innovation planned for the area, including the new Orlando VA Medical Center (VAMC) in Florida.

Many of the educators are embracing computer-based learning and simulation in their facilities. Simulation was one major topic on the agenda, followed by post-meeting discussions as attendees began to share simulation scenarios and discuss the many different ways educators can involve nursing and medical staff.

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of these potential threats prior to the arrival of patients.

A popular attraction and well-known simulation event called "SimWars" has been featured at meetings like the International Meeting on Simulation in Healthcare and meetings of the American College for Emergency Physicians. These team competitions use both low- and high-fidelity mannequins in patient scenarios where competitors must work through the clinical problem in a fixed amount of time. Each team is evaluated against predetermined criteria encompassing the entire simulation process.

There are "SimWars" played by accomplished health care professionals and students alike

(www.vimeo.com/11084119), and scenarios may have components of team training and communication principles.

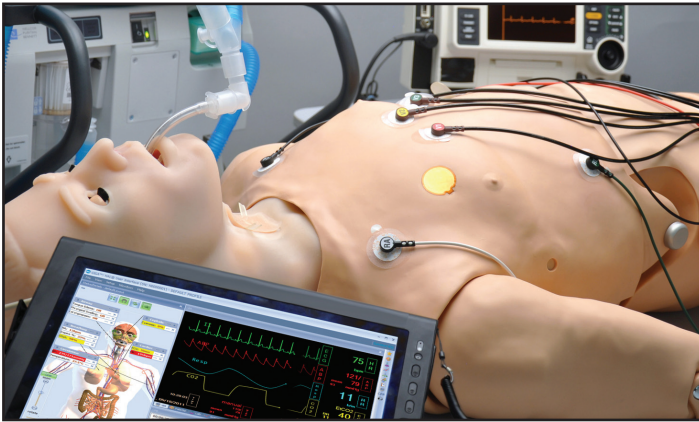
The applications described above are only a few ways simulation is being used in health care. Studies are increasingly demonstrating the effectiveness of simulation.

What is the future of simulation in health care?

As technology continues to advance, simulation will continue to provide an opportunity for the health care provider to practice procedures and become familiar with the equipment. Answers to questions about the functioning of the equipment, techniques or approaches to common and not-so-common

surgical procedures, and the ability to fill in knowledge gaps if an error is made, can be accomplished through the use of simulation well in advance of encountering a live patient.

Boards controlling re-licensure of health care professionals are talking about using simulation in their decisions to define what procedures will need to be demonstrated prior to renewal. Percentages of time students can use simulated patient care activities in lieu of actual demonstrated live practice is being mandated by some licensing bodies. Standards and guidelines will continue to emerge from simulation associations. ❖



HAL®S3201 is displayed in Medical Intensive Care Unit (MICU) bed No. 10 after his arrival at the Minneapolis VA Medical Center. (Courtesy photo)

Simulation supports tele-ICU training

*By David J. Adriansen, Ed.D, NREMT
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MINNEAPOLIS – Meet “Hal.” HAL®S3201 arrived in November to its new home in Minneapolis VA Medical Center Medical Intensive Care Unit (MICU) bed No. 10. Its mission is to help in the training of Telemetry-ICU providers using life-like patient responses. It has the ability to be connected to real patient monitors, like 12-lead ECG monitors and pulse oximetry equipment. It also sweats, breathes and even exhales carbon dioxide in an effort to enhance the student’s experience.

The Minneapolis VA Medical Center is the first hospital in Minnesota with Telemetry-ICU beds, and Veterans Integrated Service Network 23 (VISN 23) is the first VISN in VA to have a network Telemetry-ICU System.

The facility is led by Robert Bonello, MD, VISN 23 Telemetry-ICU Medical Director and VISN Simulation Champion. When complete, approximately 75 ICU beds will be monitored from a central monitoring station in Minneapolis.

VHA’s SimLEARN program is leading the initiative to place VA as the nation’s leader in health care simulation education. As part of its mission, program staff is supporting Telemetry-ICU, women’s health, surgical safety and the Resuscitation Education Initiative (REdI) via simulation education, training projects and equipment. Five high-fidelity mannequins were purchased to support VISN Telemetry-ICU Projects, and Hal was obtained to assist with Telemetry-ICU training from its base in Minneapolis.

Hal will be integral in testing systems and equipment and training Telemetry-ICU staff from its MICU bed. ICU staff will interact with Hal in the MICU and with Telemetry-ICU providers monitoring Hal in the MICU bed. Another benefit is Hal’s availability for in-situ (on site) multidisciplinary training within the

***It sweats, breathes and even exhales
carbon dioxide in an effort to
enhance the student’s experience.***

MICU for physicians, nurses, respiratory therapists, anesthesiologists and others.

For more information on Hal and VISN 23 simulation education, please contact the author at (612) 306-8232. ❖

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One attendee, Chan Park, MD, was introduced to the group and has been hired to assist with simulation at the McGuire VAMC. Future plans for VISN 6 nurse educators include using simulation in mock code and rapid response

training for all VISN 6 sites. One goal, as they plan to continue to utilize as many teaching and learning strategies as possible, is to enhance the ongoing professional development of all of the nursing staff. The possibilities seem many and varied, with the opportunity to

develop interprofessional training as well.

The VISN 6 educators represented Asheville, Beckley, Durham, Fayetteville, Hampton, Richmond and Salisbury VA Medical Centers. ❖

Connecting the dots ... or: How to build a regional simulation program

By Kelly Goudreau, DSN, RN, ACNS-BC
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PORTLAND, OR – Veterans Integrated Service Network 20 (VISN 20) is moving toward creating a regional simulation program. A proposal was developed on behalf of the Northwest Network Education Committee (NNEC) that would build and fund a simulation program to reach all VISN 20 facilities.

VISN 20 leadership provided funding for each facility to receive core simulation equipment, including a high-fidelity mannequin and miscellaneous task trainers for

low-fidelity simulation, such as IV arms, catheterization models and central line catheterization mannequins for those areas with resident training programs. Additionally, consultant services will be procured to assist the development of the trainers at each facility, as well as the overall development of policies and procedures to guide the VISN-wide program.

The program was funded with no allocation of additional personnel, so the need to identify local champions at every facility became a top priority. The NNEC, composed of all VISN 20 facility designated learning officers and other support personnel, assisted in identifying the local champions who would be the points of contact at each facility. The facility champions have, in turn, identified a team of

champions at their facilities who are now in the process of learning how to use the mannequins and the equipment, develop scenarios, debrief staff and evaluate the overall program.

The team has discussed the use of the interprofessional core competencies as the conceptual framework for an evaluative measure by which all scenarios, regardless of content or level of facility complexity, can be assessed. This single measurement factor will assist program evaluation consistency and demonstrate some measureable outcomes that will allow for determination of return on investment for the overall program.

VISN 20 has begun the journey of connecting the dots on its regional map and in its simulation program. ❖

REdI welcomes new staff

ORLANDO, FL – This fall, three new health education specialists were welcomed to the Resuscitation Education Initiative (REdI) program offices in Orlando.

Bob Kraemer, RN, BSN, CCRN; Tracey Robilotto, RN-BC, MSN Ed.; and Peggy Civiletti, RN, ADN, BHA, CCRN will be helping to implement REdI, which is a new initiative within the SimLEARN program. REdI provides critical train-the-trainer support to staff at VA Medical Centers in accordance with American Heart Association guidelines. Those trained staff members can then provide clinical training to large numbers of medical center clinical staff, as well as offer cardiopulmonary resuscitation (CPR) training to non-clinical employees.

“Bob, Tracey and Peggy are great additions to the REdI program and will be integral as the program



rolls out,” said Mary Fakes, RN, REdI program manager. “The REdI program is a national program to standardize, document, track and monitor Advanced Cardiac Life Support, Basic Life Support, and Advanced Trauma Life Support throughout VHA. This program will greatly enhance the care for our Veterans, employees and communities.” To learn more, visit www.simlearn.va.gov/redi. ❖

Program offers 'seamless transition' from student to professional

By Brandie Strange, BSN, RN

Simulation Coordinator, VA Nursing Academy

Oklahoma City VA Medical Center

OKLAHOMA CITY – In July 2008, the Oklahoma City VA Medical Center and the University of Oklahoma College of Nursing (OUCN) received funding from the VA Nursing Academy to implement the *Transition to Professional Practice Program*. This program was conceptualized as a seamless transition for would-be RNs from the beginning nursing student (junior year) through the end of the first year of professional practice as a registered nurse. The Nurse Residency Program (Phase IV) builds on the traditional orientation, and

includes didactic and web-based content, simulation exercises and clinical experiences.

In June 2009, the partnership received additional funding from the Department of Veteran Affairs via a Nursing Education Innovation Infrastructure Support Grant. The funding was used to purchase additional simulation equipment, including a high-fidelity METI iStan Patient Simulator. In 2010, a grant – funded by the Oklahoma Hospital Authority – was awarded to create a state-of-the-art, critical-care simulation lab at the OUCN that mirrors a VA suite.

In an innovative 12-month simulation program, residents receive instruction in advanced pathophysiology one month, followed by a simulated experience related to the same topic in the next month of residency. The simulations are based on the patient population of the facility. It

“Sim is a great opportunity to practice real-life skills.”

makes things “surprisingly realistic (but) without all the anxiety,” according to resident Alex Vinh.

In the weeks between advanced pathophysiology and simulation, residents participate in a group discussion of posted articles related to an advanced pathophysiology topic. This discussion occurs in a private discussion board on Facebook with the simulation coordinator and the individual group.

“I had a patient that was in cardiogenic shock, and I knew what to do because of simulation. I had seen it before, a month ago in the lab, and transitioned what I learned in there to care for my patient,” said resident Katie Grasham.

This program has garnered positive feedback and is currently part of a study to determine if clinical competence and critical thinking are improved with simulation.

According to resident David Schulze, “Sim is a great opportunity to practice real-life skills.”

The first group to complete the full 12 months graduated from the Nurse Residency Program in August 2011.

For more information about this program, go to www.va.gov/oa/vana/ or www.va.gov/oa/archive/RFP_Post_Bac_Residency.pdf ❖



(Top photo, bottom left, clockwise) Nurse residents Pat Nguyen, Taylor Ronck, Debra Sadler, Angela Sateren, Joe Tran, Heather Taylor, Lindsey Warden, David Schulze, Alex Vinh, Kelsey Schrooten, Shelly Ast and Kaci Wells. (Courtesy photos)

(Left to right) Alex Vinh and David Schulze practice resuscitating a mannequin.

Roseburg open house opens simulation doors for staff

*By Lygia Arcaro, Ph.D, RN, BC
SimLEARN National Director,
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ROSEBURG, OR – Seventy-five individuals from 21 different departments, including non-clinical staff, attended an open house at the Roseburg VA Medical Center here in August.

Mannequins took the place of human patients as staff members demonstrated skills in simulation to the visitors. After one 20-minute simulated malignant hypothermia scenario, most staff seemed to temporarily forget they were interacting with a mannequin.

“One of the housekeepers who

attended the demonstration was so impressed by what she saw that she requested a session to evaluate their own self-performance with terminal cleaning,” said Nola Norris, RN.

Ms. Norris is the Veteran Health Education and Simulation Lab Coordinator who assists with both the hands-on simulation and the behind-the-scenes administrative work. Roseburg has unit simulation champions and expert clinicians assisting with writing the scenarios.

Using full-length mannequins and some task trainers, scenarios at the medical center ran for two days. Employees were able to view how to insert an IV line, watch a simulated urological procedure and observe operating room scenarios. Some of the equipment on display was programmed for sound

changes, such as heart and lung sounds, that could be heard with a stethoscope on the mannequin’s chest. Roseburg employees can go to the Simulation Lab to learn a procedure and practice it prior to their established program “go-live” date.

Debriefing was an active part of the open house. After a simulation was completed, the participants identified gaps and then corrected their performance. Ms. Norris commented on how debriefing really “hit home” with some of the staff.

“Simulation has shown it can help deliver better care and allow the staff opportunities to gain confidence in their practice,” she said. ❖

Development of the Minneapolis VA Simulation Center -

A focus on patient safety

*By David J. Adriansen, Ed.D, NREMT
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MINNEAPOLIS – VHA provides health care services to more than eight million Veterans each year. Making sure they receive the highest quality of care is essential. To help do this, Robert Bonello, MD, Veterans Integrated Service Network 23 (VISN 23) Telemetry-ICU medical director and VISN 23 simulation champion, sought to create a network clinical simulation team training strategic initiative for the purpose of improving team training, communications and patient safety. His proposal was approved, and this became the genesis of what would become the VISN

23 Simulation Program.

Almost simultaneously, VHA had created the Simulation Learning, Education and Research Network program (SimLEARN), with a goal for VHA to become the nation’s leader in health care simulation education. VISN 23 already owned seven high-fidelity mannequins and had 20 staff members completing formal simulation instructor training, so the network was primed and ready for the quick advances about to come in VA simulation training.

In December 2010, the first VISN Simulation Program Coordinator position description was developed by Dr. Bonello. Duties include managing the growth of the Network Simulation Program, consisting of nine facilities with two coordinators each, and a Network Clinical Simulation Committee. In Minneapolis, the coordinator also manages the 1,500 square foot Minneapolis VA Simulation Center. Its mission is multidisciplinary and

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interprofessional simulation education to improve patient safety and team communication.

Besides training in the Simulation Center, the Minneapolis VA Simulation Center has the ability to perform in-situ simulation training in the Medical Intensive Care Unit (MICU), patient wards, operating room and the new URENTO Simulation Lab (urology, ear nose and throat, and orthopedics). Training capabilities include laparoscopic box training, surgical knot training, joint injections, code blue, sedation and “door-to-balloon time” training, anesthesia, pulmonary, cardiology and new employee training.

About 18 percent of Veterans are women. With this in mind, SimLEARN and VISN 23 are leaning forward with Women’s Health Emergency Care Series training via simulation.



David Adriansen, Ed.D, manager, Minneapolis VA Simulation Center and VISN 23 simulation program coordinator, points out features of a mannequin during a recent open house at the center. (Courtesy photo)

(Pictured left and below) An assortment of actual medical equipment and mannequins at the Minneapolis VA Simulation Center provide a significant level of realism for VHA staff participating in training. (Courtesy photos)



Breast and pelvic exam trainers are now available to start training for providers. Surgical safety and Telemetry-ICU training are also being supported via simulation with high-fidelity mannequins that can breathe and provide lifelike responses.

On Oct. 21, the Minneapolis VA Simulation Center hosted an open house to celebrate completion of an integrated audiovisual system installation, including a “SMART Board,” and to display the mannequins and task trainers acquired to support a multidisciplinary simulation program. Among the attendees were local college and HMO hospital chain simulation center staff, local military representatives, University of Minnesota residents and VA employees.

The arena of medical simulation training is continually growing and, with its network of nine facilities, VISN 23 is helping lead the way toward VHA becoming the nation’s leader in health care simulation education and improving the care our nation’s Veterans receive.

For more information, please contact David Adriansen at (612) 306-8232 for all questions regarding VISN 23 simulation training. ❖



SimLEARN Newsletter is a product of the Veterans Health Administration National SimLEARN Center. The program’s operations and management is conducted by the Employee Education System in close collaboration with the Office of Patient Care Services and the Office of Nursing Services. For more information, visit www.simlearn.va.gov or e-mail VASimLEARNGeneralInformation@va.gov.