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Enhancing Clinicians' Communication and Teamwork Skills Through the Use of High-Fidelity Simulators

By Joe Murphy, M.S., A.P.R., NCPS public affairs officer

Three NCPS programs use high-fidelity simulators to improve participants' teamwork and communication skills during training sessions held around the nation: Medical Team Training (MTT), Nursing Crew Resource Management (NCRM), and Patient Safety Curriculum for Faculty and Residents.

Simulation is used to present a problem as authentically as possible. Participants are required to respond to a training scenario as they would to a real event.

The use of simulators can improve the participants' ability to learn and enhance teamwork. For instance, students engaged in simulation training had higher overall scores and retention rates than those trained through more traditional means.¹ When working in teams, as is routine during simulation training, students also learned to rely on one another and to collaborate.²

Debriefing has also been recognized as an important aspect of training with simulators:

Reflection during debriefing allows the student to critically think through the lived experience. Although simulated experience will never be exactly the same as patient care, it allows the student to experience a critical event before they are responsible for one in a working environment.³

In addition, the use of simulators allows participants to experience a crisis situation before it occurs and learn from their collective response.

NCPS Programs Involved

The idea for MTT came from the realization that many safety issues in health care are related to miscommunication and the failure of groups to operate as effective teams.

The aviation industry recognized this problem 30 years ago and developed Crew Resource Management (CRM) to address communication failure in the cockpit. CRM is defined as using all available resources –

information, equipment, and people – to achieve safe and efficient operations.

NCPS began developing the MTT program in 2003. Phase I focused on operating room and surgical intensive care unit staff. It was rolled out in March 2005 and ended June 2009. Phase II began in July 2009, extending the program to non-operating room clinical areas and adding training on high-fidelity simulators.

MTT staff received training in the use of simulators, developing scenarios, and debriefing simulation sessions through a program developed by David Gaba, M.D., an anesthesiologist at the VA Palo Alto Health Care System, and associate dean for Immersive and Simulation-Based Learning, Stanford University School of Medicine.

The NCRM program began in 2010 and targets nurses at the front line, but is multidisciplinary and open to all members of the health care team. It consists of five learning modules that are taught using interactive on-site learning sessions. Topics include: team-building; assertive communication; situational awareness; reducing distractions; and, countering fatigue. A sixth and final module consists of team practice in managing specific clinical scenarios using a high-fidelity patient simulator.

The Patient Safety Curriculum program was first piloted in 2003 and is focused on faculty development workshops for those training residents, in to which high-fidelity simulation was added in 2010. The curriculum program provides content and methods that introduce patient safety concepts into early medical training, such as the importance of human factors engineering.

It is particularly significant to health care in the United States that NCPS conduct this effort at the VA. Each year, more than 80,000 health professionals are trained in VA medical centers. Nationally, more than half of the physicians practicing today had some of their professional education while in the VA health care system.

Creating the Right Environment

“There is nothing more powerful than having to perform while being observed,” said Gary Sculli, R.N., an NCPS program manager who developed and is implementing NCRM on nursing units throughout the VA. “During simulations, you must manage clinical situations, you’re demonstrating skill and knowledge; you’re actively involved, not just sitting there and watching things happen.”

For simulation training to be effective in conjunction with NCPS programs, performance must also be balanced with the knowledge that participants are not being judged.

“There are very few obstacles to simulation training; however, occasionally in multi-disciplinary training, participants can feel like they are ‘in the hot seat,’” noted Douglas Paull, M.D., a VA surgeon and director of NCPS’ Patient Safety Curriculum program. “They believe that if they fail to take decisive action during a crisis that occurs in a simulation, it could be viewed by their peers as incompetence.”

Paull said he and his NCPS colleagues work actively to dissuade participants of such concerns. “We realize that practice and self-reflection is the guide to improvement,” he said. “Simulation gives us an opportunity to practice managing difficult events, make mistakes among our peers, and have open and frank discussions about how the errors occurred and could be prevented.”

“Our goal is to create an environment where we make it very clear, ‘You’re not being tested. You’re not being checked. You’re among friends. What we do here stays here,’” said Sculli. “So what should unfold is a situation which allows participants to experience a clinical event in real time – where events play out and mistakes may be made without judgment from peers or the risk of harming a real patient.”

Sculli is also a former airline pilot who trained other pilots through the use of flight simulators.

“When you are in the aircraft

simulator, you *are flying* that aircraft,” he said. “You start getting involved in that situation. It feels real. You have all the emotions, all the operational pressures. You are as close to the real operational environment as you can possibly be without actually being there.”

Sculli said that is what it can be like with high-fidelity patient simulators. “The nurses we train feel that pressure and involvement in real time, with real forces acting on them, and so it is great practice for them.”

Creating a realistic, non-judgmental training environment is based on principles fundamental to VA’s patient safety efforts: developing a culture of safety based on prevention, not punishment. “We know that most errors aren’t due to an individual’s failure, an individual’s action or inaction, they are usually due to a teamwork or communication failure; or, to a flaw in the care system,” said Paull.

Enhanced Learning

In the early days of MTT, role-playing was used to involve attendees in the learning sessions and provide examples of effective and ineffective communication techniques.

The scripted role-plays were performed by NCPS staff members and followed by a discussion about the pros and cons of the presentation, which essentially acted as a debriefing session.

“What we are doing with simulators is increasing the experiential portion of the learning,” said Paull. “Instead of just observing something and talking about it, people have a chance to get involved.”

Because high-fidelity simulators are programmable, an exercise can include a wide range of potential problems, such as an adverse reaction to medications with changes in heart rate and blood pressure.

“The simulators can be programmed to have cardiac arrest or respiratory failure; they can be intubated or extubated; they have breath sounds and bowel sounds. They really mimic an actual patient – they speak, they cough,” noted Paull.

But the detailed ability of a high-fidelity simulator to mirror a patient’s condition is not the focus of the NCPS training sessions.

“For instance, many schools of nursing have simulators and are using them to test for technical skill competencies,” said Cheryl Mitchell, R.N., an NCPS nurse coordinator. “They are teaching participants how to start an IV or do an assessment. What we are teaching are communication skills: How to deal with different types of scenarios using real life situations that occur every day, to include distractions.”

Mitchell began as a member of the MTT group and is now assisting with NCRM Module Six, in which simulators are used during scenarios conducted over a two-hour training session.

“That allows all of the attendees, normally 10 to 15 people, to be involved in the simulation,” she noted. “And we tell people right from the start, ‘You are all going to be active participants.’”

One Part of the Experience

Regardless of which NCPS program is involved, high-fidelity simulators are only one part of the educational experience. Numerous communication and team building topics are covered before participants become involved in a simulation exercise.

“Our patient safety curriculum program includes a significant amount of didactic lecturing,” said Paull. “We discuss a wide-range of concepts, including patient safety basics, adverse events, CRM and situational awareness.”

The training also emphasizes the importance of using checklists, briefings and debriefings. Another important communication technique is also presented during the training: “Situation-Background-Assessment-Recommendation,” commonly known as SBAR, which is used to provide a framework for communication between members of a health care team about a patient’s condition, especially critical ones, requiring a clinician’s immediate attention and action.⁴

“A number of communication tools and techniques have to be explained

because there are invariably some participants who are not as aware of these tools and techniques as others,” he continued.

Another tool that Sculli discusses during NCRM learning modules and incorporates into simulation training he terms “graded assertiveness.”

“We want members of the team to bring information to the leader, and not be shy about it,” said Sculli. “It may start with a very simple and direct statement. If that doesn’t work, we want them to escalate that to a more formal and assertive statement. If that doesn’t work, we want the subordinate or person bringing the information forward to think, ‘Maybe now I need to make a phone call to somebody higher up in the chain to get resolution.’”

It’s a two-way street, however: Team leaders should also create an environment where other clinicians feel comfortable bringing information forward. “We want them to demonstrate specific leadership behaviors,” Sculli continued, “and that can mean simply extending a greeting to the team at the start of a shift and making an effort to set an effective interpersonal tone; or, it could be briefing the team and openly inviting participation by asking others to ‘speak up’ if they have a concern.”

Making it Realistic

Effective training on a high-fidelity simulator must be based on a realistic scenario, which often means one focused on a deteriorating patient and includes distractions.

The distraction could be as simple as a beeper going off or the appearance of an upset family member. The response is key, said Paull: “Do they use the standardized communication techniques that they learned in the didactic lecture to overcome these kinds of obstacles?”

Paull provided an example he has used in past scenarios: A resident deciding whether or not to call the attending physician. “What if we make the attending on the other end of the phone grumpy in the middle of the night and not eager to come in right away? How does the resident deal with that?”

said Paull. “We teach a very straight forward, standardized way of dealing with a situation like this that engages providers and ensures the patient gets early and timely care.”

Sculli noted that while the goal is to strive for clarity through standardization, each team situation has subtle differences. “There is the text book way things should go, but when humans are involved and simulations play out, things can get interesting – fast. And that’s OK, we want to emulate real life,” he said. “To me, this is the essence of the simulation experience.”

Communication is often the source of the problem when teams start down the wrong path. “We want the team to recognize the subtle indicators, or sign posts, that say, ‘Maybe something is wrong and we’re not seeing it.’ And we want somebody to speak up about it,” Sculli said.

“Another example would be when two things that should agree don’t agree. Let’s say we have a patient whose blood glucose value is within the normal range; yet, that value isn’t matching the patient’s presentation,” continued Sculli. “We want somebody to recognize that two things that should agree don’t, and start talking about it with the team.”

“I think this is really the key: Creating an environment where everyone on the team, if they have a concern, feels comfortable speaking up,” said Paull. “Because at the end of the day, most of the errors that lead to patient harm are communication and teamwork errors. And most of the time, someone on the team had information that would have either prevented the error or mitigated the effects, had they spoken up.”

Ending on the Right Note

For Mitchell, the capstone of a training session is the debriefing session that follows the simulation. It’s a time used to reflect on the various communication techniques that were presented and how best the teams used them. “The debriefing session is extremely important because we want the participants to feel there isn’t necessarily a right or wrong way,”

she said. “We are not testing technical skills. We are putting team members in situations that occur every day and asking, ‘How can you work through this?’ The simulation lab is a great place to practice how to do it.”

Her sentiment is echoed by Lisa Mazzia, M.D., NCPS MTT physician educator. “Debriefing is the key,” she said. “As facilitators, during the debrief our role is to help each group of participants recognize the importance of teamwork and communication skills.”

“Adults learn by experiencing rather than passively receiving,” she continued. “And since a simulation by nature is an exercise, participants readily grasp what they believe went well, or not so well, and are eager to discuss it.”

Participants have also shown great interest in the scenarios, too, according to Mitchell. “Many really get into the roles, often times asking us, ‘Can I play the part of...’ And we try our best to accommodate them,” she said in closing.

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Nursing Crew Resource Management (NCRM) Update

Gary Sculli, M.S.N., A.T.P., NCPS program manager

In 2010, NCPS partnered with the Office of Nursing Service to launch Nursing Crew Resource Management (NCRM). The program applies concepts from aviation's Crew Resource Management (CRM) directly to front-line nursing care.

In the early 1980s, CRM was implemented in the airline industry to address operational mishaps and significant loss of life resulting, not from mechanical malfunctions, but human failures. Today, the airlines enjoy an exemplary safety record, due in large part to the implementation of CRM methodologies. The problems in health care and, certainly on nursing units, are not unlike problems that plagued the airlines decades ago. For example, the Joint Commission sentinel event database indicates that communication failures are a root cause in more than 60 percent of the cases. Data available in the NCPS Patient Safety Information System indicate a similar finding: Ineffective communication has been identified in over 60 percent of all VA cases studied. Such communication and teamwork failures likely involve front-line nurses: In fact, a 2009 VA Patient Safety Culture Survey showed that front-line nurses scored significantly lower than VA employees in several key areas related to communication and teamwork.

Communication isn't the only challenge. Though nurses use specialized knowledge to guide patient assessments, even in the best of circumstances they are subject to the natural cognitive limitations that come with being human. When one adds high-task load, interruptions and distractions commonly experienced on nursing units, these limitations are accentuated, increasing the risk of harm to patients. For instance, in 2010 the United States Pharmacopeia sited distractions as a contributing factor in 45 percent of medication errors in hospitals and health systems.

Fourteen nursing units in nine VA facilities received NCRM training as part of the initial pilot, which included a six-hour learning session and two-hour clinical simulations using high-fidelity patient simulators. Learning session topics included improving teamwork, assertive

communication techniques, and managing operational stressors to support situational awareness. Briefings, debriefings, and the development and implementation of clinical checklists were also stressed. The simulation training gave nurses the opportunity to immediately put into practice the CRM tools and concepts covered in the learning session.

Each participating nursing unit also implements a CRM-based unit project. NCPS provides monthly coaching calls with staff to assist with implementation. While the initial learning and simulation sessions mark the program's start, the real work begins when nurses implement their unit-based project. The projects address a patient safety challenge related to teamwork, communication and task load. The goal is to permanently change how the unit implements patient care. Projects have included: using checklists for routine and critical tasks, such as medication administration, moderate sedation, and assessment of an unstable patient; registered nurse briefings to others on the care team, such as nursing assistants; and, using vests and signs to reduce interruptions during medication administration.

A significant component of NCRM is the "recurrent" or "refresher" training feature. One year after the initial training and monthly coaching calls, NCPS returns to conduct a review of CRM concepts and conduct a clinical simulation. The original units involved will complete all training in the summer of 2011. Additional nursing units have also enrolled in the program and have begun the training cycle.

Nursing units change rapidly, often experiencing staffing shortages, turnover, leadership changes, and high workloads. Implementing and sustaining NCRM amidst these challenges can be difficult: A few units could not sustain, while others are performing extremely well. NCPS remains committed to helping units succeed.

While 99 percent of participants enjoyed the training experience and found it worthwhile, a more important measure of the program's value is whether nurses viewed NCRM tools and concepts as being directly applicable to clinical prac-

tice: Ninety-seven percent of the participants felt they had learned new skills that could be applied to work assignments.

Another tool used to assess the program's impact is a Nursing Questionnaire (NQ), which measures staff attitudes about teamwork, communication and safety culture. The NQ is administered at the first training, after six months, and at one year. Initial results are promising: At the six-month mark, virtually every measure of the nursing teamwork climate, patient safety climate, and job satisfaction improved. The most dramatic improvements in nursing communication were directly related to patient safety. For example, following initial training, 60 percent of respondents agreed with the statement, "It is difficult to speak up if I perceive a problem with patient care." Six months later, only 20 percent agreed.

As units implement NCRM projects, a variety of metrics are being examined. For example, several sites have implemented a clinical version of aviation's sterile cockpit rule, by wearing vests and using signs that warn others not to disturb or interrupt a nurse administering medications. These units are measuring the number of distractions pre- and post-implementation; the corollary being that fewer interruptions equate to fewer medication variances. One site using these techniques found a statistically significant reduction in the number of distractions during the medication pass; and, a significant reduction in the time required to complete medication delivery (from 67 to 50 minutes).

Other sites implementing nurse team briefings have also discovered promising results. One unit is implementing a briefing checklist to improve communication between registered nurses and health care technicians, and reports increased compliance with skin assessment protocols and glucose monitoring. Related patient outcomes (i.e., hospital-acquired pressure ulcers and hypoglycemic/hyperglycemic episodes) are currently being analyzed.

For additional information, VA employees can visit the NCRM SharePoint site via the NCPS Intranet site.