TOPICS IN PATIENT SAFETY®

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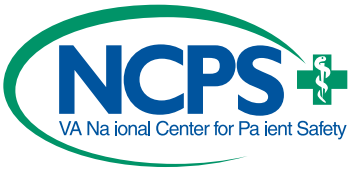

Contents

Pages 1 and 4:
New Moderate Sedations Toolkit for Non-Anesthesiologists

Page 2 and 3:
Medication Reconciliation: The Patient Behind the List

Page 3:
'Medical Team' Approach Reduces Operating Room Mortality Rates

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New Moderate Sedation Toolkit for Non-Anesthesiologists

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

The VISN 6 Patient Safety Center of Inquiry (PSCI), Durham, N.C., in partnership with Duke University Medical Center staff, has developed a comprehensive toolkit to support non-anesthesiologists who conduct moderate sedation.

Moderate sedation is the technique of providing medication to relieve anxiety and discomfort during medical procedures. In contrast to general anesthesia where patients are completely unconscious, patients receiving moderate sedation are semi-conscious but comfortable.

Approximately 160,000 procedures involving moderate sedation are preformed annually at VA medical centers.

"Current training requirements for moderate sedation at the VA focus heavily on the Advanced Cardiac Life Support certification and management of serious adverse events," said Atilio Barbeito, M.D.[1]

Barbeito is an assistant professor of anesthesiology, Duke University Medical Center, and staff anesthesiologist, Durham VA Medical Center.

"As anesthesiologists, we thought we could improve the quality and safety of moderate sedation procedures by educating teams on other aspects of the process that aren't taught as often," Barbeito continued, "such as pre-procedure evaluation, patient selection, airway management, pharmacology and physiology. We also wanted to emphasize teamwork and communication skills during crises."

According to Jonathan Mark, M.D., his colleagues also saw a much larger opportunity. "The idea of being able to develop something that could be used VA-wide was right there," he said. Mark is chief, anesthesiology service, Durham VA Medical Center, as well as professor and vice chairman, department of anesthesiology, Duke University Medical Center. "As medical educators, we're interested in quality improvement," he added. "We settled on this problem area as one where we had familiarity and one that was really important."

Mark learned about the PSCI program some years ago, and applied to NCPS for funding for the project. PSCIs have been managed by NCPS since its establishment and are an integral part of the patient safety program. To be successful, a PSCI is expected to develop, disseminate and implement clinically relevant innovations that improve patient safety in VA medical facilities.

The Moderate Sedation Toolkit

The toolkit consists of a curriculum, study guides and cognitive aids[2], all based on standard, well-defined content familiar to anesthesiologists and nurse anesthetists around the nation.

"Most of the information in these materials can be found in standard anesthesiology textbooks," said Mark. "So there is a scientific basis that supports all the information in the toolkit, and it would be considered common knowledge in anesthesiology."

The study aids and cognitive aids will be laminated and are intended to be posted at sites where moderate sedation is being performed throughout each VA medical center. These should serve as quick reminders for all clinicians working in these locations.

"Should sedation complications arise, a bedside clinician may access these clear, concisely written, and easily understandable cards as an immediate reference on what to do," said Alberto Bonifacio, R.N., PSCI program manager, Durham VA Medical Center. "Cognitive aids such as these are helpful in that you don't have to rely solely on your memory in critical situations."

In addition to these materials, the moderate sedation toolkit includes training scenarios for facilities that have access to high-fidelity human simulators. "We created simulation cases that represent the most common and potentially life-threatening complications that clinicians who perform moderate sedation should recognize and know how to handle," said Mark. Examples include problems that can occur with elderly, medically compromised, or morbidly obese patients.

"The cases we created take the doctors and nurses through predictable problems," he continued. "You see how they handle them and then most importantly, you debrief afterwards, discuss alternative methods for patient management and how the issues might be handled better."

Continued on page 4

Medication Reconciliation: The Patient Behind the List

By Erin Y.N. Narus, Pharm.D., R.Ph., NCPS pharmacist

Many health care professionals remember *reconciling meds* before the term "medication reconciliation" came into vogue. Since the term's inception, it has continued to mature and further contribute to our understanding of successfully managing patients' medication information by spawning innovative research.

Still, foundational tasks persist – taking comprehensive medication histories, educating the patient, and comparing inpatient medication lists with home medication lists and discharge medication instructions. It seems simple enough, but ensuring consistency and quality in a large health care system can be daunting, especially one as large as the VA, which provides health care to more than five million Veterans annually.

As you reflect on how medication reconciliation fits into the safety and quality of care provided at your facility, it may be useful to take a step back, place yourself in the shoes of the patient, and put things in perspective. Think about the last time you were at a clinic visit for yourself or a loved one. You may have had the opportunity to see a medication reconciliation process in action. What did it look like?

- Were you asked or expected to bring a written list of your medications from home?
- Were you given a list of medications the clinic thought you were taking when you checked in? Were you asked to review the list and make comments?
- Did a health care professional compare these medication lists? Did they find differences? How did the health care team resolve the differences?
- Did you leave your clinic visit with a clear understanding of what medications you should be taking? Were individualized instructions written down? Printed out?
- Did you know what your responsibility was as a patient with this list – keeping it current, sharing it with other doctors, pharmacies?

If your experience was in the private sector, how did your answers to these questions compare with how the medication reconciliation process looks to the Veterans at your VA facility?

New Directive

To evaluate and guide the VA in answering this last question, the Health Systems Committee chartered the VA Medication Reconciliation (MedRecon) Task Force in December 2009, led by Maureen Layden, M.D., M.P.H., director, VA Medication Reconciliation Initiative.

The task force was charged with defining MedRecon for the VA and drafting a national directive (anticipated release spring 2011). The primary purpose of the directive is to guide VA facilities in delivering quality medical care by successfully managing Veterans' medication information.

Since the Veteran or caregiver are the only individuals who really know *which* medications the Veteran is taking and *how* they are being taken, the task force deemed it is critical that the VA:

- *Empower Veterans* to maintain an accurate list of medications that is shared at each visit (tools such as MyHealth*e*Vet, the Blue Button, the Daily Plan®, and others help make this possible) [1]
- *Engage Veterans* to share this personal medication list
- *Ensure health care teams* recognize the role of the Veteran in the medication information management continuum
- *Employ processes* to obtain, compare, educate, and communicate Veteran-specific medication information
- *Embrace Veterans' rights* to participate in decisions regarding their care

While the task force worked toward this end in the drafting of the directive, The Joint Commission (TJC) further supported this idea in their recent pre-publication release of National Patient Safety Goal NPSG.03.06.01.[2] By cross-referencing select standards (Table 1), TJC suggests that a healthy medication reconciliation process reaches beyond the NPSG. The VA MedRecon Directive will take this one step further by pointing to additional related TJC standards that show the universal nature of this process. The interdependency of the NPSG and the standards helps to bring home the point that *medication information management* is the responsibility of the "village," not a single individual or profession.

In the end, it is the hope that the phrase *medication reconciliation* dissolves from the vernacular of the health care system. Not that we should discard what we have learned, but with the dissolution of this phrase should come the integration and persistence of the strong practices that aid us in successfully managing Veterans' medication information across the continuum of care. When that day happens, we shall all celebrate that which will have become "ordinary."

Notes

1. Examples include those available to Veterans: MyHealth*e*Vet (http://www.myhealth.va.gov/) and the Blue Button, which allows Veterans to download their personal health information from their My Health***e***Vet account (http://www.va.gov/bluebutton).
2. TJC article on the pre-publication release of NPSG.03.06.01: Reconciling medication information: http://www.jointcommission.org/npsg_reconciling_medication

Table 1: VHA Medication Reconciliation Directive Cross-Reference

The Joint Commission NPSG.03.06.01 *Relevant Joint Commission Standards*	VHA Medication Reconciliation Directive *Related Joint Commission Standards and VHA Directives*			
MM.05.01.01 EP11	LD.03.06.01	RI.01.01.01	PC.02.01.05	MM.01.01.01
MM.06.01.03	LD.04.01.05	RI.01.02.01	PC.02.02.01	MM.05.01.01
PC.04.02.01	LD.04.01.07	RI.01.06.05	PC.02.03.01	MM.05.01.11
PC.02.03.01	HR.01.02.07	RI.02.01.01	PC.04.01.05	MM.06.01.01
PC.04.01.05	HR.01.05.03	IM.01.01.01	PC.04.02.01	MM.06.01.03
HR.01.06.01 EP1	HR.01.06.01	IM.04.01.01	VHA Handbook 1050.11	MM.07.01.03
	RC.01.01.01	VHA Directive 2009-038		MM.08.01.01
	RC.02.01.01	VHA Directive 2008-059		

VHA Medication Reconciliation Directive Tools

The tools listed below will be available on the VA Medication Reconciliation SharePoint® site following the release of the directive.

- **Frequently Asked Questions (FAQs)**
  - *Provides a crosswalk of the directive components, applicable TJC standards and safety goals, and questions from clinicians*
- **Patient and Staff Educational Videos**
  - *Provides a professional way to promote optimal medication information management with patients, staff and leadership*
- **Gap Analysis**
  - *Breaks down the directive components into manageable pieces to allow facilities to determine areas of compliance and areas of needed improvement by comparing their local policies and processes to the directive*

'Medical Team' Approach Reduces Operating Room Mortality Rates

By Tom Cramer, editor/writer, VA Office of Communications

A Department of Veterans Affairs study published Oct. 20, 2010 in the Journal of the American Medical Association concludes that Medical Team Training (MTT) improves communication, teamwork and efficiency in VA operating rooms, resulting in significantly lower mortality rates.

"Patients can suffer inadvertent harm at times, despite care from well-trained, experienced and conscientious health care providers," noted Douglas Paull, M.D., a VA surgeon, coauthor of the article, and director of NCPS' patient safety curriculum program. "The cause in many such instances is faulty teamwork and communication. For example, a surgical team initiates an operation but forgets to check the availability of necessary blood products."

"Fortunately, teamwork and communication skills —often referred to as non-technical skills— can be measured, learned, practiced, and enhanced," Paull continued. "The MTT program improves these non-technical skills among providers, delivering on the promise of a safer health care system."

VA's nationwide study involved the analysis of over 100,000 surgical procedures conducted at 108 of its hospitals from 2006 to 2008. MTT had been introduced at 74 of these hospitals, but not at the 34 "control group" hospitals. The study found that the decline in the risk-adjusted mortality rate *was 50 percent greater in the MTT group than in the non-MTT group*.

"MTT is all about communication," said Lisa Mazzia, M.D., one of the article's coauthors and NCPS physician trainer. "It encourages team members to talk to one another before, during and after surgery. MTT empowers *every member* of the surgical team to immediately speak up if they see something that's not right."

She added: "When people talk and listen to each other, fewer errors occur in the operating room. That's the bottom line."

Julia Neily, R.N., associate director of the NCPS field office, White River Junction, Vt., and one of the study's authors, said conducting briefings prior to starting surgery proved to be a key component in reducing mortalities because it gave surgeons "a final chance" to correct potential problems.

"For example," Neily said, "one of our MTT teams realized the correct-sized implant was not available in the operating room. In another instance, a pre-op briefing prevented a wrong side surgical procedure. These kinds of 'catches' can help avoid potential adverse effects."

The study found post-operative debriefings also proved valuable because they led directly to the prompt resolution of glitches that occurred during surgery. Examples included fixing broken equipment or instruments, ordering extra back-up sets of instruments, and improving collaboration between the operation room and the radiology department —all of which led directly to less delays while surgeries were in progress.

Pre-op briefings and post-op debriefings are a fundamental component of the VA MTT program, which NCPS developed from 2003 to 2004. VA began implementing a nationwide MTT program in 2006.

New Moderate Sedation Toolkit for Non-Anesthesiologists

(Continued from page 1)

The philosophy behind the trainings and debriefings is based on a systems approach to problem solving, not on judging individual performance. The training also helps to reinforce the importance of teamwork across medical disciplines.

"In all of our PSCI Simulation Center activities, we want to create a common ground where any practitioner can come in, feel welcome and safe, and practice clinical skills without feeling judged," noted Bonifacio. "We want to allow people to learn and openly critique their performance. Our goal is to create a more open and transparent culture based on teamwork."

"I think it is absolutely crucial," said Rebecca Schroeder, M.D., staff anesthesiologist, Durham VA Medical Center, and associate professor of anesthesiology, Duke University Medical Center. "The walls that exist between one clinic and another, one specialty and another, at least in my opinion, contribute greatly to the risks that patients face. Everybody has different skill sets to offer – and collaborating and communicating is the only way to go."

Table-top training exercises were created for facilities that don't have high-fidelity patient simulators. "We took the same stories and recreated them in a case conference discussion format," said Mark. "So for instance, a trainer would say: 'Mr. Jones comes in and he weighs 345 pounds. Prior to administering moderate sedation, how you would assess his airway and what special concerns would you have in planning his sedation and procedure?' "

"The remarkable thing about our moderate sedation toolkit is that it is an entire training program 'in a box,' " concluded Bonifacio.

Patient Safety Managers Involvement

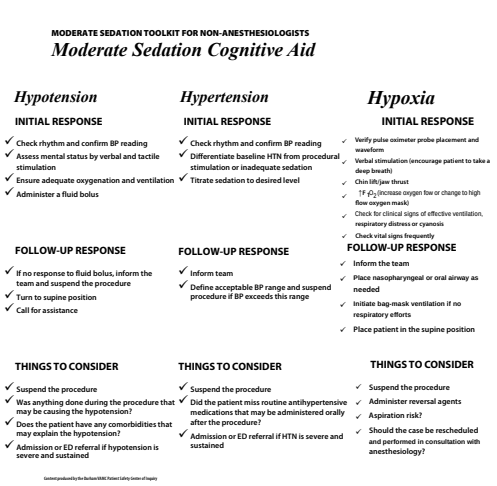
The team will reach out to Patient Safety Managers (PSMs) to promote the toolkit. "They can help us identify where the material should go in their facilities," said Mark. "In a large facility like ours, we have an anesthesiology service and we can support the PSMs in whatever way we can." In facilities that don't have an anesthesia service, PSMs can play a critical role in dissemination and use of the toolkit by identifying key clinicians involved in moderate sedation practice.

Mark spoke of what he would urge the PSMs to do. "At every site where sedation is conducted in your institution, make sure that the laminated study aids and cognitive aids are readily available. These can be attached on a wall near the procedure room oxygen supply, next to the suction canister, on the equipment cart, or somewhere else in a procedural room, so that all the clinical providers in these locations can become familiar with them."

He also noted that not every VA facility where sedation is practiced has anesthesiologists. "Some VA medical centers have surgical programs but don't have anesthesiologists; however, within each VISN there are anesthesiologists and nurse anesthetists who can also provide support for the toolkit and the training program."

The moderate sedation toolkit materials are expected to be made available this spring and will include the following:

- Facilitator's Guide
- Learner Objectives
- Curriculum Guide
- Pre-Procedure Patient Evaluation Form
- Study Guide
- Cognitive Aid
- Call for Help Card
- High-Fidelity Simulation Cases
- Table-Top Simulation Cases



MODERATE SEDATION TOOLKIT FOR NON-ANESTHESIOLOGISTS

Moderate Sedation Cognitive Aid

Hypotension	*Hypertension*	*Hypoxia*
INITIAL RESPONSE	**INITIAL RESPONSE**	**INITIAL RESPONSE**
✓ Check rhythm and confirm BP reading ✓ Assess mental status by verbal and tactile stimulation ✓ Ensure adequate oxygenation and ventilation ✓ Administer a fluid bolus	✓ Check rhythm and confirm BP reading ✓ Differentiate baseline HTN from procedural stimulation or inadequate sedation ✓ Titrate sedation to desired level	✓ Verify pulse oximeter probe placement and waveform ✓ Verbal stimulation (encourage patient to take a deep breath) ✓ Chin lift/jaw thrust ✓ ↑F O_2 (increase oxygen flow or change to high flow oxygen mask) ✓ Check for clinical signs of effective ventilation, respiratory distress or cyanosis ✓ Check vital signs frequently
FOLLOW-UP RESPONSE	**FOLLOW-UP RESPONSE**	**FOLLOW-UP RESPONSE**
✓ If no response to fluid bolus, inform the team and suspend the procedure ✓ Turn to supine position ✓ Call for assistance	✓ Inform team ✓ Define acceptable BP range and suspend procedure if BP exceeds this range	✓ Inform the team ✓ Place nasopharyngeal or oral airway as needed ✓ Initiate bag-mask ventilation if no respiratory efforts ✓ Place patient in the supine position
THINGS TO CONSIDER	**THINGS TO CONSIDER**	**THINGS TO CONSIDER**
✓ Suspend the procedure ✓ Was anything done during the procedure that may be causing the hypotension? ✓ Does the patient have any comorbidities that may explain the hypotension? ✓ Admission or ED referral if hypotension is severe and sustained	✓ Suspend the procedure ✓ Did the patient miss routine antihypertensive medications that may be administered orally after the procedure? ✓ Admission or ED referral if HTN is severe and sustained	✓ Suspend the procedure ✓ Administer reversal agents ✓ Aspiration risk? ✓ Should the case be rescheduled and performed in consultation with anesthesiology?

Content produced by the Durham VAMC Patient Safety Center of Inquiry

"The high-fidelity and table-top simulation cases each contain four clinical scenarios. All told, we will provide nearly 100 pages of educational materials that can be downloaded to the facilities," added Mark.

The laminated moderate sedation study aids and cognitive aids are expected to be delivered to facilities this spring.

Reference

1. Read the directive: http://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=1409
2. Two laminated cognitive aids are going to be distributed to VA medical centers. The full toolkit is not being commercially printed and distributed. It will be posted to the NCPS Intranet site for download, printing and distribution by VA employees.

Note

Members of the PSCI team interviewed for this story would like to thank the entire PSCI team for assistance with this project, which consists of 15 other members (list provided in conjunction with online edition of *TIPS*). This important initiative could not have been successfully completed without everyone's dedicated efforts. They would also like to thank NCPS' visual information specialist, Deborah Royal, for assistance with copy editing and graphic design of the material.

MODERATE SEDATION TOOLKIT FOR NON-ANESTHESIOLOGISTS

Moderate Sedation Study Aid

Airway Evaluation

Evaluation*	Equipment	Interventions
Teeth	O_2 Delivery Devices (Nasal Cannula, Mask, Ambu® Bag)	Auditory/Manual Stimulation
Mouth Opening	Nasopharyngeal Airways	Reposition Head
Neck Extension	Oral Airways	Chin Lift
Thyromental Distance	Intubation Equipment	Jaw Thrust
Mallampati Classification		Airway Adjunct Use
		Assisted Ventilation

*LEMON Score, OBESE Score

LEMON Score (Difficult Intubation)

The score with a maximum of 10 points is calculated by assigning one point for each of the following LEMON criteria. A LEMON score ≥ 5 predicts difficult intubation.

L = Look externally (facial trauma, large incisors, beard or moustache, large tongue) (4 points)

E = Evaluate the "3-3-2 rule" (inter-incisor distance < 3-finger breadths; hyoid-mental distance < 3-finger breadths, thyroid-floor of mouth distance < 2-finger breadths) (3 points)

M = Mallampati (Mallampati score ≥ 3) (1 point)

O = Obstruction (presence of any condition like epiglottitis, peritonsillar abscess, trauma) (1 point)

N = Neck mobility (limited neck mobility) (1 point)

OBESE Score (Difficult Mask Ventilation)

OBESE | BEARDED | ELDERLY | SNORES | EDENTULOUS

The Obese Patient

Pulmonary	Cardiovascular	Gastrointestinal
↑ Chest Wall Mass ↑ CO_2 Production, ↓ FRC ↓ Pulmonary Compliance ↑ Risk of OSA* ↑ Risk of Difficult Airway ↑ Total O_2 Consumption ↑ Work of Breathing	↑ Cardiac Output ↑ Stroke Volume Systemic Hypertension Pulmonary Hypertension Right Heart Failure Difficulties With Monitoring	↑ Risk of Aspiration ↑ Residual Gastric Contents ↑ Intra-Gastric Pressure ↑ Intra-Abdominal Pressure

*Obstructive Sleep Apnea

The Elderly Patient

General/Metabolic	Cardiac/Pulmonary
↓ Blood Volume (~25 percent) ↑ Risk of Aspiration ↓ Glomerular Filtration Rate ↓ Metabolic Rate ↑ Risk of Hyperthermia ↓ Albumin ↑ Unbound Drug Concentration ↓ Enzyme Activity ↑ Sensitivity to CNS Depressants ↑ Parasympathetic Tone	↓ Max/Resting HR ↑ Risk of Coronary Artery Disease ↑ Dysrhythmias ↓ Chest Stiffness ↓ Muscle Strength ↓ Response to Hypoxia, Hypercarbia

↓ Drug Doses 30 to 50 Percent

Pharmacology

DRUG	DOSE	ONSET	PEAK EFFECT	DURATION
Fentanyl	25-50 mcg IV	3-5 min	5-15 min	30-180 min
Midazolam	0.5-2 mg IV	1-2 min	1-2 min	20-40 min
Naloxone*	0.1-0.2 mg IV***	1-2 min***	5-15 min	30-45 min
Flumazenil**	0.2 mg IV (Max 1 mg)	1-2 min	6-10 min	45-60 min

*Use with care in patients on chronic opioids

**May precipitate seizures

***Naloxone may be given IM, 0.4 mg IM with onset 2-5 min

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