

## Medical Team Training Program — Coming to a local VAMC near you

By Ed Dunn, MD, MPH, Amy Carmack, MA, Julie Neily, RN, MS, and Peter D. Mills, PhD, MS

IF YOU ARE interested in achieving the JCAHO National Patient Safety Goals, the NCPS Medical Team Training (MTT) program can help you reach Goal 2: improving communication between healthcare providers. We have reports of improved staff satisfaction and communication from several VAMCs participating in the program. If you are focused on meeting quality performance standards, the Houston VAMC has evidence that briefings and debriefings in the OR, introduced in the MTT program, have facilitated surgical infection prevention (SIP measures) in their facility due to more timely administration of antibiotics.

The MTT program was launched in the fall of 2003. A description of the program with its roots in aviation-based Crew Resource Management (CRM) was outlined in a previous *TIPS* article by Neily et al.<sup>1</sup> As of February 2006, 19 VAMCs are participating in the MTT program. Our Learning Sessions have accommodated 1,071 VAMC clinicians and administrators, representing multiple professional disciplines from the OR (11), ICU (4)<sup>2</sup>, Ambulatory Primary Care Clinic (3), Emergency Department (1) and Medical Surgical Unit (1) (see Table 1, p. 4).

The Houston VAMC surgical services staff, led by David Berger, M.D. (Operative Care Line Executive and Chief of Surgery) and Beverly Rashad-Green, R.N. (Operative Care Line Nurse Executive), became active participants in the MTT program when they took part in the Learning Session on September 2004. With implementation of briefings and debriefings, the Houston group reported a statistically significant improvement in communication scores from a survey for surgeons and anesthesiologists. They also found the number of patients receiving antibiotics within 60 minutes of the surgical incision increased from 84% to 95%. Additionally, these authors found the number of patients receiving DVT prophylaxis prior to anesthetic induction increased from 92% to 100%. Both improvements were statistically significant. Preoperative briefings in Houston identified 3.3% of patients whose surgical procedures were delayed due to risks identified in these briefings.<sup>3</sup>

Dr. Berger has become a champion of the MTT program. "MTT has been important in changing the culture in our operating room . . . MTT has improved communication and, we believe, overall patient care . . . The residents have taken well to the preoperative briefing process. Our goal is to ensure that the next generation of surgeons incorporates MTT as part of their routine processes of care," he said recently.

Narrative reports from participating staff in other VAMCs have included the following:

- ◆ Briefings and debriefings enhanced staff satisfaction and morale;
- ◆ Briefings streamlined the use of surgical instruments and staff planning for procedures;
- ◆ Briefings improved ICU staff understanding of daily patient goals;
- ◆ OR staff were empowered to "speak up" during surgical procedures;
- ◆ One pre-op briefing prevented a wrong site/side surgical procedure;
- ◆ Pre-op briefings prevented two potentially harmful surgical procedures.

### What is required to participate in the MTT program?

The application for the program is available on our Web site: [vawww.ncps.med.va.gov/Education/MTT/index.html](http://vawww.ncps.med.va.gov/Education/MTT/index.html) The program has three components: 1) preparation and planning for the Learning Session (2 months); 2) Learning Session at the participating VAMC (one full day); and 3) implementation of the MTT project with follow-up and support (12 months). Preparation and planning begins by working with NCPS faculty on conference calls to establish a multidisciplinary Change Team of 6-to-10 members representing the professional disciplines from the targeted clinical unit(s).

The Learning Session is held in the VA facility and begins with administration of a communication/safety questionnaire and continues for a full day with didactic instruction, interactive role play and exercises, and films demonstrating CRM tools applied in the clinical environment. Two MTT faculty members, typically with clinical backgrounds matched to the program participants, facilitate each Learning Session.

Program participation requires each VAMC to implement an MTT project involving briefings and debriefings in the clinical units targeted by facility leadership. Each participating VAMC agrees to initiate these activities within days of the Learning Session and to continue for a minimum of one year. MTT faculty provide follow-up and support of the VAMC's project implementation, which includes conference calls for coaching and interviews and assistance with data analysis. We facilitate a second administration of the questionnaire for participants one year following the Learning Session.

We plan to implement the MTT program in all VAMCs with ORs and ICUs. The program is also available to ambulatory care clinics, medical-surgical units, emergency departments and other clinical units. When we receive an application from a VAMC, we will request that senior leadership make the Learning Session available to staff from as many clinical units as possible. For example, if the program is requested for OR staff, we will request that invitations be extended to staff from the ICU and other clinical units in the same facility, and that VAMC leadership ensure staff attendance.

*The MTT project provides participants with a concrete method to translate what they have learned into actual practice, resulting in real improvements for patients and staff.*

For information about scheduling the MTT program, contact Amy Carmack ([amy.carmack@va.gov](mailto:amy.carmack@va.gov)) or Jami Umstead ([jami.umstead@va.gov](mailto:jami.umstead@va.gov)) in the NCPS office. If you have questions for VA professionals who have implemented the MTT program in their VAMCs, contact the following individuals: 1) Houston VAMC: David Berger ([DavidH.Berger@va.gov](mailto:DavidH.Berger@va.gov)) or Beverly Rashad-Green ([beverly.rashad-green@va.gov](mailto:beverly.rashad-green@va.gov)); 2) Boston VAMC: Michael Crittenden ([michael.crittenden@va.gov](mailto:michael.crittenden@va.gov)) or Debra Furlong ([debra.furlong@va.gov](mailto:debra.furlong@va.gov)).

<sup>1</sup> Click to: [www.patientsafety.gov/TIPS/tips.html](http://www.patientsafety.gov/TIPS/tips.html), then scroll to Nov/Dec 04

<sup>2</sup> One VAMC included both OR and ICU staff

<sup>3</sup> Awad, S., Fagan, S., Bellows, C., Albo, D., Green-Rashad, B., De La Garza, M., Berger, D. Bridging the communication gap in the operating room with medical team training. *Am J Surg* 190 (2005): 770-774.

# Beyond Preventive Maintenance: Don't Set the Staff Up for Failure When Relying on IV Pump Pre-Programmed Drug Menus

By: RCA Aggregate Med Error Team: Dayna Mitchell, PharmD, BCPS; Deborah Moody, PharmD; Ramon Navarro RPh; Helen Schneider RN, MS; Pat Hagenbart RN, MBA, MS, CNOR, Risk Manager; Edward Hines Jr. VA Hospital, Hines, Ill.

TECHNOLOGY IS A wonderful asset to modern nursing staffs. But Periodic Biomedical Maintenance (PM) programs are not the absolute end of worry for the safe use of IV pumps. Our facility has 350 pumps that were acquired in the early '90s. While PMs were routinely accomplished, it wasn't until a medication error was submitted that we became aware of a problem: Inaccurate units of measure and doses inappropriate to treatment were discovered in the pre-programmed drug menus.

Our Aggregate RCA Medical Error Team went on a "field trip" to ask questions about the incident in the clinical setting. We asked the staff nurses to show us how the error happened.

## *Investigating the Clinical Setting*

Nursing brought the pump into the room for the RCA team. Upon gathering around the break room table, we immediately discovered a number of problems: to read the instrument correctly, all the lights in the room needed to be turned off; also, the two people standing directly in front of the LCD display were the only ones who could see anything clearly. Worse, to set the pump in the correct unit of measure for the provider's medication order, 22 finger manipulations had to be carried out.

This was an intensive care setting where patients, frequently in emergent situations, could have multiple pumps administering several medications at the same time. Each pump could require the same number of finger manipulations.

## *A Systems Approach*

It was apparent that a potential for a medication adverse event existed. The team recognized the need for better IV pump functionality, and had several steps to determine the action plan:

1. Check to see if pumps were biomedically sustainable. Determine repair history and availability of parts.
  - ◆ Pumps were judged to be very rugged, had very few repairs over time, and repair parts were still available.
  - ◆ The pumps were an early technology but upgradeable to newer technology.
  - ◆ The pre-programmed medication menu had not been updated since 1997.
  - ◆ The pre-programmed medication menu information on the pumps was not uniformly set. They had been "set" to meet a particular location need. This was problematic in that, when returned to SPD for PMs and

cleaning, the next nurse to use the pump had a different set of parameters for the same drug selection. This presented a potential opportunity for a medication error.

2. Survey all staff nurses for the most frequent, manually-entered drugs (with concentration, dose and unit of measure currently used; no menu of compatible concentrations existed in the pump).
  - ◆ Nursing responses led to the assembly of a list of usable pre-programmed medication entries.
3. Develop a database of medications for pump memory entry in the pre-programmed menus.
  - ◆ The pump manufacturer representative reviewed the medication database to determine whether the memory could be expanded. The representative also determined whether the pump could offer current accurate concentrations, units of measure and doses appropriate to specific therapies. This would require the insertion of a new computer chip to expand the memory.

## *Leadership Consensus*

The information regarding the identification of risk was presented to leadership for action plan direction. Many hours in the initial stages of this project were spent making an assessment of the continued utility of the pump, ensuring that we had a commitment by management for the resources we'd need, and networking with vendors.

We determined that it was time to make an IV pump update. This action would require a written agreement signed by the nurse executive, the chiefs of pharmacy, biomedical engineering and the SPD supervisor as to the correctness of the menu entries. The agreement would require protected universal drug information that could not be changed on individual pumps.

## *Action Plan*

The medication database tool was made operational by installing a new, more versatile computer chip. Nursing and pharmacy reviewed the database repeatedly to maximize its usability. Some medications could not be safely entered because the chip could not change the unit of measure or the dose titration was not compliant to either the facility pharmacy formulary or standard of practice. These meds would still need to be entered manually. Future "smart pump" pur-

chase groups would, however, have a readily accessible medication database completed for consideration.

## *Taking Action*

The database was presented for the pharmacy and therapeutics committee's concurrence. Nurse managers promoted the updated program by encouraging that the pumps be collected.

Outpatient clinic pumps were freed up for cleaning over a weekend. The following Monday morning, an assembly of manufacturer's representatives, SPD and biomed personnel took a number of actions: they withdrew the pumps from the wards, cleaned each one, set the LCDs to high contrast and the alarms to the loudest level, zeroed the machines to a neutral position, opened the machine faces and completed the PMs.

Only after these steps were taken were the pumps ready to be wirelessly updated...ZAP!...and returned by SPD personnel to the clinical areas for a trade-out with other pumps that needed upgrading; thus, the process was started all over again. Within four working days, the team completed what they deemed to be 100 percent of available pumps on campus (339 of the 350 pumps were found). The computer software and 10 additional computer chips are available for any outliers that are found in the future.

## *Don't be Afraid to Ask if Things Don't Seem Quite Right*

Our nurses knew that they had to educate each other in the use of the medication pre-programmed menus, but didn't understand that this could lead to problems. This is an unsystematic way of doing things. The weakness of this approach was recognized because a part-time clinician, returning from extended leave, forgot how to use the pump's menu.

## *Conclusion*

Our nurses are now confident that the pumps have more readable LCD screens, the pre-programmed medication menus are available in safe concentrations, and the doses cannot be administered in the wrong unit of measure.

All pumps now have the same, standardized, pre-programmed medication information. A systems-approach to problem solving has created a setup for success!

# Using Caution with Fentanyl Patches

By: Carol Samples, BGS, NCPS program analyst

THE USE OF fentanyl transdermal patches has significantly changed the way pain medication is administered, but convenience comes with the same vulnerabilities as other pain medication — and more. NCPS has received several hundred reports of adverse events occurring primarily in the course of ordering, administering and/or monitoring fentanyl patch use.

## Ordering

Adverse events occurred when orders were duplicated, when multiple forms of pain control were used, and when transfer orders did not include mention of fentanyl patches. Orders were confusing, difficult to manage, overlapped or were delayed because of CPRS entries.

- ♦ Orders for patches were overridden when duplicated on the same date, or when written before expiration of existing orders, causing patients to receive a duplicate dose.
- ♦ Patches of different strengths were ordered on alternating days, which made administration confusing.
- ♦ Orders for “one time only” were not followed up, and orders were not picked up by rotating physicians.

## Administration

Since fentanyl patches are often used for terminal care, delays may deny much needed comfort. A patient, having gone without a scheduled change for almost a day, said, “I know I am going to die because I hurt so much.” Staff described how another patient experienced withdrawal symptoms when administration was delayed. They also noted pain was difficult to control after extensive delays. One factor that contributed to these delays involved orders written with a start time prior to the order causing BMCA to default to the following day. When this happens, patients may go without much needed medication for up to 24 hours.

Omissions occurred during both administration and removal of the patches. Some were not removed at the stop date resulting in multiple placements, despite BCMA alerts to removal time. Conversely, some patches were replaced too soon.

The backing was sometimes not removed from patches, so patients’ pain remained unrelieved. These were not isolated events! For example, patches were found taped to the skin with the backing still in place; once, even hidden under a nicotine patch making the problem undetectable.

Overdoses occurred when patches were overlooked because multiple body sites were utilized for placement, such as the chest, back, flank and upper arms. There were frequent reports of multiple patches found on patients, sometimes overlapping or with different start dates. Patches were also found on patients who did not have orders for them.

## Monitoring

Duplicate patches were placed before expended patches were removed. Inpatients brought patches from home, sometimes prescribed by another facility, which were not confiscated or documented upon admission.

Disposition of old patches was inconsistent. Patients, bedding, wheelchairs, clothing, laundry and trash were searched when patches, documented as applied, could not be found. Patients sometimes told staff they had discarded patches in wastebaskets or toilets.

### Other adverse events:

- ♦ Outpatient prescriptions were filled incorrectly as when multiple boxes, rather than multiple patches, were dispensed.
- ♦ Adverse reactions occurred when used in combination with chemotherapy.
- ♦ Patches were chewed and swallowed, or were used in excess, either to relieve pain or in suicide attempts.
- ♦ A patch leaked when a patient was advised to cut it in half before applying it.

The FDA issued a public health advisory highlighting important safety information on fentanyl patches:

- ♦ Patches may cause death from overdose. Prescribe at the lowest dose needed for pain relief.
- ♦ Do not use to treat short-term pain, pain that is not constant, or for pain after an operation. Use only for patients who are opioid-tolerant, and who have chronic pain that is not well controlled with shorter-acting painkillers.
- ♦ Tell patients and their caregivers about directions for safe use and tell them to follow directions exactly. These directions are provided in the patient package insert: [www.fda.gov/cder/drug/infopage/fentanyl/DuragesicPPI.pdf](http://www.fda.gov/cder/drug/infopage/fentanyl/DuragesicPPI.pdf)
- ♦ Tell patients and caregivers about safe methods for storage and disposal. Store in a safe place and kept out of the reach of children. Safely dispose of used, unneeded or defective patches by folding the sticky side of the patch together (until it sticks to itself) and flushing it down the toilet.
- ♦ Providers and patients should be aware of the signs of overdose: troubled or shallow breathing; tiredness, extreme sleepiness or sedation; inability to think, talk or walk normally; and feeling faint, dizzy or confused.
- ♦ Be aware of a sudden, possibly dangerous, rise in body level of fentanyl or a stronger effect from fentanyl if patients: use other medicines that affect brain function; drink alcohol; have an increase in body temperature or are exposed to heat; or use other medicines that affect how fentanyl is broken down in the body.

ISMP believes the FDA can improve safety, but only if healthcare practitioners become fully aware of the dangers, select patients appropriate for therapy, educate those patients on safe medication use, and ensure proper disposal of the product.

ISMP further recommends: use of biohazard containers for disposal that cannot be opened; improved methods to guard against multiple dosing; and use of a patient dosing calendar to document administration and removal times

## NCPS Recommendations

- ♦ Patches should not be used for acute or post-operative pain because the medication will not reach a steady state for 12-18 hours and will not reach peak until 24-72 hours. Therefore, fentanyl patches will not offer immediate pain relief, so “now” and “stat” orders are generally inappropriate.
- ♦ Observe caution when patches are discontinued. Other pain medication must be titrated to allow for fentanyl’s duration of action.
- ♦ Avoid covering patches with heating pads, electric blankets or warming devices because that may speed absorption.
- ♦ When increasing dosage, remove old patches and apply new ones rather than adding patches that require a different schedule. Multiple schedules become confusing and may result in an overdose.
- ♦ Standardize placement and rotation of fentanyl patches so staff anticipates where to look for the last patch(es). Document placement precisely.
- ♦ When hidden by clothing, gently mark the patch with a bold “F” to make it more visible. Consider dating the patch consistent with practices for other medications and dressings.

In summation, avoid overly complex orders and regimens that may be difficult to interpret and administer. Check for additional patches before applying new ones. Assess all pain medications prior to ordering transdermal pain medication.

## References

FDA Patient Information Sheet, Fentanyl Transdermal System, July, 2005 [www.fda.gov/cder/drug/InfoSheets/patient/FentanylPIS.pdf](http://www.fda.gov/cder/drug/InfoSheets/patient/FentanylPIS.pdf)

Janssen, Important Drug Warning on Duragesics, [www.fda.gov/medwatch/SAFETY/2005/duragesic\\_dll.pdf](http://www.fda.gov/medwatch/SAFETY/2005/duragesic_dll.pdf)

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**Medical Team Training Program — Coming to a local VAMC near you (continued from page 1)**

**Table 1: VAMCs and Clinics participating in the MTT program (n = 1,071 participants in 19 learning sessions)**

VAMC/ Clinic	Learning Session Date	Clinical Unit(s)	MTT Activities After Learning Session: (Self reports from follow-up interviews and conference calls)
Des Moines, IA	9/10/03	OR	<b>Briefings and Debriefings in the OR:</b> Report: streamlined instrument case packs; working on reduction of delays in first case of the day.
Detroit, MI	9/24/03	Surgical ICU	<b>Patient-Centered Multidisciplinary Rounds in the ICU:</b> Report: nurses more comfortable asking questions and participating in decision making; decreased staff overtime and sick leave.
Buffalo, NY	10/30/03	Medical ICU	<b>Patient Centered Rounds with residents and nursing staff:</b> Report: reduction of inappropriate ICU admissions; improved understanding of daily patient goals.
Boston, MA	11/10/03	OR	<b>Briefings and Debriefings in the OR:</b> Report: streamlined instrument case packs; improved understanding of personnel and equipment needs for surgical cases; briefings captured incorrect information in the Surgical Package.
Black Hills, SD	11/13/03	Med-Surg Unit	<b>Patient-Centered Multidisciplinary Rounds and using CRM tools with staff:</b> Report: improved staff-to-staff communication.
Jackson, MS	11/17/03	Medical ICU	<b>Administrative Briefings integrated with Patient Centered Briefings:</b> Report: improved communication among staff; reduction of urinary tract infections; and improved house staff knowledge of roles in the ICU.
Houston, TX	9/13/04	OR	<b>Pre-op Briefings in the OR:</b> Report: improvement in measures of communication between surgeons and anesthesiologists; increase in prophylactic antibiotic administration within 60 minutes of incision; increase in DVT prophylaxis before induction of anesthesia; and 3.3% of high-risk surgical procedures cancelled due to findings from pre-op briefings.
Atlanta, GA	3/4/05	OR	<b>Debriefings in the OR:</b> Report: conducting debriefings in the OR.
Bay Pines, FL	5/6/05	OR	<b>Debriefings in the OR:</b> communication scores on questionnaire improved for surgeons and anesthesiologists; staff are more comfortable verbalizing concerns during surgical procedures.
Nashville, TN	5/13/05	OR	<b>Briefings and Debriefings in the OR:</b> Report: briefing and debriefing all surgical cases; problems identified during debriefings are addressed immediately; 30% improvement in surgical cases receiving antibiotics within 60 minutes of incision; one case was cancelled due to concerns raised by the surgical team in the pre-op briefing; debriefings informed new equipment purchases.
Long Beach, CA	8/5/05	OR	<b>Debriefings in the OR:</b> Report: Debriefings after Vascular Surgery cases; plan roll out of the debriefing program to the entire surgical service, one specialty at a time.
Honolulu, HI, Tripler Hospital — Oahu Clinic	8/17/05	Prim. Care Clinic	<b>Administrative Briefings and Rules of Conduct in the Clinics:</b> Report: multidisciplinary administrative briefings in outpatient clinics; “Rules of Conduct” implemented in the clinics to improve communication between clinical staff.
Honolulu, HI, Tripler L.S. for Island Clinics: Kauai, Maui, Kona, and Hilo	8/18/05	Prim. Care Community Based Outpatient Clinics	<b>Administrative Briefings and Debriefings in the Clinics:</b> Report: Outpatient clinics report conducting “huddles” each morning to discuss the day’s events. The huddles cover needed equipment, staffing issues, cross coverage, and review patients coming in, as well as debriefing the day before. The clinics report improved awareness of issues before they happen, improved staff moral and improved efficiency.
Fargo, ND	9/7/05	OR, ICU	<b>Patient-Centered Multidisciplinary Briefings in the ICU/Briefings and Debriefings in the OR:</b> Report: multidisciplinary rounds on each patient in the ICU weekly; briefings and debriefings of surgical cases in the OR as of 11/05.
Minneapolis, MN	9/9/05	OR	<b>Debriefings in the OR:</b> Report: debriefing surgical cases led by circulator RN in the OR; many equipment issues identified in briefings and debriefings.
St. Louis, MO	9/20/05	ED	<b>Improving Transfers to the ED:</b> Report: tool was developed to improve information transfer between outpatient clinics and the Emergency Department. They have begun using the tool for patient transfers to the Emergency Department, and report the tool is improving the quality of patient transfers.
Las Vegas, NV	9/29/05	Prim. Care Clinics	<b>Administrative Briefings in the Clinics:</b> Report: multidisciplinary administrative briefing in the outpatient clinics at the beginning of the day.
West Haven, CT	10/28/05	OR	<b>Briefings in the OR:</b> Report: developing briefing guides for sub-specialty surgical services; and improving surgical scheduling process as a strategy for reducing delays; briefings have decreased OR cancellations due to increased accuracy of bookings.
Providence, RI	12/2/05	OR	<b>Briefings and Debriefings in the OR:</b> Report: they have started briefings and debriefings.

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