

31. ACUTE PAIN NURSING IN THE FIELD

INTRODUCTION

“Austere environment” can be defined many ways. The term is used here to refer to the contemporary battlefield, but similar conditions are found in disaster-relief scenarios and the developing world—military nurses or physicians may find themselves in any of these places. Providing health care under these circumstances has challenges unique to each environment as well as common to all austere environments. Today’s combat support hospital (CSH) is the best example of the military’s effort to compensate for the lack of physical infrastructure in the field. Designed to deliver an array of advanced healthcare services usually restricted to fixed facilities, the CSH is a testament to current technology’s capabilities, relative portability, and self-contained packaging. Although CSH technology is impressive, mission success depends less on equipment and more on the personnel assigned to it. Nurses in particular are a vital element of the CSH system. Despite the CSH’s technical advances in casualty care, its austere environment still complicates medical care delivery, including pain management. For any successful acute pain management program to work on the battlefield, nursing service must be an integral part of the plan.

Nursing service plays a key role in the management of acute pain from the perspective of clinical practice. This chapter will outline the clinical roles and responsibilities of an acute pain nurse based on a 4-week orientation for the acute pain service (APS) at Walter Reed Army Medical Center. How these acute pain nursing skills transfer to the field environment will also be addressed.

ACUTE PAIN NURSING ROLES AND RESPONSIBILITIES

Acute pain nurses should be on staff around the clock. Under the direction of the physician consultant, APS nurses conduct the following activities:

ties: bolus continuous peripheral nerve block and epidural catheters, discontinue catheters, adjust flow rates on the infusion pumps, change dressings, educate patients and families, and make recommendations to the attending staff based on their daily assessments. Walter Reed APS nurses are also trained in the maintenance of specialized equipment.

APS nurses are taught clinical skills that incorporate daily checks on several aspects of acute pain management. These include pain infusion pump troubleshooting, evaluation of the remaining infusion volume and repletion if necessary, and most importantly, assessment of pain intervention success (Table 31-1). The continuous reevaluation of all changes in treatment plans made by the APS team is a key component of the nurse’s role. This role involves returning to the bedside not only to assess effectiveness of an intervention, but also to document the result in the patient record. If a

TABLE 31-1

“ABCDE” OF PAIN ASSESSMENT AND MANAGEMENT

Ask about the pain regularly; assess pain systematically.

Believe the patient’s report of pain and what relieves it.

Choose pain control options appropriate for the patient’s circumstances.

Deliver intervention in a timely manner.

Evaluate effectiveness of the intervention within 30 minutes or less, depending on the acuity of the patient and the treatment. If further intervention is required, reassess, initiate treatment, and/or obtain consult if indicated.

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change has not had the desired effect, it is up to the nurse to relay this information to the team with suggestions for therapy changes.

The responsibility of recommending treatment changes is a role uniquely suited to an advanced practice registered nurse with specialty training in pain management, although this does not preclude other nurses from working in pain management. The Military Advanced Regional Anesthesia and Analgesia working group encourages and supports all nurses who have an interest in the specialty to participate to the fullest degree possible. However, it is recommended that the nursing leadership of an APS be a masters-prepared registered nurse.

APS nurses also review all pain service patient medication lists for possible redundancies or contraindications (eg, anticoagulation regimens coupled with peripheral nerve catheters). Any questions or concerns are referred to the attending APS staff. In short, the nurses implement the APS team plans and serve as the eyes and ears of the acute pain physicians (Tables 31-2 and 31-3). An additional major component of the APS nurse role is nursing staff education (Table 31-4). APS nurses work to improve pain treatment safety through ward nurse education in infusion pumps, peripheral nerve blocks, basic pain medication pharmacology, and appropriate APS utilization.

Morning pain nursing rounds consist of the above assessment, troubleshooting, and technical problem solving. Teaching rounds are accomplished in the afternoon with APS nurses, attending staff, residents, and fellows. Multidisciplinary rounds occur once a week, when key team members such as pharmacy, physical therapy, and social services professionals are invited to consult. This multidisciplinary approach to pain management assures continuity of care and improved overall pain management.

APS nurses also spend time educating patients and their families on the disease of pain. Educating patients about anticipated discomfort for specific surgeries or injuries, as well as explaining pain

TABLE 31-2
SKILLS OF THE ACUTE PAIN NURSE

- Infusion pump operation (CPNB and IV PCA):
 - adjusts flow rates
 - changes infusion bags
 - clearing the history
 - changes batteries
- Epidural and peripheral nerve catheters:
 - bolus doses catheters
 - assesses for local anesthetic toxicity and efficacy of intervention
 - discontinues catheters
- Epidural and CPNBs:
 - sets up and assists in placement
 - uses nerve stimulator to assist in placement of CPNB
- Knows about most commonly used peripheral nerve blocks:
 - indications
 - areas of coverage
- Working knowledge of local anesthetic medications:
 - preparation
 - use
 - side effects
- Discusses other common medications used in multimodal pain control:
 - classifications
 - indications
 - dosages
 - side effects

CPNB: continuous peripheral nerve block
IV: intravenous
PCA: patient controlled analgesia

TABLE 31-3
PRINCIPLES AND COMPONENTS OF PAIN ASSESSMENT

Principles	Components
Accept patient self-reports of pain.	Location
Screen for pain routinely.	Intensity
Use the same rating scale over time (eg, VAS).	Duration
Document and track scores over time.	Onset
Reassess routinely to determine efficacy of interventions.	Radiation
Consider individual cultural differences, values and beliefs.	Alleviating factors
	Exacerbating factors

VAS: verbal analogue scale

TABLE 31-4
COMMON MYTHS AND BARRIERS TO PAIN MANAGEMENT

Myth	Truth
The best judge of pain is the physician or nurse.	The patient's self-report is the most reliable indicator.
The same type of pain affects different people in the same way.	Identical injuries can be described differently by sensation and intensity.
The patient who reports pain early will be provided pain relief quickly.	Stoicism is highly valued by many societies and by the military.
All nurses and physicians know how to treat pain.	Although improving, training for physicians and nurses in pain management is minimal and pain is undertreated in the majority of the patients.

therapies is a primary responsibility. Nurses discuss realistic pain expectations during treatment, what alternatives may—or may not—be available, anticipated side effects of medications used, and toxic symptoms to be addressed immediately (Table 31-5). The success of a pain treatment plan often hinges on the rapport nurses develop with the patient and family through daily interaction.

The psychosocial, behavioral, and emotional impact of battle-acquired traumatic injuries has been well documented. If an explosive device is powerful enough to blow apart an armored vehicle—even without a documented traumatic brain injury—it is now assumed that a pressure wave-induced, subclinical traumatic brain injury has occurred.

TABLE 31-5
SIDE EFFECTS OF PAIN INFUSIONS TO ADDRESS IMMEDIATELY

- Shortness of breath
- Difficulty swallowing
- Redness, warmth, tenderness, or discharge at site of catheter insertion
- Temperature > 101.0° F
- Dizziness or light-headedness
- Metallic taste in the mouth
- Ringing in the ears
- Catheter dislodgement
- Patient expressions of impending doom
- Pain out of proportion to the clinical injury or out of character for the patient's history
- Seizure activity

This assumed injury, along with the posttraumatic stress disorder diagnosed in up to 20% of returning soldiers, complicates an already challenging pain management scenario. This is an area of patient care where the pain nurses' interpersonal skills are often needed most.

The APS nurse is on the clinical frontlines, working daily with grievously wounded individuals who are often in extreme pain. Even when optimum pain control (a verbal analogue scale of ≤ 4 on scale of 0–10) has been achieved, the nurses spend much of their time listening to, grieving with, teaching, and emotionally supporting patients and their families. The APS nurse should also be knowledgeable about complementary alternative medicine and encourage patients to utilize these techniques (eg, relaxation, meditation, massage, acupuncture, hypnotism). Pain management nursing requires an individual willing to work with patients who are often at their behavioral worst—in significant pain—and still provide soothing human contact that cannot be found in a pill or injection.

ACUTE PAIN NURSING IN THE FIELD

The role of the APS nurse in theater is somewhat different than that of the APS nurse in a fixed facility. Although essential responsibilities remain unchanged, it is reasonable to expect that nurse–patient interactions will be relatively brief in the present rapid evacuation casualty environment. The APS must balance the need to manage intractable pain with maintaining hemodynamic stability; supplies may be limited and difficult to replace; and personnel shortages may send medical and nursing staff in many directions. In this setting pain management might be considered an unreasonable luxury; however, although no definitive studies have yet linked aggressive acute pain treatment to improved patient outcomes, evidence continues to support this theory. The working premise of the Military Advanced Regional Anesthesia and Analgesia or-

ganization is that early and aggressive treatment of acute pain improves long-term outcomes and may attenuate chronic pain syndromes.

Pain management at the CSH level is complicated by many factors. The autonomic signs of pain (tachycardia, hypertension, and diaphoresis) are difficult to distinguish from hypovolemia, ischemia, or other physiologic disturbances. Treating pain in the presence of marked hemodynamic instability is even more difficult. Assuming a patient is able to communicate, the most reliable assessment tool is the self-report of pain. The verbal analogue scale is the simplest, most familiar, and easiest to document.

CONCLUSION

APS is currently nonexistent or severely constrained on the battlefield and in the evacuation chain; however, anecdotal evidence collected at Walter Reed indicates that pain during evacuation is a common complaint in stable patients. A recent survey of 106 combat wounded arriving from the battlefields of Iraq and Afghanistan revealed an average verbal analogue scale pain score of 5.3 (± 2.3), and less than 50% claimed they received relief from their pain during transport. The need for a team of dedicated pain physicians and nurses in this environment is apparent. The nurse's role on this team would be similar to that in a fixed facility but with added responsibilities. The nurse may be tasked with identifying soldiers in need of pain management; bringing these individuals to the staff's attention; arranging and assisting with procedures, follow-up, and evaluation on intervention efficacy; charting; and communicating with air evacuation teams. In the clinic or on the battlefield, the role of the military APS nurse in a military environment is both challenging and evolving, but it is also rewarding and essential to providing wounded soldiers the excellent pain management they deserve.

COMMONLY USED TERMS AND ABBREVIATIONS

Acute pain: a mechanism the body uses to protect itself from further tissue damage following an external injury, internal malfunction, infection, acute inflammation, and/or ischemic event. Normally acute pain is self-limiting and treatable with pharmaceuticals, removal of the cause, or resolution of the illness. Acute pain can become maladaptive when the body is overwhelmed with painful stimuli, leading to chronic pain conditions.

Addiction: the compulsion to engage in a behavior on a continuous basis in spite of the negative consequences. Commonly used in referring to substance abuse. Addiction is different from drug dependency and tolerance.

Afferent nerve: receptor nerves that carry impulses, painful or otherwise, from the periphery of the body to the central nervous system.

Allodynia: the perception of pain to a stimulus that is usually considered nonpainful. An example would be the feeling of light touch, which is otherwise pleasant, being interpreted by the patient as painful. Many patients with neuropathic pain find the feel of clothing against their skin to be painful.

CAM: complimentary and alternative medicine (acupuncture, massage, herbal supplements, hypnosis, etc)

Chronic pain: a constellation of symptoms contributing to degrees of disability ranging from moderate but manageable pain to complete disability resulting in loss of employment, psychosocial issues, and medication dependency. Chronic pain is distinguished from acute pain in the duration of symptoms (> 6 months) and/or the healing of the predisposing injury/illness without resolution of the pain.

CPNB: continuous peripheral nerve block; refers to catheter placement with or without a continuous infusion running.

Dependence: drug dependency may occur after legal, long-term use of a medication in which abrupt cessation will result in unpleasant physical withdrawal symptoms. An individual can be drug dependent and not addicted.

Efferent nerve: nerves that carry impulses away from the central nervous system to the periphery, the “effector” nerves or motor neurons.

Endorphins: naturally occurring, endogenous opioids that act as the body’s internal pain management system, providing mild analgesia and a sense of well-being. Most commonly associated with the “runner’s high.”

Gate control theory: the idea that pain is felt, transmitted, modulated, and interpreted by a complex system of excitatory and inhibitory pathways composed of a series of neurons (first, second, third, and fourth order) in both the peripheral and central nervous systems. With acceptance of the gate control theory different types of pain were able to be defined, pharmacologic targeting of specific pathways became commonplace, and the role of inhibitory neurotransmission took on significance.

Hyperalgesia: an increased sensitivity to painful stimuli.

Multimodal pain management: the use of more than one pain management therapy. This may or may not include an intravenous PCA, a regional nerve block, CAM, or an assortment of medications. Once the primary source of discomfort has been determined, the goal is to treat it from many different mechanisms of action to maximize the effect of therapy while minimizing the side effects of each individual treatment.

Neuropathic pain: pain that is a direct result of damage to neurons. Although presentation can vary, it usually presents as an intense burning, sharp, stabbing, and lancinating pain. Patients often describe the pain as “electric shock-like.” These patients are often predisposed to allodynia and hyperalgesia.

Nocioceptors: nerve endings responsible for nociception or the ability to perceive painful stimuli. As opposed to mechanoreceptors, which monitor change in physical structure (eg, touch); thermoreceptors, which monitor changes in ambient temperature; and proprioceptors, which monitor body positioning in space.

Opioid rotation: Anderson et al (2001) defined opioid rotation as “the practice of converting from one opioid to another as clinical circumstances warrant.” The primary reasons for changing are loss of analgesic efficacy and management of side effects. The most commonly rotated narcotics are morphine and hydromorphone.

Pain threshold: the least experience of pain that a subject can recognize or the lowest level of stimulation that is perceived as painful.

Pain tolerance: the greatest level of pain that a patient is willing to tolerate.

Paresthesia: loss of normal sensation in a given distribution of the skin. Usually described as “pins and needles”; transient numbness; a tingling sensation. It is most commonly felt as the limb being “asleep.” Paresthesias are usually transient but can become chronic and generally not painful.

PCA: patient-controlled analgesia. The use of a mechanical pump controlled by the patient that provides on-demand infusion of pain medication (usually opioid). The device requires input of the infusion basal rate, bolus amount, and lock-out interval.

PCB: patient-controlled bolus. Specifically refers to the setting on the pain pumps allowing the patient to deliver a preset dose of local anesthetic during CPNB.

Phantom pain: although commonly neuropathic in nature, the term is used to describe painful sensations that arise from an absent limb or body part. Phantom limb pain varies greatly among individuals and can be absent, manageable, or totally disabling.

Phantom sensation: term used to describe a constellation of sensations (nonpainful) arising from an absent limb or body part. Here, phantom limb sensation is distinguished from phantom limb pain.

PNB: peripheral nerve block, also called a “single-injection” nerve block. **Pseudoaddiction:** the term used to describe an iatrogenic syndrome that mimics behaviors usually associated with addiction. It usually results from inadequately treated pain, leading to patient demands for medication that are erroneously interpreted by the care team as excessive.

Somatic pain: also called musculoskeletal, somatic refers to pain associated with bone, muscle, joints, skin, and connective tissue. Usually localized in nature.

Stump pain: pain localized to the amputee’s stump, frequently caused by hypertopic ossification growth, pressure from prosthetic devices, and residual wound closure/incisional pain. This pain tends to be musculoskeletal in nature but varies from patient to patient.

Tolerance: when an individual begins to require larger doses of a medication to achieve the same effect. This may be due to psychological dependence or physiologic upregulation of receptor activity and/or metabolism of the medication. Tolerance results in lack of drug efficacy if the dose is not increased. Opioid rotation may also be considered.

Visceral pain: pain of the viscera or internal organs. Most commonly described as a diffuse, pressure-like sensation, constant, aching in nature and difficult for the patient to localize except to the general area of the abdomen and/or pelvis.

Wind-up phenomena: a phrase used to describe a state of hyperexcitability and dramatically increased sensitivity (hyperalgesia) to pain as a result of continuous exposure to overwhelmingly painful stimuli. It is believed that the wind-up phenomena results in actual cortical remapping within 36 hours, predisposing the individual to chronic pain syndromes.