

Summer 2008

A Complimentary Publication

## Orthopedic Assessments in Nursing

### Why is this important?

If thorough assessments are performed, complications can be detected earlier and permanent injuries to the patient can be prevented.

### What comprises a neurovascular assessment?

- **Circulation:** pulses, capillary refill, color, temperature, and swelling [compared to opposite side]
- **Motor:** muscle testing and pain with active or passive movement
- **Sensation:** numbness or tingling. A nurse should not just check one area of the extremity. An extremity has multiple nerves that affect it, so if only one part of the extremity is checked, a problem with a different nerve may not be detected..

### How often should neurovascular assessments be done?

According to the Orthopedic Nurses Association, assessments should be done at least every 4 hours unless specific orders are written, or the patient's condition changes and warrants more frequent assessments. A nurse should not just document in the nursing records CMS [circulation-motor-sensation] checks done q2h or as ordered. The specifics should be documented. Many facilities have incorporated this type of assessment into their flowsheets to try to make documentation easier and more thorough. But the staff must still use this area.

### What signs or symptoms are concerning?

#### 6 P's

- **Pain** Unrelenting, increasing pain, unrelieved by narcotics, pain with passive range of motion of fingers or toes is likely to be caused by ischemia.
- **Pallor** Discoloration or loss of color, increased capillary refill.
- **Paralysis** Progressive loss of function.
- **Paraesthesia** Numbness and tingling to extremities. This may be caused as the sensory part of the nerve becomes progressively ischemic. [If the patient has this and they have had a recent procedure, the nurse should look at the operative

records or call the doctor to see if local anesthesia was used.]

- **Pulselessness** Absent pulse with doppler, beyond the injury. [This is a late and the least reliable finding. A nurse should not think that just because someone has a pulse that they do not have neurovascular compromise.]
- **Polar** Cool or cold extremity distal to the injury. This should be compared to the opposite extremity.

## An Orthopedic Emergency: Compartment Syndrome

### What is a compartment?

A compartment is an area of the body where muscles, nerves and blood vessels are encompassed within a tough, inelastic tissue called fascia.

### What is compartment syndrome?

When there is an injury and swelling occurs, the fascia does not expand and causes compression of the contents of the compartment. As pressure in the compartment increases the microcirculation is compressed, leading to decreased perfusion and ischemia.

There are 46 compartments in the body with 36 of them found in the extremities. Compartments of the leg are most frequently involved.

### What can cause compartment syndrome?

- Fractures
- Direct Compartment trauma
  - Surgery
  - Venomous bites
  - Crush wounds
  - Postischemic swelling [from loss of blood flow]
  - Electrical injuries
- Edema [swelling] formation
- Prolonged tourniquet time [blood vessels are compressed]
  - Vascular obstruction
  - Thermal injuries
  - Excessive use
- Coagulopathies resulting in bleeding into a compartment
  - Anticoagulant therapy
  - Hemophilia

- Other causes
  - Constrictive dressings
  - Gas gangrene
  - Use of pneumatic antishock garments
  - IV infiltration [See picture]
  - Drug overdose

**Onset:** Can be as short as 2 hours to as long as 6 days after an injury.

**Treatment** is emergent. **If a nurse suspects compartment syndrome they should notify the doctor immediately.**

The pressure has to be released by:

1. Loosening the bandage or splitting a cast, along with elevation.
2. Fasciotomy [A surgical intervention involving cutting the fascia to release pressure and save the extremity]

If pressure is not relieved in a timely manner [within 4-6 hours of first symptoms] muscle necrosis occurs with loss of function and nerve damage from the swelling and compression.

**Sources:** 2008 AALNC Conference Session on Orthopedic Complications and *Nursing Malpractice*, 3rd edition.

## Delayed Defibrillation in Cardiac Arrest

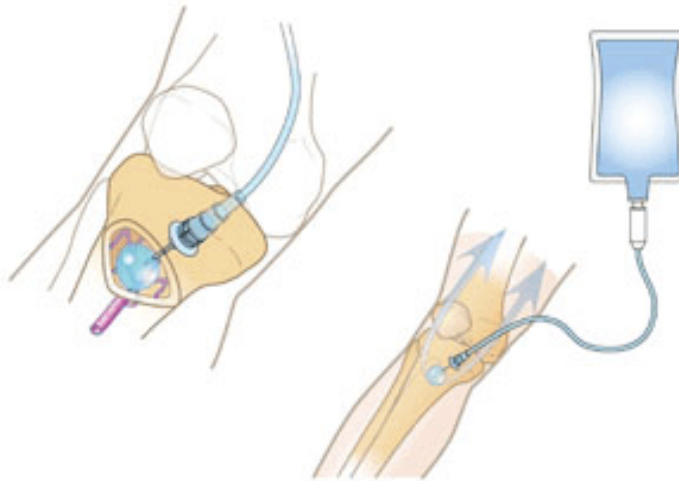
A new study published in the *New England Journal of Medicine* in January 2008 found that there was a delay in defibrillation [electrical shock] of more than 2 minutes in over 30 % of hospitalized patients who suffered a cardiac arrest.

The current recommendations for hospitalized patients with ventricular fibrillation or pulseless ventricular tachycardia state that the patient should be shocked within 2 minutes of recognition of cardiac arrest.

The investigators in this study also showed that delays in defibrillation

resulted in a decreased likelihood of survival to discharge and being less likely to be discharged without neurologic complications. **Increasing time to defibrillation also led to lower rates of survival for each minute of delay.**

Factors found to be associated with the delay were: black race, noncardiac admitting diagnosis, cardiac arrest occurring in small hospitals, after hours or in an unmonitored bed. *Source: Heartwire 2008 at www.medscape.com.*



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