

## FAST FACTS AND CONCEPTS #85 EPIDURAL ANALGESIA

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**Background** Epidural analgesia with local anesthetics, opioids, and/or alpha-agonists can provide superior regional analgesia over conventional systemic routes (IV or PO). In contrast to drugs administered systemically, drugs administered in the epidural space are extremely potent since the drug is delivered close to the site of action (opioid and alpha receptors in the spinal dorsal horn or local anesthetic blockade of nerve roots). Because of this, systemic side effects such as nausea, sedation, and constipation, are minimized. In palliative care, epidural analgesia may be appropriate for patients with regional pain (e.g. pelvic pain from cervical cancer) and/or patients who do not tolerate or obtain relief from oral/parenteral drugs and non-drug therapies.

**Indwelling Epidural Catheters** In patients with refractory cancer pain, anesthesiologists typically place a more durable and longer lasting epidural catheter than the epidural catheters used for childbirth. These indwelling epidural catheters, are tunneled under the skin, directed away from the spine, and covered it with clear adhesive dressing to reduce infection. Indwelling epidural catheters can remain in place for weeks to months and can be utilized in the home setting; however, longer catheter durations are associated with higher risks of serious adverse effects such as a deep epidural infection. The best estimate is that one in 35 patients with an epidural catheter in place for 74 days for cancer pain can be expected to get a deep epidural infection and 1 in 500 may die of such complications. .

**Medications** The epidural solution typically contains a local anesthetic such as bupivacaine along with an opioids such as fentanyl and morphine. Clonidine is sometimes utilized when neuropathic pain is present. If the patient is getting a low dose of the anesthetic, lower leg movement and function is often preserved; at higher doses, however, patients may lose ambulation. Drugs administered epidurally are distributed by three main pathways:

- Diffusion through the dura into the CSF, then to the spinal cord or nerve roots.
- Vascular uptake by the vessels in the epidural space into systemic circulation.
- Uptake by the fat in the epidural space; creating a drug depot from which the drug can eventually enter the CSF or the systemic circulation.

**Patient Controlled Epidural Analgesia (PCEA)** Epidural analgesia can be administered by intermittent boluses (by a clinician or by patient controlled epidural analgesia using an appropriate pump); continuous infusion; or a combination of both. PCEA is used to supplement a basal rate, to allow a patient to manage breakthrough pain in order to meet their individual analgesic requirements. Like IV PCA, PCEA can provide more timely pain relief, more control for the patient, and convenience for both the patient and nurse to reduce the time required to obtain and administer required supplemental boluses. Unlike IV PCA, the lockout interval of PCEA varies widely based on the lipid solubility of the opioid administered, from 10 minutes with fentanyl to 60-90 minutes when morphine is used. If local anesthetic is used, the lockout interval should be at least 15 minutes to allow for peak effect of the supplemental local anesthetic dose.

**Management** Due to the proximity of drug delivery to its site of action, frequent assessment of pain relief, side effects, and signs or symptoms of technical complications (catheter dislodgement, epidural hematoma or abscess, pump malfunction, etc.) are necessary. This should be done every hour for the first 24 hours, then every 4 hours. Assess and document on the pain management flowsheet:

- Patient's pain rating using patient-specific pain scale (e.g. 0-10), both at rest and with activity.
- Level of sedation & respiratory rate, *preferably by the same nurse during each shift.*
- Side effects: pruritis, nausea, urinary retention, orthostatic hypotension, motor block.
- Sign of catheter insertion site infection or epidural abscess such as back pain, tenderness, erythema, swelling, drainage, fever, malaise, neck stiffness, progressive numbness, or motor block.
- Changes in sensory/motor function that may indicate an epidural hematoma including unexplained back pain, leg pain, bowel or bladder dysfunction, motor block.

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