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## FAST FACTS AND CONCEPTS #98

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**Background** Intrathecal drug delivery can be an invaluable adjunct in the management of severe pain when meticulous application of conventional drug therapy proves ineffective or produces intolerable side effects. Intrathecal analgesia is distinguished from epidural analgesia by catheter location within the neuraxis (see Fast Fact #85). In the former, the catheter lies within the subarachnoid space, where small quantities of medication have direct access to spinal drug receptor sites. In the latter, larger doses of medication (necessitated by epidural fat and vascular uptake) must diffuse across the dura to reach these receptors.

**Epidural vs. Intrathecal Analgesia** Potential advantages of intrathecal – relative to epidural – techniques are:

- Ease of catheter placement, particularly in the presence spinal pathology.
- Superior analgesia in the following settings:
  - Presence of epidural pathology, e.g. metastatic disease, radiation fibrosis, vertebral compression.
  - Widespread pain, multiple pain locations, and pain distant from catheter site, especially upper body.
  - Pain poorly responsive to high-dose epidural therapy.
- Fewer catheter problems such as catheter migration or tip occlusion.
- Lower dose requirements may reduce side effects and lower drug costs.

**Choice of System** There exists a spectrum of intrathecal system options – from a simple, percutaneous catheter/external pump to a totally implanted system. Choice is based on life expectancy, performance status, and available professional expertise. Pharmacoeconomic modeling suggests that the percutaneous catheter may be the most economic option for patients with prognoses of days to a few months.

**Drug Choice** Arner and Arner (1985) demonstrated a relative responsiveness of pain mechanisms to intraspinal opioids as follows: continuous somatic pain > continuous visceral > intermittent somatic > intermittent visceral > neuropathic > cutaneous (ulcers or fistulas). An opioid alone is likely to be effective for nociceptive pain syndromes. The addition of coanalgesics, including local anesthetics and/or clonidine, is usually necessary for neuropathic pain syndromes. Ziconotide, a relatively new N-type calcium channel blocker, may have a role in pain syndromes refractory to traditional intrathecal opioids and coanalgesics. Frequency of adverse CNS effects (e.g. confusion, somnolence, dizziness), may be attenuated by slow titration. Experience with this drug in the palliative care setting is limited.

**Complications and Side Effects** Complications may occur from a) the procedure (e.g. post-spinal headache), b) medications (e.g. opioid-related respiratory depression, sedation, urinary retention, pruritis), and c) hardware (e.g. catheter kinking/disconnection/dislodgement, infection). Major contraindications to intrathecal catheter placement include coagulopathy, infection at catheter insertion site, and sepsis.

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**Version History:** This Fast Fact was originally edited by David E Weissman MD. 2nd Edition was edited by Drew A Rosielle and published November 2007. Current version re-copy-edited April 2009.

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**ACGME Competencies:** Medical Knowledge, Patient Care

**Keyword(s):** Ethics, Law, Policy Health Systems; Pain – Evaluation; Pain – Opioids

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