

Epidural Morphine

Anesthetic Pearls: Anesthetic Pharmacokinetics & Pharmacodynamics of Epidural Morphine

1. Epidural dosing of Morphine requires higher doses (by a factor of 10) than subarachnoid injection.
2. Morphine has poor lipid solubility causing a slow penetration into the spinal column (~ 60 min to onset after epidural placement).
3. Higher likelihood of **centrally mediated respiratory depression** due to its water solubility allowing greater cephalad spread compared to lipid-soluble narcotics (respiratory depression usually peaks between 12 -18 hours and rarely occurs after 24 hours).
4. After epidural injection of Morphine (highly ionized and hydrophilic opioid), only small concentrations of lipid-soluble unionized drug will be present in solution in the epidural space. Most of the Morphine present in the CSF is ionized therefore leading to a small concentration gradient of unionized drug making the transfer from CSF to spinal cord and egress of drug from spinal cord to CSF a slow process. The high concentrations of ionized drug in the CSF will be available to move upward with the spinal CSF flow and thus extend the level of analgesia cephalad to supraspinal structures.

Adult Epidural Morphine Dosing			
Age	Abdominal Incision (Lumbar catheter)	Thoracic Incision (Lumbar catheter)	Thoracic Incision (Thoracic catheter)
20 – 45	5 mg	6 mg	4 mg
45 – 65	4 mg	5 mg	3 mg
66 – 75	3 mg	4 mg	2 mg
>75	2 mg	3 mg	1 mg

