

***MINIMIZING THE RISK OF MORTALITY IN THE PERI-PROCEDURE PERIOD
RELATED TO INTRATHECAL MEDICATIONS***

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In view of the increase risk of mortality in the period immediately after implant, revision, and refill of intrathecal pumps and catheters, it is important to emphasize the procedures that can minimize risk in this period.

I. Implantation

A: The dose equivalent of opioids for various routes has been published. There is considerable variability in this and the practitioner should be conservative and overestimate the impact of the intrathecal route.

B: The regimen that the patient has previously been taking should be substantially reduced to avoid the additive effect of intrathecal and systemic opiates.

C: Adjuvant medications that have a synergistic effect on respiratory depression should be avoided or minimized, especially by the intravenous route.

D: All patients should be monitored with pulse oximetry for a minimum of 24 hours.

E: Bolus dosing should be minimized or avoided by the intrathecal route.

F: Programming should be checked by more than one person to assure its accuracy and appropriateness.

G: Dosing should not exceed that administered during the trial.

II. TRIAL

Trial information is vital to determining dosage requirement immediately after implantation. Careful monitoring during the trial provides some valuable predictive information for estimating dosage requirement at permanent implantation. Adjuvant synergistic respiratory depressing medications should be reduced during the trial and systemic opioids should be reduced as well. Total equivalents should be noted to provide information at the time of implantation. Other information that is valuable is the route of the administration, the location of the catheter tip during the trial, and the total amount of systemic as well as intrathecal medications administered.

For the trial to provide the greatest predictive value, it should mimic the permanent implantation as much as possible. Thus, the epidural route is less likely to provide high-quality predictive value in terms of dosing compared to the intrathecal route. Epidural scarring can result in sequestration of medications that conceivably can predict a higher

intrathecal dose than will be tolerated. Similarly, assuming that the intrathecal dose would be exactly one-tenth of the epidural dose is not appropriate.

III. CATHETER REVISION

At the time of catheter revision, it is necessary to realize that the patient may not have been receiving medication for a substantial period of time and therefore, may not be as tolerant as at the time when the catheter was functioning. Therefore, dosage should be reduced. Sometimes at the time of catheter revision a dosage change in the pump is made. This should be accounted for and if a higher concentration is present in the catheter, this must be calculated in advance to avoid inadvertent higher bolusing.

IV. DIAGNOSTIC TESTING

When performing a myelogram through the catheter, it is essential to calculate the amount of medication in the catheter and not to bolus this to the patient. It is ideal to aspirate before injecting contrast solution. If it is not possible to aspirate spinal fluid from the catheter, one must consider whether it is prudent to administer contrast through the catheter and bolus the patient with the amount of medication in the catheter. If it is determined that it is appropriate to bolus the patient through the catheter after being unable to aspirate, it is then imperative that monitoring be performed after this bolus has occurred.

V. REFILL

At the time of refill, pump programming should be checked by a more than one provider to assure its accuracy. If new medications are added, they should be added with extremely modest starting dose and increases in new medications should not exceed 20% at a specific refill. Providers should check that the medication is being administered into the reservoir of the pump and not subcutaneously.

VI. PUMP REPLACEMENT

At the time of pump replacement, it is necessary to consider the medication in the catheter when programming the pump. If changes are made in the medications in the pump, the patient should be monitored for 24 hours after the pump revision.

If these precautions are followed, it will lower the risk related to intrathecal pump procedures.