PALLIATIVE CARE NETWORK OF WISCONSIN

FAST FACTS AND CONCEPTS #28
SUBCUTANEOUS OPIOID INFUSIONS

David E Weissman MD

Background
A parenteral opioid infusion is the standard of care for managing moderate-severe pain or dyspnea when the oral/rectal route is unavailable and/or frequent dose adjustments are needed. As death nears, the burden of maintaining intravenous (IV) access, especially in the home setting, can be enormous. An alternative delivery route supported by major pain societies such as European Association of Palliative Care is the subcutaneous (SQ) route for continuous infusions, Patient Controlled Analgesia (PCA), or intermittent bolus opioid injections.

Drugs
Morphine, hydromorphone (Dilaudid), fentanyl, and sufentanil can all be safely administered as SQ bolus doses or continuous SQ infusion. Methadone infusions cause frequent skin irritation; one case series reported successful use of methadone with concurrent dexamethasone infusion and frequent site rotation.

Dosing equivalents
Dose conversion ratios between the IV and SQ route for all the above listed opioids are not well established. For morphine, the ratio appears to be close to 1 mg IV = 1mg SQ.

Pharmacokinetics
SQ infusions can produce the same blood levels as chronic IV infusions. There is no data to suggest that cachectic, febrile or hypotensive patients have problems with drug absorption.

Volume and Drug Choice
The limiting feature of a SQ infusion is the infusion rate; in general, SQ tissue can absorb up to 3 ml/hr. At low opioid requirements morphine is generally the drug of choice based on availability and cost; a switch to hydromorphone is indicated for a high opioid requirement due its higher intrinsic potency (approximately 4-6 times as potent as morphine), thus the need for a smaller infusion volume.

Administration
Use a 25 or 27 gauge butterfly needle—place on the upper arm, shoulder, abdomen or thigh. Avoid the chest wall to prevent iatrogenic pneumothorax during needle insertion. The needle can be left indefinitely without site change unless a local reaction develops—typically, patients can keep the same needle in place for up to one week at a time.

Toxicity
Local skin irritation, itching, site bleeding or infection can occur. Of these, skin irritation is the most common, managed by a needle site change.

Patient acceptance
Patients readily appreciate the ease of SQ administration as an alternative to IV access.

References

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