

Tunneled Intrathecal Catheter Mistaken as Central Venous Line Access

This bulletin presents incident findings and recommendations related to the misidentification of a tunneled intrathecal catheter as a central venous line access. The patient's family and hospital hope that sharing this information will reduce the risk of a similar fatal incident.

A patient with end-stage cancer, who was receiving home care, had a subcutaneously tunneled intrathecal catheter and was receiving hydromorphone and bupivacaine via a continuous ambulatory delivery device (CADD). The patient's intrathecal catheter had been inserted a few weeks earlier at an academic medical centre, and her medication administration was being managed by the home care service providers. She was taken to a local hospital because of resurgence of severe pain and insufficient supply of pain medication.

The admitting emergency physician identified the hydromorphone and bupivacaine as "epidural medications". However, for management of pain, he ordered insertion of a peripheral intravenous (IV) catheter and prescribed IV administration of morphine.

The patient was transferred to an inpatient unit. A nurse in that unit, noting the health record reference to an epidural line, looked for such a line, but her experience was limited to non-tunneled catheters. An assumption was made that the patient's catheter was for central line access, and new documentation in the health record incorrectly identified the intrathecal catheter as a central venous line.

An order was received to continue IV fluid maintenance and IV morphine. Because the peripheral IV line was interstitial, the presumed central venous line was accessed and the IV tubing connected for administration of fluids and medication. The patient experienced intractable pain and was transferred to another patient care area specializing in palliative pain management. The mistaken identification of the intrathecal line as a central line continued in this area. When the patient experienced seizures as a result of the large volume of fluid that had been administered intrathecally, a pain specialist and a nurse recognized the intrathecal catheter and identified the error. The patient did not regain consciousness and died several days later.

With the increasing use of tunneled intrathecal catheters for delivery of pain medication¹ and with the wide interconnectivity of medical devices, the potential for mix-ups between intrathecal and IV access devices requires priority attention.

The following factors contributed to this incident:

- There was a lack of adequate and visible identification to ensure that the intrathecal catheter would be immediately identified as such. No label was affixed to the dressing, catheter, infusion

tubing, or pump to communicate the route of administration.

- Although the intrathecal catheter port had "no IV access" printed on it by the manufacturer, the port was covered by a protective nontransparent dressing.
- The exit site and port of the tunneled catheter were located in the anterior chest (subclavian) area, the exact location where one would expect to find the site and port of a central venous line. Usually the abdominal area is selected as the exit site for a tunneled intrathecal catheter; however, because of an existing colostomy, the anterior chest area had been selected for this patient.
- The patient had been instructed by the academic medical centre to go to her local community hospital should she encounter problems and was given a discharge package containing information about the intrathecal catheter location and drug therapy, as well as a 24-hour pager number for emergency contact. Unfortunately, this information about the intrathecal catheter was not carried by the patient and thus was not available for review at the time of hospital admission.
- Front-line practitioners lacked a full understanding of the various types of neuraxial (including epidural and intrathecal) catheters.
- The patient's severe pain created urgency, which led practitioners to overlook critical information (e.g., faxed documents received from the hospital where the intrathecal catheter had been inserted).

Recommendations:

- Ensure that all specialty catheters are labelled at the access port, at the connection point of the infusion tubing, and at the infusion pump.
- Ensure that health care personnel use exact, consistent terminology when labelling and describing devices, infusions, and treatment.
- Ensure that dressings applied to protect catheter sites are transparent; for specialty catheters, an additional label identifying the type of catheter and the route of administration should be present.
- Educate practitioners about how to confirm the identity of catheter lines. Specifically, when they are accessing a central IV catheter, they should always aspirate before injection of any fluids or medications.
- Provide training to practitioners about specialty catheters such as neuraxial catheters.
- Identify resources that are readily accessible on all shifts

to assist with unfamiliar devices (e.g., anesthesia on-call physician, nursing resource personnel).

- Ensure that all medication labels **prominently** identify the route of administration.
- When inserting a tunneled catheter to an exit site (such as anterior chest location) where it could be mistaken for another line, additional emphasis on education and communication is needed.
- Include the patient and family in the medication use process, to facilitate the sharing of critical information. Whenever a long-term catheter is inserted, provide patients and family members who will be assisting in the patient's ongoing care with wallet-size information cards (similar to the cards provided after a pacemaker has been inserted) and instruct them on the importance of presenting this information whenever seeking health care services. It has been suggested that medical alert bracelets would provide an additional warning to the health care team.

References:

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- Recognize that communication between health care personnel and family members becomes increasingly important for patients whose condition is deteriorating and who may become unable to act as their own advocates.

In addition to the steps that health care providers can take to prevent misidentification of catheters, all manufacturers must provide distinct identification on these devices. Ultimately, the ideal safeguard is a "lock and key" redesign of catheters so that medications intended for IV use cannot be connected to intrathecal or epidural lines.

Several previous publications have discussed mix-ups between intrathecal (or epidural) and IV administration and have described the devastating consequences of such errors.^{2,3,4,5,6,7,8}

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Labelling and Packaging Issues of Pharmaceuticals – Meeting with Stakeholders

A collaborative meeting of stakeholders, co-led by ISMP Canada and the Canadian Patient Safety Institute (CPSI), and supported by Health Canada, was held in Toronto on September 20, 2005. Representatives from Canada's Research-Based Pharmaceutical Companies (Rx&D), Canadian Generic Pharmaceutical Association (CGPA), the Canadian Society of Hospital Pharmacists (CSHP), the Canadian Standards Association (CSA), Canadian Emergency Health Services, Canadian Anesthesiologists' Society, ISMP (U.S.), the U.S. Food and Drug Administration (FDA), HealthPRO Procurement Services

Inc., Medbuy Corporation, Baxter Corporation (Canada), Hospira Healthcare Corporation and select pharmaceutical manufacturers were in attendance.

The intent of the meeting was to discuss concerns related to medication labelling and packaging, and to develop a consolidated approach for prioritizing issues and for implementing recommendations regarding medication label and package enhancements. An example of a high priority item is the labelling of neuromuscular blocking agents.

Incident reporting was identified as a key component in the understanding of medication

safety issues and development of prevention strategies. Stakeholders were asked to encourage their members to report medication incidents to the Canadian Medication Incident Reporting and Prevention System (CMIRPS) for shared learning. See ISMP Canada website (www.ismp-canada.org) for information about CMIRPS.

ISMP Canada and CPSI, with the support of Health Canada, will be collaborating to create Terms of Reference for a formalized group to move forward with addressing pharmaceutical labelling and packaging issues.

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ISMP Canada is a national voluntary medication incident and 'near miss' reporting program founded for the purpose of sharing the learning experiences from medication errors. Implementation of preventative strategies and system safeguards to decrease the risk for error-induced injury and thereby promote medication safety in healthcare is our collaborative goal.

To report a medication error to ISMP Canada: (i) visit our website www.ismp-canada.org, or (ii) e-mail us at info@ismp-canada.org, or (iii) phone us at 416-480-4099. ISMP Canada guarantees confidentiality and security of information received. ISMP Canada respects the wishes of the reporter as to the level of detail to be included in our publications.

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