

INSTITUTE FOR SAFE MEDICATION PRACTICES

Normal View

FAILURE TO CAP IV TUBING AND DISINFECT IV PORTS PLACE PATIENTS AT RISK FOR INFECTIONS

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Problem: While numerous improvements in patient safety have been on the national agenda, medication errors and healthcare-associated infections (HAIs) top the list. Both of these serious problems have received widespread attention, and rightfully so. In its 2006 report, Preventing Medication Errors, the Institute of Medicine reported that medication errors were among the most common medical errors, harming at least 1.5 million people each year and costing more than \$3.5 billion annually for preventable drug-related injuries in hospitals alone.(1) Equally sobering, the Centers for Disease Control and Prevention cites HAIs in the top ten leading causes of death in the US. Each year, HAIs account for an estimated 1.7 million infections in hospitals, 99,000 associated deaths, and \$4.5 to \$5.7 billion in added patient care costs.(2-4)

These two risks—medication errors and HAIs—sometimes converge, particularly when basic handwashing does not occur between patient contact during medication administration (compliance rates have been cited between 25-50%),(5) and when aseptic technique is not maintained during preparation and administration of injectable medications and solutions. We have previously published reports of hepatitis out-breaks and other infectious diseases caused by the improper use of syringes and multiple-dose vials. However, there are several other unsafe medication-use practice habits that place patients in danger of an infection, two in particular that we frequently observe:

- **IV tubing not capped**--The failure to place a sterile cap (see Figure 1 in the PDF version of the newsletter) on the end of a reusable IV administration set that has been removed from a primary administration set, saline lock, or IV catheter hub and left hanging in between use
- **Port not cleaned**--The failure to properly disinfect the port when accessing needle-free valves on IV sets.

In the first instance, the tip of the IV administration set is exposed to potential contaminants, which could lead to infection if the nonsterile IV set is reconnected to the patient's IV access. In the second instance, the port is exposed to potential contaminants that can be pushed into the patient's IV line once the port has been accessed by tubing or a syringe.

These risks are unexpected outcomes associated with the implementation of needleless IV systems. Before the introduction of needleless systems, healthcare practitioners typically replaced the needle used to connect the infusion to the IV tubing with a new sterile, capped needle to prevent contamination when the line was hanging between uses. Now it appears that many practitioners are not considering the risk of contamination and are not placing a sterile cap on the exposed tubing. While needleless systems have dramatically reduced the risk of needlestick injuries, some have speculated that the lack of a needle or cannula on a syringe, or at the end of the tubing, may suggest that protection and disinfection is not required. One healthcare educator we spoke with finds that this aspect of infection control is not emphasized during initial professional education. A nurse we heard from supported this premise when she reported that physicians and nurses caring for her hospitalized mother were actually offended when she offered them alcohol swabs to disinfect the IV port when it looked like they were not going to follow through on this process.

Safe Practice Recommendations: We encourage organizations to ensure that practitioners involved in medication administration are well versed in the use of aseptic technique during the medication-use process and conditions under which it must be applied. These conditions should include: 1) covering the exposed end of IV tubing used for intermittent infusions with a sterile cap between uses, and 2) disinfecting the port before connecting tubing or a syringe to the port.

We heard from one pharmacist that nurses in her facility sometimes attach the exposed end of IV tubing to a port on the same tubing to maintain sterility (sometimes called “looping”), although it was not clear whether the nurses properly disinfected the port prior to attachment. This practice is not among those recommended by the Infusion Nurses Society (INS)(6) and should be brought to the organization’s infection control committee for careful deliberation before being endorsed. (INS standards of practice state, “a compatible sterile covering should be aseptically attached after each intermittent use.”) We also learned that nursing assistants sometimes disconnect the IV tubing when an intermittent infusion is finished, and then forget to attach a sterile cap. This practice should be prohibited, as unlicensed staff should never connect or disconnect any type of medical tubing.

These processes—capping the tubing end and disinfecting the port—should be documented in policies and procedures. The capping procedure should make clear that a new sterile cap must be used every time the tubing is capped. The disinfecting procedure should describe the exact process to be used, which may include using two alcohol swabs and allowing the alcohol to evaporate before accessing the port. Both processes should also be included as specific elements that must be observed during competency assessments related to medication use for new and existing practitioners. We also recommend that you conduct regular compliance rounds on all patient care units to document the extent of the problem and measure improvement.

References:

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