

## Keeping needleless connectors clean, part 2

By Nancy L. Moureau, BSN, RN, CRNI, CPUI, and Robert B. Dawson, MSA, BSN, RN, CRNI, CPUI

IN A PREVIOUS COLUMN, we discussed central line-associated bloodstream infections (CLABSIs) and methods to reduce CLABSIs, including proper disinfection of devices before accessing them. (Not using a disinfectant before accessing the needleless connector lets bacteria on the connector enter the bloodstream.) Guidelines aren't always consistent on the best solution to use with each device, so you should know which solution your facility's protocol specifies, how that solution works, and how to apply it correctly.

Let's take a closer look at two disinfection protocols: the wipe method and the disinfecting cap method.

### The wipe method: More than a swipe

The wipe method is an active scrubbing process in which the healthcare provider uses a fabric pad soaked with alcohol (prep pad) and applied to a surface for cleaning. This method is best for multiple quick connector accesses (such as flushing) and multiple medication administrations. A sterile prep pad is used on the needleless connector before access.

Friction and time are vital to the success of this method. Alcohol is effective at reducing microbial contamination on needleless connectors if applied vigorously for at least 15 seconds and allowed to dry passively. However, most clinicians admit they don't adhere to this 15-second time recommendation.<sup>1</sup>

The sample protocol for this method is:

- Perform hand hygiene.
- Put on clean gloves.
- Tear the top portion of the disinfectant wipe or prep pad packaging to expose the edge of the wipe. Pull the wipe out of the package.
- Grasp the needleless connector of the I.V. device in your nondominant hand.
- With your dominant hand, use the wipe to vigorously scrub the threads and septum of the needleless connector, being sure to touch only one side of the wipe with your gloved hands.
- Be sure to twist the wipe over the connector threads in a clockwise-counterclockwise motion several times (as if you were juicing an orange). Scrub the septum with pressure (friction) on the top of the connector, making sure to clean in all crevices.
- Alternate between twisting the wipe on the threads and scrubbing the septum for at least 15 seconds, covering each area for several seconds at a time. Sing, whistle, hum, or think the song, "Happy Birthday" as an easy estimate of 15 seconds.<sup>1</sup>
- Keep the needleless connector in your nondominant hand and let it air-dry before accessing it with a sterile syringe or a male I.V. tubing connector.
- Each and every time you access a needleless connector, perform a new 15-second scrub following the same steps.

### The disinfecting cap method: Clean protection

The disinfecting cap contains a disinfecting solution that cleans the needleless connector before access and also protects it from touch contamination between uses. You can twist the cap onto the needleless connector and leave it in place for up to 96 hours; protection starts after the cap has been on the needleless connector for at least 5 minutes.

The passive protection provided by the disinfecting cap is ideal for central venous access device lumens that are used intermittently—for example, for administering antibiotics every 6 hours. You just remove and discard the cap and the needleless connector is ready for use without further wiping. Using caps on secondary tubing sets reduces contamination between administration times.

Here's a sample protocol for using the single-use disinfecting cap:

- Perform hand hygiene.
- Put on clean gloves.
- Remove the old disinfecting cap, if one is in place. To remove the disinfecting cap, use your nondominant hand to grasp the needleless connector. Using your dominant hand, twist the disinfecting cap counterclockwise to remove it. Discard the cap.
- Open the new disinfecting cap package by peeling the protective cover. Keep the cap in its package to prevent touch contamination.

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Most patients developed infections in the pump pocket or lumbar site. Devices were explanted in 55% to 80% of patients, and all the infections resolved with device removal and antibiotic therapy.

Device removal is recommended in patients with erythema, edema, pain, or fluctuance (a soft, boggy feeling on palpation of the skin) along the length of the tunneled catheter or electrode that suggests deep-tissue infection. These infections can progress to the intrathecal and epidural spaces.

### Epidural abscess

A bacterial infection typically caused by *S. aureus*, epidural abscess is a severe infection of the epidural space

that usually requires emergency neurosurgical intervention.<sup>4</sup> Risk factors for this complication include diabetes, trauma, I.V. drug abuse, and alcohol abuse.

Epidural abscess is treated with laminectomy, abscess drainage, and antibiotics, and most patients recover completely. Early diagnosis can help reduce or avoid permanent neurologic deficits. Signs and symptoms of include severe back pain, fever, neurologic deficit, muscle weakness, sphincter incontinence, and sensory deficits.

### Keeping analgesia painless

By understanding these infection-control issues in pain management, you can help your patient get safe and effective analgesia. ■

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Clifford Gevirtz is associate professor of anesthesiology at Louisiana State University-New Orleans Health Center, and medical director of Somnia Pain Management in Harrison, N.Y.

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- Grasp the needleless connector with your nondominant hand.
- With your dominant hand, apply the disinfecting cap to the needleless connector and twist on with pressure in a clockwise motion (as if attaching a syringe).
- After the manufacturer's recommended time for disinfecting the connector, remove the cap to access the needleless connector.
- If touch contamination occurs or debris such as blood is present, swab the connector with a disinfecting wipe before accessing it (using the wipe method as described above) and before applying a disinfecting cap.

- Leave the disinfecting cap in place until the next access, so the needleless connector stays clean and protected.
- Apply a new single-use disinfecting cap each time you access the needleless connector.

### General principles

Needleless connector disinfection isn't a new concept, but it's received little focused attention. The most important tool in preventing CLABSIs still remains the individual clinician at the point of care, so education has been a top recommendation by the CDC for the past 8 years.<sup>2,3</sup> By understanding the

importance of needleless connector disinfection, you can keep patients safe from CLABSI. ■

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Nancy L. Moureau is president of PICC Excellence, Inc., of Hartwell, Ga., and a part-time I.V./PICC team nurse at Greenville (S.C.) Memorial Hospital. Robert B. Dawson is an I.V. team clinician at Concord (N.H.) Hospital, a vascular access consultant, and president of PICC Academy of Nashua, N.H.