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Guide to Patient Safety

Vascular access

Needleless connector know-how

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Guidelines aren't always consistent on the best solution to use with each needleless device, so you should know which solution your facility's protocol specifies, how that solution works, and how to apply it correctly to the chosen device.

The wipe method: More than a swipe

The wipe method is an active scrubbing process in which the healthcare provider uses a fabric pad (prep pad) soaked with alcohol 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 prepackaged 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.[1]

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.[1]
- 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.
- Every time you access a needleless connector, perform a new 15-second scrub following the above 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.

• Open the new disinfecting cap package by peeling the protective cover. Keep the cap in its package to prevent touch contamination.
• 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, remove the cap to access the needleless connector. 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.
• 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) 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 cap after accessing the needleless connector.

General principles

Needleless connector disinfection isn't a new concept, but it has received little focused attention. The most important tool in preventing central line–associated bloodstream infection (CLABSI) 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.[1,2] NM

REFERENCES

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2. Centers for Disease Control. Draft Guidelines for the Prevention of Intravascular Catheter Related Infections. 2009. http://www.cdc.gov/ncpdcid/pdf/Draft_BSI_guideline_v15_2FR.pdf.

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continued from page 39

1. How does the virtual ICU technology integrate with the existing or new electronic medical record in your organization?
2. What's the organization infrastructure to support mobile technology?
3. What multidisciplinary groups need to be involved during the strategic planning of integration?
4. What are strategies to promote sustainability of the virtual ICU and integration of telehealth/ehospital?
5. How does demonstration of return on investment differ across different areas of clinical integration?
6. How will compliance with evidenced-based practice initiatives be monitored?
7. What performance metrics will be used across different specialty areas?
8. What are the educational and training requirements for diverse populations of clinical staff?
9. How are performance results communicated?
10. What's the organizational direction for telehealth integration?

Future growth

The future is promising for widespread integration of technology. The virtual ICU provides one solution to greater accessibility to critical care resources across diverse patient-care groups. Patient quality and safety are enhanced through strategic integration of this life-saving virtual technology. Multidisciplinary collaboration, communication, and performance outcomes will drive the virtual ICU into new and exciting territories to serve those patients who need it most. NM

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2. Bennett AM, Rappaport WH, Skinner FL. *Telehealth Handbook: A Guide to Telecommunications Technology for Rural Health Care.* U.S. Department of Health, Education and Welfare, Office of the Assistant Secretary for Health, National Center for Health Services Research; 1978.

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