



Infection Prevention

Kaiser Permanente Los Angeles Medical Center

Contact Information

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Category: Adherence to procedures
Type of Facility: Outpatient
Number of Patients: 205 patients: 130 in-center; 66 PD; and 9=Home HD
Number of Nephrologists: 10 Nephrologists and 6 Fellows

Background

The buttonhole technique is a method in which an individual cannulates the AV fistula in the exact same spot, at the same angle and depth of penetration every time. A scar tissue tunnel track develops, allowing for the use of a buttonhole (blunt) fistula needle.

From January 2012 to October 2012, six infections were attributed to the use of buttonhole access. Additionally, an apparent cause analysis is done after each incident of infection to determine possible cause.

A Root Cause Analysis/Performance Improvement Project was conducted in October 2012 to further investigate contributing factors related to the buttonhole-related infections. As a result, the dialysis interdisciplinary team and infection control practitioner agreed to discontinue the use of buttonhole technique on all in-center hemodialysis patients. For home hemodialysis patients, the decision on whether to keep the buttonhole or switch to sharp needles is based on an individual assessment by the nephrologist.

Policies and activities implemented

As of October 2012, the in-center hemodialysis unit ceased using the buttonhole technique due to the increase in infection incidents and switched to using sharp needles.

The Dialysis team created a guideline for “Triple Antibiotic Use in Buttonhole Sites post Dialysis Treatment” for patients who continue to use the buttonhole technique. They also adapted the “Two-Step Cleaning Protocol for Buttonhole Sites Prior to Cannulation to Prevent Infections” from Northwest Renal Network.



Facility staff received training on the new policies during in-services, and access cannulation procedures are also incorporated into the staff annual competency review. Staff provides the patient education regarding the infection risks associated with the use of buttonhole technique.

Outcomes

As a result of the policy change and patient education, the majority of patients agreed to stop using the buttonhole technique, and used the sharp needles instead (rope-ladder technique). However, a few patients remained insistent on using buttonhole.

From November 2012 to November 2013, infection incidents attributed to AV fistula have dropped significantly. There was only one incident of AV fistula related infection and the patient was using buttonhole. The patient insisted on using buttonhole technique despite extensive explanation by the medical staff. However, after the infection incident, the patient finally agreed to stop using buttonhole. No further occurrence of infection was noted.

Recommendations

- Track, monitor and investigate each infection incident.
- Determine possible causes attributed to each infection incident.
- Collaborate with the team to determine possibility of discontinuing the use of buttonhole technique.
- Incorporate vascular access monitoring, infection rate, and hospitalization rate in the Quality Assurance Performance Improvement Program of the department.

Two-Step Cleaning Protocol for Buttonhole Sites Prior to Cannulation to Prevent Infections

Procedure	Rationale
1. Have the patient wash their access arm before coming to their dialysis chair.	1. Dialysis patients have more staph on their skin than those without kidney failure. <i>Staph aureus</i> is the leading cause of infection in dialysis patients ¹ .
2. Using your facility's antimicrobial agent, cleanse the buttonhole sites, using a circular rubbing motion.	2. Pre-cleaning buttonhole sites will continue to reduce <i>Staph aureus</i> and help to prevent infection.
3. Remove the scabs from the buttonhole sites using an appropriate technique.	3. Scabs contain <i>Staph aureus</i> from the skin. See attached guide for "Dos & Don'ts of Scab Removal." ²
4. Using your facility's antimicrobial agent, cleanse the buttonhole sites and leave on according to the manufacturer's recommendation.	4. KDOQI™ 2006 Vascular Access Guidelines ³ states to follow manufacturer's guidelines for correct contact time. See attached guide "Preparing the Vascular Access for Cannulation." ⁴
5. Cannulate per facility policy while maintaining sterility of the needles.	5. Contaminated needles and improper needle insertion can lead to tunnel infections and/or sepsis.

1. Kaplowitz, L.G. Comstock, J.A., Landwehr, D. M., Dalton, H.P. and Mayhall, C.G. Prospective study of microbial colonization of the nose and skin and infection of the vascular access site in hemodialysis patients. *Journal of Clinical Microbiology*. 26(7):1257-1262.
2. Ball, L.K. (2006). The buttonhole technique for arteriovenous fistula cannulation. *Nephrology Nursing Journal*, 33(3): 299-305.
3. National Kidney Foundation. (2006). KDOQI clinical practice guidelines and clinical practice recommendations for 2006 updates: Hemodialysis adequacy, peritoneal dialysis adequacy and vascular access. *American Journal of Kidney Disease*, 48: S1-S322, (suppl 1).
4. Ball, L.K. (2007). Preparing the vascular access for cannulation. Retrieved from <http://www.nwrenalnetwork.org/fist1st/cleanaccess.pdf>.

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Triple Antibiotic Use in Buttonhole Sites post Dialysis Treatment

1. Triple ATB packet is a medication and must be stored in a separate drawer from oral or IV medications in a drawer that can be locked.
2. Obtain a MD order for the application of triple ATB on buttonhole site post HD.
NOTE: Have MD write a DC order on the Mupirocin.
3. When preparing supplies prior to discontinuing dialysis treatment, request a packet of triple ATB from the RN.
4. Remove fistula needles and stop the bleeding using sterile gauze.
5. While waiting for the bleeding to stop, open 2 new sterile gauze and squeeze a pea-size amount of triple ATB on each gauze.
NOTE: Use separate gauze to apply the ATB ointment on each site.
6. After bleeding stops, remove the first set of gauze and apply ointment on the buttonhole site.
7. Use a gauze and tape or band aid to cover the site before sending patient home.
8. Discard the used triple ATB packet. Do not save for another day or use on another patient.
NOTE: Use 1 triple ATB packet per patient.