Implementing Zero/Neutral Displacement IV Connectors to Reduce Blood Stream Infections

Kirsten Mitchell  
*Pittsburg State University*

Barbara McClaskey  
*Pittsburg State University*

Follow this and additional works at: [https://digitalcommons.pittstate.edu/posters_2019](https://digitalcommons.pittstate.edu/posters_2019)  
Part of the [Bacterial Infections and Mycoses Commons](https://digitalcommons.pittstate.edu/bacterial_infections_and_mycoses_commons), and the [Hematology Commons](https://digitalcommons.pittstate.edu/hematology_commons)

**Recommended Citation**  
[https://digitalcommons.pittstate.edu/posters_2019/40](https://digitalcommons.pittstate.edu/posters_2019/40)

This Article is brought to you for free and open access by the Research Colloquium 2019 at Pittsburg State University Digital Commons. It has been accepted for inclusion in Posters by an authorized administrator of Pittsburg State University Digital Commons. For more information, please contact dlwhite@pittstate.edu.
Implementing Zero/Neutral Displacement IV Connectors to Reduce Blood Stream Infections

Kirsten Mitchell, BSN Student
Irene Ransom Bradley School of Nursing, Pittsburg State University
Barbara McClaskey, Ph.D. – Faculty

Abstract
Catheter related blood stream infections are a major problem in the United States and account for over $225 million each year with over 1,300 infections occurring each day. By researching the most effective type of IV connector, health care providers have the ability to give the best and safest care to patients requiring IV access. Zero/neutral IV connectors may be the answer to decreasing these infections as they produce no reflux in the connector which is a breeding ground for bacteria and occlusions. In several studies, zero/neutral connectors performed better than positive and negative IV connectors when comparing both reflux and bacteria growth. By implementing zero/neutral connectors into every day practice over positive and negative connectors the number of catheter related blood stream infections can be cut down and prevent additional harm to patients.

PICOT Statement
Population - Any patient requiring IV access
Intervention - Zero/neutral displacement IV connectors
Comparison or Routine Method - Positive and negative displacement connectors
Outcome - Decreased incidence of catheter related blood stream infections
Time - duration of necessary IV access

Background Information
Needleless connectors allow for the administration of fluids, medications, and blood into indwelling venous or arterial catheters.
- Considered the microbial gatekeeper
- Use began in 1991 to reduce the risk of needlestick injuries when accessing IV's
Catheter related blood stream infections (CRBSI) occur at a rate of 57 per hour.
- 1,370 per day with a 25% mortality rate
- CRBSIs cost $225 million per year and $40,000 per incident
- 200,000 ICU days per year

CRBSI can be a direct result of occlusion caused by improper maintenance by health care providers.
- Improper clamping resulting in blood reflux can cause occlusions and a breeding ground for bacteria
- The minimum amount of blood to cause an occlusion or how long it takes for an occlusion to develop is unknown
- Current best nursing practice to prevent CRBSIs is to use proper hand hygiene, site care, flushing regimens, and adequate knowledge on their facility’s connector

In a study by Hull (2017), his team looked at reflux in 11 different connectors. The zero/neutral connectors of four different companies out performed all the negative and positive connectors in the study.

Leakage of less than 8 microliters in an unaccessed connector may seem like a miniscule amount but gives an opportunity for bacteria to enter the bloodstream and cause a potentially fatal infection.

CRBSI Decreased from 7 infections to 1 in 1000 days
SICU decreased from 8 infections to 1 in 1000 days
MICU decreased from 7 infections to 1 in 1000 days

Reference