STUDY SUMMARY

Reducing Hazardous Drug Exposure: Are All Closed Systems Created Equal?

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BACKGROUND

Pediatric oncology nurses handle hazardous drugs on a daily basis, increasing their risk for exposure and potential short- and long-term adverse effects. Since 2008, The Center for Cancer and Blood Disorders at Children's National Medical Center in Washington, DC has employed a closed system transfer device (CSTD) to minimize pharmacy and nursing exposure to antineoplastic agents and other hazardous drugs.

In October 2011, the medication safety team at Children's National Medical Center made the decision to switch from secondary tubing for chemotherapy administration to a primary setup that employed low-sorbing tubing and placed a PhaSeal™ (Becton, Dickinson and Company) CSTD at the connection to the patient's central line. In the following months, there was a dramatic rise in exposure to antineoplastic agents due to spills as a direct result of disconnections of the infusion tubing to the CSTD. This disconnection was not only a hazardous drug exposure risk, but also a blood exposure and central line-associated bloodstream infection (CLABSI) risk, because the patient's central line became an open system.

In order to better protect staff, patients, and families, Children's National Medical Center initiated a performance improvement process to resolve this issue. An interdisciplinary team conducted a systematic review and implemented interventions to reduce hazardous drug exposure in the Cancer and Blood Disorders unit.

OBJECTIVE

The purpose of this performance improvement initiative was to reduce hazardous drug spills, blood exposure, and the risks associated with an open central venous catheter resulting from disconnection between the CSTD and administration tubing.

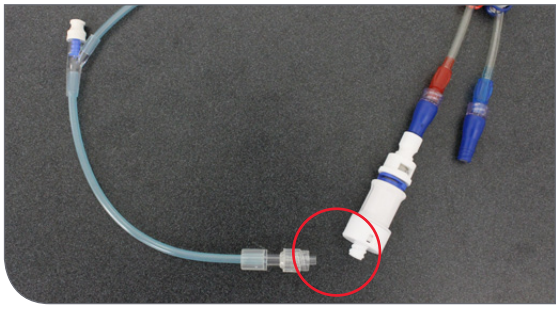


Figure 1: Point of disconnect while using PhaSeal's closed system administration device

METHODS

The safety improvement process was implemented in two phases. The first phase involved assembling an interdisciplinary team to identify the root cause of hazardous drug spills during patient administration. This team evaluated incident report data and consulted with representatives of the PhaSeal CSTD manufacturer. Subsequent practice changes were instituted, and both nursing and pharmacy teams were reeducated. The outcomes of these changes were recorded and analyzed.

During the second phase, the interdisciplinary team researched alternative CSTD systems, including the ICU Medical ChemoClave™ needlefree CSTD, featuring the Spinning Spiros® closed male luer. The team conducted a trial of the Spinning Spiros in June 2012 and implemented the product in November 2012.

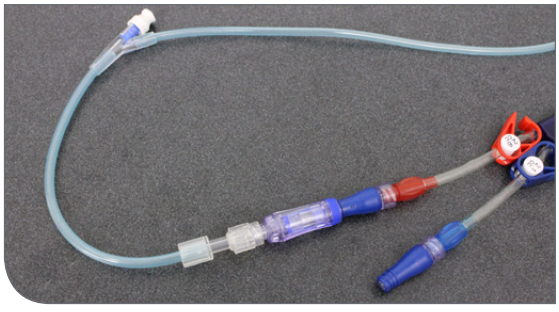
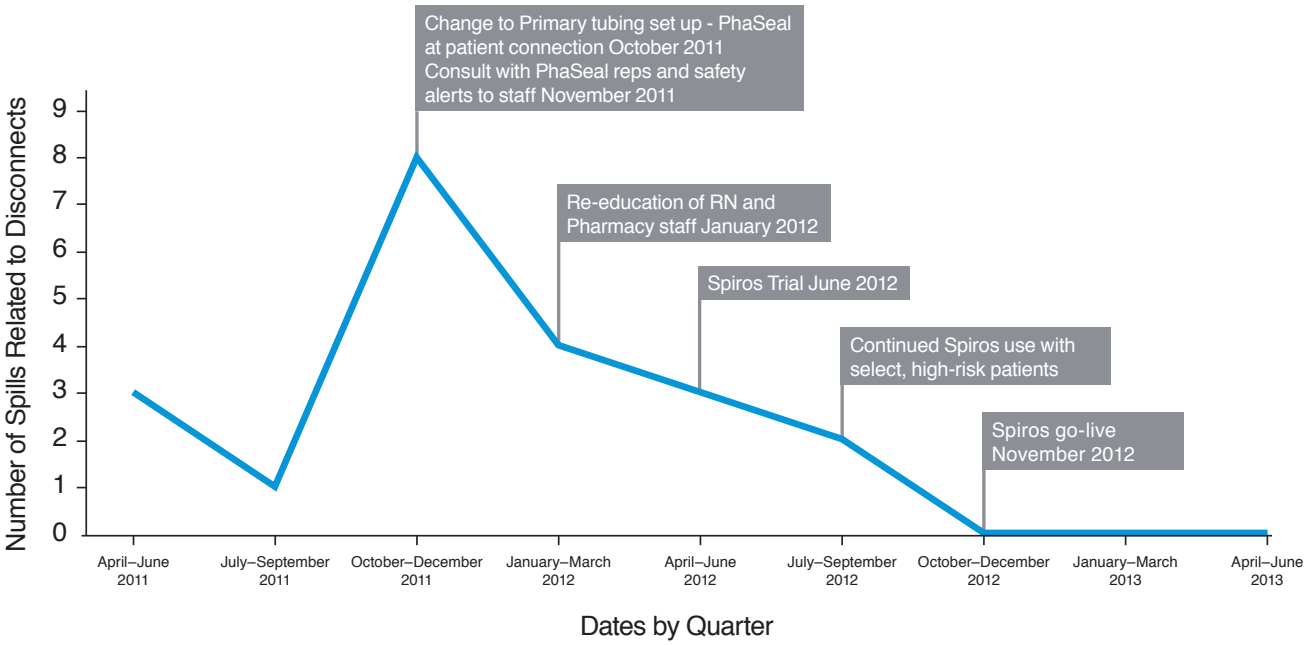


Figure 2: Connection between Spiros Closed Male Luer and administration tubing

RESULTS

In spite of efforts to reduce disconnects with the existing PhaSeal CSTD product in use, there continued to be disconnects on a regular basis. After research and a product trial were completed, the team at Children's National Medical Center introduced and implemented the ChemoClave needlefree CSTD featuring the Spinning Spiros closed male luer in November 2012. To date, there have been no exposures to hazardous drugs from disconnects following the conversion to the ChemoClave system.

GRAPH: TREND OF CHEMOTHERAPY DISCONNECTS FROM APRIL 2011 THROUGH JUNE 2013



CONCLUSION

The Spiros closed male luer proved to be an effective solution for reducing disconnects and the potential for dangerous exposure to hazardous drugs and blood, and complications related to an open system. The small size of the Spiros also made it ideal for use on pediatric patients, increasing patient and family satisfaction.