CLABSIs in the PICU: Use of Alteplase in the PICU and Adherence to the Maintenance Bundle.

1 Background
Central Line Associated Blood Stream Infection (CLABSI), is one of the most common nosocomial infections in the world. One of the highest incidence rates of CLABSI occurs in pediatric patients admitted to the intensive care unit. CLABSI-related morbidity makes it a major health problem, therefore it is pertinent to develop preventive strategies against it.

This project is one of multi factorial bundles initiated in 2006 in an effort to reduce the incidence of CLABSI in the PICU. On December 16, 2013, the Children's Center of Johns Hopkins Hospital, switched brands of the needleless connectors used as caps on their central lines. The change was primarily driven because of incompatibility issues between IV tubing and the connector cap in use known as NeoClave Clear connector cap.

Besides, a central venous catheter, (CVC), clot can be a primary driver because of incompatibility issues between IV tubing and the connector cap in use known as MicroClave Clear connector cap. Therefore, CL days reflects a constant variable in this project, it was not the reason for the adoption. Therefore CL days reveals that there was a little decrease in CL days during these periods.

The efficient use of the new needleless connector cap in conjunction with commendable, effective staff implementation of the CLOT bundle in the maintenance of CVC has continued to reduce the incidence of CVC clot in the PICU patient population. This effort has also contributed to reducing the rate of CLABSI in the PICU.

The consistent utilization of these evidence-based practices will continually yield the best outcomes for both patients and clinicians.

2 Methods
1. Weekly use of the CLOT bundle data collection tool to retrieve information from the electronic medical records of patients.
2. The total doses of Alteplase used to dissolve clots and total number of days that patients had central lines (CL) IV access was compared for 6 months periods before and after the introduction of the new needleless connector cap.

3 Results
Specific Aim #1
To ascertain the effectiveness of the InVision Plus IV connector cap in the reduction of blood clot and invariably, a reduction in the use of Alteplase.

Specific Aim #2
This retrospective surveillance project also aimed to establish adherence to the CLOT bundle for the maintenance of central lines.

Demographic:
Specific aim #1 and aim #2 were jointly addressed. Data was collected and compared for the period of June 1st, 2013 to December 15th, 2013 and another period from December 16th, 2013 to June 15th, 2014.

These periods represent six month prior and after the adoption of the new cap. Comparative Data analysis revealed that there was a little decrease in CL days during these periods. But there was significant reduction in the use of Alteplase in the months after the adoption. Therefore CL days reflects a constant variable in this project, it was not the reason for the reduction in the use of Alteplase in the PICU.

Below are the images and features of the old and new connector caps used in the PICU.

4 Conclusions
The efficient use of the new needleless connector cap in conjunction with commendable, effective staff implementation of the CLOT bundle in the maintenance of CVC has continued to reduce the incidence of CVC clot in the PICU patient population. This effort has also contributed to reducing the rate of CLABSI in the PICU.

5 Future Directions
1. Continue to monitor adherence to the CLOT bundle.
2. Continue to monitor the use of Hospital protocol in the use of Alteplase.
3. Use of root cause analysis in the investigation of new cases of CLABSI. In the PICU

6 References

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