

# ENGAGEMENT OF FRONTLINE STAFF AND IMPLEMENTATION OF A NOVEL NEEDLELESS CONNECTOR RESULTS IN DRAMATIC DECREASE IN CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTIONS (CLABSI)

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## BACKGROUND

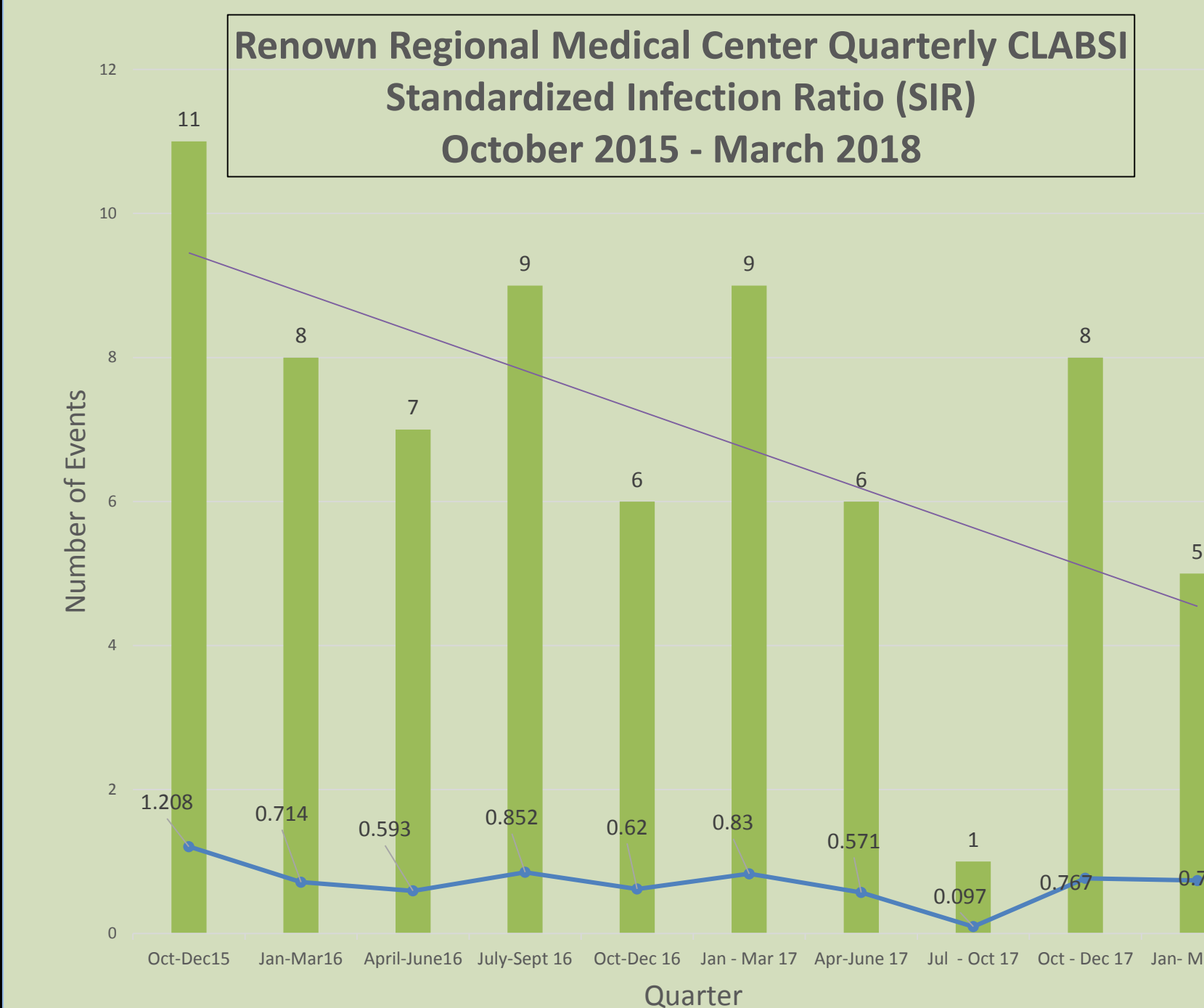
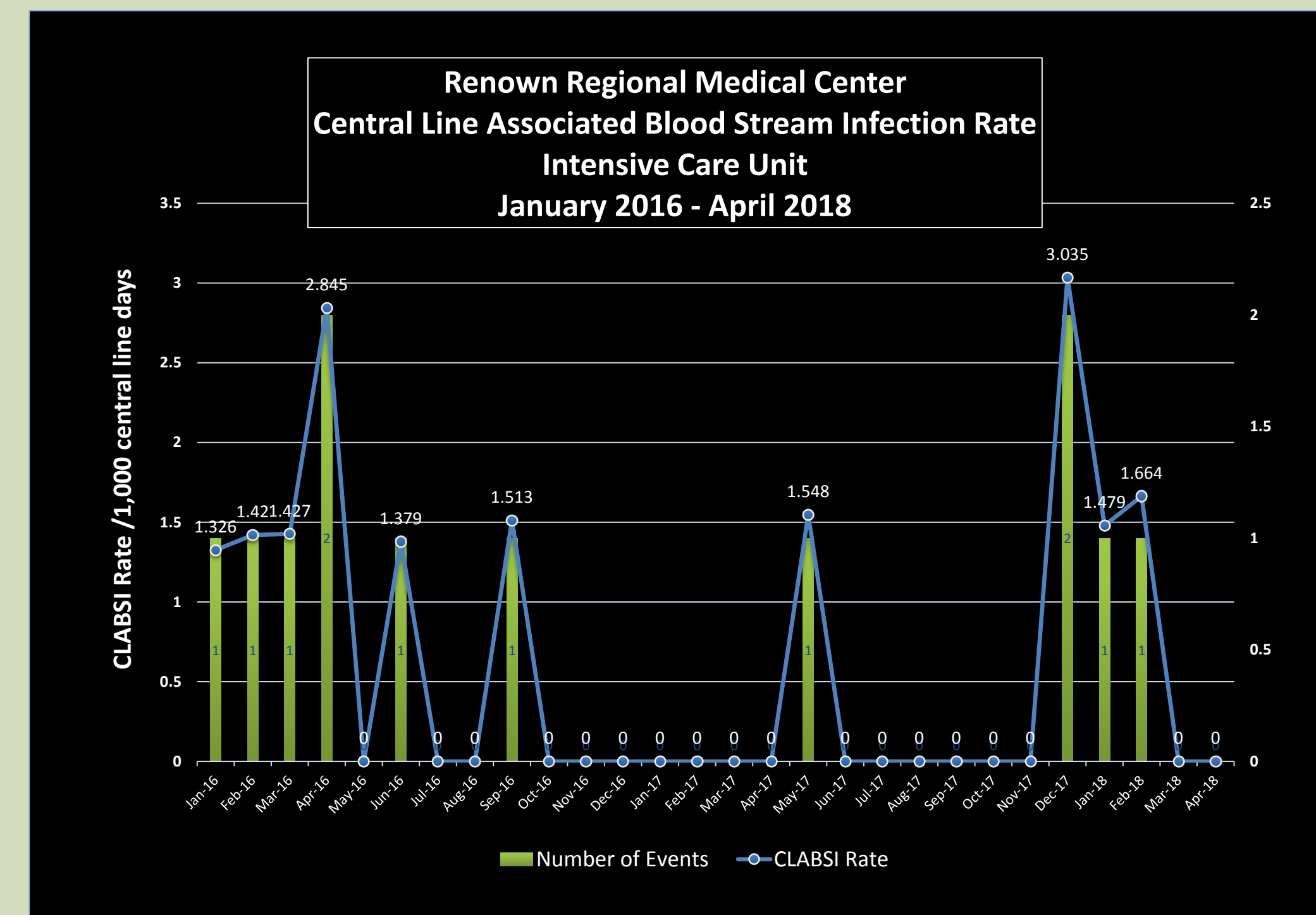
Central lines are a common device in the Intensive Care Unit (ICU) and oncology patients, however their use is associated with increased risk of blood stream infections. Central Line Associated Bloodstream Infection (CLABSI) results in significant morbidity, up to 25% mortality, extended length of stay, and increased cost. Consistently following evidence based guidelines may lead to a reduction of this risk.

This project sought to determine whether the use of a novel needleless connector, impregnated with chlorhexidine and silver ions, paired with nursing education to consistently apply best practices would reduce CLABSI rates in a high-risk population.

## METHODS

- Gap analysis performed on current policy, practice, and supplies and literature review (July 2016)
- Education and process improvement plan developed based on data analysis
- Creation of an Infection Prevention (IP) Champion Education Program consisting of local unit bedside Registered Nurses (RNs)
- Didactic and **hands on** training provided to IP Champions
- IP Champions trained their peers with a 100% completion rate (n=1200)
- **Eliminated use of passive alcohol disinfection caps**
- Implemented needleless connector impregnated with chlorhexidine and silver ions in high risk units; three adult ICUs and one oncology unit (November 2016)

## RESULTS



Units	Average number of Events / unit			Rate per 1,000 line days		
	Pre CLABSI/QTR	Post CLABSI/QTR	Percent change	Rate pre	Rate post	Percent Change
RRMC	10.25	6	41% ↓	3.44	3.18	7.6% ↓
RICU	0	0.5		0	0.59	
SICU	2	1.17	41.5% ↓	1.46	0.929	36% ↓
CNU	0.75	1.33	77% ↑	0.99	1.35	36% ↑
ICU	2.75	0.83	70% ↓	1.36	0.497	63% ↓
Trial Units Combined	5.5	3.83	30% ↓	1.06	0.80	24.5% ↓

## OUTCOMES

- 4 deaths avoided
- 204 hospital days saved
- \$544,000 cost savings\*

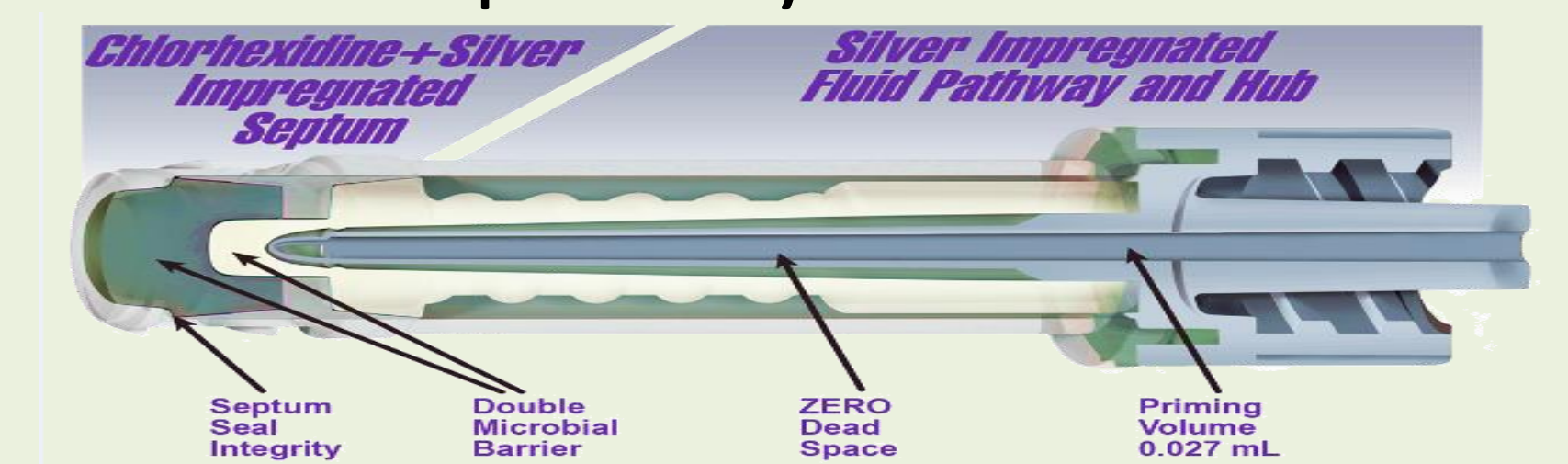
\*annualized \$32,000 per CLABSI

## DISCUSSION

The implementation of a novel needles connector, discontinuation of passive alcohol disinfection caps in combination with the development of an IP Champion Education Program resulted in an overall reduction in CLABSI's by 30% in high-risk populations and facility wide by 41% and improved multiple patient outcomes. These positive results led to the facility-wide conversion to novel needles connectors for all peripheral and central lines and the extension of the IP Champion Education Program to ensure consistent application of best practices. The successful outcomes demonstrate that engagement of the frontline staff, consistent application of best practices and evaluation of key supplies is the pathway to the elimination of CLABSI and achieving and sustaining ZERO.

## NOVEL IV CONNECTOR ADVANTAGES

- Needleless connector impregnated with silver and chlorhexidine
- Neutral fluid displacement
- Straight-through fluid pathway allows for effective blood clearance with typical NS flush
- Septum seal integrity prohibits bacterial ingress
- Effective blood clearance to minimize CLABSI risk and bacterial growth
- Zero dead space minimizes biofilm formation
- Double microbial barrier protects intraluminal pathway



## EDUCATION

- Creation of facility-wide IP Champion Education Program which focuses on peer-to-peer education and communication
- Ongoing training addressing central line best practices; blood draws, medication administration, hub maintenance, and a standardized dressing change kit
- Hands on training with teach back validation

## WHAT WE LEARNED: ZERO is Achievable!

- Frontline staff is key to success – engage and empower
- Back to Basics, Standardize, Keep it simple
- Observe and validate practice at the bedside
- Keep the focus
- Don't get discouraged by setbacks – maintain focus and don't settle.

- 38 Bed ICU achieved and sustained a 70% reduction in CLABSI events.
- Four High Risk units achieved and sustained a 30% reduction in CLABSI events.
- TPA usage for line clearance decreased by 47%.

- It is a journey, we have had zero CLABSI's in multiple units and across the facility for several months. Next step is sustaining zero:
- Continue to engage frontline staff
- Keep the Focus
- Celebrate Success because **Zero is achievable!!!**