

## □ Example of a QI project write up.

### Title:

Effect of an educational program and new data collection method on rates of central line insertion data collection, use of sterile technique strategies, and incidence of catheter-related bloodstream infections in a medical intensive care unit (ICU).

S. Mountain, J. Rodrigo, C. Gray, J. Al Barrak, P. Dodek  
Department of Medicine, University of British Columbia, Vancouver, BC

### Problems:

Need for improved data collection methods to determine what steps line inserters are taking to ensure sterile technique; and need for improved observation of the tenets of sterile technique to reduce the incidence of catheter-related bloodstream infections.

### Aim:

To increase the percentage of lines for which insertion data are collected by 50% within 2 months in a medical ICU; to increase the number of strategies for sterile line insertion employed by inserters by 10% within 2 months in a medical ICU; to decrease the incidence of catheter-related bloodstream infections by 10% within 2 months in a medical ICU.

### Key measures for improvement:

Percentage of central line insertions for which data regarding sterile insertion technique are collected; number of strategies for sterile line insertion employed by inserters; incidence of catheter-related bloodstream infections.

### Process of gathering information:

Data regarding line placement technique were gathered in two ways; initially line inserters were randomly surveyed after they placed a line by two data collectors stationed in the ICU. After our intervention, data were collected by voluntary completion of an online form that automatically generated a line placement procedure note.

Data on the actual number of line placements in the ICU were collected independently by ICU data collection personnel not affiliated with this study. These data collectors also documented all incidents of catheter-related bloodstream infections as defined by a strict set of predefined criteria.

### Analysis and interpretation:

Table 7.1 Results before and after providing an educational session on proper sterile technique in line placement, posting reminder notices and introducing an online standardized procedure form and note.

**Table 7.1 Analysis of results — line placement technique**

	<i>Prior to intervention</i>	<i>Post intervention</i>	<i>Difference</i>
Percentage of line placements for which data were collected	19.2	47.2	-27.98 ( $p < 0.0001$ )
Number of sterile technique strategies employed in line placement	9.67	9.8	0.133 ( $p = 0.663$ )
Incidence of catheter-related bloodstream infections	0.155/1000 line hours	0.085/1000 line hours	-0.07/1000 line hours ( $p = 0.211$ )

### Strategies for change:

Multiple measures, including an educational presentation, posters and an online data collection form and automated procedure note, were instituted.

### Effects of change:

Percentage of line placements for which data were collected was increased significantly, from 19.2% to 47.2%. Our intervention was not associated with an increase in the overall rate of use of sterile techniques. However, in some of the individual strategies, such as use of surgical caps and ultrasound, a significant difference was demonstrated. The low baseline incidence of catheter-related bloodstream infections did not change significantly after our intervention.

### Lessons learned:

Current data collection methods limit our ability to effect change, as it is difficult to determine current practices.

Newer data collection methods can be much more effective at allowing us to capture a broader picture of procedural techniques, and they can also serve as an educational reminder for best practices.

Sterile technique is quite well observed in our medical ICU. However, some lapses in observation of full technique were amenable to change associated with our interventions.

The relatively low baseline incidence of catheter-related bloodstream infections was not affected by our interventions as assessed over a relatively short period of time.

**Keywords:** intensive care unit; catheter-related bloodstream infections.