COST EFFECTIVENESS OF PREVENTING CATHETER ASSOCIATED URINARY TRACT INFECTIONS IN THE GENERAL WARD

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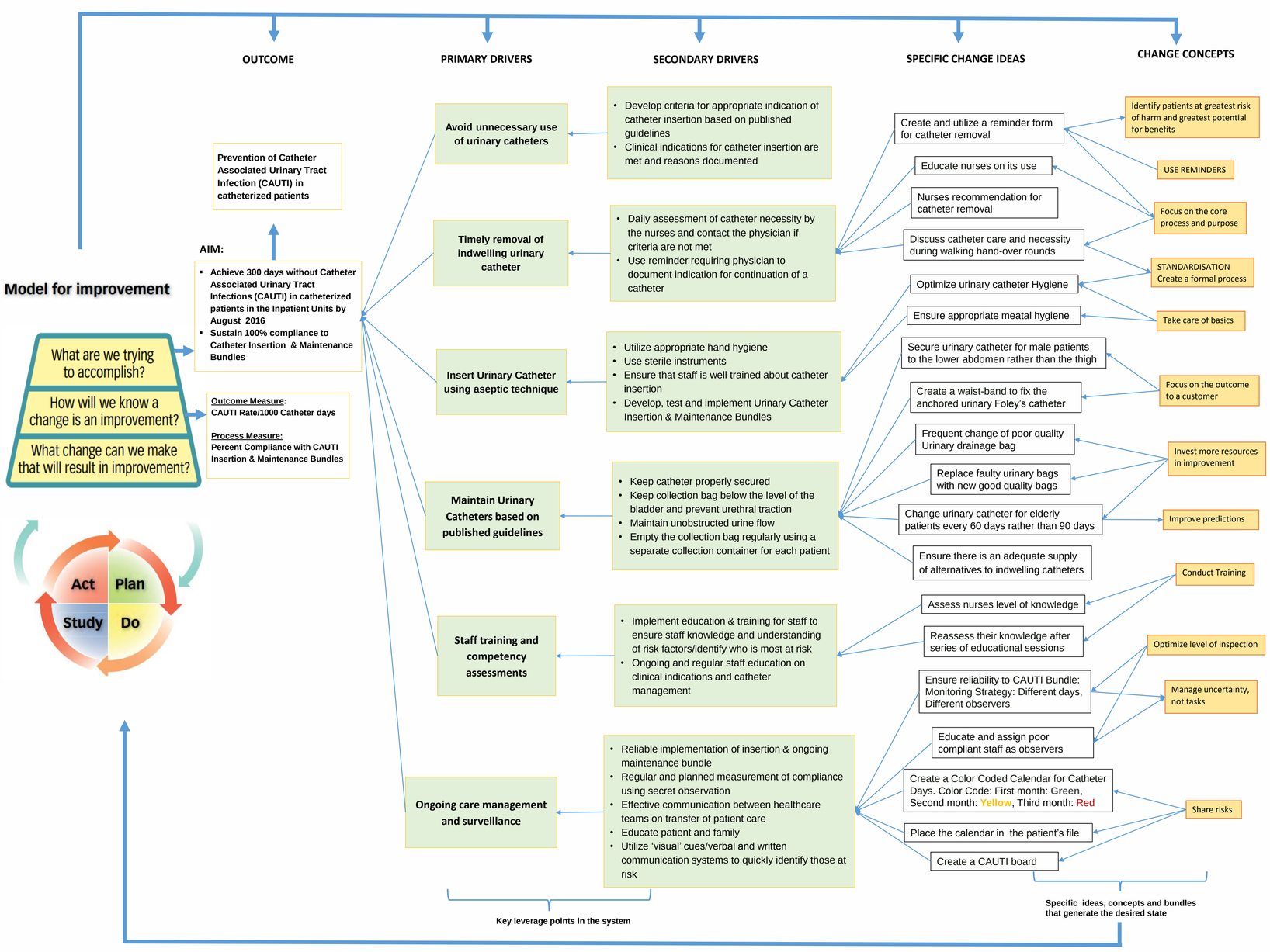
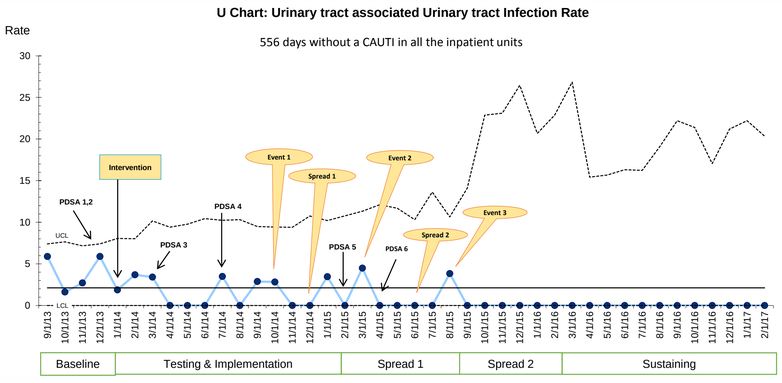
BACKGROUND:

- Urinary tract infections are the most common hospital acquired infections (HAI's).
- The major risk factor associated with catheter associated urinary tract infection (CAUTI) is the presence of indwelling catheter.
- CAUTI's increase the hospital cost and are associated with increased morbidity and mortality
- Being aware of the correlation between Urinary Catheterization & CAUTI, this was selected as an Improvement initiative.
- The Medical Ward of Al Khor Hospital was selected as the pilot site as it caters an average of 10 -12 long term/Total care patients who might have the catheter in situ for extended periods of time.
- 3 months baseline data was collected retrospectively (Sep 2013 - Nov 2013) showed our CAUTI rate was (5.88%).
- In Dec 2013, the Medical Unit began a quality improvement initiative to reduce the incidence of CAUTI from 5.88% (as reflected from baseline data) to ZERO% by reducing the number of un-necessary catheters in all the long term residents.

AIM, METHODOLOGY & INTERVENTIONS:

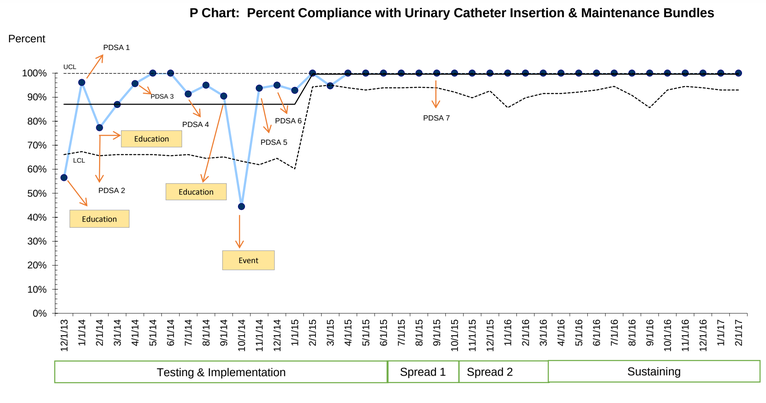


RESULTS:



- **PDSA 1:** Test a Reminder Form
- **PDSA 2**: Test if a nurse can recommend catheter removal
- **PDSA 3:** Test a catheter days calendar
- **PDSA 4:** Test if staff nurses in Medical Unit, practice recommended best method to secure urinary catheter for male patients
- **PDSA 5:** Test if the new urinary bag will reduce the incidence of CAUTI in catheterized patients
- **PDSA 6:** Replace all the faulty urinary bags with the new urinary bags in the unit

Intervention: Improvement plan started from December 2013
Event 1: The unit provided with new urine drainage bag which was found to be of poor quality
Event 2: March 2015: One patient developed CAUTI due to use of a missed old urinary bag
Event 3: August 2015 : One long term patient developed CAUTI



- **PDSA 1:** Discuss catheter care during morning walk rounds & identify inappropriate care and share the correct practice
- **PDSA 2** :Test the reliability of compliance with CAUTI bundle (change the observer & observation day
- **PDSA 3:** Test if identifying poor compliant nurses & assigning them as observers will affect bundle compliance
- **PDSA 4:** Test a recommended practice to secure urinary catheter for male patients
- **PDSA 5:** Changing the drainage bag frequently due to the poor quality
- **PDSA 6:** Include securing of catheter to abdomen in male unconscious patients in the maintenance bundle
- **PDSA 7:** Test if changing urinary catheter for elderly patient every 60 days rather than 90 days will prevent CAUTI

Event: In October 2014, the unit was provided with urine bags found to be of poor quality causing impaired closed drainage system.

COST EFFECTIVE ANALYSIS:

Objective: The aim of this study is to evaluate the cost-effectiveness of decreasing:

- Incidence of CAUTI in catheterized patients
- Number of un-necessary catheter days
- Length of hospital stay

Design: Considered costs of daily resources required to deliver standard protocols of care.

Methodology:

- A bottom-up costing approach was used to estimate the treatment costs per patient, per episode of care
- Retrospective chart analysis of a long term patient with a CAUTI showed increased patient length stay by 9 days.
- Costs associated with the treatment and resources required for daily catheter care were considered.
- Excess length of stay was included.
- Nursing time was excluded.

Setting: Inpatient Unit.

Subject: All long term/ total care patients with an indwelling urinary catheter.

Time period: Sep 2013 – Dec 2015.

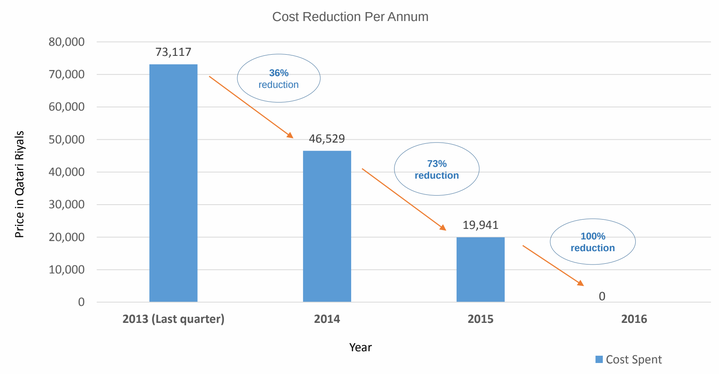
Calculation of Cost:

	Treatment Cost per CAUTI episode	Excess LOS	Total cost related to excess LOS	Total Cost per episode of care	Episodes of care			
					2013	2014	2015	2016
	QR: 1247	9 days	QR: 5400	QR: 6647				
Total episodes of care per year					11	7	3	0
Total cost spent per year					QR: 73,117	QR: 46,529	QR: 19,941	QR: 0

Treatment Cost per CAUTI Episode: Treatment cost includes the total cost associated with treating a single episode of CAUTI.

Total Cost per Episode of Care: The sum of treatment cost per CAUTI episode and the cost associated with excess length of stay.

Results:



Annual Cost Savings = Cost of CAUTI Onset X Number of un-necessary catheters removed

2014: 6647 X 41 = QR: 272,527

2015: 6647 x 48 = QR: 319,056 QR

Gross total savings generated over a period of 2 years was QR: 591,583.

Limitations:

- This is not limited to but may also include potential savings acquired from reducing the risk of hospital acquired infections and saving nursing time for patient care.
- Costs related to secondary complications were excluded.

CONCLUSIONS:

- It is far more cost effective to pay for the prevention of CAUTI compared with the standard management.
- By reducing the incidence of CAUTI for patients who are admitted to hospital for other conditions, we can also generate potential savings through:

➢Reducing the additional costs of treating patients with pressure ulcers.

➢Releasing beds and nursing time to treat more patients within the same overall capacity.

➢Lowering the risk of hospital acquired infections by decreasing the overall length of stay.

SUMMATIVE STATEMENT:

- Urinary tract infection has long been considered the most common healthcare-associated infection (HAI), with the vast majority of these infections occurring after placement of the convenient, often unnecessary and easily forgotten urinary catheter.
- Catheter-associated urinary tract infection (CAUTI) results in increased patient morbidity and mortality. Risk of CAUTI is associated with the process and duration of catheterisation, patient susceptibility to CAUTI and quality of catheter care. Therefore, catheters should only be used for appropriate indications and should be removed as soon as they are no longer needed.
- Up to 69% of catheter-associated UTIs are considered to be avoidable, provided that recommended infection-prevention practices are implemented. Evidence-based guidelines have focused on preventing CAUTI and have assessed the evidence and provided recommendations for implementing prevention strategies such as appropriate use, aseptic insertion, proper maintenance, and timely removal of indwelling urinary catheters, as well as use of established practices such as hand hygiene.
- In summary, hospitals should strongly consider employing interventions to avoid unnecessary catheter placement and to prompt removal of unnecessary catheters. These interventions appear to be low cost, low risk and effective strategies to address a common hospital-acquired infection
- Furthermore, reducing indwelling catheter use addresses the non-infectious complications of urinary catheter use such as catheter-related patient discomfort and immobility.

In Collaboration with