

Reduction of Catheter Associated Urinary Tract Infection (CAUTI) Rates at home care environment: An Evidence Based study

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I. Introduction

Health Care at Home which is headquartered at Noida is the first home health care organisation in India to set up ICU at home. HCAH management has made a commitment to make quality and patient safety a top priority throughout the patient's journey. Home Health care organisations operating in India are yet to work towards combating home acquired infections by looking into the surveillance and managing it. Nonetheless nothing has stopped HCAH from looking into this and working towards reducing the rates. Thus, Preventing home care associated infections, including Catheter Associated Urinary Tract Infection (CAUTI), has become a high priority for our organisation

In order to reduce the CAUTI rates, a nursing task force team was formed and led this evidence based and performance improvement project. It actively involved the Infection Control Nurse and the Nurse Educator of each unit. Above all the direct care givers were active participants in this journey. The purpose of this publication is to indicate the quality improvement interventions implemented to reduce CAUTI rates and the outcome of those interventions during the past one year

The study period was for one year i.e from May 2018 till April 2019. Our aim was to reduce CAUTI rates per 1000 device days among our ICU patients who were admitted with us with urinary catheters . Implemented interventions resulted in a reduction of CAUTI rates from 12.87 per 1000 device days in August 2018 to 1.6 CAUTI rates in May 2019 and few months zero CAUTI

Key words: CAUTI, Health care at Home, Infection Control Nurse, Evidenced based study, quality

II. Background

CAUTI is one of the most common healthcare associated infections. It is a leading cause of secondary blood stream infection resulting in increased morbidity and mortality with an estimated 13,000 attributable deaths annually in the hospitals. However, there is no data available on the mortality rate related to home acquired CAUTI. Overuse of indwelling urinary catheters contributes to the frequency of CAUTI and the duration of urinary catheterization is the single most important risk factor for developing CAUTI .At HCAH, we were no different when we started this study and we had high incidences of CAUTI rates which were reduced to a large extent with strict evidence based protocols being followed. Studies have proved that each day an indwelling urinary catheter remains in the patient has a 5% increased risk of developing CAUTI. Up to 60% of CAUTI are considered preventable if the below mentioned actions are initiated in a timely manner:

- Evidence based infection-prevention practices
- Guidelines for the prevention of CAUTI and following strict bundle checklist
- Appropriate catheter use
- Aseptic insertion
- Use of closed drainage systems
- Proper maintenance
- Timely removal of indwelling urinary catheters
- Proper hand hygiene practices
- Prevention strategies must focus on clear indications for the insertion of urinary catheter, proper maintenance while in use and early catheter removal

Baseline measures:

CAUTI rates among the ICU patients in all our units in the month of May -July '18 was 4.79 per 1000 device days on an average which went upto 12.87 in the month of August. During this time we identified that isolated measures may not help in solving this problem , but a combination of all preventive measures need to be in place.

CAUTI cases were identified by the specialist nurses, Supervisors and members of CET (Clinical Evaluation Team) during the e- monitoring and rounds, through active surveillance from the electronic medical record and appropriate health communication. This baseline rates had to be determined to see the efficiency of the study.

III. Review of Literature

Home care infections are ignored or left out as many unorganised sectors are running such programme in India. Notwithstanding the fact that the quality care can notbe ensured if home health care organisations do not look into Home Acquired infections with the same seriousness of how a hospital acquired infections are looked at. This could possibly be a reason for hospital readmission or prolonged infections which could lead to increase in mortality rates. When we started this study in the month of May 2018 , we felt there was under reporting and we were sorting out as to how we could improve the reporting. The only way we could do this was to look into patient documentation to see if any fever spike was present and in such cases any urine sample was sent. It was a challenge initially to get people reporting voluntarily as it is a distributed environment. However, with rewards and recognition program incorporated into incident reporting we could see a genuine reporting and parallely the Central Evaluation Team (CET) also started tracking the results of urine culture being sent. Since we made sure that no cases went unreported

IV. Methodology

At HCAH we admitted about 40 patients on an average every month with indwelling catheter. After we started tracking and the reporting was streamlined we had about 6 patients reported with CAUTI. The organisms identified were mostly Pseudomonas, Klebsiella and E- coli.

To begin with we had to define what is CAUTI at home environment and when it should be reported. It was decided to consider any signs and symptoms developed after 48 hours of admission at home and the following initiatives were developed:

- Guidelines for reporting CAUTI as an incident
- Protocol for catheter care which was changed from the practice of using betadine twice a day to using of Normal Saline three times a day.
- Introduction of CAUTI bundle checklist
- Long term catheter had to be compulsorily changed to silicon catheters
- Strict infection Control practices
- Physical and video audits
- Robust training program
- Rewards and recognition program for encouraging voluntary reporting

Guidelines for reporting CAUTI at HCAH was prepared and circulated among all nurses and training f the same ensured.

Home acquired CAUTI is when the signs and symptoms develop after 48 hours in home care set up.

Causes

- The catheter may become contaminated upon insertion
- The drainage bag may not be emptied often enough
- Bacteria from a bowel movement may get on the catheter
- Urine in the catheter bag may flow backward into the bladder
- The catheter may not be regularly cleaned

Signs and symptoms

- cloudy urine
- blood in the urine
- strong urine odour
- urine leakage around your catheter
- pressure, pain, or discomfort in your lower back or stomach
- chills
- fever
- unexplained fatigue

Reduction of Catheter Associated Urinary Tract Infection (CAUTI) Rates at home care environment:

- vomiting
- Positive Culture report

Reporting Guidelines

- Inform the incident to supervisors or nursing manager
- Document the patient name and ID number and the date of insertion
- Inform to the consultant/ Critinext (a team of doctors who electronically monitor the patient) doctors and send sample for investigation based on the recommendations.
- Inform the lab reports for further management
- Follow the advice of physicians and document the same
- Reports on CAUTI which include the corrective and preventive measures should be reviewed by the respective head of sections and Central Evaluation Team(CET) within 24 hrs

Ways to prevent CAUTI

- Perform hand hygiene before touching catheter site
- Catheter care with Normal Saline three times a day
- Ensure catheter and Collecting tube are free from kinking
- Ensure catheter and tubing are appropriately fixed
- Ensure collecting bag below bladder level and well above floor
- Ensure catheter is continuously connected unless suggested for intermittent drainage
- Ensure catheter bag emptied appropriately into a clean container
- Assess the need of catheter daily by following CAUTI bundle check list
- Change the catheter asper the policy (Foleys catheter – 15 days, Silicon catheter – 30 days)

V. Results

At HCAH when staff were encouraged to follow these initiatives strictly we could start seeing a down trend in the development of CAUTI. We could not completely get it down to “zero” or “no CAUTI” although few months we did have such results. When ever we had CAUTI reported after implementing the protocols we started analysing the route cause of such CAUTIs and found some could not have been avoided due to age, nutritional status, other comorbidities etc...

CAUTIdata

	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
Total No. of patients with catheter	36	46	33	32	39	45	44	40	38	47	50	39	43	32
CAUTI	4	2	3	6	0	6	3	3	2	0	2	1	4	1
Total Caheter days	566	721	660	466	542	773	623	688	719	579	698	622	539	525
Rate	7.06	2.77	4.54	12.87	0	7.76	4.81	4.36	2.71	0	2.86	1.6	7.42	1.9

Fig1

CAUTI Analysis

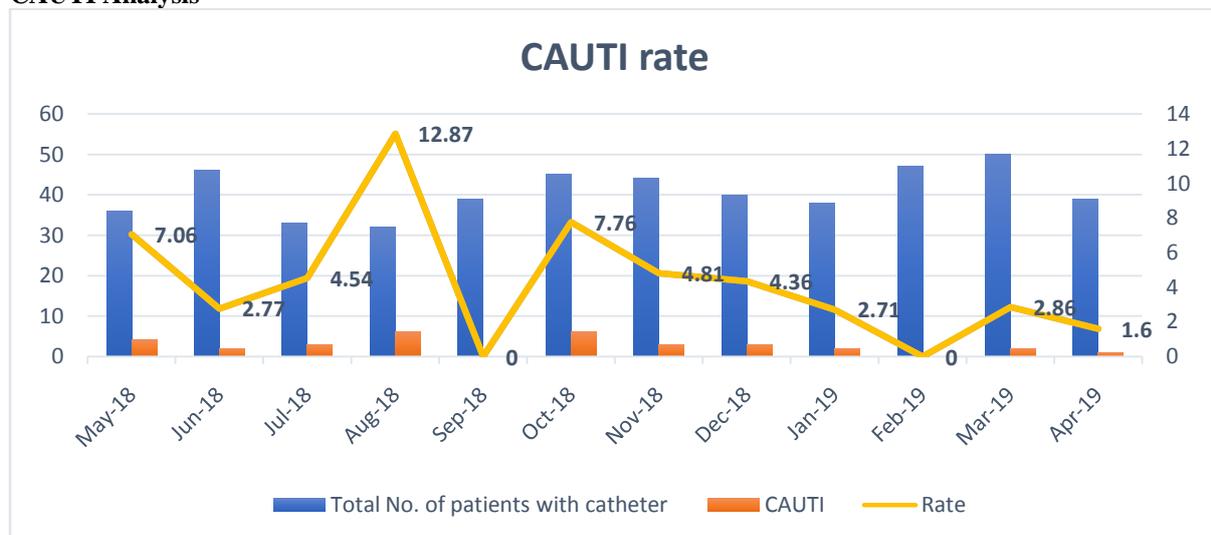


Fig 2

VI. Discussion

Once we defined CAUTI at home care set up, our endeavour was to increase the reporting by campaign and spreading awareness among staff. We developed guidelines for CAUTI reporting for the staff to refer anytime if they a doubt. The challenge what we could see was the collection of information from a distributed environment which needed a lot of discipline. Now it has become a norm to report voluntarily without any hesitation by the staff. The usage of normal saline 3 times a day instead of betadine wash twice a day has certainly brought down the CAUTI incidences. Strict infection control practices and focus on hand hygiene audits gave us a good result too. Introduction of CAUTI bundle checklist and training around it has certainly helped in reduction of home acquired CAUTI. The training has been mandated as part of induction and regular refresher program. Any one needed individual attention was given “on the job” training.

Support and Limitations:

Senior management’s support and empowerment was one of the critical success factors. The monthly review which was conducted, and the questions raised during those reviews kept the clinical team to drive this as a quality initiative. Senior Management also ensured that adequate supplies PPEs available at the bed side and whatever required for maintaining sterile environment during provision of catheter care.

However, it took time to get buy in and engagement from frontline staff due to different background education and training. The sustainability of this improvement will need continued frontline engagement and maintaining leadership support.

VII. Conclusion

Hospital acquired infections which are very carefully monitored, reported and treated at hospitals are neglected at home set up. This is very unfortunate and to be seriously taken note of. The clinical team managed to implement quality improvement interventions and change management strategies⁶ that resulted in significant sustained reduction in CAUTI rates in home set up. Implemented interventions are generalizable and can be replicated by other health care organisations, be it hospitals or other home care set ups. Lessons learned were disseminated throughout the organization. This improvement project will enhance patient safety and reduce preventable harm from CAUTI. Commitment and support from senior leadership was critical to the success of this project.

This performance improvement project shows that the clinical team should engage frontline staff and nursing supervisors more in order to overcome resistance to change and implement sustainable systems.

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