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Original Research Paper

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IMPACT OF RESIDENT & NURSING EDUCATION TOWARDS HAND HYGIENE TO REDUCE THE INCIDENCE OF CATHETER ASSOCIATED URINARY TRACT INFECTION

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ABSTRACT

Background: Catheter associated urinary tract infections(CAUTIs) are the most common health care acquired infection and leading cause of morbidity.The aim of this study is to determine the incidence of CAUTI and impact of resident and nursing education towards hand hygiene to reduce CAUTI. **Methods:** The study was conducted in Chirayu medical college, Bhopal after approval from institutional Research Committee for a period of 3 months. Admitted patients are enrolled in our study, according to given inclusion and exclusion criteria with their written informed consent. 7 Days nursing education will be done with informative illustrative charts 30 minutes daily for 7 days following which the Intensive Care Unit will be observed for reduction in incidence of CAUTI rates for a period of 3 months. **Results And Conclusion:**In our stuty.the incidence of CAUTI preintervention was 35.6% and decreases to 9.2% post intervention which suggests that aseptic insertion of indwelling catheters and evidence-based care bundle utilization are not only important in the reduction of CAUTIs also the nursing autonomy with patients and situational awareness promoted through catheter necessity discussions are keys in delivering timely care reduces CAUTIS and length of catheter days.

KEYWORDS : Incidence,CAUTI,Indwelling urinary catheter,Nursing education

INTRODUCTION

Catheter-associated urinary tract infection (CAUTI) is one of the major infections in healthcare facilities[1,2]. Urinary catheter is the most common indwelling device[3]. Catheter-associated urinary tract infections (CAUTI) according to the centers of disease control and prevention(CDC) is defined as UTI where an indwelling urinary catheter was in place for more than two calendar days on the date of event (day 1 being the day of device placement).[4] Multiple risk factors can affect the occurrence of CAUTI.

These include quality of aseptic technique, duration of catheterization, appropriate hand hygiene and care of catheter.[5,6] Complications associated with CAUTI cause discomfort to the patient, prolonged hospital stay, and increased cost and mortality.The present study was done to assess the incidence of CAUTI and impact of resident and nursing education towards hand hygiene to reduce CAUTI.

METHODOLOGY (MATERIAL AND METHODS)

The study was conducted in Chirayu medical college, Bhopal after approval from institutional Research Committee for a period of 3 months. Admitted patients are enrolled in our study, according to given inclusion and exclusion criteria with their written informed consent. 7 Days nursing education will be done with informative illustrative charts 30 minutes daily for 7 days following which the Intensive Care Unit will be observed for reduction in incidence of CAUTI rates for a period of 3 months.

7 Day Nursing Education Plan

Day 1: Introduction to Catheter associated Urinary Tract Infection.

Definition of Catheter associated Urinary Tract Infection: Explanation of Catheter associated urinary tract infection are, including the medical terminology used to describe them. :Causes and risk factors: Overview of the factors that can lead to the CAUTI, including Careful and meticulous hand hygiene, Attention to aseptic technique with all infusion-related procedures, Minimal manipulation of the urinary catheter and adjunct administration components, Rigorous disinfection practices when the system must be manipulated (SCRUB THE HUBS):Overview of the nursing care plan for prevention of CAUTI: Summary of the steps involved in the nursing care plan for CAUTI, including assessment, care, and patient education.

Day 2: Prolonged hospitalisation and duration catheterization.

Maximum sterile barrier (MSB) precautions: These are defined as wearing a sterile gown, sterile gloves, and cap and using a full body drape (similar to the drapes used in the operating room) during the placement of Catheter. Use of MSB is associated with fewer episodes of both catheter colonization and CAUTI.

Day 3: Prevent heavy microbial colonization at the insertion site.

Techniques for preventing heavy microbial colonization: Hands-on training on how to prevent heavy microbial colonization, including techniques for daily dressing, using antimicrobial spray/ointment and other equipment, and promoting awareness about hand hygiene

Day 4: Microbial colonization at the catheter hub.

Techniques for cleaning and dressing the catheter insertion sites: Hands-on training on how to clean and dress the catheter inserted at the meatus, including guidelines for preventing infection.Role of the nurse in preventing infection: Explanation of the nurse's role in preventing infection, including regular assessment for signs of infection and prompt reporting to the healthcare team

Day 5: Appropiate Education and Training & Maintanence of Urinary catheter.

- Regular pericare and incontinence care to keep catheter clean.
- Maintain a sterile, continuous closed system.
- Maintain unobstructed flow, minimizing dependent loops and kinks.
- Keep bag below bladder, including during transport.
- Collect urine from the port, not drain tubing.
- Empty drain bag regularly by using a patient-dedicated

collection container.
- Assess daily for medical necessity and appropriateness of device.

Replace devices when breaks or leaks occur with the catheter and collection system.

Day 6: Catheter insertion checklist fulfilled.
- Review Urinary catheter insertion practices in individual patient care units and across a network.
- Facilitate quality improvement by identifying specific gaps in adherence to recommended prevention practices, thereby helping to target intervention strategies for reducing CAUTI rates.

Day 7: Removal.
- Remove when no longer medically necessary.
- Implement approved device removal protocols(intensive care unit.wards,and post –anesthesia care unit,
- Use bladder scanners to assess urinary retention.

RESULTS

A total of 70 nurses were enrolled for the study. The pre-test marks obtained by them was 14.5 +/− 3.5 (11 − 18).

The total number of catheter days was 1100 with a CAUTI rate of 35.6 per 1000 catheter days before the nursing education programme, post education the catheter days were 1235 with a CAUTI rate 9.2 per 1000 catheter days. There was a significant reduction (P=0.02) in CAUTI rates i.e. 9.2 post workshop with a total catheter day 1235.

Catheter associated urinary tract infections(CAUTIs)

Data	Pre – Intervention	Post – Intervention
Number of patients	109	112
Catheter Day	1100	1235
CAUTI rate	35.6	9.2
CAUTI case	35	6

The total number of opportunities, as reported by the infection control nurse, where hand hygiene steps could be adhered to, was 139 before the intervention, 59.4% of which were missed. Three months post test, the percentage of the non-compliance with hand hygiene was 22.7%, the reduction being statistically significant (p=0.02).

DISCUSSION

In our study,pre-intervention the incidence of CAUTI was 35.6% and post-intervention it was 9.2% which is higher as compared to France [7] 14.8(1995),Germany [8]1.39(Before2000) and 15 developing countries[9] 7.86(preintervention).In our study, post-intervention the incidence of CAUTI was 9.2% which was higher as compared to France 8.8 (2004),Germany 0.83(2001,2002)or Germany 0.68 (2003/later) and 15 developing countries 4.95(post-intervention).

Incidence of 9.6 per 1000 ICU days was found at Calgary by Laupland [10] and colleagues. 14 which is similar to the present study post intervention.

In Vishwajith1 etal.study[11], the incidence of CAUTI was 1.74 per 1000 catheter days , CAUTI rate of 0 to 4 per 1000 catheter days of NHSN (National healthcare safety network)report Duszynska etal[12] reported a CAUTI rate of 6.44, 6.84, 7.16 per 1000 catheter days for the years 2012, 2013 and 2014, respectively from Poland, which is lower as compared to the present study.

This is in contrast to the study done by Arunagiri Ramesh et al[13] where in the incidence of CAUTI was found to be 16 per 100 catheterization which is higher as compared to the present study.

Following the positive results of the study, Hand hygiene is the most important factor regarding reducing the CAUTI in the ICU and other inpatient units within the organization are being identified for the development of their own nurse-driven indwelling urinary catheter removal protocol based on their patient population and evidence-based research. In particular, a step-down unit has implemented a similar protocol which has also resulted in a decrease of indwelling urinary catheter device days. Ongoing analysis and PDCAs are still being employed to identify diagnoses or conditions that may also be an indication for catheter use.

CONCLUSION

According to our findings, lowering CLABSI rates can be achieved by strengthening adherence to the fundamentals of good hand hygiene. The promotion and adoption of hand hygiene practises are straightforward, but maintaining them over time is more challenging and involves regular training, employee inspiration, and reminders.

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