

# Impact of NABH guidelines on incidence of hospital acquired infections in intensive care- Audit

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## Abstract

**Introduction:** Incidence of nosocomial infections in the intensive care unit (ICU) is about 2 to 5 times higher compare to the general in-patient hospital population. With an effective program for nosocomial infection surveillance, infection rates can be reduced by approximately one-third.

**Objective:** Impact of implementation of NABH Guidelines 5 on the HAIs in ICU. Duration: April - August 2015.

**Population:** All the patients admitted to ICU at Tatwadarsha Hospital, Hubli. **Methods:** All the ICU health care workers were trained in NABH guidelines for hospital acquired infections. An initial evaluation and a monthly re-evaluation of infection control care- bundle-practice and its documentation was done by infection control team.

**Results:** Urinary tract infections have reduced to 50% from April to August 2015. Central line associated blood stream infections were reduced to zero for 400 central line days. Incidence of surgical site infection, ventilator associated pneumonia had dropped significantly bringing it to zero for 200 operation performed and 80 ventilated days respectively.

**Conclusion:** Reduction in the incidence of HAIs could directly be attributed to implementation of NABH guidelines.

**Keywords:** Hospital Acquired Infections, NABH guidelines

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## Introduction

Effectiveness of the health care provided could be assessed by various quality indicators like cure of disease, increase in life expectancy, good quality of life. This again is based on maintenance of set of standards and guidelines in treating the patient and efficient use of health care resources. Quality can be also judged by the patient outcome and technical performance.<sup>(1,2)</sup> Several organisations are involved in defining the concept of quality in health care, measure of quality and surveillance of quality. Joint commission in USA, care quality commission in UK<sup>(3)</sup> and National accreditation board for hospitals and healthcare providers (NABH) in India are some of the organisation accredit health care providers for delivering quality health care.

National Board for Quality Promotion (NBQP) as constituent board of Quality Council of India has primarily been assigned task to promote quality in all walks of life. National Accreditation Board for Hospitals & Healthcare Providers (NABH) is a constituent board of Quality Council of India, set up to establish and operate accreditation programme for healthcare organizations.

Infection control is one of the areas where NABH has set standards and guidelines to reduce hospital acquired infections (HAIs). Five to ten percent of patients admitted to acute care hospitals acquire infections. Incidence of nosocomial infections in the intensive care unit (ICU) is about 2 to 5 times higher than in the general in-patient hospital population.<sup>(1)</sup> In this audit an evaluation of HAIs in intensive care unit

has been done over period of 5 months after implementing NABH guidelines.

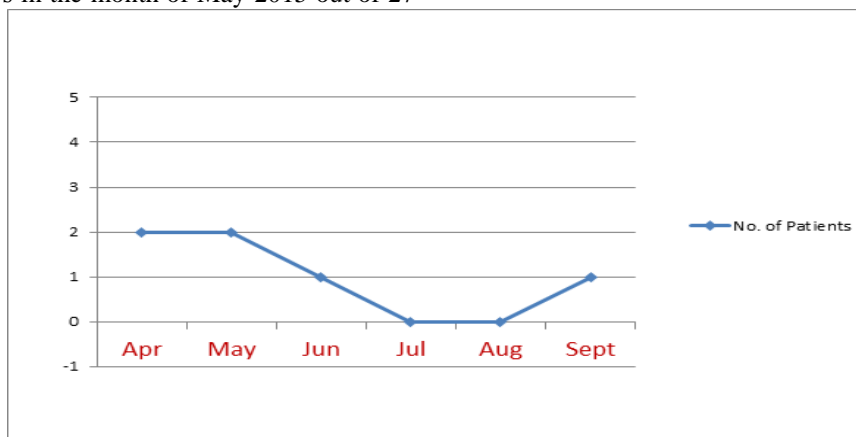
## Material and Methods

With an objective of improving the quality health care delivered, our hospital was enrolled for NABH accreditation programme. NABH representative trained all the health care workers in infection control practice and guidelines. Compliance of Infection control practices (six modules Table 2) and care bundles practice by the health care workers were monitored and documented during the infection control team daily surveillance rounds. ICU in- charge nurses were entrusted the duty of completing the data required in the HAI register. Total number of ventilated days, central line days, urinary catheter days, and number of intravenous cannulae inserted in one month were calculated. Number of ventilator associated pneumonia (VAP), central line associated blood stream infection (CLABSI), thrombophlebitis and urinary tract infections (UTI), surgical site infections (SSI), and bedsore/ pressure sore were documented in the HAI register. Number of needle stick injuries was collected in a separate register as per the NABH protocol. Every month infection control nurse collected the data from the HA register for analysis and auditing. Data was discussed in the monthly infection control meeting to implement changes if needed before sending it to NABH central office.

**Results** (Table 1)

In the month of April 2015 total ventilated days were 84 and 2 patients (2.4%) developed VAP. After four months that's in the month of May 2015 out of 27

ventilated days none of the patient developed VAP (0%) (Fig. 1).

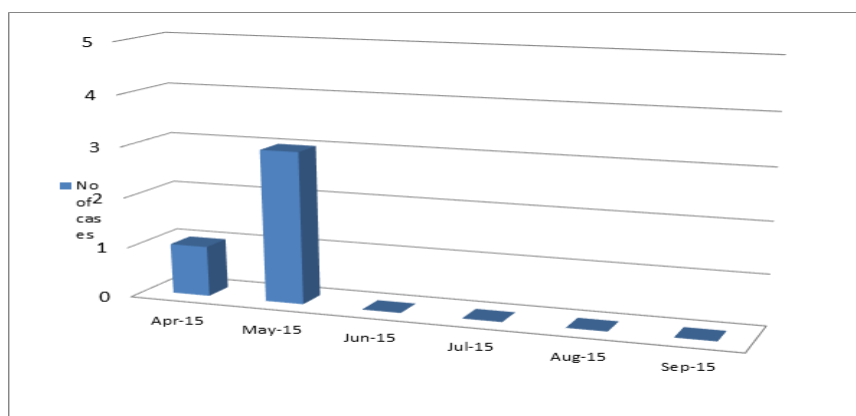


**Fig. 1: Ventilator Associated Pneumonia 2015**

**Table 1**

S. No.	Data	April	May	June	July	Aug
1	Ventilator days in the month	84	119	59	83	27
2	Ventilator associated pneumonia in the month (VAP)	2	2	1	0	0
3	Central line days	404	438	455	493	427
4	Central line associated blood stream infection (CLABSI)	1	3	0	0	0
5	Urinary catheter days	773	867	881	943	797
6	Urinary Catheter associated infections (UTI)	4	3	0	0	2
7	IV peripheral cannulation in the month	928	1239	948	1005	983
8	Thrombophlebitis in a month	170	186	158	104	104
9	Surgery Performed in a month	170	196	186	193	268
10	Surgical site infection in the month (SSI)	3	1	2	3	0
11	Needle stick injuries (From NSI/ BBF Register)	3	3	4	3	2
12	Bedsore/ Pressure ulcer in a month	1	1	0	0	0

During the same period, infections due to central venous catheters fell from one (0.24%) for 404 central line days to none (0%) for 427 central line days (Fig. 2).



**Fig. 2: Central Line Associated Blood stream infection (CLABSI)**

Most commonly done ICU procedure urinary catheterization is notorious for systemic infection. In our audit there was significant drop in the UTI after implementing the NABH guidelines. Out of 773 urinary catheter days 4 patients (0.52%) got infected in the beginning (April) of our audit and in the month of August 2 patients contracted infection (0.25%) for 797 urinary catheter days. In the middle of the audit it reached nil for two months (Fig. 3).

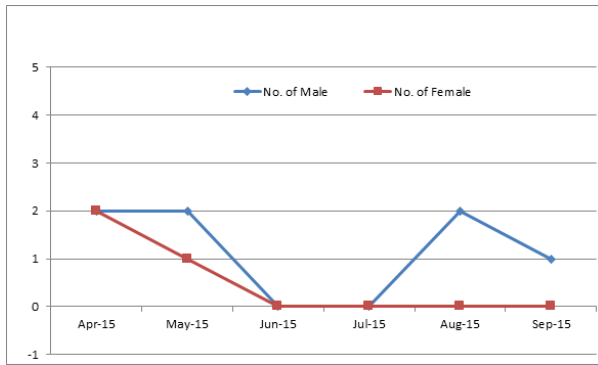


Fig. 3: Catheter associated UTI- 2015

Thrombophlebitis is a measure of universal infection control precautions taken. In the month of April there were 170 cases (18.3%) of thrombophlebitis for 928 cannulation performed. This dropped to 104 (10.6%) for the 983 cannulation performed in the month of August (Fig. 4).

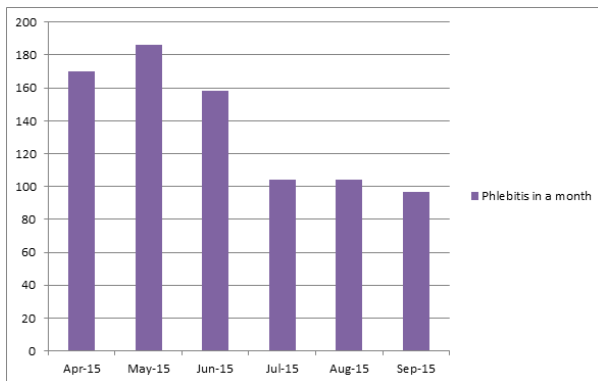


Fig. 4: Thrombophlebitis 2015

Surgical site infection in thirty days after surgery dropped significantly from 3 per 170 (1.76%) operations done to zero for 268 in the month of August (Fig. 5). Occurrence of bedsore dropped from one to zero during five months of audit (Fig. 6). Needle stick injury dropped from four in the month of May to two at the end of the audit period (Fig. 7).

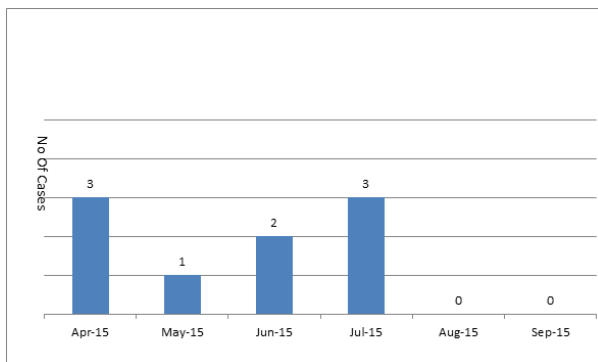


Fig. 5: Surgical site infection 2015

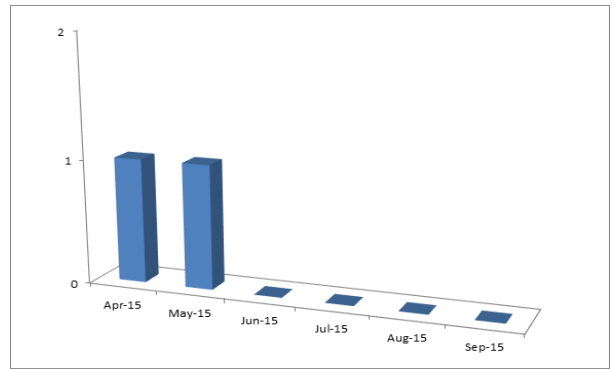


Fig. 6: Bedsore/ Pressure ulcer 2015

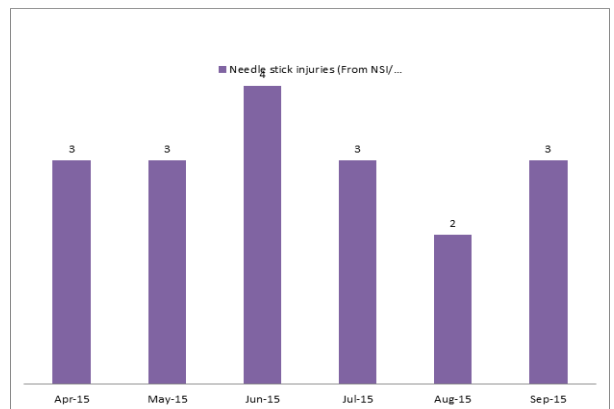


Fig. 7: Needle stick injuries (From NSI/ BBF Register)

### Discussion

Incidence of nosocomial infections in the intensive care unit (ICU) is about 2 to 5 times higher compare to the general in-patient hospital population.<sup>(4)</sup> Delivery of quality care in the hospital demands universally accepted, evidence based, easy to follow robust system. With an effective program for nosocomial infection surveillance, infection rates can be reduced by approximately one-third.<sup>(4)</sup> HAIs lead to extended hospital stay, contribute to increased medical costs, and are a significant cause of morbidity and mortality. Every hospital can make its own system to achieve its objective of controlling infection though the evidence base could be a question. NABH evidence base guidelines are useful resource in this regard for any hospital to get enrolled and get help in implementing these. For the five months duration of this audit, the significant reduction in the incidence of infections (Table 1) is a clear indication that new system implemented is making an impact. Compliance of Infection control practices (six modules) and care bundles to prevent infections by the health care workers were monitored during the infection control team surveillance (Table 2).<sup>(5)</sup>

**Table 2 Components of Safe I practice (NABH)**

1	Safe Injection Practices
2	Safe Infusion Practices
3	Infection Control Practices
4	Bio-Medical Waste management
5	Health care worker Safety
6	Disinfection and Sterilization

In addition to the infection contracted by the patient by being exposed to the ICU environment, there are definitive intensive care interventions potential to cause infection. Precaution to be taken during these interventions is standardized by NABH as care bundles. For example VAP, UTI, CLRBI care bundles. Use of these care bundles in managing ventilator associated pneumonia, CVP line insertion, peripheral venous cannulation, surgical wound care and back care has brought the incidence of infection to zero level in our hospital. Though the incidence of infections during urinary catheterization, and handling needles and peripheral venous cannulation has reduced almost by 50%, there is still more room for improvement.

### **Conclusion**

Reduction in the incidence of HAIs could be directly attributed to implementation and practice of NABH guidelines. Evidence based, structured, streamlined, systematic guidelines provided by NABH are tailor made for different tier of hospitals for the provision of best quality care and prevent infections.

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