

Insight into Tertiary Care Hospital having Low HAI Rate

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ABSTRACT

Background: Health care associated infection (HAI) has got direct effect on morbidity and mortality in any hospital. Continuous monitoring of criteria and indicators for prevention of HAI by infection control department is mandatory for closing the quality gap.

Aim: Health institution having excellent very low HAI rate should be studied in detail to learn and copy the model for emerging and struggling health establishments.

Study design: Descriptive and analytical study.

Place and duration of study: King Khalid Hospital Najran KSA which is 350 bedded post graduate teaching hospital. Study was done in Aug 2018.

Methodology: Compliance and Adherence to protocol care bundles like CAUTI, CLABSI, VAP and SSI (Catheter Associated Urinary Tract Infection, Central Line Associated Blood Stream Infection, Ventilator Associated Pneumonia and Surgical Site Infection) along with hand hygiene was monitored, direct effect on incidence of HAI, isolation of microorganism and sensitivity pattern was established/re-coded by infection control Dept. The report produced, discussed in presence of all consultants/ HODs along with administrative staff by quality management department. Grading of recommendation, assessment, development and evaluation (GRADE) was done for future.

Results: HAI rate were very encouraging and matched international standards. Quantitative evaluation and graphic manifestation prepared, presented and discussed.

Conclusion: It was established that vigilance of infection control department and its extended advisory role for adherence to care bundle, hand hygiene with other preventive measures has brought direct positive effect on HAI rate along with active maintenance of supervisory role of Quality Management and CME.

Keywords: HAI, CAUTI, CLABSI, VAP, SSI, GRADE, CME, Care bundle, Antibiogram,

INTRODUCTION

King Khalid Hospital Najran is tertiary care hospital having standard administrative layout and architecture. It has got state of the art professional manpower along with all types of investigative hardware on its inventory which is most modern and advanced. Infection control department headed by consultant is independent, efficient and result oriented. The best results on HAI rate were achieved after having a well-organized, fool proof delivery system. Every individual inducted in KKH has to undergo screening and vaccination before start of job¹. He/she has to attend demonstrations and lectures on infection control to get BICSL (Basic Infection Control and Skills License). Demonstration of hand hygiene with alcohol based gel included. Every new professional has to attend demonstration about face mask types its wearing techniques. N95 mask demonstration fit testing for fitness of mask, shield wearing with filtered air supply for isolation patient visit².

Gloving and degloving techniques along with gown wearing and undoing. All doctors and paramedics are BLS trained by independent world recognized body. All doctors have to be certified ACLS or ATLS according to their discipline. Every doctor has its granted privileges for the task/jobs and cannot practice beyond that. These are periodically reviewed and fluid.

To keep the high standard, independent accreditation of hospital is mandatory. Hospital had been on list of JCA (Joint Commission Accreditation and regularly accredited by CEBAHI (Central Board of Accreditation for Health Institution). Quality Management Department keeps vigilance and arrange regular meetings to maintain standards. CME Department impart regular medical education with lectures, workshops and seminars. Every health professional has to maintain mandatory CME hours for valid practice license.

MATERIAL AND METHODS

KKH has its internal centrally regulated patient management and record keeping software interlinked to every unit of hospital and supervised by IT department. No paper work for nurses, doctors, laboratory are imaging department. Visiting, retrieving documents and collecting the data on any patient become very easy and is available on one click at desktop. Quality Management Team and Infection Control Team work hand in glove and have easy software access to every patient's record, investigation, clinical pictures and treatment of any clinician. KKH follow WHO guidelines for infection control^[3]. Emphasize use of care bundles to reduce the morbidity and mortality. Care bundle are evidence based practice intervention and are grouped as protocol. These are easy to practice, implement, audit and compute results. Observation of hand

hygiene with alcohol based gel is one indicator along with use of care bundle parameter like CAUTI, CLABSI, VAP and SSI^[4,5]. Designated infection control and antibiotic stewardship team keep watch and record compliance of health professionals. They make antibiogram of particular patient with help of microbiologist, clinical pharmacist and concerned clinician. Quality Management Team in the end grade, recommend assess and develop evaluation (GRADE) in joint meeting of health professionals ^[6].

RESULTS

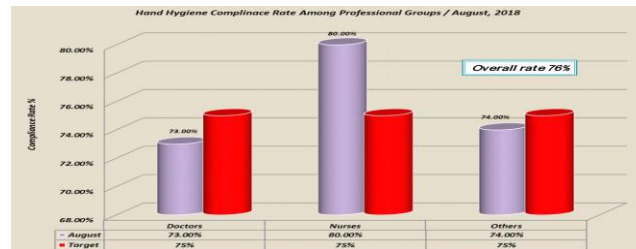
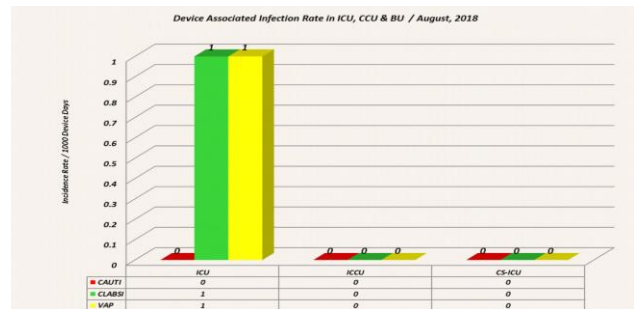
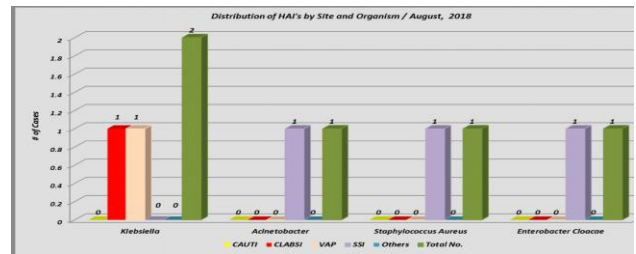
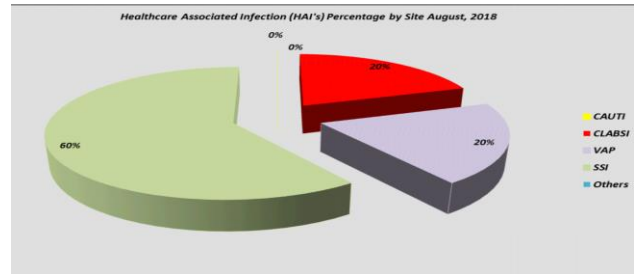
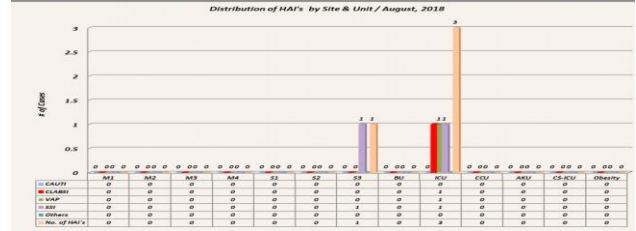
HAI incidence monitored in medical wards (M1, M2, M3, M4), surgical wards (S1,S2, S3), artificial kidney unit (AKU), obesity unit and cardiac surgery ICU (CS-ICU) with reference to care bundles and microorganism. The pictorial representation depicts that laudable results achieved. Device associated infection rate is also shown.

Table 1: Employee Health Clinic Activities

| Employee Health Clinic Activities | Total |
|--|-------|
| Pre employment screening & assessment for newly recruited staff | 98 |
| Doctors | 8 |
| Nurses | 13 |
| Technician | 2 |
| Trainees | 71 |
| Allied | 4 |
| Re-screenina & Re-assessment of old staff | 57 |
| Re-screening for HBsAg, HCV, HIV | 7 |
| Re-screening for PPD (Purified Protein Derivative) | 26 |
| Re-assessment of immunization (anti-HBs antibodies) | 24 |
| Others | - |
| Vaccination / Immunization | 710 |
| Hepatitis B vaccination | 68 |
| Hepatitis A vaccination | - |
| Influenza vaccination | 40 |
| Meninaitis vaccination | 102 |
| MMR vaccination | 100 |
| Varicella vaccination | 100 |
| Hajj vaccination | 300 |
| Management of Occupational Exposure | 4 |
| HCW's Exposed to Sharp Injuries (Needle stick/Sharp Object Injuries) | |
| Doctors | 2 |
| Nurses | 1 |
| Technicians | - |
| Trainees | - |
| Allied Staff | 1 |

Table 2: HAI's Suvillance Data

| HAIs Surveillance DATA-Monthly Report: August, 2018 | |
|---|-------------------------------|
| Total No. of Admissions | 812 |
| Total no. of HAIs | 4 |
| Infection Rate (%) | 0.49% |
| Incident Rate / 1000 pt days | 0.70/1000 Pt. days |
| Total No. of Organisms causing HAIs | 4 |
| Predominant organism Isolated | Klebsiella (40%) |
| Ward Recorded Infection Rate & Incident Rate | ICU 2.3/1000 Pts. Days |
| Commonest Site of HAIs | SSI (Surgical Site Infection) |



DISCUSSION

HAI control is a package deal in any clinical settings. From the very basic architectural layout, adequate solid waste disposal to many environmental factors such as air conditioning, optimum humidity control, supply of filtered air along with ability of six total air replacement per hour ^[7]. The clinical setup get help in prevention of infection with regular use of EPA approved surface cleaner/disinfectant agent. There should be separate storage of clean and dirty

linen. Adequate toilet facilities are mandatory. It encompasses maintenance of negative pressure room and selective use of antiseptic prophylaxis. Identification of high risk cases like elderly age group, patients in shock, major trauma patients, patient in coma, patient of acute renal failure, immunocompromised patients and individuals on mechanical ventilatory support^[8,9]. Factors include all the patient who are already on medicine which affects the immunity. Patients who have more than 3 days stay and ICU or having indwelling catheter are also prone to have infection. Focus should be on prevention of infection. 5 moments of hand hygiene is religiously practiced and monitored.

If at all infection occur, identification of source and microbials are mandatory. Isolation of such patient if required. Early debridement for necrosed tissue with good nutritional support to build the capacity to fight against infections. Efforts of food services department may not be left unnoticed. Use of personal protective equipment (PPE) like face mask, N95 mask use, gloving and donning of gown is ensured. Chest physiotherapy, changing the patient position and posture, 30 degree head up tilt, cough exercises, deep breathing and suctioning in VAP patient is mandatory. Use of air mattress with rippling, temperature control, use of elastic stocking or pneumatic sleeves and adherence to DVT prophylaxis protocol make remarkable difference. Antibiotic protocol with antibiogram helps to great extent in HAI^[10].

CONCLUSION

Structured way of improvement process come with use of care bundles. These battling bundles can bring success story but a lot depend upon attitude of health professional for prevention of nosocomials. Increased receptivity and good compliance is achieved by quality improving program. Good communication between healthcare supervisors of hospital and healthcare delivery staff may not need more to be emphasized. Sustained improvement can be guaranteed with cordial relation, rewards and appreciation

by administrators when needed. Individuals rise and fall with team. The manifested results are due to team work.

Explicit uniform implementation of care bundle science with consistency for every patient for every single time is hallmark of success in infection control. Care bundle have planks of intervention tied to gather, like five care steps of CLABSI and four Care steps of VAP has brought phenomenal change. Checklist actually avoid accidents and care bundle practice affect the patient directly if not followed. Both have got huge significance and are not synonymous. Auto mated monitoring of patient by independent infection control team without any prejudice and favor has brought the best results.

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