



# Hospital Acquired Infections, A Public Health Concern: Management Solutions from an Indian Experience

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**Abstract** Hospital-acquired infections (HAIs) are nosocomially acquired infections, typically not present on admission, but manifest rapidly after hospitalization, and have recently assumed an increasingly global problem. A case study of a healthy male patient, though 93 year old is presented here to demonstrate how human lives can be lost as a result of negligence in developing nations. Though there are many clear-cut criteria for preventing hospital-acquired infections, it is still unclear how many of these are followed in majority of hospitals. There is definitely a sponsored nexus of economic growth and hospitals at the cost of human lives, specially where health care has been a major blockade in sustainable development. In order to eliminate HAIs, targeted prevention initiatives along with compliance of research-based hospital treatment modalities should be strictly implemented, under strict independent monitoring. Programmatic recording and reporting of actual hospital inspections should be strengthened, delivering genuine hospital data from district to state, and then to national levels, through a transparent public system. Use of honest hospital metrics, state of the art data collection and its correct scientific interpretation for improving the malady of HAI in our health care systems is recommended. Appointment of specifically qualified hospital managers must be made mandatory, instead of clinical doctors donning the mantle of management specialists, resulting in deficiency in services.

**Key Words** hospital acquired infections, curbing management strategies

## 1. Introduction

Hospital acquired infections (HAIs) are a significant and increasing issue in contemporary healthcare and are a leading cause of death and morbidity. On any given day, about one in 31 hospital patients has at least one health-care associated infection. Given the increased morbidity, mortality, length of stay, and cost of such infections, efforts should be taken to keep hospitals as safe as economically feasible<sup>1</sup>. According to the Centres for Disease Control and Prevention (CDC), more than two million people get HAIs each year, with about 100,000 of them dying, [1], [2]. Due to a lack of cash and a very low per capita healthcare expenditure in developing nations such as India, Pakistan, Bangladesh, and others, the loss of life due to irresponsible neglectful services is beyond estimation [3].

The present communication, based on a case report is an attempt in this regard and it is not with any intention to hurt the feelings of those who are dedicated and sincere. The objective of the article is to make our health-care worthy of human lives, in this era of sustainable development goals, health for all.

## 2. Methodology: The Case

A case study with due ethical permission taken in writing from the next kin of the deceased patient is presented here to demonstrate how human lives can be lost as a result of negligent services supplied by stakeholders in the noble medical profession for a fee, rather than for free. A 93-year-old male healthy, normal patient, a retired professor, literally walked on his own into a private hospital, with a complaint of urine retention due to prostate enlargement. He was admitted in the private ward of a National Accreditation Board for Hospitals (NABH) accredited hospital of a major city of Maharashtra, India. The patients' vital parameters tested as per hospital procedure on admission (day 01) were within normal levels; as he had no previous history of diabetes, thyroid or any major ailment, (Table 1).

Unfortunately, within 72 hours, (days 3-4) of his stay in the hospital, due to a faulty unhygienic insertion of catheter by an untrained staff, he developed high fever, indicative of bacteraemia, acquired from the hospital environment. It was specifically observed that the staff even in the private rooms of the hospital did not follow hand hygiene practice, did not

S.No.	Parameters	Days of admission of the patient and stay in the hospital								
		1	2	3	4	5	6	7	8	9*
1	Body temp °F	97.3	97.6	97.4	99.0	100.5	100.0	103.8	103.5	---
2	Blood Pressure (mmhg)	130/80	130/90	130/70	150/80	130/70	130/70	110/65	90/60	---
3	Pulse Rate (PM)	82	78	79	82	82	78	75	55	---
4	Resp. Rate (PM)	22	21	18	20	20	23	16	15	---
5	SP O2 (%)	98	98	96	95	94	80	70	60	---
6	Hb (g/dl)	15.0	---	---	15.0	---	---	12.1	---	---
7	Glucose (mg/dl)	121	---	---	128	---	---	138	---	---
8	Level of Consciousness / Orientation PA (Soft) PA (Clean)	Conscious Oriented PA (Soft) PA (Clean)	Conscious Oriented PA (Soft) PA (Clean)	Conscious Oriented PA (Soft) PA (Clean)	Down / unwell feeling weak/Conscious	Conscious but in delirium sometimes	Delirium/ semiconscious sometimes	Semi-Conscious	---	---
9	Pain Level	No Pain	No Pain	Headache Pain in lower back	Headache and severe pain in lower back	Headache body ache / Shivering Pain	High level of pain	Not responding	---	---
10	Urine output (ml/hr)	50	45	35	30	30	10	10	05	---

\*Note: The patient was healthy on day 01, doing all activities by himself, was non-diabetic, normal thyroid, had non-symptomatic hypertension, controlled by medication, he died on day 09 in the hospital

Table 1: Showing vital parameters of the patient from first day of his admission (01) till his death on the 9th day in the hospital

use hand gloves or any antiseptics while performing clinical procedures like taking BP, temperature, blood samples, injecting IVs, medicines or insertion of tubes and catheters to the aged patient.

The daily change of bed sheets, pillow covers, sweeping and cleaning of floors with disinfectants was also to be 'carried out' by paying some extra amount by attendants of the patient. Despite exorbitant room charges, the specialists of the hospital continued to justify, their mode of nursing and treatment, citing factors such as elderly status, poor immune system, antibiotic resistance et al. Surprisingly, over the entire period of his high fevered hospitalization, the specialists never recommended to perform the mandatory culture tests of his urine, nor tips of his catheters were analysed for precise microbiological detection and specific treatment thereof. The patient's catheter was never removed for replacement, despite clear signs of infection, violating all mandatory standard procedures.

### 3. Discussion

Hospital infection control norms clearly state that when suspecting catheter-associated urinary tract infections, hand hygiene practice must be strictly followed. The old catheter should be removed immediately and a urine sample from the newly placed catheter must be obtained, preferably before initiating antibiotics and sent for culture, along with the tip of the catheter. None of these simple common sense-based life-saving procedures were carried out in the present case probably due to cost cutting. This seems a very common phenomenon and the main issue is that- one of the key indicators, the proportion of people who contract hospital-acquired infections, despite receiving high-quality care is impossible to calculate, because the true number of such instances is unknown, consequently not properly reported.

Though studies have reported that there are clear-cut criteria for preventing hospital-acquired infections, [4], [5] it is unclear how many of these are actually followed, as there is no independent monitoring or recording of events by peers. A visit to any government or private hospital, blatantly disregards all of the well-documented guidelines, making a mockery of the healthcare system as a whole, with the exception of top private hospitals, which do maintain standards to avoid this malady, but perhaps in compliance of the heavy packages of payments taken from the patients.

There is definitely a nexus of economic growth and hospitals, aided by bureaucracy, as reported by Nazir et al [3].

The focus should be on increasing health related data collection, for rigorous notifications, compliance, and other indicators provided by the actual cause of carelessness, as well as the deficiencies in healthcare system's recording and reporting. This area needs maximum attention for a better management of hospital services provided to patients. Using the services of national and international, NGOs, district administrators, and other independent honest public-based entities, we can develop better models in strict regulatory compliances for improving the health care services.

In this state-of-the-art setup, it is recommended that programmatic recording and reporting of actual hospital inspections be strengthened, which can save and deliver genuine data from district to state, and then to national levels through a transparent system. Information technology experts must extensively use the hospital data through a national monitoring system, where they can create a fool-proof mechanism for identifying discrepancies and deficiencies in services, hospital-acquired infections, their status and control in the entire country, starting with the mid-segment hospitals. Nothing is more vital than human life, so the government can fund this initiative from the healthcare budget. Use of sincere hospital metrics, state of the art data collection and its correct scientific interpretation for improving the health care management system is suggested.

In most developing countries, some hospital accrediting agencies have created an inexpensive and practical bottom-up approach in which health staff, including individuals at the facility level use their data incorrectly. Inspection teams make their arrivals known well in advance, and they fabricate inspections and evaluations without any improvement or solutions. Inspection visits are often prepared in advance in connivance with hospital managers, staff doctors, and their owners. Such situations raise concerns about the effectiveness of restrictive services, highlighting dishonest activities that ultimately harm the patients. Local personnel are not motivated because they are underpaid, so they avoid improving patient services and hospital program management, which minimizes cascade gaps and as a result health quality deteriorates significantly at the expense of patients, leading to avoidable death, despite massive bills.

In this sense, strict financial and administrative supervision

is desired. Hospital owners and administrators must realize that avoiding HAIs improves their financial situation. Patients who do not have HAIs are discharged sooner, allowing more beds to be available for new patients and generating more income. Available bed days enhance volumes and revenue, assuming fixed costs remain constant. Investment in this area will benefit hospital management and owners, as well as patients' and doctors' reputations; it will be a win-win situation for everybody.

Use of simple procedure of strict hand hygiene including masks and gloves if adopted seriously, can become important in the reduction of the rate of HAIs. A combination of infection control interventions should be used in order to have a significant impact on HAIs. The identification of outbreaks and their associated pathogens is currently warranted in order to establish which HAIs are particularly problematic across geographical regions, so as to and to allow for a specific targeted approach. Catheter-associated urinary tract infections especially in the elderly, can be avoided by washing the catheter and the site of insertion on a regular basis, securing the catheter to prevent bio-film dislodgement and irritation and removing the catheter when it is no longer needed, [4]–[8].

Untrained workers, non-specialist 'doctors,' ward boys, and low-wage nurses contribute to the deterioration of the delicate healthcare system, which may be blackmailed or exploited for a few extra bucks notwithstanding the will of doctors and administrators. As a result, the patients' unwavering faith in the temples of life, the hospitals, gets shattered. This aspect needs urgent attention for an amicable management for all the stake holders. It is necessary to work hard for restoring the faith, trust and the purpose of hospitalization which gets dented by such episodes of unscientific behaviour, sans ethics playing with human life.

#### 4. Conclusion

This study indicated that during several necessary clinical procedures, even a simple neglect in the mandatory use of hand hygiene, disposable gloves, masks, specific anti-septics, anti-fungals can cause enormous problems in disturbing the delicately balanced health-care system. Also, along with not keeping correct data base for compliance of hospital inspection reports, on a random basis can magnify the seriousness of HAIs, leading to untimely deaths of healthy patients. A wide variety of HAI management control interventions can be implemented during a time frame, involving all the stake holders in a transparent system.

#### Ethical Considerations / Informed consent

Written consent was obtained from the patient's kin.

#### Funding

This study has not received any external funding.

#### Data and Material Availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

#### Conflict of interest

Author declares no conflict of interests. Author read and approved final version of the paper.

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