

# Preventing hospital acquired infections: A challenge we must accept

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Nosocomial infections pose a constant threat to hospitalized individuals. Apart from increased mortality they also add substantially to hospital costs. There are a few studies estimating the excess cost of nosocomial infections in India.<sup>[1]</sup> Less than 15% of population in India has some form of health insurance coverage and out-of-pocket payments are still among the highest in the world. Thus the additional burden of costs attributable to these infections has serious implications to the Indian patient. Besides, to ensure fiscal efficiency and optimization of healthcare planning, organization and delivery we need to address the issue of infection control.<sup>[2]</sup>

In some studies, hospital-acquired infection (HAI) rates have ranged from 1% in parts of Europe and North America to more than 40% in certain parts of Asia, Latin America and sub-Saharan Africa.<sup>[3]</sup> However, there remains a problem with measuring the exact incidence of HAI due to varying definitions for specific infections such as ventilator-associated pneumonia (VAP). Even the Center for Disease Control (CDC) definition of VAP has low sensitivity (50-70%) and specificity (40-95%).<sup>[4]</sup> Similarly, a time cut-off of 48 h after admission used to differentiate between hospital and community-acquired pathogens may not always take into account the patient's carrier status prior to hospitalization. There is inadequate data HAI that manifest after the patient is discharged from the hospital.

Guidelines similar to the one in this issue<sup>[5]</sup> incorporating various simple methods and strategies to control HAI have been published regularly by the CDC and the

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World Health Organization. The purpose of the present guidelines appears to be to focus on issues that are relevant to infection control in Indian hospitals.

These guidelines explain important underlying principles and lay down practice points for general infection control measures, which should be mandatory for any hospital. The present guidelines have uniquely included principles involved in the care of burn patients that are hard to come by.

The limitation of these guidelines is the lack of evidence-based strategies tailored for the Indian needs, not least because of a paucity of empirical data. The guidelines have elaborated on the isolation criteria for high-risk patients but have not specified the type of isolation recommended for diseases transmissible via contact versus droplets (i.e. negative vs. positive).

Another notable omission is that of methicillin-resistant *Staphylococcus aureus* (MRSA) prevention, eradication and management strategies for India where it is an emerging threat.<sup>[6]</sup> New eradication strategies for MRSA and issues related to antibiotic therapy have been recently published. In a cluster randomized control trial of targeted versus universal decolonization in routine intensive care unit (ICU) practice, universal decolonization was more effective than targeted decolonization or screening and isolation in reducing

rates of MRSA clinical isolates (by 37%) and bloodstream infection (BSI) from any pathogen (by 44%).<sup>[7]</sup>

The guidelines have mentioned but could have dwelt more at length on the ways to implement multidisciplinary education programs for physicians, nurses, respiratory therapists, pharmacists, and other ancillary personnel as a part of overall preventive strategies. Significant reductions in HAI have been reported through implementation of educational interventions.<sup>[8]</sup> Regarding staffing, the guidelines only mention the nurse-patient ratio but given the lack of trained paramedical staff in India, the respiratory therapist to patient ratio also merits attention. Maintaining these ratios in the ICU may favorably influence duration of ICU stay and VAP incidence.<sup>[9]</sup>

The guidelines mention many individual strategies to prevent VAP, catheter-associated urinary tract infection (CAUTI) and catheter-associated blood stream infection (CABSI), but fail to emphasize the “care bundle” approach that has been universally advocated. A care bundle identifies a set of key interventions from evidence-based guidelines that, when implemented together, are found to be more than the sum of its parts.<sup>[10]</sup>

The guidelines have done well to have highlighted the importance of antimicrobial stewardship. This refers to coordinated interventions designed to measure and improve the use of antimicrobials by promoting the selection of the optimal drug, dose, duration of therapy, and route of administration. The guidelines mention formulary restriction; however, a restricted antibiotic policy, an operating procedure for implementation and subsequent audit are not mentioned which are perhaps of particular importance in the Indian context. A recent metaanalysis of interventions to reduce excessive antibiotic prescribing in hospitalized patients showed reduced antimicrobial resistance and HAI, and improved clinical outcomes.<sup>[11]</sup>

The guidelines are comprehensive and wide-ranging but could have included the important issue related to the management and containment of hospital-acquired *clostridium difficile* infection as it remains under-recognized in this country, increasing the risk of horizontal spread of such infections. In addition, the principles involved in preventing skin and soft tissue infections (SSI) are worthy of mention. Finally, hospital policy for yearly vaccination of health care professionals covering for influenza outbreaks must be incorporated in HAI prevention guidelines.

Today, in India, unless there is a paradigm shift from a narrow individual patient- based approach to a more inclusive approach targeting control of the microbial environment and processes of care, significant improvement in this vital area of healthcare would not be possible. Protocols and programs are being developed and implemented energetically in individual ICUs across India, but change is urgently also required at the organizational and administrative levels in terms of integrating all factors that go into effective and economical infection control practices. For example, the cost of infection control should be accepted as a part of administrative responsibility rather allowing it to be imposed on the patient even for essential items such as gloves, masks and disinfectants. The call is for a fundamental shift in approach to infection control in critical care and intensivists must not shy away from it.

## References

1. Tiwari P, Rohit M. Assessment of cost associated with Hospital acquired infections in a private tertiary care centre in India. *Value Health Reg Issues* 2013;2:87-91.
2. Zee News Agency. Available from: <http://www.dnaindia.com/health/report-health-insurance-in-india-still-remains-an-untapped-market-1891509> [Last accessed on 2013 Sep 20].
3. WHO South-East Asia Region: India Statistics Summary (2002-present). India (<http://apps.who.int/gho/data/node.country.country-IND>): World Health Organization.
4. Ponce-de-Leon-Rosales S, Macias A. Global perspectives of infection control. In: Wenzel RP, editor: *Prevention and Control of Nosocomial Infections*. 4<sup>th</sup> ed. Philadelphia: Lippincott Williams and Wilkins; 2003. p. 14-33.
5. Mehta Y, Gupta A, Todi S, Myatra SN, Samaddar DP, Patil V et al. Guidelines for prevention of hospital acquired infections. *Ind J Crit Care Med* 2014;18:149-183
6. Vincent JL, Rello J, Marshall J, Silva E, Anzueto A, Martin CD, et al. International study of the prevalence and outcomes of infection in intensive care units. *JAMA* 2009;302:2323-9.
7. Huang SS, Septimus E, Kleinman K, Moody J, Hickok J, Avery TR, et al. Targeted versus universal decolonization to prevent ICU infection. *N Engl J Med* 2013;368:2255-65.
8. Bloos F, Müller S, Harz A, Gugel M, Geil D, Egerland K, et al. Effects of staff training on the care of mechanically ventilated patients: A prospective cohort study. *Br J Anaesth* 2009;103:232-7.
9. Cho SH, Keteftian S, Barkauskas VH, Smith DG. The effects of nurse staffing on adverse events, morbidity, mortality, and medical costs. *Nurs Res* 2003;52:71-9.
10. Fulbrook P, Mooney S. Care bundles in critical care: A practical approach to evidence-based practice. *Nurs Crit Care* 2003;8:249-55.
11. Davey P, Brown E, Charani E, Fenelon L, Gould IM, Holmes A, et al. Interventions to improve antibiotic prescribing practices for hospital inpatients. *Cochrane Database Syst Rev* 2013;4:CD003543.

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