



# Benchmarking local healthcare-associated infections: Available benchmarks and interpretation challenges

Aiman El-Saed<sup>a,b,c,d</sup>, Hanan H. Balkhy<sup>a,b,d,e,\*</sup>, David J. Weber<sup>f</sup>

<sup>a</sup> Gulf Cooperation Council (GCC) States and WHO Collaborating Center for Infection Prevention & Control, Riyadh, Saudi Arabia

<sup>b</sup> Department of Infection Prevention and Control, King Abdulaziz Medical City, Riyadh, Saudi Arabia

<sup>c</sup> Community Medicine Department, Faculty of Medicine, Mansoura University, Egypt

<sup>d</sup> King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia

<sup>e</sup> Department of Pediatrics, King Abdulaziz Medical City, Riyadh, Saudi Arabia

<sup>f</sup> University of North Carolina Health Care, University of North Carolina, Chapel Hill, NC, USA

Received 2 February 2013; received in revised form 1 April 2013; accepted 6 May 2013

## KEYWORDS

Benchmarking;  
Comparison;  
Surveillance;  
Healthcare-associated  
infections

**Summary** Growing numbers of healthcare facilities are routinely collecting standardized data on healthcare-associated infection (HAI), which can be used not only to track internal performance but also to compare local data to national and international benchmarks. Benchmarking overall (crude) HAI surveillance metrics without accounting or adjusting for potential confounders can result in misleading conclusions. Methods commonly used to provide risk-adjusted metrics include multivariate logistic regression analysis, stratification, indirect standardization, and restrictions. The characteristics of recognized benchmarks worldwide, including the advantages and limitations are described. The choice of the right benchmark for the data from the Gulf Cooperation Council (GCC) states is challenging. The chosen benchmark should have similar data collection and presentation methods. Additionally, differences in surveillance environments including regulations should be taken into consideration when considering such a benchmark. The GCC center for infection control took some steps to unify HAI surveillance systems in the region. GCC hospitals still need to overcome legislative and logistic difficulties in sharing data to create their own benchmark. The availability of a regional GCC benchmark may better enable health care workers and researchers to obtain more accurate and realistic comparisons.

© 2013 King Saud Bin Abdulaziz University for Health Sciences. Published by Elsevier Ltd. All rights reserved.

\* Corresponding author at: King Abdulaziz Medical City, Riyadh, Saudi Arabia. Tel.: +966 504623090.

E-mail address: [balkhyh@hotmail.com](mailto:balkhyh@hotmail.com) (H.H. Balkhy).

## Introduction

Between 7 and 10% of patients worldwide admitted to acute care hospitals develop at least one healthcare-associated infection (HAI) during their hospital stay [1]. HAIs add extra morbidity and mortality risks to patients and lead to considerable stretching of many countries' already limited healthcare resources [1–3]. Recently, HAI surveillance as part of a broad-based prevention and control strategy has received more attention from healthcare facilities, patient-safety organizations, and patients themselves [4]. Growing numbers of healthcare facilities are routinely collecting standardized data on HAIs, which are used not only to track internal performance but also to compare local data to national and international benchmarks [4].

## Benchmarking

Prior to its use in healthcare surveillance, benchmarking was recognized in industry as an effective means of improving business performance [5]. Today, HAI benchmarking can be divided into internal and external systems. Internal benchmarking typically involves comparing current processes and/or outcomes to baseline data or comparing different departments in the same healthcare facility [6]. Although easily accessible and potentially highly useful, the collection of baseline data that is of adequate size for statistical comparison may require a significant amount of time. Moreover, the inability to adjust for patient, healthcare, and methodological changes over time may lead to erroneous conclusions. External benchmarking, on the other hand, usually involves comparing processes and/or outcomes in one healthcare facility to other facilities performing similar activities, often with higher standards [7]. The main challenge to external benchmarking is accounting for differences in patient risks and surveillance methodologies.

The purpose of both internal and external benchmarking is to continuously improve healthcare by demonstrating strengths and weaknesses, stimulating competitiveness, and assessing the value of interventions intended to reduce HAIs [6]. Benchmarking is often compromised by the limitation of simply comparing outcome indicators rather than analyzing and promoting the best practices [8]. Without performing these latter activities, the benchmarking of HAI data can be misleading. Furthermore, the benchmarked data must be collected using standardized case definitions as well as similar data collection methods and in populations

of adequate sizes over a sufficient duration of time, as a statistically relevant number of outcomes are required for comparison [9]. Moreover, the collected data should be analyzed and reported using similar risk-stratified or risk-adjusted metrics (rates, proportions, or ratios) to allow fair comparisons [9]. Nevertheless, benchmarking is often performed without fulfilling these conditions, perhaps because local policy makers poorly understand the significance of these limitations. Obviously, external benchmarking cannot be accomplished if there is no regional system for data collection and dissemination.

## Benchmarking risk-adjusted metrics

One of the major challenges in benchmarking metrics of HAI surveillance is the heterogeneity of healthcare facilities in terms of HAI risk. The potential for healthcare facilities to report higher rates of HAIs is dependent on many factors including size (bed number) of the facility, type and complexity of the care provided (such as burn care and solid organ transplants), length of patient stay, duration and type of device use, patient risks for an HAI (such as age and immunocompromising conditions), and comorbidities (such as renal dysfunction, liver failure, obesity, and diabetes) [10–13]. Therefore, benchmarking overall (crude) HAI surveillance metrics without accounting or adjusting for these variables can result in misleading conclusions. Providing risk-adjusted metrics is one way to reduce the possibility of such erroneous conclusions [4]. Statistical adjustments of the metric can take any of the following forms: (1) multivariate logistic regression analysis to adjust for multiple confounders at the same time; (2) stratification to adjust for (usually) one confounder at a time by stratifying the metric by the levels (groups) of that confounder; (3) standardization to adjust for (usually) one confounder based on weighted averages; or (4) restrictions to adjust for (usually) one confounder by excluding unwanted levels of that confounder.

Stratification is by far the most common adjustment method used in benchmark reports. The National Healthcare Safety Network (NHSN) and the International Nosocomial Infection Control Consortium (INICC) previously reported type-specific rates of device-associated HAI stratified by critical care unit types for adults and paediatric patients and by weight groups for neonatal patients [2,14]. Additionally, dialysis access-related infections were stratified according to the type of

Download English Version:

<https://daneshyari.com/en/article/6132643>

Download Persian Version:

<https://daneshyari.com/article/6132643>

[Daneshyari.com](https://daneshyari.com)