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Major article

Surgical site infection rates in 16 cities in Turkey: findings of the International Nosocomial Infection Control Consortium (INICC)

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Background: Surgical site infections (SSIs) are a threat to patient safety; however, there were no available data on SSI rates stratified by surgical procedure (SP) in Turkey.
Methods: Between January 2005 and December 2011, a cohort prospective surveillance study on SSIs was conducted by the International Nosocomial Infection Control Consortium (INICC) in 20 hospitals in 16 Turkish cities. Data from hospitalized patients were registered using the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) methods and definitions for SSIs. Surgical procedures (SPs) were classified into 22 types according to International Classification of Diseases, Ninth Revision criteria.
Results: We recorded 1879 SSIs, associated with 41,563 SPs (4.3%; 95% confidence interval, 4.3-4.7). Among the results, the SSI rate per type of SP compared with rates reported by the INICC and CDC NHSN were 11.9% for ventricular shunt (vs 12.9% vs 5.6%); 5.3% for craniotomy (vs 4.4% vs 2.6%); 4.9% for coronary bypass with chest and donor incision (vs 4.5 vs 2.9); 3.5% for hip prosthesis (vs 2.6% vs 1.3%), and 3.0% for cesarean section (vs 0.7% vs 1.8%).
Conclusions: In most of the 22 types of SP analyzed, our SSI rates were higher than the CDC NHSN rates and similar to the INICC rates. This study advances the knowledge of SSI epidemiology in Turkey, allowing the implementation of targeted interventions.

It is difficult to ignore the burden posed by surgical site infections (SSIs) on patient safety in Turkey in terms of pain, suffering, delayed wound healing, increased antibiotic use, revision surgery, increased length of hospital stay, and increased morbidity and mortality, which are also reflected in excessive health care costs.[1] Nevertheless, as far as we know, the incidence of SSIs in Turkey has not been systematically studied to date. Thus, for Turkey, there no data on global SSI rates or SSI rates stratified by surgical procedure (SP) according to International Classification of Diseases, Ninth Revision (ICD-9) criteria,[2-5] which would provide a basis for international benchmarking.[6]

According to the World Bank's classification of national economies based on 2012 gross national income per capita, low-income and lower middle-income economies represent more than 75% of the world's population.[7] The incidence of SSIs in limited-resource economies has not been studied systematically, however, and standard methodological approaches are infrequently introduced in infection control programs in such countries.[8,9]

Surveillance programs focused on health care–associated infections (HAIs), including surgical site infections (SSIs), are essential tools for preventing their occurrence and reducing their adverse effects, thereby reducing patients' risk of infection. As widely shown in the literature from high-income countries, including the United States, the HAI rate can be reduced by as much as 30%, and by as much as 55% in the case of SSIs, through the implementation of an effective surveillance approach.[10]

Within the scope of developing countries, several reports of the International Nosocomial Infection Control Consortium (INICC) have also shown that application of surveillance and infection control strategies can significantly reduce HAI rates in limited-resource countries.[11-13] The first joint effort to provide data on the epidemiology of SSIs was initiated by the INICC in 2005 and continues to the present day, to providing the big picture of SSI rates in limited-resource countries.[14] The objective of the present study was to provide a comprehensive analysis of each of these countries.

As noted in a 2011 World Health Organization report, limited-resource countries like Turkey only have published data on SSI rates stratified by level of wound contamination.[15] This multicenter study, conducted between January 2005 and December 2011 at 20 hospitals in 16 cities of Turkey, is the first to report an analysis on the SSIs rates associated with 22 types of surgical procedures (SPs) stratified according to the ICD-9 and the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN), which will allow us to introduce targeted interventions.

METHODS

Background on the INICC

The INICC is an open, nonprofit, HAI surveillance network that applies methods based on US CDC NHSN guidelines.[16] The INICC was established to measure and control HAIs worldwide in hospitals through the analysis of standardized data collected on a voluntary basis by its member hospitals, fostering the use of evidence-based preventive measures. Since its international inception in 2002, the INICC has steadily grown and now composes nearly 1000 hospitals in 300 cities of 60 countries in Latin America, Asia, Africa, the Middle East, and Europe, and is currently the sole source of aggregate standardized international data on the epidemiology of HAIs.[14]

Study setting and design

Between January 2005 and December 2011, we conducted a cohort prospective multicenter surveillance study of SSIs on patients undergoing SPs in 20 medium-sized hospitals of 16 cities in Turkey. Sixteen of the 20 hospitals (80%) participating in this study are academic teaching hospitals, 3 (15%) are public hospitals, and 1 (5%) is a private community hospital.

Each participating hospital's Institutional Review Board approved the study protocol. Patient confidentiality was protected by codifying the recorded information, making it identifiable only to the infection control team.

INICC surveillance program

As part of the INICC program on SSI prevention, infection control professionals (ICPs) at each participating hospital were trained in conducting outcome surveillance of SSI rates,[17] according to the standard CDC NHSN definitions for superficial incisional, deep incisional, and organ/space SSIs, including laboratory and clinical criteria.[16]