Surveillance of Sanitation Practices and their Effect on Surgical Site Infections

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INTRODUCTION

The most frequent surgical complication that patients will face are surgical site infections (SSIs). SSIs are a substantial cause of morbidity and mortality, leading to prolonged hospitalization stays that cost tens of millions of dollars each year globally.

What makes SSIs even more devastating is that they are preventable. In 2016, the World Health Organization (WHO) made the first effort to provide a central resource with guidelines to prevent SSIs, which consisted of 29 recommendations before, during, and after surgery. This study compares the different implementation levels of the strong recommendations outlined in the WHO guidelines in the United States and Croatia in order to:

1. Determine if there is an overall improvement in SSI rates since the introduction of the WHO guidelines and,
2. Determine if one country is improving more due to the different implementations of these guidelines.

METHODS AND MATERIALS

Seventy-six hours were spent making observations in operating rooms from two different hospitals in two different countries.

- **Hospital 1:** “Klinički bolnički centar Sestre milosrdnice” in Zagreb, Croatia
- **Hospital 2:** “Madigan Army Medical Hospital” in Fort Lewis (WA), United States

Observations were based on the 2016 WHO guidelines for SSI prevention, specifically the “strong” recommendations that focus on before, during, and after operation procedures (Table 1). The overall layout and conditions of the operating room were also used as a point of comparison (Figure 1).

![Figure 1. Operating room blueprints from a public hospital in Croatia (A) and a private hospital in the United States (B). The circles indicate the wash stations. In Croatia, the operating rooms were divided by a wall and would open up to the other operating rooms with a central wash station in the center. Windows were present in each room and were often open. In the U.S., each operating room was closed off with no windows, and had its own enclosed washroom.](https://example.com/figure1)

**Table 1.** The “strong” recommendations from the WHO guidelines (2016) in SSI prevention and our observations from hospitals located in Croatia and the United States are noted. Recommendations for before (orange), during (green), and post (blue) operation are indicated. V* denotes that this recommendation varied in its execution.

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REFERENCES


RESULTS AND FUTURE WORK

With respect to SSI rates, it is unclear whether Croatia or the United States is seeing improvement since the release of the 2016 WHO guidelines due to insufficient data. There does, however, seem to be a decreasing trend in the United States, which could potentially be due to the differences in the surgical hand preparations for all personnel as well as the general operating room set up. A recent study showed how windows and turbulent circulation increases contamination rates in hospitals (Hirsch et al., 2012). Further research should compare how different operation room arrangements, like the ones in Croatia and the United States, effect SSI rates as it could offer a novel recommendation for future SSI prevention guidelines.

There were many limitations within this study, such as the location of the hospitals surveyed, the number of hospitals observed, the types of departments surveyed, and the duration of the study. Additionally, there was limited surveillance data available from Croatia, and what was available was limited to 2011 to 2012. These limitations, in conjunction with our findings, outline the further work that needs to be done to better address this issue. This includes additional observations in different hospital locations, a longer observation duration, and an effort to require updated reports to a central database. The WHO can then use this central database to generate more specific and up-to-date recommendations to prevent SSIs. More information and clearer, updated guidelines are needed in order to reduce SSI rates worldwide.

For Additional Information

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