



Preliminary Study on Care Bundle for Preventing Surgical Site Infections: Implementation Experience in Medical Centers

Pei-Hsuan Lu^{*1}(呂佩璇)、Yuan-Lun Chen¹(陳媛綸)、Han-Chi Chung¹(鍾翰其)、Yin-Ching Chuang²(莊銀清)
 Division of Research and Development, Joint Commission of Taiwan, New Taipei City, Taiwan(R.O.C)¹;
 Department of Medical Research, Chi Mei Medical Center, Tainan City, Taiwan (R.O.C)²

Objectives

Preventing surgical site infections (SSIs) is a crucial issue worldwide. In Taiwan, since 2016, a multicenter approach has been adopted to introduce combined care bundle elements for the prevention of SSIs, and the implementation experience of medical centers in Taiwan was analyzed to provide a reference for other medical institutions in the future.

Table 1. impact of infection rates and compliance rates in surgeries after SSI Bundle

Surgeries	Infection rates	Compliance rates
Colorectal surgery	-0.3%	11.8%
Hysterectomy	0.5%	0.0%
Coronary artery bypass graft	-0.3%	1.2%
Cesarean section	-0.1%	0.2%
Appendectomy	0.0%	0.0%
Joint replacement surgery	-0.4%	-2.1%



Figure 1. The Bundle Elements to Prevent SSI

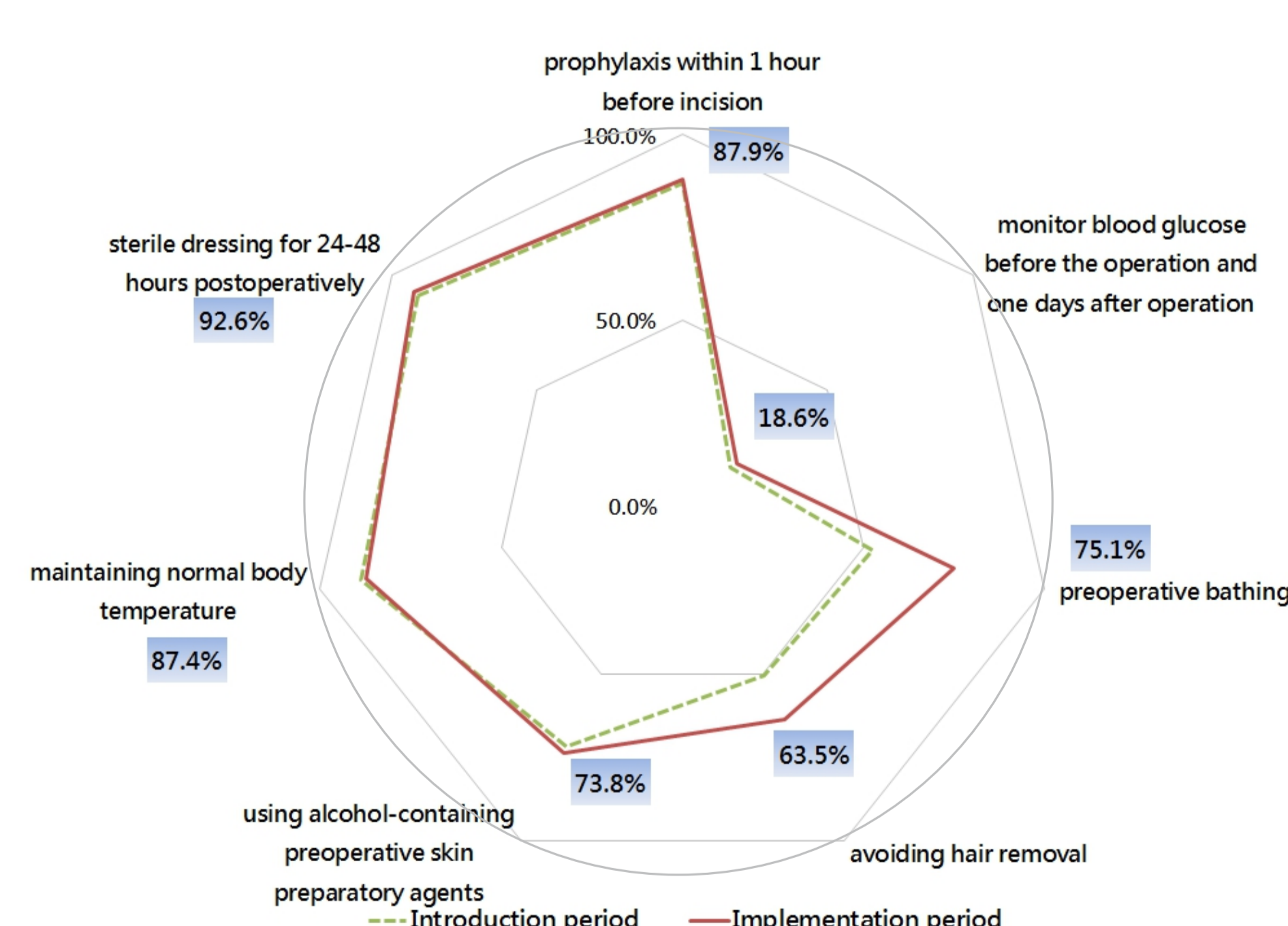


Figure 2. The Compliance rates with SSI bundle elements at Medical Center

Methods

From 2016 to 2017, in collaboration with the Taiwan Centers for Disease Control, the Joint Commission of Taiwan promoted a 2-year pilot study of care bundles for the prevention of SSIs. The program's primary goal was to promote SSI care bundles for 6 types of surgeries (joint replacement surgery, coronary artery bypass grafting [CABG], Cesarean section, hysterectomy, appendectomy, and colorectal surgery) and 7 bundle elements (using prophylactic antibiotics appropriately, preoperative bathing, removing hair appropriately, applying skin antiseptic, maintaining glucose control, maintaining normal body temperature, and caring for wounds)(Fig1). In total, 42 hospitals joined the pilot study. The hospital level is defined according to the number of beds, it is divided into medical centers, regional hospitals and district hospitals. Eleven out of 19 medical centers volunteered to participate in this research project.

In this pilot study, the medical centers used multifaceted promotion strategies and developed relevant operational mechanisms. These mechanisms included establishing a data platform or a reminder mechanism to alleviate the loading of clinical staff, encouraging cross-sectional cooperation, conducting education and training, enacting a protocol for glycemic control, introducing electric hair removal, increasing the number of preclinical health educational resources, and re-examining the methods of receiving cases of infection.

We selected data related to the 6 types of surgical procedures and compared the compliance rates and infection rates between the introduction period (August 2016 to January 2017) and the implementation period (February 2017 to July 2017). In total, we collected 6,752 surgical case data sets from 11 medical centers.

Results

According to the study results, the compliance rates of the 6 types of surgeries improved, except for joint replacement surgery at the later stage of intervention, with the highest compliance rate of 11.8% observed in colorectal surgery. The 2 elements of the care bundle with the highest compliance rates were the preoperative bathing (75.1%) and the avoiding hair removal(63.5%) in implementation period (Fig 2). The SSI rate decreased in all surgeries, except for hysterectomy, of which the most significant reduction was observed in joint replacement surgery, with a decrease of 0.4% ($p > 0.05$), followed by Colorectal surgery and CABG with a decrease of 0.3% ($p > 0.05$)(Table 1).

Conclusion

This project was a pilot study. The improvement of the compliance rate demonstrated that the implementation of the program in the medical centers was effective. The compliance rate of each surgery improved, except for joint replacement surgery. Although no improvement in compliance was observed in joint replacement surgery, the infection rate will still be improved through the implementation of this program.

In addition to organize regular meetings at the hospital, digitization was employed to simplify the workflow. Through continuous education and training, increasing preclinical health education resources, and increasing follow-up rate of outpatient infection cases, the awareness of medical staff about care bundles for SSIs can be further enhanced. These implementation experiences should be continuously promoted to other hospitals in Taiwan for future reference.

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