

# Use of Care Bundles to Prevent Healthcare-Associated Infections in Intensive Care Units: Nurses' Views

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## ABSTRACT

**Objective:** The purpose of this study was to determine the views of nurses working in intensive care units regarding the use of care bundles in preventing healthcare-associated infections.

**Methods:** This study used the focus-group interview method, which is one of the qualitative methods. Two focus-group interviews, each lasting about half an hour, were conducted with 14 intensive care unit nurses. Qualitative data obtained from the interviews were recorded on tape and in note form. The interviews were then transcribed and analyzed. The transcribed data from the focus-group discussions were grouped by theme and concept, and the statements of the participants were coded numerically according to these groupings. Three themes and six subthemes emerged in analyzing the qualitative data.

**Results:** The nurses defined care bundles as “materials that provide integrated care for patients”. They also stated that their benefits included providing a tool for self-monitoring, support and guidance for both patients and nurses. When whether they had experienced any difficulties while using care bundles, they stated that they had not experienced any. Furthermore, nurses stated that care bundles improved their perspectives, and that they were must-have items in intensive care units providing reminders rather than a waste of time.

**Conclusion:** It is that the participation of nurses is important so that care bundles are used more widespread in order to prevent healthcare-associated infections in intensive care units.

**Keywords:** Care bundle, healthcare-associated infections, intensive care units, nurses' views

## 1. INTRODUCTION

Healthcare-associated infections (HAIs) are a global health problem for both patients and healthcare professionals (1-3). HAIs are the most important indicator of care quality in hospitals, threaten patient safety, cause prolonged hospital stays, and increase morbidity, mortality and treatment costs (3-8). It has been reported that mortality rates due to HAIs vary between 8.2 and 29%, an additional hospitalization period of between 4.3-29.5 days and an additional cost of between \$11,000 and \$18 million (3-6,8,9). Turkey has reported that HAIs prolong hospital stays by an average of 10 days, cause an increase in mortality of 16% and an additional cost of \$1500 (10). According to the World Health Organization (WHO), 15% of hospitalized patients catch HAIs worldwide. This rate is 7% in developed countries (general infection frequency is between 3.6% and 12%), while in developing countries it is 10% (general infection frequency is between 5.4% and 19.1%) (3). Often HAIs appear as catheter-related

urinary tract infections, ventilator-associated pneumonias and catheter-related bloodstream infections (9).

While the incidence of infections associated with healthcare varies depending on the country, hospital and patient characteristics, the average is 3-17% across hospitals (9). While this rate rises to 30% in intensive care units (ICUs) in developed countries, it is 2-3 times more in the ICUs of developing countries than in those of developed countries (3). According to 2017 data from the Ministry of Health in Turkey, HAI rates in intensive care units vary between 1.08 and 4.86% (11). It is extremely important to prevent infections before they appear in order to provide a quality healthcare service and to protect against the negative effects of possible infections. These precautions should be implemented through initiatives that can be accepted by both the institution and the patients, and whose results have been proven by scientific studies (12). Studies on the prevention of HAIs, especially in the last 20 years, show that initiatives that have been proven

to prevent a specific hospital infection make a rate of zero hospital infections possible if they are implemented as part of a whole bundle (13-15). One study using a healthcare bundle shows that ventilator-associated pneumonia decreased from 2.50 to 1.60 cases per 1000 ventilator days; catheter-related bloodstream infections from 2.38 to 0.73 cases per 1000 catheter days (16). Another study conducted to prevent ventilator-associated pneumonia showed that infection rates of ventilator-associated pneumonia decreased from 4.08 to 1.16 cases per 1000 ventilator days (17). In cases where compliance is at a high level the effectiveness of care bundles increases, and their use causes a significant decrease in mortality and morbidity (18). The fact that HAI rates decrease as a result of higher compliance with care bundles has increased demand for them and led to the development of many different types of care bundles (19,20).

A care bundle has been defined as a set of implementations used to standardize care and treatment in hospitals (21). Another definition has suggested that a care bundle involves the co-administration of several evidence-based practices (usually three to five) that positively affect the patient's healing process and improve the quality of care (20-23). The philosophy of the care bundle is to focus on how to provide the best care, not on what the care should be. The parameters that make the care bundle important are that "all its implementations have been tested with randomized controlled trials, level of evidence I, [and] it combines all these implementations and can be applied to every patient" (21,22,24). The key principle in evaluating packages is the logic of "all or nothing". Non-compliance with one of the parameters is accepted to be non-compliance with all the other parameters as well (21).

Intensive care nurses who look after a patient for 24 hours a day have an important responsibility in terms of using care bundles. Studies have stated that the presence of nurses during the implementation and monitoring of these bundles increases compliance by 100% (13,25). A study examining the use of care bundles to prevent infection found that if the responsible nurse was present in the ICU for the first three months of applying the care bundle the other nurses complied with it and infection rates decreased. In the second three-month period of the study, the responsible nurse was not present in the ICU for a long period and the compliance of the other nurses decreased while infection rates increased. This shows that the responsible nurse plays an important role, particularly in maintaining compliance (26). ICU nurses implement the procedures included in these bundles and maintain patient care, but they are also expected to be aware of the fact that HAIs are preventable, to keep up with the latest measures accepted worldwide for the prevention and control of infections, and to provide the best care for patients by using their knowledge to supplement their practice (27).

The literature includes studies on the effectiveness of care bundles with regard to infection rates. However, there is no study of the opinions of nurses on this subject. This study thus aimed to collect the opinions of the nurses who use

care bundles. Knowing these nurse's opinions about the implementation of care bundles will be especially helpful in increasing their compliance with them.

### Purpose of the Study

The study aimed to determine the views of nurses working in the ICU regarding the use of care bundles in preventing HAIs.

## 2. METHODS

### Study design

The study employed a qualitative research design with the use of focus groups.

### Setting and sample

Fourteen nurses working in the thoracic diseases ICU of a university hospital constituted the population and sample of this qualitative study. The study used the purposive sampling method in order to include intensive care nurses who had previously worked with the care bundles. Nurses use care bundles to prevent ventilator-associated pneumonia, catheter-related bloodstream infections, catheter-related urinary system infections in the intensive care unit.

In the study, 21.4% (n: 3) of the nurses were male and 78.6 (n: 11) were female. The average age of the nurses was  $29.64 \pm 5.82$ . Total ratio of nurses who were graduates from vocational high school are 7.1% (n:1) and 92.9% (n: 13) of nurses had bachelor's degrees. While the average number of years of employment of the nurses was  $7 \pm 5.09$ , the average number of years of employment in the ICU was  $6 \pm 3.46$ . All of the nurses participating in the study had previously received training on HAIs and the use of care bundles and had worked with care bundles for six months.

### Measurements/instruments

The study collected the data using a semi-structured questionnaire about the characteristics of the nurses (age, gender, educational status, total years employed, years employed in the intensive care unit) and their opinions regarding care bundles (Box 1).

#### Box 1: Questions for focus-group interviews

What is a care bundle? Are care bundles useful in the ICU? What difficulties have you experienced when implementing care bundles?
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### Data collection and analysis

#### Qualitative data collection and analysis

The data were collected in September 2019 using a semi-structured questionnaire. The study included two half-hour long focus-group interviews with seven nurses in each group,

for a total of 14 ICU nurses. The researchers conducted the focus-group interviews in the meeting room of the ICU. Before starting the interview, the researchers explained the purpose of the research to all the nurses participating in the study, and informed them that the interviews would be recorded. Their written permission and verbal consent were obtained.

The researchers conducted the focus-group interviews using three open-ended questions intended to open up a discussion. No additional questions were needed. The researchers ensured the nurses understood the questions and expanded them if necessary. The interviews were recorded on tape and in the form of written notes. The moderator of the focus group interviews was the first author, who had previously worked with care bundles, while the other researcher took notes during the interviews. The recorded interviews were then transcribed. The researchers then evaluated the data.

### Analysis

The main researcher transcribed the focus-group interviews verbatim. The transcripts were later supplemented with the field notes which also contained information about the nonverbal responses that were observed during the interviews. The data transcribed from the focus-group interviews were grouped by theme and concept, and the statements of the participants were coded numerically according to these groupings.

### Credibility

In order for the study to be credible to the nurses, the sessions were held in the meeting room of the ICU so that group members were in a familiar environment. The interviews started with casual conversation to create a relaxed atmosphere so that group members would feel free to express their opinions and speak openly. The researcher who had previously worked with care bundles was also previously acquainted with the nurses.

### Dependability

In qualitative studies, dependability means that different researchers should come to almost the same conclusions when analyzing the data. Therefore, findings should be verified by more than one researcher (28). Both members of the research team analyzed the data in this study. They then compared the results of their analyses.

### Ethical considerations

The study was conducted in accordance with the Principles of the Declaration of Helsinki. The study obtained approval from the Ankara Yıldırım Beyazıt University Ethics Committee (number 2019-351) in order to maintain the ethical standards of the research. In addition, permission was obtained from the institution where the study would be implemented after

obtaining the permission of the Ethics Committee. The nurses participating in the study gave their written permission and verbal consent.

## 3. RESULTS

In the qualitative data analysis three themes and six subthemes emerged. These themes which are presented in Table 1.

**Table 1:** Themes and subthemes

Themes	Definition	Benefits	Difficulties
Subthemes	<ul style="list-style-type: none"> <li>• Self monitoring – reminder</li> <li>• A preventive tool</li> </ul>	<ul style="list-style-type: none"> <li>• Helpful</li> <li>• A guide</li> <li>• Care</li> </ul>	No problems

### First theme: definition

Most of the participants defined a care bundle as “*a materials and reminder tool that provide integrated care for patients.*”

Below are some sample responses:

#### Self monitoring-reminder

“**Self-monitoring** (informing ourselves)” (Nurse 4); “I can see my own deficiencies better by looking at the care bundle, **it helps me make up what I lack**” (Nurse 6); “**Preventing errors, suggestions, reminders** to prevent infections” (Nurse 7).

#### A preventive tool

“**All-inclusive material** that will prevent infection in the patient” (Nurse 12); “**A preventive tool** for infection which allows action to be taken before infection occurs” (Nurse 13); “**Advantageous for the patient, a tool that allows us to be careful**” (Nurse 14); “Material to prevent or minimize the risk of infection in patients” (Nurse 2).

### Second theme: benefits

All of the nurses stated that a care bundle was beneficial, that it should be used in the ICU and that it was effective in reducing infection rates.

Below are some sample statements:

#### Helpful

“Helpful. **It’s like self-monitoring.** It helps us to check up on ourselves” (Nurse 2); “It’s very important. It’s especially effective for beginning nurses. Because nurses may miss something during implementations, **a care bundle helps us to go back and carry out procedures we’ve missed**” (Nurse 3); “I saw many benefits, especially when I first started nursing. Since I can’t remember everything, I look at the list and **check everything** (because I may have missed something)” (Nurse 5).

#### A guide

“You see the **whole picture** after a while, but something may be overlooked in the beginning because of information

overload. It functioned as **a guide for me** when I first started" (Nurse 6); "It allows us to follow up the patient in a better way and **go back if there are any points that have been missed in the care**" (Nurse 8);

#### Care

"It's important for **better care** and to prevent infections" (Nurse 13); "It provides advantages for patient care and nurses, and **reduces cost**" (Nurse 14); "**Makes nurses aware** how to fight infections in intensive care units, **if done regularly and properly**" (Nurse 12).

#### Third theme: difficulties

The nurses stated that they had no problems using care bundles and they were easy to apply once they had adapted to them.

Some of the nurses' statements are given below:

#### No problems

"I had **no difficulty**" (Nurses 1, 2, 7, 12, 13, and 14); "**If you adapt to it, it's not difficult** and doesn't take any time. On the contrary, it's beneficial; it helps us to overcome any deficiencies" (Nurse 6) (Other nurses confirmed by nodding); "I didn't have any difficulty. I liked it because **it improved my perspective**" (Nurse 8); "It is important that we use it **as a stimulus**" (Nurse 5); "I've just started. It's very convenient for me. I see it as being **a reminder, not a waste of time**" (Nurse 10).

## 4. DISCUSSION

Healthcare-associated infections are an important problem as they increase the length of hospital stay and costs, and cause mortality and morbidity (3-8). Nipping infections in the bud is extremely important in order to provide a quality healthcare service and to protect patients against the negative effects of possible infections. Hence, initiatives that are easy to implement for both the institutions and the patients, and that have evidentiary value should be developed (12). The literature suggests that care bundles are materials which fulfill this need. Studies on the prevention of HAIs show that implementing initiatives that are proven to prevent a specific hospital infection reduces the infection rate rapidly or even cancels it out when they are used as part of a whole bundle (13,14,16-18,26,29).

HAIs are seen most frequently in ICUs (3,9,30). These common infections need to be prevented because they increase mortality and morbidity rates and negatively affect the patients' quality of life.

ICU nurses are the most common users of the care bundles designed to prevent HAIs (13,16,17,26,29). Moreover, it has been found that the views of stakeholders are especially important in increasing compliance with care bundles (31). This study thus collected the opinions of the nurses who most frequently employ care bundles. Obtaining the opinions of

these nurses about the implementation of the care bundles will be particularly helpful in increasing compliance.

The main purpose of care bundles is to provide guidance to their users. They are designed to be helpful tools which remind nurses of the required procedures in a step by step fashion. One study that included opinions of the nurses about care bundles stated that the nurses described the care bundle as a "good visual reminder" (32). Similarly, in our study, nurses defined care bundles as "**a materials and reminder tool that provide integrated care for patients**". Nurses also identified care bundle as "preventing errors", and as consisting of "all-inclusive material" or "reminder material. Furthermore, nurses in our study stated that their care bundles were a tool that allowed them to be more cautious in preventing infections. In fact, implementing specific steps through care bundles helps to eliminate errors by increasing nurses' attention (33,34). Care bundles are a strategy for increasing the incorporation of research evidence into clinical practice and assisting healthcare providers in providing optimal patient care in busy environments with limited resources.

The literature shows that care bundles are used in various fields (13,32,35-37). The objectives of care bundles include providing direct benefits to patients, shortening the duration of hospitalization in intensive care, reducing the economic burden and improving resource use (18). Care bundles, as mentioned earlier, provide reminders to nurses. The nurses in this study stated that using care bundles benefits them. They also stated that a care bundle is a tool that provides them with guidance and helps them to monitor themselves, as well as including very effective material for beginner nurses.

Also, They thought that care bundles lead to better quality care for patients and that they prevent infection when applied regularly and properly. Care bundles list all the specific steps that should be applied in the correct order. Failure to carry out any of the steps included in a bundle thus negates its usefulness. In the study by Chaboyer and Gillespie (2014), nurses stated that it would be effective for them to use care bundles in their daily practices. In another study by Dampliang et al. (2015), in which opinions on the use of care bundles in emergency services were asked, the participants stated that using the care bundle helped them improve the quality of care and increase the knowledge, skills and confidence of nurses. Another study examining the results of using a care bundle in preventing ventilator-associated pneumonia concluded that using a care bundle provides a structured approach to the nursing care of a ventilated patient and that using a care bundle at the bedside is beneficial in an intensive practice environment (34). The introduction of care bundles to prevent/control infections creates an important opportunity for providing evidence-based, safe healthcare to patients.

There are no studies indicating difficulties in using/implementing care bundles. However, Chaboyer and Gillespie's study (2014) stated that nurses were worried that the use of care bundles would increase their workload. In the current study, they also stated that they had not experienced

any difficulties when asked about problems they had had while using care bundles. Rather, they talked about their benefits and how essential they were. Nurses stated: "I had no difficulties, I liked it very much because it improved my perspective"; "It is important that we use it as a stimulus", "I see it as a reminder, not a waste of time". It may have been only natural for the nurses participating in our study to think in this way as they had worked with care bundles before.

The literature has emphasized that compliance with care bundles is very important for them to be effective (18,25,26). There are some factors that affect adherence to care bundles. In a study that sought health professionals' opinions on the barriers to the implementation of evidence-based practices in the prevention of ventilator-related events, "inadequate use of evidence to underpin practice" was among the emerging ones (38). This study demonstrates that there is a need for care bundles that combine evidence-based practices, as stated by nurses in our study (38). Ladbrook et al. (2019), on the other hand, stated that the obstacle to the use of the care bundle is that the unit culture does not give priority to preventive care. In our study, a nurse stated the importance of complying with the use of the bundle as follows: "If you adapt, it's not difficult, doesn't take time. On the contrary, it's beneficial, it helps us to overcome any deficiencies". A care bundle consists of several interventions or approaches, all of which positively affect the patient's healing process and results when applied separately, but which provide a better result when applied together. The key principle of care bundles is high compliance with all their components (18,21,39).

The literature shows that the education and responsibility given to nurses play an important role in compliance with the care bundle (26,39,40). For this reason, effective communication should be established before implementing care bundles in a clinic, and nurses should be provided with adequate education and feedback, as well as the chance to express their own opinions about the effectiveness of care bundles (24,31,41).

### Limitations

This study was conducted in the ICU of a university hospital; the data thus represent a single sample. Since this is a qualitative study, its results cannot be generalized to the population of nurses. Further studies should be conducted with larger samples and mixed methodologies.

## 5. CONCLUSIONS

Control of healthcare-associated infections is an important issue related to patient safety. Recent studies have shown that it is possible to prevent most HAIs through the introduction of care bundles that combine various evidence-based practices. Our study is the first study gathering the opinions of the nurses about the use of care bundles. The nurses participating in the research stated that the care bundles provide them with reminders and are useful, that

they should be applied properly and regularly, and that they are easy to use once they have been adapted to. We know that effective communication, leadership, education, recommendations, supervision and feedback are required for proper use of nursing care bundles (24,31,41). In this regard, the participation of nurses in line with these guidelines is important for the widespread use of care bundles to prevent HAIs in ICUs.

In line with the results of the study, the care bundles used by nurses to prevent infection are determined to be beneficial. Contrary to popular belief, among the activities carried out to improve the quality of care in addition to routine work in ICUs, it has emerged that care bundles are not viewed as a workload by nurses, but rather as a guide for them, and they are especially important for nurses who have just started their profession. In this direction, managers of health institutions are recommended to expand the use of care bundles for HAIs, which is one of the quality indicators and one of the most important indicators of the quality of care.

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### REFERENCES

- [1] Bates DW, Larizgoitia I, Prasopa-Plaizier N, Jha AK. Global priorities for patient safety research. *BMJ*. 2009;338:b1775.
- [2] Burke JP. Infection control – a problem for patient safety. *The New England Journal of Medicine* 2003;348:651-656.
- [3] World Health Organization. Report on the Burden of Endemic Health Care-Associated Infection Worldwide; 2011.
- [4] Evangelos IK, Flora K, Eirini A. Prevalence, incidence burden, and clinical impact of healthcare-associated infections and antimicrobial resistance: a national prevalent cohort study in acute care hospitals in Greece. *Infection and Drug Resistance* 2017;10:317–328.
- [5] Kanerva M, Ollgren J, Virtanen MJ, Lyytikäinen O. Prevalence Survey Study Group. Estimating the annual burden of health care-associated infections in Finnish adult acute care hospitals. *American Journal of Infection Control* 2009;37(3):227–230.
- [6] Koch AM, Nilsen RM, Eriksen HM, Cox RJ, Harthug S. Mortality related to hospital-associated infections in a tertiary hospital; repeated cross-sectional studies between 2004–2011. *Antimicrobial Resistance & Infection Control* 2015;4(1):57.
- [7] Umscheid CA, Mitchell MD, Doshi JA, Agarwal R, Williams K, Brennan PJ. Estimating the proportion of healthcare-associated infections that are reasonably preventable and the related mortality and costs. *Infection Control & Hospital Epidemiology* 2011;32(2):101-14.
- [8] Vrijens F, Hulstaert F, Devriese S, van de Sande S. Hospital-acquired infections in Belgian acute-care hospitals: an estimation of their global impact on mortality, length of stay and healthcare costs. *Epidemiology & Infection* 2012;140(1):126–136.

- [9] Pittet D, Allegranzi B, Storr S, Bagheri N, Dziekan G, Leotsako A. Infection control as a major World Health Organization priority for developing countries. *Journal of Hospital Infection* 2008;68(4):285-292.
- [10] Öztürk R. Nosocomial Infections: Problems, New Goals and Legal Responsibility. (First Edition). In S. N. Öztürk, R., Aygün, G. (Ed.), *Nosocomial Infections*. İstanbul: Aksu Publication, 2008;23-29.
- [11] Healthcare Associated Infections. Turkey Ministry of Health General Directorate of Public Health Infectious Diseases Department. 2020 (cited 2020 May 16) Available from: <https://hsgm.saglik.gov.tr/tr/bulasici-hastaliklar/shie/shie-liste/shie.html>
- [12] Akbayrak N, Bağçivan G. Evidence Based Practice For Preventing Infection that Frequently Encountered in the Intensive Care Unit. *Journal of Anatolia Nursing and Health Sciences* 2010;13:4.
- [13] Berenholtz SM, Pronovost PJ, Lipsett PA, Hobson D, Earsing K, Farley JE. Eliminating catheter-related bloodstream infections in the intensive care unit. *Critical Care Medicine* 2004;32:2014-2020.
- [14] Cheema AA, Scott AM, Shambaugh KJ, Shaffer-Hartman JN, Dechert RE, Hieber SM. Rebound in ventilator-associated pneumonia rates during a prevention checklist wash out period. *BMJ Quality & Safety* 2011;20(9):811-817.
- [15] Zingg W, Walder B, Didier P. Prevention of catheter-related infection: toward zero risk? *Current Opinion in Infectious Diseases* 2011;24:377-384.
- [16] Helmick RA, Knofsky ML, Braxton CC, Subramanian A, Byers P, Lan KWC. Mandated Self-reporting of Ventilator-Associated Pneumonia Bundle and Catheter-Related Bloodstream Infection Bundle Compliance and Infection Rates. *The Journal of the American Association Surgery* 2014;1627.
- [17] Eom JS, Lee MS, Chun HK, Choi HJ, Jung SY, Kim YS. The impact of a ventilator bundle on preventing ventilator-associated pneumonia: A multicenter study. *American Journal of Infection Control* 2014;42:34-37.
- [18] Horner DL, Bellamy MC. Care Bundles in Intensive Care. *Continuing Education in Anaesthesia. Critical Care & Pain* 2012;12:4.
- [19] Nolan T, Berwick DM. All-or-none measurement raises the bar on performance. *JAMA* 2006;295(10):1168-1170.
- [20] Resar R, Griffin FA, Haraden C, Nolan TW. Using care bundles to improve health care quality. IHI innovation series white paper. Cambridge (MA): Institute for Healthcare Improvement; 2012 [cited 2020 Apr 19] Available from: <http://www.ihl.org/resources/Pages/IHIWhitePapers/UsingCareBundles.aspx>
- [21] Marwick C, Davey P. Care bundles: the holy grail of infectious risk management in hospital? *Current Opinion in Infectious Diseases* 2009;22(4):364-373.
- [22] Institute for Healthcare Improvement. What is a Bundle; 2020 [cited 2020 Apr 19]. Available from: <http://www.ihl.org/resources/Pages/ImprovementStories/WhatIsaBundle.aspx> Accessed
- [23] Rello J, Afonso E, Lisboa T, Ricart M, Balsera B, Rovira A. A care bundle approach for prevention of ventilator-associated pneumonia. *Clinical Microbiology and Infection* 2013;19(4):363-369.
- [24] Borgert MJ, Goossens A, Dongelmans DA. What are effective strategies for the implementation of care bundles on ICUs: a systematic review. *Implementation Science* 2015;10:119.
- [25] Raad NC. The Cost effective management of central line-associated bloodstream infections (Clabsis) Comparing the central line bundle to antimicrobial coated central Venous Catheters: A Systematic Review. Theses of Master, The University Of Texas school of public health, Houston, Texas, 2012.
- [26] Yazıcı G, Bulut H. Efficacy of a care bundle to prevent multiple infections in the intensive care unit: A quasi-experimental pretest-posttest design study. *Applied Nursing Research* 2018;39:4-10.
- [27] Yüceer S, Demir SG. Prevention of nosocomial infections in intensive care unit and nursing practices. *Dicle Medical Journal* 2009;36(3):226-232.
- [28] Polit D, Beck CT, Hungler B. *Essentials of Nursing Research: Methods, Appraisal and Utilization*, Philadelphia: Lippincott, 2001.
- [29] Alcan AO, Korkmaz FD. Prevention of ventilator associated pneumonia: Care bundle approach. *Izmir University Medical Journal* 2015;3:38-47.
- [30] Kölgeliler S, Küçük A, Aktuğ NA, Özçimen S, Demir LS. Nosocomial infections in intensive care units: Etiology and predisposing factors. *Kafkas Journal of Medicine Science*. 2012;2(1):1-5.
- [31] Gilhooly D, Green SA, McCann C, Black N, Moonesinghe SR. Barriers and facilitators to the successful development, implementation and evaluation of care bundles in acute care in hospital: a scoping review. *Implementation Science* 2019;14(1):47.
- [32] Chaboyer W, Gillespie BM. Understanding nurses' views on a pressure ulcer prevention care bundle: a first step towards successful implementation. *Journal of Clinical Nursing* 2014;23: 3415-3423.
- [33] Dampiang J, Considine J, Kent B, Street M, Eval GDD. Nurses' perceptions of using an evidence-based care bundle for initial emergency nursing management of patients with severe traumatic brain injury: A qualitative study. *International Emergency Nursing* 2015;23:299-305.
- [34] Ladbroke E, Bouchoucha SL, Hutchinson A. Lessons learned from a rapid implementation of a ventilator-associated pneumonia prevention bundle. *Journal of Infection Prevention* 2019;20(6):274-280.
- [35] Bower W. Quality care bundles in paediatric continence management. *Australian and New Zealand Continence J*. 2009;15:46-8.
- [36] Hopkinson NS, Englebretsen C, Cooley N, Kennie K, Lim M, Woodcock T. Designing and implementing a COPD discharge care bundle. *Thorax* 2012;67:90-92.
- [37] Provonost P, Needham D, Berenholtz S, Sinopoli D, Chu H, Cosgrove S. An Intervention to Decrease Catheter-related Bloodstream Infections in the ICU. *The New England Journal of Medicine*. 2006;355(26):2725-32.
- [38] Madhuvu A, Endacott R, Plummer V, Morphet J. Healthcare professional views on barriers to implementation of evidence-based practice in prevention of ventilator-associated events: A qualitative descriptive study. *Intensive & Critical Care Nursing* <https://doi.org/10.1016/j.iccn.2021.103133>
- [39] Çetinkaya Şardan Y. Bundles in Infection Control. *Journal of Intensive Care* 2010;9(4):188-192.

- [40] Youngquist P, Carroll M, Farber M, Macy D, Madrid P, Ronning J. Implementing a ventilator bundle in a community hospital. *The Joint Commission Journal on Quality and Patient Safety* 2007;33(4):219-225.
- [41] Robert S, McInnes E, Wallis M, Bucknall T, Banks M, Chaboyer W. Nurses' perceptions of a pressure ulcer prevention care bundle: a qualitative descriptive study. *BMC Nursing* 2016;21(15):64.

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