

The Effectiveness of Increasing Frequency of Central-Line Dressing Changes and Monitoring on CLABSI Rates: A Scoping Review

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Purpose

The purpose of this project is to determine what is already known in the literature about the effect of the frequency of central-line dressing changes and monitoring on the incidence of central-line associated blood stream infections in adults with central-lines.

Background

Central lines are an essential tool in treating critically ill patients with fluids, blood, total parenteral nutrition, medications, hemodynamic monitoring

Central lines come with risk of central-line associated bloodstream infection (CLABSI)

CLABSIs can increase morbidity and mortality, contribute to longer hospital length of stay, and produce higher medical costs

Studies have evaluated the best methods of reducing CLABSIs

- Implementing central venous catheter (CVC) bundles
- Use of improved documentation and checklists
- Frequency of surveillance of CVC dressings
- Comparing various types of CVC dressings
- Comparing frequency of CVC dressing changes

Methods

Article Selection/Eligibility

- Extensive literature search to identify the most relevant articles to address the PICOT question.
- Published in medical or nursing journals.
- English language.
- Published within 10 years.
- Exclude children/neonates.

Information Sources

- University of Tennessee Health Science Center Online Library
- EBSCO/CINAHL, PubMed, Cochrane database and Scopus

Search Terms

- Monitoring, CLABSI, Dressing changes, Central line, Infection, Bundle care, Central venous catheter

Rapid Critical Appraisal (RCA)

- Performed on selected articles to determine the quality of evidence and type of research

Data Charting

- Included data from selected articles entered into a table summarizing results.
- Level of Evidence Synthesis Table and a Level of Evidence Outcomes Table created for article comparison

Results

Reduction in CLABSI rate

Findings suggest CLABSI rates may be affected by CVC dressing change frequency and surveillance. Selected articles focused on multiple areas within bundle care that contributed to reduction. There was no consistency with exact intervention contributing to CLABSI rate improvement.

Noted interventions that resulted in CLABSI rate reduction:

- Increasing surveillance of dressings
- Decreasing frequency of dressing changes
- Increasing CVC bundle compliance
- Increasing documentation / checklist utilization

Confounding factors

- The included articles assessed multiple intervention changes in association with CLABSI rates

Implications for Practice

CVC Bundles

- Implementation and compliance with bundle instructions is an appropriate intervention to decrease CLABSI rates
- Units with patients with central venous access should adopt the CVC bundle

Surveillance and Documentation

- Increased surveillance of CVC lines and increased documentation of the status of CVC lines can aid in decreasing CLABSI rates
- Education for providers and nursing staff is imperative

Next Steps

- Although the collection of strategies was shown to decrease CLABSI rates together, further studies are needed to determine the effectiveness of each individual strategy.

Findings of Variables within the PICOT Question

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CLABSI Rate	↓	↓	✓	↓	↓	—	↓	—	—	—	—	↓	↓	↓	↓
Surveillance of CVC	↑	↑	✓	↑	✓	✓	✓	✓	✓	↑	✓	↑	↑	↑	↑
Frequency of Dressing Changes	↓	↓	↓	NE	✓	↓	NE	↓	*	✓	NE	NE	NE	*	NE
CVC Bundle compliance	↑	↑	✓	↑	NE	NE	NE	NE	NE	↑	✓	NE	NR	NE	↑
Documentation / checklist use	↑	↑	✓	✓	NR	NE	✓	✓	NE	✓	✓	✓	↑	NE	↑

SYMBOL KEY

↑ = Increased, ↓ = Decreased, — = No Change, NE = Not Examined, NR = Not Reported, ✓ = applicable or present

* Dressings used in this study were non-traditional (i.e. no dressing, or gauze), rather than traditional transparent dressings

LEGEND

1 = Burke et al., (2021); 2 = Alanazi et al., (2020); 3 = Ling et al., (2016); 4 = Perin DC, et al. (2016); 5 = Wei L, et al. (2019); 6 = Gavin, N.C. et al. (2016); 7 = Van der Kooi, T., et al., (2018); 8 = Timsit et al., (2009); 9 = Ammar, G., R., et al. (2019); 10 = O'Neil et al., (2016); 11 = Lee, K.W., et al., (2018); 12 = Kim et al., (2019); 13 = Ormsby, J.A. et al. (2020); 14 = Paquet, F., et al. (2019); 15 = Quan et al., (2016); X = applies to article

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