

## Umbilical catheter complications

### Abstract:

**Introduction:** Adverse events associated with umbilical catheters include malposition, bloodstream infections, thrombosis, tip migration, and extravasation, resulting in loss of vascular access and increased risk of morbidity and mortality. There is a need for greater understanding of risk factors associated with adverse events to inform safe practice.

**Objectives:** The aim of the study was to summarise the existing evidence regarding risk factors for umbilical catheter-related adverse events to inform the undertaking of future research.

**Review method used:** A scoping review of peer-reviewed original research and theses was performed.

**Data sources:** The US National Library of Medicine National Institutes of Health, Embase, EMcare, and ProQuest Dissertations and Theses were the data sources.

**Review methods:** Informed by the Joanna Briggs Institute Reviewer's Manual, all types of original research studies reporting adverse events published in English from 2009 to 2020 were eligible for inclusion. Studies where umbilical artery catheter and umbilical venous catheter data could not be extracted separately were excluded.

**Results:** Searching identified 1954 publications and theses, 1533 were excluded at screening, and 418 were assessed for eligibility at full text. A total of 89 studies met the inclusion criteria. A range of potential risk factors for umbilical arterial and venous catheters were identified. Longer dwell time and prematurity were associated with increased risk of bloodstream infection and thrombosis in cohort studies. Case studies detailed analogous factors such as insertion techniques and lack of catheter surveillance during dwell warrant further investigation.

**Conclusions:** We identified a vast range of patient, device, and provider risk factors that warrant further investigation. There was a lack of large cohort studies and randomised controlled trials to demonstrate the significance of these risk factors. Improvement in methods to ensure correct catheter tip location and to detect adverse events early is essential. In addition, policy needs to be developed to guide clinicians in catheter surveillance measures to reduce the risk of adverse events.

### Reference:

Gibson K, Sharp R, Ullman A, Morris S, Kleidon T, Esterman A. Risk factors for umbilical vascular catheter-related adverse events: A scoping review. *Aust Crit Care*. 2021 Jun 1;S1036-7314(21)00038-2. doi: 10.1016/j.aucc.2021.02.010. Epub ahead of print. PMID:

34088575.