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# Effect of peripheral intravenous catheter type and material on therapy failure in a neonatal population

#### Matheus ('Roland') van Rens

Hamad Medical Corporation, Qatar

Background: In neonatal settings vascular access devices are essential for treatment. However, their use is not without risks. The design and materials of peripheral vascular access devices have been evaluated amongst adult populations, but contemporary studies in neonatal settings are scant.

Purpose: This research describes the prevalence of peripheral intravenous catheter failure related to three different catheter types with the intent to identify modifiable risks that might be used to evaluate device efficacy, innovate neonatal practice and support future policy developments.

Method and setting: This was a retrospective observational analysis of routinely collected anonymized intravenous therapy related data. The study was carried out at the tertiary neonatal intensive care unit (112 beds) of the Women's Wellness and Research Center of Hamad Medical Corporation, Doha, Qatar.

**Results:** Using different catheter types resulted in significantly less therapy failures as phlebitis and increased dwell time, compared to control groups. This remains significant after adjusting for age (gestation, insert), birth weight and catheter type.

**Conclusion:** The study's findings are in accord with international literature concerning the superiority of Vialon (polyurethane) over Teflon (polytetrafluorethylene) catheters with respect to the risk of phlebitis and longer dwell times. However, the risk of failure of therapy did not differ between catheters. This finding is reassuring and supports practitioner judgment when selecting peripheral catheter devices.

### **Biography**

Matheus ('Roland') van Rens has over twenty years clinical experience in neonatal nursing and holds a MA in Advanced Nursing Practice (Ma ANP), from Erasmus University, the Netherlands. He has worked as an advanced neonatal nurse practitioner, performing complex vascular access procedures, developed and delivered multi-professional education activities and carried out clinical research in Europe and more recently in the Middle East. Latterly as a Clinical Director of Nursing for the New-born Intensive Care Unit (NICU) at Women's Wellness and Research Center, Qatar. His research engages with issues around improving neonatal care, most notably around the broad topic of vascular access. With his international research collaborators and co-authors, he has presented at international conferences and published several referred journal articles concerning neonatal vascular access, infusion therapy and related technology. Currently, he is preparing for his PhD study in the Netherlands.