**UMBILICAL VENOUS CATHETER AND PERIPHERALLY INSERTED CENTRAL CATHETER MALPOSITION AND TIP MIGRATION IN NEONATES: AN ECONOMIC MODEL**

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**BACKGROUND**

Hospitalized neonates require reliable vascular access for life-saving care. Obtaining access can be challenging due to veins size and mobility, even for most commonly used devices (umbilical venous catheters (UVCs) and peripherally inserted central catheters (PICCs).

**OBJECTIVES**

To estimate and break down the attribution of costs of vascular access care in neonates in the North America.

**METHODS**

A four-step, multi-method study, determined direct healthcare costs for neonatal UVCs and PICCs insertion and complications for economic model establishment. Peer-review literature and North American experts were utilised to develop the model, which then underwent face-validity and re-survey of model input parameters. A final face-to-face focus group validity and model finalisation occurred to complete a two decision analytic models (Treeage-Pro Healthcare).

**RESULTS**

Two economic models were developed and examined by invited experts (N=22). Resource and cost feedback was incorporated into the model before focus group (n=13). Experts feedback was incorporated including probabilities for migration (PICC), neurological complications (PICC), probability of catheter reposition (UVC) and switching grom UVC to PICC. Base-case expected cost per patient for UVC was $398 and 0.04 expected complications due to malposition or migration. The cost attributable to malposition was 21% ($83/398) and 14% for migration ($54/398). Base-case expected cost per patient for PICC was $1,518 per patient, with 0.1 events expected complications. The cost attributable to malposition was 3% ($44/1518) and 47% for migration ($720/1518). Device cost differences were driven by complications with 55% for PICCs (migration) versus 9% for UVC; likely related to shorter UVC dwell (14 vs 4 days).

**CONCLUSIONS**

The migration and malposition of PICCs and UVCs have clinical and economic consequences for neonates. In a world where preterm birth is increasing, best-practice should be prioritised including innovative and cost-effective solutions to improve neonatal vascular access care.

**Keywords:** neonatal, newborn, umbilical, peripherally inserted central catheter