To determine the efficacy of near-infrared devices in facilitating peripheral intravenous access in children, using a systematic review and meta-analysis” Kuo et al (2017).

Abstract:

BACKGROUND: Peripheral intravenous access is a common and invasive procedure that is performed in pediatric clinical settings. Children often have difficult intravenous-access problems that may not only increase staff stress but also affect the timeliness of immediate treatments.

METHODS: Six databases, namely the Index to Taiwan Periodical Literature System, Airiti Library, CINAHL, Cochrane Library, PubMed/MEDLINE, and ProQuest were searched for related articles that were published between the earliest year available and February 2017. The search was limited to studies on populations of children that used either a randomized controlled trial or controlled clinical trial approach and used the key words “near-infrared devices” AND “peripheral intravenous access.” The 12 articles that met these criteria were included in the analysis. The Cochrane Collaboration bias assessment tool was used to assess the methodological quality. In addition, RevMan 5.3.5 software was used to conduct the meta-analysis.

RESULTS: The near-infrared devices did not significantly improve the first-attempt success rate, number of attempts, or the procedural time of peripheral intravenous access in children. However, the subgroup analysis of difficult intravenous-access factors revealed a significant improvement in the first-attempt success rate of children with difficult intravenous access scores (OR = 1.83, p = .03).
CONCLUSIONS / IMPLICATIONS FOR PRACTICE: Near-infrared devices may improve the first-attempt success rate in children with difficult intravenous access by allowing healthcare professionals to visualize the peripheral veins. Therefore, we suggest that the difficult intravenous-access score be used as a screening tool to suggest when to apply near-infrared devices to children with difficult peripheral intravenous access in order to maximize efficacy of treatment.

Reference:


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