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Vascular access cannulation pain perception among adult undergoing maintenance haemodialysis: what is the effect of individual staff self-performance rating?

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Cannulation associated pain assessment is an integral component of the pre-HD vascular access assessment as the procedure can provoke stress, discomfort and anxiety and sometime refusal to attend treatment session. The quality of the haemodialysis (HD) dose is dependent on a functional vascular access, which is a pivotal components determinant of the success or failure of the therapy. The arteriovenous fistulas (AVF), the commonest and safest access, and the arteriovenous grafts (AVG), are the predominant vascular access used in the UK. However, prior to each treatment session, AVF/AVG cannulation must be performed thrice weekly; approximately 300 punctures per year using large bore needles.

Cannulation is primarily undertaken by HD practitioners deemed competent by a senior HD nurse, the ward manager or Practice Development Nurse (PDN) following completion of competences. However, these skills set are not routinely validated. Additionally, practitioner allocation of patients, which is a routine practice among many HD units, might not always consider the dynamics of different patients' access risk versus practitioner competence.

Objective
To determine the effect of individual practitioner self-performance rating and training on cannulation pain perception among individual HD patients

Design and setting
A cross-sectional, paper-based survey of registered nurses employed at one HD satellite units.

Participants
12 HD practitioners of different clinical grades and 39 patients with a mean age of 65 of which 53.4% were males participated in this project.

Method
Practitioners rated individual patient access using the traffic light system (green, amber and red) as well as vascular access risk. Following staff self-assessment, individualised training was provided for 2 weeks by the practice development nurse (PDN) who also assessed, verified and documented achieved competency. The National Patient Reported Experience Measure section on demographics and needling pain which was amended to include the universal pain assessment tool and a section for recommendations, comments and suggestion was used as the baseline data.

Findings

54% of patient accesses were assessed by the practitioners as difficult to palpate (fig 1). However, 67% of practitioner responded able to cannulate 82% of the patient AVF/AVF. 33.3% of practitioners who were only able to cannulate 62% of the patient possessed <2 years HD experience. Using the 2017 PREM's mean needling mean score (5.3) as the baseline, the mean score for cannulation with as little pain as possible was 6.7, an improvement from being one of the lowest score to among the higher ranking HD units. Overall, 55% of the patient reported no pain during cannulation compared to 18% from April 2018. A 9 month (2019) follow-up showed a mean score of 7.8.(fig 2)
However, no statistical significant difference was found between training and reduction in cannulation pain except individual self-assessment which was statistically significant (p=0.0005).

Conclusions and implications for practice
There is an unmet need and demand among practitioners for mapping individual patient access with staff competency to identify individual practitioner learning gaps, reduce cannulation associated pain, and improve overall treatment tolerability. Self-assessment might improve staff confidence during cannulation and reduce mis-cannulation associated pain. However, adequate staffing and skill-mix needs to be considered.