

The global is local: Bringing IV research back to the bedside

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Hospital and community based patients rely on intravascular (IV) catheters, also known as vascular access devices (VADs), for the delivery of fluids and medications directly into the bloodstream. Across the globe, about 1 billion VADs are sold each year, costing many billions of healthcare dollars in consumables and equipment, and health provider hours. Vascular access (VA) is the most common procedure performed in clinical practice, but complication rates remain unacceptably high, affecting up to 40% of VADs [1]. Complications can be infective (painful local site infection or potentially life-threatening catheter-related bloodstream infection), mechanical (occlusion or dislodgement), or vascular (phlebitis and/or thrombosis) [1]. The consequences of VAD failure include patient discomfort, deterioration in vessel quality, treatment delays, expensive and time-consuming catheter resites, and prolonged hospitalisation.

Demand for VADs is increasing with the ageing population, more chronic conditions, and continuing advances in therapy. Simultaneously, VA is becoming more difficult in veins that are older, covered in more adipose tissue, and scarred from previous punctures. Older and frail skin is vulnerable to skin tears from dressing and securement practices. Research in the area offers significant opportunities to improve patient outcomes and experience, and reduce costs. Clinical nurses are at the forefront of treatment, and are therefore well placed to tackle these challenges, engage in VAD research, and implement new findings into practice.

Led by Professor Claire Rickard, the Alliance for Vascular Access Teaching and Research (AVATAR) group, based in the NHMRC Centre for Research Excellence in Nursing Interventions at Griffith University in Australia, has a 20-year history of conducting VAD research (<http://www.avatargroup.org.au/>). The group comprises more than 100 members, including nursing and medical clinicians, microbiologists, economists, engineers, and other researchers pursuing clinically focused research in conjunction with hospitals across the globe. Our vision is that patients require only one VA device for treatment, and that this device remains comfortable, and complication-free, for the duration of therapy. This would dramatically transform the delivery and patient experience of VA and reduce worldwide costs by millions of dollars annually [2].

The AVATAR group conducts pilot studies to large multi-centre randomised clinical trials, systematic reviews and meta-analyses, cost-effective analysis, qualitative research, and develops education strategies to implement practice change. A driving goal is the development of researchers and clinical champions with a desire to improve VAD practice. Current projects investigate best methods of dressing and securement, flushing and blood sampling techniques, microbiology studies of devices and therapy delivery systems, and qualitative research into patient experience.

No research group is an island, and the AVATAR group has developed significant collaborative relationships with numerous VA associations, including National Infusion and Vascular Access Society (NIVAS), World Congress on Vascular Access (WoCOVA), Association for Vascular Access (AVA), Canadian Vascular Access Association (CVAA), and Intravenous Nurses New Zealand (IVNNZ). The group works closely with the Cochrane Wounds Group, The Cochrane Collaboration, and the University of Manchester to develop systematic reviews and meta-analyses of evidence pertaining to VA skin preparations and dressings. The Michigan Safety Laboratory at the University of Michigan provides expertise

on healthcare-associated infections and patient safety initiatives. Major providers of VA products, including Becton Dickinson (BD), 3M, BBraun, Carefusion, and Centurion have shown great support for the work of the AVATAR group, in the belief that clinician experience, rigorous research, and industry knowledge together can provide patient-focused, cost-effective VA solutions.

Despite the rigorous research undertaken to date, the challenge remains to translate knowledge into practice. For instance, despite recommendations, between 5%-63% VADs remain in place when no longer needed, increasing infection risk, with many never used for treatment [3-5]. VADs should be removed at any sign of infection/complication, yet 25% of VADs have one or more such complications without removal [6]. Strong evidence exists for clinically indicated removal of VADs, rather than routine removal [1,7], yet ongoing resistance to implementation is evident [8].

Translation of research into practice requires skilled researchers and clinicians who can develop appropriate knowledge translation strategies. These include compiling systematic reviews and guideline summaries, conducting clinical workshops and conference presentations, publishing journal articles, and forming connections with VAD manufacturers so that product development can be informed by clinical practice.

The 5th NIVAS Conference will be held 9–10 June 2015 in Bristol. The theme of this year's conference is 'The challenges and future of IV therapy'. Following my presentation on the current state and future directions for vascular access, Lisa Dougherty will present the experience of participating in the AVATAR-led One Million Global Peripheral IntraVenous Catheter (OMG PIVC) study at The Royal Marsden Hospital. The brainchild of Dr Evan Alexandrou from the University of Western Sydney and Liverpool Hospital, this study is the largest ever international prevalence study of PIVCs, and will likely generate many exciting new research projects in the clinical area.

I look forward to seeing many of you in Bristol.

References

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