

Two billion peripheral intravenous catheters (PIVCs) are used globally each year, but optimal dressing and securement methods are not well established. We aimed to compare the efficacy and costs of three alternative approaches to standard non-bordered polyurethane dressings” Rickard et al (2018).

Abstract:

BACKGROUND: Two billion peripheral intravenous catheters (PIVCs) are used globally each year, but optimal dressing and securement methods are not well established. We aimed to compare the efficacy and costs of three alternative approaches to standard non-bordered polyurethane dressings.

METHODS: We did a pragmatic, randomised controlled, parallel-group superiority trial at two hospitals in Queensland, Australia. Eligible patients were aged 18 years or older and required PIVC insertion for clinical treatment, which was expected to be required for longer than 24 h. Patients were randomly assigned (1:1:1:1) via a centralised web-based randomisation service using random block sizes, stratified by hospital, to receive tissue adhesive with polyurethane dressing, bordered polyurethane dressing, a securement device with polyurethane dressing, or polyurethane dressing (control). Randomisation was concealed before allocation. Patients, clinicians, and research staff were not masked because of the nature of the intervention, but infections were adjudicated by a physician who was masked to treatment allocation. The primary outcome was all-cause PIVC failure (as a composite of complete dislodgement, occlusion, phlebitis, and infection). Analysis was by modified intention to treat. This trial is registered with the Australian New Zealand Clinical Trials Registry, number ACTRN12611000769987.

FINDINGS: Between March 18, 2013, and Sept 9, 2014, we randomly assigned 1807 patients to receive tissue adhesive with polyurethane (n=446), bordered polyurethane (n=454), securement device with polyurethane (n=453), or polyurethane (n=454); 1697 patients comprised the modified intention-to-treat population. 163 (38%) of 427 patients in the tissue adhesive with polyurethane group (absolute risk difference -4.5% [95% CI -11.1 to 2.1%], p=0.19), 169 (40%) of 423 of patients in the bordered polyurethane group (-2.7% p=0.44), 176 (41%) of 425 patients in the securement device with poplyurethane group (-1.2% , p=0.73), and 180 (43%) of 422 patients in the polyurethane group had PIVC failure.

17 patients in the tissue adhesive with polyurethane group, two patients in the bordered polyurethane group, eight patients in the securement device with polyurethane group, and seven patients in the polyurethane group had skin adverse events. Total costs of the trial interventions did not differ significantly between groups.

INTERPRETATION: Current dressing and securement methods are commonly associated with PIVC failure and poor durability, with simultaneous use of multiple products commonly required. Cost is currently the main factor that determines product choice. Innovations to achieve effective, durable dressings and securements, and randomised controlled trials assessing their effectiveness are urgently needed.

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Reference:

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