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Venous access through a child's eyes

By Physeon

Researchers have estimated needle phobia – the term commonly used to describe the anxiety and distress linked to peripheral (IV) cannulation – affects as many as one in 10 patients (McGowan 2014). But what happens when that one patient is a child?

According to Soares da Silva et al., peripheral IV cannulation can literally traumatize a child: “the use of needles generates anxiety, insecurity, and fear” (2016, p. 61).

Children too young to fully grasp why they must endure painful needle sticks are especially prone to needle phobia. As are hospitalized children, who “rate needle sticks as the most distressing part of their hospitalization” (Walsh 2008, p. 199). Soares da Silva et al. went so far as to say hospitals can be “hostile” to children because they serve up a scary mix of strangers and procedures like venipuncture “that can inflict pain and physical suffering, thus causing emotional suffering” (2016, p. 61).

Those children with serious illnesses are even more likely to be traumatized. Side effects of the therapies they require, plus the repeated and long-term nature of those therapies – which render their veins increasingly difficult to cannulate – can all contribute to the psychological complications of IV cannulation (McGowan 2014, p. S4).

Children may even interpret repeated venipuncture “as aggression ... accompanied by fear or pain, which translates into anxiety and sobbing,” said Soares da Silva et al. (2016, p. 62). And that, concluded the authors, can damage a child's development.

The dangerous cycle of difficult venous access (DVA)

Even in the best of circumstances, children are generally considered DVA due to the small size of their veins. And even in the most skilled nursing hands, children and their families find peripheral IV cannulation distressing (Larsen et al. 2010). When things go wrong – such as failed placement attempts – they not only intensify their anxiety (Larsen et al. 2010), but reinforce it (Walsh 2008). McGowan agreed, noting 50% of phobias are formed through personal traumatic experiences (2014).

Anxiety further compounds the physiological challenges presented by small veins – it is responsible for “veins literally retreating in fear” (Mackereth & Tomlinson 2016, p. S27). “When children experience extreme anticipatory anxiety because they are afraid of needles or have had bad experiences ... fear activates the sympathetic nervous system and can produce peripheral vasoconstriction” (Walsh 2008, p. 199).

Thus, an already vicious cycle spirals further downward. Needle phobia intensifies, veins become more difficult to cannulate, and the chances for failure skyrocket.

Venipunctures subsequent to failed attempts are typically more painful. They also open the door to serious risks: extravasation, vascular perforation (causing hematoma or hemorrhage) and phlebitis (Walsh 2008, p. 198). Furthermore, failures and complications can delay or interrupt vitally needed treatments.



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The device is manufactured within the ISO 13485 standard in the United States.

Practitioners are not immune

Patients are not the only ones who experience anxiety about peripheral IV cannulation. Nurses are affected as well. "We have met nurses who have lost confidence in their cannulation skills and are looking for a new job that does not include this role," said Mackereth and Tomlinson (2016, p. S28).

The reality, however, is that nurses will be expected to cannulate more often, because IV therapy is "rapidly expanding" in hospital settings (McGowan 2014, p. S9) at the same time hospitals are downsizing specialist IV teams to cut costs. Pressure to perform can be intense, too. Many facilities require nurses to turn the task over to a colleague after one or two failed attempts, in an effort to increase patient satisfaction and trust (Mackereth & Tomlinson 2016; Walsh 2008).

Saving grace

Despite the challenges, nurses are ideally situated to help children combat needle phobia and improve their chances for peripheral IV cannulation success.

"By providing coping strategies that help alleviate distress, nurses can help patients feel that they have some control over the fear-provoking event," Walsh said, noting such strategies assist both during the procedure and by reducing the long-term adverse effects of the procedures (2008, p. 199). She advocated empowering children through hands-on involvement, such as holding bandages or applying pressure to a venipuncture site.

Larsen et al. "found that preparing the child and family can boost the chance of success" (2010, p. 11). Soares da Silva et al. also recommended "resources that can offer more humanized care with activities that provide appropriate preparation and less suffering from procedures" (2016, p. 67).

In a study with needle-phobic three- to six-year-olds in Brazil, Soares da Silva

et al. prepared their young patients by using therapeutic toys such as the medical devices that would be used in their treatment. The result – 40% remained calm ahead of venipuncture (2016). Even more encouraging, 100% "allowed the venipuncture procedure after use of the therapeutic toy, and were more communicative and cooperative" (2016, p. 65).

Veinplcity – helping children and nurses overcome needle phobia

The Veinplcity venous access device is a resource that can minimize both physiological and psychological complications linked to peripheral IV cannulation.

Through rapid but gentle stimulation, Veinplcity prepares veins for successful cannulation by increasing local and peripheral blood flow. Small veins become engorged, stiffen and expand. In addition to becoming more stable for palpation, they become physically larger – vein lumen diameter can increase by up to 50%.

These marked, physiological changes can lead to first-attempt success. Needle-phobic children will be less likely to experience the trauma of painful additional attempts and complications. Nor will they be as likely to face follow-on complications brought on by delayed or interrupted therapies.

By improving first-attempt success rates, Veinplcity can help prevent children from developing needle phobia, or seeing it worsen. In turn, nurses who use the device as an adjunct to venous access will benefit from additional confidence of higher first-attempt success, alleviating the pressure to meet facility expectations.

Finally, Veinplcity could easily be added to a nurse's therapeutic toy box. Using the device in therapeutic play could empower children as hands-on participants and prepare them for peripheral IV cannulation. "The person who plays with the child will be the person to whom the child turns when he or she feels frightened

or needs help, thus establishing an important bond of trust in the hospital environment" (Soares da Silva et al. 2016, p. 65).

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