





The parent, child and young person experience of difficult venous access and recommendations for clinical practice: A qualitative descriptive study

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Abstract

Aims and objectives: Explore the parent and child/young person experience of difficult venous access and identify ideas and preferences for changes to clinical practice.

Background: Peripheral intravenous catheter insertion is one of the most common invasive procedures in hospitalised paediatric patients. Multiple insertion attempts in paediatric patients are common and associated with pain and distress. Little research has explored the parent and child/young person experience of difficult venous access nor sought to identify their suggestions to improve clinical practice.

Design: Qualitative description.

Methods: A purposive sampling approach was used to identify children and young people with experience of difficult venous access and their parents. Semi-structured interviews were conducted, with sample size based on data saturation. Transcripts were analysed using thematic analysis.

Results: There were 12 participants, seven parents and five children/young people (five parent/child dyads and two individual parents). Analysis of the data revealed three main themes: (1) Distress—before, during and after (2) Families navigating the system: the challenging journey from general clinician to specialist and (3) Difficult venous access impacts both treatment and life outside the hospital A pre-determined theme, (4) Recommendations for good clinical practice is also described.

Conclusions: Multiple attempts to insert a peripheral intravenous catheter are a source of substantial distress for children/young people, leading to treatment avoidance. Effective interpersonal skills, providing choice and avoiding frightening language are important to minimise distress. Clinicians without specialist training should assess each child's venous access experience and consider immediate referral to a specialist if they have a history of difficult venous access. Cultural change is required so clinicians and healthcare services recognise that repeated cannulation may be a source of psychological distress for children/young people.

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1 | INTRODUCTION

Peripheral intravenous catheter (PIVC) insertion is one of the most common invasive procedures in hospitalised paediatric patients (Reigart et al., 2012). This procedure is seemingly simple to many clinicians, a routine part of everyday healthcare practice. However, for many children/young people and their families, the insertion of a PIVC can be momentous; a complex, stressful and invasive procedure signifying the commencement or recommencement of complex healthcare treatments (Cooke et al., 2018; Cummings et al., 1996).

Children/young people describe PIVC insertion as one of the most painful procedures in hospital (Cummings et al., 1996) and is acutely distressing for many children, with 50% experiencing substantial distress (Fradet et al., 1990). Agitation and resistance to care increases the use of physical restraint further exacerbating psychological distress and contravening their human rights (United Nations, 1989). Many with a chronic condition require regular needle procedures for testing and treatment and distress is amplified by repeated PIVC insertion attempts (Alexander & Manno, 2003; Peterson et al., 2012).

Difficulty inserting PIVCs or difficult venous access (DVA) in paediatric patients is common, with more than half of the patients requiring two attempts, and some requiring 10 attempts or more (Kleidon et al., 2019; Schults et al., 2022). Difficulty accessing the venous system also delays and disrupts the provision of time sensitive treatments, such as antibiotics and hydration fluids (Schults et al., 2022). This device insertion process often needs to be repeated, due to high rates of PIVC failure during treatment necessitating repeated insertions to complete treatment schedules (Indarwati et al., 2020; Malyon et al., 2014; Ullman et al., 2020).

Parents are encouraged to participate in the clinical care of their child in hospital, including PIVC insertion. However, operationalisation of this approach during painful procedures can be challenging for both parents and clinicians (Birnie et al., 2014; Cooke et al., 2018; Smith et al., 2007). Whilst pain relief, distraction and procedural sedation are used to encourage compliance and reduce distress in paediatric patients for PIVC insertion, physical restraint/ therapeutic positioning is also frequently necessary (Birnie et al., 2014; Cummings, 2015; Kirwan & Coyne, 2017). Participating in this procedure can be difficult for parents, which may be further exacerbated when multiple PIVC insertion attempts are necessary (Cummings, 2015; Darcy et al., 2014; Kirwan & Coyne, 2017).

Most research has looked at the patient experience of DVA in adults requiring PIVC and other vascular access devices (Cooke et al., 2018; Robinson-Reilly et al., 2016; Sharp et al., 2014). Scant, high quality contemporary research has explored the parent and child/young person experience of this. It is imperative to understand their experience to inform clinicians and researchers to ensure that much needed practice change meets their needs.

This project sought to explore the parent and child/young person experience (whether separate or shared) of DVA management and identify ideas and preferences for clinical practice to improve the quality of care for these children/young people.

What does this paper contribute to the wider global clinical community?

- First study to provide an in-depth description of the parent and child/young person experience of difficult venous access.
- The findings of this study indicate that repeated failed cannulation attempts may be a source of substantial psychological distress and lead to ongoing and persistent stress responses that contribute to medical trauma for some children/young people.
- Directs clinical practice improvement strategies for individual clinicians, and healthcare services for children/young people with difficult venous access that require peripheral intravenous catheter insertion.

2 | METHODS

2.1 | Design

Qualitative description was used to explore the child/young person and parent experience of DVA, a method which seeks to describe phenomena in the language of the participants and focuses on the participant's experience rather than interpret responses from a conceptual framework (Sandelowski, 2010). A qualitative approach generally involves small sample sizes to gain an in depth understanding of the participants' experience (Polit & Beck, 2004). The project is reported in accordance with the Equator network consolidated criteria for reporting qualitative research (COREQ) (Tong et al., 2007).

2.1.1 | Ethical and influence considerations

Ethical approval was obtained prior to the study's commencement (WCHN/166). Researchers (MM, CB, JM) who approached participants to take part in the study had an existing clinical relationship with participants. However, the researcher who obtained consent (RS) was not employed at the hospital where the study took place and did not have a relationship with participants prior to the interview.

2.2 | Setting

Participants were recruited from a metropolitan, level 1 major trauma centre for women and children in South Australia. In the hospital where the study was set, PIVCs for planned treatment and tests are usually inserted by the Registered Medical Officer from the child's treating team. As per the Hospital's *Peripheral intravenous cannulation policy*, topical local anaesthetic cream is routinely offered to children and parents are encouraged to use distraction

to reduce distress. Nurses from the clinical area/ward are usually in attendance to support the physician and to support the parents and child/young person. At the time of the study, both Anaesthetists and specialist vascular access (VA) nurses located in the Radiology department received referrals from general physicians after unsuccessful PIVC insertion attempts for children/ young person. Many Anaesthetists undergo further training in the use of hypnotic communication during invasive procedures.

2.2.1 | Recruitment and participants

A purposive sampling approach was used to identify parents/ caregivers and children/ young people with experience of DVA. Principal caregivers (referred to as parents in the remainder of the paper) of a child/young person (0-17 years) with a history of DVA and their child (≥ 8 years old) who were referred to specialist VA nurses in the Radiology Department were invited to take part. DVA was defined as prior experience of repeated unsuccessful attempts at cannulation or venepuncture (>2 unsuccessful attempts whether that was due to anatomy or behaviour) (Gorski et al., 2021). Those parents who were unable to provide informed consent due to neurological barriers or the inability to read, write or understand English or whose child was managed by palliative care were excluded.

Specialist VA nurses (MM, CF, JM) informed parents of the study after PIVC insertion occurred. A researcher employed by the university (RS) contacted parents if they were interested in participating and an information sheet/consent form was emailed. Additionally, if parents were willing for their child to participate (if ≥ 8 years old), an age-appropriate information sheet/consent sheet was provided. Participants were asked to return completed consent forms. For children/young people to participate, written consent from both the child/ young person and the parent was obtained. Additionally, consent was reaffirmed verbally at the beginning of each interview.

2.3 | Data collection

Interviews were conducted March 2021–February 2022 using semi-structured telephone or video call interviews (decided by participants) and were recorded. An interview guide was developed which was guided by clinical knowledge and previous research (Table 1) (Cooke et al., 2018; Sharp et al., 2014). Interviews were conducted by RS, an adult nurse who holds a doctorate degree and has prior qualitative research experience. Parents were present when the child/ young person was interviewed, and questions were modified so they were age appropriate. Parents were interviewed without the child/ young person in attendance. Openness was facilitated using iterative questioning when uncertainty or ambiguity was apparent. Participant responses guided which themes were explored further. Participants were asked to validate the researcher's

TABLE 1 Parent and child experience of difficult venous access interview guide.

Parent

1. What has been your experience of cannula (drip) insertion?
2. Does your child also have difficulty with blood samples/other needles e.g. vaccination?
3. How do you prepare your child for the cannula?
4. Once you are at the hospital, what is waiting for the cannula like?
5. What are your views regarding the process of cannula insertion?
6. What do you think about how clinical care was organised?
7. What do you think about the information that clinicians provided?
8. What was the clinician communication like? What do the clinicians say before, during and after the insertion?
9. Do clinicians try to explain why they were unsuccessful?
10. Was there any delay in treatment because the cannula was difficult to insert? If so, what did you think about this?
11. Did you find that clinicians were open to listening to you/your child's view/opinions?
12. If your child has experienced difficult cannula insertion before, have you learnt to work around the system? In what way?
13. What is your experience of the clinical service/resources provided by the hospital for cannula or drip insertion?
14. What do you think was done well? What do you think was done poorly?
15. What do you think would help make the process better for other children?
16. What would your advice be to other parents in this situation?
17. What do you think would be useful for doctors and nurses to know?
18. Does your child need to have many blood tests? Do the Doctors/nurse have difficulty then as well?

Child

1. What was it like for you getting a drip?
2. Do you have to wait? What is waiting like?
3. Do doctors and nurses try to get a drip in for a long time?
4. Did they let you know what was happening? /Did they listen to you?
5. What did the doctors and nurses do well?
6. What do you think was bad?
7. What would make it better for you and other kids?
8. What would your advice be to other kids?
9. What do you think would be useful for doctors and nurses to know about how this was for you?

interpretation of their responses during the interview process to increase accuracy.

2.4 | Analysis

Data from the interviews was analysed as per Braun and Clark's steps of thematic analysis (Braun & Clarke, 2006, 2021). Recordings were transcribed verbatim immediately following each interview (RS) and were compared to the original recordings for accuracy. Initial themes were identified which were recorded as field notes to guide subsequent interviews. Data collection was conducted until saturation was achieved. This was determined when similar concepts were repeated,

and no new ideas were provided by participants. Three researchers (RS, MM and CB) independently read transcripts and identified/coded relevant data extracts. For context, five researchers on the project have extensive paediatric nursing clinical experience (>120 years combined) and assisted in the design of the study including the interview guide. Data analysis was conducted by three current paediatric nurses (MM, JM and CB) and a published researcher (RS), who has a doctorate in VA devices. Codes were organised into initial themes and reviewed to assess for variability and consistency and a thematic tree was generated. Final themes were compared to the entire dataset for fitness and were named (Braun & Clarke, 2006). One theme was decided a priori as an aim of this study was to identify recommendations by parents and children to improve clinical practice. Hence a deductive approach was used, this theme was identified in advance and relevant codes categorised to present a summary of recommendations for clinicians and hospital management.

3 | FINDINGS

3.1 | Participants

Initially 16 participants were recruited, however, at the time of interview four were unable to be contacted. A total of 12 participants were interviewed (Table 2), seven parents and five children/young people (five parent/child dyads and two individual parents). Children in the study required a PIVC and/or blood samples for planned medical tests or treatment for a range of conditions such as cancer and juvenile diabetes. All children/young people had a history of difficulty with PIVC insertion and some also had problems with obtaining blood samples. Interview duration ranged from 25 to 76 min with most taking more than 40 min.

3.1.1 | Themes

Analysis of the data revealed three main themes: (1) Distress—before, during and after (2) Families navigating the system: the challenging journey from general clinician to specialist and (3) DVA impacts both treatment and life outside the hospital. A pre-determined theme, (4)

TABLE 2 Participant information.

Pseudonym	Child age (years)	Child interviewed
P1	6	
P2	12	✓
P3	8	✓
P4	11	
P5	12	✓
P6	15	✓
P7	15	✓

Recommendations for good clinical practice is also described. A list of themes and sub-themes is presented in Figure 1.

4 | DISTRESS—BEFORE, DURING AND AFTER

Parents and children/young people described substantial distress both prior to and during the procedure. Parents indicated that their child was often reluctant to undergo treatment for their medical condition because of their experience. Part of this were clinician factors which worked to amplify or dissipate that distress. Distress from these needle procedures not only had immediate impact, but also affected later clinical procedures.

4.1 | Anticipatory distress

Children/young people were apprehensive about the number of attempts required to have a successful PIVC insertion or blood test prior to the hospital visit. This anticipatory distress was evident to many parents of older children as their children would tell them they were worried. For some families, discussion of the PIVC insertion became the focus for some time leading up to the planned infusion or test.

'Whenever he had to get a drip or blood test...he would talk about it for days in advance...about how stressed he was, how he was going to have a terrible day ...'
(Parent of P2)

Other children/young people did not verbalise their concerns and parents were only aware of their distress due to their behaviour. Some parents reported that the anxiety levels of their children would initially rise but as the time came closer to the hospital visit then their child would become withdrawn. One parent described that her child would often experience insomnia the night before a planned blood test.

'She stayed up all night, she didn't sleep. I can hear her pacing around the house at 2:00 o'clock in the morning.'
(Parent of P6.)

Most children/young people in the study had the PIVC inserted for radiological tests or one-off infusions and then the PIVC was removed. However, one child was regularly discharged home with a PIVC (without an infusion) and the family were apprehensive about not only the insertion but also complications such as dislodgement, which would require further insertion attempts.

'So we were on edge that something was going to bump it or knock it out ... every time we flush it you hold your breath and hope that it flushes...'
(Parent of P5.)

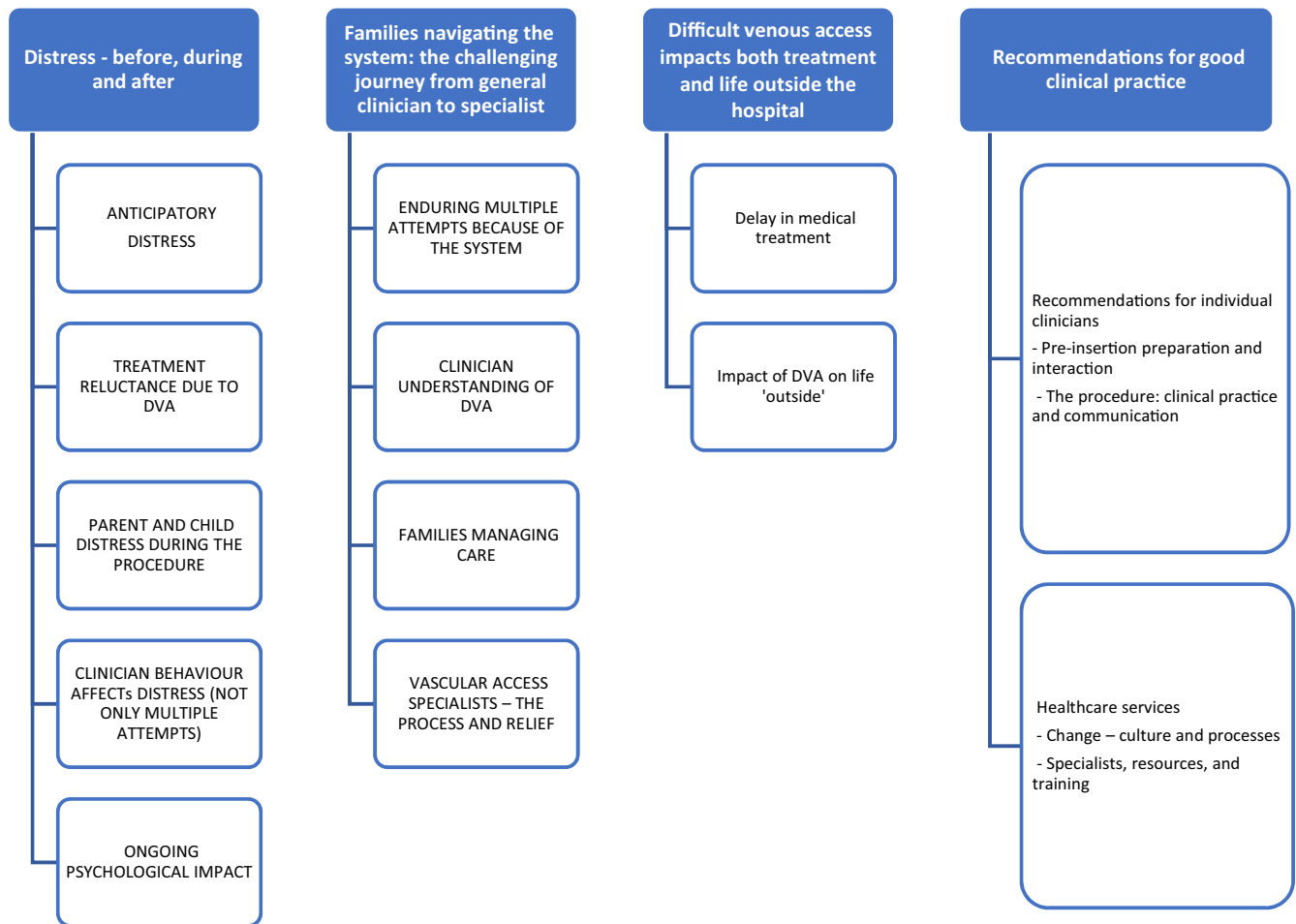


FIGURE 1 Themes and subthemes of the parent, child and young person experience of difficult venous access. DVA, difficult venous access.

4.2 | Treatment reluctance due to DVA

Children/young people were often reluctant to undergo tests and treatment because of the pain and distress associated with multiple PIVC insertion attempts and parents found it challenging to convince their children to attend hospital for treatment. Some children/young people who were interviewed said they refused treatment as a strategy to avoid multiple PIVC insertion attempts.

‘...he used to cry a lot...he gets ... upset, I don't want to go because they hurt me.’

(Parent of P4)

The negative experience of repeated PIVC insertions coloured the child's overall attitude toward their condition and treatment. One parent recounted that the condition had marginal impact on the child initially, but they soon came to dislike treatment due to repeated attempts at cannulation and began to worry about their medical condition.

Many parents and children/young people identified that the cannula was more of a concern than medical tests or treatment. One parent whose child was undergoing cancer treatment described the

PIVC as the worst part of treatment which was supported by the child.

‘Well, there's nothing else bad about it (cancer treatment) apart from the drip (cannula)’

(P2, 12 year-old)

4.3 | Parent and child distress during the procedure

Parents described their children as ‘terrified’ and ‘very, very distressed’ during PIVC insertion attempts. The outward manifestation of the child's distress was variable, many cried during the procedure, but some children did not display emotion. Parents indicated that this was because their child had become accustomed to painful procedures and they would only vocalise pain once it became unbearable.

‘... when it was really aching, when it was really sore, I shouted out’

(P3, 8-year-old)

Witnessing multiple attempts was also distressing for parents and some described the process as deeply traumatic. This distress was compounded for parents of younger children who were asked to restrain their child during the procedure. Witnessing multiple attempts on older children sometimes triggered painful memories of previous insertion attempts for parents. One parent of a teenager described that they still remembered the obvious distress of their child as a baby undergoing venepuncture.

'So most times they wrapped her up like the mummy to keep her still when they are babies and they'd scream...it's heartbreaking because you know on one hand, they have to have bloods done because they need it for diagnosis...But on the other hand it's traumatising for the baby because they feel the pain don't they, of the needle going in. She doesn't remember that as a baby, but I do.'

(Parent of P6).

4.4 | Clinician behaviour affects distress (not only multiple attempts)

Clinician manner and behaviour prior to and during the insertion impacted the child's experience. Many clinicians failed to introduce themselves to the family or identify their role in the procedure. For younger children, this increased their fear, especially when several clinicians were present and children assumed they were there to restrain them. Clinicians who were disorganised and took a long time to prepare for the procedure in front of the child/young person heightened anxiety due to lengthened anticipation. Visual and aural cues such as visible needles in trays and the sound of multiple packets being opened in front of children/young person added to their distress.

'Coming in with trays clattering and needles and bits and pieces in them and sitting down and then trying to find something and not having tape and ... just all that kind of sort of... chaos...which if you are a child lying on a bed feeling frightened anyway doesn't instill confidence...'

(Parent of P1)

Clinician manner prior to and during the insertion also affected distress. Some clinicians were described as 'job focussed' and did little to engage with the child/young person or family prior to the procedure.

'...there was a lack of communication I don't want to blame any health professional but you know as a parent or as a father so I need to ... highlight these things were not great.'

(Parent of P4)

Parents felt that some clinicians minimised the impact that multiple PIVC insertion attempts had on the child/young person. The language they used was described as 'frightening' and 'triggering'. Some clinicians were described as 'authoritarian' and were thought to have little understanding of the psychology of power and control and the impact their behaviour had on the child/young person.

'I've ... experienced lots of traumatic experiences in hospitals with (child) it's just they just come at this mindset of, well, we're in control and this is what we are going to do so we're just going to do it.'

(Parent of P7)

Conversely, even if multiple attempts were required, parents described that effective communication and interpersonal skills minimised their child's distress. Parents thought most clinicians were aware that the process was traumatic for children/young people and actively tried to minimise distress. These clinicians attempted to engage the child/young person by establishing rapport prior to insertion and listening to their preferences. Parents were appreciative that they engaged the family to develop a plan rather than focus on the task. A collaborative and caring approach that gave children/young people power and control during the procedure was perceived to improve their experience.

'...even the doctor who tried to put it in 4 times one of the reasons I suppose I didn't get cross or ask for another person was that he was extremely calm and gentle. Like (child) always says can you count to three and then put in the needle and he was really good about that.'

(Parent of P2)

4.4.1 | Ongoing psychological impact

Most children/young people in the study had a long history of multiple attempts at PIVC insertion and/or blood tests. Some had experienced difficulty with cannulation since their initial diagnosis in infancy and every engagement with clinicians for tests/treatment required multiple insertion attempts. Parents thought this experience had substantial and ongoing impact on the psychological well-being of their child. One parent identified that the experience of restraint and multiple insertion attempts was a form of cumulative trauma.

'... it's not one lot of trauma, it is cumulative because you're having it regularly so it's trauma upon trauma...that's pretty hard to get through... then they put up a wall, yeah... I think that trauma has probably wired their brain differently and there's not that understanding'

(Parent of P7)

Some parents described that after experiencing multiple insertion attempts, their children were anxious about interacting with clinicians in all settings. This impacted not only ongoing treatment for their condition but also other areas such as vaccination.

'...he had a panic attack (during immunization) ...he is usually calm, even though he is six you can have a conversation with him, he's very logical, but he just went into panic and he was kicking out, he's not aggressive at all but he went into the fight/flight mode so then the nurse was struggling.'

(Parent of P1)

One parent surmised that distress from multiple PIVC insertion attempts would impact the reaction of children to clinical care in the future. Hence, allowing children/young people to experience the distress of multiple attempts set them up for future negative reactions to healthcare. This was especially problematic due to the chronicity of their child's condition which required ongoing medical treatment.

5 | FAMILIES NAVIGATING THE SYSTEM: THE CHALLENGING JOURNEY FROM GENERAL CLINICIAN TO SPECIALIST

Parents and children/young people described the challenges they faced on their journey to a VA specialist. The healthcare system forced them undergo insertion by a non-specialist, and many of their encounters with these general clinicians were negative. Some general clinicians were said to lack knowledge about the nature of DVA or discounted the previous experience of the child/young person. The battle to access the specialist required parents to develop new resources/skills to police their attempts and advocate for referral. Once children/young people encountered a specialist, they were considered a 'blessing' which had a substantial positive impact. However, there were still challenges accessing specialists for subsequent procedures.

5.1 | Enduring multiple attempts because of the system

Parents recounted that despite a long history of DVA, physicians from their child's treating team were required to attempt PIVC insertion before they could be referred to a VA specialist. PIVC insertion was nearly always left to the most junior physician in the medical or surgical speciality which managed their child.

'...the same person tried too many times...it would be good if they had people in Oncology who could put drips in.'

(P2, 12-year-old)

Both parents and children/young people described frustration with this system which forced them to undergo multiple attempts with a novice inserter.

'...I was kind of annoyed in some ways, why does this need to happen?'

(P3, 8-year-old)

Parents indicated that whilst these general physicians seemed competent in other areas, they lacked experience with PIVC insertion. Parents were unsure about the amount of training these doctors received and questioned why there was a lack of supervision. Parents thought that senior physicians had an expectation that these junior doctors would be successful, despite the lack of training and support.

5.2 | Clinician understanding of DVA

Parents and children/young people described varying experiences of DVA assessment. Some physicians did not ask about the child's previous experience of cannulation or consult the medical record prior to the procedure. Parents thought this due to the self-confidence of these physicians who assumed that PIVC insertion was straightforward. It was only once they were unsuccessful that they consulted the medical record and asked the parent/child about their experience.

'...usually they didn't really ask ... its usually after because they can't get it so then after once like they realise it's a bit hard then they start asking.'

(P6, 15-year-old)

Parents and children/young people described that they had encountered general physicians who appeared to disbelieve their description of multiple attempts. They felt that they did not understand or accept that some children/young people had DVA. One parent stated that they would take the journal article from this project to present to general physicians in the future as evidence that DVA is real. Parents felt that these clinicians did not recognise that DVA was due to the unique anatomy of the child's veins and other factors. Rather, they would tell them that unsuccessful attempts in the past were due to the skill level of the previous clinician. Many of these physicians told parents that they had well-developed skills which meant that they would be successful.

'...pretty much every (physician) believes they will be able to find a vein and every (physician) then struggles... you ... explain the situation to them and they .. (say) let me have a go first.'

(Parent of P7)

Many parents and children/young people described that they felt some clinicians blamed the child or family for lack of success during

PIVC insertion which made them angry. They perceived that these clinicians viewed it as the child's problem and some clinicians would use phrases such as the child/young person was 'too hard'. One young person attending a Pathology Centre for blood sample collection recounted that clinical staff would instruct her to leave if they were unsuccessful. There was no attempt to refer to a specialist in that setting or develop a solution to assist the family to successfully obtain the blood sample, it became the family's problem. The family were instructed to attend at a different time when other clinicians were working in the hope that they would be successful.

'One time they just tried three times and she said that she already tried too many times. So we... have to come back another time.'

(P6,15-year-old)

Often clinicians would identify that they were unsuccessful because the child/young person was dehydrated. Parents described that after an unsuccessful attempt, some clinicians would quiz the parent and child/young person about the volume of water they consumed. Many families would follow recommendations to increase water intake prior to the procedure and it made no difference to the success of subsequent PIVC insertions or blood sampling. Some children/young people described that they were concerned whether their water intake would be adequate and if their veins would be large enough.

'I was just worried that I haven't drunk enough water or something or that my veins were too small.'

(P6, 15-year-old)

Parents thought that clinicians blamed them, and they felt guilty that they had not pushed their child to consume more water.

5.3 | Families managing care

Parents were forced to increase their clinical knowledge and develop advocacy skills to improve their child's experience of PIVC insertion and gain access to a specialist. Some characterised themselves as naïve during initial encounters with clinicians as they assumed that general physicians would be highly skilled in every factor of their child's treatment including PIVC insertion. Parents became more assertive over time which allowed them to challenge physicians. Many parents found this difficult and thought that parents should not be placed in this position. Some children/young people also described developing self-advocacy skills.

'I would...say am I still having an anaesthetist for having my drips put in?'

(P3, 8-year-old)

The development of advocacy skills took time and only occurred once they had experienced the procedure multiple times. They

described that once they become knowledgeable about the process, they would flag to the general clinician that PIVC insertion was always challenging prior to the procedure. One parent described that they would 'seed' this idea in the mind of the clinicians as soon as they encountered them in the hope they would immediately refer to a VA specialist so their child could avoid multiple insertion attempts.

'...like I feel like I always need to ask now, like '... do you need to check her record because she has small veins and they have had trouble in the past' I am always highlighting that now as I am not sure its front of mind...'

(Parent of P5.)

Other parents described that they pushed for an alternative plan for vascular access in meetings with the senior physician on the treating team. Another parent described that they would advocate for their child by directly asking general physicians about their PIVC insertion skills and experience prior to the procedure.

'Yes I would ask them if they were any good at cannulas, do you do this all the time? Are you quick? And some hesitate and I would say who is the best person here ...I want them to do it...'

(Parent of P1)

Other parents described occasions where they were required to 'police' the number of PIVC insertion attempts by clinicians. Some clinicians would continue to insert PIVCs despite multiple unsuccessful attempts and the obvious acute distress of the child/young person. It was at this stage that the parent would step in and tell them to stop.

'So I have had to stop a few of them, because they are determined to get it in...and he's screaming.'

(Parent of P1.)'

One young person indicated that some clinicians did not engage with them or even listen to them when they asked them to stop the procedure, rather they would often communicate directly with the parent. These clinicians would wait until the parent directed them to stop the procedure.

'... when I say... stop, I've had enough, of being ... (a) pincushion. They kind of just ignore me but then they'll they might listen to that if my mum says it. So what I'm saying is when I say something, they don't care about my opinion.'

(P7, 15-year-old)

Once parents had become more assertive and felt able to stop clinicians from continuing PIVC insertion attempts, some described regret and guilt from previous encounters where they had not stopped these clinicians.

'... I wish I had always been as strong as what I am now, to be able to say no ... but I imagine most mums go through that ... because it is quite intimidating, and it takes time to grow your own resolve. And I think also, as a mum, you just kind of eventually get to a point where enough is enough. But yeah, it takes time and then the damage is done and then you feel guilty as a parent because you've allowed this to happen and so you know it's very challenging'

(Parent of P7)

5.4 | Vascular access specialists—the process and relief

Parents and children/young people identified that it was only once the general clinician was repeatedly unsuccessful that referral to a specialist was considered.

'...sometimes it took 5 shots to get it in and then they decided well this is a bit hard let's call (the VA specialist).'

(P5, 12-year-old).

In some cases, another clinician encouraged the physician to refer to a specialist after multiple attempts. For others, referral occurred only once their child was visibly distressed, and the parent pushed for an alternative plan.

Unfortunately, some children/young people had to endure insertion attempts (without US) by general physicians even after they had commenced planned US-guided insertion with a specialist on a regular basis. The process to access a specialist was haphazard and required individual clinicians to both access the medical record and refer to a specialist. Some physicians still tried to insert despite the medical record noting the history of DVA and previous use of US.

'Yes, but as I say, even the last time we went in there I had to fight with them (to access the specialist/US) ... it was a process.'

(Parent of P7)

Both parents and children/young people described a sense of relief once they were referred to a VA specialist. Parents described the specialist as a 'blessing' and expressed gratitude for the service which reduced their child's pain and anxiety. For some children/young people, it changed their perception of treatment overall.

'It's been amazing, like his attitude toward his treatment has totally changed, like he's happy to go along. Like it changed his whole mindset regarding having his treatment and dealing with the condition he's got.'

(Parent of P3)

'It made me glad as I knew it would ... only take one jab. Definitely a lot more easy.'

(P3, 8-year-old)

Both the technical and communication skills of VA specialists were identified as important to improve the child/young person experience of PIVC insertion. It was only once the family encountered a VA specialist that they became aware that ultrasound could be used to assist with PIVC insertion. Once the child/young person experienced ultrasound guided PIVC insertion, parents were astonished that this had not been used previously. Both parents and children/young people appreciated the education that VA specialists provided about why the child had DVA. Those who felt that general clinicians blamed them for unsuccessful attempts especially appreciated this education as they felt vindicated.

'...and that, it's not (the child's) fault. Nothing to do with water (the vascular access specialist said) "she has deep veins" So there you go, no one told us.'

(Parent of P6).

'Ultrasound was really good, that helped a lot. She found my veins on the first time with it. She said my veins were a bit deep and it might be a bit harder for the other (clinicians).'

(P6, 15-year-old)

The communication skills of VA specialists were also identified as an important factor in improving the child/young person's experience of PIVC insertion. VA specialists were described as 'patient-focussed' who were considerate and instilled confidence. This was especially important as these children/young people were distrustful of clinicians due to their previous experience. Some specialists used a hypnotic style of communication which enabled a good experience for the child/young person.

'...one of the anaesthetists who did it who was fantastic...she just said..."I am looking after you, you are safe, this is what I am going to do" ... and she just said "you are in good hands and I am going to put my hand on your...and this is what I am going to do"...she talked through everything and she counted down so everything was predictable...safe...all the words were reassuring..."I am very good at this, I do this all the time" and just very confident. And that made a vast difference.'

(Parent of P1)

Parents described that once a plan was in place for their children to have each PIVC inserted by a VA specialist there were still challenges in accessing these resources. Often VA specialists had other duties which competed with their availability for PIVC insertion. There were

also problems with accessing an ultrasound as there were limited machines which resulted in long waiting times which delayed treatment. Parents were required to attend the hospital early to wait for a specialist. However, they were happy to do this so their child would have an easy PIVC insertion, and they indicated that this wait was minimal compared to the delay from DVA.

6 | DIFFICULT VENOUS ACCESS IMPACTS BOTH TREATMENT AND LIFE OUTSIDE THE HOSPITAL

Parents recounted that the multiple attempts required to insert a PIVC or obtain a blood sample not only delayed treatment but also impacted the family in other ways. Children appeared less aware of time spent waiting and the impact of this on treatment and the family. These delays required families to allocate more time to attend the hospital which had wider ramifications for the family in terms of education, employment and other children.

6.1 | Delay in medical treatment

Parents reported delays in treatment at the hospital due to DVA. General clinicians from their medical team would attempt PIVC insertion and then when they were unsuccessful, they waited for these clinicians to organise a referral to a VA specialist. Once this was organised, they were often sent to the Radiology department to wait for the VA specialist to be available. Or they were required to wait for an Anaesthetist, who was often delayed due to other commitments.

'it could delay it up to 2 hours on any given day ... sometimes they think they can put it in the day unit and that doesn't happen, they send you down to (Vascular Access Specialist)...we are writing off the day when we are in there.'

(Parent of P5)

Multiple attempts also caused delay due to waiting for the anaesthetic cream to take effect. Parents described that once general clinicians were unsuccessful, they would assess another site, apply anaesthetic cream to that area and wait for it to take effect. One parent recounted that this was in addition to the general waiting required for testing and treatment overall which added to their poor experience at the hospital.

'It took a while trying to get it in and also it took a while...they put numbing cream on. So they would say well we cant get it in and he might've only put numbing cream on one site and said we will try another site. I think that happened 3 times...well we will wait 30 min for the numbing cream ...we have to wait 30

mins for this one so it just seemed to take forever... I guess the general waiting around we do in hospitals because things aren't ready or they're too busy, that another part of our bad experience.'

(Parent of P2)

For some, the time taken to have the PIVC inserted was as long as the duration of the infusion. DVA delayed medical tests and medical treatment including chemotherapy. Often the delay due to DVA had a flow-on effect which interrupted necessary clinical processes required for treatment that led to further delays.

'...it might have been that the doctor was ready to ... sign off that you are healthy enough to get the chemo and you need to go downstairs and the doctor may go off to do something else and the problem is that they will only make up the chemo once they have a go ahead as it's really expensive and only lasts 24 hours and if you miss the time they make it you may need to wait for the afternoon session.'

(Parent of P2)

One parent recounted that they were not able to provide the medical team with a blood sample to inform clinical care until weeks after it was requested.

'...the doctor says ... I need bloods ... could you do it sometime this week. Sometimes we've gone two or three weeks over ...'

(Parent of P6)

However, one young person reported that they appreciated the delay as it provided them with more time at the hospital to prepare for the insertion.

6.2 | Impact of DVA on life 'outside'

DVA meant that parents were required to leave home early to attend the hospital to allow enough time to wait for a specialist. However, they were willing to do this if that meant that they were more likely to be able to access a specialist for their child. Once at the hospital the family was required to wait for the specialist to be available.

Parents tried to use waiting time to complete schoolwork to reduce the impact of treatment on their child's education. However, this was challenging due to noise and interruptions from clinical staff. One parent described that they would like to leave the medical day unit to find a quiet place for their child to study but could not as they had to wait for the specialist which made them feel 'caged in'.

'Yeah I try to do his school work with him at hospital, but you just start something and someone comes and says, ahh we just need to do your weight or

something...its also very noisy, with babies screaming, just get interrupted constantly.'

(Parent of P2)

Another parent whose child had difficulty with obtaining blood tests explained that as she was a shift-worker she could only take her for tests on weekdays which meant her child missed school. If the clinician was unsuccessful often they were sent away to try another pathology collection centre and the parent was unsure whether to try another clinical site later in the day or postpone the test which had ramifications on the clinical management of her child's condition.

'Its hugely frustrating because like do you go back after school and do it again on the same day or do you wait for your next day off and postpone?'

(Parent of P6)

This parent also described the 'juggle' of managing her children's medical needs and her employment. Both of her children required frequent medical appointments and managing that on top of difficulty obtaining blood samples which required them to attend multiple pathology collection centres was challenging.

'I have another child at home who's autistic and it impacts on his life and his appointments...she doesn't drive herself to the appointments I have to take her.'

(Parent of P6).

7 | RECOMMENDATIONS FOR CLINICAL PRACTICE

A summary of recommendations made by parents and children/young people to improve clinical practice for children/young people with DVA is presented in [Table 3](#). Suggestions for improvements to clinical practice were predominantly made by parents. Quotes are provided to further elucidate each recommendation. Recommendations made by families were divided into two categories, recommendations for individual clinicians and recommendations for health services. Recommendations for individual clinicians sub-themes were (i) Pre-insertion preparation and interaction and (ii) The procedure: clinical practice and communication. Parents thought it was important that clinicians reflect on their own attitudes toward power in healthcare and focus on their interactions with children/young people and families prior to the procedure to build rapport and trust to reduce distress. Communication was also an important component during insertion to improve the experience. Clinicians were advised to 'check-in' with the child throughout the procedure because children may not vocalise pain and often found it difficult to ask them to stop the procedure. Careful vein assessment was integral to good clinical practice during PIVC insertion. Many parents recommended that clinicians refer to a VA specialist if they thought

they would not be successful after this assessment rather than attempt insertion.

Recommendations for health care services were further divided into the sub-themes (i) Change—culture and processes and (ii) Specialists, resources and training. Parents and children/young people identified that healthcare services' management should drive cultural and procedural changes as well as increase resources to improve PIVC insertion for children with DVA. One parent, who understood the process of organisational change in a professional capacity, identified that for practice to improve, first hospital management needed to recognise that cultural change was required. Integral to this was an acceptance that multiple attempts were a problem. A review of clinical processes was recommended to improve VA planning for all children/young people, introduce immediate referral to specialists for those with DVA and implement standardised insertion procedure based on best practice.

8 | DISCUSSION

Insertion of PIVCs in children/young people is often complex and is further compounded by the ubiquity of children with DVA. The aim of this study was to explore the parent and child/young person experience of DVA and identify potential clinical practice improvements. Through the process of semi-structured interviews, children/young people and their parents conveyed feelings of pain, fear and anxiety relating to the insertion of a PIVC. This is consistent with previous paediatric research (Goff et al., 2013; Kleidon et al., 2019; Larsen et al., 2010; Reigart et al., 2012; Schults et al., 2022) that has reported the experience of patients' PIVC insertion for medical treatment.

An important finding in the present study was the report of substantial psychological distress from repeated unsuccessful cannulation attempts for both children/young people and parents. One child identified that the PIVC was the worst part of cancer treatment, and many were reluctant to undergo medical care due to the PIVC insertion experience. Treatment reluctance was more obvious in older children/adolescents who expressed unwillingness to attend the hospital in the days leading to the procedure, perhaps because they were more aware of the scheduled treatment/tests. Alternatively, this could be a rejection of the condition itself or due to their developmental stage, an age-group which is more likely to be non-adherent to medical treatment (Robertson et al., 2015).

Both the parent and child/young person's recount of DVA focussed on distress rather than pain from the procedure. Previous research has reported that when topical anaesthetic cream is used for children, fear is more of a concern than pain during needle insertion (Hedén et al., 2016) However, some participants indicated that pain experienced during the procedure was the main reason for treatment reluctance. The outward manifestation of their pain was not always obvious, one parent described their child as 'stoic' and that they had become accustomed to painful procedures at hospital.

TABLE 3 Parent and child/young person recommendations for peripheral intravenous catheter insertion clinical practice for those with difficult venous access.

Recommendations for individual clinicians	
Pre-insertion preparation	<p><i>Reflection and education</i></p> <ul style="list-style-type: none"> • Reflect on your attitude towards the child/young person '...what I realized is that they all stand over them...so from a power and control perspective its ... you have no choice, I am bigger than you, I am standing over you...we are doing this to you.' (Parent of P1) • Educate yourself, each person has unique anatomy 'Understand that hidden veins (are) a thing... they have to understand that ... every human being body is different and ... just because you're able to get a line in 80% of kids super easily does not mean that every child is built the same.' (Parent of P7) • Reflect on the impact of multiple attempts on the child/young person and consider if this is traumatic Don't try to do it yourself first because then it's traumatic and you then create anxiety for the next time... Think about the trauma you're inflicting upon the child and how to minimise this (Parent of P7) <p><i>Clinical decision-making</i></p> <ul style="list-style-type: none"> • Review the child/young person's medical record before attempting insertion <ul style="list-style-type: none"> ◦ If the child/young person has a history of DVA and required US previously, consider referral to a specialist immediately rather than attempting insertion. '... So I had to repeat myself every single time. "He needs US guided" I had to go through the process and also that's in front of him which just talking about it isn't great.' (Parent of P1) 'I think go straight to the person who can actually put it in.' (P5, 12-year-old) 'They need to understand and need to source out other alternatives.' (Parent of P4) ◦ Organise sedation (unless contraindicated) if the child/young person has required sedation previously. 'If that anxiety is not under control. There's not consent, there might be consent from the parents, but not consent by the child, and ...I (think) that adds to the trauma...' (Parent of P7) '(use) anxiety meds!' (P7, 15-year-old) • Consider support—another clinician/play therapist if the child/young person has DVA '...have someone to help you to hand you things, distract...unless you are very confident...then its two people.' (Parent of P1) • Ask the child/young person and parent about their experience of PIVC insertion 'That would actually be quite useful if they said "well what's your experience been previously? ... That would probably be a useful thing. Because that would prompt us to say "yep she has had a tough time" and maybe we should look at what the alternatives are.' (Parent of P5) <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Prepare supplies/set up the tray before you enter the room '...they need a kit ready to go...need to think about, perhaps look through the door and think about how they're going to do it before they even come in...even where they put everything.' (Parent of P1)
Pre-insertion interaction	<ul style="list-style-type: none"> • Everyone should introduce themselves—who are you and what is your role? '... they didn't announce themselves. Obviously cause that's the other thing about why (child) is frightened...he sees a lot of people in the room, and he is frightened that they are going to hold him.' (Parent of P1) • Sit at the same level as the child/young person and have a conversation/establish rapport with the family 'The ones that were most successful squatted down next to the bed or pulled up a chair so that they were level...it's not sort of about the insertion so it's like "tell me about what happened" and "tell me about your brother" while they (are assessing veins and best insertion site).' (Parent of P1). • Listen to and collaborate with the child/young person and parents '...speak to (child) as the person not me, so everything is all about her.' (Parent of P6) '(what could make it better?) Uhm, maybe clinicians that talk, that listen to you?' (P7, 15-year-old) 'I mean they are an expert in her condition but I'm an expert in her.' (Parent of P5) • Declare why you are inserting a PIVC '...setting the scene when they get in the room, "so today we need to (insert the PIVC) this is for your operation tomorrow" or whatever it is.' (Parent of P1) • Recognise the child/young person as an individual with unique veins '...them knowing more about me, and knowing what my veins are like.' (P5, 12-year-old) • Educate/empower the child/young person—educate about the PIVC and explain why they have DVA 'So actually, we didn't get ...(any) information about why ...the (PIVC didn't go into the) hand or what was the difficulties. So, we didn't have any idea.' (Parent of P4)

TABLE 3 (Continued)

Communication during procedure	<ul style="list-style-type: none"> • Use a gentle, nurturing, kind, calm and empowering approach 'Yeah, even the doctor who tried to put it in 4 times one of the reasons I suppose I didn't get cross or ask for another person was that he was extremely calm and gentle. Like (child) always says can you count to three and then put in the needle and he was really good about that. And he was feeling his veins for a long time and chatting calmly, ... made him feel calm and they let him have some choice about where it's going to go or (explain) why they can't use that particular place he wants it.' (Parent of P2) • Reduce chatter—it is serious for the child/young person so avoid jokes during the procedure '...I relaxed as soon as I saw him. I mean he barely spoke, I saw him just eyeing...just looking at his arms, turning them over...actually assessing him. Rather than talking and making lots of (jokes)...he was very serious which I think was good cause I think its important cause it's a big deal so you don't want someone who is cracking jokes. You really want them focusing on the task at hand.' (Parent of P1) • Seek permission and feedback throughout the procedure—maintain the child/young person's sense of control and choice 'I think permission is very important...of sorts, obviously it has to happen...it's their body and 6 year old's know what they are doing...say "Would you prefer I held you here?" Or "would you like your left arm or your right arm?" So giving... feeling like there is some engagement in the process. giving him some control... obviously they have to be careful, ... you can't ask him if he wants it as he's going to say no.' (Parent of P1) '...(say) "Does this hurt"... "is this OK"...I think that's good when she's included in the process.' (Parent of P6) • Be aware that children/young people find it hard to ask you to stop and they may not vocalise pain 'Sometimes if I couldn't get my cannula in and I had lots of times to be jabbed I would probably ask the doctor to let me have a little break. Cause its aching a lot when the needles in a long time. So I would ask for a break. Yeah I do (find it hard to tell doctors to stop).' (P3, 8-year-old) '...he is quite stoic, he won't necessarily (tell them to stop), he loves things medical, so for him to tell a doctor to stop is means it must be pretty bad.' (Parent of P3)
Clinical practice during insertion	<ul style="list-style-type: none"> • Assess veins carefully and thoroughly 'So when we had the doctor for the kidney function test...he was fantastic, I knew...I relaxed as soon as I saw him....I saw him just eyeing...just looking at his arms, turning them over...actually assessing him.' (Parent of P1)
Recommendations for healthcare services	
Change - culture and processes	<ul style="list-style-type: none"> • Improving the PIVC insertion experience for children/young people requires cultural change—a recognition that the system requires change and funding should be allocated to appropriate resources '...you know what, they need to address the culture first...because fear (not asking superiors for support etc.) and all that kind of thing is a cultural thing and even getting rid of people that shouldn't be there anymore makes a vast difference... there is no accountability...if you are consistently bad at doing cannulas no one knows...It keeps going on.' (Parent of P1) 'Don't get me started, don't even get me started on how much funding (the health department) gets and where that funding goes... they get so much funding, and the issue is not how much funding they get. The issue is where they put that money.' (Parent of P7) • Healthcare services should identify best processes for PIVC insertion to standardize the procedure (communication, preparation and insertion) and create an alert system 'Standardized process - in that everything, from the conversation to the engagement to the prep. To timing, like this should take 2 minutes so it is the same experience every time you go. So the children know what to expect.... So actually looking at the process, ...good, bad, so looking at that and pulling out the best to make the best standardized process.' (Parent of P1) '...it (an alert) should be something that goes straight on top of that child's file. ... why is there not ...(a) warning on a child's medical file?' (Parent of P7) • Children/young people may also experience difficulty with blood samples—US-guided blood tests should be offered 'Yeah now we know so if we need blood we are welcome to keep going back to the hospital to have the ultrasound. But ... it would be good if all the blood places have ultrasound.' (Parent of P6).
Specialists, resources and training	<ul style="list-style-type: none"> • Specialists should be embedded within each clinical area—not just in a central department '... the fact that they can't do the US right there, that would be great if they had the machine and could do it right there (at the cancer centre).' (Parent of P2) • Increased resources are required—more specialists/US '...its such a brilliant idea... I think it should be mandatory (US) because the time wasted waiting to get them in would far outweigh the cost of getting someone in with US for 10mins as opposed to the 4 people that have tried for 45mins and the distress of the child, the delay of the operation...or whatever it is.' (Parent of P1) '...policy makers are the lawmakers they need to consider ...a proper way of the training in the hospital setting also in the point of even the government funding. There should be enough funding for those nurses and practitioners to be able to practise ... (and) have proper training environment where they can practise ...and learn.' (Parent of P4) • Avoid train the trainer approach—specialists should train clinicians '(a) qualified trainer that trains everyone versus train the trainer approach because you lose the accuracy of the approach. The person doing the training needs to be an expert, one of the best, not just someone that's on hand that has done it before.' (Parent of P1) • Training should incorporate trauma informed care principles 'Have a trauma informed practice ..., because why would you want to pile on the trauma? ... Why would you want to increase that trauma that they're experiencing in their short lives, you know, cause they're only kids.' (Parent of P7)

Abbreviations: DVA, difficult venous access; PIVC, peripheral intravenous catheter; US, ultrasound.

It is important for clinicians to remember that children/young people may not vocalise pain during a procedure.

Some parents characterised multiple PIVC insertion attempts as a form of psychological trauma for their children. Traditionally, assessing and managing psychological trauma in children/young people attending hospital has concentrated on injury and violence occurring outside the facility. Increasingly, research has focussed on psychological trauma occurring as a result of medical procedures (Christian-Brandt et al., 2019; Shea et al., 2021). Paediatric medical trauma or paediatric medical traumatic stress (PMTS) is the stress response to pain, injury, illness and invasive medical procedures (Price et al., 2016). While some stress reactions are to be expected at the time of the procedure, some children develop persistent post-traumatic stress symptoms which affect daily functioning and adherence to medical treatment (Christian-Brandt et al., 2019). PMTS in children/young people is expected to grow with improved survivorship and advancements in treatment for chronic conditions, however, many clinicians do not recognise that medical procedures may lead to persistent stress symptoms (Christian-Brandt et al., 2019; Ziegler et al., 2005).

DVA also had a profound effect on parents, including distress from witnessing multiple attempts. This served as the impetus to challenge doctors when they continued PIVC attempts. Some parents described that they began to 'police' clinicians. Parents were forced to develop advocacy skills and learnt to champion for earlier access to a specialist. Many parents were intimidated by medical staff and found this challenging. This is consistent with other research which has documented that parents of children with chronic disease perceive a need to repeatedly advocate for their child to receive appropriate clinical care which is characterised as an additional stressor (Baker & Claridge, 2022). Parents who were required to restrain their child during the procedure reported high levels of distress. Unfortunately, the use of 'restraint' or 'clinical holding' in paediatric clinical practice is common in many clinical settings with parents often asked to participate (Kirwan & Coyne, 2017). This not only contravenes the rights of the child but also increases parental distress.

An important aim of this study was to determine child/young person and parent preferences and recommendations for clinical practice. This is an important starting point for clinicians and healthcare services to reflect on PIVC insertion practice and consider the experience of the procedure from the child/young person's perspective. Recommendations for individual clinicians centred on pre-insertion preparation and communication during the procedure. Many recommendations made by participants were not specific to PIVC insertion, they could be characterised as elements of quality care that should be present in every procedure, such as partnering with families. Poor communication was a consistent theme with parents and children frustrated at not being heard. This lack of partnership with parents and children/young people contravenes the tenets of family-centred care (O'Connor et al., 2019) and the rights of the child/young person (Bray, 2021). Both parents of children with chronic conditions and the young people themselves develop considerable expertise and want to

collaborate with clinicians, but their contribution is not always valued (Smith et al., 2015).

Participants made several recommendations specific to PIVC insertion practice for those with DVA. Many participants indicated that general clinicians should access education about the nature of DVA and the impact of multiple attempts on the child/young person. Participants indicated that clinicians should recognise that the procedure is not a routine simple procedure for children/young people with DVA and that trivialisation of the procedure increased distress. The fact that one participant stated that they would take this journal article to the hospital as proof that DVA exists is a telling indictment of the knowledge levels and attitudes of some general clinicians. Careful assessment of the child/young person's veins and discussion with parents and children/young people about their prior experience of PIVC insertion were recommended by many participants. Some clinicians did not ask about their prior experience of the procedure or if they did, appeared to disbelieve the family's description of prior insertion attempts. Assessment of previous insertion attempts is an integral part of DVA assessment to identify those who require clinical escalation so that they receive appropriate care with adequately skilled clinicians supported by visualisation technology from the outset (Schults et al., 2022).

Recommendations for healthcare services to improve clinical practice for children with DVA focussed on cultural change and improved resourcing. Parents reported that PIVC insertion was nearly always left to the most junior physician, indicating that the healthcare system did not appreciate the specialist skills required to insert PIVC for those with DVA. Both parents and children/young people described frustration with this system which forced children to undergo multiple attempts with a novice inserter. One of the parent's interviewed very astutely observed that for care to improve for these children/young people, cultural change, including acknowledgement that multiple attempts were a problem is imperative. Only then will healthcare services provide appropriate resources to improve care. Appropriate resources (equipment and clinicians) are required to ensure a skilled and competent workforce with the necessary technology is available.

Critical to the provision of appropriate care for children/young people with DVA is ensuring the sustained availability of skilled clinicians. Whilst parents in the current study generally felt confident in physicians' competence and ability outside the PIVC insertion arena, they felt that these clinicians lacked experience with PIVC insertion. This finding is consistent with previous research reporting lack of support or resources from healthcare services for clinicians to improve their PIVC insertion skills (Kleidon et al., 2019; Schults et al., 2019).

8.1 | Limitations

Participants were recruited from one health service and their experience may reflect the practices of that service and if the study

was conducted at another site, with a different approach to DVA, experiences may be different. Our sample consisted of mainly older children or adolescents, further research is required to understand the experience and preferences of younger children. Whilst robust qualitative methods were used to describe the phenomenon, a relatively small number of participants ($n=12$) took part in the study and consistent with qualitative approaches, findings cannot be generalised to other settings.

9 | CONCLUSION

The need for attitudinal change toward the acceptability of multiple PIVC insertion attempts for children/young people is palpable. This study explored the parent and child/young person experience of DVA and provided their recommendations for clinical practice improvements. It highlighted the profound psychological distress these children/young people (and parents) experience and need for additional training, for clinicians to acquire pre-requisite clinical skills. This includes not only DVA assessment but also improved interpersonal skills to partner with families to plan clinical procedures and ensure child-focussed care. Cultural change within healthcare systems is imperative so that VA specialists are recognised and adequately resourced. Chronic conditions are increasing in children/young people and many require regular needle procedures for testing and treatment. Improvements in their experience of these common procedures will set them up for positive relationships with healthcare settings in the future.

RELEVANCE TO CLINICAL PRACTICE

Insertion of peripheral intravenous catheters in children/young people can be difficult, particularly in those with DVA. Parents and children/young people report that DVA is associated with both short-term pain and anxiety as well as long-term psychological distress. Healthcare systems need to improve resourcing, education and training to support clinicians improve first time PIVC insertion success for children/young people with DVA.

AUTHOR CONTRIBUTIONS

Rebecca Sharp, Michele Muncaster, Tricia M. Kleidon, Amanda J Ullman planned and designed the study. Michele Muncaster, Catherine L Baring, Jacinta Manos supervised data collection. Rebecca Sharp, Michele Muncaster, & Catherine L Baring performed data analysis and all authors assisted with interpretation of the results. All authors had an active role in drafting and revising the manuscript. All authors approved the final version to be submitted.

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Research data are not shared.

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Parents and children/young people shared their experience and recommendations for practice; however they were not involved in the design, analysis or preparation of this manuscript.

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REFERENCES

- Alexander, J., & Manno, M. (2003). Underuse of analgesia in very young pediatric patients with isolated painful injuries. *Annals of Emergency Medicine*, 41(5), 617–622.
- Baker, K., & Claridge, A. M. (2022). "I have a Ph. D. in my daughter": Mother and Child Experiences of Living with Childhood Chronic Illness. *Journal of Child and Family Studies*, 1–12.
- Birnie, K. A., Noel, M., Parker, J. A., Chambers, C. T., Uman, L. S., Kisely, S. R., & McGrath, P. J. (2014). Systematic review and meta-analysis of distraction and hypnosis for needle-related pain and distress in children and adolescents. *Journal of Pediatric Psychology*, 39(8), 783–808.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328–352.
- Bray, L. (2021). Getting It Right First Time and Every Time: Re-Thinking Children's Rights when They Have a Clinical Procedure. *Journal of Pediatric Nursing*, 61, 10–12.
- Christian-Brandt, A. S., Santacrose, D. E., Farnsworth, H. R., & MacDougall, K. A. (2019). When treatment is traumatic: an empirical review of interventions for pediatric medical traumatic stress. *American Journal of Community Psychology*, 64(3–4), 389–404.
- Cooke, M., Ullman, A. J., Ray-Barruel, G., Wallis, M., Corley, A., & Rickard, C. M. (2018). Not "just" an intravenous line: Consumer perspectives on peripheral intravenous cannulation (PIVC). An international cross-sectional survey of 25 countries. *PLoS One*, 13(2), e0193436.
- Cummings, E. A., Reid, G. J., Finley, G. A., McGrath, P. J., & Ritchie, J. A. (1996). Prevalence and source of pain in pediatric inpatients. *Pain*, 68(1), 25–31.
- Cummings, J. A. F. (2015). Pediatric procedural pain: How far have we come? An ethnographic account. *Pain Management Nursing*, 16(3), 233–241.
- Darcy, L., Knutsson, S., Huus, K., & Enskar, K. (2014). The everyday life of the young child shortly after receiving a cancer diagnosis, from both children's and parent's perspectives. *Cancer Nursing*, 37(6), 445–456.

- Fradet, C., McGrath, P., Kay, J., Adams, S., & Luke, B. (1990). A prospective survey of reactions to blood tests by children and adolescents. *Pain*, 40(1), 53–60.
- Goff, D. A., Larsen, P., Brinkley, J., Eldridge, D., Newton, D., Hartzog, T., & Reigart, J. R. (2013). Resource utilization and cost of inserting peripheral intravenous catheters in hospitalized children. *Hospital Pediatrics*, 3(3), 185–191.
- Gorski, L. A., Hadaway, L., Hagle, M. E., Broadhurst, D., Clare, S., Kleidon, T., Meyer, B. M., Nickel, B., Rowley, S., & Sharpe, E. (2021). Infusion therapy standards of practice. *Journal of Infusion Nursing*, 44(15), S1–S224.
- Hedén, L., von Essen, L., & Ljungman, G. (2016). The relationship between fear and pain levels during needle procedures in children from the parents' perspective. *European Journal of Pain*, 20(2), 223–230.
- Indarwati, F., Mathew, S., Munday, J., & Keogh, S. (2020). Incidence of peripheral intravenous catheter failure and complications in paediatric patients: systematic review and meta analysis. *International Journal of Nursing Studies*, 102, 103488.
- Kirwan, L., & Coyne, I. (2017). Use of restraint with hospitalized children: A survey of nurses' perceptions of practices. *Journal of Child Health Care*, 21(1), 46–54.
- Kleidon, T. M., Cattanaach, P., Mihala, G., & Ullman, A. J. (2019). Implementation of a paediatric peripheral intravenous catheter care bundle: a quality improvement initiative. *Journal of Paediatrics and Child Health*, 55(10), 1214–1223.
- Larsen, P., Eldridge, D., Brinkley, J., Newton, D., Goff, D., Hartzog, T., Saad, N. D., & Perkin, R. (2010). Pediatric peripheral intravenous access: does nursing experience and competence really make a difference? *Journal of Infusion Nursing*, 33(4), 226–235.
- Malyon, L., Ullman, A. J., Phillips, N., Young, J., Kleidon, T., Murfield, J., & Rickard, C. M. (2014). Peripheral intravenous catheter duration and failure in paediatric acute care: a prospective cohort study. *Emergency Medicine Australasia*, 26(6), 602–608.
- O'Connor, S., Brenner, M., & Coyne, I. (2019). Family-centred care of children and young people in the acute hospital setting: a concept analysis. *Journal of Clinical Nursing*, 28(17–18), 3353–3367.
- Peterson, K. A., Phillips, A. L., Truemper, E., & Agrawal, S. (2012). Does the use of an assistive device by nurses impact peripheral intravenous catheter insertion success in children? *Journal of Pediatric Nursing*, 27(2), 134–143.
- Polit, D. F., & Beck, C. T. (2004). *Nursing research: Principles and methods*. Lippincott Williams & Wilkins.
- Price, J., Kassam-Adams, N., Alderfer, M. A., Christofferson, J., & Kazak, A. E. (2016). Systematic review: A reevaluation and update of the integrative (trajectory) model of pediatric medical traumatic stress. *Journal of Pediatric Psychology*, 41(1), 86–97.
- Reigart, J. R., Chamberlain, K. H., Eldridge, D., O'Brien, E. S., Freeland, K. D., Larsen, P., Goff, D., & Hartzog, T. H. (2012). Peripheral intravenous access in pediatric inpatients. *Clinical Pediatrics*, 51(5), 468–472.
- Robertson, E. G., Wakefield, C. E., Marshall, K. H., & Sansom-Daly, U. M. (2015). Strategies to improve adherence to treatment in adolescents and young adults with cancer: a systematic review. *Clinical Oncology in Adolescents and Young Adults*, 5, 35–49.
- Robinson-Reilly, M., Paliadelis, P., & Cruickshank, M. (2016). Venous access: the patient experience. *Supportive Care in Cancer*, 24, 1181–1187.
- Sandelowski, M. (2010). What's in a name? Qualitative description revisited. *Research in Nursing & Health*, 33(1), 77–84.
- Schults, J., Rickard, C., Kleidon, T., Paterson, R., Macfarlane, F., & Ullman, A. (2019). Difficult peripheral venous access in children: an international survey and critical appraisal of assessment tools and escalation pathways. *Journal of Nursing Scholarship*, 51(5), 537–546.
- Schults, J. A., Kleidon, T. M., Gibson, V., Ware, R. S., Monteagle, E., Paterson, R., Charles, K., Keys, A., McBride, C. A., & McTaggart, S. (2022). Improving peripheral venous cannula insertion in children: a mixed methods study to develop the DIVA key. *BMC Health Services Research*, 22(1), 1–10.
- Sharp, R., Grech, C., Fielder, A., Mikocka-Walus, A., Cummings, M., & Esterman, A. (2014). The patient experience of a peripherally inserted central catheter (PICC): a qualitative descriptive study. *Contemporary Nurse*, 48(1), 26–35.
- Shea, T., Athanasakos, E., Cleeve, S., Croft, N., & Gibbs, D. (2021). Pediatric medical traumatic stress: A scoping review. *The Journal of Child Life: Psychosocial Theory and Practice*, 2(1), 42–54.
- Smith, J., Cheater, F., & Bekker, H. (2015). Parents' experiences of living with a child with a long-term condition: a rapid structured review of the literature. *Health Expectations*, 18(4), 452–474.
- Smith, R. W., Shah, V., Goldman, R. D., & Taddio, A. (2007). Caregivers' responses to pain in their children in the emergency department. *Archives of Pediatrics & Adolescent Medicine*, 161(6), 578–582.
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349–357.
- Ullman, A. J., Takashima, M., Kleidon, T., Ray-Barruel, G., Alexandrou, E., & Rickard, C. M. (2020). Global pediatric peripheral intravenous catheter practice and performance: a secondary analysis of 4206 catheters. *Journal of Pediatric Nursing*, 50, e18–e25.
- United Nations. (1989). *Convention on the Rights of the Child*. <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child>
- Ziegler, M. F., Greenwald, M. H., DeGuzman, M. A., & Simon, H. K. (2005). Posttraumatic stress responses in children: awareness and practice among a sample of pediatric emergency care providers. *Pediatrics*, 115(5), 1261–1267.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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