IV'e Been 'BITTEN': A Semi-Structured Interview Investigating Trauma and Betrayal During Peripheral Intravenous Catheter Insertion Among DIVA Patients

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Abstract

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Inserting a peripheral intravenous catheter (PIVC) can be a stressful moment in a patient's hospital stay, especially in patients with difficult intravenous access (DIVA). This study investigated the applicability of a mid-range theory of trauma-informed care (BITTEN) to PIVC insertion in DIVA patients. A qualitative, semi-structured interview was conducted with 17 DIVA patients. Data was analyzed by item and compared to the BITTEN model. Key findings include: the BITTEN model can help explain the traumatic experiences DIVA patients have with PIVC insertion, DIVA patients have experienced institutional betrayal after medical and other traumas, previous adverse PIVC experiences inform expectations for future experiences, and DIVA patients' trust in clinicians is restorative. In fact, adverse PIVC experiences have little to do with the needle itself.

Keywords: peripheral, venous, intravenous, catheter, PIVC, IV, PIV, difficult, access, DIVA, DVA, betrayal, BITTEN, trauma

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I want to thank the participants for being open and sharing their experiences with me. It was a pleasure meeting and connecting with each one of you. I hope this study also helps you realize that you are not alone in your experiences; your experiences are valid, shared, and connected to people from many different parts of the world.

To Cheryl, thank you for seeing something in me when I first joined the team, for teaching me all that you know, and for reinvigorating my passion for nursing. You have always been a true leader and role model in my career.

To my family, for their love, support, and encouragement throughout my life and educational journey.

To my loving husband, for your unwavering support of me in all my endeavours; I would not have been able to do this without you by my side.

Finally, to our precious children. You are the heart behind this achievement. I did this for you.

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"Nature never intended that the human being be fed and watered through a vein, and, therefore, the insult of such a procedure should be respected" (Sandelowski, 2010, p. 76).

Researcher Background

I am the Clinical Nurse Educator for a vascular access specialist team (VAST) at a large urban-centred hospital, with extensive prior experience working as a member of this team before my current position. The VAST team is an essential service that performs peripheral intravenous catheter (PIVC) insertion, phlebotomy/venipuncture, and insertion of peripherally inserted central catheters (PICC) on patients with difficult intravenous access (DIVA) using best practice recommendations, as well as advanced skill and ultrasound guidance if needed[1]. I have also achieved certification through the Canadian Vascular Access Association (CVAA). I am passionate about venous access, and I am proud to provide patients with this essential care during their hospital stays.

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[1] **Note:** My work consists of establishing reliable intravenous (IV) access and obtaining blood samples that are important in diagnosing and treating a patient. The maintenance and care for an IV line once established are not going to be highlighted in this piece. For the purposes of my research, the act of *establishing IV access* by means of PIVC is the focus.

The impetus for this research comes from my interactions with patients over the years. I have met several patients who have expressed stress, anxiety, fear, and apprehension about having the procedures we provide. Most patients seen by VAST have already been subjected to multiple unsuccessful attempts to obtain blood or establish reliable intravenous access before being seen. Patients have communicated to me a loss of trust in the clinicians, loss of control and autonomy, and loss of confidence in clinician knowledge/skill if they have been subjected to multiple attempts.

Statements I have frequently heard from patients include (but are not exclusive to): "You only get one try, and then you are out; Are you good at this? /Are you from the IV team?; They do not know what they are doing and keep poking; Thank God you are here; Do I even have a choice?; Do not 'fish' around, I hate when they 'fish'; Nobody can find my veins, I'm impossible; [After success] I did not even feel that. Can you come back every time?"

I have found that patients are sometimes even more fearful of their PIVC insertion than their main reason for seeking care. For example, I have frequented the surgical prep unit, where patients have told me the PIVC is worse than the surgery they are to have, even expressing relief when finding out that any additional PIVC will be placed once they are under anesthesia. I have experienced patients with severe needle phobias with intense emotional and physical (sometimes even violent) responses or who require a loved one close by to hold their hand during the procedure.

Having a PIVC placed or having blood drawn daily (or multiple times a day) is a physically and emotionally jarring experience, especially for DIVA patients, as each required procedure often takes more than one attempt. These multiple attempts leave the patients with pain, bruising, compromised vasculature, and emotional turmoil. I aim to better understand the

patient experience of having adverse experiences of PIVC insertion to minimize their distress. I believe there is more to the experience than just failed attempts; I believe previous trauma could be a key component in patients' experiences of PIVC insertion, which has not been evidenced before.

Understanding Venous Access

What is a PIVC?

The insertion of a PIVC is defined by the Infusion Nurses' Society (INS; 2024) as "A catheter that is inserted into and resides in veins of the periphery that includes all extremities, the external jugular vein, and scalp veins in neonates." (p. S268). PIVC insertion is one of the most common invasive procedures in hospitals worldwide (Masamoto & Yano, 2018). Nearly 80% of all patients admitted to the hospital will require the insertion of a PIVC during their stay (Berger et al., 2021). Once placed, a PIVC can deliver a variety of medications, fluids, contrast medium, chemotherapy and blood products through a patient's veins to aid in their treatment requirements.

The insertion of a PIVC is a delicate procedure that requires the skill of a knowledgeable inserter, as well as knowledge and understanding of the indication, benefits, and risks associated with it. Although nurses insert most PIVCs, many physicians or technologists may perform this skill; therefore, the person inserting the PIVC will be referred to as 'clinician' throughout this piece to encompass any medical professional who has the skill and knowledge to insert a PIVC.

What is Phlebotomy?

Phlebotomy is the process of inserting a needle to withdraw blood from the body for diagnosis, transfusion, and research purposes (Canadian Phlebotomist Technicians Group, Inc., 2023). Phlebotomy has been practiced for over five millennia (Parapia, 2008). In phlebotomy, the needle is withdrawn after the blood specimen is collected. Phlebotomy requires similar skill,

dexterity and knowledge to perform, and it carries many of the same risks as PIVC insertion. PIVC insertion will be referred to throughout this thesis; however, it is essential to understand that phlebotomy is a very similar process, as this knowledge is also relevant to the findings presented in this research.

Patients with Difficult Intravenous Access (DIVA)

Though PIVC insertion is common among all patients in the healthcare system, some patients' vasculatures create an increased difficulty with this procedure. Schults et al. (2023) identify that nearly 67% of initial insertion attempts are unsuccessful, and 10-45% of patients will require three or more attempts. These patients are named 'difficult intravenous access'- or DIVA patients. Patients may fit these criteria for a variety of reasons: unable to visualize or palpate veins, multiple attempts required by clinicians to establish reliable access, chronic illness, a history of intravenous drug use, history of central venous access devices (CVAD), or limited options for access (due to anatomical reasons, mastectomy, arteriovenous [AV] fistula, physical deformities, obesity, or darker skin tone) (Plohal, 2021). DIVA patients are represented among all ages and genders, and it is estimated that over a third of adults and over half of children who require a PIVC are classified as DIVA patients (Sou et al., 2017). Because this population encompasses a diverse range of individuals, there is some ambiguity regarding who meets these criteria and when they do. Some institutions utilize a DIVA scale to help predict or identify patients who may have increased difficulty establishing IV access, but there is no standardized scale (Salleras-Duran et al., 2020). Sou et al. (2017) report an increase in DIVA patients within the healthcare system, with higher rates predicted for the future.

History of Venous Access

Accessing a vein for phlebotomy and infusion therapy has been a practice extensively used throughout history. Humans have been utilizing these skills to heal and aid the sick through trial and tribulation. With increased knowledge of anatomy, antisepsis, and the use of efficient equipment, the procedure has become more routine and safer for both patients and clinicians over time.

PIVC Insertion, Risk and Power

Historically, venous access posed risk, where inserting a needle into a person's veins proved to be dangerous, and often, even fatal. These risks were attributed to infections from the supplies, infections from the injected solutions, and incompatibility of blood products in recipients (Kelly, 2014; Millam, 1996). The needle is the instrument in PIVC insertion. It holds the power to inflict pain, withdraw and inject fluids, and it also functions as the vector to create wellness; therefore, its impact on patients should not be underestimated.

Needles used in the 1950s for IV therapy were reused and sterilized using boiling water. Patients often endured PIVC insertion using dull and even barbed needle ends due to this reuse (Millam, 1996). Before the invention of the over-the-needle cannula, nurses used arm boards to help keep patients' arms straight, allowing the needle to remain in the patient's extremity. Advances in needle technology in the 1950s, combined with the introduction of single-use supplies, have significantly reduced the risks associated with IV therapy (Millam, 1996). Risk of needle stick injury for both patient and nurse, with the exposure of blood-borne pathogens such as human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) is still present (Sandelowski, 2010). Advancements in the use of safety mechanisms and needle-less connectors have helped to reduce this risk (Kelly, 2014).

During World War II (WWII), PIVC insertion and therapy were conducted by physicians as it was considered a highly sophisticated medical procedure, even 'awe-inspiring' (Sandelowski, 2010). Piercing the vein was not within a nurse's scope of practice. As time went on, and injuries of ailing soldiers increased, the demand to utilize IV therapy also increased. Doctors were no longer always available at the bedside; therefore, nurses began inserting PIVCs as an extension of the care provided by doctors. It was not until after WWII that nurses were eventually allowed to perform IV therapy independently. Once it became routine for nurses and no longer as physically dangerous, it was seen as *professionally* dangerous to the dominance of doctors to perform it (Sandelowski, 2010).

Patients have placed their trust in clinicians both in the past and currently to aid them in healing and wellness. As time passed, the physical risks associated with PIVC insertion decreased, but the emotional risks remained.

Could PIVC Insertion be Traumatic?

Historically, PIVC insertion was inherently traumatic simply due to the lack of knowledge and understanding. Although the physical risk remains, the procedure is significantly safer today than it was in the past. Emotional risks associated with PIVC insertion have always held the potential to cause harm to patients. Furthermore, could PIVC insertion constitute medical trauma for patients?

Trauma is defined as a "threat to a person's cognitive or psychological integrity, caused by extreme events or experiences, that challenges their past ways of understanding the world and their place in it" (Trauma Informed, n.d.). Traumatic events may include sexual assault/abuse, gender-based violence, physical violence, substance abuse, betrayal from a trusted source, grief/separation, and witnessing a violent event (Greene et al., 2023). Approximately 70% of the

world's population is estimated to have experienced at least one traumatic event (World Health Organization, 2024).

Three features help define what constitutes a traumatic event: the perception that the event is a highly negative experience, a sense of lack of control, and suddenness (Carlson & Dalenberg, 2000). Up to 3.4% of those who experience traumatic events may develop post-traumatic stress disorder (PTSD; World Health Organization, 2024). PTSD is a mental health disorder that also affects physical health and well-being (Husarewycz et al., 2014). Symptoms related to PTSD include re-experiencing the event through sensory details, avoidance behaviours, hyperarousal, and mood disorders (World Health Organization, 2024). Exposure to childhood trauma (adverse childhood events [ACE]) has been known to affect physical health significantly. It can lead to increased risk of heart disease, cancer, mental illness, and high-risk behaviours (Cole, 2020). Trauma has been an etiological factor in other chronic illnesses, such as chronic pain and hepatic disease, as well (Husarewycz et al., 2014).

Trauma in Healthcare

A subcategory of trauma is medical trauma, wherein a patient experiences "pain, injury, serious illness, medical procedures, and invasive or frightening treatment experiences" within a healthcare setting (National Child Traumatic Stress Network [NCTSN], 2018; as cited by Lewis et al., 2019, p. 293). Using childbirth as an example, Nelson (2024) reports that rates of birth trauma are high and result in increased hardships for the mother, including mood disorders and physical symptoms such as pelvic organ prolapse. Watson et al. (2020) state that the perception of a traumatic birth lies in the 'eye of the beholder'. In addition, birth trauma can result in poor bonding with the child, nightmares or flashbacks, and a possible development of tokophobia (fear of giving birth). This perception of trauma leads to avoidance of triggers and even avoidance of

giving birth again. Watson et al. (2020) state that common themes in childbirth trauma include a feeling of loss of control, powerlessness, and self-blame. Tsakmakis et al. (2022) hypothesized that traumatic birth may stem from inadequate control and lack of involvement in decision-making, which leads to decreased trust in care providers.

Schneider et al. (2016) reiterate the idea of the traumatic experience being subjective and individually determined in a study about dental phobia. They also note that patients may not always exhibit difficulties in the future, even if they have experienced a particularly stressful event. The authors describe a cycle of seeking dental care, which includes anticipation, behaviour, and experience stages. Patients anticipate the appointment based on their last interaction with the healthcare provider. If a patient had a particularly traumatic experience during their previous appointment, they would anticipate the next interaction to be similar, heightening their fear and anxiety and increasing the risk of experiencing another traumatic experience.

Abrahamsson et al. (2002) describe a strong association between dental fears and general fears and anxieties such that stimuli and cognitive processes interact with personality and other factors. Traumatic life events, troubled childhoods, and previous poor experiences were found to influence the likelihood of developing a dental fear and aversion in adulthood. These findings support the assertion that fear and trauma in life can have an impact on a patient's experience in the medical world.

Considering these facts, could a DIVA patient's adverse PIVC experiences be considered traumatic? Could these events, in addition to previous life traumas, influence future PIVC interactions?

Trauma and PIVC Insertion

Each patient who experiences PIVC insertion will have a unique perspective on their experience. In parallel with the literature on childbirth, even a 'simple' insertion might have the potential to be traumatic for a patient. For DIVA patients, due to factors such as comorbidities, age, chronic illnesses, or history of substance abuse, it can be hypothesized that these patients are more likely to have experienced traumatic events in their lifetime as well as medically. Therefore, they are vulnerable to being triggered or retraumatized by the healthcare system. They are also at higher risk of experiencing a traumatic event or institutional betrayal when undergoing a PIVC insertion due to the difficulty of their venous access.

As will be elaborated on further, the PIVC insertion experience has been shown to bring out some of the same themes and ideas as trauma experienced in childbirth or dentistry. However, in the venous access world, there is limited research on patient experience (Song & Oh, 2016) and even less offering insight into patients' traumatic experiences. Sharp et al. (2023) briefly touched upon the potential for PIVC to be psychologically traumatic for children who are chronically ill, as parents describe their child's experiences as such. Furthermore, these authors indicate that some children may develop post-traumatic stress responses to PIVC insertion, but they ultimately left this consideration open. They also state that some clinicians do not recognize that medical procedures can cause persistent stress responses.

Possible Sequelae of Adverse PIVC Insertions

Avoidance of Health Care and Treatments. Lewis et al. (2019) suggest that patients who experience institutional betrayal or who have lost trust in the healthcare system during previous encounters are less likely to return for future care. Patients who also experience healthcare institutional betrayal are less likely to utilize future healthcare services and follow

treatment regimens. This decrease in healthcare utilization is detrimental to the patient, as it can lead to a worse prognosis and a poorer response to treatment (Rastegar & Langhinrichsen-Rohling, 2024). Prolonging the seeking of care also leads to more serious and complicated cases for hospitals to manage in the future, resulting in the need to allocate more money and resources to a patient's care when it could have been a preventative measure beforehand. With hospitals already overfilled and understaffed, this could result in a significant burden on the healthcare system.

Patients Will Share Their Lived Experiences. It is a natural phenomenon to share experiences to cope, connect, and find meaning. However, when patients convey their negative medical or traumatic experiences to friends, family, or children, this may increase needle phobias or avoidance in these populations through learning from someone else's experience; thus, creating the cycle of distress again in a different population.

Avoidance of Blood Donation. Lindsay (1996) states that donor clinics have lost long-term donors due to traumatic episodes with phlebotomy. Traumatic events surrounding PIVC insertion and venipuncture have the potential to spread and affect not only the patient but also hundreds of patients from one event. According to Canadian Blood Services, the current amount of blood and plasma donations is insufficient to meet the demand for blood needed to support patients in hospitals (Canadian Blood Services, 2024). In a study by Gilchrist et al. (2021) examining the patient experience of fears and pain associated with whole blood and plasma donation, adverse events such as vasovagal responses deter repeat donations, with fear and a fear of blood identified as predictors of avoidance.

Vaccine Hesitancy. Patients who experience negative PIVC insertions or suffer from needle phobia are likely to avoid seeking care in the future, which includes vaccine hesitancy.

When children experience negative PIVC insertion and these experiences are left unaddressed, it can lead to an increase in vaccine hesitancy in adulthood (Lorenc et al., 2024). Vaccine hesitancy is particularly important in relation to current events and global pandemics such as COVID-19. Even more alarming is that 27% of healthcare workers were found to avoid vaccines due to needle phobias, potentially becoming a public health concern (McLenon & Rogers, 2019). Reductions in vaccine uptake have led to an increase in disease cases and higher costs for the public sector.

Betrayal Theory in the Context of Trauma

Betrayal theory (Freyd,1996; cited by Klest et al., 2017) suggests a correlation between trauma caused by betrayal and health outcomes. The theory suggests that a trauma can vary in its level of betrayal (high betrayal or low betrayal) according to how close the perpetrator was to the victim. High betrayal is associated with acts such as intimate partner violence, sexual abuse by a known perpetrator, and familial child abuse. Low betrayal is associated with acts such as motor vehicle accidents, natural disasters, or stranger-perpetrated violence. Individuals who experience higher levels of betrayal tend to report poorer health outcomes and a greater difficulty trusting others. Klest et al. (2017) make an important connection, noting that individuals who have experienced high levels of betrayal are more likely to seek healthcare due to their poorer health, yet at the same time, less likely to trust the individual providing care to them.

BITTEN: A Trauma-Informed Model

In 2019, a mid-range theory was conceived by Lewis, Langhinrichsen-Rohling, Selwyn and Lathan (2019) to help clinicians provide effective treatment utilizing trauma-informed healthcare. It was informed by betrayal theory. This model is known as BITTEN. BITTEN is comprised of six components, all related to a patient's past, current, and future encounters in their

life (primarily related to their healthcare experiences, but this theory also considers non-healthcare-related trauma). These components include a history of **B**etrayal, the current **I**ndicator for healthcare engagement, **T**rigger of traumatic symptoms, **T**rust, **E**xpectations and **N**eeds (Lewis et al., 2019). Clinicians need to recognize patients as more than just a single encounter, but as a complex being with previous experiences that can influence their current and future thoughts and behaviours. This model was also created in consideration of the Quadruple Aim model for healthcare, which aims to "lower costs, improve quality, increase patient satisfaction and increase provider satisfaction" (Sikka, Morath & Leape, 2015; as cited by Lewis et al., 2019, p. 291).

For this study, adverse PIVC experiences were investigated within the context of the BITTEN model, in order to identify any emotional risk PIVC insertion carries, including the risk of re-triggering past PIVC and non-PIVC traumas in patients. In alignment with betrayal theory, patients with a history of adverse PIVC experiences would be expected to be less likely to trust their clinicians as well as more vulnerable to experiencing past traumas/triggers in the current encounter. In the section that follows, the components of the BITTEN model are presented, along with a synthesis of the literature relevant to DIVA patients' PIVC experiences that may be relevant to each component.

The research question was as stated: Can the BITTEN model be applied to the DIVA population to explain their adverse experiences with PIVC insertion?

Betrayal

According to BITTEN (Lewis et al., 2019), betrayal can be experienced on the institutional and societal levels. It is the duty of the healthcare system to provide care to patients in accordance with the patients' best interests. When this duty is not upheld, and the trust is

broken, patients then experience betrayal. Institutional betrayal occurs at the system level and includes a lack of adherence to policy, institutional barriers, and fostering an environment where adverse incidents are likely to occur, potentially resulting in traumatic exposure for the patient (Lewis et al., 2019). Patients who believe their treatment is out of financial gain for the hospital/provider are also likely to experience betrayal at an institutional level.

The experience of institutional betrayal is expected to have an impact on how patients utilize the healthcare system in the future and the likelihood of adhering to treatment regimens (Lewis et al., 2019).

Institutional Betrayal in PIVC Insertion

Betrayal by Failing to Follow Institutional Policies. According to the Infusion Nurses Society (INS), a clinician should only attempt to insert a PIVC (if they have the requisite skill to do so) up to two times before seeking assistance from a more skilled individual (Nickel et al., 2024). This second individual may also have two attempts, with a vascular access specialist or a physician performing the next attempt. This means that a patient may be 'poked' more than four times before success (if the protocol is adhered to), which could be a potentially painful and emotionally traumatizing experience for patients as they wait for care (procedure, medications, etc.). The more failed attempts a patient has experienced, the more difficult it will be to locate a viable vein, simply because the damage to the patient's veins makes it more challenging. Sharp et al. (2023) describe paediatric patients' experience with this protocol, as parents state their children must constantly endure multiple failed attempts before consulting the vascular access team, despite requiring this team before. In my own experience, patients are not always aware of this standard and fail to speak up after the allotted number of attempts simply because they are unaware of it. INS suggests that practicing skills on humans is not recommended as the risks

outweigh the benefits, therefore a DIVA patient is an inappropriate candidate for PIVC insertion practice (INS, 2024).

With protocols established by organizations driven by best practices, it is intriguing to investigate why clinicians may override such policies (i.e. exceeding the number of allotted attempts of PIVC insertion). IV management standards are inadequate despite policies (Berger et al., 2010). When clinicians fail to follow policies, this leads to errors in patient management (Lau et al., 2010). We know that exceeding the allotted number of attempts can breach a patient's dignity and bodily autonomy. Schults et al. (2022) suggest that the escalation to a more skilled individual leads to a delay in care (for example, escalating to an anesthesiologist in smaller hospitals). Therefore, clinicians will continue trying until they are successful. There is also a reluctance among physicians who insert PIVCs to escalate to a more experienced nurse upon an unsuccessful attempt, perhaps due to pride.

Some institutions may lack the resources for a dedicated vascular access team or to provide additional training in the use of these technologies. In the case of hospitals that have access to these resources, *failing* to provide a patient with them (primarily if the patient has been known to need them in the past) is an extraordinary example of institutional betrayal. The goal is to treat these patients, but it is a duty of the clinician to provide the best route to reduce the adverse effects of poor/failed PIVC insertion.

Betrayal by Inappropriately Using PIVC and Ineffective Use of the Appropriate Venous Access Device (VAD). Understanding the proper indications for a PIVC is crucial for clinicians, as it involves collaboration with the physician to determine the most suitable type of access device for the patient's treatment and medical history. The most appropriate VAD should be chosen with consideration of (but not limited to) the following: infusate osmolality and pH,

number of infusates, anticipated treatment length of time, if infusate causes vasodilation, or vasoconstriction of vessels (INS, 2024). This includes choosing the most appropriate location and size of the device as well. Patients experience more discomfort when a PIVC is placed in the antecubital area, areas of flexion, and lower extremities; therefore, these areas are often not the most appropriate choices (CVAA, 2019). Some patient populations also have specific needs when it comes to insertion; for example, the avoidance of forearm and upper arm veins is recommended for renal patients, as damage to these veins can create future complications if the patient requires a fistula for dialysis (INS, 2024).

Insertion of central venous access devices (CVAD) is done by either a physician or a specifically trained nurse. This requires additional training, resources, and understanding. Once placed, a CVAD can be used for medication, and some allow for blood withdrawal, alleviating the need for additional venipuncture attempts, which can preserve the peripheral vessels (Kelly & Snowden, 2021).

Kelly and Snowden (2021) investigated the lived experiences of patients having a CVAD and found that most patients had difficulties obtaining IV access before CVAD insertion. Patients provided recollections that were violent and distressing when discussing their PIVC attempts, with phrases used such as ‘stabbing me to death’. Robinson-Reilly et al. (2015) found an alarming number of patients who referred to PIVC insertion as ‘cruelty’. When strict protocols are not in place to escalate a patient’s venous access appropriately according to their needs, this could be considered betrayal. This betrayal is particularly pronounced in cases where patients are frequently admitted to the hospital, with many of the admissions resulting in a CVAD. CVADs carry a higher risk of complications and infection than PIVC, and therefore, physicians should consider risk vs benefit when ordering one to be inserted.

A patient may still be subjected to attempts to obtain peripheral venous access even with a CVAD in place, due to an inability to access the CVAD without proper training (as is the case for an implanted port). Kelly and Snowden (2021) describe this lack of training in an interview with a patient who was taken aback when her husband had an implanted port, and the nurses still attempted to insert a PIVC, as none of them were trained to access his port. Not having the proper training to access the devices these patients are coming to the hospital with is a betrayal of the patient.

When they are given CVADs such as an implanted port or a Hickman for long-term IV access, the patient might have a false belief that the woes of PIVC insertion are over (with a few exceptions). Consider the betrayal a patient would feel if they underwent a surgical procedure for a CVAD only to find out the nurses caring for them do not have the training to use it. As an added caveat, the institution is also betraying the clinicians by failing to provide this training. These clinicians are then not practicing to their full scope and potential, serving as a vector of betrayal on behalf of the institution. The INS committee consensus states the necessity of using an implanted port for venous access unless contraindicated (INS, 2024).

The Infusion Nurses' Society also suggests that best practice is to eliminate the use of unnecessary PIVC insertion or 'just in case' lines to reduce risks (Nickel et al., 2024). Many drugs and fluids can be delivered via alternate routes to avoid causing further trauma to a patient's body, which should be considered in some cases.

***Betrayal of Patient Best Interests by Default Barriers in the System*.** In a study conducted by Bruce et al. (2018) investigating knowledge, views, and practices of trauma providers, it was found that many providers identified institutional barriers that kept them from providing trauma-informed care. These barriers included time constraints, lack of formal

education, and fear of retraumatizing patients. PIVC insertion has become such a task-oriented procedure that it may be challenging to incorporate trauma-informed practices if a clinician is not adequately trained to do so. Additionally, nurses caring for patients often have more than one patient to attend to on any given shift. With each patient comes a complicated and comprehensive task list for the nurse to complete; therefore, a nurse may not have the time to conduct an appropriate assessment or meet the patients' needs when inserting a PIVC. This rushed behaviour discourages the facilitation of necessary conversations and emotional support to recognize those who are at risk of exhibiting trauma symptoms and increases the risk of a failed insertion.

Indicator for Healthcare Engagement

The indicator for healthcare engagement is described as the patient's chief complaint or their reason for seeking care (Lewis et al., 2019). Patients either seek care for illness or injury, or for health promotion/wellness. A patient requiring a PIVC is most likely seeking the former reason, though there are some instances where the latter is pertinent (such as the case of blood donation). It is noted that the closer the indicator is to past traumatic experiences, the more likely the patient will exhibit trauma symptoms.

According to theory, if a DIVA patient has had a negative experience with their PIVC insertions in the past, and their reason to seek care is specifically for PIVC insertion, they may be more likely to exhibit trauma symptoms. In addition, if the PIVC insertion shared similar characteristics to previous traumatic events experienced (such as being held down or having several people gathered around them), they may also have the potential to exhibit trauma symptoms.

DIVA Patients with Chronic Illnesses

Patients with chronic illnesses seek care repeatedly due to the nature of their diseases. It is estimated that 65% of those with a chronic illness suffer from more than one comorbidity (Maun et al., 2023). Disano et al. (2010) suggest that the utilization of healthcare visits is related to socioeconomic status. Individuals from lower socioeconomic backgrounds were more likely to visit the hospital for treatment of conditions that could be managed in an outpatient setting.

In relation to PIVC insertions, exacerbations, infusion requirements, and care, such as dialysis, may be necessary to stabilize specific disease processes. Their frequency of admittance and need for infusion reduces the viability of their vasculature and increases the likelihood of having difficulties or needing multiple attempts to insert a PIVC.

DIVA Patients with Substance Use Disorders (SUD)

Those with a substance abuse disorder are two times more likely to visit an emergency department (ED), and more than six times more likely to be hospitalized than the general population (Stein, O'Sullivan, Ellis, Perrin and Wartenberg, 1993, as cited in O'Toole, 2007). O'Toole et al. (2007) found that high frequency of emergency department visits in those with SUD was associated with illness-related need factors such as HIV/AIDS and renal disease, as well as other chronic illnesses/mental health disorders. Frequency of ED visits is also predisposed by being homeless, African American, or female gender. In Canada, from 2015 to 2019, the rates of ED visits for opioid toxicity nearly doubled (Gomes et al., 2022). Opioid use is associated with serious complications, such as infections like osteomyelitis, infective endocarditis, necrotizing fasciitis, and sepsis, all requiring heavy courses of intravenous antibiotics to clear the infections. After completing IV therapy, the chance of readmission is high, as the patient is likely to have a recurrence of the infection within one to two months of completing therapy (Daher & Bohensky,

2022). This population also has a higher likelihood of leaving against medical advice than the general population. According to Gomes et al. (2022), there is a rising trend of infections and hospitalizations in this population. As a result of the patients' drug use, many have sclerosed, scarred, and non-palpable veins, making it very difficult to establish venous access.

DIVA Patients Who Are Women

Regarding healthcare utilization, women use more health services than men and are overrepresented in the healthcare system (Elliott et al., 2012); therefore, it is more likely that a DIVA patient seeking care is also a woman.

DIVA Patients Who Are Acutely Ill

Patients who are DIVA patients due to their acute illness are seeking immediate care for their condition. Some patients in this category have never been ill before and are experiencing a sudden increase in care requirements. Their diagnosis and their processes can create an environment that makes establishing venous access difficult. In support of Carlson and Daleberg (2000), individuals may experience the three features of a traumatic event: a perception that the event is a highly negative experience, a sense of lack of controllability, and suddenness. In this case, multiple attempts to establish reliable IV access may be overwhelming for patients, creating additional fear and apprehension.

Trigger of Traumatic Symptoms

Exposure to a traumatic event can cause physical and psychological distress, leading to the possible development of post-traumatic stress symptoms, which include, but are not limited to flashbacks, avoidance of the event, fear/shame, and irritability (Lewis et al., 2019). Patients may be exposed to medical trauma in their hospital stay, which can also lead to these symptoms. Each patient is at risk of triggering trauma symptoms from previous experiences.

The Needle as a Trigger

One powerful and important nuance to PIVC insertion is the experience of needle phobia. A phobia is defined as a persistent and irrational fear of something that leads to an aversion to it (Cook, 2016). There is no specific term for the fear of venipuncture. However, the terms belonephobia (fear of sharp or pointed objects), trypanophobia (fear of needles), and algophobia (fear of pain) are used to describe this process. The fear of having a PIVC inserted may also be regarding the fear of being touched, or the fear of being restrained as well (Cook, 2016). Needle phobia is associated with changes in transmission and modulation of the nervous system (Sorensen et al., 2021). Exposure to the feared object can then result in extreme emotional and physical responses, such as anxiety or syncope.

Needle phobia is typically most common in children, and its prevalence decreases with age (McLennan & Rogers, 2018). Fear of needles is more common in girls than in boys and in women more than in men. In support of this statistic, Turgut and Guven (2022) found that females were seventeen times more likely to have a fear of injections than men. The authors suggest that women are more likely to take children to medical appointments and perhaps influence the fear in their children. If a patient experiences needle phobia, this can lead to avoidance of healthcare and treatment in the future (McLenon & Rogers, 2019).

In children, venipuncture is one of the most invasive and stressful events when in the hospital (Silva et al., 2021). Needle-related pain is stated to be the worst pain experience in the hospital by children (Lorenc et al., 2024). Children rated venipuncture as more painful than subcutaneous injections in a study by Sorensen et al. (2021), which investigated patient experiences of children with rheumatic diseases. Patients describe the PIVC insertion as abusive and describe being held down during the procedure, creating a phobia of needles.

An initiative named “The Comfort Promise” was created to provide clinicians with an intervention bundle to help paediatric patients reduce pain, discomfort, and fear during painful procedures such as venipuncture and PIVC insertion (Lorenc et al., 2014). The bundle consists of four evidence-based interventions: breastfeeding or sucrose, numbing skin with pharmacological agents, distraction, and the use of comfort holds. By implementing some or all of these interventions with or without the assistance of a Child Life Specialist, The Comfort Promise has been proven to eliminate much of the pain and anxiety associated with these procedures in children. Sorensen et al. (2021) also state that a child’s memory of their first injection is more important than subsequent experiences of pain or discomfort with injection.

Needle phobia has been associated with negatively affecting a patient’s life- it may create responses so intense that a person may change their career, immigration or marriage plans, education, and travel (Turgut & Guven, 2022). This phobia or aversion may be a trigger for DIVA patients who have had adverse PIVC experiences or traumatic medical procedures involving needles.

The Environment as a Trigger

Andrews and Shaw (2010) state that life occurs in places, as arenas of actions that are lived, felt, and occupied. A place has the potential to influence a person, as does the reciprocal action. With the presence and action of humans, places are then given meaning. From a phenomenological standpoint, places are about what we do in them. Places can evoke a range of emotions and feelings depending on the context, and therefore, discussing ‘safe spaces’ is crucial when exploring the dimensions of PIVC insertion. In a hospital environment, for example, the area may be busy, loud, congested, distressing, or triggering, and it may remind a patient of a previous negative experience in that setting. They may seek out a safe space in their mind (such

as looking at artwork on a wall, or visualizing a favourite vacation spot) to separate their experience from the space they are in.

Environments in hospitals can be loud, busy and fast-paced. When an environment reflects this loud and fast-paced state, it may be difficult for a clinician to provide compassionate care, especially when a patient is experiencing anxiety or phobias in relation to their treatment (Cook, 2016). In the context of childbirth, Kuipers et al. (2022) found that the birth environment can influence a woman's birth experience. The release of oxytocin is heavily influenced by feelings of safety and security in an environment, and it is hindered by distress. Spaces that are assigned meaning and value based on human interactions and responses, as well as social power, are termed 'social space' or the interactive process of human activity in a space (Kuipers et al., 2022). Women who have experienced traumatic births often relate their experience to the environment and what occurred in that environment (Kuipers et al., 2022). Regarding the insertion of a PIVC, if the interactions in a space are particularly distressing, this may have an impact on patients' feelings, experiences, and psychological responses when they receive care in that environment again.

In the case of an institutional environment, patients with difficult IV access often resort to extreme measures when faced with difficulty in smaller, rural hospitals with limited resources, such as self-cannulation, discontinuing treatment, transfer to alternate facilities, and insertion of an intraosseous (IO) access device (Schults et al., 2022).

Intimacy, Power Dynamics, and Powerlessness as a Trigger

PIVC insertion is a very intimate and invasive procedure. The clinician is in proximity to a patient's personal space, penetrating the skin and inserting a sharp object for the purposes of taking blood or injecting fluids. The clinician is often standing over the patient, inadvertently

exuding power and dominance, which may seem intimidating or be triggering for patients. They are being held by the clinician, which may feel like being restrained against their will. The tourniquet is wrapped around their limb, constricting them even more, followed by light tapping on the vein by the clinician. The procedure itself is painful and may remind the patient of a traumatic experience. If an attempt to gain IV access is unsuccessful, the patient is subjected to this multiple times (and by multiple clinicians). The patient is at the mercy of the clinician, whether they trust in their abilities or not. Any or all of these components could be potentially triggering for someone who has experienced past adverse PIVC insertions or other traumas with similar characteristics.

A common theme found in the patient experience literature is the feeling of powerlessness and not being heard by the clinician (Robinson-Reilly et al., 2015). Patients feel as though they are unable to speak up or are not listened to by the clinician when they are having a PIVC inserted. Each subsequent interaction heightens anxiety, thus creating a vicious cycle of poor experience and failure.

Comparing dentistry literature to the literature on venous access reveals several similar themes that may facilitate a deeper understanding of power dynamics. In dentistry, patients are often under the lamp in situations that are beyond their control. They are unable to see what is being done to them and must trust the clinician to perform their duties appropriately and safely. The dentist makes procedures and decisions with little to no direction from the patient. Instruments are inserted into the mouth, including sharp objects, needles, water spray, and suction, which could trigger emotional responses from patients, heighten anxiety and even elicit feelings of past traumatic experiences (healthcare-related or in their life). Literature depicting dentists' experiences with providing patient care includes descriptions of the conflicting feelings

of being both the healer and the inflictor of pain (Schneider et al., 2016). This feeling is a familiar feeling among nurses or clinicians who perform PIVC insertion and venipuncture. Inflicting pain, when it comes to PIVC insertion, is unavoidable, and therefore, clinicians should be mindful when performing it. The authors also noted that recalling significant, painful, or uncomfortable experiences made patients more likely to avoid the dentist in the future. Byrne et al. (2022) investigated dental phobia and the patient experience; they found that patients with a history of trauma have difficulty showing up to their appointments. When the dentist viewed them positively, provided predictability in the interaction, and patients genuinely felt like they were being cared for, they were more likely to have a positive experience and thus return for their next appointment.

These feelings of powerlessness, including the lack of control over situations and the insertion of instruments into the body, are also related to PIVC insertion. Therefore, the above literature is crucial in comprehensively understanding the phenomenon.

When discussing powerlessness and loss of control, I am reminded of my own experiences, particularly when I have seen patients and been told to return later to perform my duties. This refusal may have seemed like avoidance, but it was perhaps instead a way for patients to regain more control in a stressful interaction.

Trust

Lewis et al. (2019) describe this category of BITTEN as violations which occur on the interpersonal level. When the clinician does not act in the patient's best interests or breaches their trust, this creates a cycle that leads to poor health outcomes/delay in treatment.

Trust in Clinician Knowledge, Competency and Skill

Each clinician comes from a different background, personally and professionally and can create a positive or negative experience for their patients. PIVC insertion requires a knowledge of anatomy and of proper insertion techniques to prevent complications. A clinician with more experience is more likely to be successful than one with less experience (Sandstrom & Forsberg, 2018). Notably, nurses often express a lack of proper training for PIVC insertion, which leads to poor practice and perpetuates the notion of 'see one, do one, teach one' that is prevalent in nursing today. With clinicians at different skill levels and degrees of training, patients can be subjected to inconsistencies in their care.

When IV access is established quickly, correctly, and with a lower number of attempts, patients have increased satisfaction, decreased wait times/delays in treatment, and a decrease in cost of supplies (Salleras-Duran et al., 2024). Poor insertion can lead to long-lasting psychological effects that result in delaying seeking care in the future, the creation and exacerbation of needle phobias and increased mistrust in clinicians.

The statement of having 'bad veins' is also explored by Larsen et al. (2017). Clinicians may place blame on patients for their 'bad veins' if they are unsuccessful instead of taking responsibility for their own actions and/or lack of skill. Instead of placing blame on the patient for their veins (whether they are 'bad veins' or not, the patient has little control over this), the clinician should assess their own skill set and seek assistance from a more skilled individual, rather than continuing to make attempts on the patient. Using patient-blaming statements creates a false belief within the patient that somehow, the clinical incompetence was their fault, making patients feel even worse about the procedure and creating expectations that subsequent experiences will be similar.

Trust in Continuity of Care

Purkey et al. (2018) found that in women who have experienced traumatic events, one of the six major themes was the importance of continuity of care, with a need for a strong connection between the clinician and the patient. Unfortunately, the current healthcare system lacks continuity, especially in acute care settings, where patients may have multiple nurses caring for them each day, each with their own skill set. In the context of PIVC insertion, a successful clinician one day may not be working the next, thus subjecting the patient to multiple attempts again to establish IV access. There is also a lack of continuity in communication from shift to shift or from one previous encounter to the next, regarding a patient's previous difficulties in establishing IV access. This inconsistency provokes a greater difficulty in trusting the providers. The patient has the right to receive care from the most skilled individual at any point in their care, which is essential for maintaining consistency and rebuilding trust.

Trust in the Respect of Dignity and Autonomy

Each person who seeks care in the healthcare system has the right to be treated with dignity and have autonomy over their body and choices regarding their care. It can be said that these fundamental rights may be compromised to establish reliable IV access in DIVA patients. Jacobson (2009) outlined a taxonomy of dignity, stating that interactions with individuals and societies create social dignity. This taxonomy can be further broken down into dignity-of-self (encompassing self-respect and self-worth) and dignity-in-relation (referring to how respect and worth are conveyed through collective behaviour). The author states that dignity is more likely to be compromised in situations involving a more vulnerable individual or in situations of uneven power relationships.

Papastavrou et al. (2016) investigated nursing students' observations of dignity, supporting the notion that autonomy and rationality are important aspects of dignity. They describe another type of dignity as identity dignity, which is tied to the body and mind. Identity dignity is compromised through humiliation or when one is treated as an object. Halpern (2023) states, "the obligation to respect autonomy is not an obligation to maximize good decision making, but a duty to ensure proper regard for each person's mental freedom and thus their ability to be a center of agency and initiative, an end setter" (p. 1252).

In PIVC insertion, a patient's dignity and autonomy are compromised when their choices and preferences are dismissed, when the number of attempts exceeds policies, when informed consent is not wholly obtained, and when the patient is seen as a 'pincushion' rather than a human being who experiences complex emotional responses.

Trust That the Patient Will Be Provided with the Right Information to Make Informed Choices

Nicholson and Davies (2013) conducted a study on patients' experiences with the insertion of a PICC. The insertion of a PICC is more extensive than venipuncture or PIVC insertion and carries similar risks, as well as more complex complications. It was found that many patients felt rushed into the procedure, finding the information/consent process to be overwhelming and not truly understanding what a PICC was until it had already been inserted. This finding suggests that patients may not always receive the most accurate information, nor have sufficient time to process it. Papastavrou et al. (2016) outlined two instances where nursing students witnessed a lack of consent. The first was witnessing a nurse grab a blind patient's arm to draw blood without proper consent, and the second was a failed attempt by a nurse who proceeded to attempt a second time despite the patient requesting an alternate nurse. This finding supports the need to allow patients time to be educated in a manner that is easy for them to

understand, as well as time to ask questions about how the procedure will affect them and their quality of life after the procedure is performed. Risks versus benefits should also be discussed, with the patient being the ultimate decision maker, without coercion from the clinician.

Trust That Patients Will Be Included in Communication and Collaboration

Larsen et al. (2017) found that patients expressed fear and mistrust of the clinicians inserting their PIVC due to previous failed attempts or inexperienced clinicians. Patients want their experience to be comfortable and to be involved in the process, whether through decision-making or open communication between the patient and the inserter. Important themes for patients to have a positive experience include effective communication between the patient and inserter, proper insertion technique, the inserter's competence, and the device's location (Larsen et al., 2017). The actual device itself is not often a cause for stress, but rather the inserter. Patients often feel like they know their body best, but are often disregarded and instead made to feel like the clinician knows best.

DIVA patients prefer to be treated by the most skilled clinician first (Plohal, 2021). In the event of multiple failed attempts, they feel helpless and hopeless, wanting never to return to seek care. They experience physical and emotional pain and feel a lack of communication between the inserter and themselves. Patients often feel that there are inflexible processes that are inconsiderate of their needs, a lack of appropriate escalation upon attempted failure, and a lack of protocols and pathways to address their difficult venous access (Schults et al., 2022).

Shave et al. (2018) investigated caregiver experiences regarding procedural pain in children. This study depicts distress from both the child and caregiver during painful procedures such as PIVC insertion. Caregivers valued open communication from clinicians, including explanations of procedures, to help alleviate the distress or anticipation associated with the

procedure. One caregiver describes the repeated failed attempts of PIVC insertion on her daughter as particularly distressing as the clinicians seemed to try “every inch of her” (Shave et al, 2018, p.6).

Trust That Patient Knowledge Will be Honoured

Patients are often the best resource when providing care. They have lived with their condition and have extensive knowledge of past successes and failures in their care. For example, those with SUD are often subjected to difficulties in the healthcare system due to many reasons. They may feel judged by the clinician due to their recreational activities and may also have difficulties finding reliable IV access due to their damaged veins. In a study examining the experiences of SUD patients in healthcare, four important themes emerged: conflict associated with phlebotomy, emotional response to phlebotomy, patients as experts, and offering solutions (Clements et al., 2014). These patients often experienced some conflict regarding their venous access and held strong emotional responses to it. These patients are often very familiar with their veins but often feel ignored by clinicians when pointing out locations that will likely be easier to cannulate. A key message from these patients is that when clinicians and patients work together collaboratively and with open communication, the experience is more likely to be successful rather than stressful.

Expectations

Expectations, according to BITTEN, refer to the expectations a patient has about what will happen when they seek care. If a patient had a particularly poor experience previously, they may be more likely to expect that the subsequent encounter will also play out similarly. Conversely, if the experience was particularly pleasant, they may expect the subsequent encounter to be the same. Personal experiences can influence expectations, as well as the

previous experiences of people they know, or social determinants of health associated with poorer health outcomes, such as poverty and racial minority status (Lewis et al., 2019).

Expectation 1: PIVC Insertion Involves Risk

Modern IV therapy is still relatively new and advancing rapidly, with the introduction of PICCs and implanted ports occurring only in the last forty years (Millam, 1996). Risks associated with PIVC insertion include pain, potential of puncturing an artery or nerve, infection, infiltration, extravasation, and the potential to lead to even worse complications such as loss of limb/extremity (Canadian Vascular Access Association, 2019). Repeated failed insertion attempts cause physical trauma, scarring and permanent damage to the veins. Improper insertion techniques or poor vein choice can cause issues in the future (for example: inserting a PIVC in an upper arm vein when not clinically indicated can cause damage, leading to difficulty or impossibility of inserting a CVAD in the future). An indwelling PIVC should be removed as soon as it is no longer clinically indicated, as it poses a risk of infection to the patient (INS, 2024). As PIVC insertion is so commonly used in hospitals, these risks may not be as routinely considered by clinicians, and therefore, patients may suffer.

If a patient has been the unfortunate victim of one of these risks previously, they may anticipate the next interaction to be the same.

Expectation 2: PIVC Insertion Involves Pain and Distress

There are many ways in which PIVC insertion pain can be reduced, such as the use of distraction or numbing cream, but few pain prevention interventions are practiced among the adult population. A highly skilled and proper insertion can be minimally painful for a patient, but a failed insertion or one using poor techniques can be a very painful experience.

In my own experience, I have often inserted PIVCs with comments about how shocked the patient was at how minimal the pain could be. With multiple previously painful attempts and insertions, they expect the procedure to be excruciatingly painful every time.

A common theme across the patient experience is distress, which includes anticipatory distress- more time focused thinking on the PIVC insertion than the procedure patients were in for (Sharp et al., 2023). Sharp et al. (2023) outlined the experience of young children who experience DIVA and their parents. One child interviewed for the study stated that the PIVC was the worst part about his cancer diagnosis. Patients also resorted to refusal of treatment due to multiple unsuccessful attempts in the past.

Expectation 3: Expecting the Use of Vein-Finding Technology to Insert PIVC

Several types of technologies have been created and used to aid in locating veins and performing procedures, such as 'vein finders' and ultrasound guidance. According to INS Standards, ultrasound is recommended in DIVA patients when the vein is not visualized or palpable with the naked eye (INS, 2024). Sou et al. (2017) found that patients with DIVA report less discomfort when using ultrasound compared to the traditional method of insertion. When using ultrasound guidance, a clinician can visualize the vein and the surrounding tissues, determine the location of arteries, nerves and scarred tissue, and perform the insertion whilst watching these structures. By using ultrasound guidance, clinicians are less likely to fail the insertion attempt. Ultrasound guidance, when performed by a skilled clinician, reduces the number of insertion attempts, shortens insertion time, and increases patient satisfaction (Schults et al., 2023).

One disadvantage to using ultrasound guidance is that these technologies may not be available to every unit or hospital, and they require additional training for clinicians to perform

the skill. Therefore, the use of these technologies is not feasible for every patient. Lack of resources for ultrasound use is detrimental to the institution providing care.

Patients who have had a PIVC or phlebotomy done under ultrasound previously may not always get this service again, even when facing repeated attempts due to PIVC failure, or on readmission, again due to lack of resources or lack of trained clinicians at any given point. Many hospital guidelines also suggest a regular assessment/attempt before obtaining an ultrasound to view, resulting in inconsistent use and care. These patients may expect that the technology will be used on them in subsequent encounters. However, when it is not, due to the above factors, the cycle of mistrust and institutional betrayal may be activated.

Libbis et al. (2022) investigated patient empowerment and the use of ultrasound for PIVC insertion. Despite encouraging patients who self-identify as DIVA patients to request the use of ultrasound, they found no significant increase in ultrasound use for PIVC insertion, which could be related to patients being dismissed by the clinician.

Expectation 4: Utilizing VAST to insert PIVC

Hospitals that have access to a VAST are at a significant advantage when caring for DIVA patients. Utilizing these teams, composed of highly skilled individuals, patients experience a higher likelihood of first-attempt success and a decrease in complications associated with PIVC insertion; inappropriate escalation to CVAD is also decreased (Nickel et al., 2024). Organizations also experience a decrease in supply costs. Not all hospitals have the resources for such a team, or they may have limited hours of coverage. Not having these resources is detrimental to patients, as PIVC failure can occur at all hours of the day. Suppose a hospital has access to a VAST. In that case, it may also become reliant on them and increase the likelihood of failure during after-hours, which could be unnecessarily painful and traumatic for a patient. Having a dedicated team

available at all hours is one way to ensure that patients are receiving these procedures to the highest standard, which also minimizes inconsistencies in care. A patient may be able to anticipate a skilled and easy insertion if they know a VAST member will be placing their PIVC and they can then refocus their energy on other aspects of their care.

Notably, in my own experience, the VAST has a list of tasks to complete, but they are also able to spend some extra time with the patient. This extra time is critical in finding an appropriate vein, communicating and learning about the patient and their experiences, and collaborating with patients to either help put them at ease or allow them more autonomy and decision-making when it comes to their venous access. A unit nurse often has multiple patients to care for and is responsible for all aspects of their care; therefore, they may not be readily available, making VAST an important component of the patient care plan.

Similar to the use of technologies to locate veins, a patient may expect to have VAST on every admission if they have been previously identified; however, this may not always be the case due to the hospital's resource limitations.

Expectation 5: DIVA Patients Expect Multiple Attempts to Have Their PIVC Inserted

Repeated pokes and damage to a vessel wall cause scarred tissue and eventual occlusions in the veins, making it extremely difficult to locate veins suitable for use. These repeated attempts are cyclical, especially if the clinician is not well-educated or has limited assessment skills. Even if the attempt is successful, the PIVC may not last as long due to weakened vessel walls.

Vein preservation is vital for patients with renal disease, as there may be potential for needing an arteriovenous fistula (AVF) in the future. If veins are damaged or scarred (particularly the cephalic vein) due to multiple access attempts, there may be difficulty with site selection and the maturity of a fistula in the future (Ray, 2011). The work to ensure vein preservation in renal

patients is highlighted in a project titled “Save The Vein” (STV) by the American Nephrology Nurses’ Association.

Even though patients may not fully understand the concept of preserving their veins, they may arrive at the hospital with an expectation (and trust) that the clinicians will do everything they can to reduce the number of times they are poked. However, if their last encounter(s) involved multiple attempts, they may expect their current encounter to be the same.

Needs

Needs are described as the physical and psychosocial needs of the patient that are required to create a safe and holistic care environment for them (Lewis et al., 2019). The authors note that needs and expectations do not always align with what is provided by the clinician, which is an important consideration when providing trauma-informed care.

Self-Care Needs

In accordance with best practice, the clinician has a duty to consider the patient's daily self-care needs when selecting the correct PIVC and determining its optimal location. Avoiding areas of flexion and understanding patient lifestyle are important factors to consider (Masamoto & Yano, 2020). Not only does this reduce the risk of complications, but it also allows the patient some freedom and independence that is critical during a vulnerable time in their life.

The Need for Trauma-Informed Care

Patients who have experienced trauma in both their personal lives and in medical encounters need clinicians to be trained in trauma-informed care. Trauma-informed care is the process of understanding the impact of trauma on a person’s behaviours and perceptions (U.S. Centers for Disease Control and Prevention, 2024). Utilizing trauma-informed care can help

clinicians identify patients who have experienced traumatic events and provide care that is sensitive to their needs in ways that reduce the risk of re-traumatization.

The Substance Abuse and Mental Health Services Administration (SAMHSA) describe four components of trauma-informed care, which include realizing the impact of trauma, recognizing the signs and symptoms of trauma, responding appropriately in policies and procedures, and resisting re-traumatization (SAMHSA, 2014). Doncliff (2020) outlined some additional principles of trauma-informed care. He describes trauma as having the potential to elicit psychological features that are associated with poor health outcomes, poor social functioning, and an inability to cope with stress, along with an increase in lengthy periods of mental illness. Trauma-informed care is a duty of clinicians to help promote autonomy and minimize distress.

Principles of trauma informed care include safety (providing a physical and psychologically safe environment), trustworthiness and transparency (providing an open decision-making process), peer support (mentoring, and connecting service-users with lived experience to help coping), collaboration and mutuality (levelling power differences between clinicians and patients), empowerment, voice and choice (valuing resilience, strengths and experiences of the client); and cultural, historical and gender issues (providing culturally, and gender-sensitive care).

Vulnerable Population Needs

DIVA Patients. Patients who may potentially be considered DIVA patients were found to have a higher rate of needle phobias than those without (McLenon & Rogers, 2019). With a lack of formalized pathways for clinicians to follow, and an increase predicted in the future, DIVA patients are particularly vulnerable to the detrimental effects of unsuccessful PIVC attempts

(Schults et al., 2022). DIVA patients need to be supported better in the healthcare system with set protocols and appropriate resources to care for them.

Chronic Illnesses. Patients who have experienced traumatic events in their childhood are at increased risk of developing health anxiety (Traino et al., 2023) as well as other chronic health conditions. They have underlying needs to reduce the risk of being triggered by past events. Providing trauma-informed care while investigating and acknowledging past negative experiences will be beneficial for both the patient and the clinician.

Substance Abuse Disorders (SUD). Guta et al. (2022) discuss SUD in their peer commentary on trauma-informed approaches in ethics consultations. They note that many of these patients have been subjected to abuse or trauma in their lifetime, which is trauma that clinicians often dismiss. When requiring IV antibiotics, clinicians may opt for the oral route due to a perceived risk of misuse of IV access (Guta et al., 2022). Populations who have also been labelled as 'difficult to work with' are more likely to be treated poorly and risk re-traumatization, which results in suboptimal treatment, and even avoidance of care (Rastegar & Langhinrichsen-Rohling, 2024). Challenging patient behaviours can be traced back to trauma and experiences of institutional betrayal.

The needs of those experiencing SUD go beyond the PIVC for their infections; it starts with destigmatizing their disease processes. There is an increased desire for punitive actions when using stigmatizing messages and terms to describe these patients, altering the perception of the encounter (Ledford et al., 2022). Clinicians hold biases against these patients (Todt, 2023), ignoring the previous traumas they have endured; thus, compassion and trauma-informed care are lost.

Women. Difficult IV access does not discriminate between men and women; however, the experience of men and women does differ. Important notes about women in healthcare include that female patients are more likely to have infiltration, extravasation, dislodgement, or PIVC failure (Masamoto & Yano, 2020). Needle phobia is highest in girls and women, with a particular fear of self-injection in pregnant women (McLennon & Rogers, 2018). Women have higher levels of pain and severe pain (Duztepelilar & Gural Arslan, 2014). They are also more likely to experience PTSD than men (World Health Organization, 2024). It is estimated that one in three women will have experienced gender-based violence, with many different health effects such as the development of pain disorders and poor overall health (World Health Organization, 2024). In accordance with this data, I hypothesize that a large percentage of women who fit the DIVA category have been exposed to traumatic experiences in their lifetime.

Methodology

This qualitative study employed a descriptive/confirmative semi-structured interview (SSI) approach (McIntosh & Morse, 2015). The SSI is a method for juxtaposing participants' perspectives with a given research topic (McIntosh & Morse, 2015). The descriptive/confirmative SSI is a subcategory of SSI that is used to test framework or assumptions (what is known) against subjective responses from participants (McIntosh & Morse, 2015). The SSI was an appropriate method as we sought to confirm the relevance of each of the components of the BITTEN model to the adverse PIVC experiences reported by DIVA patients. By utilizing a structured interview schedule and allowing participants to describe their experiences, the BITTEN model can be compared.

Construction of the Semi-Structured Interview Schedule

The SSI schedule (See Appendix E) was constructed around a main domain and categories. The primary domain is the experiences of DIVA patients with PIVC insertion. As the research question poses whether the BITTEN model can help explain DIVA patients' experiences of PIVC insertion, the components of the model comprised the categories (**B**etrayal, **I**ndicator for healthcare engagement, **T**rigger of traumatic symptoms, **T**rust, **E**xpectations and **N**eeds), with an additional category of Trauma and PIVC Insertion. In an SSI, participants are asked questions in the same order, and each question (called an item) is numbered; this allows each item to be analyzed as its own dataset (McIntosh & Morse, 2015).

Recruitment

Participant eligibility for participation in this study was DIVA patients with one or both of the following criteria: those with chronic illnesses, or those with a history of intravenous drug use. Additional inclusion criteria included participants over the age of 18 (as the BITTEN model was developed using adults), those with a condition requiring frequent PIVC insertions, and individuals who had experienced more than one adverse PIVC insertion experience. This study received Trent University Research Ethics Board approval #29443 (See Appendix A).

Participants were recruited using purposive sampling using online recruitment strategies. See Appendix B and C for recruitment ads. Ads were shared amongst relevant support groups (chronic illness, difficult venous access, and substance abuse disorder) and organizations. The social media sites used included Facebook, Instagram, Threads, TikTok, and Reddit.

Data Collection

A total of 18 participants were recruited for the study, and 17 completed the interview. The 18th participant did not attend the scheduled interview. The participants were from several areas of Canada [Ontario, Nova Scotia, British Columbia, Alberta], the United States of America (USA) [Michigan, Ohio, Maine, Nevada, Wisconsin, New York, Texas], Hungary, the Netherlands, and England. Most participants were women. Participants' ages ranged from their early 20s to mid-60s. Of the inclusion criteria, most participants had one or more chronic illnesses. There were no participants with a stated history of substance abuse.

Participants were interviewed via Zoom and were audio and/or visually recorded. The interviews were transcribed and lasted between 30 minutes and 90 minutes in length. Participants were asked a series of questions (See Appendix E) and relevant probes regarding their experiences with having a PIVC inserted. Participants were asked to give as much detail as they were comfortable giving and were allowed to pause or stop the interview at any time.

Analysis

Interviews were transcribed via Zoom during the interview. Each transcription was then manually reviewed against the interview to ensure accuracy and correctness. Each question (item) was coded and analyzed as its own dataset (McIntosh & Morse, 2015) using MAXQDA™ software.

Question 1: How Would You Describe Your Health?

Participants Perceive Their Health in Different Ways

Participants were asked about their overall health. Each participant described their health using a blanket statement followed by a description of the health issues they currently face or faced in the past. Of the seventeen participants, seven described their current health negatively,

using words such as ‘poor’, ‘not great’, ‘bad’, ‘not the best’, and ‘terrible’. “Poor. I'll use that word, yeah. Different disabilities, chronic illness, not really sure what, just random things happening [laughs]” [P8]

A few participants described their current health as neither good nor bad using words such as: ‘fair’, ‘decent’, ‘so-so’, ‘not so bad’, ‘mixed bag’. “Not so bad, but…Trouble being managed, if that makes sense." [P5]

A few participants discussed their current health by describing their chronic illnesses with neither a good nor bad connotation associated with it, “[…] I would describe my health as uh long-term chronic illness... Crohn's disease as a teenager, progressing to short bowel syndrome as a 35-year-old and then on parenteral nutrition for the following years, for the last 33 years.” [P1]

Only a couple of participants described their health positively using words such as ‘good’ and ‘excellent’, “It's fairly good. I do have ulcerative colitis, but I think other than that. It's not bad. It's pretty good.” [P10]

Participants Had Extensive Experience Living with Chronic Illnesses. Most participants described having experienced living with one or more chronic illnesses, which has resulted in frequent hospitalizations, scheduled infusions/testing, and a large amount of time spent in the healthcare system.

Participants Presented with Multiple Chronic Illnesses. Participants’ experiences of chronic illness included: kidney diseases, liver diseases, cancer, autoimmune disorders, gastrointestinal disorders, reproductive disorders, neurological disorders, musculoskeletal disorders, diabetes, thyroid issues, blood disorders, chronic pain, visual disorders, cardiac diseases, and physical disabilities. “[…] I'm currently seeing… Let's see, uh, pain, obviously for

my chronic pain, internal med cardiology, infectious disease, rheumatology, and I might be seeing endocrinology soon for the undiagnosed condition that I have." [P12]

Several participants described living with Ehlers-Danlos Syndrome (EDS) accompanied by postural orthostatic hypertension syndrome (POTS), specifically, "Yes. I have Ehlers-Danlos syndrome. I'm not sure if you've heard of that. […] Then I've… I have to think how to call it in English... POTS... usually, I don't know if you've heard of uh that condition, POTS?" [P3]

Participants Experienced Their Chronic Illnesses Throughout Their Lifetime. Some participants described the length of time they have been living with or experiencing symptoms of their respective chronic illnesses. Three participants described having lived with their illness for less than five years, "Umm, so I have multiple chronic illnesses. I started getting sick in May of 2020, so approaching the five-year mark now." [P4]

Two participants described having lived with their illness between five and ten years, "Um. So, I do have times of stability. But… Right now, it's been not great. I was diagnosed with EDS when I was 17-ish, so back in 2017. I got like... My health got really bad in like 2015." [P14]

Two participants described having lived with their illness for more than 20 years: "For the last 33 years [I've been] on parenteral nutrition." [P1]

Two participants described having lived with their illness since childhood: "Um, I have had chronic health problems my entire life." [P11]

Participants Held Varying Views on How Their Health Had Been Managed. Though unprompted, some participants described how they felt their health was being managed in relation to their chronic illnesses, either currently or in the past. Some participants felt their health was poorly managed either by themselves, "I have hypothyroidism, PCOS, and mental health

issues, and I don't take my meds on time a lot of times, and I don't see the doctor when I'm supposed to. So, it's infrequent that I'm irregular on everything." [P5]; or during childhood, "As a child, my health conditions were not addressed at all. I had other conditions pop up." [P6]

Some participants stated undiagnosed illnesses that persist, or the schedule of treatments they receive, "[…] I have a couple of conditions that have remained undiagnosed. The doctors are trying to look into it." [P12]

Some participants believed their health to be well managed, "I have a host of chronic conditions. So… they are... Well-managed, for the most part, but still not, you know, optimal." [P9]

Participants Experienced Mental Health Struggles. When describing their health, nine participants referred to their mental health and its current state, demonstrating the importance and interconnectedness between mind and body. Some participants described direct diagnoses (autism, post-traumatic stress disorder [PTSD], anxiety) as well as generally spoke about having mental health struggles, "[…] Um... I have autism. I do have anxiety… Diagnosed anxiety. I have PTSD." [P2]

Others referenced their mental health concomitant with their experiences of chronic illness, such as "unstable", "In the past, I have had um, serious health conditions, uh mental health has been unstable […]" [P7]; and "confining",

> […] I have a myriad of health problems. Yeah... Making my life a bit, uh, confined at home. Yeah, my health isn't uh, in my opinion, not so great. Doctors feel it's going good, according to the circumstances, but uh, yeah, it feels a bit uh confining in some days. [P3]

Despite their difficulties with chronic illness, two participants stated they remain positive in their outlook. Of these two, one participant described their mental health in a way to stay

positive and still have choice and control in the matter, **“**Because yeah, no, because it’s like, even if all these things are happening to me in my body, I can still choose to be happy with and like live my life the best I can with my adaptabilities.” [P2]

Participants Required PIVCs for the Management of Chronic Illnesses. Participants were asked about their requirements for PIVC and the frequency of these needs. Requirements ranged from being required frequently for testing and scheduled infusions, due to repeated hospitalizations, to being required only in childhood. “Currently, about once a year, um, I go in with iron infusions, which require um, an IV once a month for three months.” [P7]; “No, I've required IVs more so for testing. [P8]; “And so I get infusions like every year and a half to two years, where I'll have a set of like 12 to 16 over six weeks. Then it'll go away and then come back.” [P9]; “Over the past four years, I've been admitted to hospital approximately 70 times in the last four years each one usually I was given an IV for either pain relief, anti-emetics, or some sort of treatment they were trying on me.” [P12]; “In the past, yes, as a child, and I also had kind of a rough experience with the birth of my other child, where I was requiring uh IV oxytocin and some other IV medications. That was also kind of an unfun experience.” [P16]

Some requirements were not specified, and some participants described either currently having or having had a central line in the past, “PICC line. That's what it was. Yep, they ended up putting in a PICC line […] like my IV would blow every day and they were like, "We don't want to keep putting a new IV in your arm every day, so..." [P4]

Question 2: How Would You Describe Your Previous Healthcare Experiences?

Participants were asked to describe their previous experiences in healthcare as patients, separate from their experiences with PIVC. Answers ranged from mainly having negative

experiences to some describing positive experiences. Each experience was dependent on several factors related to the healthcare system, the clinicians, and the individual.

Participants' Healthcare Experiences were Influenced by the Healthcare System

Participants described difficulties navigating the healthcare system or experiencing frustrations related to their specific healthcare system. For example, one participant in the USA described their feeling of the system relying more on insurance companies than the care that is needed, "And sometimes…You know, it was the way that healthcare is structured in the US is a lot more fragmented and relies too heavily on insurance companies rather than doctors to actually get the care you need." [P9]

Another participant described their healthcare system as non-evidence-based, where patients do not tend to disobey the authority of a doctor; the result of this is a system in which the participant felt as though they did not have much self-agency in their care:

> "A lot of people have not much... They don't feel that there's a lot of agency for themselves in their own health and their own health decisions... And that kind of radiates out into the doctors not really giving you that space for it." [P16]

Participants' Healthcare Experiences were Influenced by the Institution

Participants described that their experience was potentially influenced by which institution they attended. One participant described not being allowed to have visitors during their treatments at their specific institution, "Also, too, oh, sorry. We're not allowed to have visitors." [P15]

One participant described experiences that have been good in one place and bad in other places, "It really depends on where you go. Some places have been great, and some places have been a nightmare." [P13]

Participants Had Difficulty Finding an Institution with the Right Specialists for Their Condition. One participant described difficulty finding the right specialist for their chronic illnesses, “Like when you're diagnosed with more like...Rare things or you need like a specialist they're not like a specialist they're not always easy to find. Or your location.” [P4]

Participants Had Adverse Experiences Occur Frequently in the Emergency Department (ED). The ED was mentioned several times as a location where adverse experiences frequently occurred. These experiences include waiting for long periods of time to get care, the busyness and noise of the unit, and poor treatment by clinicians:

> So yeah, I don't know. The ER is hard to deal with. And they don't… typically treat me that great, I feel like with chronic illness... Because they, I mean, they know me at this point, like I'm there so much, so I don't think I get like as good of treatment as probably someone who just is coming in for the first time and never goes in there. [P4]

One participant reported being forgotten about, “I've had a few instances where things have sort of gone sideways in emergency departments. I've been forgotten about. Um, they get busy, but nothing sort of major that I would say has been overly detrimental.” [P7]

Participants Had Medical Trauma from Previous Healthcare Experiences. Two separate participants from two different countries made the same statement about their experiences: “Most of the time, not great. Definitely have medical trauma from different providers and such.” [P8]; “Um. It’s varied widely. I have a team of some really good doctors now, um, but I’ve definitely had some not great experiences and definitely have some medical trauma.” [P14]

Participants' Healthcare Experiences were Influenced by the Clinician

Participants described a range of feelings related to the clinicians they have encountered during their care. Participants have both felt abused and dismissed by clinicians and confident in the care they receive, depending on the clinician they are encountering.

Abuse and Mistreatment by the Clinician. Participants described instances of abuse and mistreatment by the clinician as part of their previous healthcare experiences.

Clinicians Dismissed Symptoms and Gaslit. Several participants describe instances in which the clinicians were dismissive of their needs and concerns, despite their extensive knowledge of their own bodies and illnesses. They stated instances in which they were not being believed when seeking care related to their illnesses; they were felt to be seen as 'drug-seeking', "[…] Just because like I'm coming in and they think I'm just seeking meds or something or something you know." [P4]; incorrect about their symptoms, "[…] Usually uh.. most doctors aren't equipped to work with special patients like me. And they, you know, regularly would say Uh oh 'No, your shoulder isn't dislocated. Come on, go home.'" [P3]; and a 'waste of time':

> It's so starkly black and white. Either the providers are gaslighting you, cruel to you, um they don't believe you. They assume that you're just a hypochondriac liar and just tell you to go do yoga or lose weight instead of looking into your actual issues. Which has delayed my healthcare for years when it comes to getting diagnoses because I was dismissed, dismissed, dismissed. Oh, it's just anxiety. No, it was asthma. […] Things like that. Like a lot of my diagnoses have taken almost most of my life. Now you do run into providers who can be excellent, right? Those are the ones who get you your answers. After all the other ones have, you know, abused you. And yelled at you and calls you names and told you that you're a waste of their time, you'll never get better. [P2]

Clinicians with Poor Qualities Affected the Patient Experience. Participants mentioned poor qualities of clinicians that led to negative healthcare experiences, such as not having the time to understand their illness, not looking at the whole picture, clinicians not "comfortable" admitting they "aren't the right person for the job" [P11], not giving space for self-advocacy, and not taking into consideration patient safety.

> … And she (doctor) was like, we must get a (IV) line into you. And… I was like, okay, then that's fine, and she said to me, she's like, we'll just use ultrasound if need be, and I was like, okay, then that's fine. And she sort of reassured me. So, as you can imagine, I've got rigours anyway, so I'm not exactly still, and they're just stabbing at me, and it just felt really dehumanizing. It felt like I was like a piece of meat or something, I was just being prodded and poked. And they were holding on to my arm quite they were holding on quite tightly to stop me from moving about so much, and it just wasn't it wasn't person-centred; it wasn't compassionate, it wasn't safe it it wasn't... [P17]

Participants Had Long-lasting Effects from Mistreatment. Not only did participants discuss the mistreatment from clinicians, but also the ramifications that this treatment caused them. They described care being delayed for years, being sent home with dislocated limbs from not being listened to, severe health outcomes because of negligent treatment, and bruising from poor PIVC experiences, "And then I would be sitting with a dislocated shoulder for over three, four days before I finally could put it back." [P3]

Competent Treatment by the Clinician. Participants also described situations in which they received appropriate and competent care from the clinicians in the past.

Participants Had Positive Experiences since Finding the Right Care Team. Several participants described having negative experiences in the healthcare system before finding the

right care team. Once they obtained the appropriate care team and specialists trained to treat and care for their conditions, their experiences were positively affected, “Um… I’d say the team that I have right now has been pretty good. It’s taken a long time to like find the right doctors to kind of be on my care.” [P4]

Clinicians with Positive Qualities Benefited the Patient Experience. When describing positive interactions with clinicians, participants described clinicians who were compassionate, understanding, nice, not dismissive, had a willingness to help, accommodating, had a better understanding of their conditions, worked collaboratively with them, and were proactive in getting answers, “[…] All the doctors I’ve seen and nurses and other health practitioners have been very accommodating, very nice, understanding, and um just overall very compassionate.” [P12]

Participants’ Healthcare Experiences Could be Influenced by Their Own Knowledge or Experience

Participants describe situations related to themselves that they believed helped give them better experiences in the healthcare system.

Related to a Job or Education. One participant described having better experiences due to working in the healthcare field, while another participant discussed their educational background, which allowed them to ask certain questions, and this was a factor that might have helped the treatment they received from clinicians.

> And so I’ve been... I think I have been very lucky to be able to work with people that are not dismissive, and you know when they...When I tell them about my background in... Uh, science and my you know, microbiology degree and, you know, my...My uh, related knowledge, then they tend not to treat me like I’m stupid? [laughs] [P9]

Related to Time in the Healthcare System. Some participants discussed having increased their medical literacy, knowledge or ability to advocate for themselves simply from being in the healthcare system for so long. Having this increased time dealing with clinicians and different hospitals has allowed them to learn more about their condition and how to ask the right questions to help facilitate their care. “They’ve gotten progressively better. I don’t know if it’s because I’ve increased my medical literacy or because doctors are more knowledgeable now about my conditions and they’re more like widely known, so they don’t immediately just jump to like hypochondriac.” [P14]

Question 3: Please Share an Experience You’ve Had Getting an IV

Participants were asked to share an experience they’ve had getting a PIVC. Most participants recalled adverse PIVC experiences.

Participants Experienced Difficulty with PIVC Insertion

Participants described their adverse PIVC experiences and discussed a variety of factors leading up to the failed attempts.

Difficulty as a Result of Patient Factors. Participants described issues with their vasculature as a cause of difficulty. This included acute situations such as being dehydrated, “So, you know, trying to find an appropriate vein on someone who couldn't... Drink water for the past eight hours...All of the factors.” [P9]; or loss of blood contributing to smaller/more difficult veins, as well as situations that were related to their chronic illnesses, such as increased skin elasticity of Ehlers-Danlos Syndrome, “Due to my uh, due to the Ehlers-Danlos, the bad collagen. That usually starts bleeding just uh, yeah, half an hour of it being in there.” [P3]

Difficulty as a Result of Clinician Factors.

Clinicians Took Multiple Attempts at Inserting the PIVC Before Success. Almost every participant described situations in which it took multiple clinicians and multiple attempts to establish a reliable PIVC line, "I can't remember how many. And each of them are trying to find their own IV. So I have people poking my hands and my arms at the same time. Um, I got poked eight times. Or I'm fairly certain because, again, there's multiple people trying to do it at once." [P8]; "So I took…There were… seven nurses on call, and they each try several moments of the... would have been about 18 attempts poking a hole in me. And… They, yeah, weren't successful." [P3]

Some described needing to resort to other technologies, such as ultrasound, to find their veins; this was usually done after already attempting multiple times, "…So then they brought the IV or the ultrasound machine. Even with that, they had to try five times to get the actual IV in place with the ultrasound machine because my veins were just so bad." [P12]

When asked if their experience of multiple attempts/use of technology to find veins was a typical experience, most participants agreed.

Clinicians Tended to Follow Policies and Guidelines on the Number of Attempts. Most participants outlined a policy or guideline at their institution which states the number of PIVC attempts allotted by each individual. The consensus was two to three attempts before seeking additional help, "Um… I know for sure the doctor himself only took two attempts. Um, I'm pretty sure everyone only did two or three attempts, which is what's recommended here. So…" [P8]. When asked about overriding the policy, participants reported that clinicians they have experienced did not tend to override this, unless they were the 'last resort':

> In all of the areas that I've been in where I've had IV starts, the rule seems to be three pokes and then that's it. They're done. They have to go get somebody else. So, the only time that it's been one person trying over and over and over again was anesthesia. And that was the nine poke time. And that's because- It was a gentleman- and that's because he's it. He's the end of the line. There is nobody else to call. [P7]

Additionally, when asked about escalating to another clinician, participants stated that the clinician did this without needing to request it. When needing to exceed the allotted number of attempts, one participant described consent being obtained before this: "Yes, they asked me if I wanted to continue. Yes, I did want to continue. I just knew that the IV would be better for me than the subcut line." [P12]

Clinicians Could be Dismissive. Participants described situations in which being dismissed by the clinician was a factor in their experience: "They were like 'Well, you just got to get [the PIVC]. So just sit and deal with it.' Like, 'Well, it hurts. Can I get somebody that knows what they're doing?' 'No, you just got to do it.'" [P5]; "I feel sometimes a bit dismissed that I'm not believed. When I say, 'You know, sometimes it takes the IV team'". [P7];
"So, one of those three [experiences], and I don't remember which one it was. I told the nurse, 'Do not past my wrist. Do not try to put anything in my hands. And she went in… Here [shows top of wrist] … And... damaged the nerve. [P9]

One situation mentioned by one of the participants involved a failed PIVC insertion for a CT scan in which two clinicians checked the PIVC, and despite the participant stating it was causing pain, CT contrast was injected anyway:

> ...And I said to her, I was like, "It doesn't feel quite right." And she was like, "No, I'm getting blood back." And like it's "You know, it's doing everything that it should do. It

> looks fine." And she put a bit of water through like she flushed it, and she was like it feels fine. I was like "No, that flush didn't feel right." But she only put like a little tiny bit through, so like it didn't have a chance for like, it to expand or anything. Or cause any burning or tissueing or anything. […] And so, I went round to CT and because they were giving me contrast and the contrast goes in at quite a high speed. They're really religious about testing the cannula. And he took one look at it, and he said, "That's not in place properly." So, we sort of undid the dressing and sort of wiggled it about and did whatever he did with it. And then flushed it. And I said, "Oh, that's stinging." And he was like, "Are you sure?" And I was like. "Well. Yes, I'm sure." And… he had a quick look at my arms, and he was like, "Oh, you've got no other veins, and we're behind schedule." […] And… we started the scan, and they do the bit without the contrast, and he came in for the contrast bit—because he didn't trust the cannula. And lo and behold. When the contrast went in, my arm blew up and went rock solid. Because it wasn't in my vein. It wasn't even properly in my vein. But he basically told me to suck it up, but he didn't even trust it. And I'm like, well, why didn't you just put in one at the start? You know, and… It just… like it was a really horrible experience. [P17]

A proposed 'ego' from the clinicians was mentioned as well, with statements about letting them do their job: "I have to think hard and long when it comes down to IVs on the amount of people or experiences who have not shot me down and told me that I should let them just do their job." [P6]; or believing they can obtain the PIVC even if it was beyond their skill set,

> And I tell them every time that they should call somebody from infusion because I'm a hard stick, and they're so confident every time. "Oh, I'm sure I can get it". And they might try, like they do like the wrap my arms in warm blankets, and they like tap all over

> my arm trying to find something, and they'll go to try, and they'll miss, and they'll go, "Okay, you were right. We're going to call infusion. [P13]

This gaslighting and dismissive nature often occurs after the participants have described their past venous access issues to make the encounter easier for all parties involved, "You know, and it just it's... it's also really invalidating as well. Because they ask you, how does it feel? And it's like, well, you know if I'm telling you [the PIVC] stings or it burns and you're going 'Well, it'll do just suck it up.'" [P17]

Some Clinicians Lacked the Skillset. Participants again described the multiple attempts it had taken to establish a reliable PIVC, going through multiple clinicians and knowing that it likely would not be successful with the first person they saw. They described moments of poor technique, "There was a lot of like sawing back and forth trying to get it into a vein." [P13];

> But what ended up happening was… That phlebotomist was nowhere near as skilled as the last one. And what I was told afterwards is my vein kept rolling away from under the needle. And they did promise me to try and do it from one poke. So, what, what... I can't remember if it was a he or a she, but what they ended up doing was uh keep the needle under the skin and just maneuver it around to try and hunt down the vein that was rolling around. [P16]

Participants described safety concerns as a result of this poor technique as well:

> …And then she [medical resident] took the gelco out and then put the stylette back in and then went to do it in a different place. And I had to say, "Stop. You're not using the same in site as you used last time. Do you know what the end of that looks like after you've tried once you've threaded, you've like feathered it, not going in again". Plus, I said, "It's dirty. It's been through my skin". And she kind of went [makes confused face]? [P7]

Despite these concerns, participants mentioned that when clinicians failed their attempt, they often sought someone else to attempt it without being told by the participant. Additionally, some participants noted that not all their experiences have been negative, and clinicians who were patient and listened to them were often more successful than those who were not.

> But I mean, some are really, really patient and really compassionate, and you know, people who take pride in their work and people who do it because they want to provide good care, like, you know when you come across those people, you know, you feel it in the care like it does make the difference. [P17]

Participants Experienced Strong Emotions About PIVC Insertions.

Participants described a variety of strong emotions and feelings associated with these negative experiences, which included: fear, anxiety, loss of control, frustration, exhaustion, anticipating failure, feelings of unimportance, worry about consequences of not getting the PIVC, and using humour to cope: “I’m not doing anything wrong. But… it feels like I am, you know. I…Uh. I can’t make it work any better. I can’t will my way into it behaving any better.” [P11]; “And I’m looking at the clock ticking away, thinking this procedure is only supposed to take 15 minutes start to finish. I have now backed up the rest of the day. I’m feeling guilty that you know I’ve caused this huge delay in the OR because they can’t get an IV on me.” [P7]; “I’m frustrated, sad, […] wondering what’s going to happen if they don’t get the IV, you know that situation. I’ve done the prep, and what happens now if they don’t get it? […] Do I have to do all of this again or...?” [P10]; “… And I’m always just like. I anticipate it’s always going to go badly.” [P15];

> So I was still hallucinating things a little bit. I was still in a really bad mental place, I was shaking. I wasn’t really in control of myself in a lot of ways, but between the nurse being very skilled, having my husband with me, and also having uh the clinic’s nurse trainer do

kind of a guided meditation thing with me as we were doing this, I managed to not completely spiral out, even though I could feel my brain wanting to go that way. [P16]

This participant also described their experience as traumatic:

"And… they eventually did have to go with some oxytocin and some other medications. So, it was good to have that access, but I didn't need it for like the first 13 or so hours that I had it in me, and it was really kind of traumatic." [P16]

They also discussed their fear associated with having a PIVC from their hospitalizations as a child:

And… I think… I think because I was already having that kind of fear in me. After a while my parents, if I was really, really badly misbehaving, my parents would threaten me that "Well, if you don't start behaving, they'll take you to the doctor and they will give you they will uh put sedatives in you via IV' and they're just like put me right back into a place because I was so terrified of having to do that. [P16]

Another participant, contrarily, discussed having few emotions associated with their experience from being ill as a child: "[…] I mean… I like, I've always been terrible [veins] like, ever since I was little, like, I very quickly learned not to be scared of needles because I was always so difficult to get blood from." [P17]

Participants Experienced Negative Sequelae of Adverse PIVC Experiences

Several participants described physical and emotional damage because of these poor experiences, ranging from bruising and nerve damage to completely wanting to avoid having bloodwork or a PIVC: "…. And I was left with massive black bruises on my arms for about a month." [P13]

Participants Knew Their Own Body

Some participants discussed understanding their own body and its vasculature, sometimes sharing this information with the clinician as a way to advocate for themselves and mitigate potential negative situations. As one participant pointed out, they would offer some insight about their health and vasculature, but it was at the discretion of the clinician to use it: “[I will] Like tell the nurses and be like, ‘Oh, like right there they say there's lots of valves, so don't try that one. They had success here, like do this one,’ or whatever but it's like really I don't know, it's the nurse's discretion as to what they want to do, right? [P15]

Question 4: Have You Had a Different Kind of IV Experience?

Participants were asked to describe a different IV experience they have had; they were either prompted to tell a positive story or a negative story, whichever was the opposite from their previous answer. This was done to juxtapose and contrast positive and negative experiences.

Participants Had Positive PIVC Experiences

Participants described their positive experiences based on healthcare workers' demeanour, skill level, and the procedure itself. Participants had positive experiences when the healthcare worker believed the participant that they usually have difficulty obtaining a PIVC, used appropriate technology immediately rather than multiple unsuccessful attempts, identified when the task was beyond their skill level, understood particular information or details vital to the individual and their diagnoses, communicated openly with the participant on preference and past successful attempts, were calm, patient, confident, skilled and took their time assessing the veins, and were successful on the first or second attempt: “Um.. yeah, I mean, I’ve definitely had nurses that have been like really good about it and they’ll ask me like oh like you know “Which, which arm is better? Do you have a spot that’s better?” [P2]; “I have had good ones. Mostly emerge

nurses at a big center that I go to in [location] who get it on like the second try. And it is… a relief. I'm always pleasantly surprised. Um I'm always amazed at their skill. Um, and I tell them, you know, 'You are amazing. You're really, really good. Thank you for that.'[P7];

> Any IV I've had to get in CT has been amazing. Maybe it's because they're using a tiny little needle. But they always, I don't know how they get it in my hand without blowing anything. But they always get it first try. It takes them like two minutes. And it never hurts. It never bruises. I don't. They're magic of some kind, I think. [P13]

Participants Had Lasting Effects from Negative Experiences

When answering this question, some participants discussed additional negative experiences they have had getting a PIVC, with more examples of being dismissed: "…And I'm like, 'Can we just start with the IV placement or the ultrasound placement?' a lot of the time they say no. Okay, and usually they'll get one out after three blows and then they've blown it even using ultrasounds before. [P2];

> […] my hands are awful and like so many people insist like, "Oh, well, they want it in your hand. We're supposed to put it in your hand", and I tell them like "You're not going to have a good time trying to get it in my hand." But they, "Oh, well, that's where the doctor wants it." [P13]

Despite having some positive experiences, participants noted the lasting effects that having numerous negative experiences had on them. This ranged from avoiding a particular clinic, to anticipating failure: "Yeah, so I have had good ones, but there's always that little bit of trepidation about [makes face] I hope this one sticks." [P7]; " […] I felt… threatened honestly... And I do know what being threatened feels like. It affects… how I am mentally with this office still to this day overall." [P6]

Question 5: Thinking About Your Most Recent Bad Experience with Having an IV, What was the Reason You Went to the Hospital?

Related to Chronic Illness

Most participants stated that their most recent bad experience with having an IV was related to their chronic illness such as scheduled infusions, blood transfusions, and seeking care in the ED.

Unrelated to Chronic Illness

The remaining participants stated their most recent bad experience with having a PIVC was not related to their chronic illness, such as surgery, birth, or imaging.

Question 6: Was This the First Time You had Gone to the Hospital for this Reason?

Not The First Time

Eleven participants stated this was not the first time they had been to the hospital for the reason mentioned in the previous question.

The First Time

Six participants stated this was the first time they had been to the hospital for the reason mentioned in the previous question.

Question 7: How Do You Feel About Getting an IV?

Participants Experienced Adverse Emotions in Anticipation of Prospective Procedures Because of Past Experiences

Participants experienced anxiety, fear and anger related to multiple attempts. Almost all participants described some anxiety or fear related to the procedure. Some of these emotions were related to past experiences of failed attempts, while others were related to whether the clinician would be responsive to them. One participant stated their anger of having to go

through the ‘traumatic’ process of being poked multiple times every time they sought healthcare due to the clinicians not listening to them:

> […] It's not that the IV itself bothers me. Because I don't care about getting stuck. Like I can watch them stick needles in me all day. I'm a human pincushion at this point. But like. What annoys me about it is they don't listen. They don't trust me. They won't put my safety in mind and my vein safety in mind. And I just feel like I'm being gaslit. So, I feel like I'm just setting myself up to be basically abused in these situations. And it can become kind of traumatic, and it makes you nervous and it makes you scared because you're like, oh my gosh, I'm going to have to go through all this unnecessary pain just because nobody believes me. Am I scared? Yeah, I'm not scared, but I'm mad. I'm mad. [P2]

Participants Experienced Anxiety and Fear of Pain. Fear and anxiety of pain and anticipating pain was prevalent in the interviews as well: “And I don’t expect them to not hurt. But it shouldn’t be like trying to jab a pen in someone’s eye.” [P6]; “For example, I have a pain infusion tomorrow and I’m not worried about the actual infusion. I’m worried about the process of getting the IV.” [P12]; “I’m usually just anxious that they’re going to screw it up again and I’m going to end up with multiple holes in my arms.” [P13]; “Oh, absolutely terrified [to get a PIVC] like uh that was actually the reason I started seeking some more severe therapy for this.’ [P16];

> Um…I—I do get a bit anxious. Because I wonder… How difficult it’s going to be. You know, I’m like, how difficult is it going to be today like you know because some people get can become quite aggressive with me because they can’t find a vein. And they sort of take it out on me. [P17]

Participants Experienced Helplessness. Some participants expressed the fact that they felt helpless in the procedure; that there was nothing that they can do to make the situation better: "So just like knowing that it's going to take a while and I'm just laying there in pain and I can't do anything but lay there and wait. There's nothing that I can do to help it along, so. I don't know, I guess just the anxiety of just being helpless and knowing that I have to sit there and take it.' [P4]

Participants were Resigned to PIVC Insertion as Something They 'Have to Do'

Some participants suggested that the procedure was perceived as another task they had to get through in order to receive care that they needed: "Uh, usually I'm just, okay, let's get it over with. That's usually the reaction I have. I don't really feel… feel sad or angry or whatever. I just have you know... Okay, I have to do it. And that's about it." [P3]

Participants Devised Interventions to Gain Back Control of the Experience

Some participants discussed interventions that they used to help make the situation go better. These interventions were developed over time based on their previous experiences. Some of the interventions that participants stated they used included drinking more fluids prior to seeking care if able, bringing their own warmers, using relaxation techniques during the procedure, and planning a reward system for following through with the procedure: "I honestly plan a reward system. So, like I went to get a blood draw yesterday. So, I planned that afterwards, I'm going to go to my favorite breakfast place because I need some kind of reward system of 'I did it' and something to look forward to." [P5]

Question 8: Where Do These Feelings (About Receiving IVs) Come From?

Previous IV Experiences Informed Participants' Feelings

Participants stated that their feelings towards receiving a PIVC stemmed from past experiences occurring in both adulthood and childhood. Each experience has further built upon these feelings and continued each time they went to receive healthcare. There had been anticipation, fear and anxiety leading up to the procedure: "It's the repetition for sure, because it's just you go in, you know, you're not going to be believed no matter what you say. You know they're going to stick you three to five, six times. You know, you're going to be covered in bruises. It's going to hurt." [P2]

Question 9: How Do You Physically Respond to Getting an IV?

Participants were asked how their body physically responds to receiving a PIVC. Responses ranged from no somatic response to extremely adverse somatic responses. Participants offered coping strategies that helped in these situations.

Participants Experienced Adverse Somatic Responses

Participants with negative responses to receiving a PIVC included anxiety, nervous tics, overheating, sleep disturbances prior to the procedure, and an extreme panic attack which triggered incontinence at the time of the procedure. One participant reported such a strong emotional panic and helplessness from the procedure that they felt like dying was the only way out of it:

> I had a full-scale panic attack. To the point of the point of like complete loss of touch with reality, complete derealization uh. And I just had like one long thought that I could not get out of the thought loop and that the only way that I can get out of this experience is if I

> die. So, it wasn't like a suicidal imagination or anything like that. It wasn't that I have to kill myself it was that I just have to stop living, and I have to just not exist anymore. [P16]

Participants Experienced Neutral Somatic Responses

Despite some participants stating that they physically responded very little or not at all to having the PIVC placed, they reported emotional responses and negative anticipation for the procedure: “I mostly just sit there and watch and wait for things to go wrong.” [P13]

Participants Had Strategies to Help Cope with Experiences

Participants were asked, as a follow-up question whether they preferred to watch or look away while the PIVC is being inserted. Most participants stated that they preferred to look away, while others preferred to watch so they could see the technique or get a visual indication of success. Although unprompted, some participants offered coping strategies that included distraction in the form of headphones/music, humour, having a support person present, focusing attention on other things in the environment, relaxation through guidance or flexing/rotating feet, engaging in light-hearted conversation with the healthcare provider, and maintaining positive thinking.

> Um…I don’t really like flinch or wince in pain or anything like I’m pretty… unfazed by it, but I definitely look away. Like I usually stare off in the opposite direction and like focus on something else. I’ll stare off and look at like the cabinet on the other side of the room, or like if my husband’s there, I’ll like make eye contact with him and he’ll like make a silly face at me or something like [laughs]. [P4]

Question 10: Are There Other Experiences in Your Life That Make You Feel This Way?

Participants were asked to try to relate the feelings they get when having a PIVC to other experiences in their lives. Three participants stated there was no other experience that warranted similar feelings and physical responses.

Participants Expressed Similar Feelings Related to Other Healthcare Experiences

The majority of answers to this question were related to other healthcare experiences or medical procedures that participants have undergone. Participants again expressed the feelings presented in the previous question, such as anxiety. Examples of these experiences included getting a nasogastric tube placed, having dental procedures, or having blood drawn: "[…] a little bit anxious now every time I go for my blood work. […] I don't know who the blood tech is going to be today. Are they going to do a good job? Is it going to hurt? […] And then I just feel like I just… I wish I didn't have to do any of it. [P15]

Participants Expressed Similar Feelings Related to Experiences Separate from Healthcare

One participant stated that they have similar anxiety when driving a car. Another participant stated that they are generally an anxious person. One participant mentioned that during PIVC insertion, they were somewhat easy-going; they attributed this to their relationship with their partner and how they can be quite easy-going in their relationship.

Question 11: Are You Afraid of Needles?

Most Participants were not Fearful of Needles

Thirteen out of the seventeen participants stated they had absolutely no fear of needles. This was a particularly interesting finding as it was hypothesized that a large number of DIVA patients might also have needle phobia.

Some Participants were Fearful of Needles

Four participants reported having a needle phobia. Some of these participants elaborated and stated that they could undergo most other procedures associated with a needle but were more specifically fearful of the PIVC needle. Some mentioned having tattoos and not having any problems with getting those done; others stated no issues when it came to donating blood, receiving vaccinations, or other injections. Contrarily, some were fearful of all needles; the fear of pain, the fear of upcoming PIVCs/injections, the fear of a needle penetrating deep into the body tissues: "Yes, I've always been a bit apprehensive about needles. In fact, that's something I was working with my therapist about. Before this all started, I would be so scared of needles, I would worry about a blood test that hadn't happened yet." [P12]

Question 12: As a Child (or Any Other Time in Your Life), Have you Experienced Any Form of Trauma?

Participants were asked about trauma they have experienced at any point in their lives. Prior to the following three questions, participants were reminded that they did not have to answer any question or elaborate on anything that made them uncomfortable.

Participants Have Experienced Trauma Throughout Their Lifetime

Sixteen participants indicated having experienced some form of trauma during their lifetime. These types of traumas included: emotional, physical, sexual and medical. Some participants stated having experienced trauma but did not feel comfortable elaborating.

Participants Experienced Emotional Trauma. Participants described situations in which they experienced emotional trauma. These included bullying, abuse as a child, death of a loved one, experiencing trauma as a result of being autistic/neurodivergent, and abandonment: "I

define it as trauma. I don't know how other people would, but I was bullied unmercifully all through elementary school and high school." [P7]

Participants Experienced Physical Trauma. Participants described situations in which they experienced physical trauma. These included abuse as a child and adult by trusted individuals, and car accidents: "Sure. Um. I've had…A variety of different medical trauma and some physical traumas as a child." [P11]

Participants Experienced Sexual Trauma. Participants described situations in which they experienced sexual trauma. These included abuse as a child and adult by trusted individuals.

Participants Experienced Medical Trauma. Most participants shared having experienced medical trauma at some point in their lives. Some situations were elaborated on and included trauma related to experiencing symptoms of their illness, having flashbacks of traumatic surgeries and hospital stays, being mistreated as a minor in the hospital system, experiencing traumatic and vulnerable medical procedures, experiencing traumatic emergencies: "[…] I would just say like medical trauma as far as like I have like some PTSD kind of stuff from like surgeries and things […] I've had like flashbacks of like things that have happened in hospital situations that I've been in." [P4]

Question 13: Have You Ever Witnessed What You Would Consider a Traumatic Event in Your Lifetime?

Participants Have Witnessed Traumatic Events in Their Lifetime

Nearly all participants agreed to having witnessed traumatic events in their lives. These events included events related to careers, family members, medical experiences and external sources.

Participants Witnessed Trauma in Their Careers. Participants who worked in healthcare described situations in their job that they would consider traumatic. These events included emergencies, death, suicide, and family coping: “Yes, I worked in acute inpatients... So in a mental health ward. I had to cut a ligature off someone's neck. And obviously being in that environment can be quite triggering. You know, seeing the restraints and... all the other things that happen.” [P17]

Participants Witnessed Trauma with Loved Ones. Participants described traumatic events in which their family members experienced a medical event (stroke, broken bones, car accident, dementia): “[…] But when I was like maybe 10-ish 11-ish? I was present as my grandfather was having a stroke.” [P16]

Participants Witnessed Trauma During Healthcare Experiences. One participant described events they witnessed while receiving healthcare that they would consider traumatic. These events included repeated events of the death of a roommate while inpatient:

> “[…] And they were overflowing or at capacity, and they put a dying woman in the room with me. And I just casually heard the nurses mention, oh yeah, she just passed away. […] I just realized. There's someone who's dead right next to me and […] their life just ended. And that's happened a couple times.” [P14]

Participants Witnessed Trauma Within Ones’ Own Life Experiences. Participants described additional life experiences they considered traumatic. These events included a bomb threat, house fires, and witnessing someone in perilous events [lightning strikes, drowning]: “I mean, my school had a bomb threat and how it was handled was traumatic for a lot of us.” [P8]

Question 14: Do You Believe There is a Relationship Between These Events and Your Current Health?

Participants were asked to try to draw a connection between the traumatic events they have experienced/witnessed and the state of their current health. Two participants stated a direct relationship between their traumas and their current health; these traumas were a direct cause and effect (medical symptoms and a car accident). The remaining participants either disagreed or had mixed thoughts on the matter.

Participants Believed 'The Body Keeps Score'

Several participants referred to the idea of 'the body keeps score' or the mind-body connection, in that many traumatic events can manifest as physical symptoms:

> I know for a fact there is a correlation between ACEs and adverse childhood experiences and your health there's actually scientific proof of it um like the body holds on to trauma um. So absolutely, like my trauma has physically impacted me. You know, I've been through. So, so much. I've survived so, so much like I would be… Ignorant to say it hasn't physically manifested in some way. [P17]

Participants Believed 'The Body Keeps Score' was Only a Piece of the Puzzle

Although many participants referred to the mind-body connection, they also emphasized that it is not the whole picture, but rather a piece of the puzzle. They stated many of their illnesses or disorders were genetically predisposed or had a different etiology, separate from unresolved trauma. In the case of PIVC insertion, many participants did not necessarily see the connection between trauma and poor vasculature. These answers were important for this study as they helped better understand the complexities of DIVA patients.

> …Now, could trauma have perpetuated some of my autoimmune conditions? Absolutely. Absolutely. I would agree with that. Because high levels of cortisol and stress predispose anyone who's predisposed can unlock genetic keys to obviously developing autoimmune conditions. […] So, could trauma have contributed to those things? Sure. So, I definitely agree that Mind-Body is a real thing and it adds a nuanced, complex layer, but it's not the answer to the whole picture. [P2]

Question 15: Where in the Hospital do You Usually Get Your IVs?

Participants Received Their PIVCs in a Variety of Locations

Most patients reported receiving their PIVCs in the hospital, specifically in areas such as emergency departments, day surgery/preoperative areas, and infusion clinics. Some participants received their PIVCs in outpatient clinics or through home care.

The Location Itself was Not as Important as the Clinician in that Location

When asked about the importance of location, most participants did not believe that location was critical; instead, they stated that their experience was more dependent on the clinician's skill. It was more important to the participants that the clinician was not rushed and could take their time in places which provide more privacy. Many participants discussed the fast-paced environment of the ED, where nurses are skilled but often do not have enough time to assess patients properly; ironically, this was often when participants needed quicker, more efficient care due to being ill enough to seek care in the ED.

> Um… I mean, I think getting it in the emergency room definitely makes it… makes it a little harder because I'm more, I don't know, I'm feeling like I'm needing it more urgently. Obviously, I want those meds quicker. I want to get help faster. I want the pain relief, so I want the process to be like sped up quick. And I know that that's not typical

> for me. Like I know that it takes a long time for me to get an IV. So, like going into it I just know like, oh my gosh, it could take like an hour to get an IV and then medication. Like I'm going to be waiting hours still before getting pain meds or whatever so. Yeah, like… going into emergency room, like knowing that an IV is going to take forever to get started on me is kind of crappy? [P4]

Question 16: Do You Have a Preferred Location for Receiving the IV?

Some participants touched upon this in the previous question. However, this question poses whether they had a specific area of the hospital or clinic that they preferred for receiving the IV. This question focused on the environment in which patients received PIVCs and inquired which environments were more comfortable and less triggering for them.

Participants Had no Preference for Location

Five participants stated that they had no preference for the location.

Participants Had a Preference for Location Based on the Clinician's Care

Other participants stated a preference for the location where they received their treatment most frequently due to feeling more comfortable with the clinicians; "I prefer to go to [location] just because the staff is a little bit more compassionate. And they are um… they kind of know me by now." [P12]

Participants Had a Preference for the Location Based on the Environment in the Location

Some participants reported a preference based on the environment in which they were when a PIVC was inserted. Clinics were described as more comfortable locations as opposed to the ED for one participant, though another participant preferred the ED as they found the

clinicians were more successful inserting their PIVC: “Usually in the ER. They usually have the most success there.” [P12]

Participants Had a Preference for Location Based on Hypothetical Factors

Some of the patient preferences included hypothetical locations or environments, such as an area that is “less medicalized” [P16], and somewhere where they have “plenty of time” [P4] for the PIVC insertion.

Question 17: Is There Anything About the Environment That can Affect Your Experience?

Environments That were Noisy or Busy Could Negatively Affect the PIVC Experience

Most participants who reported the environment having at least some influence on their IV experience stated that environments that were busy and noisy tended to have the most influence. Examples were encounters in the ED, where the clinician was busy, there was a lot of background noise and sensory stimulation, and the unit was filled with multiple people. Participants described the ED as “chaotic” [P2], “hectic” [P3], “distressing” [P1], and “stressful” [P4]. These encounters increased anxiety for participants both in their IV experience and with general anxieties such as social anxiety: "Usually if it’s loud and chaotic, I find I am more apprehensive about getting the IV rather than if it’s a calm you know, people aren’t rushing around. Usually if it’s more relaxed, I’m better about getting the IVs. I don’t feel as stressed.” [P12]

One participant discussed that having an environment like this when feeling ill increases their stress:

> …And a lot of the ERs are very loud. They’re very chaotic. You’re having anxiety already because you’re already there because you’re sick. Or you’re just trying to get

> care. And it's just, it's a highly overstimulating, unpleasant environment to be in. And it does frame up your anxiety up even more, which does not help. When you're getting poked and prodded and people are blowing veins and you're getting bruised up. [laughs] [P2]

Another participant discussed that environments such as the ED, due to the busyness, prolong the time it takes to get a PIVC and get treatment as opposed to a calmer location: "[…] So that might affect uh and it not really affects my uh my mood or anything uh it's just… usually a longer waiting time for getting your IV." [P3]

One participant stated they usually assess the environment when seeking care and will leave if it is a 'bad night': "Yeah, well, well, for me, if I spend 10 minutes looking around and I evaluate the unit, I'm usually going to walk out if I see that it's a bad night." [P6]

Two participants reported that having too many people in the room at once influences their IV experience: "Sometimes having a lot of the nurses standing around makes it worse. I was like, I know they're trying to be helpful. But at the same time, it's like, I feel they're all staring at me I feel even worse. There's so many people standing here. That makes it worse." [P10]

Participants preferred locations that were more welcoming, controlled, relaxed, and quiet. One participant's experience is benefited when in an area with more plants to look at and sit by, "Yeah. We have like a little garden area and I definitely prefer being over in that area versus um, regular rooms. Some, some people prefer to just be in a room, and I don't like that. I prefer being by the plants." [P11]; while another's experience is affected by the ability to respect privacy and modesty:

> Yes. Yeah. They have to understand that I expect a level of modesty. […] And sometimes the atmosphere will not want to give me that. Um, and that is something that

> you shouldn't have to fight for. I get it, hospital gowns are short sleeve. [shakes head] That doesn't work for me. Um so… If they're… If they're considering doing this on the side of the hallway with a short sleeve gown, I'm not going to allow them to do it. They find me a room, or they'll find me some blankets, or they find me both before they put in the IV. [P6]

Participants Felt Like They Are a Burden in These Locations. Some participants discussed sometimes feeling as though their needs were not as important as others in these noisy and busy environments; that being there and needing care was increasing the workload of an already busy clinician: "I think it definitely affects them. Like, I think they have like other things in the back of their mind that they have to do… And so, they're spread so thin. Just another… I'm just kind of another added like stressor for them?" [P12]; "I think definitely being busy makes it worse because again, I'm like, I'm going to take their time and look at all of these people that have to be helped still or have their appointments." [P8];

> Yeah, the same thing. It's like what's going on, you know are they running a trauma in one room and I'm just sitting there waiting for my IV because I need fluids or something like that, or you know, the police have brought in somebody that's really combative, and it's like, no, no, you pay attention to them. I'm fine. I'm fine. You know, and I'm just I'm kind of living life in their shoes because I know what's going on and it just like, oh, I hope they get it in, in one poke because then they can go on and, you know... Go look after somebody else. I sort of disregard my own importance in that and just, oh yeah, just do it and then and then go. I can watch my own flow rate and, and, you know, I'll let you know if it's not good sort of thing. Um. Yeah, that increases my anxiety as well. [P7]

Question 18: Is There Anything About the Procedure That Makes You Uncomfortable?

Participants were asked to think about the procedure of inserting a PIVC, from when the clinician walks into the room until the PIVC is placed, and identify any step that makes them uncomfortable.

A Lack of Communication with the Clinician Could Make the Experience Uncomfortable

Upon meeting and interacting with the clinician, if they do not properly explain what they are going to do, do not ask consent, do not ask for or respect their input or do not communicate with them appropriately, this can make the participants feel uncomfortable: "Um… Well, like I said, if it's you know if—if it's explained to me if uh, everyone's transparent and lets me know what's going on, why they're doing it, then yeah, no, I don't have usually any issues." [P1]

In addition to communication, the inserter technique influenced participant comfort. Many participants reported discomfort when the clinician used poor techniques to find a vein:

> Um…I mean, it does. Kind of suck when they're like digging around in my arm like if they… put the needle in and they don't get the vein right away, and then they're kind of like just wiggling it around. […] And there trying to find the vein and they're not using, you know, the ultrasound yet. Like they're just, yeah, like fishing around. Because I always end up with a giant bruise. [P4]

Physical Discomfort Associated with the Procedure Could Make the Experience Uncomfortable

Participants reported physical discomfort during the procedure, including the tightening of the tourniquet and pain associated with needle insertion. One participant stated that their positioning and being able to change position if needed to accommodate their needs associated

with their chronic illness was important to their experience. In addition to this, they also reported discomfort when inserting the PIVC into their antecubital.

> Yeah, just lying still for so long. That's…Yeah. Because of my ADHD, I can't sit still for very long and do have to have to do something. But also for my Ehlers-Danlos, the more I sit still, the more my joints start to ache. So I have to, yeah, I'd like to be able to walk around, uh or- or yeah, change from sitting to lying down or standing. Uh, for moments when they do stick it in my elbow, overextending my elbow is quite problematic. My elbow joint can dislocate when overexerting. [P3]

Anticipating the PIVC Insertion Attempt Could Make the Experience Uncomfortable

Many participants reported a discomfort with the anticipation of having the PIVC inserted and fear of failure and multiple attempts. Some participants discussed that each step in the procedure increased this anticipatory anxiety and discomfort: "... You know, not like... I'm nervous that they're not going to get it, but it's not like I'm nervous for the IV to be done, does that... Does that make sense?" [P10]; "It just adds to the nerve of anticipation of 'it's coming'. Okay, one more step. Okay, it's coming. And are you going to put the band on me and then scrub it? And then wait a second and then stick me on it. It's just the anticipation of it's coming." [P5]; "No, I mean, the rubbing alcohol, like the, sterilization, always freaks me out a bit because I know that the needle's coming right after." [P12]

Losing Power in the Experience Could be Uncomfortable

Participants were probed about any situations in which they had been held down to have a PIVC inserted. Most participants denied having been held down. Of the few that mentioned being held down, most responses were events that occurred during childhood, with some in adulthood

and included receiving other types of needles, such as injections: “Okay. How did that (getting held down) make you feel?” [K] “Powerless? Yeah, powerless, absolutely, terribly powerless.” [P6]

Question 19: Thinking of an IV Experience, Do You Feel That the Healthcare Professionals were Responsive to You?

Clinicians were Responsive When They were Collaborative

Most participants endorsed that most of the time, clinicians were responsive to them regarding their needs, listening to them and working collaboratively to establish an IV site; however, despite this, they still reported situations in which this was not upheld:

> Most of the time. There have been instances um where... Well, I’ve always been the kind of person to say “Okay, just tell me when you’re sticking the needle in because I can prepare for the, you know, for the little jolt of pain”. At that point, and uh yeah, most nurses are, “Okay, yes, I will,” But there have been nurses who have uh yeah who weren’t that accommodating in that sense. [P3];
>
> Sometimes they’re like, “Okay, we’ll calm down. We’ll take a break. Let’s do this. Let’s try this. Let’s try this”. And sometimes they’re like, “No, we just got to get it done. Just do it. Just sit here and do it. You’re fine.” [P5];
>
> The ones that make me feel comfortable are the ones like, ‘What are you doing, like what are your career, job, whatever’ and try and like get to connect with you a little more and be like, I’m—and like when they’ve missed my IV they’re like, “Oh, I’m so sorry. We have to try again.” And like actually respond to the situation that’s happening. [P8]

Clinicians were Not Responsive When They were Task-oriented

Some participants recalled memories of interactions with clinicians during which the PIVC insertion became very technical and task-oriented. The clinicians did not communicate openly with them, nor did they obtain consent. In addition to this, the clinicians inserted the PIVC with little or no human connection:

> Um… The ones who weren't responsive were very, 'I'm going to poke you' not really asking consent all the way along, like they'd ask at the beginning and then they'd be like, 'Oh, I'm just doing it'. And then if they need to move, they're like, 'Oh, I'm doing this one now'. And not really… communicating and not being personable either. [P8];
>
> They're not really listening to me and don't want to accommodate my questions. So they will just stick the needle in don't say anything and then they, then they would get mad at me for flinching. Because of the pain jolt which I couldn't. Prepare for. [P3]

Clinicians were Not Responsive When They Let Ego Get in the Way of Care

Some participants reported instances when the clinician was not responsive to them, and suggested it may be due to the clinician's ego. This included feeling as though the clinician knew better than the patient, did not require the technology that the patient stated they needed, or attempted to insert a PIVC that was outside of their skill level:

> [pause] Often, no. I mean, they're nice about it, right? But they let their egos get in the way. And they assume that just because they've done it thousands of times, you're going to be like everybody else, even though you know that you're not. 'Cause history repeats itself. And… I wish I would just be believed. [P2]

Patients Feared Retaliation When Clinicians were Not Responsive

One participant discussed the reality of being a long-term patient with frequent infusions. Having to go to the same clinic for their infusions, they feared retaliation from the clinician if they said anything negative about their experience.

> But I was just like, I was just like, I don't know. What am I supposed to because also too like you know, in the reality, I have to go back there every week. So if I start pissing off the nurses. What would that look like for my treatment? Or like, if I'm like, I don't want her to do it. I want somebody else to do it. You know what I mean? [P15]

Another participant reported an instance of stating their PIVC was painful and interstitial, which led to their procedure being postponed until IV access was established. They reported feelings of being dismissed, feeling labelled as difficult, and fears of retaliation from the clinician.

> [long pause] Um...Yes. There was only the one experience in the endoscopy suite where I felt quite dismissed. The surgeon was really mad that my IV wasn't in when I got in the suite. They tried starting it in the suite, and they weren't having any luck. And then they, "Oh, I got it, I got it!" And he starts injecting the—the fentanyl, and it just blew up like a balloon, and I went, "No, no, no, no, no!" I said, "It's not in. It's interstitial!" And the surgeon, I felt like he was yelling at me. "Get her out, take her to post-op, start the IV so I can get the next case in!" and I felt totally dismissed that it was my fault that I was being a difficult patient, that I had made him mad. And then *he's* going to have to do my scope afterwards. It's like, oh. [P7]

Question 20: Did the Nurse Consult With You Prior to Starting the IV?

Participants were asked to think of an IV experience and discuss whether they felt the clinician consulted with them before starting the PIVC. Consulting might include introducing themselves, asking whether they had a preferred arm or location, obtaining consent, etc. Answers were mixed among participants, with some feeling that the clinician had done these things, and others feeling that the clinician had not.

Clinicians Consulted Participants by Communicating and Collaborating.

For the participants who reported having been consulted with prior to starting the PIVC, they supported their perceptions by describing instances such as: obtaining consent, having a conversation prior to the insertion explaining what they were going to do, engaging in conversations about preferences and needs (and willing to try to accommodate them), probing about past IV locations/experiences, and obtaining consent, "She was… Yeah, quite like uh quite like first question she had was, "Where do you prefer getting your IV?". She was really uh engaging with me to find out what was most comfortable for me." [P3];

> Yeah, with, you know, "Last time it took five times, and they had to use ultrasound," and then they sort of switch on to, 'Oh, okay, pay attention to this one. She's been through this before. She knows what I—what she's talking about' and and they're they're usually very responsive and, 'Oh, we'll warm you for a little bit longer' or something like that. And that just something as simple as that makes me feel heard. [P7]

One participant agreed that clinicians usually tried to consult with them beforehand, but had wondered whether consultation questions were genuine, or rather a rhetorical question, "… And then they're like, 'Oh, you're feeling good for treatment today?' And I'm just like, that's

just a rhetorical question. Nobody wants to be here. I don't want to be here. I'm not feeling great for treatment today. Could I go home?" [P15]

Participants Reported Instances in Which Clinicians Did Not Consult Them.

The participants who reported having not been consulted with prior to starting the PIVC supported this by describing instances such as: not listening to the information being provided to them on locations to attempt/needing to use technology, not asking for preference or consent prior to grabbing their arm for the insertion, not providing an option to refuse or decline treatment, and asking to remove items of clothing to expose the arms without proper explanation:

> … And I told her, I said, I'm really hard to get, and I was like, "Usually I need smaller needles than what you're trying to use today." And she's like, "Well, we can't do this medication with a smaller needle". I said, "Okay, well, I need you to know like my veins are very valvy. They blow very easy. And they're very tiny". And she's like, "Well, we're going to give it a try". I said, "You know, sometimes I need ultrasound placement and everything". But she's like, "No, we're just going to go for it". And that's how it always goes. The conversation's always that way with everyone who does it. [P2];
>
> No, they didn't consult they, they came in with everything. And… asked me to remove my jumper. And told me to hold out my arm. There was no consent. That was… No. It wasn't it wasn't a dignified experience. You know, I was asked to you know remove items of clothing without any rhyme or reason. You know, I was being given a list of demands without any consultation of like, of course, you know, if I need an IV, I'm going to consent to you putting one in me. But you know from a human perspective you know at least seek my consent to touch my body. [P17]

Question 21: Before You Get an IV, Do You Have Expectations of What the Experience is Going to be Like?

Participants Had no Expectations of the Experience

Three participants reported entering the experiences with no expectations about how the interaction would unfold, but with varying levels of complexity. One participant reported playing out various events, but stated that this is a background process; they expected both everything and nothing. One participant reported that going in with certain expectations might make the clinician's job harder, and therefore, they try not to go in with any. One participant reported feeling relatively neutral about their expectations:

> Yeah, because I don't want to set anybody up for them feeling like I'm on them before they... they deal with me. So, I try, I try not to, and I try to make sure that each person that tries to give me an IV understands that I'm not there to make their job harder. [P6]

Participants Had Expectations About the Interaction with Clinician

Two participants reported that their expectations centred on how the beginning of the interactions might unfold with the clinician, such as anticipating a consultation or collaboration.

> I have pretty baseline expectations. Hmm. Of just being asked. Where they're going to go. What side they're going to go on, things like that. And… And what side would be okay today? Things like that. And I expect that what I tell them to be respected...This is not respected 100% of the time, but the vast majority of the time. [P11]

Participants Hoped for the Best but Expected the Worst

Some participants stated they hoped their IV experiences would go well, but due to past experiences, they expected similar negative outcomes: “I like to hope for the best, but assume that we’re going for a minimum of five sticks.” [P2]; “That’s usually like the average for me is like three, three, four. So I just, I kind of go into it like knowing that like...You know, it would be a miracle if they got on the first try [laughs]. So I don’t know. I try not to get my hopes up, I guess.” [P4]; “I have hopes, but I have reserved anxiety for it. I hope that they use my good arm. I hope that it’s a quick... And they don’t have to wiggle it to try and get a blood, like I have hopes that they can do it right, but. I know it’s a possibility that they could do it wrong and I could be there for a while so. Yeah.” [P5]

Participants Expected the Experience to be Negative

Many participants discussed that when thinking about upcoming PIVC insertions, they expected several failed attempts, a number of different clinicians making these attempts, expected pain or expected the procedure to go poorly in general: “Usually poor. I usually think it’s not going to go well. Just because of the past experiences I’ve had. I usually, I’m usually quite pessimistic about what will happen when I’m getting an IV.” [P12]; “I have all the expectation of this is going to be terrible. This is going to make me want to die. I have a lot of really negative expectations preset beforehand.” [P16];

> Yeah, definitely. Like how many pokes is it going to take this time? I anticipate a lot like four or five attempts. I anticipate it taking time. I come in with sort of preconceived ideas um and I’m always pleasantly surprised when it doesn’t go that way when they get it in the second poke or they, you know don’t need to use ultrasound or something like that.

> It's always quite happy. But I do go in with like, oh yeah how many am I going to put on my [laughs] on my list this time? [P7]

Participants Had some Positive Expectations

Three participants reported expecting successful attempts by the clinician. One participant stated that only about 25% of their experiences have had problems. One participant discussed using mental health techniques to manifest a good experience.

> Yes, I have expectations that... So. I have had a lot of mental health struggles, so I apply like techniques that I've learned from my general anxiety to IVs and now it's like just natural like I don't even think about it. It's like I just manifest basically. The needle's going to go in. It's going to be great. It's just going to be like a tiny pinch and they're going to get it. [P14]

Question 22: Do You Feel Like You Have Input in Your IV Experiences?

Participants were asked whether they felt they had input in their PIVC experiences and how they believed they had input.

Participants Tried to Provide Input to Clinicians at Each Interaction

Every participant stated that they provided the clinician with some input, such as their previous experiences or offered information that might be useful to the clinician.

Participants Provided Varying Types of Input

Most participants felt as though they could provide at least some input in the experience. Participants felt they could contribute to their IV experience in the following ways: pointing out specific sites that have been successful or unsuccessful for PIVC cannulation, providing input

once it is asked for by the clinician, pre-warning the clinician that they have had previous difficulties:

> […] Like I said, getting the IV in my elbow that would uh usually bleed after a few minutes. I'm usually like, "Well. I don't mind. Just, don't put it in my elbow". That's usually… usually my answer when they ask and when they don't ask and they want to begin I'll just say, "Well. I don't mind where you put it, but not in my elbows." [P3]

Participants Practiced Self-Advocacy When Providing Input. When answering this question, many of the participants who reported having input in their IV experiences discussed it as an opportunity for self-advocacy. Participants use the occasion to provide input to clinicians to advocate for their needs and their health: “Well, because it’s my medical health. It’s my medical program. It’s my situation. If I don’t see something I don’t like, I’m going to speak up.” [P1] As mentioned in previous questions, participants discussed knowing themselves and their bodies and provided this information to the clinicians to help make the situation better for both parties involved:

> Yeah. That I have um one, my left ACF is unusable. I have some scar tissue in there and it’s just like, yeah, don’t-don’t even look there. It’s all scarring. You might think you feel something, but it’s a scar underneath. Um, so I-I have input there. And then I’m- I have input in um, you know that I need to be warmed. I’m a difficult start and when they listen to my input um I feel heard. I feel validated. [P7];
>
> I’m able to like, for the most part advocate for myself and say, look, I think you should be doing like this place because this is where we’ve had the most success when they have had success in the past or. Overall, like I’ve mostly been in control of the um situation

like if I say I don't want it there for the most part, except for the one time they'll listen to me. [P12];

Yes, because I can guide them to veins that I know are good. They listen to me when I tell them I can't do certain tapes. I can give them tips and tricks on depth of veins. And they listen very well and they're not dismissive because when I was a minor and I would do that they'd kind of like, side-eye me. But now they're just like, oh, you just know your body. [P14]

Whether Input Was Taken into Consideration Depended on the Clinician. Input provided to clinicians was not always well received. Many participants discussed the reception of input as being dependent on the clinicians themselves and their skill set. Each interaction could be different, as each clinician would respond differently to the input being provided to them:

Um, I'd say sometimes for sure, about half the time I have, because I do try and educate the person because I've lived in my body. I'm like, I know what's happening. Um, sometimes they take it, and sometimes they're like, I'm just going to try. [P8]

One participant reported that the input they provide to clinicians to use the ultrasound is not always possible, as not every clinician is trained to use the device, "But I've definitely had like nursing staff that are not trained on the ultrasound. And so, I just have like three or four people trying. […] It's not always like an option I guess to-to even have the ultrasound." [P4] Another participant stated that they do not provide much input as they do not want to get in the way of the clinician: "Like so-so, but not really. Because it's just going to be like, it's they have a needle in their hand. And so, I trust that they're just gunna do it. I don't want to get in the way, and I don't want to make it worse." [P15]

Clinicians Sometimes Only Accept Input after Failed PIVC Attempts. Participants explained that sometimes their input was only well received after the clinicians had already made unsuccessful attempts at inserting the PIVC: "[…] after they've tried multiple times, and then I can finally be like, can we please use the ultrasound? And then sometimes they'll do it. And then other times, like after two people have tapped out, then they'll usually agree." [P2]

Question 23: How Do the Nurses Describe to You the Difficulties They Were Having When Trying to Put Your IV In?

Participants were asked to recall instances where the clinicians had difficulty inserting their PIVC. They were asked to describe the way these difficulties were explained to them.

Clinicians Blamed the Vein for the Unsuccessful Attempt.

Almost all participants reported that upon failure, clinicians would blame their failure on the vein. Words used to describe these difficulties included: rolling vein, valvy vein, deep vein, disappearing vein, small veins: "They call my veins valvy. They call them roly-poly. Delicate... baby-sized. Those are all their words. I got all those words from them." [P2]; "Um… they usually… say like "Oh, your veins are really valvey". I've been told that a thousand times. "Your veins are deep". "Your veins are really tiny."[P4];

> The one time I can think of, they started to stick me. They had it in and they're like, "Oh, it rolled and it's gone deeper and I can't get to it now". And I'm like, Okay, I don't want to hear about it. I don't want to listen to it. And you're explaining about stuff I don't care about. Yeah, yeah. [P5]

Clinicians Blamed the IV Cannula for the Unsuccessful Attempt

Some participants report the clinicians blaming the failed attempt on what was happening with the PIVC needle. Examples of this include 'blowing' the vein, not being able to advance the needle, not being able to flush the line,

> You know. I've had comments like. "Uh-oh, that went all the way through". Um, or "It feels like there's an obstruction here, maybe we should move somewhere else." Rarely, but sometimes it happens that my vein will roll, while they're trying to stick, so they'll try to tell me that... That's mostly it. [P9];
>
> They say things like "Oh. They're there and then they just disappear."—I think I've heard that about a billion times. Because that's always the way it goes. Or "Hmm, it just won't thread. It's gone. I don't know where it went." And things like "Oh yeah, that-that's not going to work. Let's try somewhere else." Those are usually the things that they say. [P7]

Clinicians Were Unsure Why the Attempt was Unsuccessful.

Some participants reported that clinicians would deny knowing why the attempt was unsuccessful or would make comments about how it should have been successful. "They haven't really said anything. They're just like, "Oh, thought I felt one". The one time was he barely, he's like "Anatomically, there should be a vein here," and just went for it. So I'm like, when he missed, I'm like...What did you think would happen? [laughs]" [P8];

> They won't actually say, "Oh, yeah, maybe I need to go and get another needle. Or a gauge down." Um, I've had some of them say, "Oh, well, I don't know why it isn't working. I don't know why I didn't get it." Oh. Move on, you know, try and get a different spot because you're not going to stick me in the same spot twice, and you're certainly not going to move that sucker around. [P6]

> Some participants reported that clinicians stated what was happening in the situation: They'll say like, "Oh, well, we got blood return, but now I can't advance the catheter" or whatever. I don't know, they just they like kind of explain what they're feeling, but I don't know if they're just saying that to make themselves look better, or I don't know. I don't know. Kind of explain the issue that they're running into, I guess. [P4]
>
> Only one participant reported the clinician being apologetic for the failed attempts: Most of the time, they're just really apologetic. They just feel really bad that they have to poke more than once or that they're like sawing back and forth with the tube and trying to get something to stick, and I've had some that seemed genuinely upset that it was that hard. [P13]

Clinicians Typically Did not Blame the Patient

Participants were probed on whether they felt the clinician blamed them for the difficulties. Almost all participants reported never feeling like blame was placed on them, with some participants wondering if the clinician blamed themselves. "No, I've never had anybody say anything to me like that would make me feel like it was my fault." [P7]; "I don't feel like they're blaming me. I'm not sure if I feel like they blame themselves or not. I don't know if I feel like they're blaming themselves because I feel bad that my veins aren't cooperating. Or if they're actually blaming themselves." [P10]; "Not me. I don't think so. I didn't do anything wrong. I didn't move. I didn't do anything like that. They just say, oh, it just happens sometimes, whatever, that kind of stuff. I don't know if they like blame themselves or just like I don't know."

Very few participants felt as though blame was sometimes placed on them when the clinician failed their PIVC attempt: "Oh, absolutely. Mm-hmm. Absolutely. From the point of

"Oh, well, your veins are so small." Yeah. Yeah, I know, but that's what the baby needles are for." [P6];

> So in [country A], I actually got reasonably good explanations about this like I would either be told that "Oh, we're really sorry, but your veins are wanting to roll away and it's hard to find them" In [country B], it's usually more along the lines of "But I can't believe that your veins don't even freaking work!" It's much more accusatory like it's my fault that my veins are awful. [P16]

Inexperienced Clinicians Often Sought Additional Help

Most participants were probed on whether the clinicians disclosed their experience level when inserting their PIVCs. Of these participants, five stated that they have been in situations where the clinician has mentioned their lack of experience, but it had always been met with them seeking a more skilled individual prior to making any attempt:

> Um…Only in that I think it's written pretty clearly in my chart that I'm a very difficult poke. So, I think I tend to only get people who have a lot of experience to start with. So a couple of times I've gotten someone who doesn't have a lot of experience, and they just haven't tried. And they've simply said, "I'm going to go get somebody who has different experience." [P11]

Question 24: Do You Feel Like You Advocate for Yourself in Interactions with Healthcare Professionals?

Participants were asked if they believed they advocate for themselves in their healthcare interactions, and which situations made it easier or harder for them. This was followed up with a probe about whether they felt the same way in interactions when receiving a PIVC.

Participants' Ability to Self-advocate was Situational

Participants found it easier to advocate for themselves in situations where they were familiar with the healthcare team and had support persons present. When participants knew the healthcare team, had established good communication and rapport, and could anticipate the topic of the appointment or meeting, they were more likely to advocate for themselves: "[…] going to actual doctor's appointments with my actual like specialists, I feel like I'm a good advocate for myself during those. Because I can like kind of plan out in my head on the way there, like what I'm going to say the questions that I have." [P2] When participants had a support person present, this gave them strength to speak up or allowed the second person to be their voice:

> But just knowing that if I absolutely just run out of myself and I'm not capable of talking anymore, there's somebody to at least help amplify my voice really helps with that. That's also why for my upcoming delivery, I already have a doula secured who can help do the same thing essentially and just be there and be my voice when my own voice fails me. [P16]

Participants found it more challenging to advocate for themselves in chaotic environments such as the ED, where there may not be enough time to do so:

> I try to [laughs] I'd say it's definitely harder in the emergency room to do that. Just because of the environment and the environment like how chaotic it is in there like with the doctors and, you know, the doctor will come in for like two minutes and they just want to get like in and out quickly and put in the orders and then... You might not see them for three hours. Like it's just it's chaotic so like having the time to even like talk to the doctors is difficult. [P4]

Advocating was more difficult if the clinician appeared too busy to listen, “Oh. It’s mostly dependent on the manner of the healthcare professional. If they are... If they act like they’re in a rush, then I’m less likely to impose on more of their time.” [P9]. If clinicians have a negative demeanour, participants are reluctant to advocate for themselves, “[…] But if they're acting like I'm the worst part of their day, I don't want to talk to them and I'll just kind of shut down.’ [P13];

> It starts with the greeting of them calling me back and if they're more on a friendlier tone and receptive to our conversation, then I'm more receptive to give information. But if they're already in a grumpy mood for the day, I'm not going to boggle you down with more information. I feel like I'm invading too much. [P5]

Participants also reported it to be more difficult to advocate in moments where they were too ill to speak up, “Um... [pauses] Sometimes it's just very difficult for me to advocate for myself when I… feel so unwell that it's difficult for me to communicate at all. But that is hitting a pretty high threshold.” [P11]

Participants’ Ability to Self-advocate During PIVC Insertion

Most participants, when probed, reported the same type of ease or difficulty advocating for themselves when it comes to placing a PIVC.

> […] I’m pretty good at at at saying...Things, you know, if they’re if they’re taking a long time with the IV, I can usually say um “Can you stop just for a second? That really, really hurts” Or if it’s taking a whole bunch, just say, you know, “Can I have just a couple of minutes? I just need a bit of a break from this”—that’s in the infusion center. Like I don’t do that if I’m in an OR or emerge or something like that because I know they don’t have

> the time. But yeah, I'm pretty good about saying, ooh, you know, just back off for a sec, or you know, could you get the ultrasound? [P7]

Two participants stated that they either advocated differently or not at all for themselves when it came to placing an IV.

> I think other than the IVs, I'm pretty good about advocating for myself, but it's you know, something like, well, I need the IV, so I don't... You know, I guess I haven't figured out at what point I say "Okay, we need somebody else" Because they're pretty good about, you know, their two sticks, go get somebody else. And I guess that's fair. But I feel like maybe I need to be a stronger advocate for, "Can you try the middle crease of my arm..." [P10]

One participant reported questioning retaliation from the clinician should they try to advocate:

> Probably like not as passionate because I know somebody's going to stick me with a needle in a moment so um I probably don't, I don't like necessarily push it with them because I'm just like, at the end of the day, I need to get the IV in. And so, I don't know, I suppose I'm like somewhat powerless in that situation is that I don't really I can't do anything. I can't give myself an IV. So, I just have to wait for somebody else to do it and give it to me. And if I'm going to piss them off. I don't know, maybe they're going to stab me a little bit harder or something like that, right? [P15]

Question 25: Can You Describe to Me Any Instances in Which an IV Team was Called to Help Insert Your IV?

Participants were asked to recall any instances in which an IV Team was called to help place their IV. This question was somewhat misinterpreted, as some participants reported needing

to call infusion nurses or more skilled nurses on the units, rather than a specific group of people on a VAST team.

Some Participants Did Not Have Access to VAST

Seven participants reported that either the hospitals they had interacted with did not have specialized teams, or they had never been called for them. Some participants state the location and size of the hospitals were too remote or small for a team like that, “I don't think we have this. It's too remote.” [P2]

Clinicians Escalated to VAST Appropriately

For those who have had a VAST called, most reported that clinicians escalated appropriately to contact the team. “Usually, they do it themselves, but sometimes after three or four pokes, I say, can you call the vascular access team? Like if they're on staff. They'll probably have a better time than what's happening now.” [P12] Some participants who had only been seen by VAST had a central line placed.

Participants Weigh the Benefits of Having VAST Available

While one participant felt as though “everyone would benefit” [P9] from having access to VAST, another participant conveyed the experience was dependent on the clinician, not necessarily their designation:

> Honestly, I could have like the head of the phlebotomy and the I- and everything Or I can end up with a really good inpatient nurse or I could end up with a very arrogant IV team member who says, "Leave me alone and let me do my job". You know. [P9]

Question 26: Can You Describe to Me Any Instances in Which Extra Technology Was Used to Help Find Your Veins, Such as an Ultrasound or Vein Finder?

Participants Required Advanced Technology for PIVC Insertion

More than half the participants reported having needed ultrasound and/or the vein finder in the past, “Yes, I've had both of them. Ultrasounds work really well. And the vein finders tend to think I don't have veins [laughs].” [P10]

Participants Experienced Roadblocks to Accessing Advanced Technologies

Participants Experienced Technical Roadblocks. For participants who had not had access to ultrasound or vein finders to help insert their PIVC, reasons included not having access to the technology or related to medical coverage, such as, “The hospital I was going to does not have anything that fancy.” [P13]

Participants Experienced Clinical Roadblocks. Participants who had undergone the ultrasound or vein finder in the past were asked whether the clinicians used the technology immediately, escalated to using it on their own, or if the participants had to request its use. Most participants reported that healthcare workers initially attempted to insert the PIVC without the use of technology. After some failed attempts, the participant either had to request it, or the healthcare worker escalated on their own, “Um… only had the vein finder like I named that the one time, and I've had ultrasound twice, two or three times. Because they almost never believe me and just start jabbing me until they get one. Instead of using the technology.” [P2]

> I've asked for them to use it yeah if they've had a couple of peripheral pokes that haven't been successful I'll usually say, could you use the ultrasound? I don't mind waiting. [P7]
>
> And do they usually listen to that request? [K]
>
> Yes. Yep. [P7] ;

> Sometimes, usually they're like, okay, I'll keep that in mind that they're going to attempt. All of them are like, I'm going to just feel. I'm like, okay, because I mean, sometimes I have found one, but… It's like, sometimes I'm like, you'd probably save time just immediately going to get technology. But all of them are always like, "we'll just try". I'm like, okay. [P8];
>
> I say, I usually mention before I get the IV that usually they have to resort to the ultrasound machine. And usually it's just amount to them having to use it anyway. Like they'll try on their own and then they'll eventually climb to using that via ultrasound machine. [P12]

Question 27: Currently, How Confident Are You in Nursing Care?

This question asked participants about their confidence in nursing care.

Participants Had High Confidence in Nursing

Almost all participants rated their confidence in nursing care either high or high depending on the situation, “I'm pretty confident. I'd say… Like 90%. I pretty much… I haven't had very many like... nurses that I haven't gotten along with or had good care from. They've all been pretty great so.” [P4]; “Pretty confident. Yeah, they do a pretty good job for me.” [P11];

> Very confident. I think the nurses that I've seen or they're all but one are excellent. They've always showed compassion. They've always walked me through things when I didn't know what was happening. Overall, just nice people who I think really wanted to care for patients. [P12]

Some recalled poor experiences they’ve had, followed by situations that have redeemed their confidence over time:

> [recalling medical event] You know they would they would come in and do things without telling me what they were doing, and it felt very it felt invasive. You know, because they weren't telling me what they were doing and it was incredibly uncomfortable. So, you know, from that, I did not have a really great opinion overall, but experiences since then have only increased my opinion. [P9]

Some participants reported confidence in nursing care depending on the interaction, "I… I'm very confident in my infusion nurses. ER nurses I am generally pretty confident in. Beyond that, I get a little nervous. Just because I've had quite a few dismissed my concerns or unrelated to IVs." [P14];

> Oh, that's hard because so many of them are overworked and not always in a good mood. I've, I've... seen both extremes. Like I've had amazing nurses, and I've had absolutely terrible nurses So. Like most of the time they're fine and they really want to help but they just don't have the resources that they need to do what they could do. I've had plenty who just they make a decision early on and they base everything they do on that thing that they've decided. And those are the difficult ones. [P13]

Some Participants Had Low Confidence in Nursing

For the small number of participants who reported a lower confidence in nursing care, they related it to many poor past experiences, feeling as though nurses choose the profession for the wrong reasons, and a declining healthcare system; "Too many bad experiences, recently. I mean, I've had one or two that are, that are friendly and get the job done right. And then there's...There's just too many bad traumatic episodes that I get passed on." [P5]; "… But a lot less just knowing that, especially in state hospitals and state clinics. The understaffing is really,

really, really real. So right now, I think the average nurse to patient ratio per shift is between 30 and 40 patients to one nurse." [P16];

> Yes. I was thinking that nursing would be full of a bunch of really caring people... And for a while, and still there are some.... But they're about... Between 20 years ago and the last 20 to 10 years, there became an influx of people with the understanding, that when they went into like a career counselor or something like that, most of the time they were told, oh, but there's lots of openings in the nursing market. That is not the reason to go into nursing. So what do we end up with? Callous, burnt out people that don't care. [pause] And that affects the kind of treatment that you're going to get. And it affects how you feel about the profession in general. [P6]

Participants' Confidence in Nursing Changes Over Time

Participants were probed about how their confidence in nursing has changed over time. Most participants reported either an increase in confidence or that it has not changed over time.

Question 28: Have Your Previous Experiences with Having an IV Affected Your Decisions About Receiving Healthcare in the Future?

Participants were asked to reflect on how they seek and access healthcare and whether the decisions surrounding it were influenced by their IV experiences.

IV Experiences Had Little or no Effect on Healthcare Decisions

Most participants stated their previous IV experiences had little or no influence on whether they seek healthcare in the future. With the complicated nature of their chronic illnesses, often when seeking healthcare, it was because they really needed care, and at that point, getting a PIVC was not on their minds:

> No, I don't think so. I mean… For me, it's just going to be a part of my life no matter what so... I just kind of have to accept it and I know that it's gonna… continue. I mean… I'm probably always going to be hard to get an IV on and I just need to make sure that I like voice that to whichever nurse is working on me. And let them know that they might need some extra help. [laughs] [P4]

Healthcare Decisions Could be Delayed or Hesitated Due to Past IV Experiences

Despite still seeking care when needed, some participants reported that their previous IV experiences do make them hesitant to seek care, which can result in delaying seeking care, "In hesitance. Sometimes to go in and get an IV when I know I need one because I know I'm going to get stuck a whole bunch. I usually… the rationale of why I might delay going a little bit because the apprehension." [P2]; "It does make you pause for thought. I mean, obviously, with my health issues, I have to receive healthcare in the future. Um… But it does make me hesitate." [P17]

IV Experiences Could Influence Healthcare Decisions

Only one participant reported actively avoiding healthcare that might involve venipuncture due to their previous negative experiences with having PIVCs and bloodwork done:

> Like it's definitely held me back from me, like between my two pregnancy blood works […]. So, there's been like a solid six-year gap between having done any sort of blood work or lab work because I cannot make myself subject myself to that. [P16]

Question 29: Have You Ever Decided Against Going to the Hospital for Care?

Like the previous question, participants were asked to think about moments where they decided to avoid going to the hospital for care they needed.

Participants Avoided Healthcare for Multiple Reasons

Most participants reported having decided against going to the hospital for care at some point during their lives. The reasons participants decided against going to the hospital included feeling as though nothing would be done, feeling as though they will be put off, feeling as though they can manage the issues at home on their own, long wait times in emergency departments, fear of being held down for procedures, unable to decipher whether symptoms were related to an emergent situation or a flare up of chronic illnesses, and decreased quality of life from frequent hospital visits:

> … Probably just going to waste everyone's time. Like, I don't know, that's kind of how I feel a lot with like chronic illness is like, I feel like I waste people's time, which I shouldn't but... That's how it feels when like when really like I go and all I get is like some pain meds and then they sent me home like... Nothing really gets accomplished, you know? What else can they do? Sucks. [P4];
>
> A few times because I'll be feeling awful, but then I'll think, well, what.. what are they going to do for me if I go in? And the answer is usually not a whole lot, so I don't bother. [P13];
>
> Yes, but I think that's more because I have trouble.... Because I have so many chronic illnesses, it's hard telling what is emergency versus what is like a new symptom or flare-up? [P14]

Avoidance of Healthcare Due to PIVC Experiences. Most participants denied their avoidance was related to PIVC insertion. Some participants, however, reported this as the only reason they avoid seeking care, “Mostly it's the IV. I just, I really don't want to get IV. Other than that.” [P12]

Question 30: Do You Have a Preferred Hospital That You Go to for Care?

Participants were asked about their hospital preferences for care and were probed about the qualities that make it their preferred location. Two participants reported not having any hospital preference.

Participant Preference was Influenced by Proximity

Some participants reported a preference only due to the location of the hospital being in closer proximity to them or being the only hospital option in the area, “I mean, where I was living before we moved, there was one hospital. That was it. So there were no other options.” [P13]

Participant Preference was Influenced by Health Insurance Coverage

Some participants reported a preference for a hospital related to the health insurance they had that covered those locations, “Um, I like it better than the other one, but it's also the one where my insurance pays. [laughs]” [P10]

Participant Preference was Influenced by Location of the Care Team

More participants preferred a hospital based on where their care team was located. As in previous questions, participants reported better experiences when they were interacting with a care team with whom they were more familiar,

> Well, because that's where the program is that I'm involved in, and my doctors are there. I can request that IR doctor that I need for my central line. Whereas if I go to [elsewhere], it would be a brand new world for me, and I don't know who I'd be getting so... [P1]

Participant Preference was Influenced by the Quality of Care

Many participants preferred hospitals that have provided better care to them in the form of knowledgeable clinicians, having access to a vascular access team 24/7, consistency of care, being seen quicker due to a smaller hospital, and/or hospitals which are newer or have a better

reputation: “All my experiences there have been better. There's been no gaslighting at that hospital. A lot of my specialists are in network with that hospital.” [P2]; “They have the vascular access team is on staff 24/7. Rather than the other hospitals where it's a couple of days a week.” [P12]

Participant Preference was Influenced by Care Received at the Alternate Hospital

Some participants offered reasons why they preferred a specific hospital by comparing it to a different hospital they had visited. The ‘other’ hospital was reported to be old and dated, with clinicians who had poor bedside manner, gaslit and dismissed patients, and failed to inform them of vital patient information. “Because of the quality of care I've had, the bedside manner is just not there.” [P5]

Question 31: Have You Ever Shared Your Experiences of Having an IV with Anyone?

Participants discussed whether they have shared their experiences of having a PIVC with anyone close to them. In addition, they were probed about the main message they convey to these individuals when sharing their stories.

Participants Shared Experiences to Educate

Several participants reported sharing their experiences with loved ones as a means of educating them about their illnesses, expectations about seeking healthcare, about the difficulties they have had when they need a PIVC, and to alleviate fears of having the same types of difficulties as the participants:

> I think helps give people a little bit more realistic expectations because I'll tell my friends what happened and they'll sort of express surprise and being more consistent telling them what happens, good or bad helps them understand what they should… be able to expect

> out of an experience. Instead of just assuming everything will like work out great when you go to a hospital just because you walked in the door. [P11];
>
> It's difficult for me to get an IV but probably wouldn't be difficult for them to get an IV. Like if that makes sense. I'm kind of a hard poke, but I usually end off with yes but, you would probably be fine because you haven't had as many IVs as me or you haven't um just don't know. It's my arms. [P12];
>
> Because it has, and I don't want people to be like needlessly afraid like I know that a lot of people have bad experiences and bad experiences do happen. But in my experience, that's not the most, the majority of IV experiences. And I think that's what contributes to some people's anxiety. Is just hearing about the bad ones because they do exist. But I think they're just realizing that they're not insanely common. [P14]

Some participants reported sharing their experiences with other clinicians as a way to educate them on how they might proceed with their care. "I've told a couple of nurses that I've had bad trauma situations, and this is the way to do it best. But nothing's been formally documented." [P5]

Participants Shared Their Experiences to Validate the Experience

Several participants reported sharing their experiences by offering information such as the number of previous failed attempts, or how good or bad the experience was in a way to seek validation from their loved ones that they have gone through a tough experience:

> Yes. Yeah, it validates the fact that um it is uncomfortable. They go, oh, wow, that must have been terrible, especially my nursing friends. You know, my colleagues that I work with, it's like, how many times? Wow that must have been so awful. And it just is like, yeah, you know what? It wasn't pleasant. It's really nice to be able to talk to people who

understand that sort of thing rather than just like lay people who can't figure out why it takes so much time to get an IV? [P7];

It's, I guess, really just the… describing the experience and mostly like my internal monologue and sensation and just how it came out to me at the end. And we're mostly just looking for some sort of reassurance that, I know that this is not normal, and I know that this is not a healthy reaction but that's both I guess looking… fishing for being told that it is based and uh and also just reassurance that "Yes but you got through it, you're still alive" and... Yeah, just any sort of kind of comfort and reassurance that I can get out of it. [P16]

One participant expressed strong emotions speaking about the last time they told their loved ones about a particularly tough IV experience in 'real-time' as it was happening. The participant shared that telling them in real-time made the experience more difficult to go through:

Sad and frustrated [about IV experience]. That was a really rough day. Yes. [P10]

Yeah, it sounds like it really was. Yeah. You have good support systems though in your sister and your mom and your husband as well yeah. [K]

I do. They were just a little too supportive that day and you know I just needed them to be like. "It's all right. You got this". I just didn't say anything the next time until after it was done, so. [P10]

Participants Shared Their Experiences to Cope with the Experience

Participants Used Humour to Cope. Some participants reported that when they shared experiences with their loved ones, they often tried to keep it humorous or light-hearted to cope with the experiences:

> [laughs] It's usually some kind of posed as, oh, you know, they got it in three pokes today, you know, world record! First poke with an ultrasound. Yay, they got it because most of my most of my friends and family know I'm a really difficult stick and that sort of thing. So yeah, I let everybody know. [P7]
>
> It's usually just like... Me telling them like in kind of a joking way like "Oh this this trip it was five times!" or "Five times and three nurses" or like just giving statistics kind of thing. In like a joke. Yeah, it's usually not like anything serious or like giving them real details. [P2]

Question 32: Do Any of Your Friends or Family Have Particular Views about Getting an IV?

Participants Knew Family and Friends with Particular Views

Seven participants reported that they had a direct family member who had particular views about getting a PIVC, such as fear and anxiety. One participant reported that their spouse was a frequent blood donor but has since stopped due to an adverse IV experience they had:

> He does blood and the platelet donation. He actually stopped doing that because he also had like a bad needle infiltration that really, really hurt and he's a little iffy about it. But he has had blood work done multiple times since then. He doesn't freak out or anything. He's just not quite as willing to go and do this voluntarily. [P16]

One participant reported they had a friend who had similar struggles with chronic illness and frequent healthcare visits, and therefore had similar experiences with having a PIVC. Due to this, they have strong feelings about receiving a PIVC as well:

> […] Um, we're both chronic patients. Where we've got some serious level illnesses. So essentially. “Well, they're all shit” [laughs]. That's the way they answer it. “These vessels,

> they're all shit". That's what they say. It isn't necessarily what I say [laughs], but it is what they say. And sometimes it is *exactly* what I say [laughs]. [P6]

Participants were Isolated in their Experiences

Nine participants reported not knowing anybody who has similar views or experiences when it comes to having a PIVC placed. One participant reported that nobody they knew had the same types of trouble as they did, "No, just if they need one [PIVC], they get one. Nobody else has had this much trouble. Yeah." [P2]

Question 33: What Do You Wish Nurses Knew About Your Needs When You Get an IV?

Participants were asked to consider any needs they might have when receiving a PIVC. Probes identified types of needs, including physical, emotional, and environmental needs.

Participants Needed to be Believed and Understood

Participants identified a need to be believed and understood in their interactions with clinicians. This includes listening to them when they offer information about past difficult IV insertions and understanding them and their disease processes.

> I wish they knew my history of IV times and that sometimes it's really hard to get a line, and sometimes it's really easy, and what worked best for the ones in the past. If there was some kind of record of [P5] needs it done this way and this way and use this, then it would be easier. Yeah. [P5];
>
> That I'm not just saying it to try to say it, I don't even know what they're thinking. I'm not just making stuff up. I'm not looking for attention. I'm not thinking that I'm some kind of exceptional case. I'm just trying to let them know like, hey, my veins are trash. Just heads up. That you're going to have a bad time here. [P13]

Participants Needed to Have the Right Equipment Used on Them

Participants reported needing to have certain equipment and interventions for their IV, including "offering something heated before attempting [the PIVC]" [P8], using smaller gauge needles for the insertion, "[…] they have to resort to an ultrasound machine or something, someone who just, I guess, is either very lucky or just knows hard veins. Knows how to find them." [P12]

Participants Needed to Have Open Communication and Collaboration with the Clinician

Participants reported needing open communication with the clinician; this would be accomplished by asking for consent prior to touching them and inquiring about their preferences.

> Yeah. Always ask before you touch someone's body. Always ask for consent. Like, even if you know they're there for a blood test, and they're putting their arms out. Like their bare arms out, still ask before you physically touch their arms, because if they have trauma, like you're… giving them their power back. That's how you that's how you are trauma-informed. [P17]

Participants Needed to Feel Important to the Clinician

One participant reported needing to feel like the focus of the clinician when they are interacting with them.

> I wish they knew that I like to be treated, um, in a gentle manner, in a non-rushed manner. And I wish they knew that they knew that I need to be reassured that I am their complete focus of attention in that moment. Um, I know as a [healthcare worker] myself, when I'm doing stuff like that, I've got like 10 other things on my list of stuff to do. […] But in that moment when I'm the patient, I just want them to say, you know, "I've got you." [P7]

Question 34: Do You Expect Those Needs to be Met?

Participants' Beliefs on Expectations Versus Needs

Participants Believe Expectations and Needs go Hand-in-hand. Seven participants reported that in their interactions with clinicians, they did expect the needs listed in the previous question to be met, but admitted that sometimes they were not, "[pauses] I always expect them to be met, and they're met more often than not, but they're not met all the time." [P11]

Participants Believe Expectations are Separate from Needs. Ten participants reported that in their interactions with clinicians that they did not necessarily expect the needs listed in the previous question to be met, "But… Yeah, I would say it would be nice if my uh my needs were met. But… yeah, it's not written in stone...Basically." [P3] Several conveyed a wish or hope that they would or should be met, but admit this was not always possible:

> Realistically, they should be met. If I'm receiving professional quality care, that should be a general expectation, I would think. But do I anticipate that? No, because my experiences have been this way over and over and over hundreds of times. So, it leads me to believe that that is not the standard of care. [P2]

Question 35: Describe to Me What an Ideal IV Experience Would be Like for You.

This question was reworded often when asking to be "In a perfect world and perfect situation, what would the most ideal IV experience look like for you?" This allowed participants to consider whether all the conditions surrounding the experience were perfect, and what that situation would look like. Each answer included a combination of all the following factors.

In a Perfect World, Clinicians Would Communicate Openly

Participants reported a desire for clinicians to listen to them and include them in communication and decision-making, “Um. Gentle and respectful of my previous experiences where they listened to me and…Changed course if I told them that we needed to. And then, um. Were flexible on how we got to what we needed to do.’ [P11]

In a Perfect World, PIVCs Would be Inserted Quickly with a Low Number of Attempts

Participants reported a desire for the PIVC insertion to be done quickly with success on one or lower number of attempts, “[…] and the easiest poke without having to wiggle it and be done like...Done in two seconds like the fastest possible.’ [P5]

In a Perfect World, PIVCs Would be Inserted in a Calm, Quiet and Private Environment

Participants reported a desire for the environment in which the PIVC is inserted to be private, calm and quiet, “[the ideal IV experience would be] A calm, quiet, isolated, uninterrupted situation.’ [P1]

In a Perfect World, Clinicians Would be Patient and Have Time to Conduct a Proper Assessment

Participants reported a desire for clinicians to have the time to listen to and assess their veins appropriately before attempting PIVC insertion.

> And then, you know, taking a look at both arms before making any pokes. Because a lot of times they'll just look at like one arm and then attempt it when there might be like a better one on the other arm and they haven't even looked over there yet. So I guess it's like, checking everywhere first to find the best one like their best chance, So that I only have to get poked once. [P4]

In a Perfect World, PIVC Insertion Pain Would be Minimal

Participants reported a desire for the PIVC insertion to be accompanied by as little pain as possible, “It would be fast and painless.” [P13]

In a Perfect World, Clinicians Would use Appropriate Interventions

Participants reported a desire for the clinicians to use the appropriate interventions to help with the PIVC insertion (i.e. smaller gauge needle, warming the extremity, using ultrasound/vein finder, consulting more skilled individual), “They would use vein finders or an ultrasound from the get-go, find my veins, use appropriate size needles, and just try to do the placement that way.” [P2]

In a Perfect World, Distractions Would be Available

Participants reported a desire to have good distractions available to help turn their attention away from the PIVC insertion:

> Something like that I describes it like a really kind of peaceful and homey environment, something that's very comfortable even having just some very quiet background music that I can focus on or allowing me to have my headphones on so I can listen to music and have my mind taken off of it. [P16]

Participants Reported the Most Important Factor in their PIVC Experience

After each participant answered this question, almost all were probed on what the most important factor in their PIVC experience would be.

> Being in a place where there's no distractions. [P1];
>
> Trust. And being able to trust them. It needs to be a two-way street of trust. It needs to go both ways. [P2];

Um…I would say… Listening to me, the patient. Because I've… had the experience of pretty much everything happening in an IV situation and um, I can pretty much tell them what works for me and what doesn't. [P4];

The least painful, I think. I think that helps the most. [P5];

Patience. They'll get it if they're patient. Patience is encompassing. Patience is listening to your person. Patience is taking the time and waiting and getting what you need. Patience is it's the it's the key factor. [P6];

Most important. Hmm. [long pause] I think… the most important for me would be the environment. That calm, enclosed, chill space with one nurse just focusing on me. I think that for me, they could poke me probably a bunch of times but if I could have that environment, I think it would help decrease my anxiety about everything else that's going on. Yeah, I think I would have to say that would be probably the most important. [P7];

I mean, it would be the quickest if they automatically had someone there with the ultrasound and be like, 'Yep, we can immediately see it. We can see what's happening.' And then also not multiple pokes. I don't really mind, but also it would eliminate it completely. And then also the nurses wouldn't have to feel bad because I know when that's happens, some of them would feel bad because IVs aren't fun. [P8];

I think the most important is actually being warm. […] I am hypersensitive to cold. And so, it will make me tense up, it will make me incredibly grouchy. And… I will not be a pleasant person to be around. [laughs] [P9];

That it's not as frustrating for everybody because I know that the nurses try and hide it, but I know it's frustrating for them and... It's certainly frustrating for me. And it delays everything. The sooner you get in, the sooner you get out and get to go home. [P10];

[pauses] Listening, I think. [P11];

Probably that it's painless. I've had a lot of IVs that like really hurt once they were put in just because of where they were like I've had them like right in my wrist I've had them in my elbow. The backs of the hands are always really painful. And I try to tell them like, can you put it in this spot that I know it doesn't hurt? And a lot of the time, that's not where the doctor wants it. [P13];

Being in a comfortable environment. I think it's like my priorities are having good competent nurses. And then my second priority is being comfortable. [P14];

Like doing it separate. And then I because I think about it too is like maybe there would be a different process that we could do. And I never really thought about this before because like when I come in you come in for your appointment and then maybe waiting in the waiting area for a while. But when you're waiting in the waiting area. Could there not be like an IV starter nurse who gets all the patients started with their IV? You sit in the waiting room till your chair is free. And then you go in there as opposed to like, I have to sit in the waiting area for 30 minutes. [P15];

The lack of pain. [P16];

I'd have… a really good vein just there, just beneath the surface primed and ready to go. [giggles] [P17]

Participants' Additional Comments

Following the conclusion of the interview questions, participants were asked if there was any outstanding information that had not been asked but that they felt was important to convey.

Warming IV Fluid Prior to Infusion Makes the Experience More Pleasant

"Okay, warmth of IV fluid. Warm it up. Don't make me colder." [P6]

Better Preparing Patients for Upcoming Procedures May Help Make the Experience More Pleasant

> […] but you know, like if you know you're having infusions, or you know, get an IV before colonoscopies, where you're already dehydrated, you know, having some sort of guidance from somebody, I don't know if there's anything that they could really tell you to do, but that might be nice. [P10]

The Condition of Veins Deteriorates Over Time

> I think if there's anything to know is that my veins were okay to start with. It was just after so many IVs that it became harder and harder to find. The point where now they usually need an ultrasound machine but at the beginning of these four years. In December 2020, they'd usually get an IV in one go. [P12]
>
> Does that scare you at all? That it gets worse and worse? [K]
>
> Yeah, it scares me quite a bit. [P12]
>
> What about that is… is scary for you? [K]
>
> What about if in an emergency situation, how are they going to get an IV in years something like that? Or if I continue with these pain infusions, how are they going to continue to find veins? [P12]

Having Improved Information and Resources as an Adult Might Make the Experience Better

> […] Like, are we not providing enough for adults so that they have… accurate, honest information? Would they cope better, do better if they kind of knew some of these things? How do you get people to advocate for themselves? […] Without feeling like we're placing a burden on our nurses or the healthcare team. And not becoming difficult patients. […] I feel like that there's probably a lot of people who are probably suffering and not advocating because they think that they just have to accept what the healthcare team is doing is what they have to do right and they don't maybe feel empowered to stand up and say, I don't like that. Could we do that a different way? Or like, this is what I need. To get through it. Could I have that? I don't know. How do you teach people those skills? […] [P15]

Findings

The findings of this study confirmed that the BITTEN mid-range theory may be used to explain the adverse PIVC experiences of DIVA patients; however, some responses from participants challenged specific categories and their defining characteristics. Table 1 outlines some quotations from the interview that either support or challenge the BITTEN model. Quotes that challenged the BITTEN model were only included if most responses to specific questions contradicted the category definition. Otherwise, quotes that challenged the model were not included as they were outliers to the majority.

Table 1

Participants' Responses Compared to BITTEN

Element of BITTEN	Supporting Quote #1	Supporting Quote #2	Refuting Quote
Betrayal	"[…] and they're just stabbing at me and it just felt really dehumanizing. It felt like I was a piece of meat or something I was just being prodded and poked." [P17]	"[…] You know, it was the way that healthcare is structured in the US is a lot more fragmented and relies too heavily on insurance companies rather than doctors to actually get the care you need." [P9]	----------
Indicator for Healthcare Engagement	(having bad PIVC experiences) "It does make you pause for thought. I mean, obviously with my health issues, I have to receive healthcare in the future… But it does make me hesitate." [P17]	"[…] and I also had kind of a rough experience with the both of my other child, where I was requiring uh IV oxytocin and some of the IV medications. That was also kind of an unfun experience." [P16, a	----------

Element of BITTEN	Supporting Quote #1	Supporting Quote #2	Refuting Quote
		pregnant participant fearful of giving birth again]	
Trigger of Traumatic Symptoms	"Usually if its loud and chaotic, I find I am more apprehensive about getting the IV rather than if its calm, you know, people aren't rushing around." [P12]	"I had a full-scale panic attack [during PIVC insertion]. To the point of like complete loss of touch with reality, complete derealization." [P16]	----------
Trust	"[…] they [clinicians] don't listen, They don't trust me. They won't put my safety in mind and my vein safety in mind. And I just feel like I'm being gaslit. So, I feel like I'm just setting myself up to be basically abused in these situations." [P2]	"[…] my hands are awful and like so many people insist like, 'Oh, well they want it in your hand. We're supposed to put it in your hand,' and I tell them like, 'You're not going to have a good time trying to get it in my hand.' But they [say], 'Oh well, that's where the doctor wants it.'" [P13]	"I think the nurses that I've seen or they're all but one are excellent. They've always showed compassion. They've always walked me through things when I didn't know what was happening. Overall, just nice people who I think really

Element of BITTEN	Supporting Quote #1	Supporting Quote #2	Refuting Quote
			wanted to care for patients." [P12]
Expectations	"I like to hope for the best, but assume that we're going for a minimum of five sticks" [P2]	"I have all the expectations of this is going to be terrible. This is going to make me want to die…" [P16]	----------
Needs	"…I like to be treated, in a gentle manner, in a non-rushed manner. […] I need to be reassured that I am their complete focus of attention in that moment." [P7]	"Always ask for consent.[…] because if they have trauma like you're… giving them their power back." [P17]	----------

Betrayal

Participants outlined several instances in their care where they felt betrayed, both institutionally and by the clinicians. Participants have been exposed to situations in which the fiduciary trust has been broken in some way, indicating that they may have experienced institutional betrayal. BITTEN (Lewis et al.,2019) states that institutional betrayal can happen in environments in which negative experiences are likely to occur and when patients perceive care is based on insurance factors, resulting in traumatic exposure. Poorer experiences for DIVA patients tended to be in the ED, and with clinicians who gaslit, dismissed or acted like they did not have the time to see or understand the patient, which supports Cook (2016) in that in busy environments, clinicians may not have the ability to provide compassionate care.

Although clinicians tended to follow policy based on the number of attempts, failing to provide care in one attempt is a form of betrayal, leaving the patient feeling let down and anticipating each subsequent encounter to follow suit. In addition, the answers given by participants revealed numerous instances where the participant provided information to prevent multiple attempts, such as guiding the clinician to an area that had been successful in the past. However, the clinician failed to consider this information. This failure to communicate and collaborate constitutes a form of betrayal and broken trust between the clinician and the patient, creating a sense of powerlessness in the patient (Robinson-Reilly et al., 2015).

Institutional betrayal also occurred in moments where clinicians' loyalty wavered. Participants describe this happening when clinicians choose to abide by what the physician has asked rather than considering the best interests of the patient.

Indicator for Healthcare Engagement

Participants in this study discussed moments of trauma in their personal and medical history. As two different participants made the same statement about having medical trauma in their past, this may represent that medical trauma is prevalent and shared among those with chronic illnesses. This is consistent with the literature, as this patient population is likely to have medical trauma histories (Meentken van Beynum, Legerstee, Helbing & Utens, 2017, as cited by Lewis et al., 2019).

The participants in this study outlined several aspects of their adverse PIVC experience that are congruent with characteristics of medical trauma. Past adverse experiences associated with betrayal have influenced the behaviours, feelings, and interactions of subsequent experiences.

In addition to negative PIVC experiences, several participants mentioned having scheduled infusions. With a scheduled event, patients can mentally and physically prepare in anticipation of the event; however, having this anticipation might trigger some memories and feelings about previous poor experiences, as mentioned by Sharp et al. (2023), in which more time is focused on the PIVC insertion than the procedure they are in for.

The emotions present during PIVC insertion were complex in nature and stemmed from a variety of sources. Some participants felt that they had no control over the matter, whereas others regained control by employing different strategies to make the subsequent experience potentially better. Anxiety was the most common word used to describe the feeling of getting a PIVC, which could be indicative of a phobia (Sorensen et al., 2021); in addition to this, two participants specifically used the words ‘trauma’ or ‘traumatic’, as one participant stated they had experienced PTSD symptoms from poor experiences in the past.

Many participants discuss having been a part of the healthcare system for a large part of their lives. During this time, the reasons for seeking care are often similar. Having been exposed to medical trauma and institutional betrayal previously, encounters of a similar nature often provoked similar somatic and emotional responses. Participants reported experiencing similar types of feelings and responses in their lives during other healthcare experiences. This might indicate that, should the participants experience trauma associated with PIVC insertion, this may influence other similar healthcare experiences, such as blood draws or dental procedures.

Trigger of Traumatic Symptoms

It was hypothesized prior to this study that many of the participants would also suffer from needle phobia, especially the female participants (Turgut & Guven, 2022). However, most participants stated they did not have a needle phobia. In addition, when describing negative experiences, the needle itself was almost never mentioned. Instead, clinician factors, environmental factors, and personal/situational factors are mentioned to contribute to poor experiences. This may indicate that the needle itself is not the vector of anxiety, fear or other strong emotions, however, rather than past experiences, procedure, the clinician, the environment, or any combination of these factors, which is an elaboration of the finding of Larsen et al. (2017), who suggest that the inserter is above the needle in the experience.

This finding is congruent with all aspects of the BITTEN model (Lewis et al., 2019), which outlines that past Betrayal, unmet Needs and Expectations, and Triggers from past healthcare experiences, including PIVC insertion, are more likely to be the reason for a poor PIVC experience than the needle itself.

Trust

Participants expressed several instances in which trust was broken between them and the clinician in both their previous healthcare experiences and during PIVC insertion. They described instances of being gaslit, dismissed and mistreated by clinicians. This is described in the BITTEN model (Lewis et al., 2019), in which clinicians' abilities and motives are questioned, potentially creating a cycle of mistrust among patients.

Trust Can be Restored.

Despite this, participants rated their confidence in nursing care as relatively high. Participants described establishing rapport with nurses, as they were the clinicians they saw most frequently and for the most extended period.

Participants discussed several instances in which they indicated their experience was heavily dependent on the clinician. They described moments when clinicians helped provide a positive experience, as well as those when the opposite occurred. While feelings of the environment stayed the same regardless of the experience, trust in the clinician varied.

Participants outlined characteristics of a good nurse or clinician throughout the interview. They describe an individual who listens to them, collaborates and communicates openly, is knowledgeable and has the skill to perform the task, advocates in their best interest, takes their time, and is willing to escalate the task to a more skilled individual.

This information may suggest that trust in the institution has been lost due to experiencing multiple adverse events; however, trust in the clinician is individual, as it remains until the clinician gives a reason not to be trusted. As well, clinicians have the power to restore trust in the patient. Restoration of trust is a healing process that may prevent the cycle of BITTEN from occurring in subsequent encounters. Having a clinician openly listen and collaborate with these

patients is an opportunity to restore **Trust,** meet patient **Needs,** and address negative **Expectations** they may have at each subsequent PIVC insertion (Lewis et al., 2019).

Expectations

Most participants reported having had previous negative experiences that affected their expectations of future experiences. Although participants stated they tried to keep an open mind with each PIVC experience, it did not negate the influence of their past experiences. This is congruent with the BITTEN model's concept of **Expectations** (Lewis et al., 2019). Due to past negative experiences, participants had learned to expect failed attempts, dismissal by clinicians, or the use of VAST or vein-finding technologies. Notably, participants could not always expect, in a reasonable and appropriate situation, that if they required ultrasound or VAST, it would also be utilized.

Needs

As patients who seek healthcare more frequently, DIVA patients in this study with chronic illnesses were well-informed about their own conditions, the effective treatments, and the approaches that help guide their care forward, as supported by Clements et al. (2014) in their study on SUD and PIVC insertion. They have been present during all PIVC successes and failures and, therefore, are experts in their vasculature. One important need was to have this knowledge considered and honoured.

Other needs listed were fairly congruent with fundamental human rights in healthcare, such as the right to informed consent and decision making, the right to refuse treatment, the right to collaborate and communicate openly and confidentially without fear of retaliation, the right to qualifications and experience of clinicians, and the right to receive compassionate care

(Parliament of Canada, 2001). These needs are basic and should be met at every PIVC insertion attempt.

Study Strengths

Transferability

Due to the interview being conducted solely online, the study allowed participants from various parts of the world to participate. As the data showed similar results among all participants, this indicates that poor PIVC experiences are not exclusive to one location. Additionally, these shared experiences can foster social cohesion among DIVA patients worldwide. This is further supported by the similarities of patient experiences noted throughout the literature.

Study Limitations

Limitations include the sample and the interviewing process.

Sample

This study had a sample with only representation of the DIVA patients with chronic illnesses. This did not include other types of DIVA patients who may have other unique experiences of having PIVC inserted, such as those with a substance abuse history.

Interviewing Process

Following the conclusion of the interviews with participants and the review of the transcripts, I reflected on the questions and the probes asked as follow-ups. As I am a novice researcher and this is my first research project, I missed opportunities to ask more probing questions to clarify or gather additional information on specific topics. Some questions were missed for some interviews due to the researcher's error. Some questions were redundant and

might not have been as important as initially thought. If this study were to be recreated, the interview schedule would include a smaller number of questions which encompass the topic more cohesively.

Question 14 asks if participants saw any direct relationship between their past trauma and their current health. The answer to this question supports previous literature stating that trauma can sometimes manifest as physical symptoms and predispose people to certain chronic illnesses. This question should have been worded differently, along with other follow-up questions, to support the BITTEN model more effectively. BITTEN does not state that trauma has a direct influence on healthcare experiences, but rather that elements of healthcare experiences or procedures can trigger traumatic responses if they are similar to the trauma. Participants identify having experienced trauma in their past, which includes moments of betrayal and loss of control. These characteristics are consistent with feelings associated with PIVC insertion, as identified in other questions on the interview schedule. Though this is the case, this question could have had more probing questions surrounding specific elements of each participant's trauma that are similar to the PIVC insertion procedure to support this better.

Discussion and Future Directions

This study aimed to compare the BITTEN (Lewis et al., 2019) model with the experiences of DIVA patients who had poor PIVC insertion, in order to explore the applicability of this model to this patient population. Data collected represent a confirmation of the applicability of the BITTEN model, with some information challenging its predictability in patients. The data suggests that PIVC insertion can be considered a traumatic procedure for patients, and negative experiences are likely to inform expectations for the future.

As per the data, most participants discussed having experienced trauma in their past, which included medical trauma not exclusive to PIVC insertion. Additionally, they provided several examples of institutional betrayal and loss of trust in the procedure's success due to repeated failed attempts. This is congruent with the BITTEN model, in that patients have a complex history of trauma and risk re-traumatization with similar encounters.

In a previous study conducted by Langhinrichsen-Rohling et al. (2021), BITTEN was applied to patients with Ehlers-Danlos Syndrome and was shown to be effective in this patient population. As some of the participants in this study also live with this syndrome, their experiences are consistent with the findings of the previous study, as well as their experiences with PIVC insertion.

Clinician Considerations for the Future

Understanding that DIVA patients with chronic illnesses have been in and out of the healthcare system frequently, and have had multiple experiences with having PIVCs inserted, some of which could have been traumatic for them, is important to consider as a clinician. According to the data in this study, clinicians have the power to restore trust by incorporating the following information into their practice.

DIVA patients understand their bodies and vasculature due to their previous experiences. When they offer information, such as ‘tips and tricks,’ to help individuals be more successful, this needs to be heard and considered by the clinician. This fosters an environment that promotes collaboration and communication, thereby establishing a good relationship and trust with the patient. Throughout the interviews, those who have been ill since childhood stated an increase in dismissal by clinicians in their childhood; therefore, building a good foundation of trust early on may help prevent instances of institutional betrayal. Additionally, listening to the patient may

prevent unnecessary pain and reduce the time spent trying to obtain venous access. In environments which are busy and do not always offer the time to be patient and listen, it is even more important to stop and consider all options, as the environment has the potential to exacerbate any triggering memories for patients. Clinicians risk retraumatizing, recurring PIVC insertion failures, long-term damage to patient veins, and future venous access issues when this bridge of communication is broken. With each subsequent failed PIVC attempt, trust in the procedure is decreased.

Another way to bridge this communication gap is by asking patients if they have any preferences that can help alleviate some of the anxiety and discomfort associated with the procedure (e.g., preferred limb, room, distraction techniques, use of technology, or VAST). These preferences should be respected whenever reasonably able. This allows patients to feel as though they have a voice, power, and control over the experience. The interaction should always be collaborative, ever-growing, living, and accommodating.

Clinicians should be self-regulating and adequately gauge their skill set for PIVC insertion against the patient during a comprehensive assessment. This assessment should take into consideration the patient's diagnoses, any information provided by the patient, as well as an extensive physical assessment of the patient's vasculature prior to attempting treatment. As most participants in the interview stated that clinicians who are not experienced enough tend to seek additional help before making attempts, clinician self-assessment must be realistic and situational. Understanding that asking for help in a situation beyond one's skillset is not a sign of weakness or incompetence, but rather a factor in patient satisfaction and safety, Clinicians should then be mindful of the number of attempts with all patients, but especially those with complex histories or who have communicated past difficulties. Understanding that the immediate situation

may be one or two attempts, but for the patients, it's one or two more failures added to their difficulties.

Obtaining consent prior to attempting, utilizing available technologies if trained to do so, and utilizing specialty teams to minimize physical and emotional harm to each patient are also important tasks for the clinician.

Clinicians should both encourage patients to advocate for themselves whilst providing them with an environment where they feel comfortable doing so. According to the data, a power dynamic persists that can influence how much mistreatment a patient is willing to endure before speaking up. Many responses to questions indicated that the experience was dependent on the clinician. Clinicians can help mitigate this by maintaining consistency with the same care team that has established rapport with patients and understands their unique experiences. This is not always possible in acute or emergent settings. However, nurses should strive for consistency in providing a good PIVC experience, which includes open communication with the patient and accepting their input, a skilled clinician who has access to the appropriate means if it is beyond their skill level, and strict adherence to both proper techniques and policies, as well as the number of attempts.

Patient Considerations for the Future

Patients need a way to have control over the situation, as they have experienced multiple traumatic events in their lifetime, which can be considered traumatic, and have also experienced moments of powerlessness (Robinson-Reilly et al., 2015). Patients' experiences vary, but most participants in the study outlined specific tactics that allowed them to regain their power. This included distraction techniques, having support persons present, and finding/staying with the right care team. Additionally, participants in this study have taken their experiences and learned

from them, using aspects of their personal life to communicate effectively with clinicians, such as their educational or career background. They learned how to cope with difficult experiences and how to convey their needs effectively. Participants demonstrated a high level of resilience in the face of the negative experiences they have endured throughout their lifetime and during their time navigating the healthcare system.

Institutional Considerations for the Future

Institutions should reconsider the number of attempts guidelines and policies, and best practice guidelines should consider the physical and emotional trauma that multiple failed attempts cause patients. A DIVA patient may have four or more failed attempts (assuming the policies and guidelines are adhered to) of PIVC insertion prior to escalating to technology or VAST team, increasing the expectation that they will be subjected to multiple failed attempts. This is also only considering one PIVC need. DIVA patients' hospital stays can be extended or frequent, increasing the number of PIVCs they will require, thus re-initiating the cycle with each PIVC need.

The skill and demeanor of the clinician was more important to participants in this study than their professional designation, but this may be to the lack of availability of VAST teams and lack of ability to depend on having them available; however, more widespread initiatives to train clinicians on PIVC insertion and the use of ultrasound or vein finders could be considered by institutions; in addition, establishing VAST teams where not yet available, or increasing the shift coverage of these teams will help in creating consistent, safe and competent care that DIVA patients can expect to receive when needed for their PIVC insertion.

Personalized care bundles or decision trees may help clinicians determine the best approach to care for each patient's PIVC needs, including positioning, IV-gauge, type of care

professional (experienced or IV Team), use of specific technologies, coping strategies, and other adjuvant interventions such as warming or numbing cream. Consideration of creating a specialist trained similarly to the 'Child Life Specialist' in pediatrics to help prepare adult patients to reduce the trauma and pain associated with PIVC insertion and other painful procedures does not seem entirely unreasonable. By doing this, the patient is being cared for in the best possible way and knows that, in all reasonable instances, these care bundles will be adhered to, ensuring consistency in each encounter. These care bundles may help reduce the number of poor experiences these patients endure. They may even save the institution time and money by focusing on what works, rather than relying on multiple clinicians. Vein preservation can be practiced, traumatic insertions would be reduced, and patient satisfaction would increase.

Institutions should also consider training all clinicians who perform PIVC insertion in the principles of trauma-informed care. Bruce et al. (2018) suggest implementing a 'universal precaution' approach in which clinicians provide care on the assumption that the patients they see have all lived through a traumatic event.

In addition, it is clear that, in relation to the Quadruple Aim model, providing trauma-informed practices in PIVC insertions would be fulfilled. This is accomplished by treating patients with consideration of their past experiences, collaborating and involving them in their care, and finding the most skilled clinician to perform the duty correctly with a limited number of attempts.

Future Study Considerations

Future studies could investigate similar experiences in a larger, more comprehensive group of DIVA patients to explore other nuances or important considerations for different patient groups. Initiatives to implement and investigate the effect of trauma-informed care on clinicians

when performing PIVC insertion could be studied as well. Investigating the areas of this study that challenge the BITTEN model could be a consideration for modifying and improving it.

Though this study focuses on applying the BITTEN model to PIVC insertion, it is clear throughout the interview that PIVC insertion has many characteristics that constitute trauma. In addition, trauma is not exclusive to PIVC insertion, but also to other previous healthcare experiences. Future studies should continue to support this model with other medical procedures and experiences.

Conclusion

DIVA patients seek care with a complex history, both medically and personally, which may include instances of trauma. Clinicians inserting PIVCs have the responsibility of identifying moments during the procedure that can be potentially triggering for patients to prevent the risk of re-traumatizing past traumas. Past life and medical experiences create vulnerability in patients, leading to a need for nurturing during times of vulnerability. Clinicians hold the power to nurture and regain trust in these moments and prevent DIVA patients from being 'BITTEN' again by the healthcare institution. Remembering the human being on the other side of the needle - who is so complex and unique - is a basic human act of compassion. It is simply the essence and vocation of being a healthcare worker.

Conflict of Interest

The researcher identified no conflict of interest in this study.

References

Abrahamsson, K. H., Berggren1) U., Hallberg, L., & Carlsson, S. G. (2002). Dental phobic patients' view of dental anxiety and experiences in dental care: a qualitative study. *Scandinavian Journal of Caring Sciences*, *16*(2), 188–196. https://doi.org/10.1046/j.1471-6712.2002.00083.x

Andrews, G. J., & Shaw, D. (2010). "So we started talking about a beach in Barbados": Visualization practices and needle phobia. *Social Science & Medicine*, *71*(10), 1804–1810. https://doi.org/10.1016/j.socscimed.2010.08.010

Armenteros-Yeguas, V., Gárate-Echenique, L., Tomás-López, M. A., Cristóbal-Domínguez, E., Moreno-de Gusmão, B., Miranda-Serrano, E., & Moraza-Dulanto, M. I. (2017). Prevalence of difficult venous access and associated risk factors in highly complex hospitalized patients. *Journal of Clinical Nursing*, *26*(23–24), 4267–4275. https://doi.org/10.1111/jocn.13750

Bahl, A., Alsbrooks, K., Zazyczny, K. A., Johnson, S., & Hoerauf, K. (2024). An Improved Definition and SAFE Rule for Predicting Difficult Intravascular Access (DIVA) in Hospitalized Adults. *Journal of Infusion Nursing*, *47*(2), 96. https://doi.org/10.1097/NAN.0000000000000535

Berger, S., Winchester, K., Principe, R. B., & Culverwell, E. (2022). Prevalence of peripheral intravenous catheters and policy adherence: A point prevalence in a tertiary care university hospital. *Journal of Clinical Nursing*, *31*(15–16), 2324–2330. https://doi.org/10.1111/jocn.16051

Bruce, M. M., Kassam-Adams, N., Rogers, M., Anderson, K. M., Sluys, K. P., & Richmond, T. S. (2018). Trauma Providers' Knowledge, Views, and Practice of Trauma-Informed Care. *Journal of Trauma Nursing*, *25*(2), 131–138. https://doi.org/10.1097/JTN.0000000000000356

Bryne, E., Hean, S. C. P. D., Evensen, K. B., & Bull, V. H. (2022). Seeing the person before the teeth: A realist evaluation of a dental anxiety service in Norway. *European Journal of Oral Sciences*, *130*(3), e12860. https://doi.org/10.1111/eos.12860

Canadian Phlebotomy Technicians Group Inc. – Let phlebotomy be your skill, and caring be your profession. (n.d.). Retrieved November 18, 2024, from https://www.mycptg.ca/

Canadian Vascular Access Association. (2019). Canadian Vascular Access and Infusion Therapy Guidelines. Pembroke, ON: Pappin Communications.

Caplin, N., Sedlacek, M., Teodorescu, V., Falk, A., & Uribarri, J. (2003). Venous access: Women are equal. *American Journal of Kidney Diseases*, *41*(2), 429–432. https://doi.org/10.1053/ajkd.2003.50052

Carlson, E. B., & Dalenberg, C. J. (2000). A Conceptual Framework for the Impact of Traumatic Experiences. *Trauma, Violence, & Abuse*, *1*(1), 4–28. https://doi.org/10.1177/1524838000001001002

CDC. (2024, August 26). *Module 4: Trauma-Informed Care*. https://www.cdc.gov/overdose-prevention/php/training/module-4-trauma-informed-care.html

Clements, A., Grose, J., & Skirton, H. (2015). Experiences of UK patients with hepatitis C virus infection accessing phlebotomy: A qualitative analysis. *Nursing & Health Sciences*, *17*(2), 214–222. https://doi.org/10.1111/nhs.12173

Cole, B. S. (2021). Recognizing the Trauma of Adverse Childhood Experiences. *Journal of Christian Nursing*, *38*(4), 248–252. https://doi.org/10.1097/CNJ.0000000000000884

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. https://doi.org/10.1371/journal.pone.0193436

Cuthbertson, L., & Ashton, S. (2021). The patient experience of peripheral intravenous therapy: development of a patient survey, initial findings, and next steps. *British Journal of Nursing*, *30*(2), S42–S48. https://doi.org/10.12968/bjon.2021.30.2.S42

Daher, N., & Bohensky, J. (2022). Getting to the heart of the opioid crisis: Infective endocarditis. *JAAPA*, *35*(8), 26–30. https://doi.org/10.1097/01.JAA.0000824936.01689.ed

Disano, J., Goulet, J., Muhajarine, N., Neudorf, C., & Harvey, J. (2010). Socio-economic status and rates of hospital admission for chronic disease in urban Canada. *The Canadian Nurse*, *106*(1), 24–29.

Düztepeliler, S., & Gürol Arslan, G. (2020). The Effect of Vibration on Pain and Anxiety During Intravenous Blood Sampling in Adults. *Journal of Education and Research in Nursing*. https://doi.org/10.5222/HEAD.2020.10692

Elliott, M. N., Lehrman, W. G., Beckett, M. K., Goldstein, E., Hambarsoomian, K., & Giordano, L. A. (2012). Gender Differences in Patients' Perceptions of Inpatient Care. *Health Services Research*, *47*(4), 1482. https://doi.org/10.1111/j.1475-6773.2012.01389.x

Executive, O. of the N. and M. S. D. H. S. (2017). *Guiding Framework for the Education, Training and Competence Validation in Venepuncture and Peripheral Intravenous Cannulation for Nurses and Midwives 2017* [Report]. Health Service Executive (HSE). https://www.lenus.ie/handle/10147/622531

Garraud, O., & Lefrère, J.-J. (2014). Blood and blood-associated symbols beyond medicine and transfusion: far more complex than first appears. *Blood Transfusion = Trasfusione Del Sangue*, *12*(1), 14–21. https ://doi.org/10.2450/2013.0131-13

Gilchrist, P. T., Thijsen, A., Masser, B. M., France, C. R., & Davison, T. E. (2021). Improving the donation experience and reducing venipuncture pain by addressing fears among whole-blood and plasma donors. *Transfusion*, *61*(7), 2107–2115. https://doi.org/10.1111/trf.16407

Goldsmith, R. E., Freyd, J. J., & DePrince, A. P. (2012). Betrayal Trauma: Associations With Psychological and Physical Symptoms in Young Adults. *Journal of Interpersonal Violence*, *27*(3), 547–567. https://doi.org/10.1177/0886260511421672

Gomes, T., Kitchen, S. A., Tailor, L., Men, S., Murray, R., Bayoumi, A. M., Campbell, T., Young, S., & Kolla, G. (2022). Trends in Hospitalizations for Serious Infections Among People With Opioid Use Disorder in Ontario, Canada. *Journal of Addiction Medicine*, *16*(4), 433–439. https://doi.org/10.1097/ADM.0000000000000928

Greene, A., Korchmaros, J. D., & Frank, F. (2024). Trauma Experience Among Women Who Have Substance Use Disorders and are Homeless or Near Homeless. *Community Mental Health Journal*, *60*(2), 233–243. https://doi.org/10.1007/s10597-023-01162-6

Guta, A., Buchman, D. Z., Schmidt, R. A., Perri, M., & Strike, C. (2022). Trauma-Informed Approaches in Healthcare Ethics Consultation: A Missing Element in Healthcare for People Who Use Drugs during the Overdose Crisis? *The American Journal of Bioethics*, *22*(5), 68–70. https://doi.org/10.1080/15265161.2022.2055208

Halpern, J. (2023). What we owe patients when fear undermines autonomy: Concretized emotions and the incapacity to deliberate. *Journal of Evaluation in Clinical Practice*, *29*(8), 1251–1260. https://doi.org/10.1111/jep.13864

Hamberger, L. K., Barry, C., & Franco, Z. (2019). Implementing Trauma-Informed Care in Primary Medical Settings: Evidence-Based Rationale and Approaches. *Journal of Aggression, Maltreatment & Trauma*, *28*(4), 425–444. https://doi.org/10.1080/10926771.2019.1572399

Hart-Johnson, T., & Green, C. R. (2012). The Impact of Sexual or Physical Abuse History on Pain-Related Outcomes Among Blacks and Whites with Chronic Pain: Gender Influence. *Pain Medicine*, *13*(2), 229–242. https://doi.org/10.1111/j.1526-4637.2011.01312.x

Husarewycz, M. N., El-Gabalawy, R., Logsetty, S., & Sareen, J. (2014). The association between number and type of traumatic life experiences and physical conditions in a nationally representative sample. *General Hospital Psychiatry*, *36*(1), 26–32. https://doi.org/10.1016/j.genhosppsych.2013.06.003

Kelly, L. J. (2014). Pig bladders and feather quills: a history of vascular access devices. *British Journal of Nursing*, *23*(Sup19), S21–S25. https://doi.org/10.12968/bjon.2014.23.Sup19.S21

Kelly, L., & Snowden, A. (2021). 'Pinholes in my arms': The vicious cycle of vascular access. *Vascular Access*, *15*(3), 15–24. https://doi.org/10.5737/cvaa-1531524

Kitson, C., & O'Byrne, P. (2021). The Experience of Violence Against Women Who Use Injection Drugs: An Exploratory Qualitative Study. *Canadian Journal of Nursing Research*, *53*(4), 340–352. https://doi.org/10.1177/0844562120979577

Klest, B., Tamaian, A., & Mutschler, C. (2017). Betrayal Trauma, Health Care Relationships, and Health in Patients with a Chronic Neurovascular Condition. *Journal of Aggression, Maltreatment & Trauma*, *26*(1), 18–33. https://doi.org/10.1080/10926771.2015.1107175

Kuipers, Y. J., Thomson, G., Goberna-Tricas, J., Zurera, A., Hresanová, E., Temesgenová, N., Waldner, I., & Leinweber, J. (2023). The social conception of space of birth narrated by women with negative and traumatic birth experiences. *Women and Birth*, *36*(1), e78–e85. https://doi.org/10.1016/j.wombi.2022.04.013

Langhinrichsen-Rohling, J., Lewis, C. L., McCabe, S., Lathan, E. C., Agnew, G. A., Selwyn, C. N., & Gigler, M. E. (2021). They've been BITTEN: reports of institutional and provider betrayal

and links with Ehlers-Danlos Syndrome patients' current symptoms, unmet needs and healthcare expectations. *Therapeutic Advances in Rare Disease*, *2*, 26330040211022030. https://doi.org/10.1177/26330040211022033

Larsen, E., Keogh, S., Marsh, N., & Rickard, C. (2017). Experiences of peripheral IV insertion in hospital: a qualitative study. *British Journal of Nursing*, *26*(19), S18–S25. https://doi.org/10.12968/bjon.2017.26.19.S18

Larsen, E. N., Marsh, N., Rickard, C. M., Mihala, G., Walker, R. M., & Byrnes, J. (2024). Health-related quality of life and experience measures, to assess patients' experiences of peripheral intravenous catheters: a secondary data analysis. *Health and Quality of Life Outcomes*, *22*(1), 1. https://doi.org/10.1186/s12955-023-02217-8

Lathan, E. C., Selwyn, C. N., & Langhinrichsen-Rohling, J. (2021). The "3 Es" of trauma-informed care in a federally qualified health center: Traumatic *Event* - and *Experience* -related predictors of physical and mental health *Effects* among female patients. *Journal of Community Psychology*, *49*(2), 703–724. https://doi.org/10.1002/jcop.22488

Lau, B., Miguel, S. S., & Chow, J. (2010). Policy and clinical practice: audit tools to measure adherence. *Renal Society of Australasia Journal*, *6*(1), 36–41. https://go.gale.com/ps/i.do?p=AONE&sw=w&issn=18323804&v=2.1&it=r&id=GALE%7CA230959175&sid=googleScholar&linkaccess=abs

Ledford, V., Lim, J. R., Namkoong, K., Chen, J., & Qin, Y. (2022). The Influence of Stigmatizing Messages on Danger Appraisal: Examining the Model of Stigma Communication for Opioid-Related Stigma, Policy Support, and Related Outcomes. *Health Communication*, *37*(14), 1765–1777. https://doi.org/10.1080/10410236.2021.1920710

Lewis, C. L., Langhinrichsen-Rohling, J., Selwyn, C. N., & Lathan, E. C. (2019). Once BITTEN, Twice Shy: An Applied Trauma-Informed Healthcare Model. *Nursing Science Quarterly*, *32*(4), 291–298. https://doi.org/10.1177/0894318419864344

Lewis, C. L., Lathan, E. C., Selwyn, C. N., Agnew, G. A., McCabe, S. D., Gigler, M. E., & Langhinrichsen-Rohling, J. (2021). BITTEN at the Bedside: An Application Guide for Nurse Practitioners. *The Journal for Nurse Practitioners*, *17*(6), 691–696. https://doi.org/10.1016/j.nurpra.2020.12.006

Libbis, E., Sweeny, A. L., Holmes, T., Aggarwal, N., Snelling, P. J., Slaughter, E., Poncia, H., Watkins, S. C. (2022). Forearmed is forewarned: A prospective intervention observational time-series study of patient empowerment for ultrasound-guided peripheral intravenous access. *Emergency Medicine Australasia*, *34*(5), 779–785. https://doi.org/10.1111/1742-6723.13981

Lindsay, R. L. (1996). Minimizing the Trauma of Phlebotomy. *Laboratory Medicine*, *27*(10), 645–647. https://doi.org/10.1093/labmed/27.10.645

Lorenc, J., Flaucher, N., Evans, E., & Schurman, J. V. (2024). Establishing a plan to improve pediatric patient comfort during PIV insertions and blood specimen collection: a quality improvement effort. *British Journal of Nursing*, *33*(7), S36–S42. https://doi.org/10.12968/bjon.2024.33.7.S36

Mackereth, P., Hackman, E., Tomlinson, L., Manifold, J., & Orrett, L. (2012). 'Needle with ease': rapid stress management techniques. *British journal of nursing (Mark Allen Publishing)*, *21*(14), S18–S22. https://doi.org/10.12968/bjon.2012.21.Sup14.S18

Masamoto, T., & Yano, R. (2021). Characteristics of expert nurses' assessment of insertion sites for peripheral venous catheters in elderly adults with hard-to-find veins. *Japan Journal of Nursing Science*, *18*(1), e12379. https://doi.org/10.1111/jjns.12379

Maun, A., Björkelund, C., & Arvidsson, E. (2023). Primary care utilisation, adherence to guideline-based pharmacotherapy and continuity of care in primary care patients with chronic diseases and multimorbidity – a cross-sectional study. *BMC Primary Care*, *24*(1), 237. https://doi.org/10.1186/s12875-023-02191-6

McBain, S. A., & Cordova, M. J. (2024). Clinical Education: Addressing Prior Trauma and Its Impacts in Medical Settings. *Journal of Clinical Psychology in Medical Settings*, *31*(3), 501–512. https://doi.org/10.1007/s10880-024-10029-1

McIntosh, M. J., & Morse, J. M. (2015). Situating and Constructing Diversity in Semi-Structured Interviews. *Global Qualitative Nursing Research*, *2*, 2333393615597674. https://doi.org/10.1177/2333393615597674

McLenon, J., & Rogers, M. A. M. (2019). The fear of needles: A systematic review and meta-analysis. *Journal of Advanced Nursing*, *75*(1), 30–42. https://doi.org/10.1111/jan.13818

Millam, D. (1996). The history of intravenous therapy. *Journal of Intravenous Nursing: The Official Publication of the Intravenous Nurses Society*, *19*(1), 5–14.

Nicholson, J., & Davies, L. (2013). Patients' experiences of the PICC insertion procedure. *British Journal of Nursing*, *22*(Sup9), S16–S23. https://doi.org/10.12968/bjon.2013.22.Sup9.S16

Nickel B, Gorski LA, Kleidon TM, et al. Infusion therapy standards of practice. J Infus Nurs. 2024;47(suppl1):S1-S285. Doi:10.1097/NAN.0000000000000532

Omkar Prasad, R., Chew, T., Giri, J. R., & Hoerauf, K. (2022). Patient Experience With Vascular Access Management Informs Satisfaction With Overall Hospitalization Experience. *Journal of Infusion Nursing*, *45*(2), 95–103. https://doi.org/10.1097/NAN.0000000000000460

O'toole, T.P., Pollini, R.A., Gray, P., Jones, T., Bigelow, G.E., & Ford, D.E. (2007). Factors identifying high-frequency and low-frequency health service utilization among substance-using adults. *Journal of substance abuse treatment, 33 1*, 51-9 .

Parliament of Canada. (2001). *Bill C-261: An Act to establish the rights of patients in relation to health, treatment and records* (1st Reading). House of Commons. https://www.parl.ca/documentviewer/en/37-1/bill/C-261/first-reading

Papastavrou, E., Efstathiou, G., & Andreou, C. (2016). Nursing students' perceptions of patient dignity. Nursing Ethics, 23(1), 92–103. https://doi.org/10.1177/096973301455713

Pidd, D., Newton, M., Wilson, I., & East, C. (2023). Optimising maternity care for a subsequent pregnancy after a psychologically traumatic birth: A scoping review. *Women and Birth*, *36*(5), e471–e480. https://doi.org/10.1016/j.wombi.2023.03.006

Parapia, L. A. (2008). History of bloodletting by phlebotomy. *British Journal of Haematology*, *143*(4), 490–495. https://doi.org/10.1111/j.1365-2141.2008.07361.x

Plohal, A. (2021). A Qualitative Study of Adult Hospitalized Patients With Difficult Venous Access Experiencing Short Peripheral Catheter Insertion in a Hospital Setting. *Journal of Infusion Nursing*, *44*(1), 26–33. https://doi.org/10.1097/NAN.0000000000000408

Post-traumatic stress disorder. (n.d.). Retrieved October 7, 2024, from https://www.who.int/news-room/fact-sheets/detail/post-traumatic-stress-disorder

Purkey, E., Patel, R., Beckett, T., & Mathieu, F. (2018). Primary care experiences of women with a history of childhood trauma and chronic disease: Trauma-informed care approach. *Canadian Family Physician Medecin De Famille Canadien*, *64*(3), 204–211.

Rapid growth in the demand for blood products could cause national supply to dwindle | Canadian Blood Services. (n.d.). Retrieved July 15, 2024, from https://www.blood.ca/en/about-

us/media/newsroom/rapid-growth-demand-blood-products-could-cause-national-supply-dwindle

Rastegar, P. J., & Langhinrichsen-Rohling, J. (2024). Understanding College Students' Healthcare Avoidance: From Early Maladaptive Schemas, through Healthcare Institutional Betrayal and Betrayal Trauma Appraisal of Worst Healthcare Experiences. *Healthcare*, *12*(11), 1126. https://doi.org/10.3390/healthcare12111126

Ray T. (2011). Save the vein: what nurses need to know. *Nephrology nursing journal : journal of the American Nephrology Nurses' Association*, *38*(1), 85–86.

Robinson-Reilly, M., Paliadelis, P., & Cruickshank, M. (2016). Venous access: the patient experience. *Supportive Care in Cancer*, *24*(3), 1181–1187. https://doi.org/10.1007/s00520-015-2900-9

Salleras-Duran, L., Fuentes-Pumarola, C., Ballester-Ferrando, D., Congost-Devesa, L., Delclós-Rabassa, J., & Fontova-Almató, A. (2020). Development, Diagnostic Sensitivity, and Prognostic Accuracy of the Adult–Difficult Venous Catheterization Scale for Emergency Departments. *Journal of Emergency Nursing*, *46*(6), 827-837.e2. https://doi.org/10.1016/j.jen.2020.06.013

Salleras-Duran, L., Fuentes-Pumarola, C., Fontova-Almató, A., Roqueta-Vall-Llosera, M., Cámara-Liebana, D., & Ballester-Ferrando, D. (2024). Pain and Satisfaction Perceptions of Ultrasound-Guided Versus Conventional Peripheral Intravenous Catheterization: A Randomized Controlled Trial. *Pain Management Nursing*, *25*(1), e37–e44. https://doi.org/10.1016/j.pmn.2023.07.010

Sandelowski, M. (1999). Venous Envy: The Post-World War II Debate over IV Nursing: *Advances in Nursing Science*, *22*(1), 52–62. https://doi.org/10.1097/00012272-199909000-00006

Sandström, L., & Forsberg, A. (2018). Problems associated with performance of peripheral intravenous catheterization in relation to working experience. *Journal of Vascular Nursing*, *36*(4), 196–202. https://doi.org/10.1016/j.jvn.2018.06.002

Schneider, A., Andrade, J., Tanja-Dijkstra, K., White, M., & Moles, D. R. (2016). The psychological cycle behind dental appointment attendance: a cross-sectional study of experiences, anticipations, and behavioral intentions. *Community Dentistry and Oral Epidemiology*, *44*(4), 364–370. https://doi.org/10.1111/cdoe.12221

Schults, J. A., Calleja, P., Slaughter, E., Paterson, R., Rickard, C. M., Booker, C., Marsh, N., Fenn, M., Kelly, J., Snelling, P. J., Byrnes, J., Keijzers, G., & Cooke, M. (2022). Peripheral intravenous catheter insertion and use of ultrasound in patients with difficult intravenous access: Australian patient and practitioner perspectives to inform future implementation strategies. *PLOS ONE*, *17*(6), e0269788. https://doi.org/10.1371/journal.pone.0269788

Selwyn, C. N., Lathan, E. C., Richie, F., Gigler, M. E., & Langhinrichsen-Rohling, J. (2021). Bitten by the System that Cared for them: Towards a Trauma-Informed Understanding of Patients' Healthcare Engagement. *Journal of Trauma & Dissociation*, *22*(5), 636–652. https://doi.org/10.1080/15299732.2020.1869657

Sharp, R., Muncaster, M., Baring, C. L., Manos, J., Kleidon, T. M., & Ullman, A. J. (2023). The parent, child and young person experience of difficult venous access and recommendations for clinical practice: A qualitative descriptive study. *Journal of Clinical Nursing*, *32*(17–18), 6690–6705. https://doi.org/10.1111/jocn.16759

Shave, K., Ali, S., Scott, S. D., & Hartling, L. (2018). Procedural pain in children: a qualitative study of caregiver experiences and information needs. *BMC Pediatrics*, *18*(1), 324. https://doi.org/10.1186/s12887-018-1300-y

Silva, M., Schuelter, P. I., Tourinho, F. S. V., Da Silva, P. F., Santos, V. E. P., & Misiak, M. (2021). Peripheral venipuncture practices performed by nursing professionals in a university hospital / Práticas de venopunção periférica dos profissionais de enfermagem em um hospital universitário. *Revista de Pesquisa Cuidado é Fundamental Online*, *13*, 724–729. https://doi.org/10.9789/2175-5361.rpcfo.v13.7151

Song, C., & Oh, H. (2016). Burn patients' experience of peripherally inserted central catheter insertion: Analysis of focus group interviews from a South Korean burn center. *Burns*, *42*(7), 1439–1444. https://doi.org/10.1016/j.burns.2016.04.006

Sou, V., McManus, C., Mifflin, N., Frost, S. A., Ale, J., & Alexandrou, E. (2017). A clinical pathway for the management of difficult venous access. *BMC Nursing*, *16*(1), 64. https://doi.org/10.1186/s12912-017-0261-z

Sweet, P. L. (2019). The Sociology of Gaslighting. *American Sociological Review*, *84*(5), 851–875. https://doi.org/10.1177/0003122419874843

The Four Humours: Understandings of the Body in Medieval Medicine. (2021, May 2). https://retrospectjournal.com/2021/05/02/the-four-humours-understandings-of-the-body-in-medieval-medicine/

Todt K. (2023). Strategies to combat implicit bias in nursing. *American Nurse Journal.* 18(7):19-23. Doi:10.51256/anj072319

Traino, K. A., Espeleta, H. C., Dattilo, T. M., Fisher, R. S., & Mullins, L. L. (2023). Childhood Adversity and Illness Appraisals as Predictors of Health Anxiety in Emerging Adults with a Chronic Illness. *Journal of Clinical Psychology in Medical Settings*, *30*(1), 143–152. https://doi.org/10.1007/s10880-022-09870-z

Trauma and Violence. (2019, January 14). https://www.samhsa.gov/trauma-violence

Trauma Informed. (n.d.). Retrieved October 7, 2024, from https://www.traumapolicy.org/home

Tsakmakis, P. L., Akter, S., & Bohren, M. A. (2023). A qualitative exploration of women's and their partners' experiences of birth trauma in Australia, utilising critical feminist theory. *Women and Birth*, *36*(4), 367–376. https://doi.org/10.1016/j.wombi.2022.12.004

Turgut, A. 1, Guven, S. D., & Vefa Kucuk Faculty of Health Sciences, N. D. (2022). *Determination of Fear of Injections and Factors Affecting the Fear of Injections in Adults: A Descriptive Study*. 1268–1274. https://www.proquest.com/docview/2723217407?sourcetype=Scholarly%20Journals

Vein Preservation. (2018, April 24). https://www.ontariorenalnetwork.ca/en/kidney-care-resources/clinical-tools/body-access/vein-preservation

Vilhjalmsdottir, A., Halldorsdottir, S., & Sigurdardottir, S. (2023). Women's Lived Experience of the Interconnectedness of Trauma, Substance Use, and Prison. *Journal of Forensic Nursing*, *19*(1), 3–11. https://doi.org/10.1097/JFN.0000000000000413

Violence against women. (n.d.). Retrieved October 7, 2024, from https://www.who.int/news-room/fact-sheets/detail/violence-against-women

Watson, K., White, C., Hall, H., & Hewitt, A. (2021). Women's experiences of birth trauma: A scoping review. *Women and Birth*, *34*(5), 417–424. https://doi.org/10.1016/j.wombi.2020.09.016

Witting, M. D., Moayedi, S., Hirshon, J. M., George, N. H., & Schenkel, S. M. (2019). Predicting Failure of Intravenous Access in Adults: The Value of Prior Difficulty. *The Journal of Emergency Medicine*, *57*(1), 1–5. https://doi.org/10.1016/j.jemermed.2019.02.011

Witting, M. D., Moayedi, S., Yang, Z., & Mack, C. B. (2016). Advanced intravenous access: technique choices, pain scores, and failure rates in a local registry. *The American Journal of Emergency Medicine*, *34*(3), 553–557. https://doi.org/10.1016/j.ajem.2015.12.062

Yalçınlı, S., Akarca, F. K., Can, Ö., Şener, A., & Akbinar, C. (2019). Factors affecting the first-attempt success rate of intravenous cannulation in older people. *Journal of Clinical Nursing*, *28*(11–12), 2206–2213. https://doi.org/10.1111/jocn.14816

Appendix A: Trent University REB Approval Letter

January 28, 2025
File #: 29443
Title: A Study to Determine The Relevancy of The BITTEN Mid-Range Theory in Explaining Patients' Adverse IV Experiences
Dear Mrs. Markose,
The Research Ethics Board (REB) has given approval to your proposal entitled "A Study to Determine The Relevancy of The BITTEN Mid-Range Theory in Explaining Patients' Adverse IV Experiences". This email serves as an official approval letter. Please note that no additional documents will follow this approval.
When a project is approved by the REB, it is an Institutional approval. It is not to be used in place of any other ethics process.

To maintain its compliance with this approval, the REB must receive via ROMEO:

An Annual Update for each calendar year research is active;

A Study Renewal should the research extend beyond its approved end date of January 28, 2026;

A Study Closure Form at the end of active research.

This project has the following reporting milestones set:

Renewal Due-2026/01/28
Annual progress report-2025/12/31

To complete these milestones, click the Events tab in your ROMEO protocol to locate and submit the relevant form.

If an amendment to the protocol is required, you must submit an Amendment Form, available in the Events tab in your ROMEO protocol, for approval by the REB prior to implementation.

Any questions regarding the submission of reports or Event forms in ROMEO can be directed to Anna Kisiala, Coordinator, Research Conduct and Reporting, at annakisiala@trentu.ca
On behalf of the Trent Research Ethics Board, I wish you success with your research.
Best Wishes,

Dr. Blair Niblett
REB Chair
Phone: 705-748-1011 ext. 7052
Email: blairniblett@trentu.ca

Appendix B: Recruitment Poster A

Have you had a BAD experience getting an IV?

- Do you have a health condition that requires you to have IVs frequently?
- Do healthcare providers have difficulty giving you an IV?
- Do you fit one or both of the following criteria:

  - have a chronic illness?
  - have a history of IV drug use?

- Have these bad experiences affected how you seek healthcare?

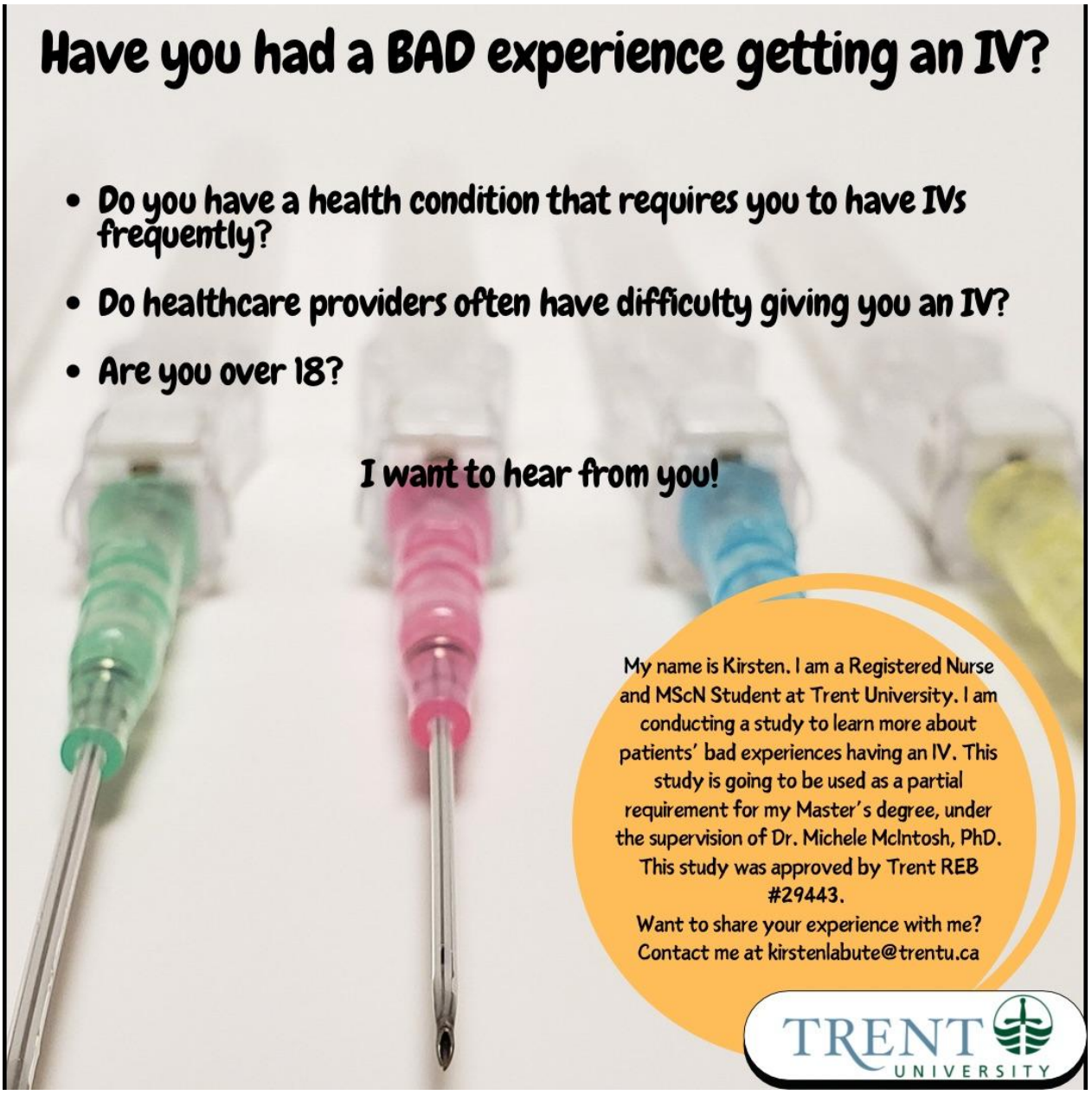
If you are over the age of 18 and fit these criteria,
I want to hear from YOU!

My name is Kirsten. I am a Registered Nurse and MScN Student at Trent University. I am conducting a study to learn more about patients' bad experiences having an IV. This study is going to be used as a partial requirement for my Master's degree, under the supervision of Dr. Michele McIntosh, PhD. This study was approved by Trent REB #29443.

Want to share your experience with me? Contact me at kirstenlabute@trentu.ca

TRENT UNIVERSITY

Appendix C: Recruitment Poster B



Appendix D: Letter of Information

Understanding Patients' Experiences with Difficult Venous Access
Letter of Information

You are invited to participate in a research study. Before you agree to participate, ***please read this form carefully and ask any questions you may have*** to be sure that you understand what your participation will involve.

INVESTIGATORS:

This research study is being conducted by Kirsten Markose, RN in partial fulfillment of the requirements of her master's degree in nursing. This thesis is supervised by Dr. Michele McIntosh, PhD at Trent University.

PURPOSE OF THE STUDY:

The purpose of the study is to better understand the emotional impact of patients who have had difficulty with having IVs inserted. My hope is to improve the experiences of patients receiving IVs.

Can I participate?

You are eligible to participate in this study if:

- You are over the age of 18
- You have **one or more** of the following: chronic illness requiring frequent IV infusions or visits to the hospital, a history of or current use of IV drugs, frequent admissions to hospital
- You have frequently have difficulty when you get an IV - You have had negative experiences when getting an IV

You are ineligible to participate if:

- You are under the age of 18

VOLUNTARY PARTICIPATION AND WITHDRAWAL:

Participation in this study is completely voluntary. You can choose whether to participate or not. If any question makes you uncomfortable, you can skip that question. You may stop participating at any point. If you choose to stop participating, you may also choose not to have your data included in the study. Your choice of whether to participate will not influence your future relations with Trent University, or the investigators (Kirsten Markose, RN and Dr. Michele McIntosh) involved in the research.

WHAT WILL I BE ASKED TO DO?

If you agree to participate in this study, you will be asked to do the following:

- The researcher will contact you to set up a date and time for the interview that is convenient for you
- You will be asked to have reliable internet connection and access to a computer privately at the time of the interview
- The interview will be conducted over Zoom; if you have a preference to have the interview conducted via phone call, this can be arranged
- Please reserve up to 1 hour and 45 mins for the interview though you may end it when you wish
- You will be asked a series of open-ended questions about your previous IV experiences as well as some questions about past trauma.

POTENTIAL BENEFITS:

I cannot guarantee, however, that you will receive any direct benefits from participating in this study. However, your participation may help me to better understand your experience and develop approaches to improve patients' experiences of IVs.

WHAT ARE THE POTENTIAL RISKS TO YOU AS A PARTICIPANT:

Some questions in this study will ask you to recollect potentially unpleasant experiences. These questions may make you feel some discomfort when recollecting these memories. If you are uncomfortable with answering any of these questions, you have the right to skip answering them or stop participating in the study either temporarily or permanently. You have the right to withdraw from the study at any time, including after the interview has been conducted.

CONFIDENTIALITY:

Your name and other identifying information provided during the interview will be anonymised. Your name will be changed to a participant number to protect your privacy.

DATA STORAGE:

All data collected will be protected using password protected Trent University resources (OneDrive, E-Mail, and Zoom). Should you choose to conduct the interview vis telephone, recording will be saved on a password protected phone. Data may be shared with Dr. Michele McIntosh (Academic Supervisor). All interview recordings will be destroyed upon thesis defence. Transcripts containing interview content will be stored for up to seven (7) years on an encrypted USB in a locked filing cabinet and will be destroyed after this time frame. Results from the interviews will be used for a Thesis Paper by Kirsten Markose, RN, as well as potential future relevant publications or conferences.

INCENTIVES AND/OR COMPENSATION FOR PARTICIPATION:

You will not be compensated for your participation in this study.

COMPENSATION FOR INJURY:

By agreeing to participate in this research, you are not waiving any legal right in the event that you are harmed during the research.

QUESTIONS ABOUT THE STUDY:

If you have any questions or concerns about the research please contact myself or my supervisor
Kirsten Markose, RN, MScN Student: kirstenlabute@trentu.ca
Dr. Michele McIntosh, PhD, Academic Supervisor: michelemcintosh@trentu.ca

This study has been reviewed by the Trent University Research Ethics Board, the study number is 29443.
If you have concerns about the research ethics of this interview study please contact: Anna Kisiala
Coordinator, Research Conduct and Reporting
705-748-1011 ext. 7866
annakisiala@trentu.ca

CONSENT
Your consent will be verbal. At the beginning of the interview I will ask you the following questions:

☐ Have you read the information letter?
☐ Do you have any questions about the study;

☐ Please confirm you are aware your participation is entirely voluntary and you can refuse any questions, take a break or withdraw consent to participate at any time;

☐ Do you agree to this interview being audio and visually recorded?

☐ Do you understand how these recordings will be used, stored and destroyed?

☐ Do you understand how your information will be kept confidential?

☐ I wish to have my interview conducted via Zoom

☐ I wish to have my interview conducted via phone call (password protected) -you will need to ask this at the interview arrangement.

Appendix E: Interview Schedule

Domain: DIVA Patients' Experiences of PIVC Insertion					
Category		**Item Number**	**Scheduled Question Stem and Probe**	**References**	**Aide Memoire**
Trauma	**Past Trauma and Health**	1	How would you describe your health? **Probe**: when did this begin?	(Cole, 2021) (Husarewycz, et al., 2014)	Looking for information on health conditions- i.e. chronic illnesses, need for hospitalization, etc. Looking for history of experiences outside of PIVC insertion to see how to experience differs
		2	How would you describe your previous healthcare experiences? **Probe**: What has been your experience as a patient?		
	Trauma and PIVC insertion	3	Please share an experience you have had getting an IV **Probe**: Would you consider this a typical experience?	(Sharp et al., 2023) (Kelly and Snowden, 2021) (Robinson-Reilly et al., 2016) (Cooke et al., 2018) (Shave et al., 2018)	This information will be used for the rest of the interview, allows patients to recollect previous poor experiences and contrast between different experiences
		4	Have you had a different kind of IV experience? Probe: How was it different?		
Indicator for Healthcare Engagement	**Reason for Seeking Care**	5	Thinking about your most recent bad experience with having an IV, what was the reason you went to the hospital?	(Disano et al., 2010) (Gomes et al., 2022) (Lewis et al., 2019)	Identifying the reason for seeking care The indicator for engagement states the closer the reason for seeking care is to a previous poor experience, the more likely they will exhibit trauma symptoms
		6	Was this the first time you had gone to the hospital for this reason?		
Trigger of Traumatic Symptoms	**Needle Phobia**	7	How do you feel about getting an IV? **Probe**: What emotions are present?	(Cooke et al., 2018) (McLennon and Rogers, 2018) (Turgut and Guven, 2022) (Silva et al., 2021)	Needles can be a trigger of past traumas
		8	Where do these feelings come from?		
		9	How do you physically respond to getting an IV? **Probe:** what does your body do?		
		10	Were there any other experiences in your life that made you feel this way?		
		11	Are you afraid of needles? **Probe**: can you describe this to me?		

	Past Trauma		12	As a child, have you experienced any form of trauma? **Probe:** at any other time in your life?	(Greene et al., 2024) (World Health Organization, n.d.)	DIVA patients may have experienced traumas in their past which they bring to each encounter in hospital 70% of the world's population has experienced a traumatic event
			13	Have you ever witnessed what you would consider a traumatic event in your lifetime? **Probe**: can you elaborate on this?		
			14	Do you believe there is a relationship between these events and your current health? **Probe:** can you elaborate?		
Betrayal	**Triggering Environment**		15	Where in the hospital do you usually get your Ivs? **Probe:** how important is location to your experience?	(Andrews and Shaw, 2018) (Schults et al, 2022)	Environment can be a trigger for past traumas
			16	Do you have a preferred location for receiving the IV? **Probe:** What about that location makes it preferred?		
			17	Is there anything about the environment you get your Ivs in that can affect your experience? **Probe:** What are these?		
	Intimacy and Powerlessness		18	Is there anything about the procedure that makes you uncomfortable and why? **Probe:** Have you ever been held down to have an IV inserted?	(Robinson-Reilly et al., 2016) (Schneider et al., 2016)	PIVC insertion is an intimate procedure, patients may feel powerless in what happens This intimacy can be a trigger of past traumas
			19	Thinking of an IV experience, did you feel the healthcare professionals were responsive to you?		
			20	Did the nurse consult with you before attempting for the IV? **Probe**: how?		
Patient Expectations	**Expectations for the Future**		21	Before you get an IV, do you have expectations about that experience? **Probe:** What are these expectations? Where do they come from?	(Lewis et al., 2019)	If a negative experience occurred, a patient may be more likely to think the next encounter will play out similarly
Trust in Healt	**Patient/Clinician Communication**		22	Do you feel that you are able to have input into your IV experience?	(Papastavrou, 2016) (Larsen et al., 2024)	Patients feel like there is no open communication/have

				Probe: pointing out a specific spot that might allow for success, stating a previous difficulty with IV insertion	(Clements et al., 2014)	little say in what happens
			23	How do the nurses usually explain to you the difficulties they were having when putting your IV in? **Probe:** What were these reasons?		
			24	Do you advocate for yourself in your interactions with healthcare professionals? **Probe**: Is this the same when you are having an IV put in?		
Patient Expectations/Needs	**Specialist Use**		25	Can you describe to me any instances in which an IV Team was called to help insert your IV? **Probe:** Do you have to ask for them to be used? Is an IV Team used every time?	(Nickel et al., 2024)	IV Teams are recommended to be used with patients with difficult venous access if available, but even if a patient requires a specialist or expects it to be used next time, it may not be available for a variety of reasons
	Technology Use		26	Can you describe any instances where extra technology was used to find your veins, such as an ultrasound or vein finder? **Probe:** Do you have to ask for it to be used? Is it used every time?	(Nickel et al., 2024) (Sou et al., 2021) (Schults et al., 2022) (Libbis et al., 2022)	Technology is an excellent tool to find veins in DIVA patients, but even if a patient requires it or expects it to be used next time, it may not be available for a variety of reasons
Trust in Healthcare Providers	**Trust in Clinician in the Future**		27	Currently, how confident are you in nursing care? **Probe:** Have your views changed?	(Rastegar and Langhinrichson-Rohling, 2024).	Negative experiences may make patients feel as though they cannot trust the providers moving forward
Trauma and PIVC Insertion	**Avoidance and Hesitancy of Care in the Future**		28	Have your previous experiences with having an IV affected your decisions about receiving healthcare in the future? **Probe:** how so?	(Watson et al., 2021) (McLenon and Rogers, 2019) (Lewis et al., 2019)	Medical trauma leads to avoidance of care and hesitancy
			29	Have you ever decided against going to the hospital for care?		

				Probe: Was this avoidance for care that you needed? How has avoiding care affected your health?		
			30	Do you have a preferred hospital to go to for care? (You do not have to mention a name) **Probe**: Can you tell me more about why you have that preference		
	Sharing Lived Experiences		31	Have you ever shared your experiences with having an IV with anyone? **Probe:** What was the main message you conveyed?		Patients may share experiences with loved ones as a way to cope
			32	Do any of your family members have particular views about having an IV?		
Patient Needs	**Individual Patient Needs**		33	What do you wish nurses knew about your needs when you get an IV? **Probe:** what are those needs?	(Lewis et al., 2019)	Patients have individual needs This question might help understand what we can do better to care for each patient
			34	Do you expect those needs to be met?		
			35	Describe to me what an ideal IV experience would be for you **Probe:** What is the most important factor?		