EDITORIAL

March already - how time flies! I hope everyone had a wonderful time with family and friends over Christmas and New Year. As much as I would like to think you have eased into 2019, I suspect most of us have ‘hit the ground running,’ such are the challenges and demands of healthcare.

For IVNNZ Inc., there are exciting times ahead with conference planning already in motion. The 17th IVNNZ Inc. Conference is returning to the garden city of Christchurch with the venue being Addington Raceway 27th–28th March 2020. The Specialist Forum will coincide to be held on the 26th. We are again looking forward to sharing innovative practices and research and will be calling for abstracts and posters later in the year. Keynote speaker and programme are yet to be advised.

With plenty of infusion related activity in both private and public sectors, it would be interesting for our members to get a snap shot of what’s happening around the country. I encourage you to submit an article for our quarterly magazine so we can share in your achievements and experiences.

In this month’s newsletter there is a case study entitled “Down the Midline” which looks at midline use, we catch up with PNDU’s 10th Birthday celebrations in Sydney, Australia and also learn about ‘the importance of data collection within the IV CNS role.”

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Nurse Educator Bidwill Trust Hospital, IVNNZ Inc. Editor & Private Sector Representative
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Case Study

Miss E is a 62 year old woman who was admitted via Emergency Department (ED) of a small hospital following an injury to her foot. Three days prior to self-presentation at the ED she had unknowingly trodden on a small piece of glass while gardening. This had caused a small puncture hole in the sole of her right foot and she presented to ED febrile, dehydrated and with development of cellulitis of her foot and lower leg.

Miss E was known to have Type II diabetes and a degree of peripheral vascular disease coupled with post chemotherapy peripheral neuropathy. She had not felt the glass puncture her heel and there was no obvious bleeding to the puncture site.

An X-ray was ordered which identified a foreign body in the arch of Miss E’s foot and the decision was to take her to the operating theatre for exploration and washout. A 20 gauge peripheral intravenous catheter (PIVC) was inserted, with difficulty, in her antecubital fossa and she was commenced on intravenous fluids (IVF), oral antibiotic clindamycin and intravenous antibiotic (IVAB) vancomycin prior to surgery. The following day she proceeded to surgery where a small piece of glass was removed from her foot and the area thoroughly washed out. The wound was left open to heal by secondary intent.

Miss E’s history of chemotherapy with peripheral vein usage and long term damage, resulted in difficult PIVC insertion with staff having multiple insertion attempts with and without ultrasound assistance. Her PIVC were only remaining patent for less than 24hrs before another attempt was made.

On day five in hospital, Miss E became increasingly unwell, developing significant shortness of breath and hypoxia, requiring high flow oxygen. Her temperature was still elevated despite IVAB’s. It was initially thought that Miss E had developed pneumonia, however on scan revealed interstitial septic emboli. Antibiotics were continued with staff battling increasing difficulty with PIVC access.

At day 15, following a conversation with the patient, it was identified that there had been so many attempts at cannulation the patient had lost count. A discussion about definitive intravenous (IV) access was had with the Vascular Access Clinical Nurse Specialist. The decision was to proceed to midline catheter insertion. The patient was able to have all IV treatment administered through her midline and it was removed prior to discharge on day 23.

How familiar does this scenario sound in your organisations? Do veins cope well with administration of medications that have a high pH and/or a low pH through PIVC? Is a central venous access device (CVAD) for administration of vancomycin the most appropriate device or should we be utilising more midlines?

A midline catheter is defined as a silicone or polyurethane catheter which is 8-20 centimetres in length and is inserted via the basilic, cephalic or brachial veins near to the antecubital fossa. The basilic vein is the preferred vein due to its larger diameter, however with skilled inserters and the use of ultrasound, the other upper arm veins can be utilised. The tip is advanced no higher than the axilla therefore to reduce the risk of vein irritation from movement of the shoulder joint (Alexander, Corrigan, Gorski, Hankins, & Perucca, 2010).

Historically, the Infusion Nurses Society (INS) Infusion Therapy Standards of Practice (2011) and Alexander et al. (2010) have advocated that medication with a pH less than 5 and pH greater than 9 are not appropriate to be administered via a short peripheral device or a midline catheter and must be administered via a CVAD. However, the most recent INS Infusion Therapy Standards of Practice (2016) no longer make comment on these specifics, but recommend to consider the infusate characteristics (irritant, vesicant, osmolality) in conjunction with the anticipated length of infusion therapy. These standards also make reference of a study by Caparas and Hu (2014), where a retrospective chart review of 1086 patients with midline catheters found that there were no cases of deep vein thrombosis or blood stream infection and only a small incidence of phlebitis and infiltration. Midline catheters dwelled between 1-25 days with average vancomycin delivery duration of 7.5 days. INS (2016) have documented that the use of a midline for vancomycin less than 6 days was found to be safe. Caparas and Hu (2014) study which demonstrated a low incidence of vascular complications (2.7%), appear to support recent changes in infusion practice that vancomycin no longer should only be administered via a CVAD. These authors suggest that this medication can also be administered short and long term.
via a midline in a safe and efficient manner. This must also be coupled with personnel skilled in vascular access, choosing the right midline catheter, performing a comprehensive vein assessment and following guidelines for safe reconstitution, dilution and delivery.

With any infusion device insertion there is inevitably always advantages and disadvantages and a risk of life threatening complication/sequelae (Chopra, V., O’Horo, J.C., Rogers, M.A, Maki, D.G & Safdar, N. 2013). Potential disadvantages include: catheter related bloodstream infection (CR-BSI), deep vein thrombosis (DVT), with the risk of associated pulmonary embolism and phlebitis remain some of the most common complications of line placement. There are significant benefits to having a midline insertion. Intravenous medication and fluids that would normally be delivered via a PIVC can be administered via a midline, as the tip of the midline resides no higher than the axillary vein. Any medication or fluid with vesicant or irritant properties should not be administered via the midline catheter (INS 2016).

A midline catheter is relatively easy to insert by suitably trained professionals and does not require an X-ray or electrocardiogram tip confirmation as the tip resides in a large vessel in the upper arm. With a longer dwell time than a peripheral catheter, greater patient comfort is experienced because they are able to maintain a greater degree of mobilisation and do not have to be subjected to multiple needle sticks when the PIVC’s fail. There are limited numbers of studies that report on the incidence of CR-BSI, but one such systematic review by Maki, Kluger and Crnich (2006) suggest that CR-BSI rates for midlines are comparable to PIVC per 1000 catheter days.

There are some limitations to a midline placement, such as mechanical phlebitis being a frequently documented occurrence, although the phlebitis rates are not as significant as a PIVC. Patient education and teaching around repetitive arm movement may reduce this incidence.

Anecdotal evidence shows that blood draw is not always successful via a midline due to the gauge size and the collapsibility of the tip, and this may be one of the limiting factors for usage and a peripherally inserted central catheter (PICC) is chosen instead. However, this comes at a greater cost, an increased risk of CR-BSI and risk of catheter malposition.

Over the years technology continues to improve and there are now many midline products that have an array of specifications which include power injection capability and come in short and long lengths (8-20cm), multiple gauges and French sizes and some have non collapsible tips.

In the case study above, nursing staff did have difficulty drawing blood from Miss E’s midline two days after insertion. Education was provided to nursing staff on the method for correct blood draw and regular flushing technique, with good patient outcomes as blood was successful throughout the rest of the patients hospital stay. Following an eight day dwell the midline was removed at end of infusion treatment and prior to the patient’s imminent discharge.

With clinical staff advocating for patients who require shorter infusion treatment, non-vesicant, non-irritant medication delivery or those patients with difficult vein access, midlines are an acceptable choice of infusion catheter. There are obviously risks and benefits to all infusion devices and as long as staff are aware of these and all measures are adhered to that help mitigate these risks, they can be averted.

References


Chopra, V., O’Horo, J.C., Rogers, M.A., Maki, D.G., & Safdar, N. (2013). The risk of bloodstream infection associated with peripherally inserted central catheters compared with central venous catheters in adults: a systematic review and meta-analysis. Infection Control Hospital Epidemiology. 34(9), 908-918.


In our last newsletter we congratulated Parenteral Nutrition Down Under (PNDU) on reaching their milestone 10th birthday. IVNNZ Inc. recognises the valuable work they do in supporting Australians and New Zealanders with Home Parenteral Nutrition (HPN) support. Below is their Media Release – January 2019 to share a little of PNDU’s history and keep you updated with their amazing work!

PNDU celebrates 10 years of support for the HPN community ‘down under’

When someone has a rare condition, in this case Intestinal Failure leading to life on the highly complex therapy, Home Parenteral Nutrition (HPN), they can feel very isolated. Life has changed and no-one else they know is travelling the same journey. Connecting with members of an HPN support group can fill that void – a group of people living with the same problems and issues, who understand this new and challenging life of ‘living with a drip’. For those living on HPN throughout New Zealand and Australia, this support group is PNDU (Parenteral Nutrition Down Under).

PNDU began on 6th January, 2009 with 5 members. It now has over 140 members representing over 80 current HPNers (those on HPN) ‘down under’. In 2019, PNDU is recognised and respected nationally and internationally for its support for HPN families; resources; opportunities and activities; awareness raising; research support; representation of the consumer perspective of this small patient group, and more. PNDU’s Management Committee (MC) decided this 10th Birthday is a great opportunity to consider how far PNDU has come, give thanks for the support and efforts of many along the way, and celebrate 10 years of pursuing PNDU’s mission to ‘support, research and inform consumers, carers and providers of Parenteral Nutrition for Intestinal Failure.

So PNDU did just that at a slightly early birthday party last month in Sydney. Over 30 people (all HPN families, shared in the special day, including two PNDU members who won PNDU travel sponsorships to attend.) Members travelled from Western Australia, Auckland and throughout NSW to be there. The MC went all out, with balloons galore; special giveaways and lucky draw prizes of PNDU’s lovable mascot, Pendoo; party hats and bubble blowers for the little ones; display tables of PNDU resources and merchandise; and a specially made and decorated cake in the shape of PNDU’s logo – a purple drip with the Southern Cross on it (made by an HPN member).

During the formalities, PNDU’s President spoke of its development through the years, paying special tribute to “those who had the vision and get-up and go to begin PNDU – a group specifically for down under HPNers and carers”, as well as expressing gratitude for the efforts of volunteers and the ever-growing support of clinicians, clinical groups, industry and friends. A treasured PNDU trait, as the President noted, is its culture: PNDU “began with a very caring and supportive culture for all HPN families ‘down under’, and this is something we’ve worked hard to continue”, while also ensuring medical advice is left to HPN clinicians. Founding member reflections from Tina and Andy, Jacqueline and Gil were shared; and travel sponsorship winners, Jodie and Trevor, spoke of what PNDU means to them.

Happy Birthday was sung, party poppers popped, the cake cut and sparkling wine poured. A rolling slideshow highlighted 10 PNDU milestones, as well as special 10th Birthday messages from various organisations. These, together with a photo gallery from the party, are now on a dedicated 10th Birthday page on PNDU’s website – https://pndu.org/resources/pndu-turns-10/.
On 6th January 2019, PNDU’s actual 10th Birthday, PNDU continues the celebrations with fun awareness-raising giveaways sent to all members; gratitude for the wonderful support of HPN families, friends, clinicians, clinical groups, and industry; and enthusiasm and anticipation for the future as PNDU continues to support the HPN community ‘down under’. To find out more about PNDU, become a PNDU member, or simply join PNDU’s mailing list, visit the website https://pndu.org/.

Southland Hospital is a small provincial centre and the numbers of complications are relatively low – any sudden spike in numbers can result in serious clinical anxiety while not necessarily being statistically significant.

In the Clinical Nurse Specialist role you invariably have limited resources and trying to focus these on the most appropriate areas is vital. A managed, deliberate approach is much more effective than responding haphazardly, directed by the loudest complainer!

For me, this issue reinforces the importance of collecting ongoing, robust clinical data. Kimberly Glassman in her article in American Nurse Today (2017) states that “data and care quality go hand in hand” and argues that nurses need access to aggregate data illuminating the impact of their care, to drive future practice decisions.
As registered nurses progress through their post-graduate journey they become increasingly experienced with utilising and interpreting data for research, and exploring evidence around best practice. This data is often focused, looking at a particular topic of concern. What I am describing, in this article, is something much broader – setting up effective systems that collect a broad set of information for interpretation, over an extended period of time. For example, how can clinical staff collect relevant data around their local central venous access device (CVAD) complication rates? Let’s commence this process by asking three questions.

1) What information are you going to target?
As nurses, we do not know exactly what clinical issues are going to emerge in the future but we also do not want to make the database so broad that the collection process becomes unwieldy and overly time consuming. There must be careful consideration around selection of the targeted variables. An example of this is how much detail around the patient’s clinical picture is actually required? There may be potential for future examination of effects of disease groups against specific complications but is this manageable with your current resources? Nelson et al (1998) advises that when using clinical data to support improvement, it is best to keep the measurement simple (think big, but start small).

2) What information technology (IT) systems may be relevant and helpful?
Loke (2014) explains that databases are electronic filing systems that were historically designed for financial purposes but can be set up to capture patient data in a variety of clinical settings. Nurses need to put careful thought into identifying the most relevant software for their context. I have had success working with standard Excel spreadsheets – enabling a wide range of tools for sorting data. This system can result in issues if you have a significant number of clinicians inputting into the same spreadsheet. Therefore, it is important to engage with your IT department as they will have the expertise to set up more advanced collection modalities. In collaboration with my IV CNS colleague on the Otago site, we now have a District-wide PICC database accessible via the intranet that all clinical staff can enter information into with minimal risk of corruption of data.

Patient information systems within the modern hospital can also be used to pull retrospective data on patient procedures e.g. you might suspect you have an issue with implanted ports but you also will need to know how many are being inserted in the first place. A patient information system should be able to assist you to retrieve this information.

3) Who collects the data?
In a smaller provincial hospital it is often easier for a PICC Team and/or IV CNS, for instance, to keep closer tabs on the complication rates and details of such. In larger centres you may need to utilise IV link or representative staff as well as ward nursing staff who have gone through CVAD workshops. Empowering them with the tools and passion around this type of surveillance will reap dividends. Remember though, you are seeking usefulness, not perfection, within the measurement! (Nelson et al, 1998)
Collecting data is not an end to itself, of course. This data can create some potent ammunition for change. If you can identify an issue and support this with robust evidence then the chances of engaging clinical management is much higher. Invariably there are budgetary considerations involved and a business case requires accurate information to convince budget holders to provide resources.

As it turned out, the clinician who spoke to me in the corridor had a valid point! Data collation from a local complication spreadsheet revealed that over the previous 20 months, 16% of our peripherally inserted central catheters (PICC) had migrated significantly. This was in spite of extensive securement strategies, including adhesive strips, skin preparation solutions, and modern transparent dressings. Of these PICC migratory incidents, 29% resulted in reinsertion of a new catheter. With the help of information from the PICC Insertion team we calculated that this was costing the organisation approximately $17000 per annum. More importantly this complication was resulting in significant delays in treatment as well as increased stress for our clients – these issues are much more difficult to put numbers against but should be significant motivators for action.

We were certainly not alone with this issue and my IV colleagues in Christchurch were very helpful in assisting us to introduce a specially engineered stabilisation device which anchors the PICC to the subcutaneous tissue. After presenting the data to the budget holder in Radiology we had the green light to implement across Southland/Lakes. Without robust evidence, I doubt we would have made any progress with this project, which has had significantly positive clinical outcomes. Ongoing surveillance has shown that ‘casual’ migration of PICC lines has disappeared and I for one am very happy to see that. Now if only I could find a strategy to effectively tackle our blood withdrawal issue...

As an IV CNS, we have many tools in our ‘work bag’ as we progress IV therapy within the clinical areas. Whether it be an ultrasound machine for locating difficult vessels or thrombolytic agents to clean out occluded catheters, we need to remember that data-collection remains a very important tool to measure outcomes and improve daily clinical practice.

“Measurement and improvement are intertwined; it is impossible to make improvements without measurement” Nelson et al (1998)

References:

IVNNZ Inc. would like to recognise our members’ achievements.
If you know of any member that we can celebrate in their achievements
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When 18 March 2019
Where Te Awamutu
When 4 April 2019
Where Wellington

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11TH CONGRESS OF THE VASCULAR ACCESS SOCIETY
When 11-13 April 2019
Where Rotterdam, The Netherlands

44TH ANNUAL CVAA CONFERENCE
When 24-26 April 2019
Where Quebec City, QC Canada

AVAS SCIENTIFIC MEETING ‘WALK THE LINE’
When 12-14 May 2019
Where Parkroyal, Parramatta, Sydney Australia

INS CONFERENCE
https://www.ins1.org/default.aspx
When 18-21 May 2019
Where Baltimore Convention Centre, Baltimore, MD USA

WOCOVA
When 17-19 June 2019
Where Athens, Greece

National

NZ NIFS EDUCATION & NETWORK DAY
When 29 March 2019
Where Jet Park Hotel, Auckland

EDUCATOR FORUM
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