

Longer length peripheral catheters in sickle cell treatment: A more cost-effective and efficient care pathway

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INTRODUCTION

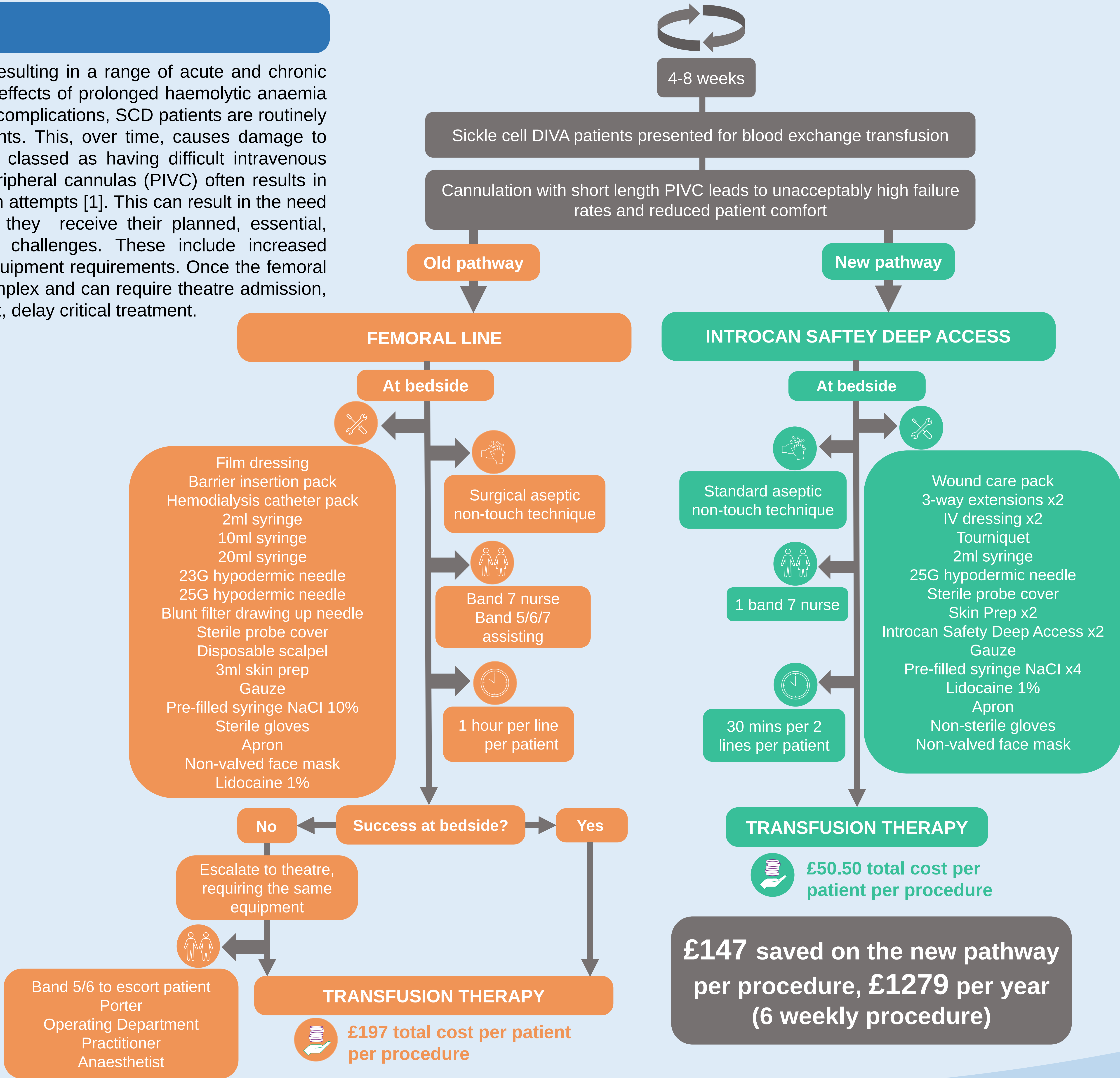
Sickle cell disease (SCD) is a hugely debilitating disease resulting in a range of acute and chronic complications. Sadly, as patients with this disease age, the effects of prolonged haemolytic anaemia often lead to more severe comorbidities. As a result of such complications, SCD patients are routinely hospitalised, requiring frequent venous access for treatments. This, over time, causes damage to their vessel health, resulting in many SCD patients being classed as having difficult intravenous access (DIVA). In DIVA patients the use of short length peripheral cannulas (PIVC) often results in unacceptably high failure rates and multiple, painful, insertion attempts [1]. This can result in the need to insert femoral lines into SCD DIVA patients to ensure they receive their planned, essential, treatment. However, femoral line insertion has its own challenges. These include increased complication risks for patients an increase in staffing and equipment requirements. Once the femoral vein develops scar tissue this procedure becomes more complex and can require theatre admission, which can at best require more time and staffing and at worst, delay critical treatment.

NEW PATHWAY

Homerton Hospital cares for around 70 SCD patients who often have to complete exchange transfusion therapy once every 4-8 weeks. Previously, all these patients received femoral lines. To overcome the challenges of DIVA patients and femoral line insertion, a new pathway of care was introduced for all SCD patients in June 2020. This pathway incorporates the insertion of two longer length PIVCs, Introcan Safety Deep Access (ISDA; 64mm) under ultrasound guidance.

METHODS

An observational audit was conducted to understand the impact of the new pathway with a longer length PIVC. Required equipment was detailed by the Medical Day Unit, and associated costs were obtained from the Procurement department at Homerton Hospital. The required equipment totalled £80 for femoral line insertion and £18 for Introcan Safety Deep Access insertion. The ISDA also required only one nurse to insert, compared with two for a femoral line, and the insertion procedure took half the time. Nursing costs were derived from the PSSRU [2], with a band 5-7 nurse averaging £52.33 per hour and a band 7 nurse costing £65 per hour. This led to a total of £50.50 per ISDA insertion and £197.33 per femoral insertion. This resulted in a saving of £1279 per patient per year, based on an average of one procedure every 6 weeks, before accounting for the cost of theatre porters, ODPs and anaesthetists who would be required in the event of theatre escalation.



TESTIMONIALS

[A femoral line was] one of the most uncomfortable and painful procedures I had to go through, it was making me very anxious and stressed to have it... plus the anaesthetic wasn't sufficient enough for me to not feel the pain.

If I knew that [USG longer length cannulation] was existing I would have asked for it straight away, it is much better than femoral.

Patient 1

When receiving the femoral line I would always feel very anxious before the line was even inserted... Over time of having many lines fitted the scar tissue build up was becoming too much to avoid so even the feeling of having a doctor push & pull through scar tissue... was extremely eerie and disturbing and created the anxiety for future line insertion. And the pain once the anaesthetic wore off was immense.

The first time I received [the USG longer length PIVC] to receive my exchange transfusion made me feel extremely frustrated at why I had to go through all that pain, stress, and discomfort of having femoral lines fitted to be able to receive my exchanges.... I felt extremely relieved and happy that this was the new way I would be receiving my blood in future. As there was talk that if we couldn't get access via femoral line any longer, I would have to be taken off the exchange programme and that of course, would put my health in jeopardy.

Patient 2

[With a femoral line] as time went on I started getting scar tissue which made it difficult to put the line in or there was times when I couldn't do the exchange. Once it was taken out I had to be very careful because a couple of times it bled once I got home.

The [USG longer length PIVCs] are an easier procedure which makes me more relaxed and a less difficult healing time.

Patient 3

CONCLUSION & DISCUSSION

Here we report that at Homerton Hospital, the new longer length PIVC pathway requires less equipment, less staff and substantially removes the risk of escalation to theatres. Importantly, patient feedback reveals that longer length PIVCs are preferred over femoral lines, causing less pain and anxiety for the patient. This new pathway forms part of an ongoing process to release inefficiencies whilst improving patient experience, and further auditing will be undertaken to continuously monitor efficiency improvements

REFERENCES

- Bahl, A., et al., *Ultralong Versus Standard Long Peripheral Intravenous Catheters: A Randomized Controlled Trial of Ultrasonographically Guided Catheter Survival*. Ann Emerg Med, 2020. **76**(2): p. 134-142.
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