



**Introducing a long peripheral catheter (LPC) to support improved outcomes for difficult intravenous access (DIVA) patients**

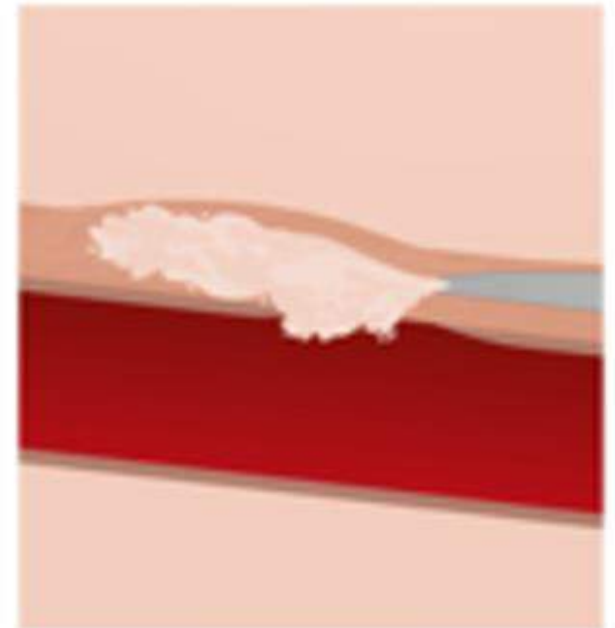
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# Background

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- Approximately 90% of hospitalised patients require a peripheral catheter during their stay.
- The majority (90%), fail before therapy completion, and up to 50% can fail within the first 24 hours [1, 2].
- Reasons for failure include:
  - Infiltration
  - Dislodgment
  - Extravasation
- Failure may be more common in patients with difficult intravenous access (DIVA), e.g. those with a high BMI, or those with smaller or damaged superficial veins [3].



# Background

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- Multiple failed cannulations have significant implications on our patients, finances and resources
- May require escalation to Anaesthetists and the PICC and Vascular Access Teams for other vascular access devices
- New DIVA policy and the insertion of a long peripheral catheter (LPC), Introcan Safety Deep Access (64mm) under ultrasound guidance (USG).



# Methods

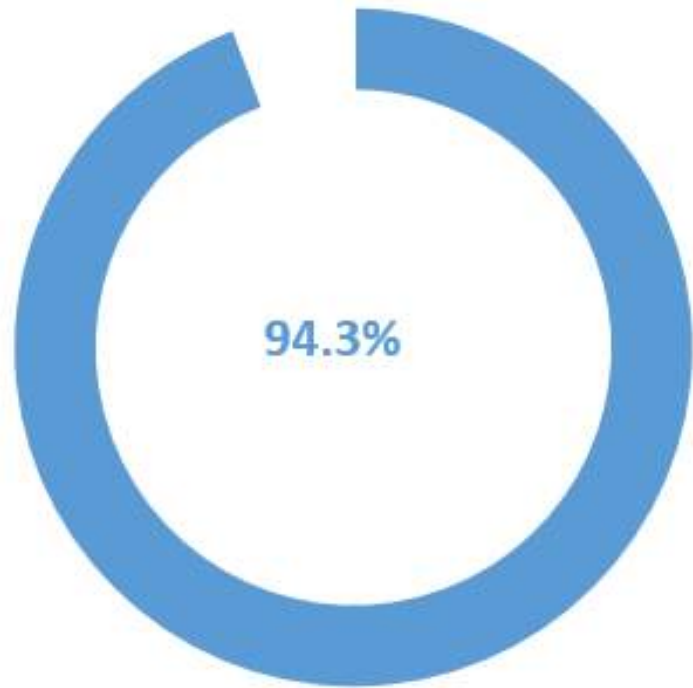
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- Training consisted of:
  - 4-hour workshop with phantom USG practice
  - 1:1 training with patients requiring cannulation
  - The trainees were required to complete 15 successful USG cannulations with the LPC along with other competencies in the training programme

# Clinical Results

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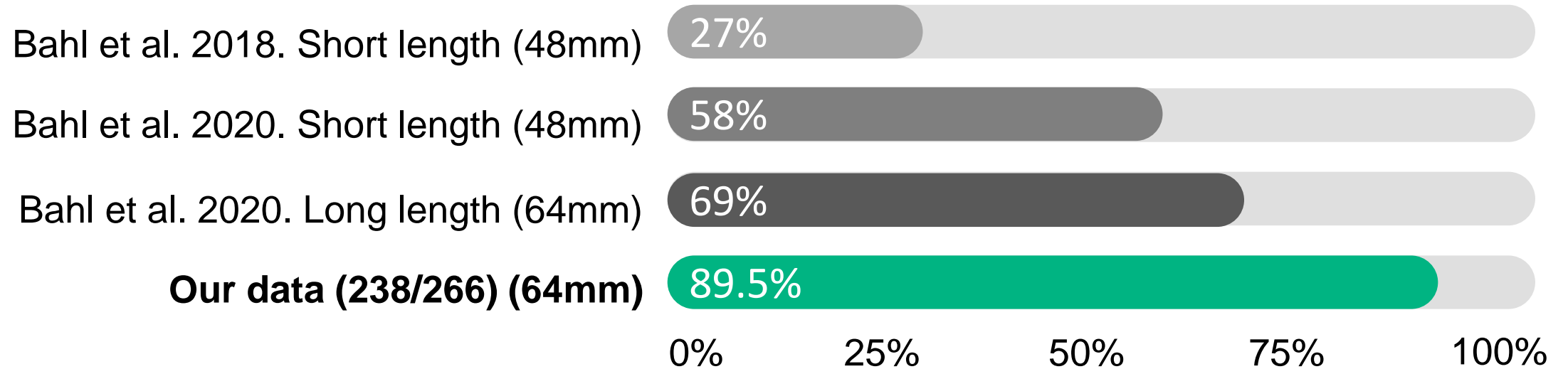


**First stick  
success**

- First stick success rate 94.3%
- Considerably higher than the 66% - 76.3% [4] reported when using landmark technique or,
- 73% reported in studies using USG [5]

# Clinical results

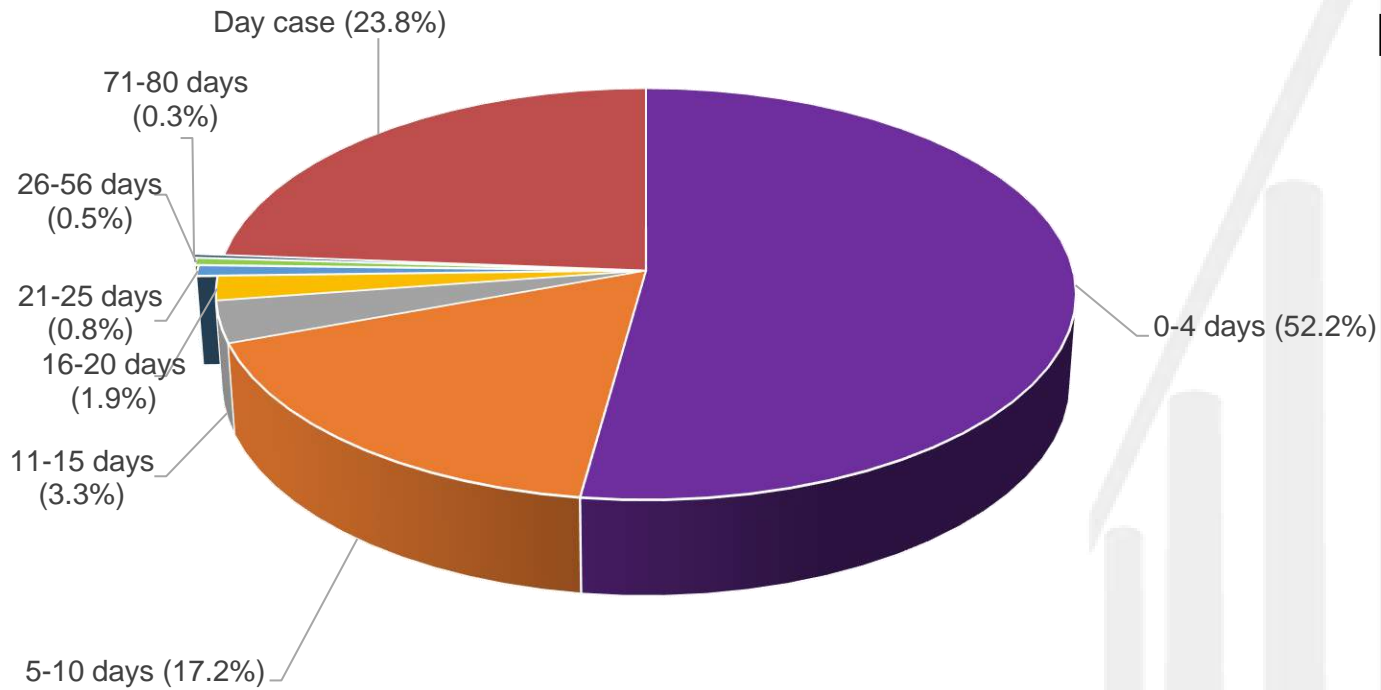
## Completion of therapy rate (%)



[6 and 7]

Completion of therapy: 89.5%

# Clinical Results



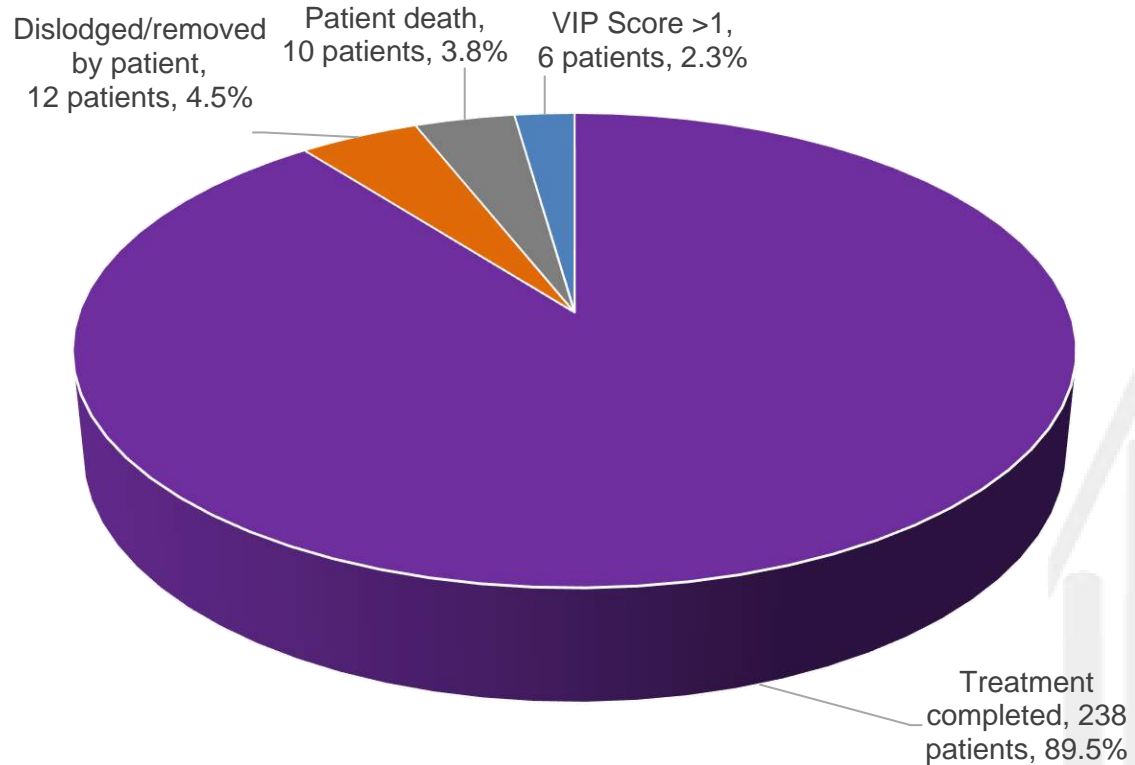
## Dwell Time:

- 0 – 4 days, 191 patients, 52.2%
- 5 – 10 days, 63 patients, 17.2%
- 11 – 15 days, 12 patients, 3.3%
- 16 – 20 days, 7 patients, 1.9%
- 21 – 25 days, 3 patients, 0.8%
- 26 – 56 days, 2 patients, 0.5%
- 71 - 80 days, 1 patient, 0.3%
- Day case, 87 patients, 23.8%

Data presented collected between  
March 2021 and April 2022



# Clinical Results



## Reasons for Removal:

- Treatment completed, 238 patients, 89.5%
- Dislodged/removed by patient, 12 patients, 4.5%
- Patient death, 10 patients, 3.8%
- VIP score >1, 6 patients, 2.3%

Data presented collected between  
March 2021 and April 2022



# Economic results

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Total cost of Midline insertion =  
**£107.66**

Total cost of Introcan Safety  
Deep Access insertion = **£18.44**

Overall saving per insertion =  
**£89.22**

# Environmental results

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Total weight of Midline  
equipment = 1105g

Total weight of Introcan Safety  
Deep Access equipment = 91g

Overall weight saving per  
insertion = 1014g

# Summary

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94.3% first stick  
success rate



Accurate placement  
using USG



89.5%  
completion  
of therapy



Good follow up care  
& maintenance



Longer length  
improved purchase  
in vein



Extending the roll out  
to other clinical areas

# References

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1. Steere, L., et al., *Reaching One Peripheral Intravenous Catheter (PIVC) Per Patient Visit With Lean Multimodal Strategy: the PIV5Rights™ Bundle*. Journal of the Association for Vascular Access, 2020. **24**(3): p. 31-43.
2. Helm, R.E., et al., *Accepted but unacceptable: peripheral IV catheter failure*. J Infus Nurs, 2015. **38**(3): p. 189-203.
3. Piredda, M., et al., *Risk factors for a difficult intravenous access: A multicentre study comparing nurses' beliefs to evidence*. Journal of Clinical Nursing, 2019. **28**(10-20): p. 3492-3504.
4. González, et al. "Indwell times, complications and costs of open vs closed safety peripheral intravenous catheters: a randomized study." *Journal of Hospital Infection* 86.2 (2014): 117-126.
5. Carr, Peter J., et al., *Factors associated with peripheral intravenous cannulation first-time insertion success in the emergency department. A multicentre prospective cohort analysis of patient, clinician and product characteristics*. BMJ open, 2019. **9**(4): e022278.
6. 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.
7. Bahl, A., et al., *Standard long IV catheters versus extended dwell catheters: A randomized comparison of ultrasound-guided catheter survival*. Ann EmergMed, 2018. **37**(4): p.715-721.