

Ashley Servi, DNP, RN, PCNS, CPN; Ashley Bequest-Roeder, BSN, RN; Lia Bradley, MSN, CNL, FNP, RN

Introduction

The Emergency Department & Trauma Center (EDTC) cares for 70,000 kids annually, which leads to over 12,000 IV pokes for evaluation and treatment. Dehydration, chronic medical conditions and/or critical illnesses, such as diabetic ketoacidosis (DKA), may increase the number of pokes.

Nurses in the EDTC are a frontline for rapid recognition and treatment of DKA, which sparked innovation for a nursing point-of-care protocol.

Additionally, nurses were driven to utilize advanced equipment including vein viewing device and ultrasound for guiding IV placement.

An opportunity to optimize care by reducing pokes to kids and improve the patient care experience was recognized.

Aim

- Reduce IV pokes
- Develop a protocol and standardized procedures for safe patient care.

Method

Strategy included evaluating evidence from literature in adults and pediatrics, collaboration with multidisciplinary members, approval from IRB as Quality Improvement, and retrospective analysis.

Implementation included development and approval of a point-of-care (POC) protocol and standardized procedures through the EDTC multidisciplinary clinical practice council. The POC protocol was trialed by nurses for >6 months to allow for feedback and small tests of change.

Training for these nurse-based interventions include videos, literature review, hands-on instruction, quizzes and competency demonstration. Chart audits, feedback and outcome data was provided on a monthly basis.

Statistical analysis was utilized to measure the impact of our interventions. Chi square analysis was used to determine if the proportion of IVs placed and pre- and post- initial POC tests were statistically significant ($\alpha = 0.05$).

Results

- Outcomes show a 49% reduction in unnecessary IV starts for diabetic patients due to utilization of the nursing POC protocol. In 18 months, there was a 62% reduction in time to DKA evaluation using the POC protocol, with 40 min reduction in EDTC length of stay in patients without DKA.
- A downward trend of unsuccessful IVs is attributed to the use of advanced equipment (vein viewer, transilluminator and ultrasound).
- A standardized procedure for collecting specimens from existing IVs saves hundreds of unnecessary pokes in a year.
- **Overall number of IV pokes has been reduced, with over 1,000 pokes saved to kids in 1 year.**

Conclusion & Implications

- The use of advanced equipment can increase the successfulness and help determine appropriate IV placement.
- The cost savings for reducing unnecessary IVs is estimated over \$40,000 annually.
- These nurse-based interventions speak to the powerful influence of nurses to identify an EBP change to make changes and improve care.
- The continued support of quality improvement initiatives is essential, as there is limited literature in the pediatric emergency setting.
- Continuing innovations for IV access may benefit nurses, patients and families.

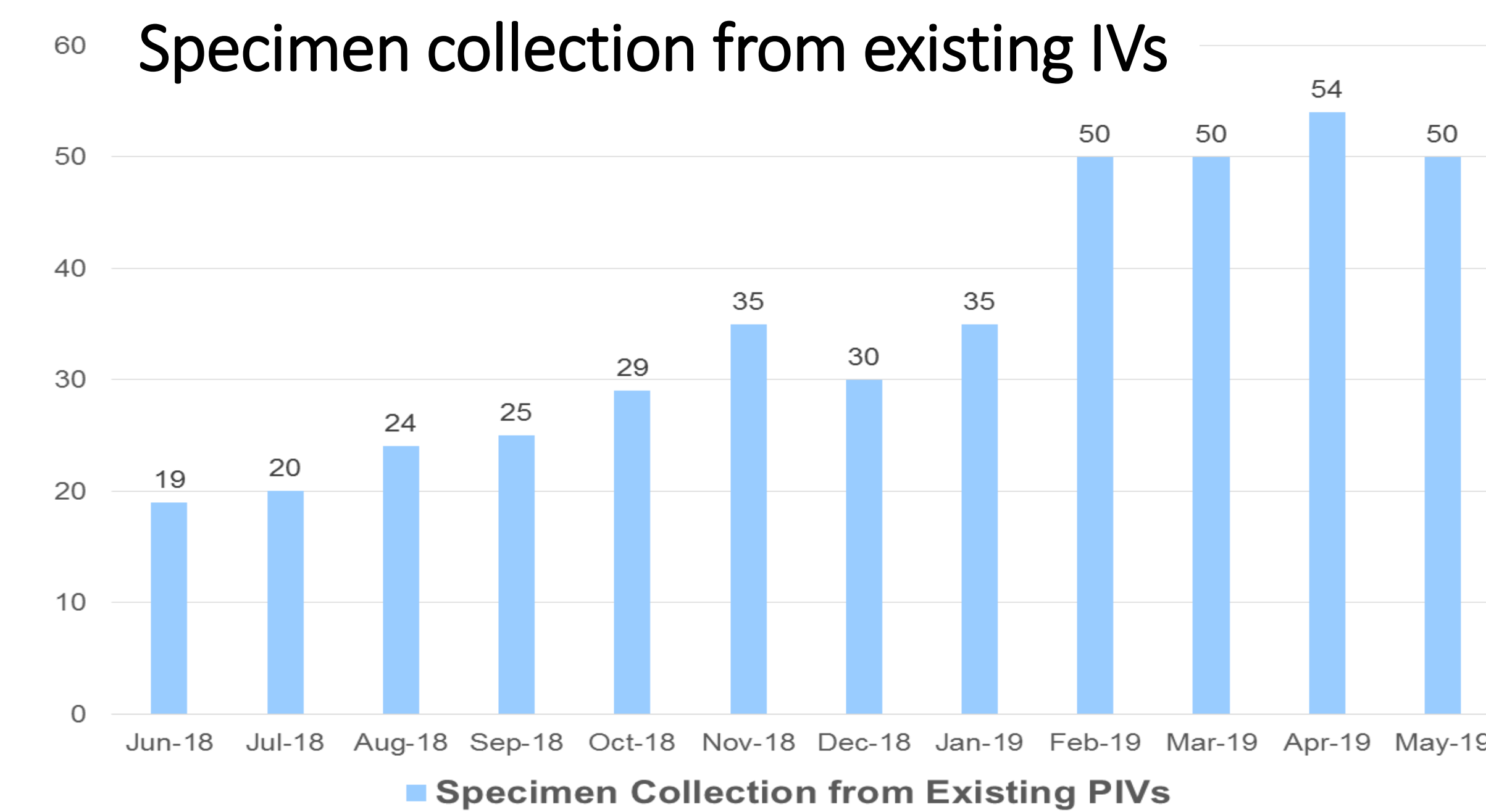
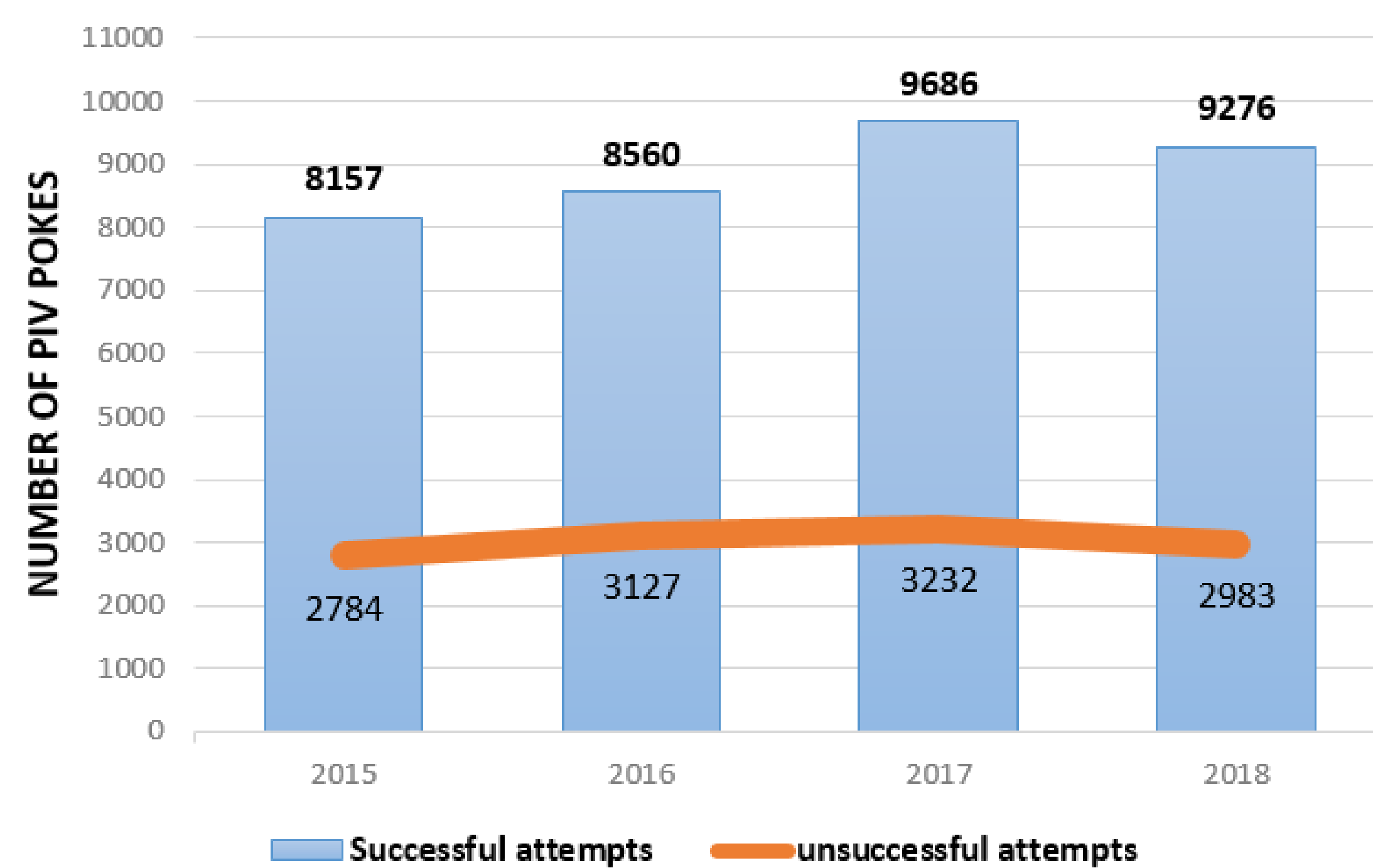


Image 2. Specimen collection from existing IV. *No tourniquet needed.

IV access in the EDTC



Equipment used for IV starts in 2018

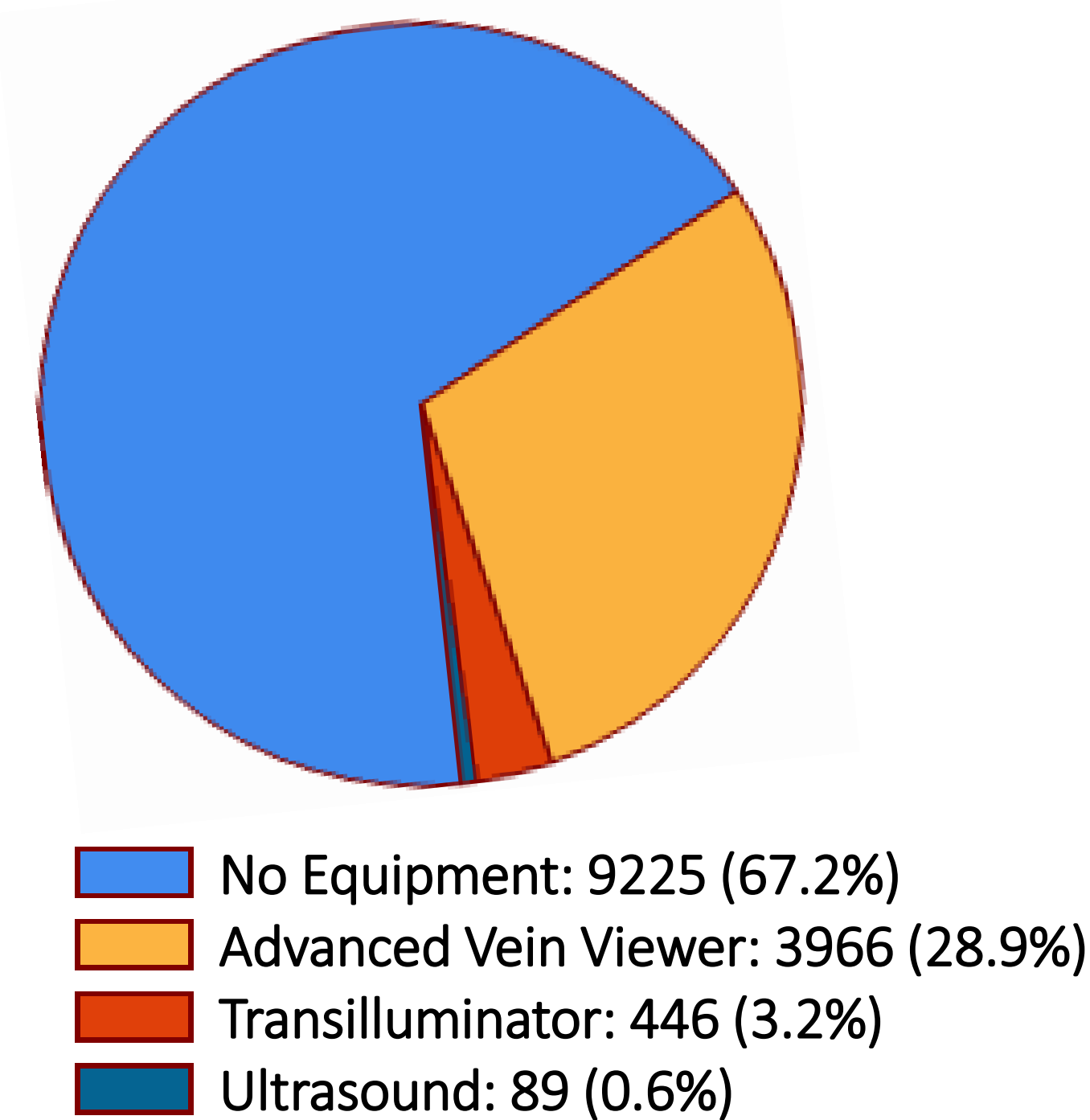
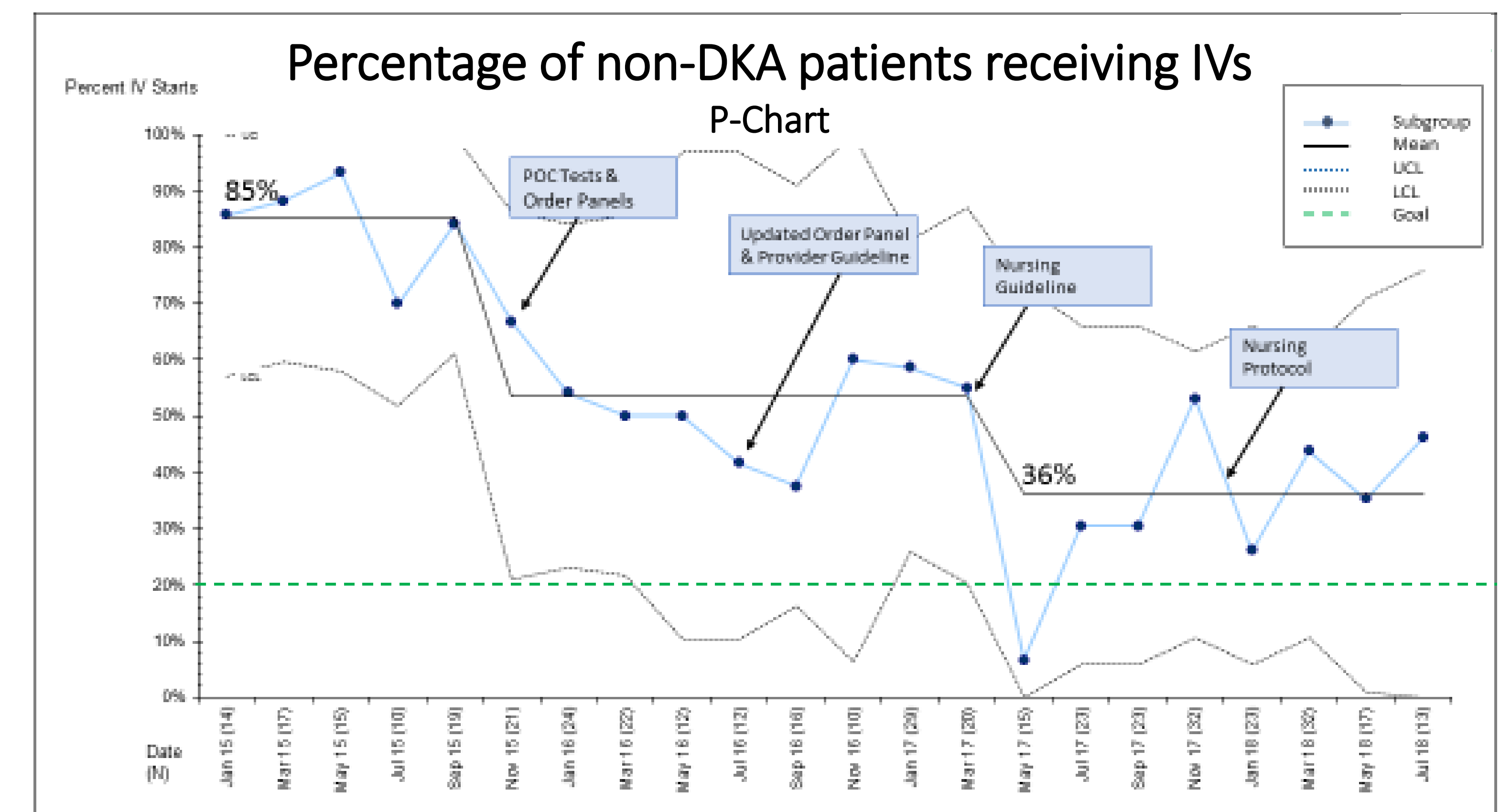


Image 1. Advanced vein viewer



Percentage of patients receiving IV placement each month in which patients did not meet DKA criteria and were discharged home. ($p < 0.001$) (UCL) Upper control limit, (LCL) Lower control limit, (POC) Point-of-care (DKA) Diabetic Ketoacidosis

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