

Peripheral intravenous cannula utilisation and frequency of intravenous fluid delivery – convenience or necessity?

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INTRODUCTION

- Over a billion peripheral intravenous cannulas (PIVCs) are inserted worldwide each year⁽¹⁾
- Peripheral Intravenous Catheters (PIVCs) are associated with complications and use up departmental resources. ⁽²⁾
- A growing body of international research suggests many of the PIVCs inserted in the Emergency Department (ED) remain unused and no national standards on the indications for PIVC insertion have yet been developed.⁽³⁾
- We determined the incidence of unused or unnecessarily used PIVCs in a large inner London ED.

METHODS/STUDY DESIGN

- We conducted a single-centre, prospective study recruiting adult patients presenting to the ED
- Data collection between 8am and 10pm for 21 consecutive days.
- Patients were followed up until discharge from the ED.
- Prior to data gathering, we developed a generous list of valid indications for intravenous (IV) fluids. IV fluid administration for patients not meeting this criteria were deemed unnecessary.
- This list of indications was reviewed post-hoc to determine if there were omissions.
- PIVCs inserted and only used for blood sampling were considered unnecessary as the sampling could have been done by phlebotomy.

Definitions:

Unused PIVCs: Those not being utilised for phlebotomy, IV fluids, IV medications, blood products, CT contrast or pain management medication.

Unnecessary PIVCs: Those being used only for phlebotomy and/or for IV fluids where none of the a priori standards for appropriate IV fluid administration were met.

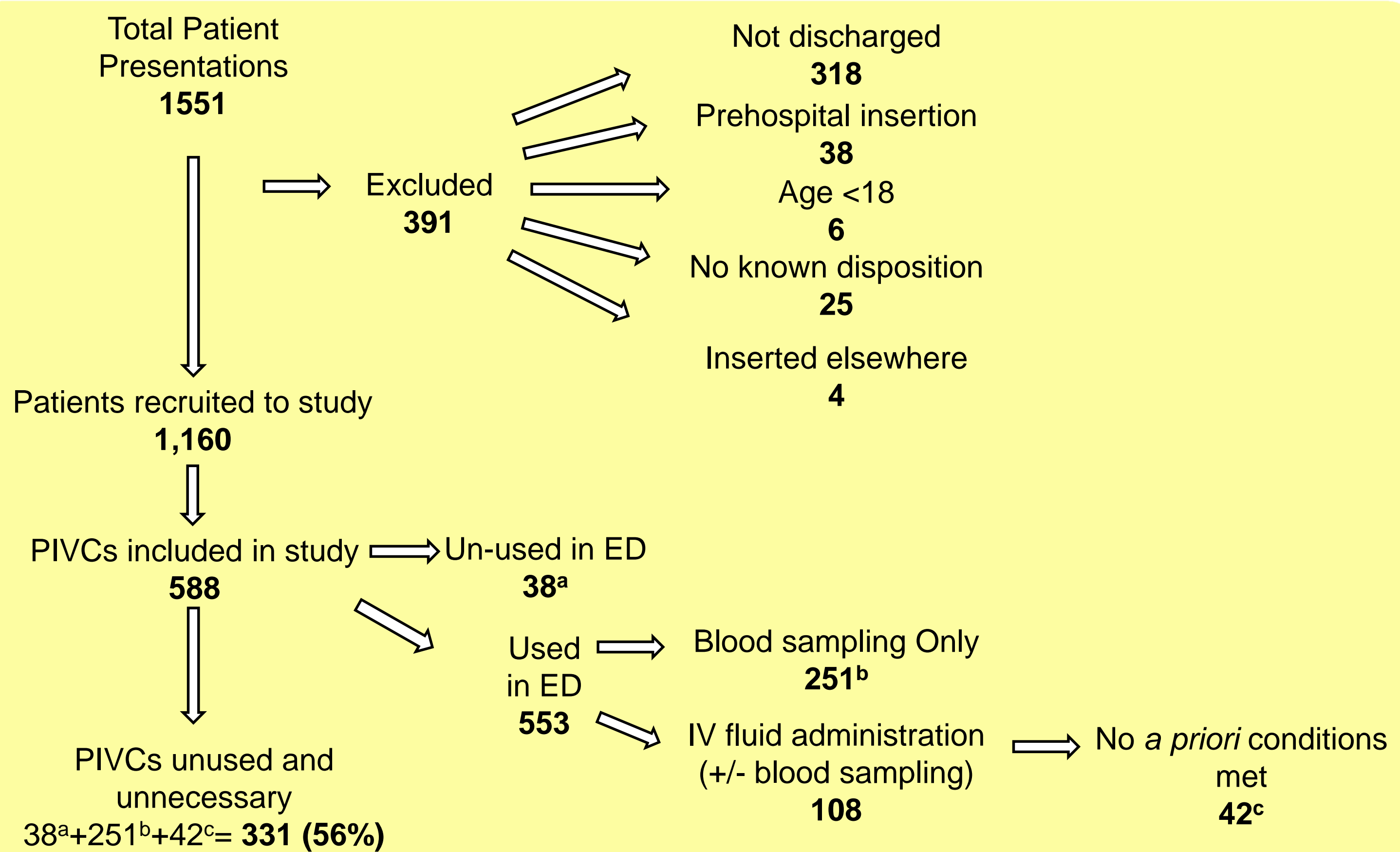


Figure 1: 331 (56%) of PIVCs were deemed unnecessary or unused from a total of 588 PIVCs included in the study, with a population of 1,160.

Database ID
Coded ID number
Arrival date and time
Gender
Arrival mode
Age
PIVC insertion location
If ultrasound was used
Grade of staff inserting the PIVC
PIVC Gauge
Number of attempts
PIVC anatomical location on patient
PIVC usage (plus date and time) for each use
A priori assessment
ED discharge time
Notes (for any queries/questions to lead researchers)

Table 1: Students inputted the following data onto the electronic database.

Vomiting (not able to keep oral fluids down) WITH signs of dehydration
IV medications/blood products
Chronic cognitive impairment where intake needs higher than usual
Fluid resuscitation
Electrolytes not potassium
Potassium and unable to tolerate oral fluids
NIL BY MOUTH (for actual/potential procedure or due to low GCS)
Swallowing difficulty
Suspected delirium/psychosis
Severe nausea

Table 2: a priori assessment standards for IV fluid administration.

CONCLUSIONS

- We found an **excessive (56%)** incidence of unused and unnecessary PIVC insertion in the ED.
- The decision to insert PIVCs is not being appropriately taken on a patient-by-patient basis.
- Overuse of IV fluids suggests guidelines for appropriate usage are not being followed.
- This may be a confounding factor where staff anticipation of IV fluid use may lead to prophylactic PIVC insertion, or IV fluids may be used because a patient already has a PIVC.
- Education on IV fluid guidelines and future work to further develop guidelines encouraging appropriate PIVC insertion and usage is required.

References

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