

BACKGROUND

After a recent morbidity and mortality review of a case in which an infant re-presented to our emergency department with advanced hydrocephalus after a prior visit where the child was observed and discharged, we identified an area of growth which may potentially improve the sensitivity with which we can identify infants with more subtle signs of a developing intracranial process. A common chief complaint in the infant patient population is "fussiness" or "irritability" — two symptoms which can represent an underlying intracranial process. The large majority of these patients are observed in our department and ultimately are discharged home, assuming that their neurological exam is reassuring, they console appropriately, successfully PO challenge, and have adequate outpatient follow up. This is an example of the best case scenario — however, it is certainly not representative of all of these encounters. A rapidly increasing head circumference can be one of the first signs on exam for an intracranial process leading to hydrocephalus, even before obvious symptoms such as lethargy or inconsolability arise. Whether it is a well patient who is observed and discharged home or a child with an abnormal neurolog exam found to have hydrocephalus, a documented head circumference — ideally a data point among many others — can be a useful adjunct to the physical exam, providing an objective marker to help risk-stratify patients and increase our confidence in predicting the likelihood (or lack thereof) of an evolving intracranial process in an infant that may not be obvious during a period of observation in the emergency department. A documented head circumference is the standard of practice in the pediatric medical home, but is not a well-developed habit in the emergency department context. We believe that collecting this measurement as an additional "vital sign" for our infant population may help us more confidently determine the safest disposition for this patient population.

At this time, it is not a standard practice in our department to obtain head circumference measurements. Retrospective chart review of the last 6 months indicates that 0 infants aged 6 months or younger had a head circumference documented from their emergency department encounter. It is evident to us that this deficiency represents a significant area for growth. We hope that by instituting a standardized practice of measuring the head circumference of infants in our emergency department, we can subsequently improve the care we provide to these patients and their families.

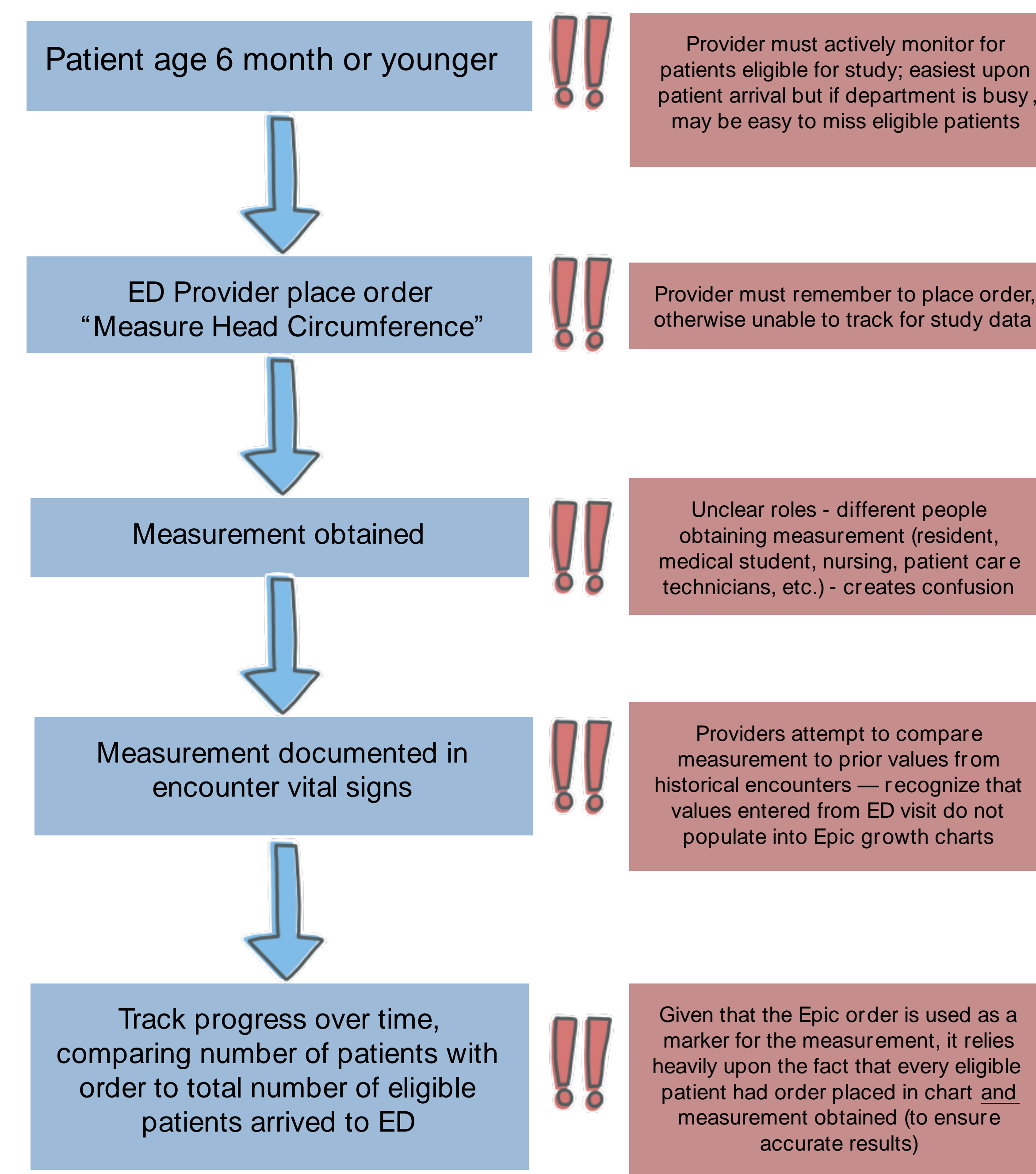
STUDY AIMS

We aim to obtain head circumference measurements in at least 55% of all infants < 6mo who present to our emergency department. This will involve educating all attendings, fellows, and residents in the department on how to properly obtain this measurement in the pediatric patient, as well as where to document this data and appropriately analyze it in our clinical decision-making. Our hope is that through this project, we can establish this practice as a standard of care for our infant population in particular and thereby improve the way that we use a data-driven approach to safe patient care and disposition

GATHERING INITIAL RESULTS

By pulling Epic reports for all patient arrivals and filtering for those 6 months or younger, the total number of eligible patients could be ascertained. From here, a separate Epic report could be generated for those patients who were 6 months or younger and who had the order "Measure Head Circumference" placed during their ED encounter. Using this order as a marker for there being a documented value, we can thereby track progress over time. After reviewing the first 60 days of data post-implementation, 11 of 246 eligible patients had the order placed in their chart. We learned that when the team was reminded at the beginning of a shift or there was an email reminder sent to the team regarding the ongoing study, there would be a short-term rise in the number of orders placed for eligible patients — and a decrease over time without recurrent reminders. While the fellows were aware of the study purpose and intended roles of those collecting and documenting this additional patient data. In our fifth month of study operation, we saw the number of measurements nearly double (13 patients) when compared to the first month (8 patients), with the total eligible number remaining largely stable.

STUDY OUTLINE WITH ANTICIPATED BARRIERS



ADDRESSING BARRIERS AND FUTURE DIRECTIONS

- Create a rule/trigger in Epic to alert providers that a patient is eligible when chart is accessed after ED arrival
- Enhance awareness of ongoing studies with physical reminders in the unit
- Meet with Epic IT team to resolve issue with OFC measurements not populating into growth charts despite appropriate documentation of measurement
- Standardize roles — i.e. fellow places order, resident obtains measurement and ensures it is documented in Epic
- Meet with IT to identify more efficient manner of pulling Epic reports; reduce human error in manually sorting for eligible patients

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