Increasing Admission Medication Reconciliation Completion Rates for Patients Admitted to Pediatric Hospitalist Medicine at the Children's Hospital at Erlanger

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Presenters: Beth Brooke, MD, and Caroline Hawes, MD, Pediatric Residents

Mentors/Project Team: Rachel Nelson, MD, Jeffrey Bennett, MD, Andrea Gerwin, PharmD, and Cindy Kiemeyer, RN

PROBLEM / BACKGROUND

- Problem:
  - At the time of project conception (November 2020), completion of medication reconciliation on admission to Children's Hospital at Erlanger at times <60%
  - Process of medication reconciliation historically not well-defined amongst residents, attendings, nursing, or pharmacy staff

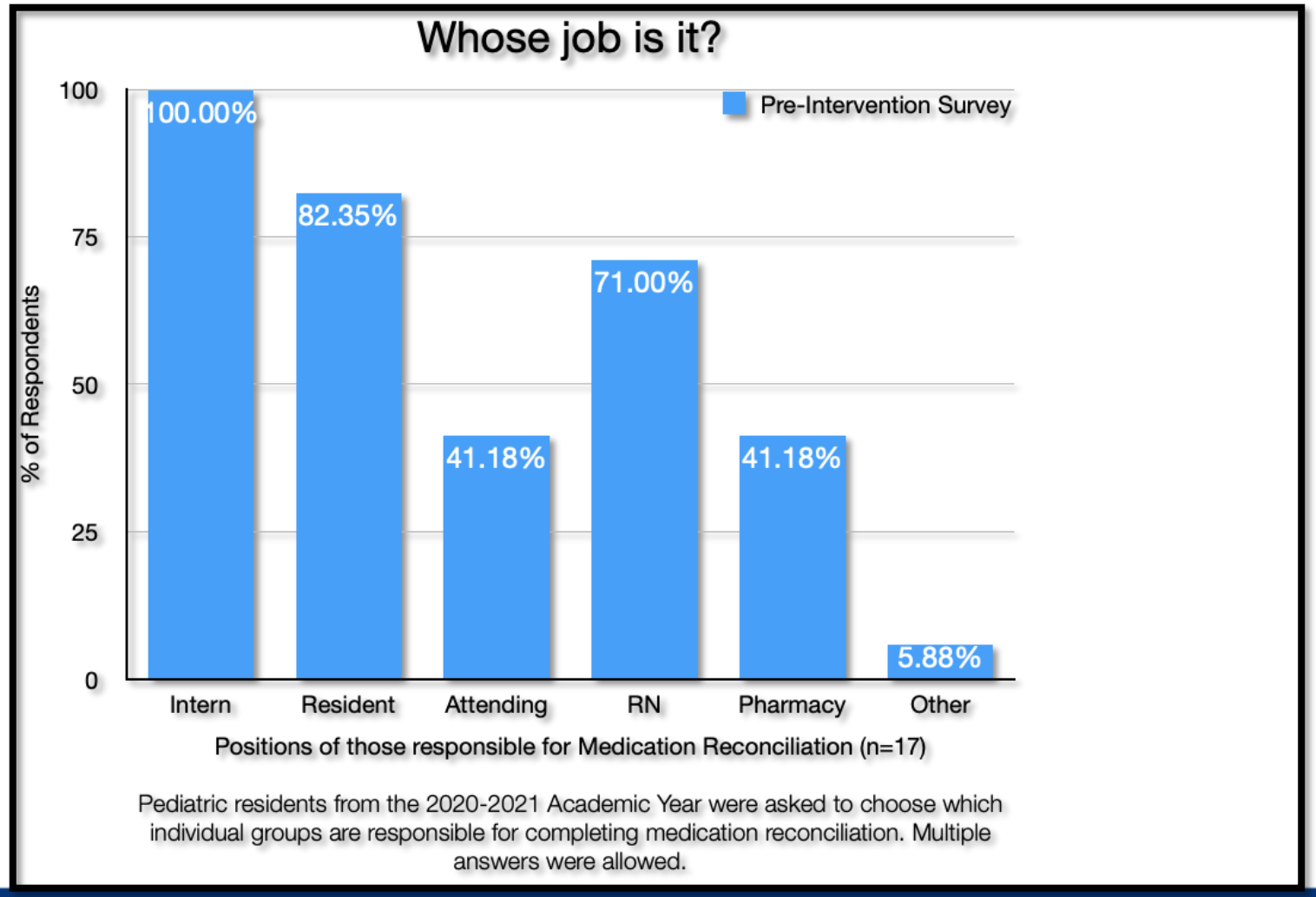
- Problem:
  - Poorly defined and poorly completed medication reconciliation can lead to variety of types of medication errors
  - Medication errors have potential to cause
    - Adverse drug events (potential or preventable)
    - Prolonged admission or readmission
    - Sentinel events, including death

PROBLEM / BACKGROUND

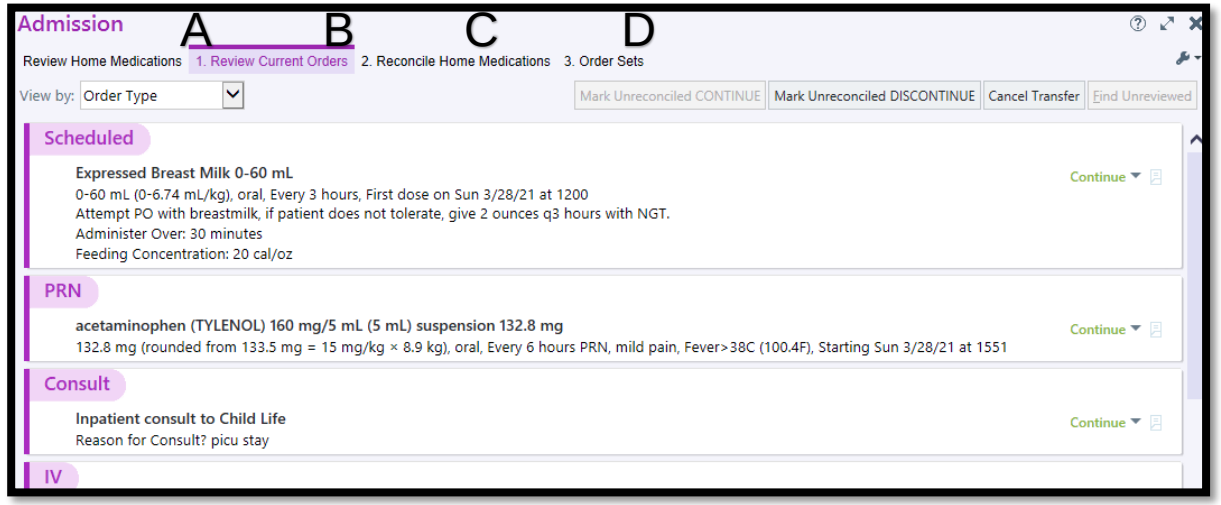
Fact finding

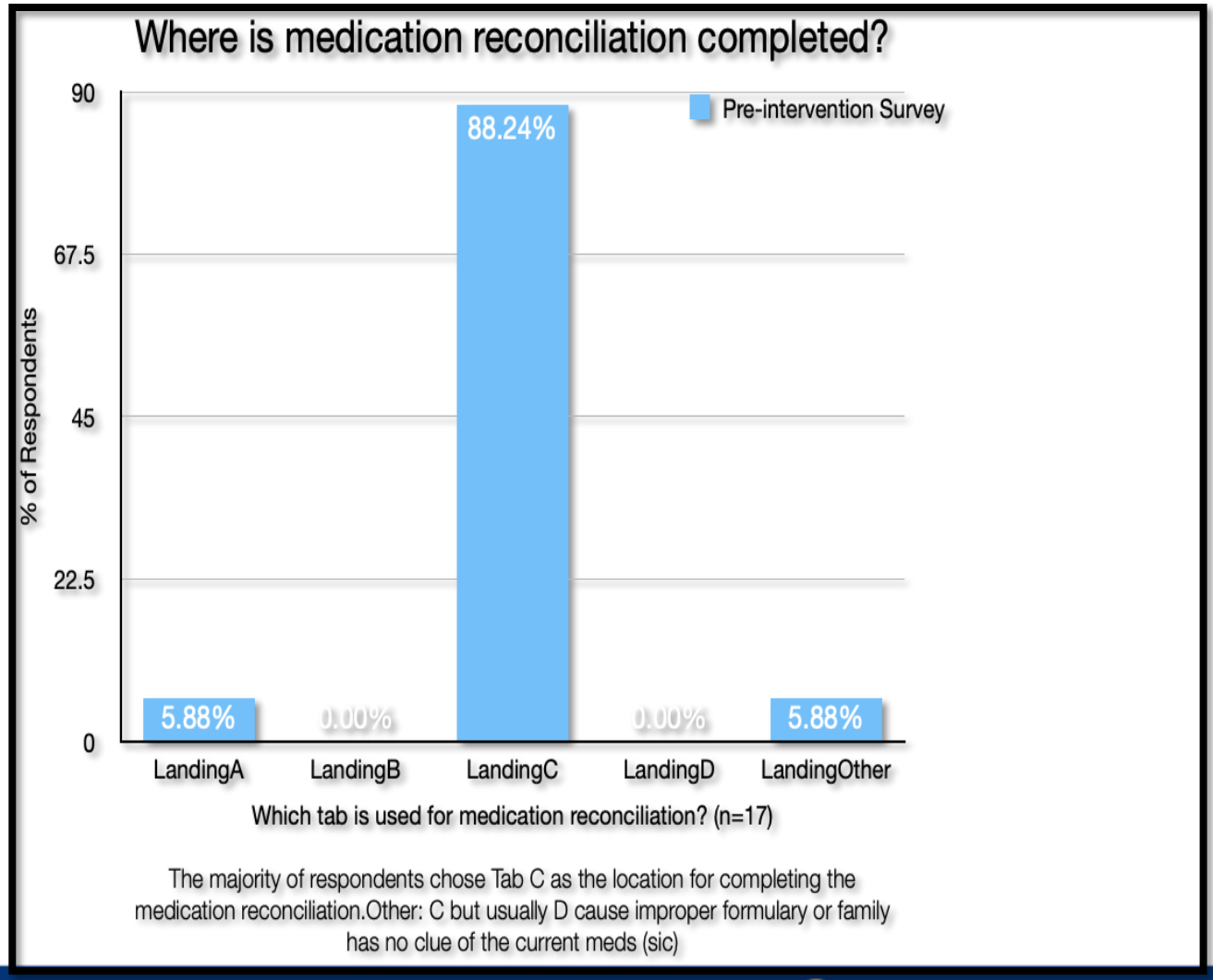
To decide where you are going, you've got to know where you are at. A pre-intervention survey was provided to the 2020-2021 Academic Pediatric Residents.

- Trends to note:
  - Confusion on whose job it really is
  - It seems like it's everyone's job
  - If so, does that mean team members are not as diligent in completion of the med rec if they think someone else has done it?
  - Other: Er nurses usually enter in mostly correct current meds but doses or schedule not right (sic)
- So, who's job is it?
  - To paraphrase S. Michael Ross, MD, MHP: If it's everyone's job, it's nobody's job. This is because no one has taken ownership to insure completion
  - There are opportunities for RNs and Pharmacy to assist (see references), but ultimately the clinician needs to be the team leader



PROBLEM / BACKGROUND





PROBLEM / BACKGROUND

What is medication reconciliation?

- The process of creating the most accurate list possible of medications a patient is taking
  - Drug name
  - Drug dosage (including concentration)
  - Drug frequency (including most recent dose)
  - Drug route

AND

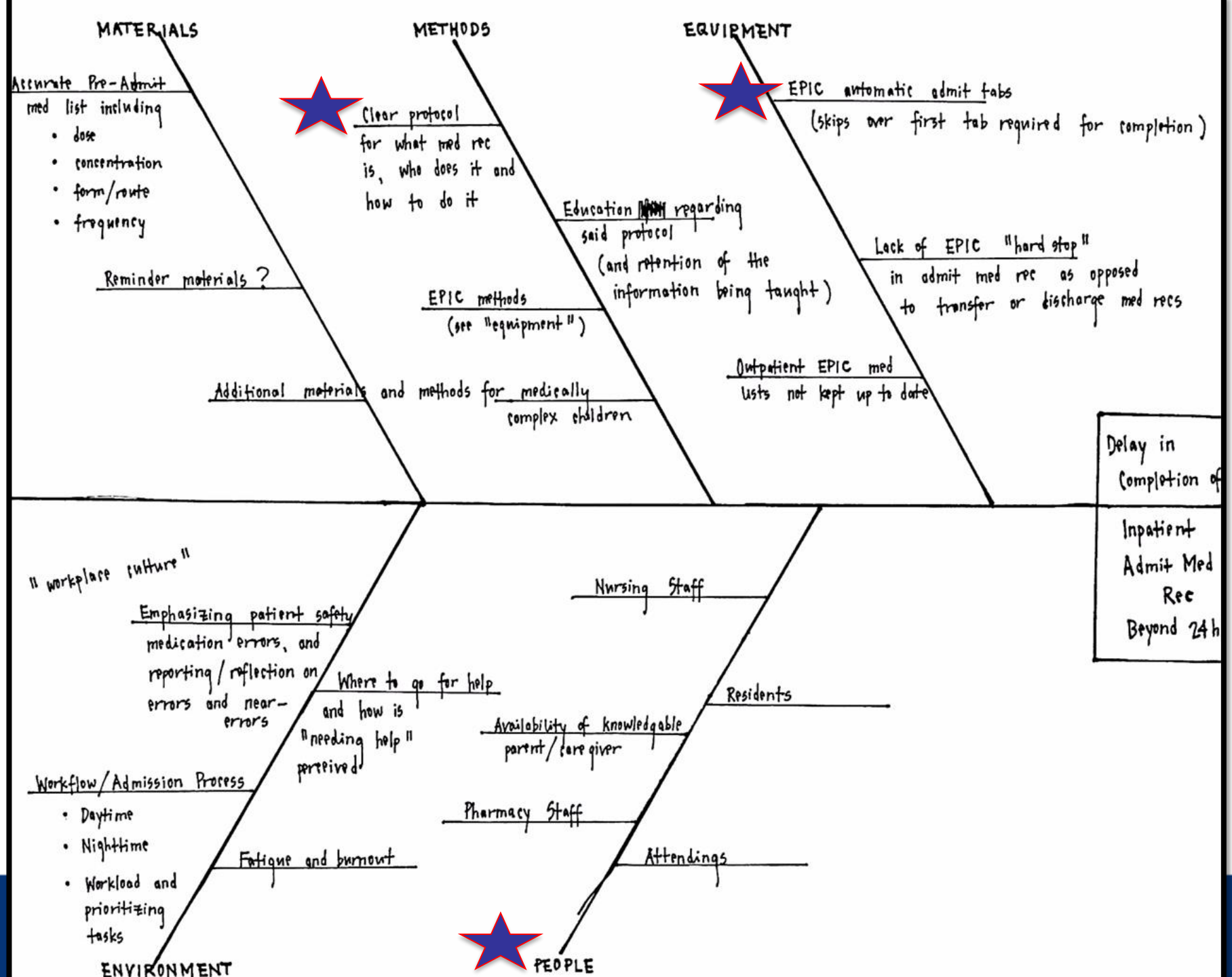
- Comparing that list against the physician's admission, transfer, or discharge orders

AND

- Making clinical decisions based on this comparison with goal of providing correct medications to the patient at all transition points within the hospital

AIM STATEMENT

By April 2022, 75% (90%) or more of patients admitted to the Pediatric Hospitalist Service will have admission medication reconciliation in the electronic medical record completed within 24 hours of admission.



Fishbone Diagram For Cause Analysis

MEASURES

(1) Outcome measure:

- What measure do we ultimately want to affect as a result of this project?
- Percentage of admission medication reconciliations completed within 24 hours of admission

$$\frac{\text{\# admission med recs completed within 24 hours of admission per week}}{\text{total \# admissions per week (total \# admission med recs possible)}}$$

- Compare week-by-week percentages
- Before and after different PDSA cycles as well as sustainability over time

MEASURES

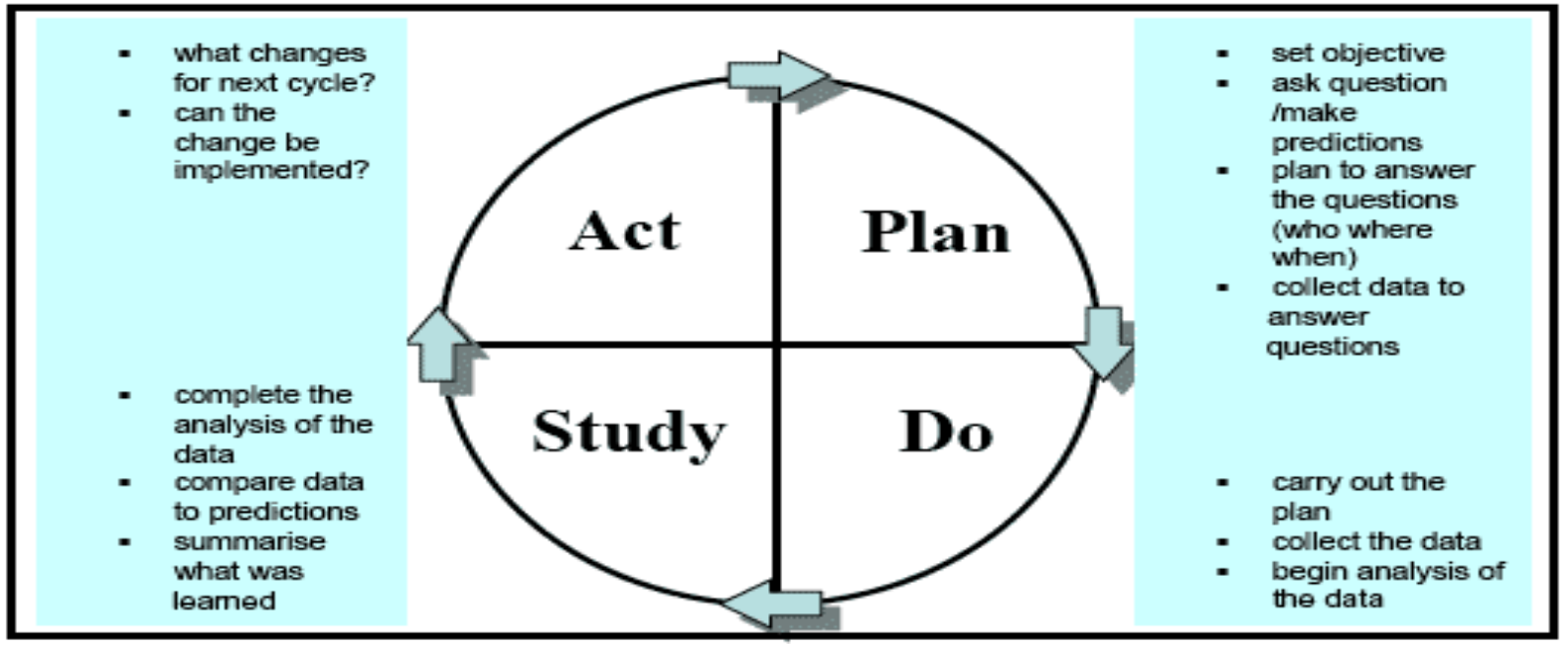
(2) Process measure:

- How will we know if the system is performing as planned to affect the outcome measure?
- Resident understanding of what the admission medication reconciliation process is, how to complete it, and why it is important

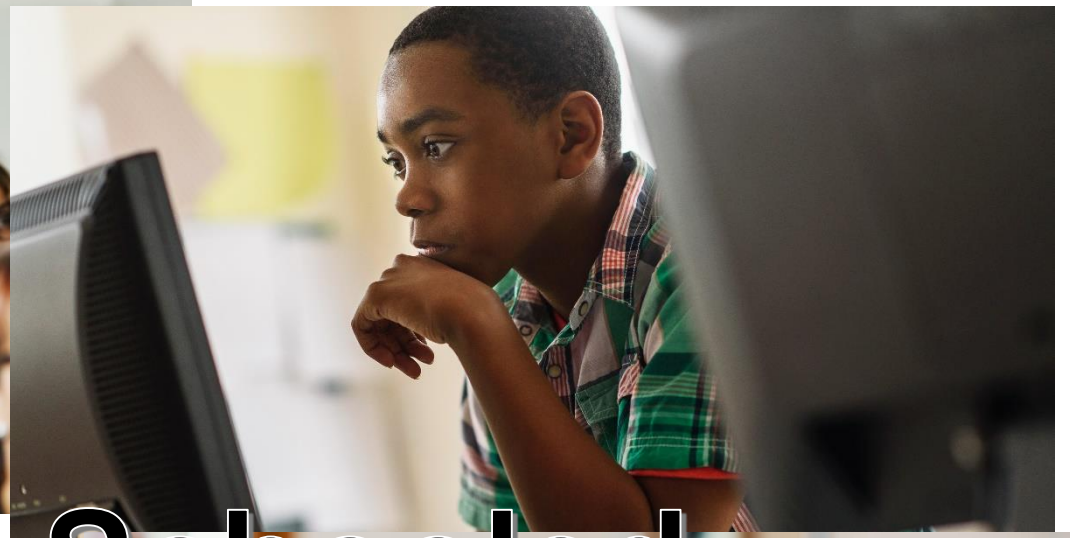
(2) Balancing measure:

- How will we know if we are introducing problems elsewhere in the system?

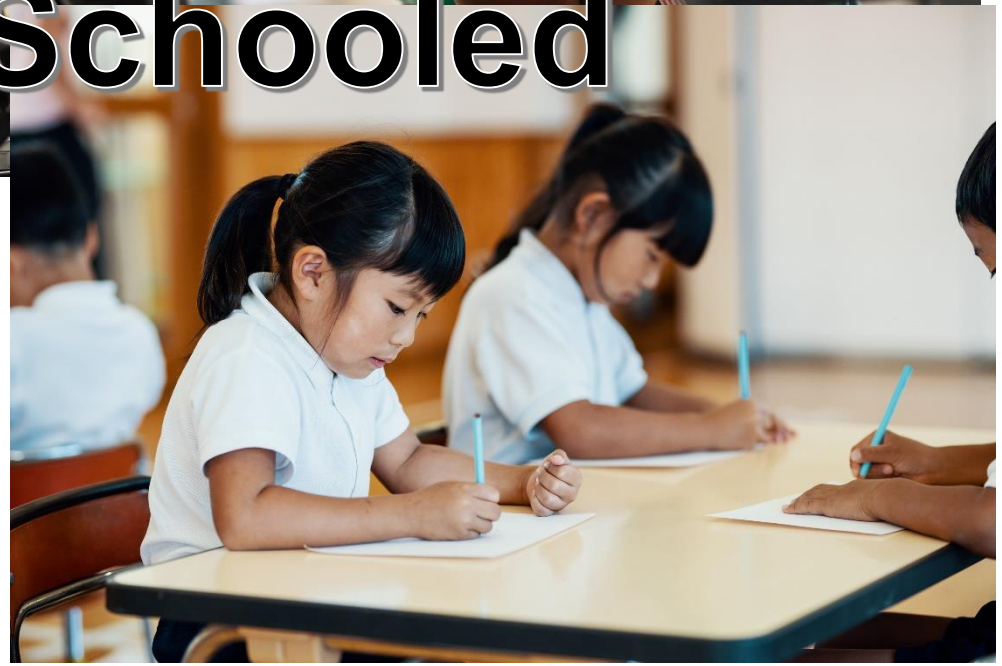
PDSA #1



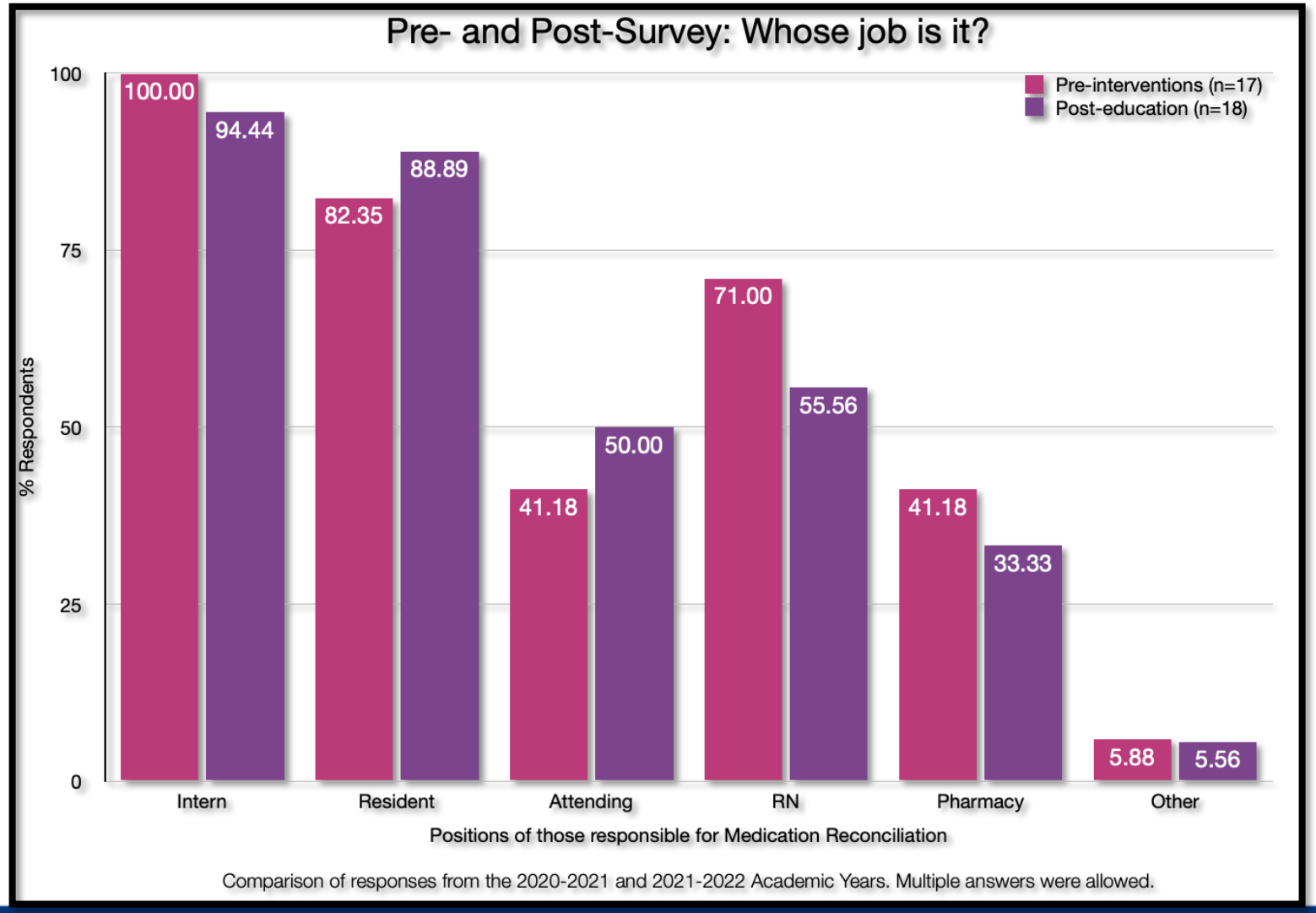
Educational intervention: Lecture given to Pediatric Residents by Drs. Brooke and Hawes during morning report time slot. Included powerpoint presentation and live EPIC walk-through of the process. Date of occurrence 8/6/2021.



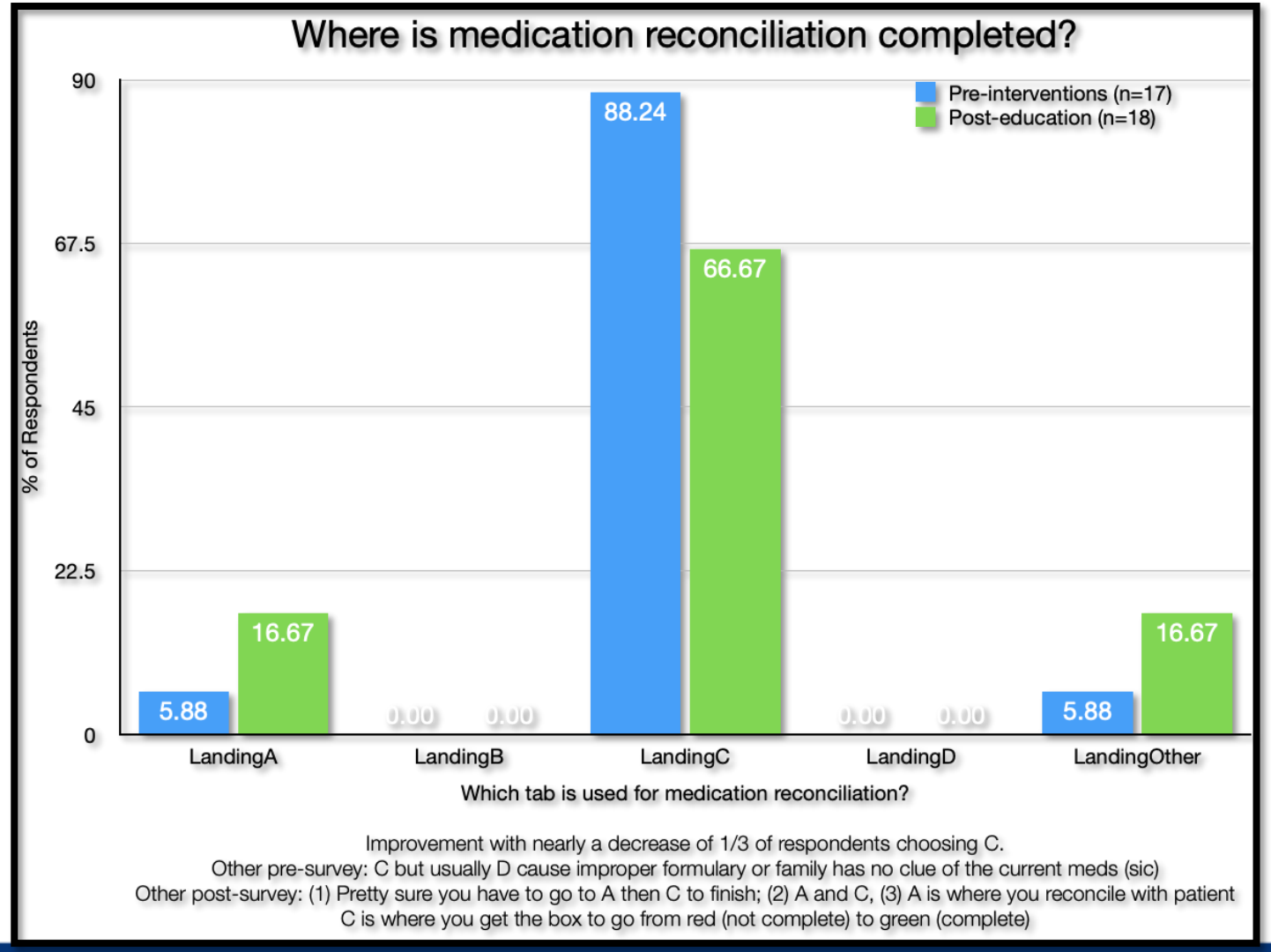
Getting Schooled



RESULTS

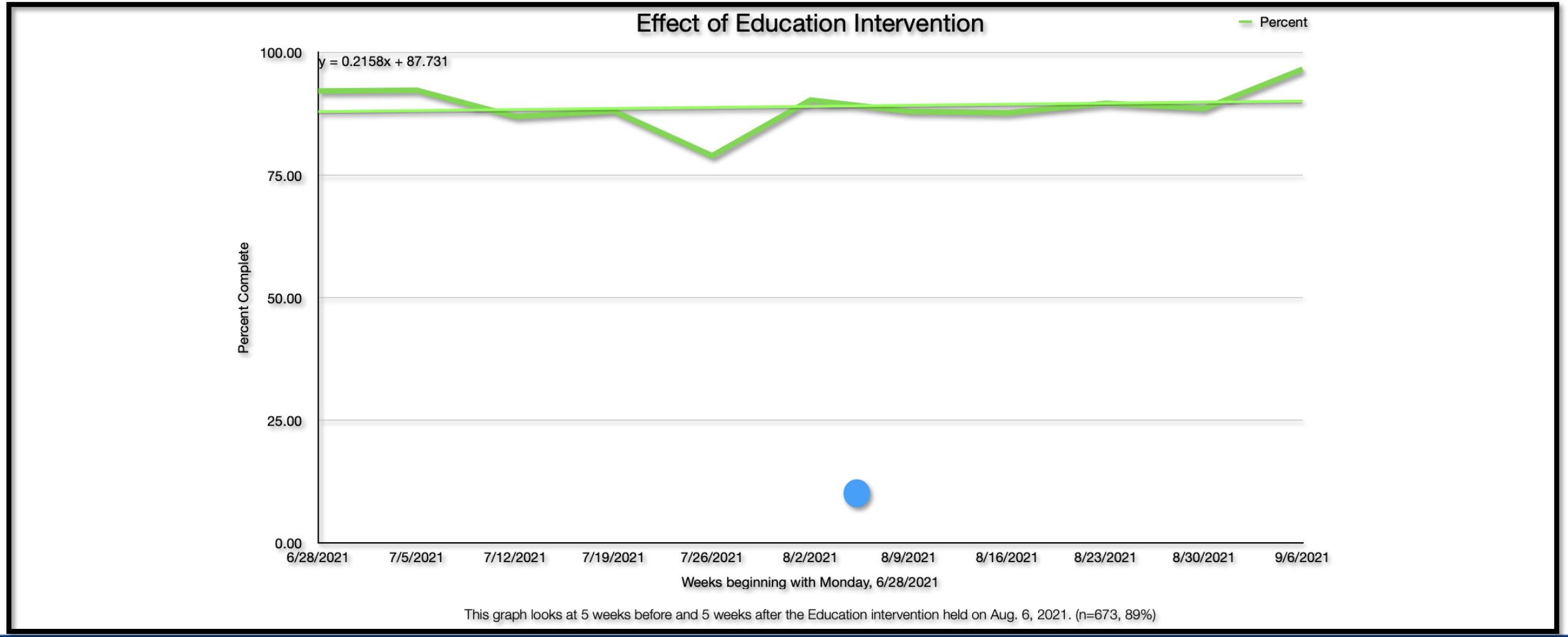

Pre- and Post-Survey: Whose job is it?
Pre-interventions (n=17)
Post-education (n=18)
% Respondents
100
75
50
25
0
100.00
94.44
82.35
88.89
41.18
50.00
71.00
55.56
41.18
33.33
5.88
5.56
Intern
Resident
Attending
RN
Pharmacy
Other
Positions of those responsible for Medication Reconciliation
Comparison of responses from the 2020-2021 and 2021-2022 Academic Years. Multiple answers were allowed.

RESULTS



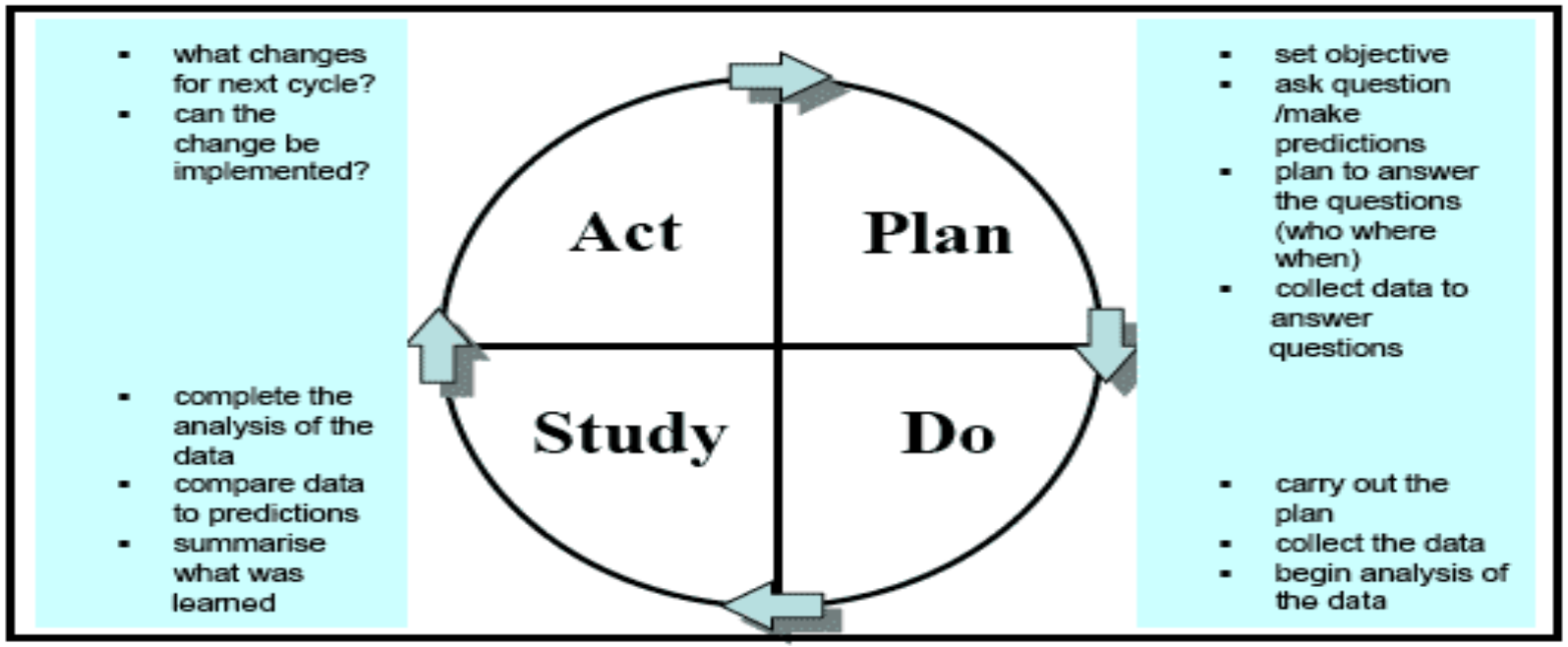
Improvement with nearly a decrease of 1/3 of respondents choosing C.
Other pre-survey: C but usually D cause improper formulary or family has no clue of the current meds (sic)
Other post-survey: (1) Pretty sure you have to go to A then C to finish; (2) A and C, (3) A is where you reconcile with patient
C is where you get the box to go from red (not complete) to green (complete)

RESULTS

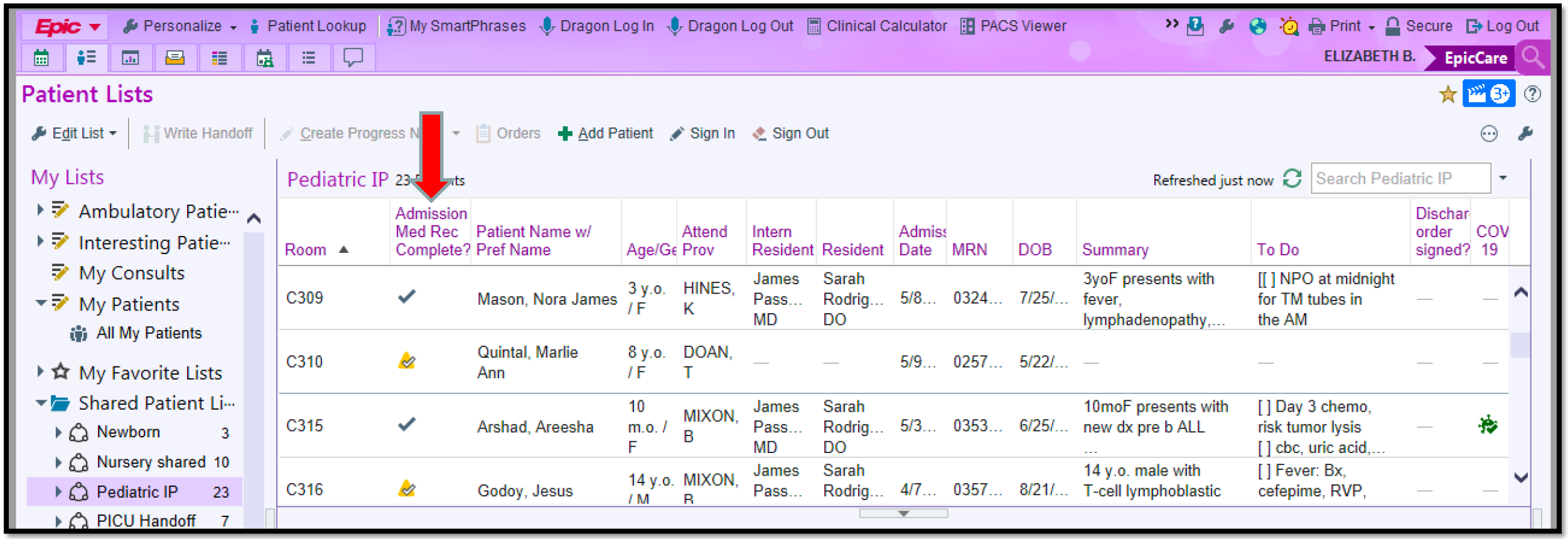


This graph looks at 5 weeks before and 5 weeks after the Education intervention held on Aug. 6, 2021. (n=673, 89%)

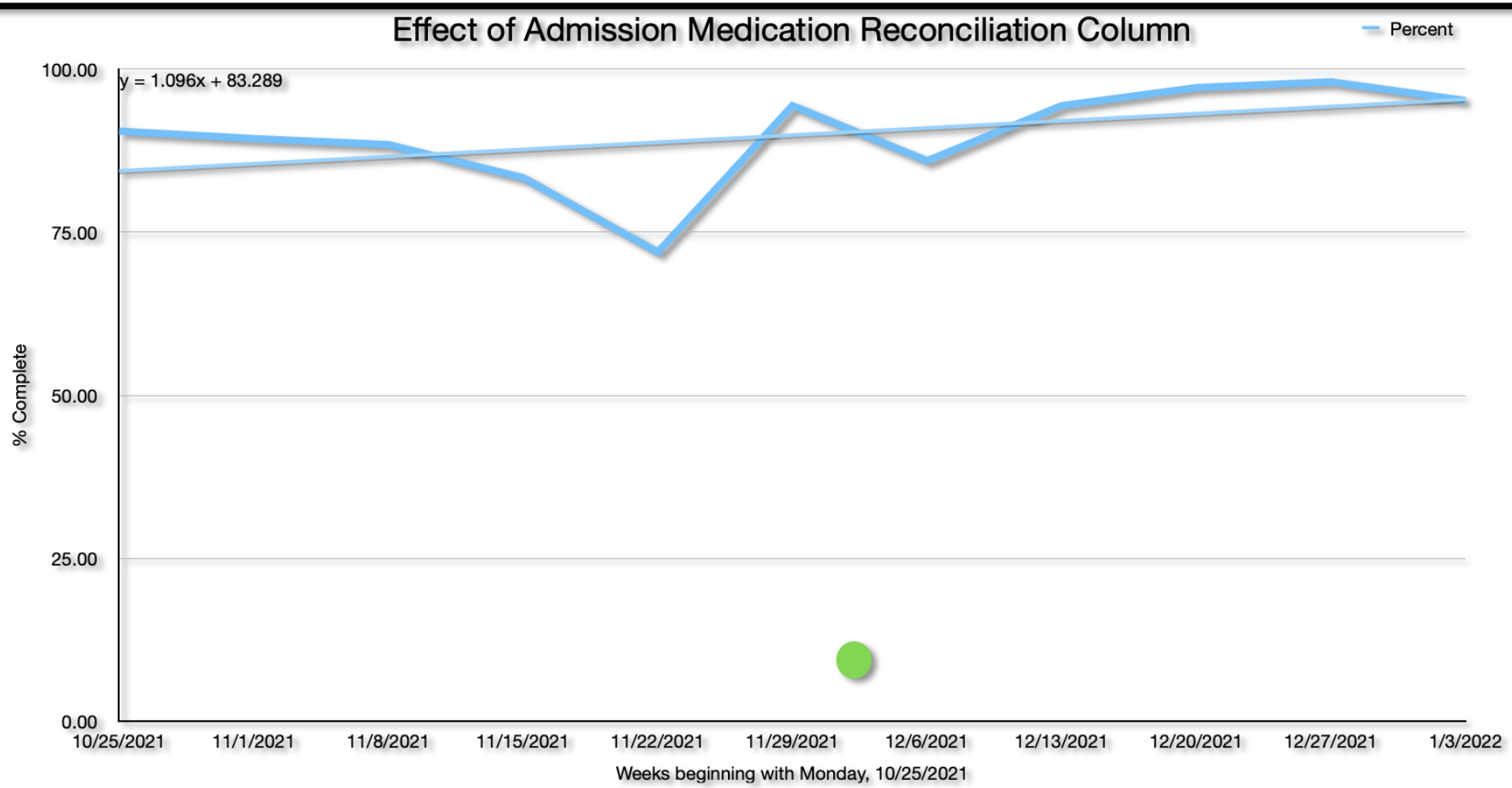
PDSA #2



Epic patient list intervention: Column added to shared Pediatric Hospitalist inpatient EPIC list stating whether admission medication reconciliation complete. This list is printed and used daily by all residents and attendings on the Pediatric Hospitalist service. Date column added 12/3/2021.

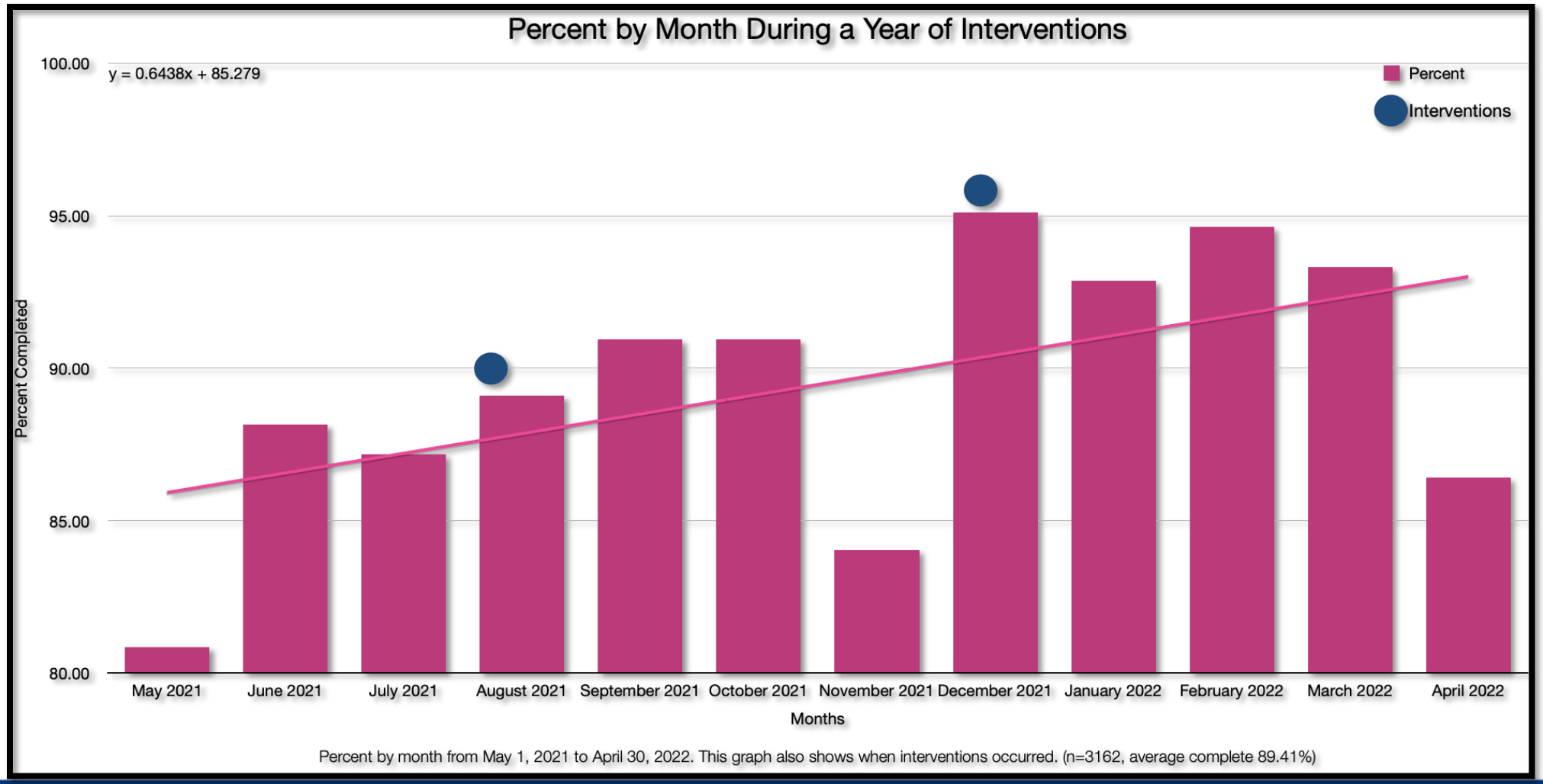

Epic
Personalize
Patient Lookup
My SmartPhrases
Dragon Log In
Dragon Log Out
Clinical Calculator
PACS Viewer
Print
Secure
Log Out
ELIZABETH B.
EpicCare
Patient Lists
Edit List
Write Handoff
Create Progress N
Orders
Add Patient
Sign In
Sign Out
My Lists
Ambulatory Patie···
Interesting Patie···
My Consults
My Patients
All My Patients
My Favorite Lists
Shared Patient Li···
Newborn 3
Nursery shared 10
Pediatric IP 23
PICU Handoff 7
Pediatric IP
Refreshed just now
Search Pediatric IP
Room
Admission Med Rec Complete?
Patient Name w/ Pref Name
Age/Ge
Attend Prov
Intern Resident
Resident
Admiss Date
MRN
DOB
Summary
To Do
Dischar order signed?
COV 19
C309
Mason, Nora James
3 y.o. / F
HINES, K
James Pass… MD
Sarah Rodrig… DO
5/8…
0324…
7/25/…
3yoF presents with fever, lymphadenopathy,…
[ ] NPO at midnight for TM tubes in the AM
C310
Quintal, Marlie Ann
8 y.o. / F
DOAN, T
5/9…
0257…
5/22/…
C315
Arshad, Areesha
10 m.o. / F
MIXON, B
James Pass… MD
Sarah Rodrig… DO
5/3…
0353…
6/25/…
10moF presents with new dx pre b ALL …
[ ] Day 3 chemo, risk tumor lysis
[ ] cbc, uric acid,…
C316
Godoy, Jesus
14 y.o. / M
MIXON, B
James Pass…
Sarah Rodrig…
4/7…
0357…
8/21/…
14 y.o. male with T-cell lymphoblastic
[ ] Fever: Bx, cefepime, RVP,

RESULTS

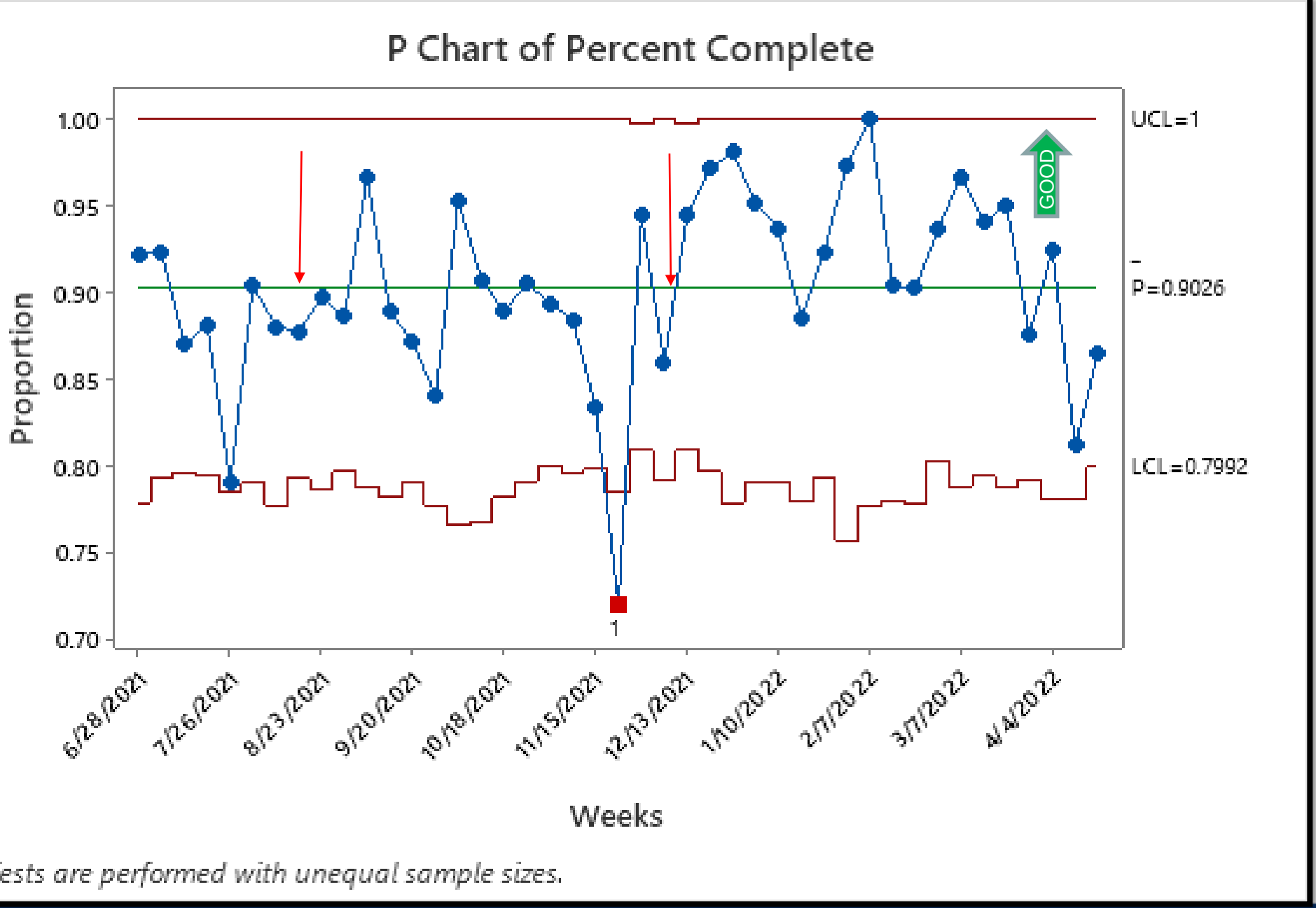


This graph looks at 5 weeks before and 5 weeks after the addition of the Admission Medication Reconciliation column in Epic, added Dec. 3, 2021. (n=761, 90.14%)

RESULTS



Percent by month from May 1, 2021 to April 30, 2022. This graph also shows when interventions occurred. (n=3162, average complete 89.41%)



Tests are performed with unequal sample sizes.

DISCUSSION

- Did we reach our AIM?
- Key breakthroughs:
  - (1) System level intervention -versus- human/individual level intervention
  - (2) Ongoing and/or repeated intervention –versus- single time occurrence
  - (3) If it's everybody's job, it's nobody's job
- How do we think this affected patient care on the Pediatric Hospitalist Service?

BARRIERS / LESSONS LEARNED

- Big, sweeping meaningful change → focused, specific, measurable goals
- System-wide → sub-system → demonstration unit
- Not working alone → finding and connecting with teammates
- Communicating with Epic/IT personnel and obtaining desired data
- Time

NEXT STEPS

- Further PDSA cycles:
  - #3 Modifying Epic workflow intervention
  - #4 Clarifying roles intervention (with flowchart)
  - #5 Motivation via awareness intervention
  - #6 Revised and repetitive resident education intervention
    - Pediatric residents
    - Chattanooga family medicine residents
    - Murfreesboro family medicine residents
    - Hamilton family medicine residents

- Sustainability:
  - How will interventions linked to improvement continue beyond the residency terms of Dr. Brooke and Dr. Hawes?

NEXT STEPS

- Long-term vision:
  - Measured improvement in the quality of medication reconciliations, not simply the quantity/percentage with timely completion
  - Characterization of medication errors associated with medication reconciliation

- Long-term vision:
  - Apply interventions linked to improvement to broader Pediatric Acute Care and PICU admissions
  - Improvement in medication reconciliation at points of transfer and discharge

REFERENCES

- Barnsteiner, J. H. Chapter 38: Medication Reconciliation. Patient Safety and Quality: An Evidence-Based Handbook for Nurses, Vol. 2.
- Greenwald, J. L., Halasyamani, L., Greene, J. et al. Making Inpatient Medication Reconciliation Patient Centered, Clinically Relevant and Implementable: A Consensus Statement on Key Principles and Necessary First Steps. Journal of Hospital Medicine. Vol 5(8). October 2010. 477-485
- Institute for Healthcare Innovation. ihi.org.
- Medications at Transitions and Clinical Handoffs (MATCH) Toolkit for Medication Reconciliation. Agency for Healthcare Research and Quality (AHRQ).
- National Patient Safety Goals Effective January 2021 for the Hospital Program. The Joint Commission.
- S. Michael Ross, MD, MHA. Cureatr (Comprehensive Medication Management). blog.cureatr.com.

THANK YOU!

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And last, but not least, all Pediatric Residents and Attendings