

Bilirubin turnaround time in an outpatient pediatric clinic: improving efficiency of time-sensitive lab results



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BACKGROUND

The American Academy of Pediatrics recommends bilirubin measurement and clinical risk assessment of all newborns prior to hospital discharge, and that close follow up assessments should occur between 48 to 72 hours after discharge from the hospital¹.

Multiple factors can impact the processing of bilirubin lab results:

- Environmental factors can hemolyze the specimen²
- Delayed communication between different areas of the hospital
- Technology miscommunication, processing speeds and required down times

The importance of finding an efficient reporting system with little variability lies in the ability to provide meaningful care to infants impacted by hyperbilirubinemia.

PROJECT AIM

Part 1 Aim Statement: To decrease the mean turnaround time (TAT) by 10 minutes over 8 months.

Part 2 Aim Statement: To decrease the variability in TAT by 50% over 4 months.

Part 3 Aim Statement: To analyze the impact of Epic Beaker on bilirubin TAT mean and variability over 2 months

PROJECT DESIGN/STRATEGY

To understand the process involved in bilirubin TAT, a detailed flow diagram was created (Figure 1).

PDSA #1 Fluorescent sheets imprinted with “STAT lab” were placed in the lab tube prior to transportation.

PDSA #2 Clinic nurses documented their calls to the outreach lab with every bilirubin order in a call log.

PDSA #3 The outreach lab staff documented incoming calls received from outpatient pediatrics with every bilirubin order.

PDSA #4 Repeat baseline calculation for data

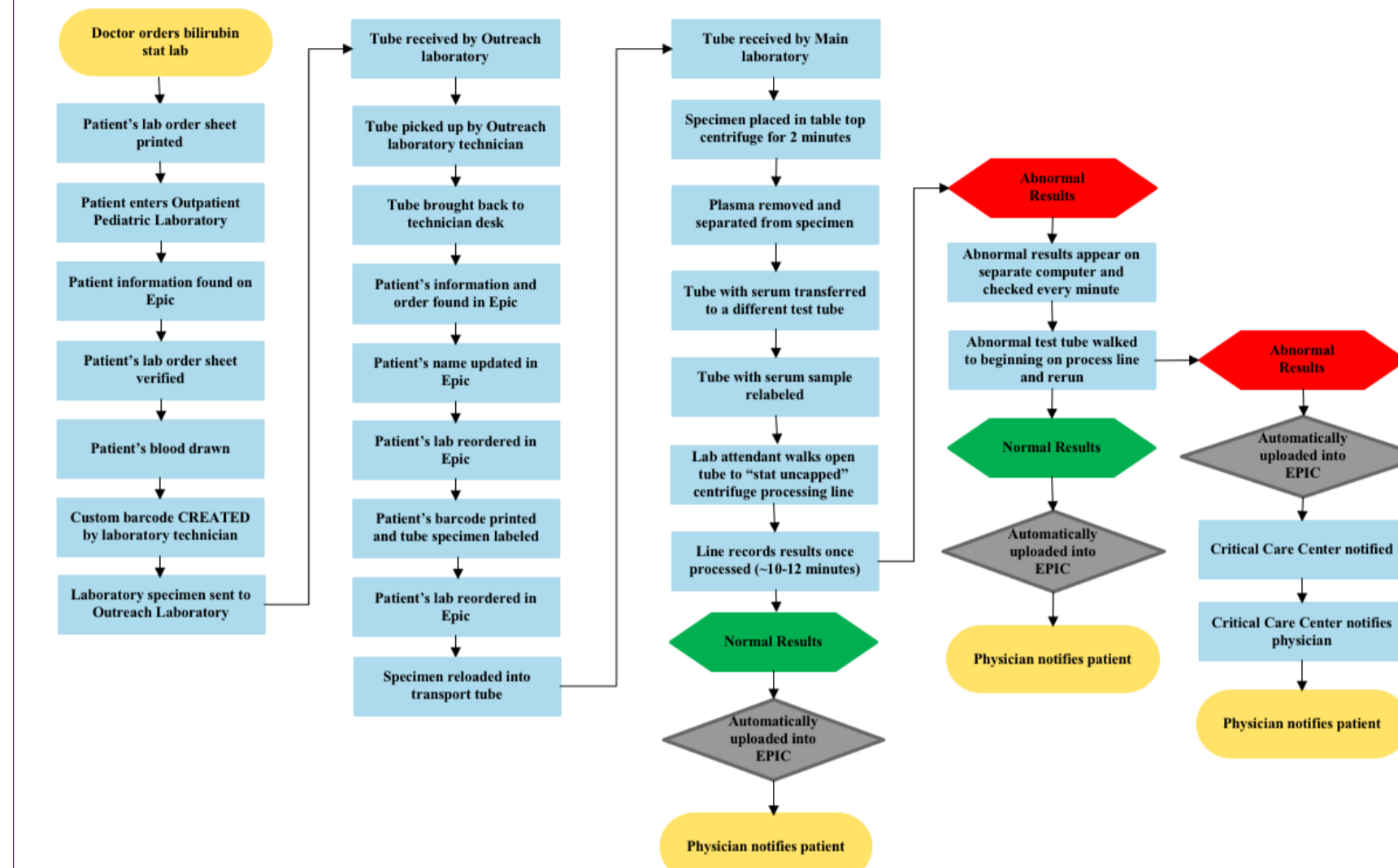
PDSA #5 Re-implementation of PDSA #1 & #2

PDSA #6 Implementation of Epic Beaker

ECU Pediatrics After Hours Clinic bilirubin lab data was excluded.

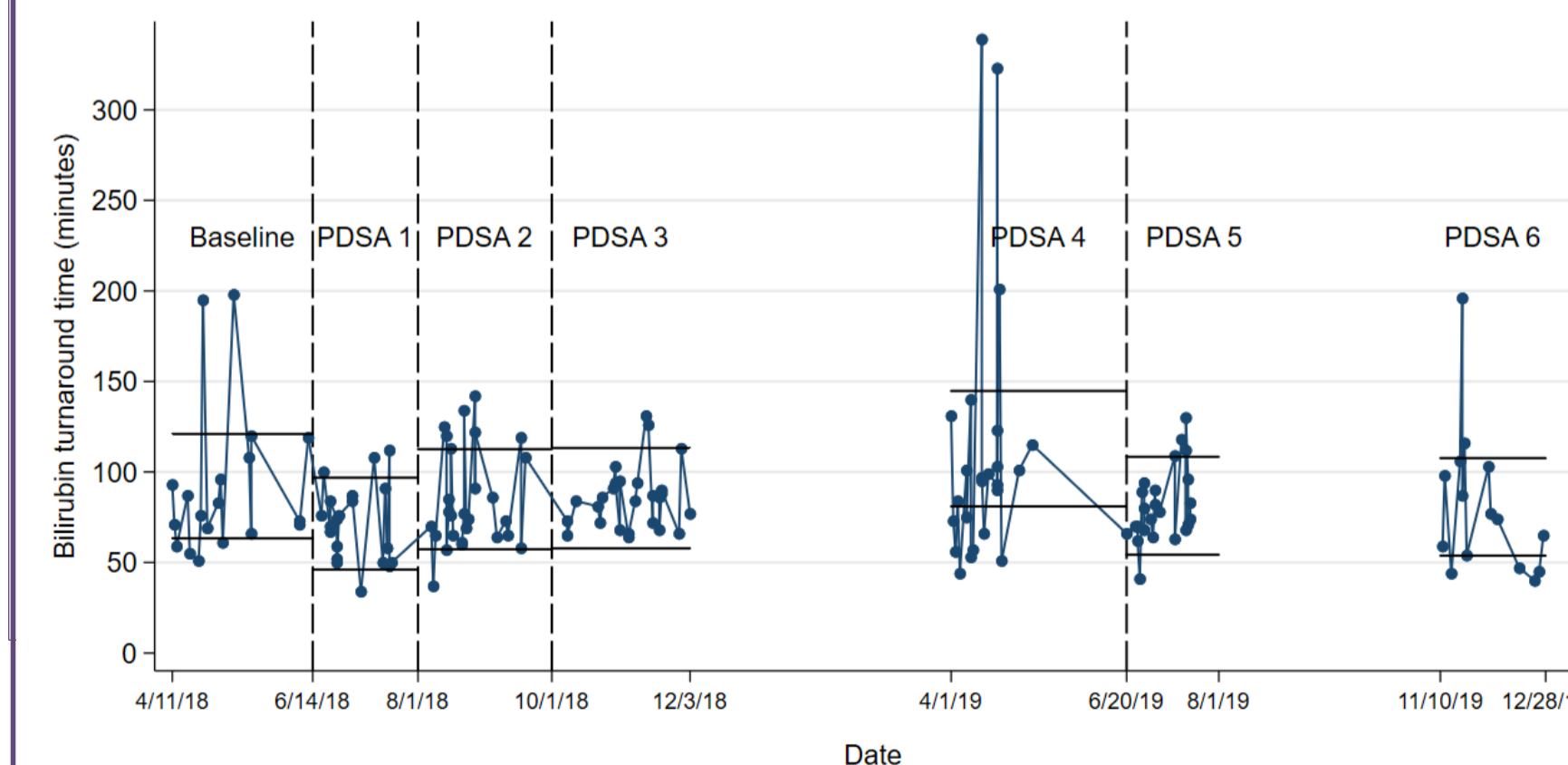
CHANGES MADE (PDSA CYCLES)

Figure 1. Steps from order to upload of a bilirubin sample



RESULTS/OUTCOMES

Figure 2. Bilirubin turnaround time (minutes) PDSA 1 – PDSA 6



LESSONS LEARNED

The process of bilirubin TAT highlights many barriers to substantial change.

Technological Barriers:

- In PDSA 1-5, ECU Pediatrics and Vidant Medical Center use the same EMR (EPIC) while the Outreach Lab uses a different EMR (Sunquest)
- The EMRs do not communicate if a critical ID field (name) changes; almost every neonatal bilirubin sample ordered involves a name change

Communication Barriers:

- Lack of communication continues to exist between the Outpatient Pediatric Clinic and the Outreach Laboratory
- PDSA #4
 - Unanticipated break in PDSA cycles due to miscommunication between researchers and the Outpatient Pediatric Clinic

Unanticipated Barriers:

- PDSA #2:
 - Increase in bilirubin orders from the clinic
 - Two new lab technicians in the Outpatient Pediatric Clinic
 - Resignation of the full-time clinic laboratory nurse
- Variability in tube system transportation time

NEXT STEPS

- Determine the impact of PDSA cycles on other laboratory tests
- Explore creative ways to expedite the sample from clinic to the lab
- Work with laboratory technicians to determine efficiency barriers with Epic Beaker

ACKNOWLEDGEMENTS

Thank you to ECU Outpatient Pediatrics, Vidant Outreach lab, and the LINC Scholars Program, Mary Mayancsik and Neann Smith in the Outreach Lab. Michelle Rotante in the Outpatient Pediatric Laboratory. Without all your help, this project would not have been possible.

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