REDUCING INTRAOPERATIVE PARATHYROID HORMONE LAB REPORTING TIME

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PATIENT SAFETY AND QUALITY IMPROVEMENT DAY

MAY 29TH, 2020

THE UNIVERSITY OF TENNESSEE
HEALTH SCIENCE CENTER.
COLLEGE OF MEDICINE
CHATTANOOGA

AIM STATEMENT

To have a 15% improvement in intraoperative parathyroid hormone (PTH) lab efficiency at our institution by May, 2020.

BACKGROUND

- Hyperparathyroidism is a common problem defined by
  - Elevated calcium
  - Elevated parathyroid hormone (PTH)
- Treatment is surgical
- Preoperative localization studies identify hyperfunctioning glands
- Confirmation of hypersecreting gland in surgery is critical
- Standard of care
  - Visualize all 4 glands
  - Confirm 50% decrease in PTH after gland excision (intraoperatively)

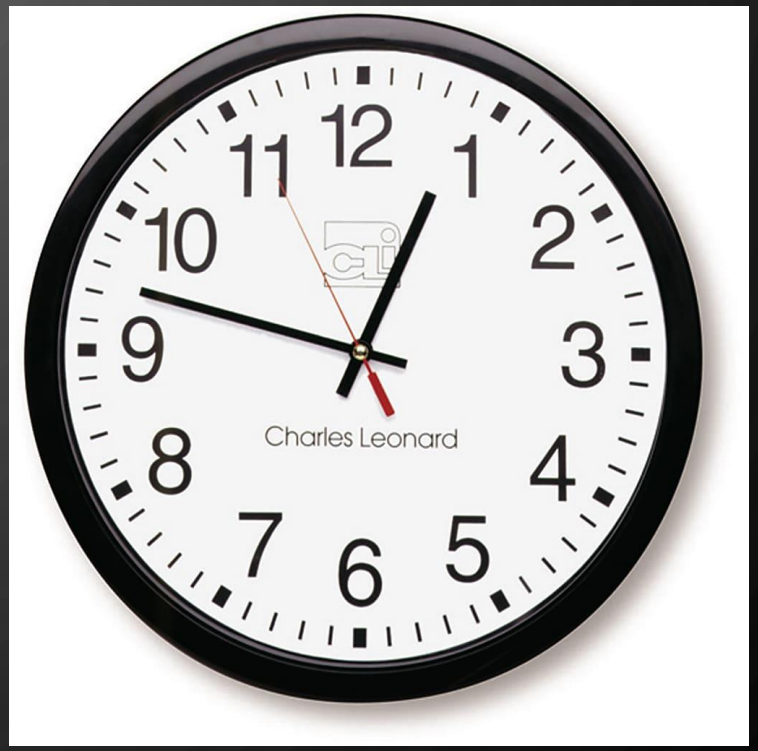
INTRAOPERATIVE PTH TESTING

- Helps confirm a successful parathyroidectomy
- Improves cure rates
- Helps prevent failure and reoperation
- **But…**

TIME CONSUMING

INTRAOPERATIVE PTH TESTING

- Logistical challenges
  - 25-60 minutes
- Increased time under anesthesia
  - Increased complications
  - Increased cost
  - Inefficiency



HYPOTHESIS

The Intraoperative PTH lab result is both inefficient and highly variable at our institution

PRE-INTERVENTION ANALYSIS

- October 30, 2017- October 30, 2019
- **Test our hypothesis**
  - 85 patients undergoing parathyroidectomy
  - Average lab result time: 45 minutes
  - Standard deviation: 21 minutes

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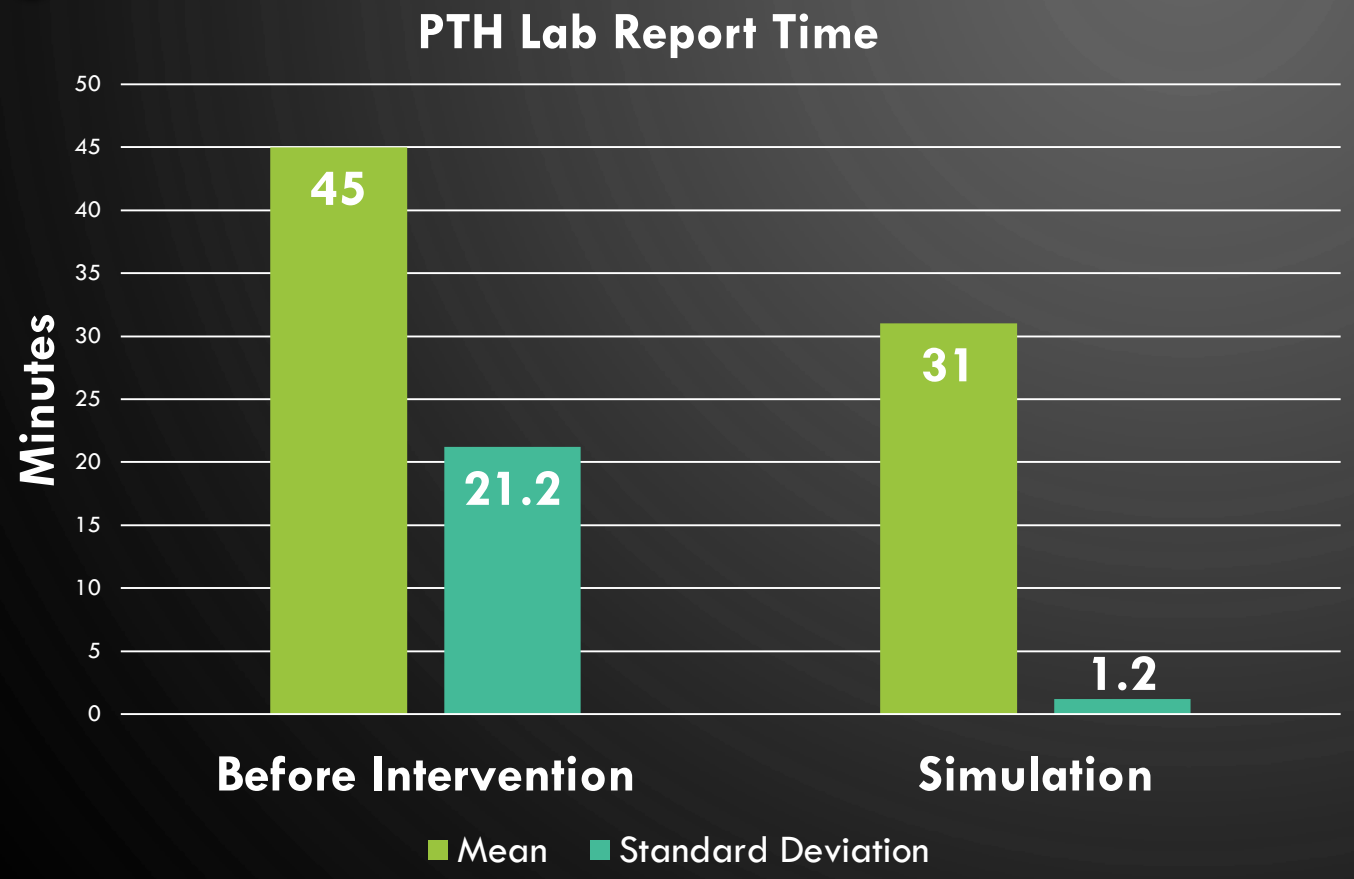
PDSA CYCLE 1

- November 1, 2019 – November 14, 2019
- **Staff meeting**
- **Observed process**
- **3 Simulations to test interventions**

PDSA CYCLE 1



- 31% decrease in lab report time ($p = 0.127$)

ANALYSIS OF CYCLE 1

- Improvement in efficiency and variability
- Controlled environment
- Established attainable goal
- Identified 4 critical steps

OR to Lab

Lab to Centrifuge

Centrifuge to PTH machine

PTH machine to OR

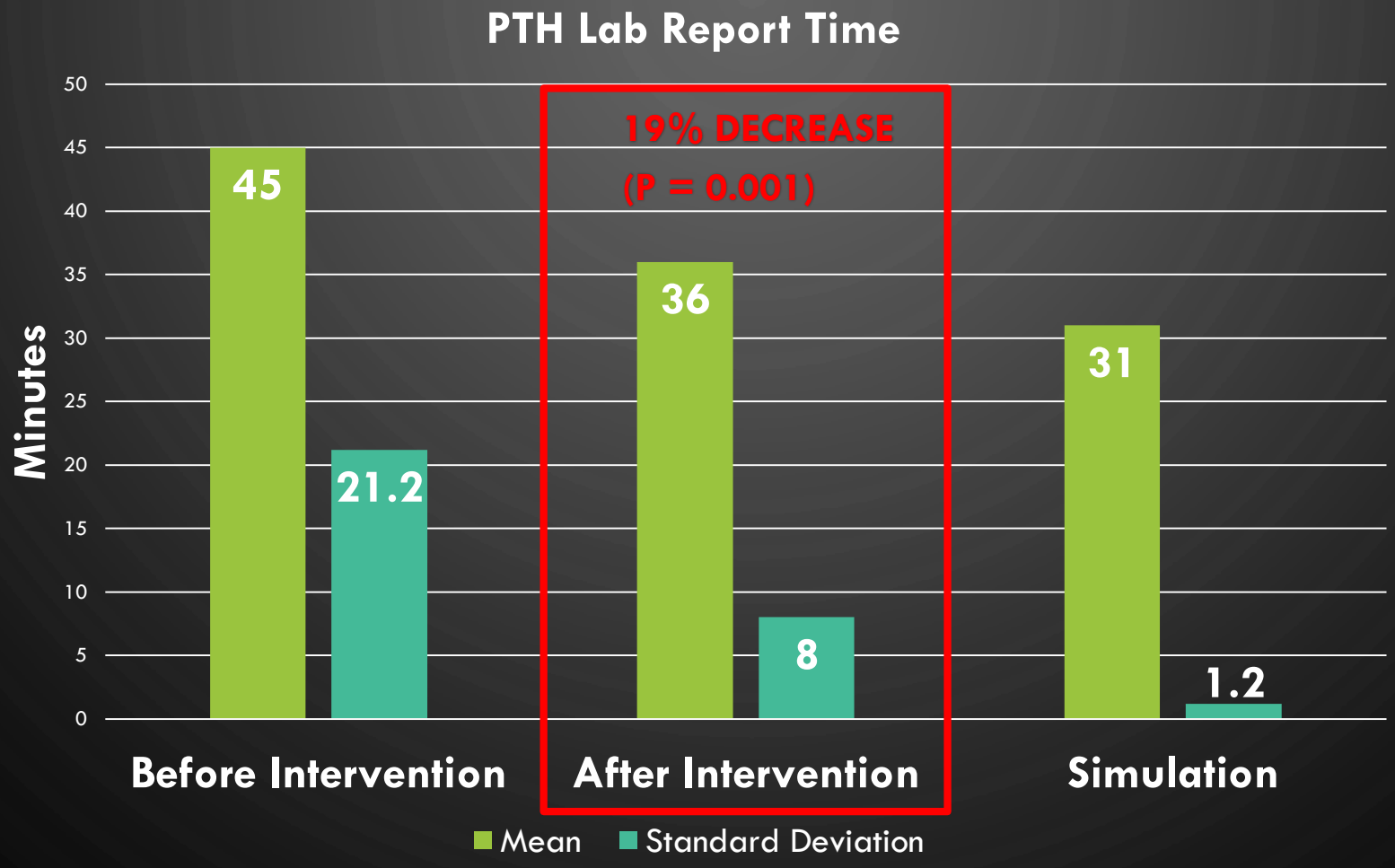
PDSA CYCLE 2

- November 15, 2019 –May 1, 2020
- **Established Interventions**

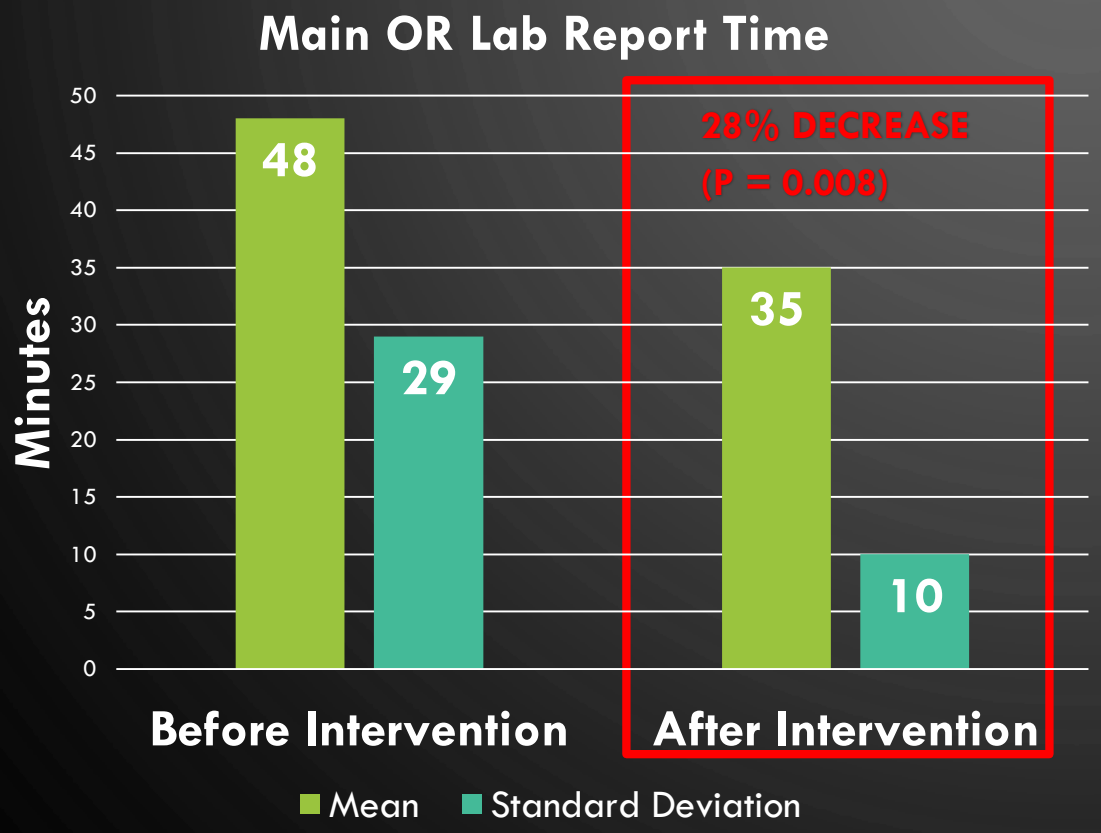
PDSA CYCLE 2

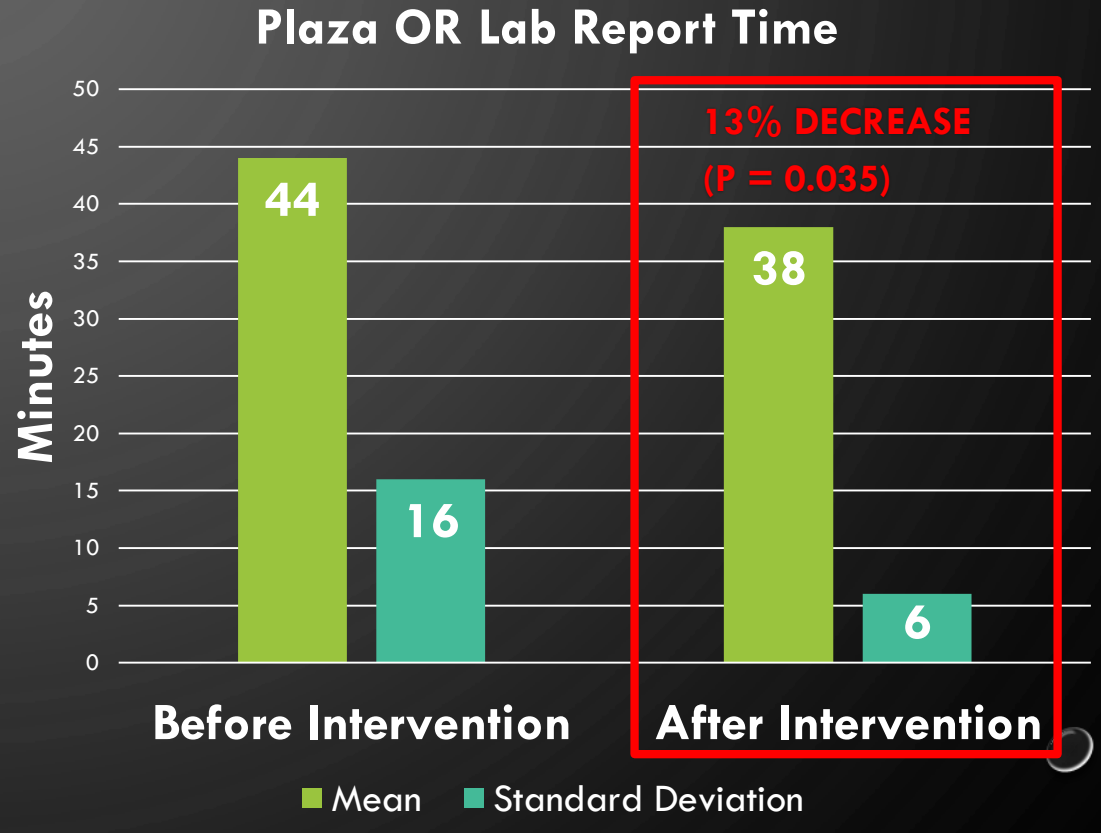
OR to Lab	• Tube system • Bright sticker insert
Lab to Centrifuge	• Reserved centrifuge machine for case • Direct phone communication
Centrifuge to PTH machine	• Alarms on lab machines • Calibrate PTH machine preoperatively
PTH machine to OR	• Staff education • Direct phone communication

PDSA CYCLE 2


PTH Lab Report Time
Minutes
50
45
40
35
30
25
20
15
10
5
0
45
21.2
19% DECREASE
(P = 0.001)
36
8
31
1.2
Before Intervention
After Intervention
Simulation
Mean
Standard Deviation

PDSA CYCLE 2


Main OR Lab Report Time
Minutes
50
45
40
35
30
25
20
15
10
5
0
48
29
35
10
28% DECREASE
(P = 0.008)
Before Intervention
After Intervention
Mean
Standard Deviation


Plaza OR Lab Report Time
Minutes
50
45
40
35
30
25
20
15
10
5
0
44
16
38
6
13% DECREASE
(P = 0.035)
Before Intervention
After Intervention
Mean
Standard Deviation

ANALYSIS OF CYCLE 2

- Statistically significant improvement in efficiency and variability
  - 19% decrease in all cases
  - 28% decrease in Main OR
  - 13% decrease in Plaza OR
- Less effective in Plaza OR

CONCLUSION

- We achieved our goal in the Main OR but not Plaza OR
- Next steps
  - Include Plaza OR nurses/managers in education
  - Establish clear lines of communication to ensure sustainability
  - Continued monitoring

SOURCES

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QUESTIONS?