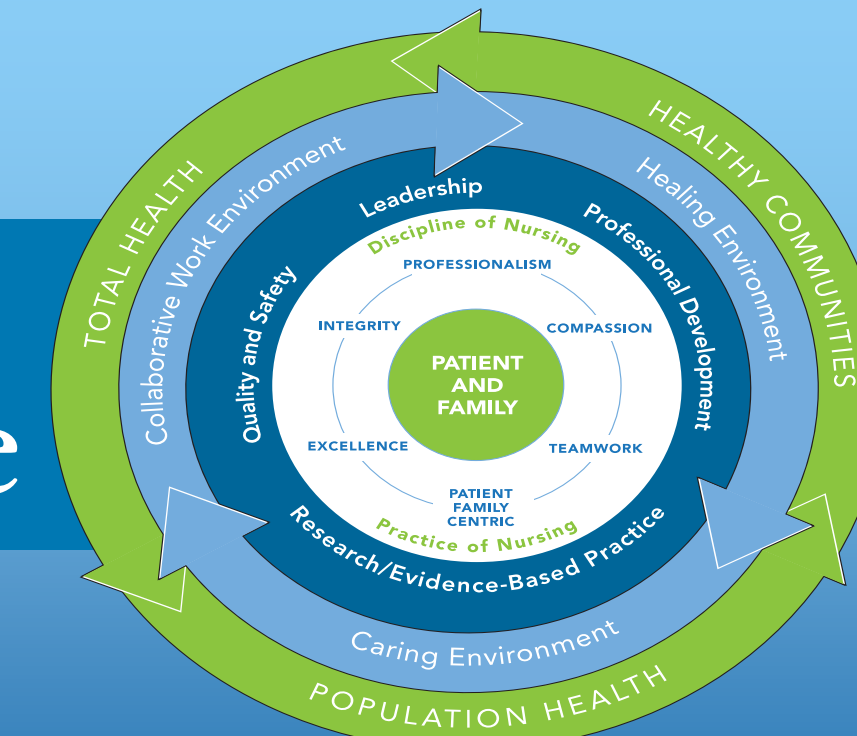


# Leveraging 2D Data Matrix Technology to Improve Sterile Tray Accuracy

Esther Yoshabele Montejo, BSN, RN, Rose Rabago, CRCST, CIS, Tia Lawson, CRCST, Sharon Ram, CRCST, CIS, Lionel Hoyte, DNP, RN, NE-BC, CNOR, NE-BC  
Oakland Medical Center

Culture of Excellence



## INTRODUCTION

- Background Information:** Incomplete surgical instrument trays for pediatric orthopedic specialty trays posed substantial risks to patient safety (missing critical instruments), increased operating room (OR) times, and prolonged total anesthesia times (Dekonenko et al., 2020). In addition to jeopardizing patient safety and prolonging anesthesia and OR times, these quality issues eroded trust in the system and impacted surgeons' and staff satisfaction (Toor et al, 2022). To address these concerns, this process improvement (PI) project aimed to improve tray accuracy for Dr. Zmugg's specialized pediatric surgical instrument trays and improve physician and staff satisfaction.
- Purpose:** To improve surgical instrument tray accuracy for periacetabular osteotomy (PAO) procedures by leveraging 2D data matrix (QR system) technology to reduce errors during the tray assembly process in the sterile processing department (SPD) and improve tray accuracy to 100% within 2 months of intervention.

## METHODS



### Plan:

- The four instrument sets used for PAO procedures were etched with the QR code and the surgeon's name.
- SPD and OR staff were made aware of the test-of-change and educated accordingly.

### Intervention:

- OR Staff (Point-of-Use):** Used instruments were put back in their respective trays and sprayed with enzymatic cleaner. Red Card Tags were placed in all 4 trays included in the test of change.
- Decontamination Area:** Red Card Tag served as a visual queue to SPD staff to inform of test-of-change.
- Prep and Pack/Assembly:** SPD staff assembled identified trays (Red Card Tagged). SPD Staff will scan all instruments to its respective indexes (i.e., 001, 002, 003).

### Data collection:

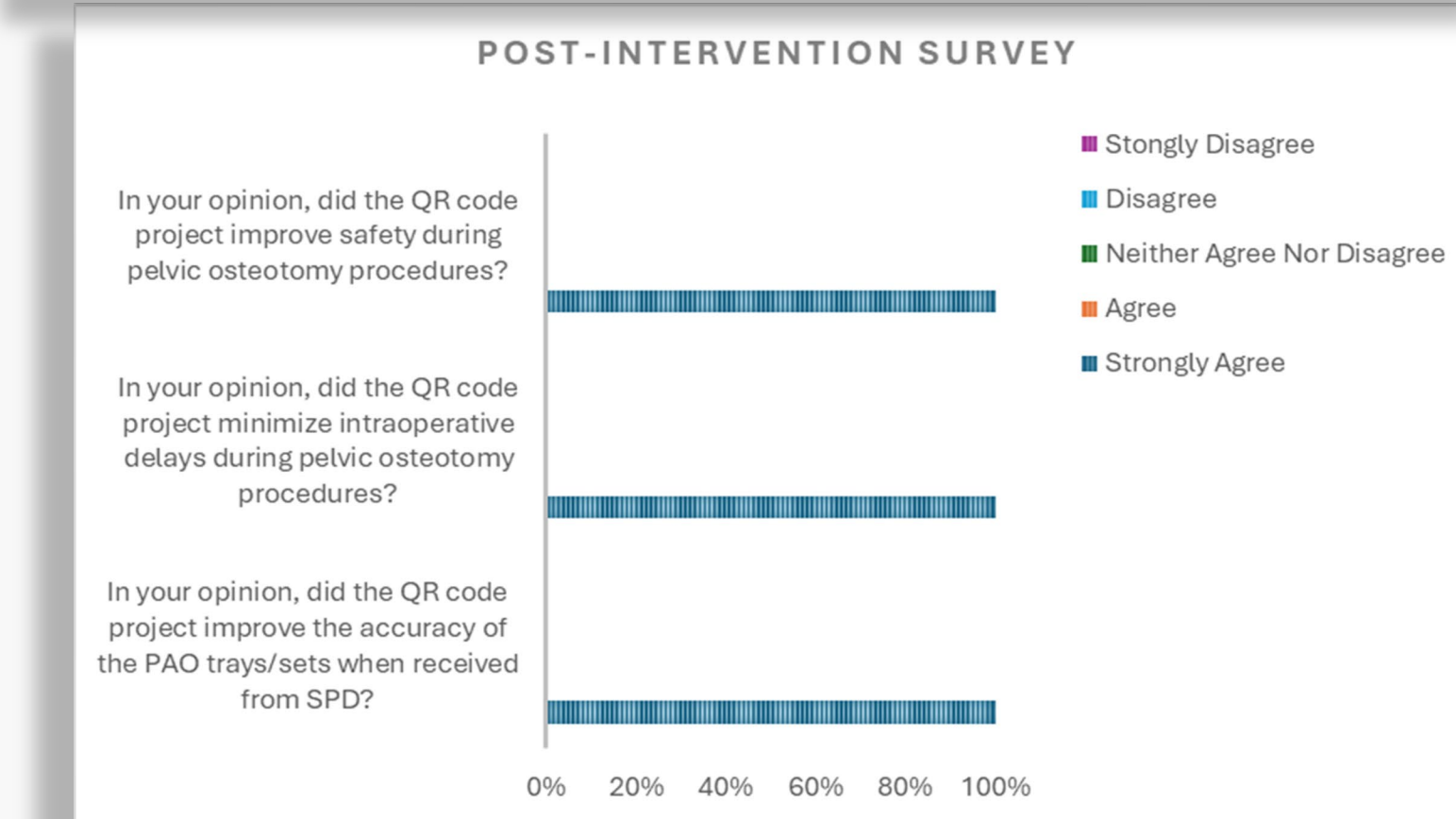
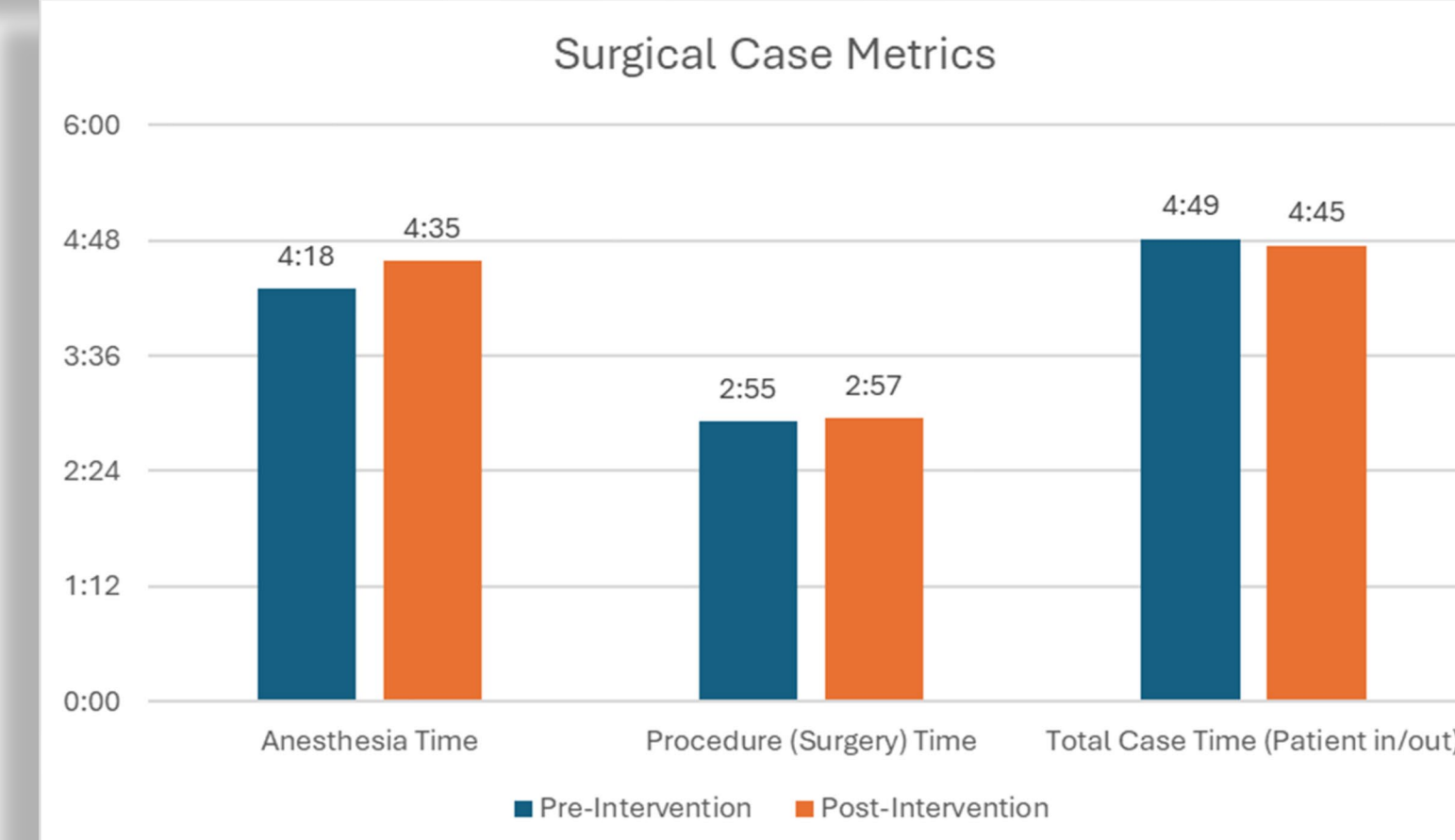
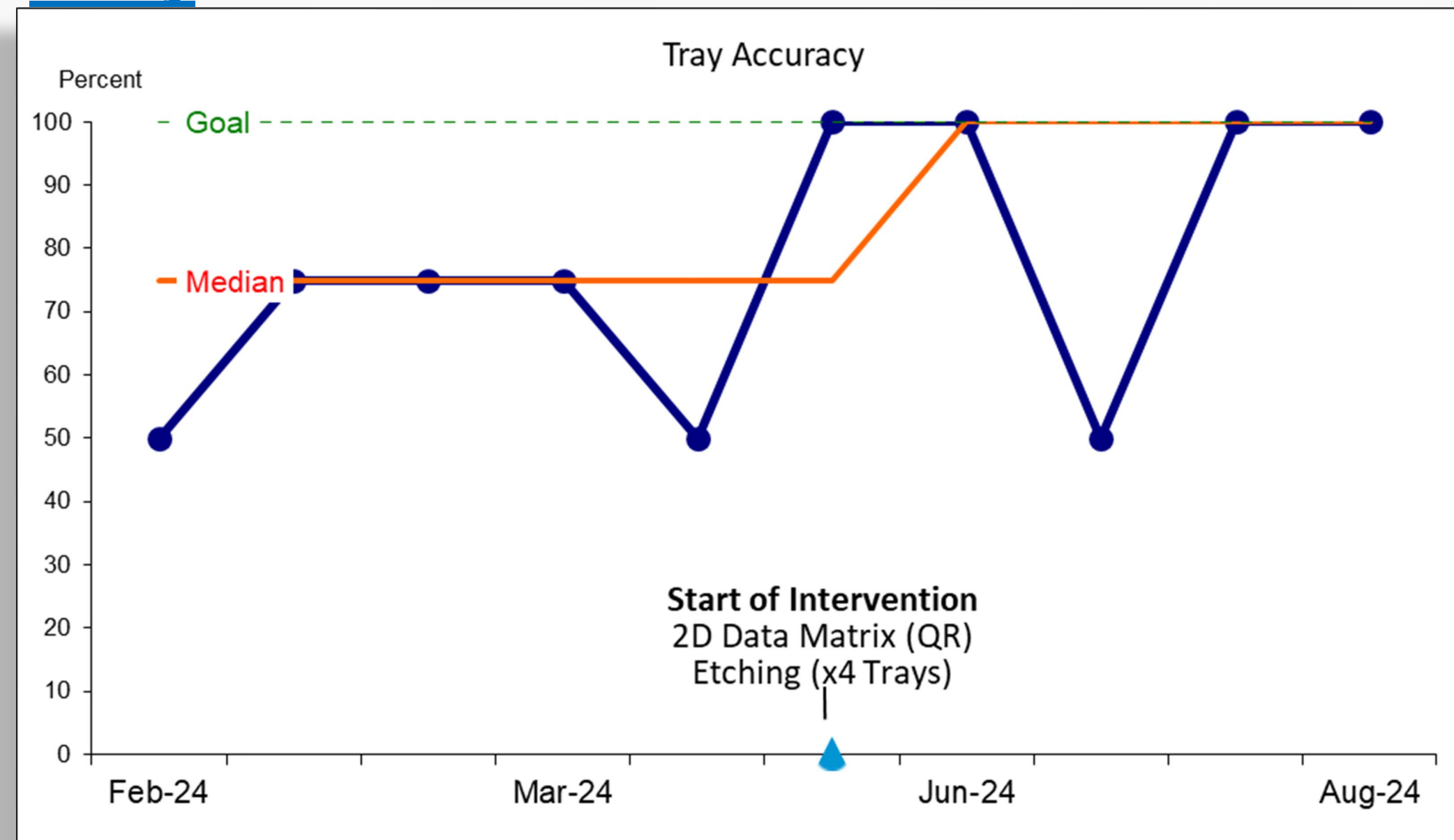
- Tray accuracy measured and defined by whether all 4 trays were accurate when received in the OR.
- OR case length measure via Health Connect (Delay codes noted).
- Team satisfaction measured via post-intervention survey.

### Do:

- Duration of the test of change was 5 cases (June 2024-July 2024).

## RESULTS or CONCLUSION

### Study:



## IMPLICATIONS FOR PRACTICE

### Act:

- After five procedures utilizing the 2D data matrix (QR system) etching technology, tray accuracy improved from an average of 75% (3 out of 4 trays) accuracy to 100% accuracy (all 4 trays) for Dr. Zmugg's PAO procedures.
- There was no impact to anesthesia time, procedure time, or total case time. However, post-intervention survey results showed 100% of the respondents indicated that the QR system improved safety, reduced delays, and improved sterile tray accuracy.
- The team decided to permanently adopt the data matrix (QR system) for PAO instrument sets
- Plans to expand the 2D data matrix system to other specialty instrument trays.

## REFERENCES

- Dekonenko, C., Oyeturji, T. A., & Rentea, R. M. (2020). Surgical tray reduction for cost saving in Pediatric Surgical Cases: A qualitative systematic review. *Journal of Pediatric Surgery*, 55(11), 2435–2441. <https://doi.org/10.1016/j.jpedsurg.2020.05.010>
- Toor, J., Bhangu, A., Wolfstadt, J., Bassi, G., Chung, S., Rampersaud, R., Mitchell, W., Milner, J., & Koyle, M. (2022). Optimizing the surgical instrument tray to immediately increase efficiency and lower costs in the operating room. *Canadian journal of surgery. Journal canadien de chirurgie*, 65(2), E275–E281. <https://doi.org/10.1503/cjs.022720>