

Improving The Efficiency of Prostate MRI Segmentation workflow through computerized provider order entry (OneConnect)

Members: Nadia Dido (University Outreach High School Program)

Abdominal Imaging Team, Urology Team

Mentor: Tharakeswara Bathala, MD; Sponsor: Catherine Devine, MD

Aim Statement

- Computerized provider order entry (CPOE) for prostate MRI segmentation can provide standardization when compared to email or verbal-based orders.
- The aim of the project is to implement and improve the prostate MRI segmentation orders placed through CPOE in OneConnect from the current state of 0% to 50% within 6 months of implementation.

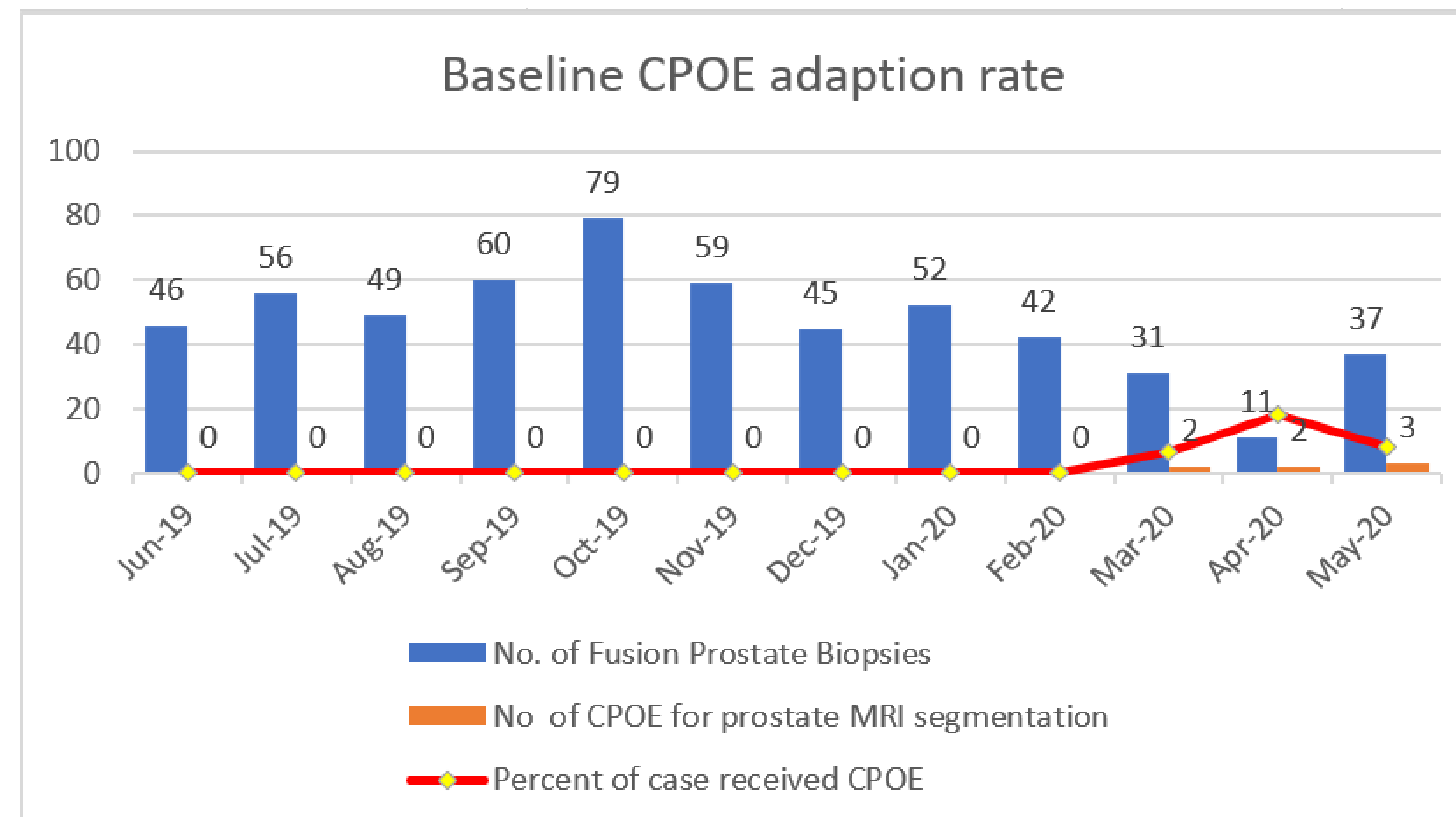
Measure of Success

- Adoption Rate - Percentage of prostate MRI segmentation orders placed through CPOE system vs. email/phone orders at baseline and at defined intervals (monthly/quarterly) post-implementation.
- Apart from the primary process metric of adoption rate, we will monitor order accuracy, clinician satisfaction score, clinician usage rate, turnaround time, regulatory Compliance and revenue capture (monthly/quarterly) post-implementation.

Process Analysis Tools

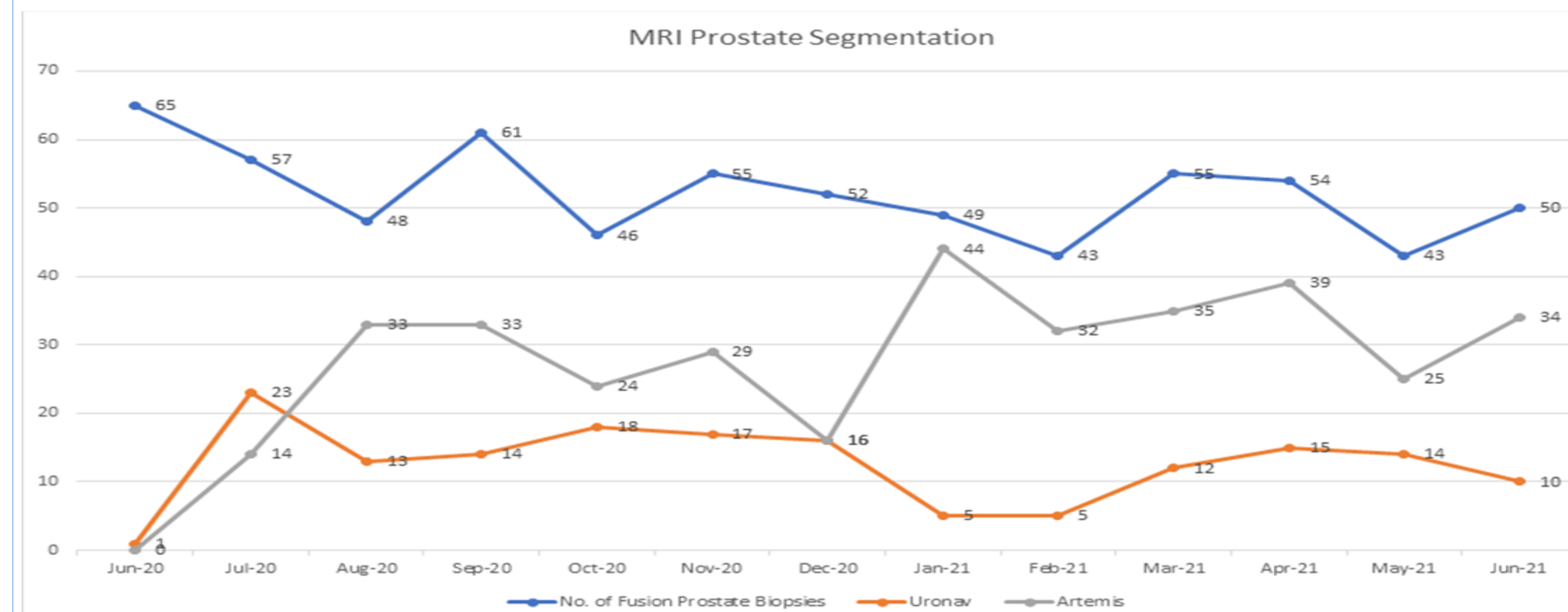
- Here are some process analysis tools that we utilized to analyze the processes related to implementing CPOE for prostate MRI orders:
- Process mapping – to create visual flowcharts of the current and future state processes.
- GEMBA walk to directly observe and follow staff and faculty to gain insights into the actual workflow
- Cycle time analysis to measure total cycle time from start to end of the process and assess overall efficiency.
- Fishbone diagram to analyze factors influencing the implementation of CPOE for prostate MRI orders.
- Failure modes and effects analysis (FMEA) to systematically evaluate where and how the process can fail and assess the effects.
- Control charts to track key process metrics.

Baseline Data



Prior to CPOE implementation, the base line measurement for prostate MRI segmentation orders was zero.

Data Analysis and Decision Making Tools

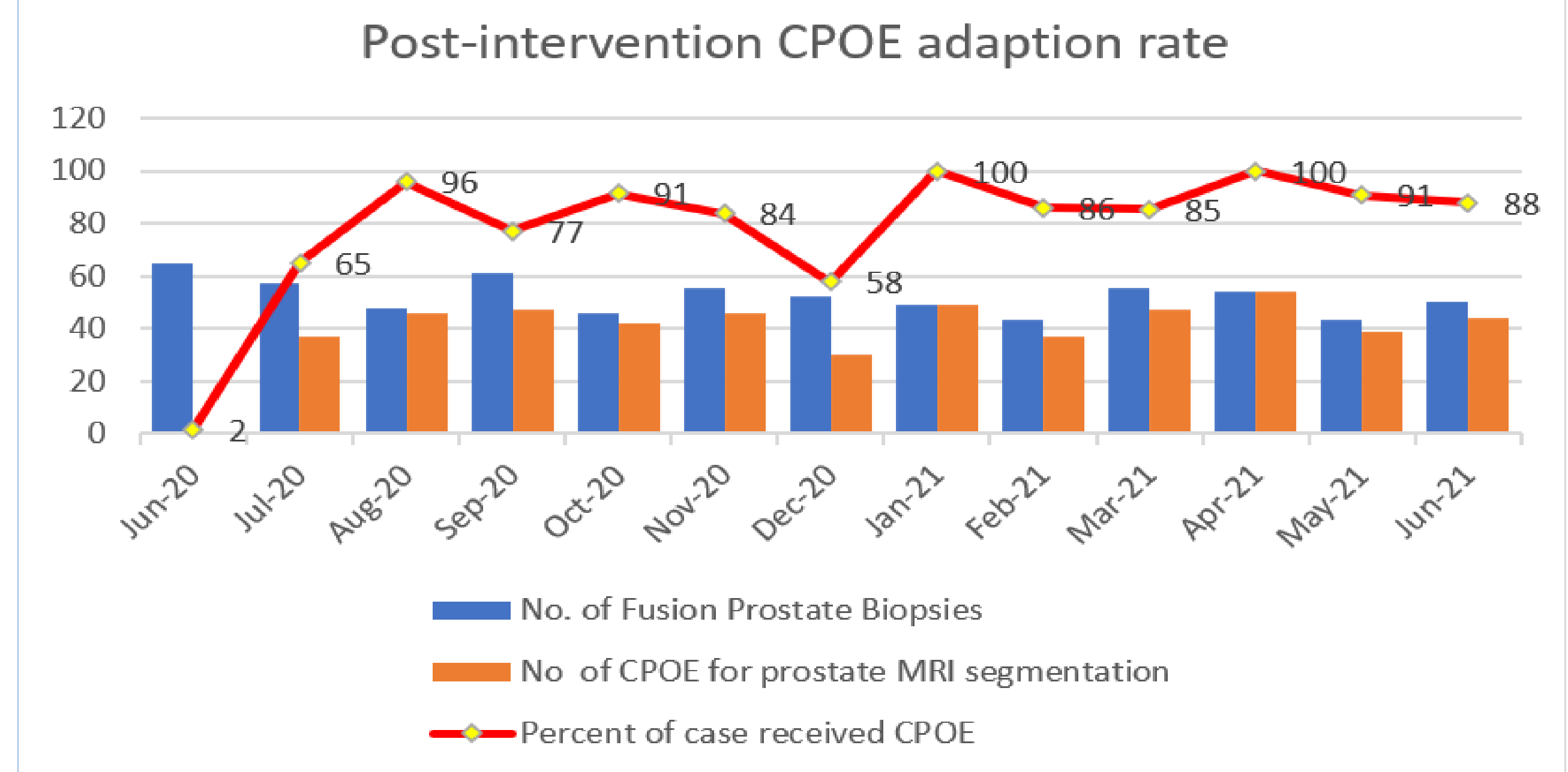


Trends in fusion biopsies after implementation

Interventions

- Worked with EHR Clinical Ancillaries team to build segmentation order set in Epic for providers. This eliminated the paper-based orders.
- Teamed up with clinical leaders, to identify CPT Codes for MR Segmentation. These were then integrated with the billing workflow.
- Coordinated with Revenue Operations and Coding team to build billing processes to capture revenue on the new procedures.
- Educated and trained the APPs, Nurse Practitioners, Urologists, and Radiologists on how to utilize the order set.
- Created a workflow for DI Coordinators on how to process the order and created an order escalation pathway.

Results



From June of 2019 to June of 2021 the prostate MRI segmentation orders placed through CPOE in OneConnect increased from 0% to an average of 91.6% (6 month running average). This significantly surpassed the original goal of 50%.

Revenue Enhancement / Cost Avoidance

FISCAL YEAR	TECHNICAL REIMBURSEMENT	PROFESSIONAL REIMBURSEMENT	TOTAL REIMBURSEMENT	OVERALL REIMBURSEMENT RATE
FY20	\$48,641.49	\$22,506.68	\$71,148.17	94.01%
FY21	\$518,995.80	\$156,711.28	\$675,707.08	97.45%
FY22	\$610,262.01	\$186,355.00	\$796,617.01	100.00%
FY23	\$547,437.18	\$165,242.00	\$712,679.18	100.00%
Grand Total	1,725,336.48	\$530,814.96	\$2,256,151.44	97.86%

The revenue generated by the prostate segmentation procedures (Uronav and Artemis) has generated additional revenue from FY20 to FY23, resulting in \$2,256,151 dollars of revenue. The overall FY22 and FY23 reimbursement percentage for prostate MRI segmentations lies at 100%. This is an increase from the FY20 reimbursement rate of 94.01%. This is an increase of 6% from FY20. After these methods were implemented, a noticeable rise in revenue was seen. The modification to the workflow has improved revenue earnings and resource use, ultimately reducing delays in the interpretation of MRI data.

Conclusion

- Implementation of CPOE for segmentation of prostate MRI has the potential to standardize and improve quality of care for patients undergoing diagnostic imaging for suspected prostate cancer.
- This project piloted targeted interventions, including optimized order sets, training, and adoption tracking, to successfully integrate CPOE into the clinical workflow and revenue capture.
- Advantages of CPOE over email communication for segmentation of prostate MRI:
 - Standardization of care
 - Improved quality and safety
 - Enhanced communication
 - Improved efficiency
 - Better analytics
 - Higher clinician satisfaction
- Lessons learned informed other institutions seeking to implement CPOE and emerging technologies like AI in medical imaging to optimize the delivery of patient care.