

Value-Driven Care in Orthodontics: a framework to support clinical practice and improve patient outcomes.

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Introduction

Orthodontic treatment for patients with dental malocclusion requires multiple visits that spans over an extended period. It has been reported that fixed appliance therapy in teens and adults requires an average of 24.9 months (Papageorgiou et al 2017). Increased frequency of visits and treatment duration are a burden to patients and adverse side effects have also been related to prolonged treatment. Hence, to improve patient experience and outcomes, the team adopted the Value-Driven Care framework and identified areas for continuous improvement.

Methodology

Various indicators for the Clinical Quality Index (CQI) that are important to patients were identified: i) Number of Unscheduled returns ii) Visits to Completion ≤ 24 iii) Time to Completion ≤ 30 months. The composite CQI performance was tracked between January 2021 and July 2024 with baseline data between January 2021 and June 2021. Sub-group analysis was done to identify patient characteristics impacting CQI.

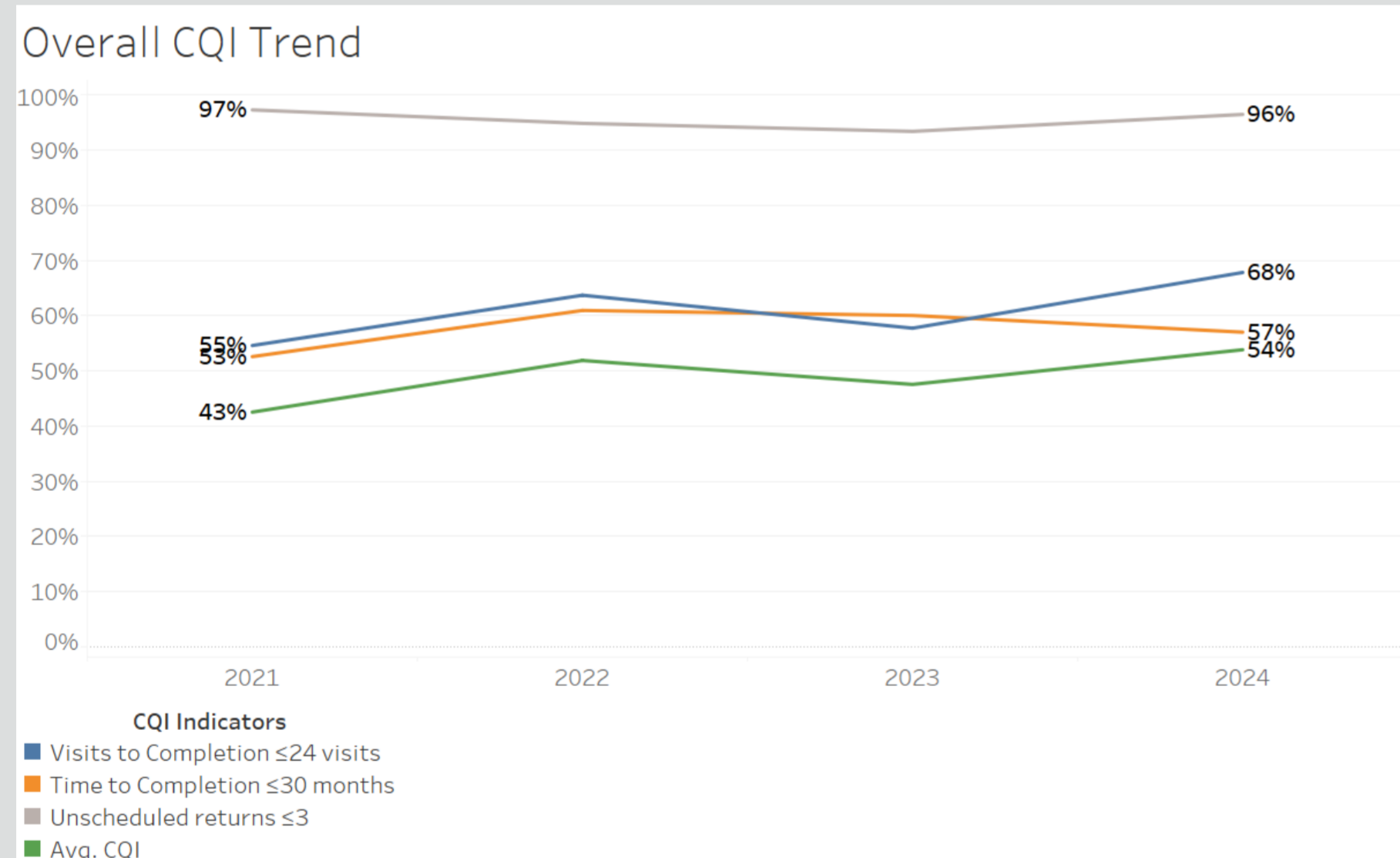


Figure 1: Yearly CQI Trend from January 2021 to July 2024

Using descriptive analytics, we identified 2 groups of patients requiring longer treatment duration:

- Patients whose primary orthodontic clinician changed during the course of their treatment (transfer patient); and
- Patients who are above 20 years old

These results corroborated with findings of previous studies (Mavreas et al. 2008, Aktas et al. 2021).

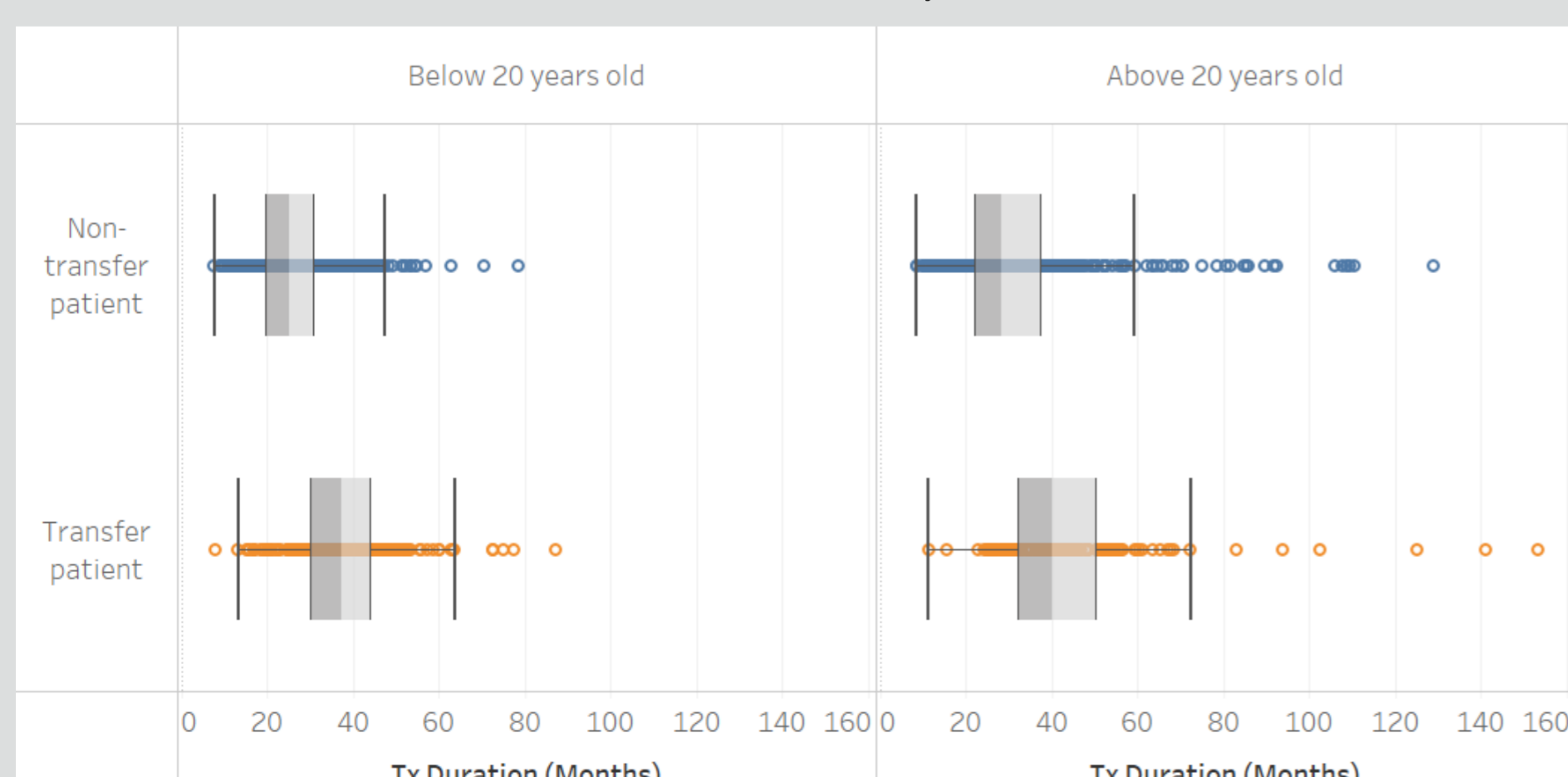


Figure 2: Descriptive Analytics using Patient Demographics

Interventions

- Minimize change of primary clinician and transfer of patients.
- Conduct calibration session within clinical team to reduce practice variability and standardising treatment package selection.
- Drive improvements at individual level by sharing of best practices (September 2021 and October 2023).
- Sharing of department and individual CQI data: Curated concise reports are shared to provide key insights, summary of performance and provide trends and benchmarking to peers.

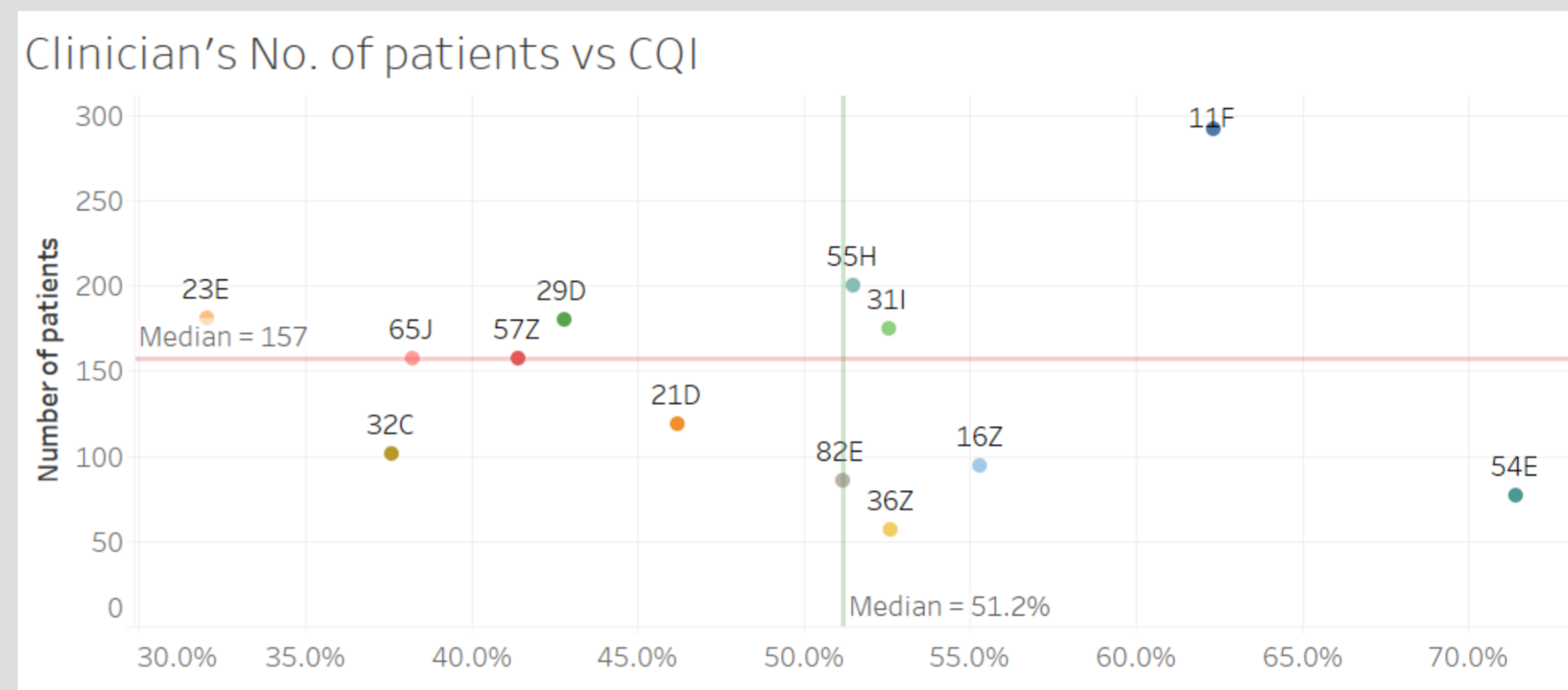


Figure 3: 2x2 Clinician CQI Performance Chart

Results

Interventions led to tangible improvements in the overall CQI results. The median number of visits saw a downward trend and was reduced by 12.5% from the baseline of 24 to 21 visits post-interventions from November 2023 to April 2024.

Moreover, the percentage of transferred patients had progressively reduced over the years, from the baseline average of 11 (35.0%) patients per month to 4 (8.4%).

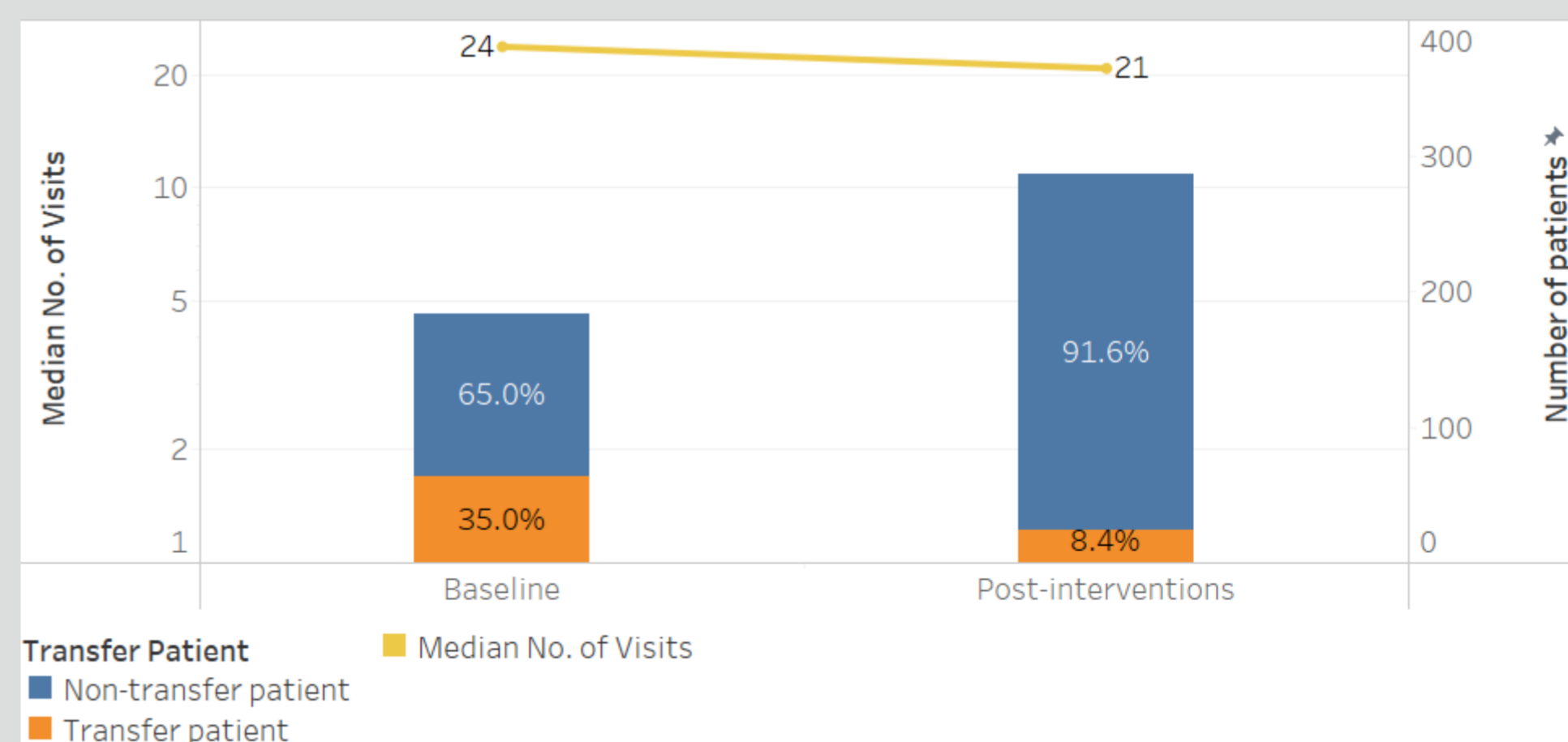


Figure 4: Impact of Interventions on median number of visits and volume of transfer patients

CONCLUSION

Data-driven analytics is a key pillar of value-based healthcare to unlock insights for the timely application of interventions and seek improvement opportunities. Plans to incorporate patient-reported experience and outcome measures into the value-driven analysis are underway to improve robustness of patient-important outcomes. Moreover, we aim to expand the implementation of this framework across the institution to streamline clinical practices and reduce variations.