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Results of a quality improvement program to increase complete lung cancer biomarker testing rates.

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Background/Methods:

- Biomarker testing is standard of care for patients with advanced lung adenocarcinoma, but limited tissue samples can lead to incomplete testing. Quantity not sufficient (QNS) samples requiring additional tissue prolong time-to-initiation of treatment (TTT) which has been shown to negatively impact clinical outcomes.
- Bon Secours Mercy Health (BSMH) Youngstown, Ohio baselined biomarker testing data among patients with advanced NSCLC diagnosed from July 2020 – July 2021 and found: 1) only 41% of patients received complete biomarker testing that included newer lung biomarkers, and 2) in the case of QNS when liquid biopsies were utilized, the time from diagnosis to results took an average of 42 days.
- BSMH worked in collaboration with OncoLens and Q Synthesis to address these issues and reduce the TTT.

Methods:

- The QI project ran from Sept 2021 - Dec 2022.
- Pathology chose to order an updated lung cancer biomarker panel for tissue testing at the time of diagnosis which included PD-L1 and all actionable genes.
- The BSMH project team worked with NeoGenomics/Inivata to develop a liquid biopsy pilot for patients with advanced lung cancer aimed at reducing delays whenever the tissue was QNS.
- The BSMH team implemented OncoLens for tumor boards. They used OncoLens to review biomarker test results and coordinate treatment plans.

Developing a standardized biomarker testing pathway can decrease TTT and increase comprehensive biomarker testing.

This project incorporated liquid biopsy testing when tissue was insufficient and led to a

≈ 50% reduction in TTT and ≈ 40% increase in complete biomarker testing.

This project also demonstrates how hospitals and reference labs may coordinate efforts to streamline biomarker testing.

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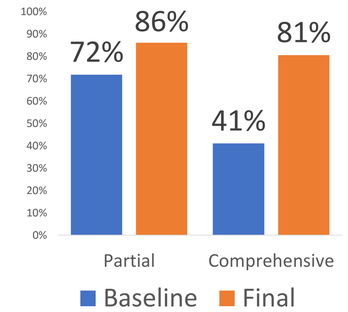
Results/Graphs/Data:

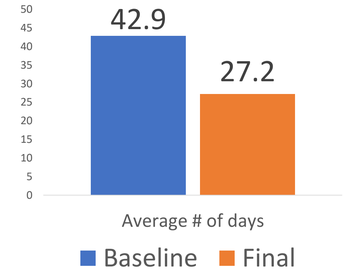
Proportion of patients with advanced NSCL receiving biomarker testing



A pathology-driven testing pathway led to an ***increase of ≈ 15% and 40% in partial[1] and comprehensive[2] testing, respectively***

[1]Partial testing defined as a minimum of PD-L1, EGFR, ALK, and ROS1.
[2]Comprehensive testing includes PD-L1 and all actionable genes.

Average # of days from diagnosis to liquid biopsy results



Project reduced average days by 15.7 days

Baseline range = 22-68 days (n = 39)
Final range = 11 – 47 days (n=36)

Future Directions:

- Development of internal processes to simplify and update testing processes (i.e., reflex testing via pathology, methodology to update limited panel testing)
- Continued education on science of circulating tumor DNA (ctDNA) testing and application of liquid biopsies
- Partnership(s) between cancer centers and reference labs to streamline processes of tissue and liquid biopsy testing when QNS