

# Utilization and Timeliness of Next-Generation Sequencing Testing for Patients with Resected or Metastatic Non-Small Cell Lung Cancer: A Real-World Analysis

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## Background

- **Next-generation sequencing (NGS)** is an evidence-based tool to detect actionable oncogenic drivers in NSCLC.
- NGS results guide **use of targeted therapy agents** that have improved survival in both early-stage and metastatic disease.
- NGS testing rates, timeliness, and workflows vary across oncology practice settings.
- This study examined hospital-level variation in NGS testing within a statewide quality improvement collaborative.

## Methods

- **Study Design:** Cross-sectional analysis of NSCLC patients (Stage IB–IIIA and Stage IV biopsy-confirmed) treated in 2023
  - Included **10 hospitals** (academic, community, and integrated network) within a **statewide cancer quality improvement collaborative**
- **Outcome & Process Measures:**
  - NGS completion rates: Stage IB-IIIA & Stage IV disease
  - Turnaround Times: Biopsy to NGS order→NGS order to result→ NGS result to first treatment (Figure 1)
- **Statistical Analysis:** multivariable logistic regression to identify predictors of NGS testing
- **Subset Analyses:**
  - Described patient subsets treated at hospitals with:
    - **In-house molecular labs**
    - **Reflex testing protocols**
  - In patients with **EGFR or ALK mutations**, evaluated **tyrosine kinase inhibitor (TKI) use** by hospital site

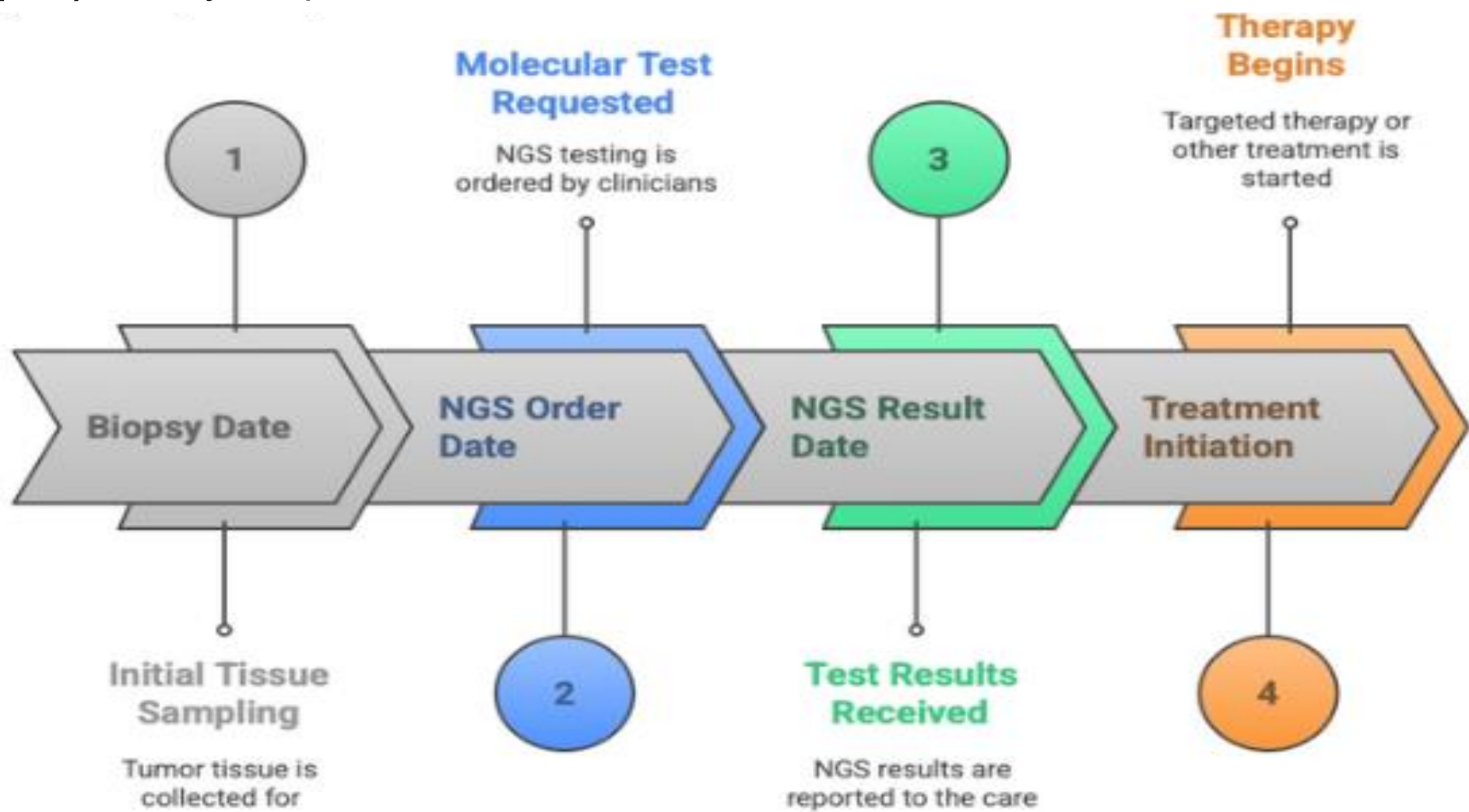


Figure 1: Process Measures Related to NGS Testing

## Results

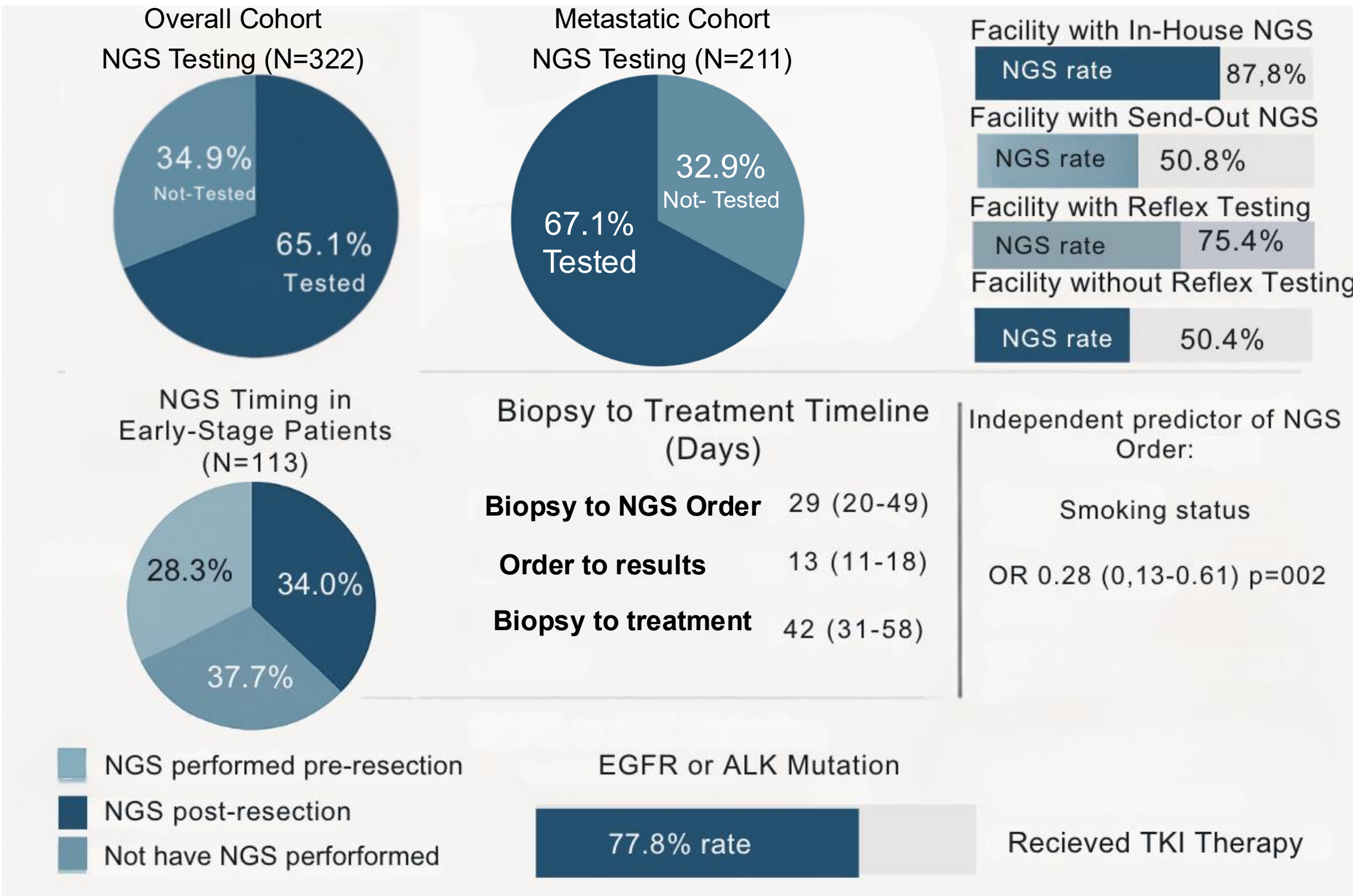


Figure 2: NGS Testing Rates, Turnaround Times, and Predictors in Early and Metastatic NSCLC

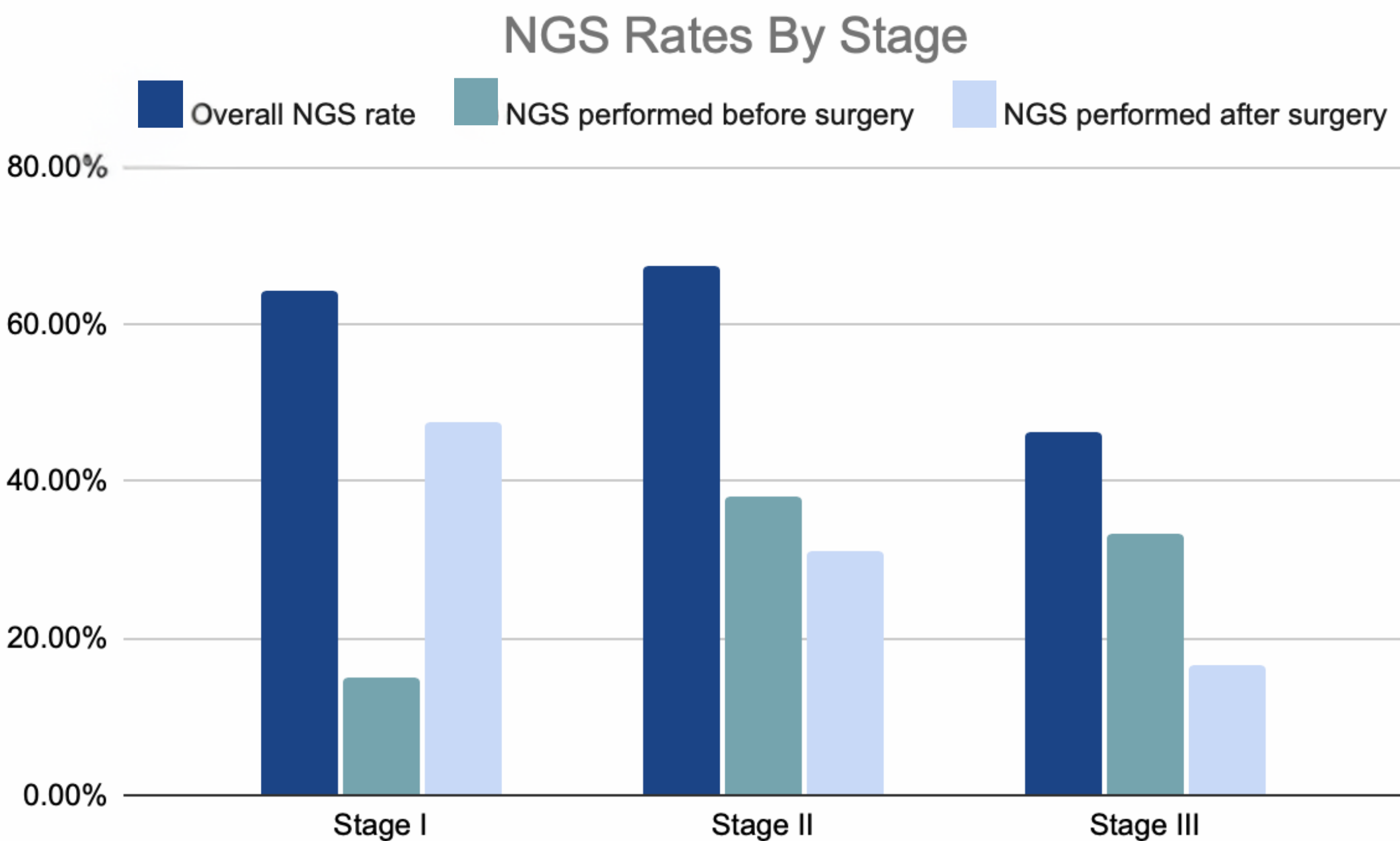


Figure 3: NGS Rate in the Resectable Cohort (Stage IB-IIIA)

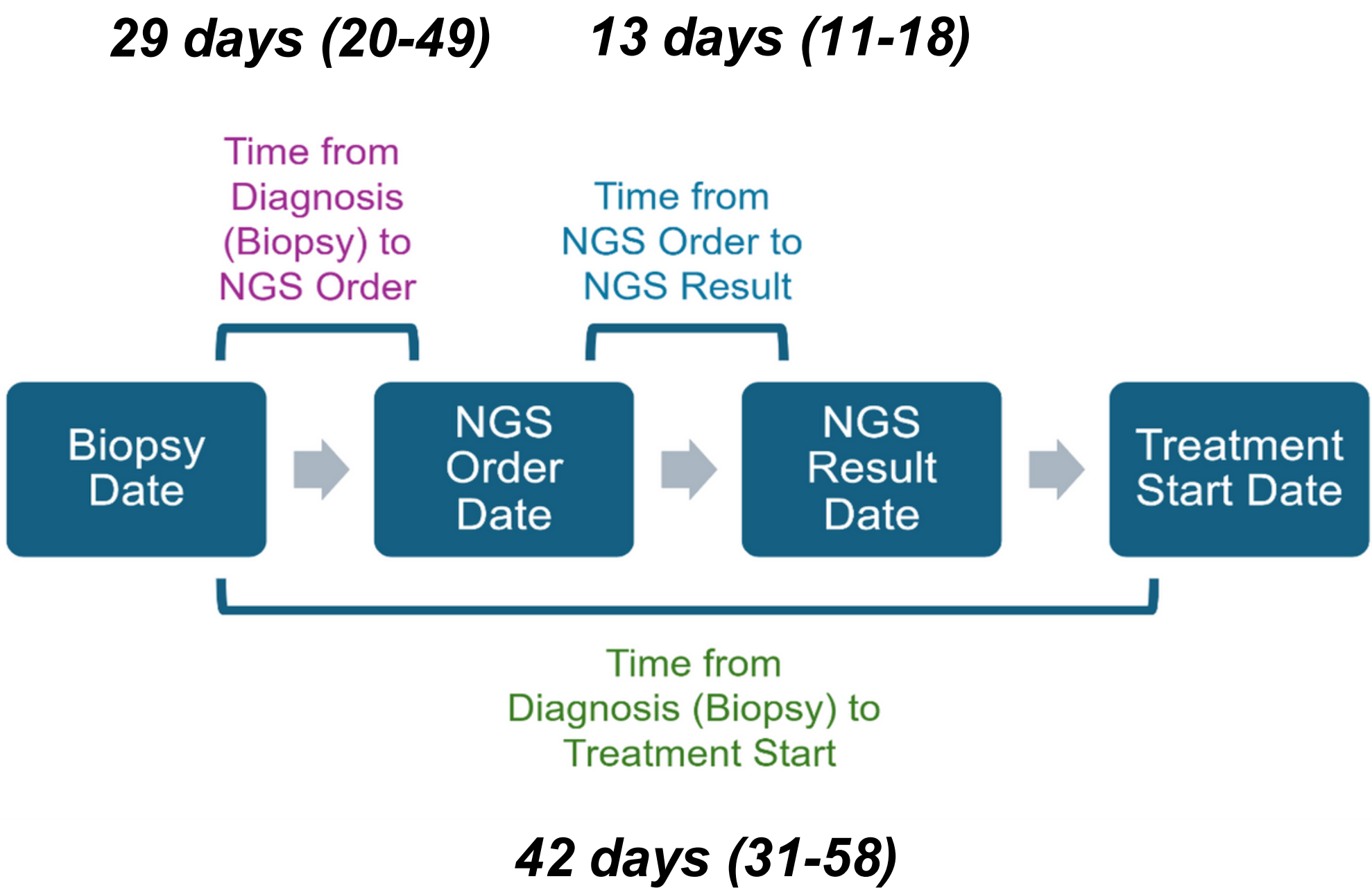


Figure 4: Turnaround Times Across Key Phases of NGS Testing

## Conclusion & Future Directions

- **Hospital-level variation** in NGS testing exist.
- **Turnaround times** for NGS results were **similar across all sites**.
- Benchmarking results and provider input were used to identify **gaps in testing practices**.
- An **interactive toolkit** was developed to support ongoing quality improvement in NGS adoption.



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