Improving non-targeted native renal biopsy specimen adequacy

A province-wide, multicenter and interdepartmental quality initiative

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No disclosures
Background

• The provincial imaging committee received feedback from pathology that there was high variance in renal biopsy adequacy across BC.

• Our goals are to:
  • Understand current practices in radiology & pathology
  • Characterize specimen adequacy rates
  • Implement QI interventions to improve rates
Addressing biopsy adequacy

Two major aspects to renal specimens prior to pathologist review:

1. **Collection** of tissue

2. **Assessment and allocation** of tissue
   - Tissue assessment provided to radiology
     - Qualitative/quantitative evaluation of cortex (glomeruli) in sample to determine how many core biopsies to collect
   - Allocation of collected tissue into fixatives for light, immunofluorescence, electron microscopy before it is sent to a central lab for analysis
Adequacy: definitions & targets

Definitions were determined by expert panel following a literature review\(^1,2\)

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Inadequate</td>
<td>&lt; 15 glomeruli collected total, no diagnosis can be rendered</td>
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<tr>
<td>Suboptimal</td>
<td>&lt; 15 glomeruli collected total, diagnosis can be rendered</td>
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<tr>
<td>Minimally adequate</td>
<td>15-24 glomeruli collected total</td>
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<tr>
<td>Ideally adequate</td>
<td>≥ 25 glomeruli collected total, allowing classification and prognostic determination</td>
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Targets

- #1: Inadequate & suboptimal < 10% of biopsies
- #2: Ideally adequate ≥ 80% of biopsies

Pre-intervention: provincial adequacy

Adequacy of 2261 biopsies from 13 hospitals
Pre-intervention adequacy by hospital

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Target 1</th>
<th>Target 2</th>
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Hospital (anonymized)

- Yellow: Inadequate
- Gray: Suboptimal
- Orange: Minimally Adequate
- Blue: Ideally Adequate

Target 1 and Target 2 indicators are shown.
Summary of survey data

• Variable training levels of pathology technologist
• Variable methods for sample collection & assessment
• The two hospitals with the lowest adequacy rates are the only sites without pathology technologist support at the time of biopsy
• Preferred interventions include:
  • Improving feedback from pathology on specimen adequacy to radiologists
  • Provide assessment & allocation training for pathology technologists, as well as reference resources
Intervention 1: Feedback to radiologists

- Adequacy feedback within the pathology report (began May 2021)
Intervention 1: Results

• Control chart analysis revealed sustained process change in ideally adequate rate after implementing the first intervention.
Conclusions

• Ideally adequate rate 66% overall
  • 80% target achieved by some hospitals & likely achievable for others

• Although there is heterogeneity in biopsy technique, the only significant factor from survey data was presence of pathology technologist at time of biopsy

• Limitation: comparison of adequacy to literature challenging due to variable adequacy definitions

• Future interventions:
  • Standardize biopsy kits at a provincial level
  • Visit hospitals to enable site specific assistance
  • Further improve feedback to radiology