High Sensitivity Troponin

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Major Changes

- Transition from conventional to high-sensitivity Troponin T
  - Results not interchangeable, but are deemed clinically equivalent

- New assay is “High-Sensitivity”
  - Variation ≤ 10% at upper 99th percentile (very precise)
  - Whole numbers, no more decimals (different units of report: ng/L)
  - Quantifiable troponin in > 50% of normal patients

- Very high negative predictive value
  - > 99% within 3 hours

- 5.00 ng/mL (very abnormal) is not the same as 5 ng/L (normal)
Major Changes

- Due to the sensitivity of this assay, patients with renal or stable cardiac disease will routinely have detectable/quantifiable values
  - These values may be elevated, but typically stable over time
  - Can be observed with conventional assay; however, frequency may increase

- Critical to evaluate the rise and/or fall of troponin to diagnose AMI
  - Acute events lead to rapid release of cardiac troponin, which is then cleared over time
Common Assay Characteristics

**Characteristics**

- High levels of biotin may interfere with testing
  - Skin/hair health products
- Troponin is very sensitive to the effects of hemolysis
  - Analytical and physical interference
  - 20% + decrease in value
  - Samples must be of high quality

<table>
<thead>
<tr>
<th>Interferent</th>
<th>Concentration/Effect</th>
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<tbody>
<tr>
<td>Biotin</td>
<td>Decrease (&gt; 5 mg/day)</td>
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<tr>
<td>Hemolysis</td>
<td>Decrease (&gt; 100 mg/dL)</td>
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<tr>
<td>Icteria</td>
<td>&gt; 25 mg/dL</td>
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<td>Lipemia</td>
<td>&gt; 1500 mg/dL</td>
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<td>HAMA</td>
<td>Variable effect</td>
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</table>
Benefits of High-Sensitivity Cardiac Troponin

- Reduced time to MI rule-out
  - 1-2 hour rule-out protocols exist
- 20% reduction in total costs
  - Reduced ED stay (20%, 79 min)
  - 35% decrease in stress tests
  - No additional catheterizations
- Sex-specific cutoffs may improve gender inequalities in ACS treatment/outcome

*HS-cTnT < 5ng/L and no ECG ischaemia*

- **37%** patients discharged
- **99.1%** 95% CI 96.7 - 99.9%
- **99.6%** 95% CI 98.5 - 100.0%