Procalcitonin (PCT)

Effective December 10, 2018, Clinical Labs of Hawaii will offer in-house testing for Procalcitonin (PCT). PCT is a(n):

- Prohormone of the hormone calcitonin and produced in several cell types and organs in response to inflammatory stimuli, in particular, bacterial products.\(^1\)
- Biomarker associated with the inflammatory response to bacterial infection.
- Aid in the risk assessment of critically ill patients for progression to severe sepsis.

In healthy individuals, plasma PCT concentrations are found to be below 0.10 ng/mL. Depending on the clinical context, a PCT concentration above 0.10 ng/mL may indicate clinically relevant bacterial infection requiring antibiotic treatment.\(^2\) PCT levels rise rapidly (within 6 to 12 hours) after a bacterial infectious insult with systemic consequences. The magnitude of the increase in PCT concentration correlates with severity of the bacterial infection.

### Interpretive Guide

- **PCT <0.50 ng/mL**
  - Low risk for progression to severe systemic infection (severe sepsis or septic shock).
  - Review patient’s condition for localized infections. Low concentrations can be associated with systemic infection in its initial stage (<6 hours).*

- **PCT 0.50-2.00 ng/mL**
  - Intermediate risk for progression to severe systemic infection (severe sepsis shock).
  - Review Underlying conditions. Recommend retest within 6 to 24 hours.

- **PCT >2.00 ng/mL**
  - High risk for progression to severe sepsis or septic shock unless other causes are known.

Percent change of PCT over time aids in accessing cumulative 28 day risk of all-cause mortality for patients diagnosed with severe sepsis or septic shock.

*PCT levels below 0.5 ng/mL do not exclude an infection. Localized infections without systemic signs may be associated with such low levels. If the PCT measurement is performed very early after a bacterial challenge (usually <6 hours), these values may still be low. In this case, PCT should be reassessed 6 to 24 hours later.

**Please Note:** Increased PCT levels may not always be related to systemic bacterial infection. This includes neonates <48 hours of life, first days after major trauma, surgery, burns, invasive fungal or plasmodium infections, cardiogenic shock, severe liver cirrhosis, and certain malignancies (lung and thyroid).

<table>
<thead>
<tr>
<th>Order Code/Test Name</th>
<th>Test Method</th>
<th>Specimen Requirement</th>
<th>Stability</th>
<th>Performed</th>
<th>Reported</th>
<th>Reference Interval</th>
<th>CPT Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCAT (3688) Procalcitonin</td>
<td>Electrochemiluminescent Immunoassay</td>
<td>1 mL (0.5 mL min.) Plasma Lithium Heparin (Green Top) or Serum: SST or Red top</td>
<td>Room temp: 24 hours Refrigerated: 2 days Frozen: 3 months</td>
<td>Sun-Sat, Available STAT</td>
<td>Same day</td>
<td>&lt;0.10 ng/mL</td>
<td>84145</td>
</tr>
</tbody>
</table>

Reference