



# 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.<sup>1</sup>
- 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.<sup>2</sup> 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.

<b>INTERPRETIVE GUIDE</b>	<b>PCT</b> <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).*
	<b>PCT</b> 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.
	<b>PCT</b> >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).

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

**Reference**

1. Christ-Crain M, Müller B. Procalcitonin in bacterial-infections-hype, hope, more or less? Swiss Med Wkly 2005 Aug 6; 135(31-32):451-460.
2. Christ-Crain, M Jaccard-Stolz D, Bingjisser R, et al. Effect of procalcitonin-guided treatment on antibiotic use and outcome in lower respiratory tract infections: cluster-randomised, single-blinded intervention trial. Lancet 2004 Feb 21;363(9409):600-607.