Early detection and specific clinical intervention has been shown to be crucial for the improved outcome of patients with sepsis. However, sepsis can be difficult to distinguish from other non-infectious conditions in critically ill patients with clinical signs of acute inflammation and negative microbiological results. Therefore, in the early phase of the disease process it may be difficult to decide on the appropriate therapeutic measures for the individual patient.

Additional specific information may be helpful to increase the accuracy of sepsis diagnosis at an early stage. Procalcitonin (PCN) is a marker that may fulfill these needs.

**So what is Procalcitonin?**

PCN is the prohormone of calcitonin (CT). Whereas CT is secreted by the C-cells of the thyroid after hormonal stimulation, PCN can be produced by numerous cell types and organs after proinflammatory stimulation, especially when caused by a bacterial triggering event. Procalcitonin has been described as being useful in assisting physicians in the diagnosis of acute infection in several different conditions. Some of these are:

1. The differential diagnosis of bacterial versus viral infections.
2. The diagnosis of bacteremia and septicemia in adults and children (including neonates)
3. The diagnosis and monitoring of septic shock.
5. The monitoring of therapeutic response to antibacterial therapy

One major advantage of PCN compared to other inflammatory parameters is its early and highly specific increase in response to severe systemic bacterial infections and sepsis. PCN levels closely parallel the severity of the inflammatory insult, with higher levels associated with more severe disease and declining levels with resolution of illness. In septic conditions, increased PCN levels can be observed within 3 to 6 hours after a triggering event, and peaks by 12 to 24 hours with a half-life of 24 to 35 hours, making it suitable for serial monitoring. PCN levels are usually low in viral infections, chronic inflammatory disorders or autoimmune processes. PCN levels in sepsis are generally greater than 0.5 - 2 ng/mL and often reach values between 10 and 100 ng/mL, or considerably higher in individual cases, thereby enabling diagnostic differentiation between these various clinical conditions and a severe bacterial infection (sepsis).

The dependence of sustained PCN elevations on ongoing inflammatory stimuli allows for the identification of secondary septic events in conditions that can result in noninfectious PCN elevations, such as cardiac surgery, severe trauma, severe burns, and multi-organ failure. PCN levels should fall at a predictable pace in the absence of secondary infection.