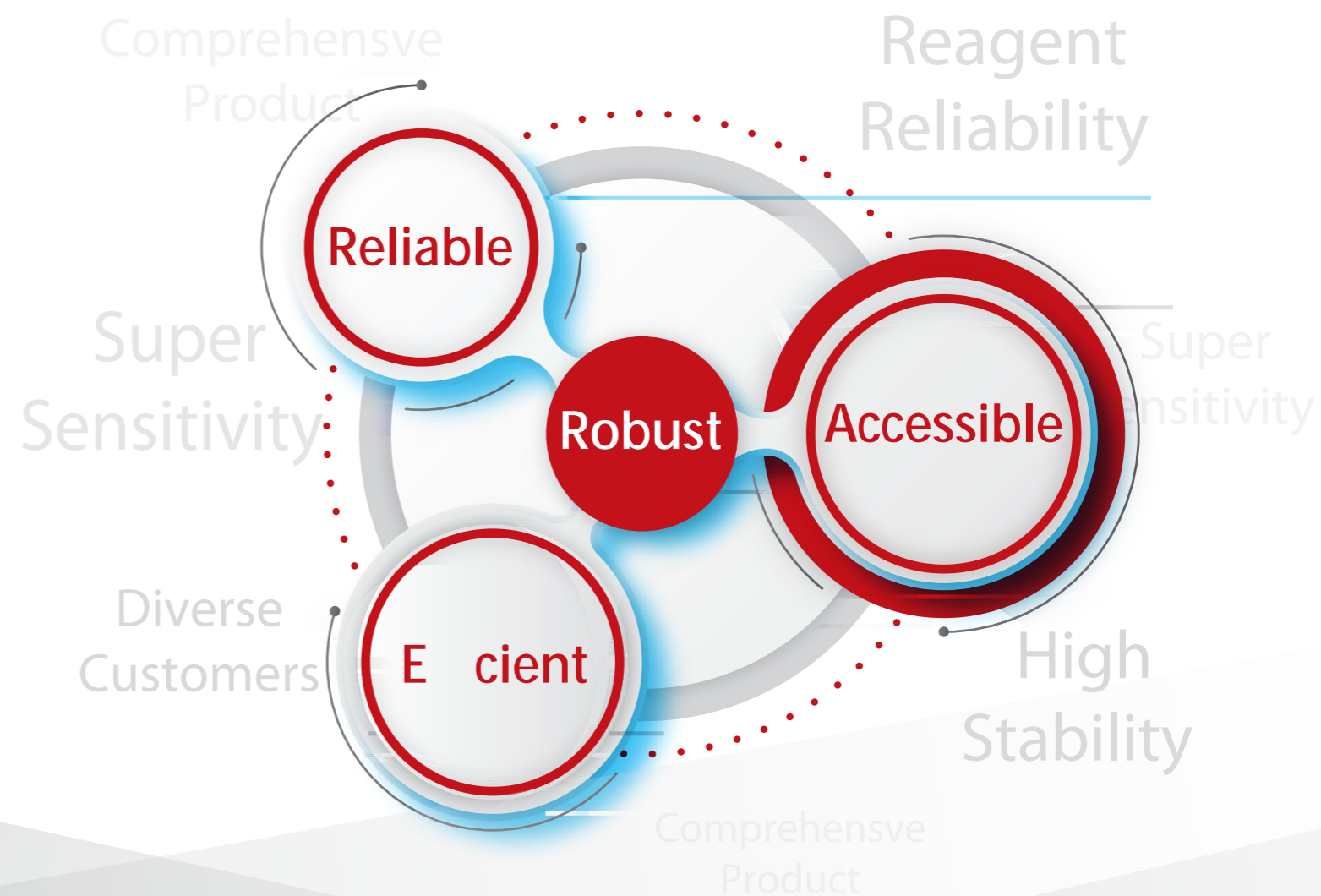


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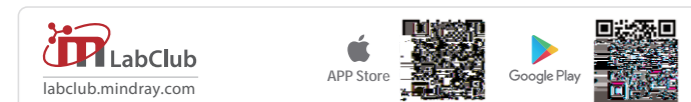
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# PCT – A Comprehensive Biomarker for Infection

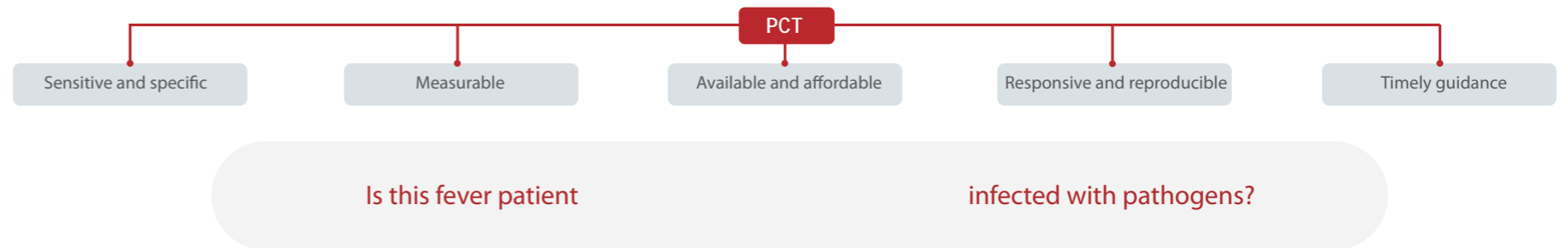
Procalcitonin (PCT) is a precursor of calcitonin. PCT test is the only FDA-approved laboratory test specific to bacterial infection and sepsis diagnosis. PCT testing could provide information about the host response to bacterial infection.

PCT helps in the differentiation of viral and bacterial infections for early diagnosis and treatment.

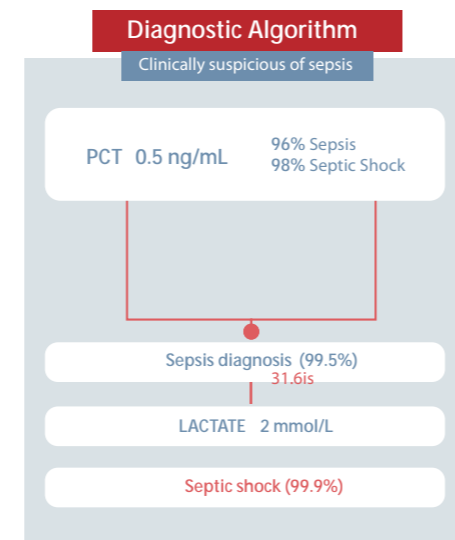
One of the most promising functions of PCT test is the early detection of patients at risk for sepsis and bacteremia.

For medical emergency, screening and early diagnosis of sepsis are significantly helpful for the patient management. The diagnosis of sepsis should be based on evidence from the patient's symptoms and signs, as well as sepsis specific laboratory tests, e.g., PCT and blood culture<sup>[1]</sup>. Scores such as sequential organ failure assessment (SOFA) and quick SOFA (qSOFA) are also widely applied to support the diagnosis of sepsis<sup>[2]</sup>.

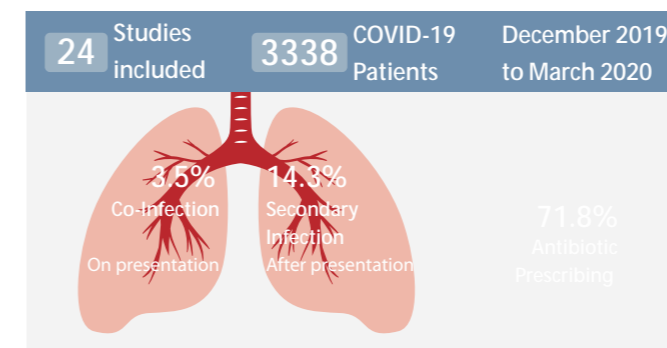
PCT can be combined with related clinical scores, including SOFA and qSOFA scores, for sepsis diagnosis and prognosis prediction. A simple modification of



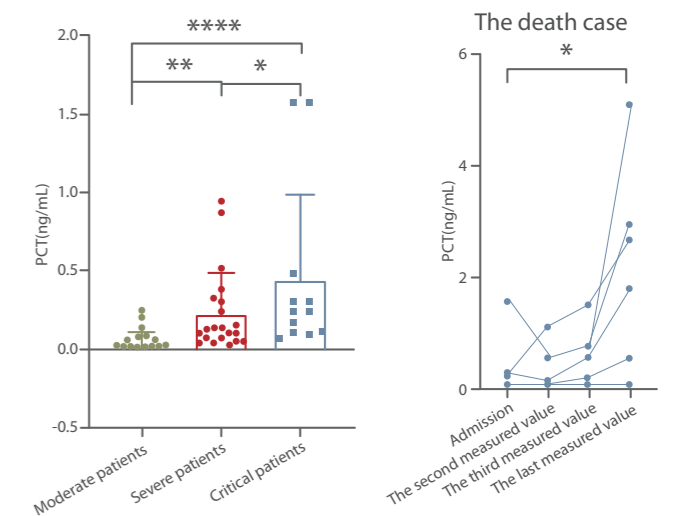
qSOFA score by adding the ordinal scale of PCT value to qSOFA can greatly improve the suboptimal sensitivity problem of qSOFA and may serve as a quick screening tool for early identification of sepsis<sup>[3]</sup>.



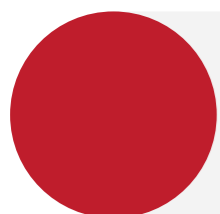
In addition, the clinical application of PCT in COVID-19 has become a hot topic among researchers. Some studies found bacterial coinfection and secondary infection happen in COVID-19 patients, and the frequency of bacterial infection is higher in critically ill patients than the mild/moderate ones<sup>[4]</sup>. If a patient with COVID-19 also has bacterial co-infection or secondary infection not known to the clinician, the patient's life will be threatened by not only COVID-19 but also potential sepsis or septic shock. Hence, it is critical for clinicians to take into account comprehensive information when designing a treatment plan for a COVID-19 patient. Specifically, they should include PCT as a routine test before admitting the patient and use the test results as supplementary information to guide the treatment.



With further research, clinicians found that PCT is a robust indicator for discriminating between critically ill and severe/moderate patients<sup>[5]</sup>. PCT may be an indicator of disease severity in COVID-19. Moreover, serial PCT measurements may be useful in predicting the prognosis of COVID-19.



Biomarker has characteristic that reflects the severity or presence of some disease state while the ideal biomarker of infection needs to be sensitive, specific, rapid and cheap. Early recognition, assessment of severity, and rapid detection of the causative microorganism are critical for early treatment and medication guidance. Mindray could provide comprehensive solutions including PCT assay, clinical scores and blood culture.













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