

Clinical Syndrome	Gold Standard is the Clinical Syndrome plus Interpretation of Microbial Etiology by Diagnostic Bundle: Pathogen(s) Detected* and Procalcitonin (PCT)							
	Only Virus Detected		Only Bacteria Detected		Both Bacteria & Virus Detected		Neither Virus or Bacteria Detected	
AECB or CAP	≤ 0.1	≥ 0.2	≤ 0.1	≥ 0.2	≤ 0.1	≥ 0.2	≤ 0.1	≥ 0.2
PCT	≤ 0.1	≥ 0.2	≤ 0.1	≥ 0.2	≤ 0.1	≥ 0.2	≤ 0.1	≥ 0.2
Interpret	c/w viral infection	c/w mixed virus & bact infect	Bact. colonization	c/w bact. Infection	c/w viral infect & bact. coloniz	c/w mixed bact & viral infect	c/w no bact or viral infect or undetected virus	c/w undetected bact in airway or at another site
Need for antibacterial therapy	No	Yes	No	Yes	No	Yes	No	Yes

In summary, "gold standard" requires:

- 1) Clinical syndrome
- 2) ID of etiologic organism(s)
- 3) Marker of invasion vs. colonization
- 4) The negative predictive value is of great assistance

*Detected by PCR, urine antigen, culture, gene signature

Refs:

- 1) Gilbert JID (epub) and Diag Micro & ID (epub)
- 2) Walsh et al. JID (epub)

Bacteremic Septic Shock vs Other Causes of Shock

Biomarker	Bacteremic Shock	Hypovolemic Shock	Cardiogenic Shock	Other: Drug overdose, PE, pericarditis
<i>For Diagnosis:</i> PCT Gene activation products	If elevated, prognostic; neg predictive value wonderful Elevated	Can be elevated in any low flow state. Presumably due to translocation of gut bacteria. Manifest by elevations in sCD14, and limulus lysate, ↑ LPS-BP, ↑IL-6, positive 16s rRNA Not studied in depth in other entities that cause shock-like state		
<i>For source control:</i> PCT Gene activation products	Due to short half-life, very helpful Have not seen any data			
<i>For duration of therapy:</i> PCT Gene activation products	Documented as method of customizing duration of therapy Have not seen any data			

In short:

- 1) Need positive blood cultures to document presence of sepsis
- 2) In hypotensive patient, low procalcitonin of great value in excluding septic shock
- 3) A fall in procalcitonin concentration predictor of source control