Diagnosis of acute infection and sepsis: the Inflammatix HostDx™ tests

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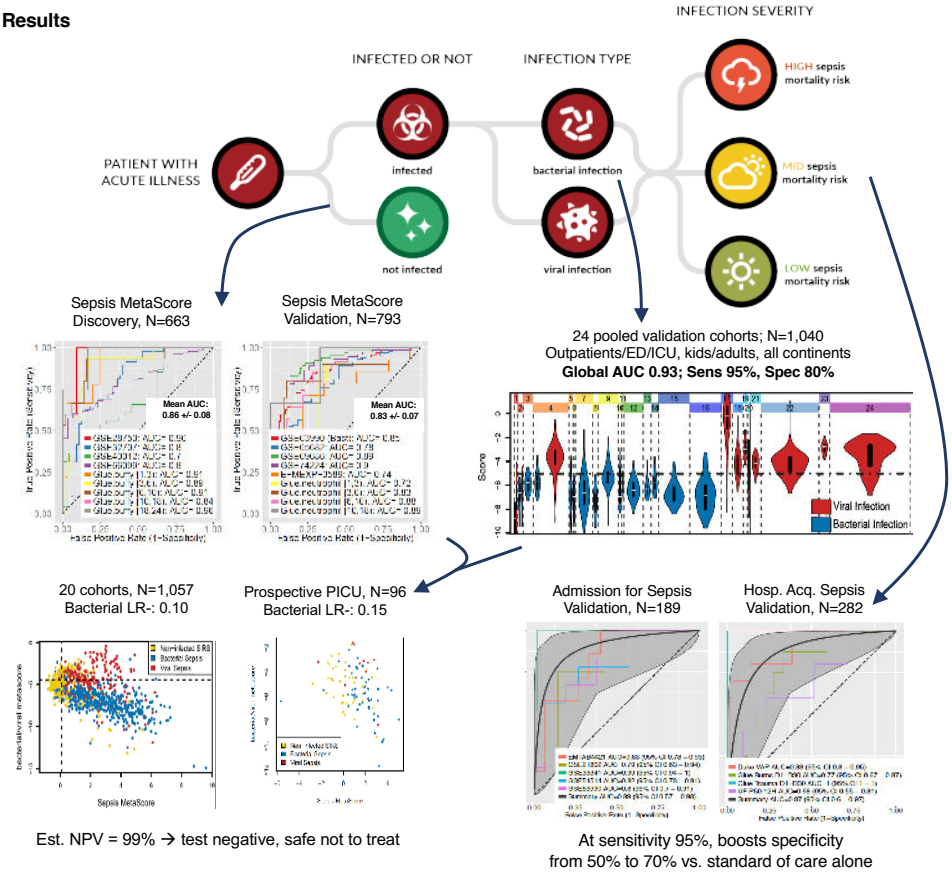
Inflammatix
Advanced Host-Response Diagnostics

Overview

Acute bacterial and viral infections are difficult to diagnose; as many as half of all antibiotics are prescribed inappropriately. Further, some infections lead to sepsis, defined as a dysregulated host response to infections. However, approximately 70% of infections in hospital inpatients are missed by the gold standard (blood culture) since most infections do not result in bacteremia. Infections and sepsis are hard to diagnose, and thus hard to treat.

Using our custom informatics pipeline, we have derived diagnostic gene sets and algorithms that can diagnose the presence, type, and severity of acute infections. Improved diagnosis of infections could decrease hospital/ICU length of stay, improve outcomes, and reduce unnecessary antibiotic administration. We are currently developing the test into a rapid whole blood-based diagnostic for clinical use. Applications are imagined in the clinic, ED, ICU, and in post-surgical care.

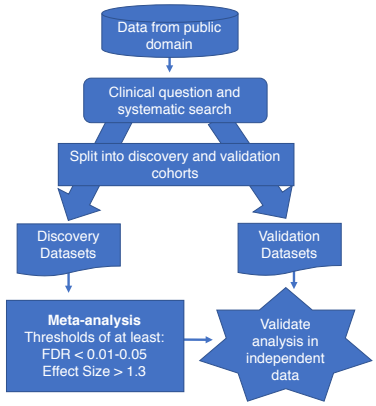
Results



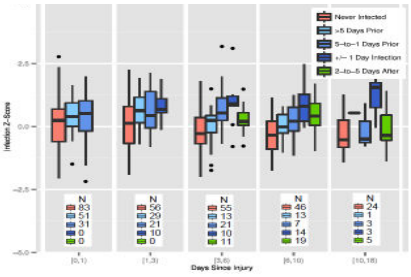
Est. NPV = 99% → test negative, safe not to treat

At sensitivity 95%, boosts specificity from 50% to 70% vs. standard of care alone

Discovery Pipeline



Diagnosis of Hospital-Acquired Infections



The SMS rises 2-5 days prior to post-traumatic infections (above). In a separate prospective trial, interim results for diagnosis of post-traumatic HAI show significantly better results for SMS (AUROC 0.72) vs. procalcitonin (AUROC 0.48).

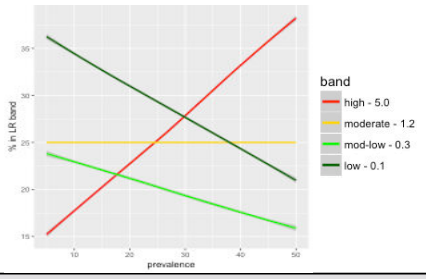
HostDx™ Sepsis

- Multiplex quantitative gene expression
- Rapid TAT (~60 min)
- Sample-to-answer, moderate complexity
- Device/manufacturing partnerships

Example Inpatient Readout: LR band + numeric score

Bacterial Infection		Viral Infection		30-Day Mortality	
Low (0.1)	1.5 Mod	Low (0.1)	6.5 High	Low (0.1)	0.1 Low
Low-Mod (0.3)		Low-Mod (0.4)		Low-Mod (0.25)	
Moderate (1.2)		Moderate (1.4)		Moderate (1.2)	
High (5.0)		High (6.0)		High (4.5)	

Band distribution vs. prevalence @ AUC = 0.85



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Acknowledgments

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