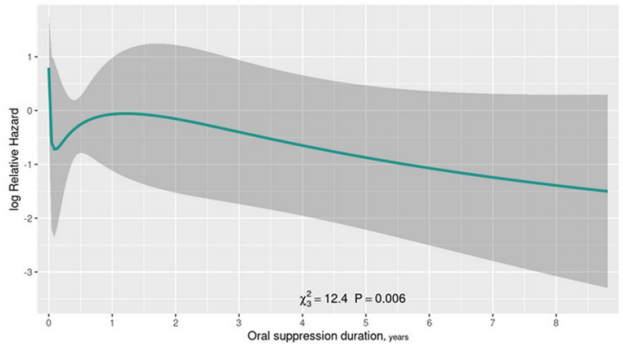
Figure 2. Time-Dependent Analysis of Oral Antibiotic Suppression Duration



Conclusion. After DAIR, efficacy from four weeks of parenteral antibiotics was no different from six weeks when followed by chronic oral antibiotic suppression. Our results could not establish an optimal duration but suggested that continuing suppression portends a lower risk of failure of DAIR.

Disclosures. **Elie Berbari, MD**, **Uptodate.com** (Other Financial or Material Support, Honorary unrelated to this work) **Matthew P. Abdel, MD**, **Stryker and AAOS Board of Directors** (Board Member, Other Financial or Material Support, Royalties) **Aaron J. Tande, MD**, **UpToDate.com** (Other Financial or Material Support, Honoraria for medical writing)

112. A Rapid Host-Protein Signature Based on TNF-related Apoptosis-Induced Ligand (TRAIL), Interferon Gamma Induced Protein-10 (IP-10) and C-Reactive Protein (CRP) Accurately Differentiates Between Bacterial and Viral Infection in Febrile Children: Apollo Sub-Study

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Background. Identifying infectious etiology is essential for appropriate patient management, including antibiotic use. A host-protein signature for differentiating bacterial from viral infection has exhibited robust performance (AUC of 0.9, 95% CI 0.86-0.95) in prior studies. Performance data was lacking for a broad pediatric population recruited in emergency departments (EDs) and urgent care centers (UCCs).

Methods. Non-immunocompromised children were recruited prospectively from 5 EDs and 3 UCCs in the U.S. and 1 ED in Israel between May 2019 and August 2020. Eligibility required physician's clinical suspicion of acute infection and reported fever. Reference standard etiology was adjudicated by experts based on clinical, laboratory, radiological, microbiological and follow-up data. For the primary analysis, experts blinded to one another, to the host-signature results and also to procalcitonin and CRP, classified cases as bacterial or viral. For the secondary analysis, experts blinded to one another and the host signature results, were permitted to classify cases as bacterial, viral or indeterminate; indeterminates were removed from the secondary analysis. Host signature (comprising TRAIL, IP-10 and CRP; MeMed BV®) was measured using a rapid platform (MeMed Key®) generating a bacterial likelihood score (0-100) in 15 minutes.

Results. The study cohort comprised 162 children (median age, 5.5 yrs; interquartile range, 8.5), of whom 69 (43%) presented within 2 days of symptom onset and 37 (23%) were hospitalized for a median of 3 days. Respiratory tract infection was the predominant syndrome (11% lower and 44% upper). Host signature attained AUC 0.87 (0.74-1) and 0.92 (0.79-1) in the primary and secondary analysis, respectively. With higher the signature score, there was a significantly higher likelihood of bacterial infection ($p< 0.001$; Table 1). The 3 bacterial infections assigned score < 35 (false negative) would have been identifiable by physical examination (Table 2).

Increasing host signature score is associated with increasing likelihood of bacterial infection across both the primary and secondary cohort

	Host signature score bin	n patients	% patients	n Bacterial reference standard patients	% Bacterial reference standard patients = PPV	n Viral* reference standard patients	% Viral* reference standard patients = NPV	Likelihood ratio (95% CI)
Primary cohort	90 ≤ score ≤100	7	4.3%	6	85.7%	1	14.3%	75.0 (9.8-573.2)
	65 < score <90	12	7.4%	2	16.7%	10	83.3%	2.5 (0.6-10.1)
	35 ≤ score ≤ 65	13	8.0%	1	7.7%	12	92.3%	1.0 (0.1-7.3)
	10 < score <35	19	11.7%	0	0.0%	19	100.0%	0.00
	0 ≤ score ≤10	111	68.5%	3	2.7%	108	97.3%	0.4 (0.1-0.9)
	Total	162	100.0%	12		150		
Secondary cohort	90 ≤ score ≤100	6	4.1%	5	83.3%	1	16.7%	87.5 (11.5-663.2)
	65 < score <90	10	6.8%	1	10.0%	9	90.0%	1.9 (0.3-13.5)
	35 ≤ score ≤ 65	9	6.1%	0	0.0%	9	100.0%	0.00
	10 < score <35	18	12.2%	0	0.0%	18	100.0%	0.00
	0 ≤ score ≤10	105	71.0%	2	1.9%	103	98.1%	0.3 (0.1-1.1)
	Total	148	100.0%	8		140		

The performance of the host signature score in differentiating between bacterial and viral infection was evaluated by allocating children to one of five score bins and within each bin according to their adjudication label and determining if there is a meaningful increase in the relative likelihood of bacterial infection across the bins based on the Cochrane-Armitage test of trend. PPV, positive predictive value. NPV, negative predictive value. *Includes patients adjudicated as non-infectious

Three children assigned a bacterial adjudication label and a score of 35 or less (false negatives) have bacterial infections identifiable in physical exam

Patient ID	BV Score	PCT (ng/ml)	Age (yr)	Max Temp (C)	Time from symptom onset (days)	Hospitalized	Microbiology	Comorbidity	Discharge Diagnosis	Current illness and Follow Up
1	5	0.07	8.6	40.0	2	No	Strep A	Type 1 Diabetes	Upper respiratory tract infection /strep throat	Presented with 1 day of measured temperature 104.0F, 2 days of sore throat, headache and abdominal pain. Physical examination significant for pharyngeal erythema. Rapid strep test was positive for Strep A. Prescribed amoxicillin. No follow up available.
2	2	0.16	3.1	38.9	2	No	Human-Rhinovirus/Enterovirus , Respiratory-Syncytial Virus		Upper respiratory tract infection /acute otitis media + reactive arthritis	Presented with 2 days measured temperature 102.0F. Physical examination significant for right tympanic membrane erythematous with fluid. Suspected of Lyme, had a positive ELISA but a Western immunoblot was not available at time of discharge. Was prescribed 28 days of cefdinir to cover the potential Lyme disease and concurrent otitis media. Symptoms subsided within 10 days.
3	9	0.05	2	38.0	5	Yes	Influenza A sub H1-2009		Periorbital cellulitis	Presented with 5 days of measured temperature 38.0C , cough and 2 days of closed and swollen left eye. Physical examination significant for left eyelid swollen shut without discharge and mild oropharyngeal erythema. Admitted for 6 days. Discharged with a 5-day course of cefuroxime, symptoms resolved within 7 days.

Conclusion. The host-protein signature measured using a rapid platform attained robust performance in differentiating bacterial vs viral infection in children with acute febrile illness, supporting its potential to enhance rational use of antibiotics in the ED and UCC.

Disclosures. **Sheldon L. Kaplan, MD**, **Pfizer** (Research Grant or Support) **Mark Kellogg, PhD**, **MeMed** (Scientific Research Study Investigator) **Andrea T. Cruz, MD, MPH**, American Academy of Pediatrics (Individual(s) Involved: Self): editorial board member **Kristina G. Hulten, PhD**, **Pfizer** (Research Grant or Support) **Cesar A. Arias, M.D., MSc, Ph.D., FIDSA**, **Entasis Therapeutics** (Grant/Research Support)**MeMed Diagnostics** (Grant/Research Support)**Merk** (Grant/Research Support) **Richard Gordon, MD**, **MeMed** (Scientific Research Study Investigator) **Sergey Motov, MD**, **MeMed** (Scientific Research Study Investigator) **Theresa Jacob, PHD MPH**, **MeMed** (Scientific Research Study Investigator) **Natasha Ballard, MD**, **MeMed** (Scientific Research Study Investigator) **George Suits, MD**, **MeMed** (Scientific Research Study Investigator) **Jeffrey Harris, MD**, **MeMed** (Scientific Research Study Investigator) **Maanit Shapira, Ph.D**, **MeMed** (Scientific Research Study Investigator) **Richard E. Rothman, PhD, MD**, **Chem bio** (Grant/Research Support) **Karen C. Carroll, MD**, **MeMed** (Scientific Research Study Investigator)**Meridian Diagnostics, Inc.** (Grant/Research Support)**Pattern Diagnostics** (Advisor or Review Panel member)**Scanogen, Inc.** (Advisor or Review Panel member) **Karen C. Carroll, MD**, Pattern Diagnostics, Inc. (Individual(s) Involved: Self): Grant/Research Support; Scanogen, Inc. (Individual(s) Involved: Self): Consultant **Leticia M. Ryan, MD MPH**, **MeMed** (Scientific Research Study Investigator) **Richard Bachur, MD**, **MeMed** (Scientific Research Study Investigator)

113. Reliability of Nasopharyngeal PCR for the Detection of Otopathogens in Children with Uncomplicated Acute Otitis Media

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