TRAIL LEVEL AND IMMUNOXPERT™ SCORE COMPLEMENT MOLECULAR VIRAL DETECTION IN THE CLASSIFICATION OF FEBRILE CHILDREN – AN INTERIM ANALYSIS FROM THE AUTOPILOT-DX-STUDY


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Background and Study Design

1. The burden: antibiotic misuse
   - 50% Overuse: 20% Underuse:

2. The challenge: distinguishing bacterial from viral infections

3. The tool: a host-signature assay

**TRAIL**

**IP-10**

**CRP**

Laxminarayan et al. 2013

Oved et al. 2015

4. The AutoPilot-Dx study (NCT03052088)

- > 580 children recruited in Mannheim
- > 900 prospectively recruited

Routine clinical and laboratory work-up
Nasopharyngeal swab PCR for viral and bacterial pathogens
28-days follow-up phone call

Expert panel adjudication

240 patients available for interim analysis

96 viral mono-infections

40 bacterial infections

Results and Discussion

**TRAIL, IP-10, CRP, and ImmunoXpert scores for each subgroup**

**TRAIL levels for patients with Adv, HRV, or RSV, either labeled viral (viral) or bacterial (bact) by the expert panel**

- Compared to bacterial infections, TRAIL levels were significantly higher (144.6±129.2 vs. 65.9±26.6 pg/mL) and ImmunoXpert™ scores lower (22.2±28.5 vs. 62.4±31.0) in viral infections, while no significant differences between the viruses subgroups were seen.
- CRP levels were higher in ADV infections compared to RSV, FLU and HRV infections (50.2±53.2 vs. 9.8±8.0, 8.2±4.7, 24.7±34.5 mg/L, respectively).
- TRAIL levels were higher in patients labeled as viral by the expert panel as compared to bacterial patients, irrespective of virus detection.

**Most commonly detected viruses**

- HRV: Human Rhinovirus n=37
- Adv: Adenovirus n=19
- RSV: Respiratory Syncytial Virus n=11
- Flu: Influenza virus n=10

**Inclusion criteria:**
- Children > 90 days of age
- Documented peak temperature ≥ 38°C (100.4°F) (AND)
- Symptom duration ≤ 7 days (AND)
- Clinical suspicion of RTI (OR) FWS

**Exclusion criteria:**
- Another episode of febrile infection within the past 2 weeks
- Antibiotic treatment of over 48 hours
- Primary or secondary immunodeficiency
- Severe illness that affects life expectancy and quality of life

**Study goal:**
To validate the diagnostic accuracy of the ImmunoXpert™ and to assess its clinical utility

**Study Design**

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- > 900 prospectively recruited
- Routine clinical and laboratory work-up
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**Results**

- 96 viral mono-infections
- 40 bacterial infections

**Discussion**

- Viral infections correlated significantly with elevated TRAIL levels.
- Despite increased CRP levels in ADV infections, ImmunoXpert™ scores were indicative of a viral etiology.
- Virus detection may not necessarily indicate underlying etiology.
- The differential expression of TRAIL in response to viral versus bacterial infections can complement molecular viral detection in febrile children.