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Real-world use of a novel host-response test to aid physicians in distinguishing between bacterial and viral infections at outpatient urgent care centers

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Background:

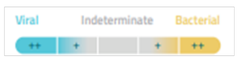
Uncertainty in the diagnostic process of an acute infection may cause antibiotic overuse and underuse. **MeMed BV® (BV) is an FDA cleared test designed to differentiate between bacterial and viral infections** based on computational integration of the blood levels of three proteins (TRAIL, IP-10, CRP) into a score. Here we describe the **impact of its real-world use on the uncertainty physicians face in the diagnostic process**.

Methods:

A retrospective study was conducted at three Maccabi Healthcare Services outpatient urgent care centers in Israel between December 2020 and May 2021. Physicians could use BV in real time whenever they felt uncertain regarding the cause of the infection - bacterial or viral. The BV result is based on pre-defined score thresholds: 0 ≤ score < 35 viral (or other non-bacterial) infection, 35 ≤ score ≤ 65 equivocal and 65 < score ≤ 100 bacterial infection (or co-infection). **Physicians were asked to answer a questionnaire composed of two parts: The first part included the suspected etiology and likelihood of prescribing antibiotic (AB) treatment before ordering the test. The second part included questions regarding the tool's impact on their decision-making process, completed after receiving the BV results.**

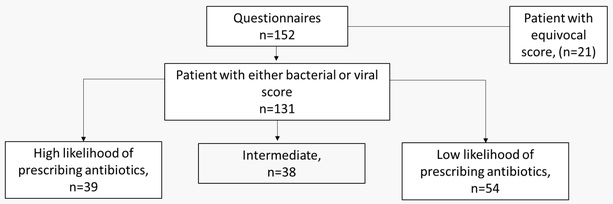
Step 1. Suspected etiology and likelihood of prescribing antibiotic treatment

Q1: Suspected etiology:

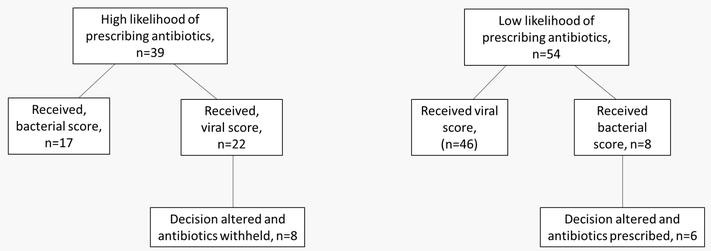


Q2: Likelihood of prescribing abx:

- Very high
- High
- I don't know
- Low
- Very low



Step 2. Host response test to distinguish between bacterial and viral infection



Step 3. Real-world impact of BV on physicians' decision-making process

Q3: Other available tests:

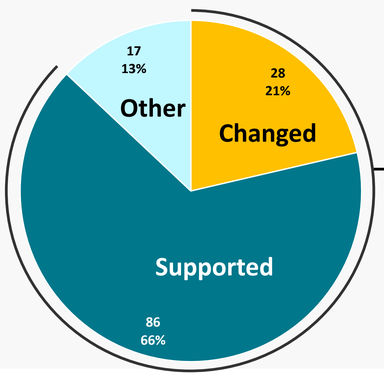
- CBC
- Chemistry
- Urinalysis
- Urine culture
- Rapid Strep test
- Rapid Flu test
- Other

Q4: Impact of MeMed BV on decision-making process:

- Strengthened
- Changed
- Other

Q5: Other tests ordered due to MeMed BV result:

- Culture
- Imaging
- ED referral
- Other



87% of cases MeMed BV contributed to the decision-making process (either changed or supported)

Results:

A total of 152 questionnaires were filled out. Of them, 58% of the patients were children under the age of 18, and 51% were female. The average number of days from fever onset was three in children and 2.3 in adults. **Out of the 131 cases with either bacterial or viral scores, in 86 (66%) of the questionnaires the physicians confirmed that the BV result supported their overall impression and management. In 28 (21%) cases the BV results altered their decision. In 39 (30%) cases the physicians marked high likelihood for prescribing ABs, of them 22 (50%) received a viral score and in 8 (36%) of them physicians altered their decision and withheld ABs. In 63 (41%) cases the physicians marked low likelihood for prescribing ABs of which 8 (15%) received a bacterial score and in 6 (75%) cases physicians altered their decision and prescribed ABs.**

Conclusion:

BV contributed greatly to physicians' decision-making process in the management of patients with acute infection. These preliminary results demonstrate the test's clinical utility regarding AB overuse and underuse