



Cost impact analysis of novel host-response diagnostic for patients with community-acquired pneumonia in the emergency department

John E. Schneider & Jacie T. Cooper

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Key messages

MeMed BV® provides savings* per patient with Community-Acquired Pneumonia (CAP) in favor of Standard of Care (SOC) + **MeMed BV®**.

Savings are in the range \$223-\$809 for providers (hospitals) based on the following components in a US setting:

Avoided antibiotics and days saved

Reduced hospital admissions

Reduced hospital length of stay

**Excluding the cost of the MeMed BV® test*

Cost impact and clinical benefits in CAP management



Community acquired pneumonia (CAP) is caused by both bacterial and viral pathogens. CAP is one of the most common infectious syndromes globally as it leads to over 3 millions deaths worldwide each year.

Treatment of CAP represents a financial burden on the healthcare system. There is significant over-utilization of antibiotics for suspected CAP patients as bacterial and viral pathogens are difficult to differentiate.

To address this issue, a host response diagnostic called MeMed BV®** was developed to accurately differentiate bacterial and viral infections by integrating measurements of multiple biomarkers (TRAIL, IP-10, and CRP).

A literature-based cost-impact model was developed to compare the cost impact and clinical benefits between using standard of care (SOC) diagnostics combined with **MeMed BV®** relative to standard of care diagnostics alone.

**Now available as the LIAISON® MeMed BV® assay

Methods

01

The patient population was stratified according to the Pneumonia Severity Index (PSI).

02

The cost-impact model identifies all the costs associated with treatment guided by the SOC compared to treatment guided by SOC + MeMed BV® together.

03

The cost savings were considered from the provider perspectives in four different scenarios:

| Scenario Analysis | Impact of antibiotic prescription | Impact of hospital admission | Impact of hospital Length of Stay |
|--|-----------------------------------|------------------------------|-----------------------------------|
|  Main Analysis: Impact of antibiotic prescription only | ● | | |
|  Scenario 1: Hospital Admission Rate Impact | ● | ● | |
|  Scenario 2: Length of Stay Impact and DRG reallocation | ● | | ● |
|  Scenario 3: Hospital admission rate, Length of Stay Impact and DRG reallocation | ● | ● | ● |

Model parameters

- Bacterial/Viral etiology in CAP patients
- Diagnostic sensitivity and specificity: SOC, MeMed BV®
- Pre-diagnostic days of antibiotics treatment
- Cost per day related to Hospital Length of Stay (LOS), Emergency Department (ED), inpatient/outpatient antibiotics
- Diagnostic SOC cost
- Baseline antibiotic days of treatment
- Probability of *Clostridium diff.* infection

Results

01

SOC + MeMed BV® has a higher diagnostic sensitivity (96.7% vs SOC only 66.6%) differentiating bacterial from viral infections. Thus, promptly antimicrobial stewardship is provided, and the risk of secondary infection and low adverse events is lowered.

| Scenario | Antibiotic patients avoided (per patient) | Antibiotic days saved (per patient) | Hospital admission avoided (per patient) | Hospital days saved (per patient) |
|--|---|-------------------------------------|--|-----------------------------------|
| Main Analysis Antibiotics | 0.43 | 1.13 | - | 0.03 |
| Scenario 1 Antibiotics + Hospital Admission | 0.43 | 1.13 | 0.01 | 0.08 |
| Scenario 2 Antibiotics + Hospital LOS | 0.43 | 1.13 | - | 0.24 |
| Scenario 3 Antibiotics + Hospital Admission + Hospital LOS | 0.43 | 1.13 | 0.01 | 0.29 |

Impact varies depending on Patient Severity



Antibiotic patients avoided



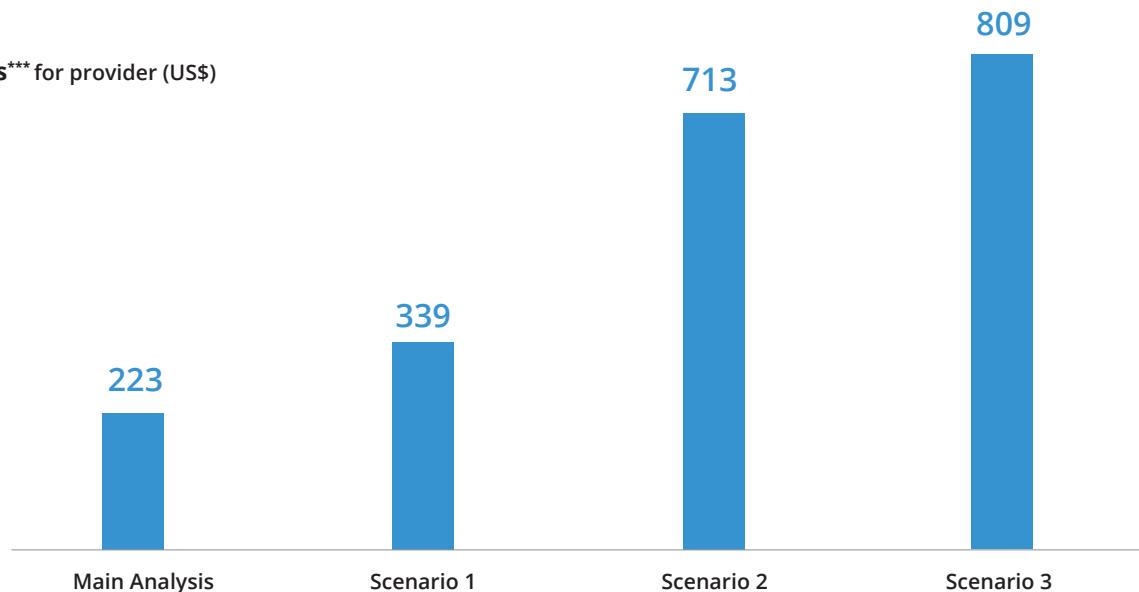
Antibiotic days saved (per patient)



Length of Stay (LOS) days saved (per patient)

02

Cost Savings*** for provider (US\$)



***Excluding the cost of the MeMed BV® test



Savings in favor of SOC + MeMed BV® are in the range of \$223-\$809 for providers

Conclusions

01



Introducing **MeMed BV®** (omitting the cost of it) to the current SOC diagnostic process is likely to be cost saving to providers.

02



MeMed BV® can significantly reduce unnecessary antibiotic distribution, saving approximately 1.1 antibiotic days per ED-presenting CAP patients.

03



Simulations show that providers could save up to \$809 overall when considering the potential impact of **MeMed BV®** on antibiotic utilization, hospital admission rate, hospital LOS, and DRG reallocation.

04



Probabilistic sensitivity analyses indicated that these savings are robust to variations in all input parameters in the base case analysis.



**Cost impact and clinical benefits
in CAP management**

MeMed and DiaSorin have jointly collaborated to make the **MeMed BV®** assay available on DiaSorin's chemiluminescent **LIAISON®** platforms. The clinical characteristics of the **MeMed BV®** and **LIAISON® MeMed BV®** assays are completely identical

The outcomes for the **MeMed BV®** assay, as reported in this paper, can thus be applied to the new **LIAISON® MeMed BV®** assay

Product availability subject to required regulatory approval



DiaSorin S.p.A.
Via Crescentino SNC, 13040 Saluggia (VC) - Italy
www.diasorin.com

