

# How can you help improve the use of antibiotics in lower respiratory tract infections?

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**Don't Guess. Know.**



## Challenges in Pneumonia

Pneumonia patients require appropriate therapy quickly. Traditional culture methods are insensitive and time consuming, identifying causative agents in days or, all too often, failing to identify anything at all. This leaves clinicians to their best guess about what is causing the patient's symptoms.

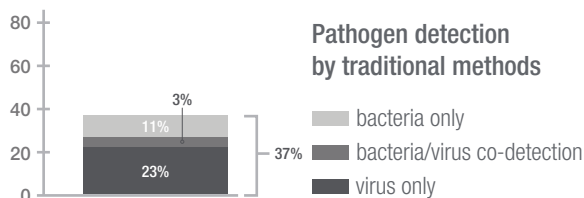
### Traditional Methods are Slow



Traditional culture testing often takes days to report results

### Culture is Less Sensitive

In a multi-center study of the epidemiology of community-acquired pneumonia requiring hospitalization, a bacterial agent was only identified in 13% of patient samples.<sup>1</sup>



### Empiric Therapy Often Fails



Initial antibiotic treatment fails in 1 of 5 community-acquired pneumonia patients, requiring an additional or different antibiotic course, an ER visit, or hospitalization.<sup>2</sup>

## The Right Test, The First Time<sup>4</sup>

The BioFire® FilmArray® Pneumonia Panel *plus* gives sensitive, accurate results in about one hour, from a variety of commonly collected lower respiratory tract specimens. These fast, reliable results may allow clinicians to have confidence in making targeted therapy decisions.<sup>3</sup>

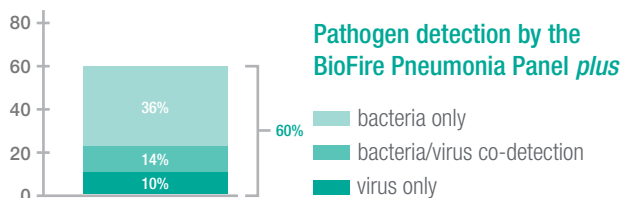
### Syndromic Testing is Fast



Sample to answer in about one hour with the BioFire Pneumonia Panel *plus*

### Detects More Bacteria

PCR detects nucleic acids rather than only organisms that will grow on culture media. This results in the BioFire Pneumonia Panel *plus* detecting many more bacteria than culture. In the prospective clinical trial for the BioFire Pneumonia Panel *plus*, a bacterial agent was identified in 50% of specimens.<sup>4</sup>



The BioFire Pneumonia Panel *plus* is a diagnostic aid and should be used in conjunction with other clinical and laboratory findings.

### Reports Semi-quantitative Results

Provides relative abundance information for 15 bacteria that can be a pathogen or normal flora. Reported in bins representing the nearest whole log in genome copies/mL.

#### Semi-quantitative bin results

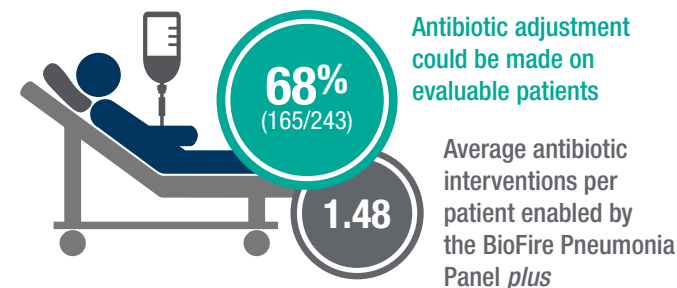


## Syndromic Testing May Improve Patient Care

The BioFire Pneumonia Panel *plus* may improve patient care by improving time to targeted therapy, reducing treatment cost, and improving laboratory and patient management workflows.

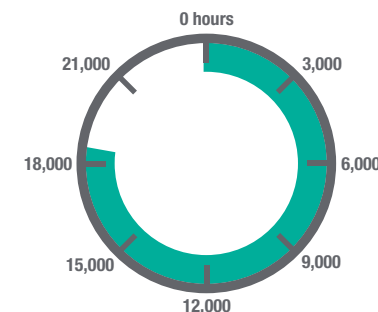
### Impact on Antibiotic Prescription<sup>3</sup>

The BioFire Pneumonia Panel *plus* was run on 259 patient samples. Chart reviews revealed that up to 68% of empiric antibiotic courses could have been altered to more appropriate therapy.



## Appropriate Antimicrobial Stewardship<sup>4</sup>

Up to 50% of patients could have been de-escalated based on the BioFire Pneumonia Panel *plus* result, saving more than 18,000 hours of antibiotic use.



## Guidelines

- A. BTS Guidelines for the management of CAP in adults WS Lim, Thorax 2009; 64 (Suppl. III).
- B. BTS Guidelines for the management of CAP in adults M. Harris, Thorax 2011; 66.
- C. Guidelines for the management of adult lower respiratory tract infections – Woodhead, 2011, European Respiratory Journal 2011 38: 112-118.
- D. NICE Clinical Guideline: Pneumonia in Adults : diagnosis and management, 2014.
- E. International ERS/ESICM/ESCMID/ALAT guidelines for the management of hospital-acquired pneumonia and ventilator-associated pneumonia. Torres A. Eur Respir J. 2017 Sep 10;50(3). pii: 1700582. doi: 10.1183/13993003.00582-2017. Print 2017 Sep.

## Who Should get Tested?

Patients in an ED, any medical ward, or an ICU with a suspected lower respiratory tract infection.

## Overall Performance of the BioFire® FilmArray® Pneumonia Panel *plus*<sup>4</sup>

	Sensitivity	Specificity
BAL	96.2%	98.3%
Sputum	96.3%	97.2%

“The low pathogen-detection yield among adults who were hospitalized for pneumonia highlights the need for more sensitive diagnostic methods and innovative discovery of pathogens.”<sup>1</sup>

– Jain S, et al.

## References

1. Jain S, Community-acquired pneumonia requiring hospitalization among U.S. adults. N Engl J Med. 2015; 373:415-427
2. McKinnell P. Clinical Predictors of Antibiotic Failure in Adult Outpatients with Community-Acquired Pneumonia. Abstract 8450 ATS 2017
3. 2018 ATS Buchan Clinical evaluation and Potential impact of semi-quantitative multiplex molecular assay for the identification of pathogenic bacteria and viruses in lower respiratory specimens.
4. Data on file, BioFire Diagnostics.
5. <https://ecdc.europa.eu/en/all-topics-z/surveillance-and-disease-data/diseases-and-special-health-issues-under-eu-surveillance>.

## 34

TARGETS

## 1hr



Fast



Accurate



Comprehensive

### Bacteria

*Acinetobacter calcoaceticus baumannii* complex  
*Enterobacter cloacae* complex  
*Escherichia coli*  
*Haemophilus influenzae*  
*Klebsiella aerogenes*  
*Klebsiella oxytoca*  
*Klebsiella pneumoniae* group  
*Moraxella catarrhalis*  
*Proteus* spp.  
*Pseudomonas aeruginosa*  
*Serratia marcescens*  
*Staphylococcus aureus*  
*Streptococcus agalactiae*  
*Streptococcus pneumoniae*  
*Streptococcus pyogenes*

### Atypical Bacteria

*Chlamydia pneumoniae*  
*Legionella pneumophila*<sup>5</sup>  
*Mycoplasma pneumoniae*

### Viruses

Adenovirus  
 Coronavirus  
 Human Metapneumovirus  
 Human Rhinovirus/Enterovirus  
 Influenza A  
 Influenza B  
 Middle East Respiratory Syndrome Coronavirus  
 Parainfluenza Virus  
 Respiratory Syncytial Virus

### Antimicrobial Resistance Genes

**Methicillin Resistance**  
*mecA/C* and MREJ

### Carbapenemases

IMP  
 KPC  
 NDM  
 Oxa-48-like  
 VIM

**ESBL**  
 CTX-M

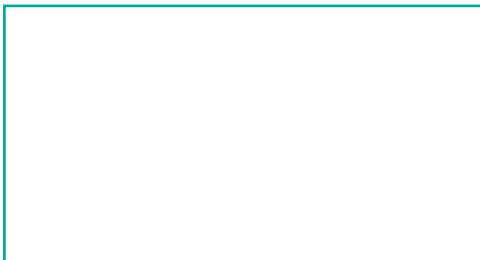
### Sample Type

Sputum (including ETA) and BAL (including mini-BAL)

## Diseases Under Surveillance<sup>5</sup>

- Influenza—including influenza A (H1N1)
- Legionnaires' disease
- *Haemophilus influenzae*

## Where To Order This Test?



The information in this booklet is given as a guideline only and is not intended to be exhaustive. It in no way binds bioMérieux or BioFire Diagnostics, LLC to the diagnosis established or the treatment prescribed by the physician. If you have any questions please contact your bioMérieux representative. BioFire is wholly owned by bioMérieux.

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