

Accelerate Pheno™ System  
**Introduction to  
Clinical Implementation Support**

12/2018





When hours matter,  
your results shouldn't  
be days away.

**Romney Humphries, PhD**  
Chief Scientific Officer  
**Accelerate Diagnostics, Inc.**

# Accelerate Pheno™ System

Supporting optimal clinical outcomes



## Fast Results

ID in ~90 minutes

AST ~5 hours after ID



## Clinical Optimization

Expedited results reporting

Timely therapy optimization  
(escalation and de-escalation)

Bench-to-bedside clinical  
implementation support



## Better Outcomes

Reduced patient mortality

Shorter length of stay

Reduced empiric ABX use





**258,000**

sepsis-related deaths annually—one every two minutes<sup>1</sup>

**2 million**

illnesses per year from antibiotic resistance<sup>2</sup>

**\$55 billion**

in annual healthcare and productivity cost<sup>3</sup>

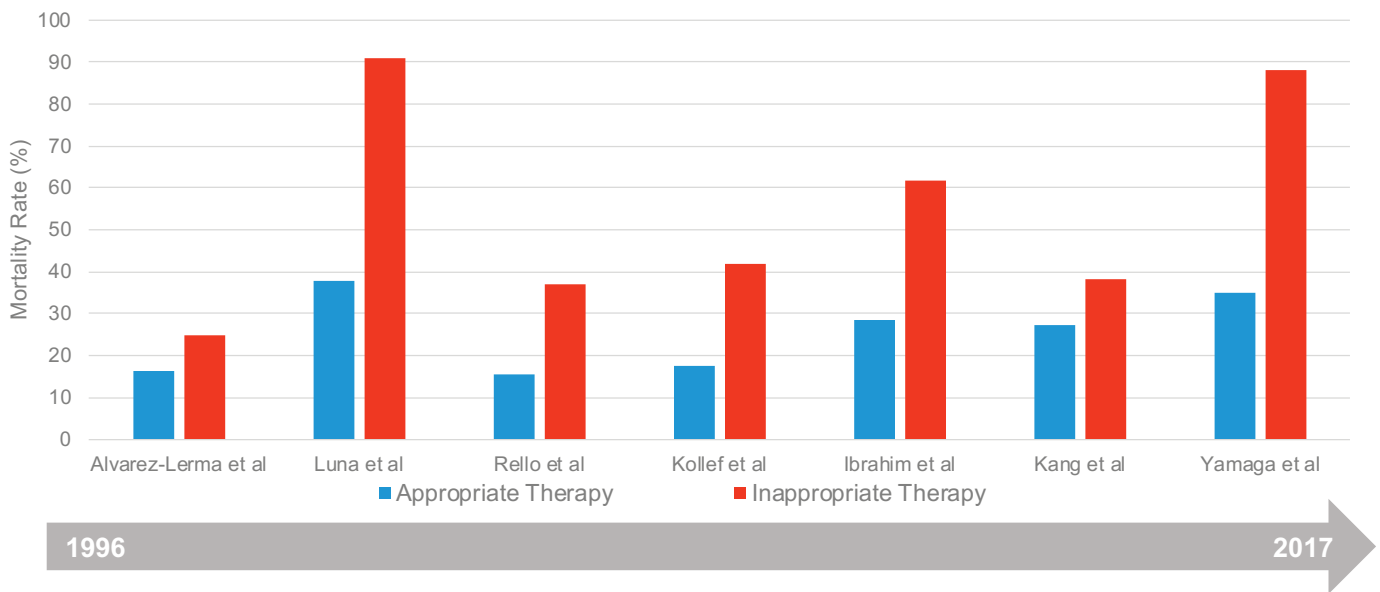
“Antibiotic-resistant infections add considerable and avoidable costs to the already overburdened U.S. healthcare system.”<sup>3</sup>

<sup>1</sup> [www.cdc.gov/sepsis](http://www.cdc.gov/sepsis)

<sup>2</sup> [www.cdc.gov/drugresistance](http://www.cdc.gov/drugresistance)

<sup>3</sup> CDC 2013. *Antibiotic Resistance Threats in the United States, 2013*. Rep. CS239559-B p6-11. Web. Jan. 2017

# Impact of Antimicrobial Therapy on Mortality



Alvarez-Lerma et al. *Intensive Care Med* 1996 May;22(5):387-94.  
Luna et al. *Chest* 1997;111:676-685.  
Rello et al. *Am J Respir Crit Care Med* 1997;156:196-200.  
Kollef MH *Chest* 1999 Feb;115(2):462-74.

Ibrahim et al. *Chest* 2000;118:146-155.  
Kang CI *Antimicrob Agents Chemother* 2005 Feb;49(2):760-6.  
Yamaga S *J Infect Chemother*. 2017 Dec 29. pii: S1341-321X(17)30299-4.



# Accelerate Pheno™ System

Fast, actionable results for targeted therapy in ~7 hours

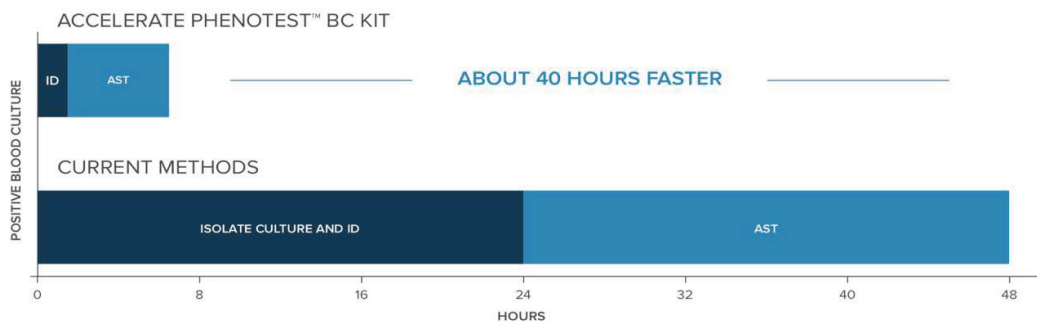
## Fast

- ID in ~90 minutes
- AST ~5 hours after ID

## Actionable

- Results cross LIS interface and post to clinical decision support software
- Clinical implementation support team optimizes adoption for new test

## Time to result



# Accelerate Clinical Implementation Support

Three ways we support optimization for clinical teams



## Clinical Pathways

Developing new pathways from bench to bedside for fast ID and AST results



## Performance Metrics

Identifying key performance indicators, measurement, and reporting methods



## Training

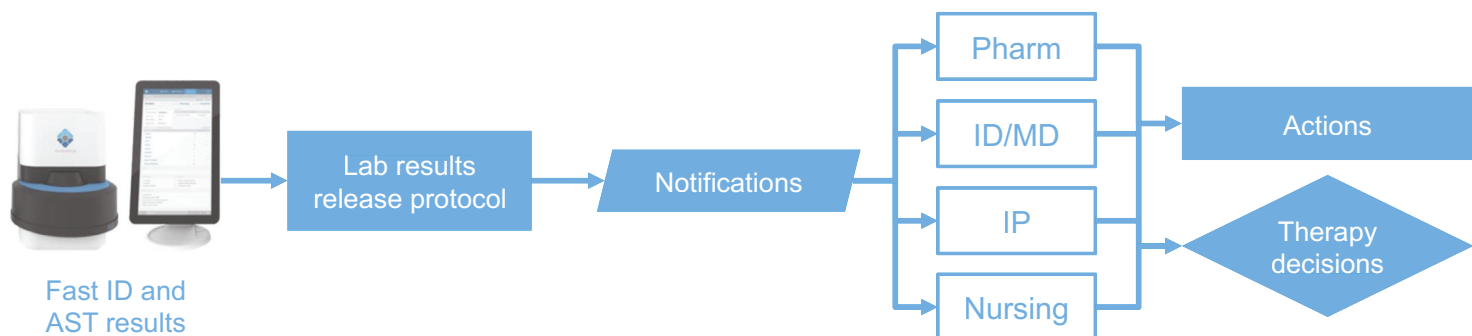
Preparing clinicians and lab for fast ID/AST and new clinical pathways



# Clinical Pathways

Bench-to-bedside mapping that accounts for all clinical stakeholders

- Evaluate existing pathways
- Design new pathways from bench to bedside for fast ID and AST results
- Develop plan for adopting new pathways

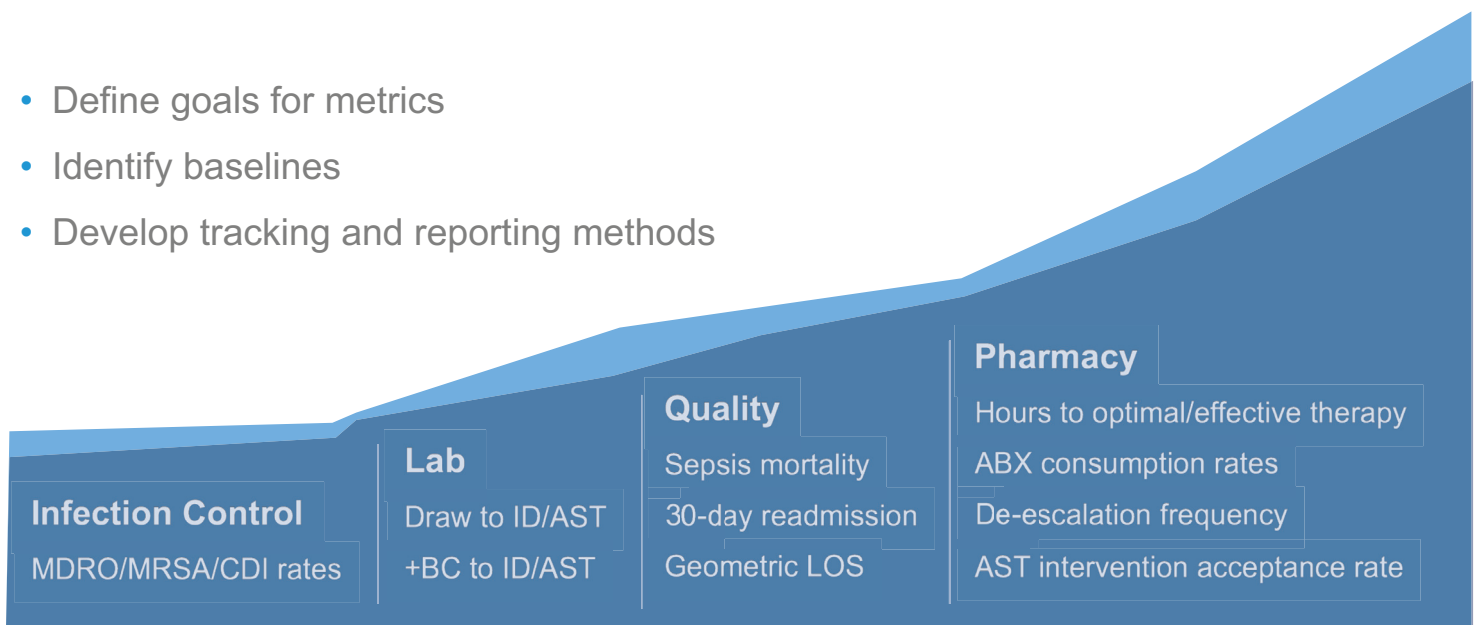




# Performance Metrics

## Measurement, tracking, and reporting

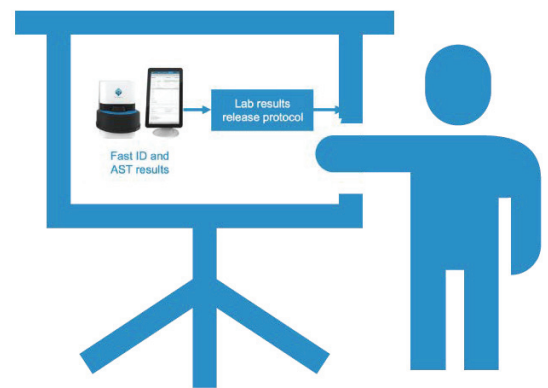
- Define goals for metrics
- Identify baselines
- Develop tracking and reporting methods



# Training

## Preparing for faster results and new clinical pathways

- Train lab staff and clinicians on new clinical pathways, documentation, SOPs
- Define challenges/gaps, conceive action plans for continuous improvement
- Integrate Accelerate Pheno™ system results into antimicrobial stewardship programs, sepsis management protocols, IP/Quality management



# The Accelerate Difference

Fast, Actionable Results + Clinical Implementation Support = Clinical Impact

## Impacts on Sepsis Management

- Rapid results: shorter time to optimal therapy for patients with sepsis
- Diagnostic certainty: data-driven ABX therapy escalation or de-escalation
- Lower mortality
- Shorter length of stay

## Impacts on Resistance/Stewardship

- Reduced use of empiric ABX reduces risk of spread of resistant organisms
- Fewer patient days in isolation due to awaiting AST results
- Fewer days on therapy
- Lower ABX consumption and cost
- Reduced risk of adverse side effects
- Lower *C. difficile* incidence



# Fast AST Results Improve Clinical Outcomes

University of Arkansas for Medical Sciences (UAMS)

Clinical Outcomes	Legacy Methods (Mean $\pm$ SD) N=79	Accelerate Pheno™ system (Mean $\pm$ SD) N=75	p-value
LOS (days)	12.1 (11.9)	9.1 (7.6)	0.03
TTOT (hours)	73.5 (50.2)	37.5 (32.7)	<0.001
Total Antibiotic DOT (days)	9.0 (7.5)	7.0 (4.6)	0.05
Meropenem DOT (days)	6.6 (3.7)	3.7 (2.1)	0.03

Use of the Accelerate Pheno™ system for bacteremic patients compared to standard of care resulted in:

- 3.0-day reduction in hospital length of stay
- 2.0-day reduction in total antibiotic days on therapy
- 36-hour reduction in time to optimal therapy

Dare et al. Impact of Accelerate Pheno™ Rapid Blood Culture Detection System on Laboratory and Clinical Outcomes in Bacteremic Patients. Presented as oral presentation at IDWeek 2018.



# Improved Outcomes Reduce Cost of Care

## Implications of UAMS' 2018 Clinical Outcomes Study

A Kaiser Family Foundation report summarizes inpatient U.S. hospital costs in 2016 and indicates that **the average cost was ~\$2,200/day (\$1,889 – \$2,488).**

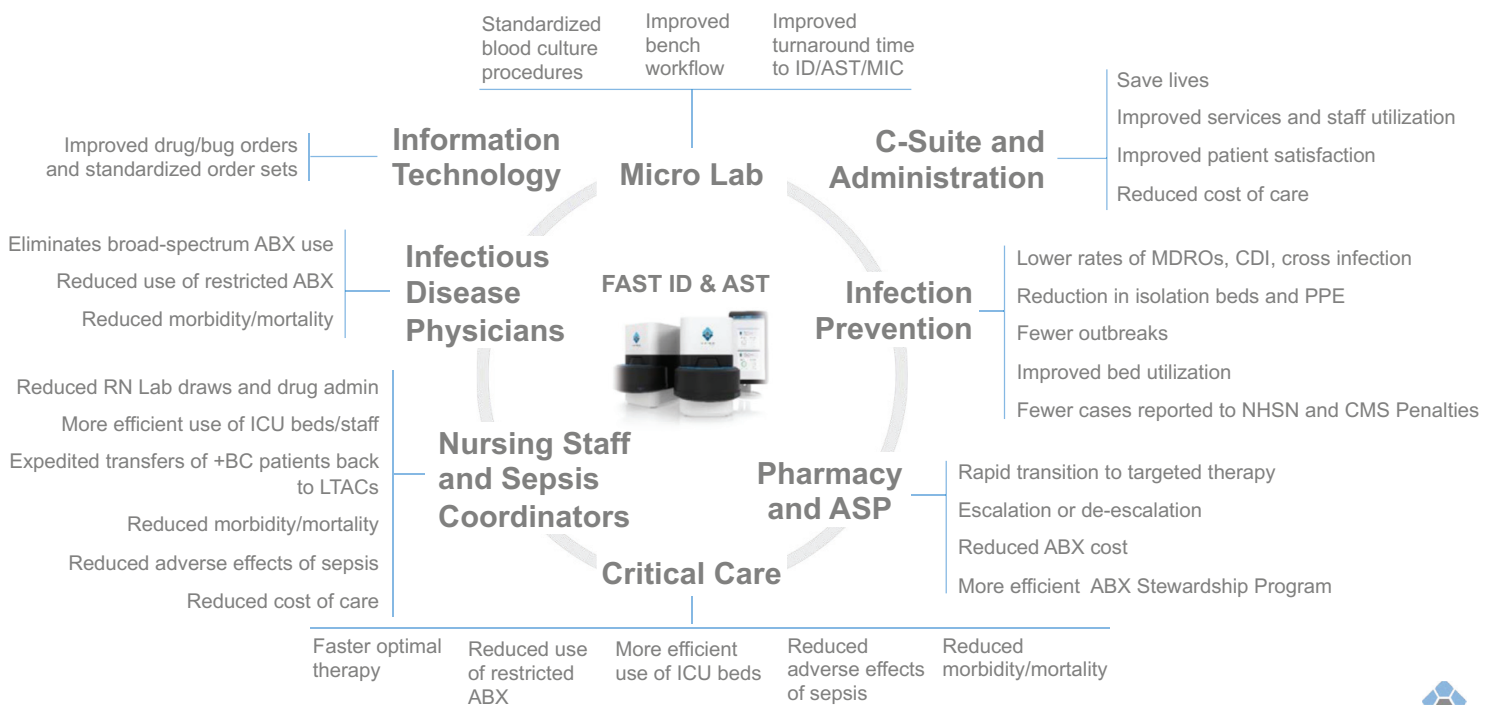
	1 inpatient day cost	3 inpatient days cost
Non-profit hospitals	\$2,488	\$7,464
For-profit hospitals	\$1,889	\$5,667

- The UAMS study demonstrated a 3-day LOS reduction following clinical implementation of the Accelerate Pheno™ system
- This suggests a mean cost savings of **\$6,565.50 per patient with bacteremia**

"Hospital Adjusted Expenses per Inpatient Day by Ownership". Henry J Kaiser Family Foundation. 2016. <https://www.kff.org/health-costs/state-indicator/expenses-per-inpatient-day-by-ownership>



# Our Impact On the Continuum of Care



With such a complicated patient population, we have found the rapid susceptibility information generated by the Accelerate Pheno to be invaluable.

**Margie Morgan, PhD**  
Director of Microbiology  
Cedars-Sinai

**Do more.**



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