



**The Dog Days of ID:  
Embracing the Bark & Removing  
the Bite of Diagnostic  
Stewardship**

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# Objectives

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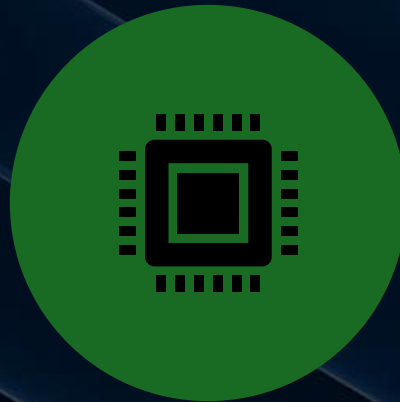
- Describe core principles of diagnostic stewardship
- Identify rapid diagnostic tests

# What is Diagnostic Stewardship

The RIGHT TEST for the RIGHT PATIENT leading to the RIGHT ACTION



ORDERING

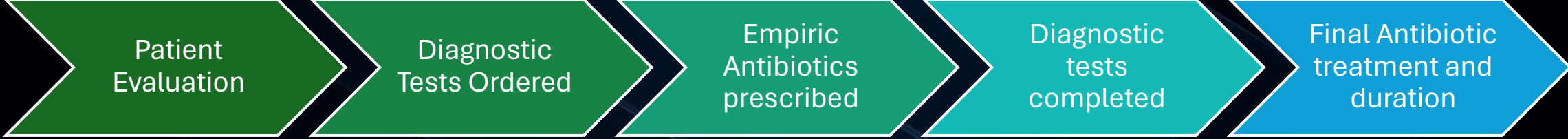


PROCESSING



REPORTING

**Antimicrobial Stewardship**



**Diagnostic Stewardship**

## **Infection Prevention**

Lead many diagnostic stewardship efforts in part due to health care associated infection (HAI) surveillance

- C.difficile infections
- Catheter Associate Urinary Tract Infections (CAUTI)
- Central Line Associated Blood Stream Infections (CLABSI)

## **Clinical Microbiology**

Carry out many of the steps of diagnostic stewardship in the Microbiology Laboratory

Ensure tests are validated, performed correctly, and reported responsibly

## **Infectious Disease Providers & Pharmacists**

Can aid in result interpretations and clinical decisions

- Best Practice Advisories
- Guidelines/algorithms
- Changes in Order Sets

# Why is Diagnostic Stewardship Important

- ***C.difficile* infections**

- Colonization 5-10x higher than infection, treatment leading to microbiome dysbiosis

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- ***C.difficile* infections**

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## Possible Interventions

### Best Practice Alerts

- Laxative within 48h, Previous positive within 14 days, Tube Feedings, etc

### Two Step Testing

- Gene and Toxin testing

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- **Blood Stream infections**
  - False positives due to contamination
  - Can prolong hospital stays and antimicrobials



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## Possible Interventions

- Appropriate culturing algorithms
- Appropriate collection
- Rapid identification system

# Why is Diagnostic Stewardship Important

- **Urinary Tract infections**

- Unnecessary treatment of Asymptomatic Bacteruria (ASB)
- Leads to MDRO, adverse drug reactions, *C.difficile* infections

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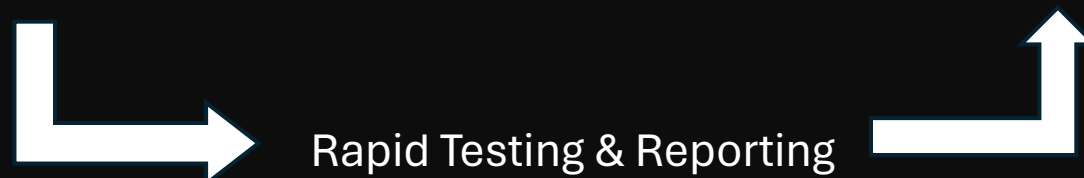
- Conditional Urine Reflex Culturing
- Reporting contamination if appropriate



# **Rapid Diagnostics**

**Embracing the Bark**

# How can rapid, accurate testing improve outcomes?



- ❖ Earlier treatment decisions
- ❖ Improved clinical outcomes
- ❖ Shorter Length of Stay
- ❖ Cost Savings

# Bacteremia

# Rapid Blood Culture ID Panels

	<b>Biofire BCID</b>	<b>GenMark</b>	<b>Verigene</b>
Versions	BCID, BCID2	BCID-GP, BCID-GN, BCID-FP	BC-GP, BC-GN
Targets	One Panel: Gram positives, Gram negatives, Yeast	Separate panels for Gram positives, Gram negatives, and fungal pathogens	Separate panels for Gram positives and Gram negatives
Other features	mecA/C, van A/B, CTW-M, KPC, NDM, VIM, IMP, OXA-48, mcr-1	mecA, mecC, vanA, vanB, CTX-M, KPC, NDM, VIM, IMP, OXA-48/23, pan-Candida	mecA, vanA, vanB, CTX-M, KPC, NDM, VIM, IMP, O

# Time to therapy modification

## Rapid Blood culture 4 Month Assessment

### Time from Draw to Report (hours)

Min: 10

Max: 72

Mean: 25.5

Median: 23

### Recommendations from Pharmacy: 21 (17.5%)

De-escalation: 11

Escalation: 10

Do Not Escalate: 0

Recommend ID Consult: 0 (ID consulted before recommendation could be made: 7)



# Time to therapy modification

## Rapid Blood culture 4 Month Assessment

### Time from receiving page to making recommendation

1 hour or less: 12

24 hours or less: 9

>24 hours: 0

### Time to change after recommendation made

<15 min: 16

<12 hrs: 5

<24 hrs: 0

# Respiratory Infections

# Rapid Respiratory Panels

## SIMPLE

GeneXpert Xpress –

- Has options with Sars-CoV2, RSV, FluA/FluB, StrepA

## COMPREHENSIVE

Biofire Respiratory 2.1

- Tests for 22 targets, results in ~45 minutes

# Review of Literature

## Antimicrobial Stewardship

7 out of 9 articles showed a reduction in antibiotic use in combination with an active ASP.

## Infection Prevention

- More accurate use of IP measures
  - Detecting unidentified pathogens
  - Stopping isolation precautions if negative result

# Meningitis-Encephalitis

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## Platforms

Biofire Meningitis-  
Encephalitis Panel  
Xpert EV  
Simplexa HSV 1&2

- ❖ Optimize antibiotic in bacterial infections
- ❖ Reduce antibiotics in viral infections
- ❖ Reduction of acyclovir use

# Meningitis-Encephalitis

**Patient presents with symptoms of meningitis. Over 50 years old and no known allergies**

**First Line Treatment: Vancomycin, Ceftriaxone, Ampicillin, Acyclovir**

- What if HSV2 positive?
- What if all targets negative?

# Other Tests

## Important to Infection Prevention

- ❖ MRSA surveillance
- ❖ C.difficile
  - ❖ 1 step vs 2 step



# Removing the Bite...

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- Make the case
  - Costs (kits, labor, etc)
  - Savings (length of stay, drug costs, etc)
- Maximize Impact
  - Staff training/education
  - IT build
  - Reporting Plan
  - Tracking key metrics

# Removing the Bite...

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- Collaboration is Key
  - Infection Prevention
  - Microbiology/Lab
  - Antimicrobial Stewardship
  - Hospitalists/Emergency Med
  - Infectious Disease (if avail)
  - Administration

# Summary

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- Diagnostic Stewardship
  - Right Test, Right Patient, Right interpretation
  - Importance of Multi-disciplinary team
- Rapid Diagnostics are available for many diseases including bacteremia, respiratory infections, and meningitis

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**THANK  
YOU**