SESSION VI – INTEGRATING RAPID DIAGNOSTICS AND ANTIBIOTIC STEWARDSHIP: Lab Clinician Perspective

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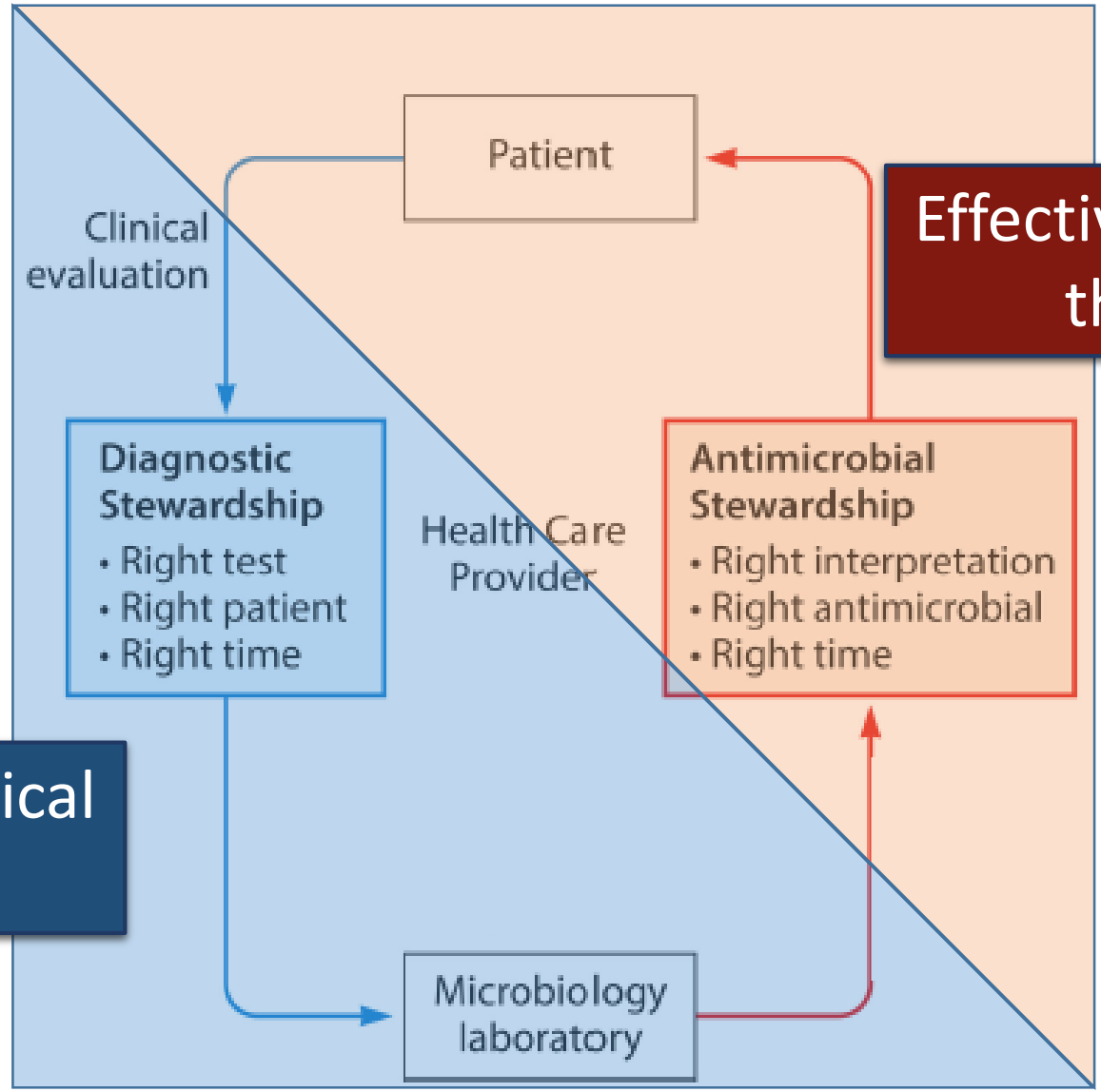
Diagnostic and Antimicrobial Stewardship



Effective, targeted therapy

Broad empirical therapy

Adapted from: Messacar et al. JCM 2017. 55: 715-723.

What is Diagnostic Stewardship?

- World Health Organization Definition:

  "Coordinated guidance and interventions to **improve appropriate use** of microbiological diagnostics to **guide therapeutic decisions**. It should promote appropriate, timely diagnostic testing, including specimen collection, and pathogen identification and accurate, timely reporting of results to **guide patient treatment**"

- "Modifying the process of ordering, performing, and reporting diagnostic tests to improve the treatment of infections and other conditions"

World Health Organization. (2016). http://www.who.int/iris/handle/10665/251553.
Morgan et al. 2017. JAMA 318: 607-608.

Diagnostic Stewardship

Right Test

- Analytical performance characteristics
  - (Sensitivity & specificity/positive & negative predictive values)
- Diagnostic yield
- Local epidemiology

- Space
- Cost
- Hands-on time
- Throughput
- Connectivity to lab information system

Right Patient

- Appropriate use criteria
- Patient population
- Pre-test probability

Right Time

- Will the timing of results fit in the clinical workflow to impact patient care
- Centralized vs. near patient testing
- Batched vs. on demand workflow

Adapted from: Messcar et al. 2017. J Clin Microbiol. 55: 715-723.

Diagnostic Stewardship Considerations

Pre-Analytical	Analytical	Post-Analytical
• Test ordering • Specimen Collection • Transport • Specimen acceptance/rejection criteria • Specimen processing	• Methodology • Batch vs. on demand • Central laboratory vs. point of care	• Reporting • Interpretation/ interpretive comments • Passive vs. active notification of results

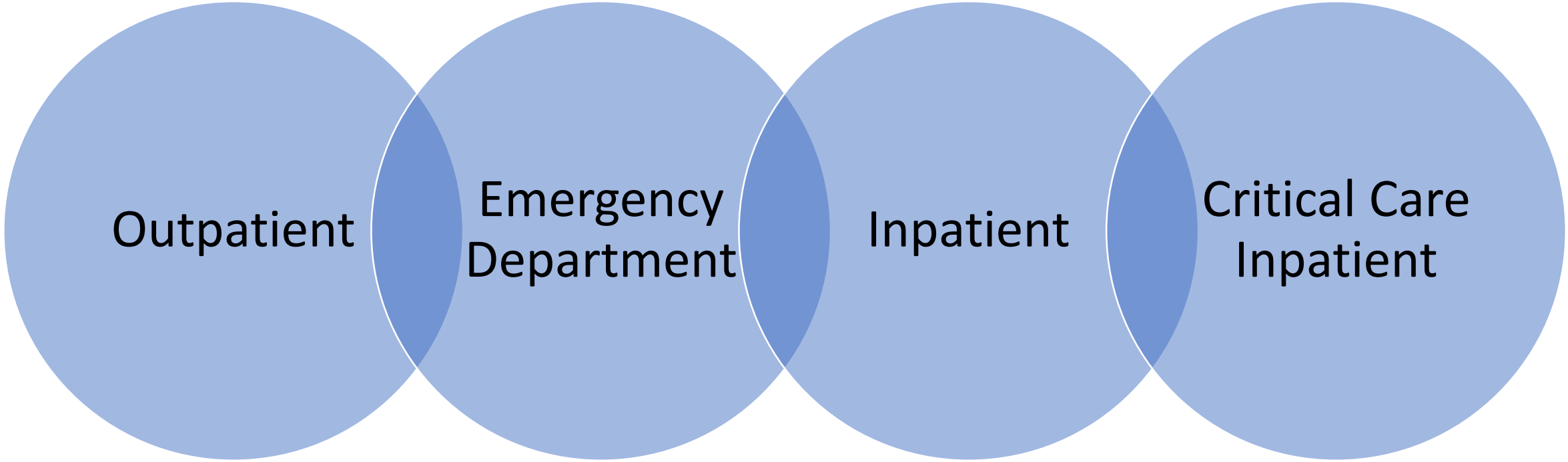
Inappropriate Diagnostic Testing

- Investigation of malpractice claims in ambulatory settings
  - Diagnostic/laboratory test performed incorrectly (8%)
  - Failure to perform diagnostic test (most common error) (55%)
  - Incorrect interpretation of a diagnostic test (37%)
  - Care provider did not receive diagnostic test results (13%)

- 15-year meta-analysis of inappropriate laboratory testing
  - Underutilization (44%)
  - Overutilization (21%)
  - Infrequently ordered tests were more likely to be inappropriately ordered

Gandhi et al. 2006. Ann Intern Med. 145: 488-496. Zhi et al. 2013. PLoS One. 8: e78962.

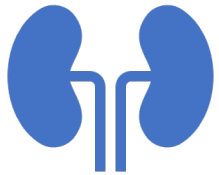
Different approaches for different practice settings



Different practice settings--considerations

- Where is the testing done? Who is collecting the specimens?
  - Near patient, local laboratory, central laboratory, pharmacy, at home
  - Laboratory experts providing guidance across settings
- How are the results reported and communicated? (i.e. guidance that accompanies the results to aid in interpretation)
- Is it an increment or a replacement test?
  - If it isn't the "final test"—may not be acted upon, especially in inpatient settings

Policy considerations

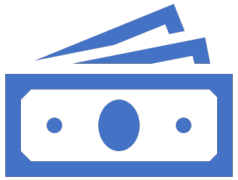


Clinical practice guidelines

Use the fast test

Actions that accompany the fast test

Critical care, surgery, urology, etc.



Reimbursement

Medical technologist workforce

Salary and job satisfaction

Critical Success Factors

- Data and clinical outcomes studies
  - From all practice settings (community, ED, inpatient, etc.)
  - Evaluation of multiple endpoints (clinical workflows, clinical decision making, avoiding unnecessary invasive procedures)
- End-user education
  - During implementation
  - Ongoing feedback
  - Guidance via cell phone app, pocket cards, EMR, etc.
- Clinical workflows may need to be re-designed to maximize the impact of rapid diagnostic tests
- Mechanisms for ongoing evaluation of performance characteristics of fast diagnostic methods
- Strong partnership between microbiology and antimicrobial stewardship program