

Role of the Clinical Microbiology Laboratory in Antimicrobial Stewardship

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KEYWORDS

- Antimicrobial stewardship • Microbiology • Rapid diagnosis
- Clinical laboratory techniques • Laboratory organization

KEY POINTS

- The microbiology department should be able to systematically select patients who will benefit from microbiological information and assigned proactively to a fast track protocol.
- The microbiology department should develop diagnostic routines for same-day reporting and implement rapid identification and antimicrobial susceptibility testing procedures for special patients and samples.
- The microbiology red phone is made up of a medical microbiologist and all the information the laboratory must make sure is reported to clinicians during the critical period of management.
- The microbiology department should put into practice the rapid reporting of results and create an alliance with clinical pharmacy and the antimicrobial stewardship committee to influence the adequate prescription of antibiotics.

INTRODUCTION

The support offered by a microbiology department to an antimicrobial stewardship program depends on the department's infrastructure and functioning. Among the factors that affect the contribution to the program of this department, are its capacity to offer its services 24 hours a day/7 days a week, the training of its members, and their

Disclosure statement: The authors have no conflict of interest to declare.

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Med Clin N Am ■ (2018) ■-■

<https://doi.org/10.1016/j.mcna.2018.05.003>

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knowledge of clinical issues. The success of any such program also depends on the receptiveness of responsible physicians to the information and advice offered by the microbiology staff throughout the day. There is, therefore, no universal formula applicable to all these departments. From the perspective of our general hospital with a 24-hour microbiology laboratory service, we describe the clinical competencies of our antimicrobial stewardship program, including what we believe is a feasible model at present. These contributions are reported as 10 action points that can be used as a guideline.

SYSTEMATIC SELECTION OF PATIENTS WHO WILL ESPECIALLY BENEFIT FROM MICROBIOLOGICAL INFORMATION AND WILL BE PROACTIVELY ASSIGNED BY THE MICROBIOLOGIST TO A FAST TRACK PROTOCOL

All clinical samples submitted to the laboratory cannot be given the same priority or diagnostic preference. This means that the laboratory itself needs to have the capacity to identify patients who will benefit from rapid proactive action. In our department, we have discussed what the best warning criteria might be for selecting patients who are likely to benefit from a fast track approach. Some of these criteria are listed in **Box 1**.

These patients should be assigned to a microbiologist guide, or better, to a multidisciplinary work group that will be in charge of managing all their samples, provide rapid diagnoses, and suggest possible procedures. This person or workgroup will inform the responsible physician of any diagnostic developments within the first 8 hours, both positive and negative. The workgroup described herein is called the microbiology red phone in our institution.

RAPID REPORTING OF POSITIVE AND NEGATIVE TEST RESULTS: MICROBIOLOGY RED PHONE

Communication with clinicians is essential¹ and a particular section of the laboratory should be responsible for providing such preferential information. We call this section the microbiology red phone. The section is made up of a medical microbiologist who coordinates all requests for rapid information from clinicians and all the information the laboratory must make sure is reported to clinicians during the critical period of management. Ideally, the section is functionally equipped with a pharmacy service representative and an infectious diseases physician.² Its work is carried out by telephone and it can also promote the consultations conducted at the bedside, alerting infectious

Box 1

Selection criteria for patients requiring a "fast track" microbiology laboratory approach

Patients should meet at least 1 of the following criteria:

1. Be hospitalized or pending hospitalization, have blood cultures requested and in process (negative until now), and have other samples sent that same day to the laboratory for diagnosis (eg, urine, respiratory samples, cerebrospinal fluid, usually sterile fluids, tissue samples, etc) on which it is possible to work with rapid techniques.
2. Be admitted to an intensive care unit.
3. Be admitted to a unit for transplanted, immunocompromised, or hematocology patients.
4. Be assigned to a fast track approach at the discretion of the responsible physicians or the infectious diseases department.
5. Patients with sepsis alert.

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