

Case study

Utilizing the Thermo Scientific Sensititre System to face the challenge of Gram negative MDRO susceptibility testing

Interview with Dr. Jean-Winoc Decousser, MCU-PH, Laboratoire de Microbiologie-Hygiène, CHU Henri Mondor, Créteil, France.

Background

Laboratoire de Microbiologie-Hygiène, CHU Henri Mondor

Henri Mondor Hospitals, located near Paris, is a group of five hospitals in the Assistance Publique Hôpitaux de Paris (AP-HP) group. This includes medical, surgery and clinical hematology wards, transplantation activities and intensive care units with a total of 3,000 beds for both national and international patients.

The microbiology laboratory has implemented a global policy for antimicrobial stewardship from prevention to diagnostics and treatment. Close relationships are maintained between the laboratory and the clinical wards, with some infectious diseases specialists working in the laboratory with direct access to physicians in wards.

The laboratory processes 50 antimicrobial susceptibility tests per day, 7 days per week, following SFM-EUCAST guidelines, which are a close variation of EUCAST. Methods used for Antimicrobial Susceptibility Testing (AST) are disc diffusion (Bio-Rad), MicroScan™ WalkAway™ (Beckman Coulter) and Etest™ (bioMérieux). The choice of the method used depends upon the nature of the microorganism and/or the localization of the infection. Additionally, some rapid tests may be used for identification or detection of resistance genes like MecA, for example.

The evolving MDRO challenges facing microbiologists

EUCAST has recently issued several warnings concerning the lack of reliability of different methods for colistin and piperacillin-tazobactam, antibiotics that are potential alternative treatments for multi-drug resistant organisms (MDROs). Additionally, it becomes crucial for the lab to be able to give susceptibility results for the newest drugs like ceftazidime-avibactam, for example.

Dr. Decousser's objective was to provide clinicians with an accurate and extensive evaluation of minimum inhibitory concentrations (MICs) utilizing the most reliable methodology, broth microdilution, via the Sensititre System. This is why he, along with other French experts, designed a plate to solve their problems.

The Sensititre System

Thermo Fisher Scientific is the only supplier that can provide a custom-designed broth microdilution plate with the exact combination and dilution of antibiotics required by the laboratory, in a timely manner.

Prior to implementing the Sensititre System at Henri Mondor Hospitals, the microbiology laboratory would utilize several different techniques to assess the susceptibility of multi-drug resistant organisms. These techniques included the process of freezing-defreezing cycles and sub-culturing strains, which led to delays in reporting results up to one week, questionable results due to freeze-defreeze cycles, and unnecessary work generated from a complex testing workflow.

“Now we are able to provide an overall view of the susceptibility to antibiotics for one strain quickly, in one shot, and with a method highly correlated to the reference method. This includes alternative treatments, using the same inoculum, at the same time and with the same methodology,” says Dr. Decousser.

The Sensititre plate has now been implemented for routine AST and is used 7 days per week. The plate has proven to be of value in the following situations:

- Carbapenemase-producers, where the level of resistance is important (MIC for carbapenem, for example) to check if it is possible to treat in synergy with other antibiotics or not, and to get the MIC for alternative options.
- *Pseudomonas* and *Acinetobacter* can be problematic microorganisms that show some technical problems with disc diffusion and automated systems, and are sometimes multi-resistant, as well.
- Atypical strain patterns from patients in intensive care, as these patients are fragile and need to receive the right treatment very quickly.

- ESBL-producers, to avoid the unnecessary use of carbapenems as part of patient treatment and to have an accurate view of the susceptibility, including alternative treatment options.



“We are so pleased with our Gram negative plate that we may now consider a plate for Gram positive organisms,” concludes Dr. Decousser.

The Sensititre System has allowed the microbiological laboratory of Henri Mondor Hospital to improve their workflow, fulfill clinicians' needs with accurate MIC results highly correlated with the reference method, provide a global overview of all alternative therapeutic options and finally, improve the patient outcome.

Find out more at [thermofisher.com/AST](https://www.thermofisher.com/AST)

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