

S087

2-hour Symposium

State-of-the-art in rapid diagnostics

Rapid testing for bacterial infections

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Rapid detection of bacterial pathogens and their antibiotic resistance profile is often of great importance for rational clinical management and successful infection control. Gram staining, culture and subsequent identification and sensitivity testing still represent a golden standard in clinical bacteriology. Bacterial antigen tests (BATs) are rapid but do not offer substantial benefit over Gram stain for detection of common pathogens in primarily sterile body fluids. Urine antigen tests are commonly used to diagnose invasive pneumococcal and legionella disease. Group A streptococcus antigen test is used with different impact on antibiotic prescribing in different settings. Molecular methods were first used for detection of difficult or take long time to culture bacteria such as *Mycobacterium tuberculosis*, *Bordetella pertussis*, atypical respiratory pathogens and *Chlamydia trachomatis*. Initially labour intensive nucleic acid amplification techniques (NAATs) have evolved to real time PCR (rtPCR), loop-mediated amplification (LAMP) and some other isothermal technologies. Today molecular diagnostics (MDx) market is growing fast and a few automated platforms using NAATs are commercially available for near or point of care testing. MDx tests are moving away from pathogen specific tests towards syndrome specific tests detecting several pathogens and/or resistance determinants simultaneously. While conventional whole genome sequencing (WGS) is based on targeted requests, next generation sequencing (NGS) methods can sequence all genomic material present in the sample with high sensitivity. Transition from proof of concept to widespread clinical implementation of WGS and NGS still faces many infrastructure and bioinformatic challenges. Even if these platforms become more affordable in the future a challenge to distinguish between bacterial colonization and infection will be even bigger than with the culturing methods.