2125. Staphylococcus Species Identification by Fourier Transform Infrared (FTIR) Spectroscopic Techniques: A Cross-Lab Study
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Background. Staphylococcus aureus is well known to be associated with toxic dermatitis. Recent studies also report S. aureus presence in lesional skin of sequeous cell carcinoma (SCC) and its precursor lesion, acinic keratosis (AK). Therefore, it is of potential clinical interest to monitor S. aureus colonization on AK lesions. Fourier transform infrared (FTIR) spectroscopy is a cost-effective, nondestructive, and reagent-free technique for rapid microbial identification. It is based on the use of spectral databases developed with well-characterized strains in conjunction with the application of multivariate statistical analysis to elaborate classification models. In the present cross-lab study, spectral databases containing FTIR spectra of over 1000 staphylococcal isolates obtained from reference and clinical microbiology laboratories across Canada were employed in the FTIR spectroscopic identification of Staphylococcus spp. isolated from AK, SCC and non-lesional skin of patients at the Princess Alexandra Hospital Dermatology Clinic in Brisbane, Australia.

Methods. FTIR spectra of 51 staphylococcal isolates from AK, SCC and non-lesional skin were acquired by both attenuated total reflectance (ATR)-FTIR and transmission-FTIR spectroscopy. All isolates had been previously characterized by 16S rRNA sequencing. ATR- and transmission-FTIR spectra were recorded in triplicate from isolated colonies taken from the same agar plate. Identification of the bacteria was based on the similarities of their spectra with those in ATR- and transmission-FTIR spectral databases originating from the Canadian lab.

Results. Among the 51 staphylococcal isolates included in this study, identification of S. aureus (n = 24) with 100% specificity and 100% sensitivity was achieved by both ATR- and transmission-FTIR spectroscopy. Overall, FTIR-based species identification was in 90.2% concordance with 16S rRNA sequencing.

Conclusion. This cross-lab study demonstrates the applicability of Canadian isolate-based ATR- and transmission-FTIR spectral databases for the identification of clinical staphylococcal isolates obtained in Australia. The results support the potential utility of FTIR spectroscopic techniques to monitor skin S. aureus colonization on AK lesions.

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2126. Comparison of Time to Appropriate Antibiotic Between Using Microarray Assay and Mass Spectrometry Technique for Identification of Positive Blood Cultures
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Background. Microarray-based, multiplexed, automated molecular method is a rapid diagnosis of bloodstream infections by directly identify bacterial pathogens and antibiotic resistance genes from positive blood culture. Previous studies showed significantly reduce time to organism identification from positive blood culture and antibiotic resistance gene with 97.1% sensitivity and 100% specificity. This study aimed to evaluate time to appropriate antibiotic between using Microarray Assay and Mass Spectrometry technique for bacterial identification.

Methods. One hundred and forty-five patients with bloodstream infection in medical ward were enrolled between 1 June 2018 and 31 January 2019. There were 2 study periods (pre-intervention and post-intervention), using MALDI-TOF method in pre-intervention group (N = 70) and microarray technique was used add-on to post-intervention group (N = 75). Antibiotic therapy was adjusted by infectious disease team in both periods of study.

Results. The time for significantly faster bacterial identification and detection of antibiotic resistance (39.34 hours vs. 5 hours, P = 0.0001) as well as time to adjust specific antibiotic therapy (75 hours vs. 27.65 hours, P = 0.0001) resulted in earlier appropriate antibiotic therapy (31 hours vs. 0 hours, P = 0.005) and decrease unnecessary of antibiotic adjustment (51.4% vs. 37.3%). However, all-cause mortality within 2 weeks was not significantly reduced (11.4% vs. 14.7%), no differences cost of antibiotic therapy and length of hospital stay (13 days vs. 17 days).

Conclusion. Microarray technique has rapid turnaround time to bacterial identification and detection of some resistant genes. A combination of this technique and clinical judgement encourage earlier appropriateness antibiotic therapy and may be helpful in antibiotic stewardship program.

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2127. Parental Acceptance of Over-the-Counter (OTC) Testing for Streptococcal Pharyngitis
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Background. Group A Streptococcus (GAS), is currently diagnosed by throat culture or rapid antigen detection test (RADT) by a healthcare provider (HP), usually for children older than 4 years. There is current interest in expanding OTC diagnostics (FDA approved for HIV and hepatitis C) to other infectious diseases such as GAS pharyngitis. There are no data on parental acceptance of such a test. Our aim was to determine parental acceptance of expanding OTC diagnostic availability for GAS pharyngitis.

Methods. Caregivers of 3-18 years old in OP primary care pediatric clinics were given a questionnaire: data included demographics (excluding all patient identifiers), interest in buying an OTC GAS test, education level, type of health insurance (HI), comfort level swabbing their child, interest in available support/free hotline with AK lesions. Fourier transform infrared (FTIR) spectroscopy is a cost-effective, nondestructive, and reagent-free technique for rapid microbial identification. It is based on the use of spectral databases developed with well-characterized strains and positive blood culture and antibiotic resistance gene with 97.1% sensitivity and 100% specificity. This study aimed to evaluate time to appropriate antibiotic between using Microarray Assay and Mass Spectrometry technique for bacterial identification.

Results. Six articles met the criteria of symptomatic pregnant murine typhus in published between 1990 and 2019. Three of the articles were case reports, and two were observational studies. There was a statistically significant association between interest in buying an OTC GAS test and age (P = 0.067). There was a statistically significant association between interest in buying an OTC GAS test and the following variables: high self-swab comfort level and availability of support (P = 0.009 and 0.001, respectively). The majority of participants (73/76 (96%)) did not respond to questions about acceptable pricing.

Conclusion. There was mixed interest in OTC GAS testing among respondents. Neither age nor educational level affected interest. Surprisingly, 96% of respondents declined to select a price they would pay for an OTC GAS test. Greater interest in OTC GAS testing among respondents with private HI suggests those parents are more likely to purchase the kits to avoid an HP visit (and co-payment). Since most respondents were comfortable self-swabbing or unsure, further education including web tutorial and support availability may lead to greater comfort level with such testing.

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was favorable, except in an Asian cohort reporting 6 patients with poor pregnancy outcomes.

**Conclusion.** The lack of data about murine typhus in pregnancy is of serious concern. Increase awareness of different presentations is needed in this population. Murine typhus infection can mimic other pregnancy-related pathologies that have very different treatments and outcomes. More data are needed about effective treatment and safety of doxycycline use during pregnancy.

**Table 1** - Results of phenotypic and genotypic testing

| Test                | Result | Result | Result | Result | Result | Result |
|---------------------|--------|--------|--------|--------|--------|--------|
| Baby 1              |        |        |        |        |        |        |
| CEPH Test (10 µL)   |        |        |        |        |        |        |
| Oxacillin < 0.25    | S      | S      | S      | S      | S      | S      |
| Oxacillin E Test    |        |        |        |        |        |        |
| MV With 29 BAC      | 0.25   | 0.19   | 0.5    | 0.25   | 0.25   | 0.25   |
| Cefoxitin Disc (10µL) | S      | S      | S      | S      | S      | S      |
| Cefoxitin Disc (1µL) | S      | S      | S      | S      | S      | S      |

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2130. Detection of Carbapenemase-Producing Organisms and Impact on Antimicrobial Utilization for Carbapenem-Resistant Enterobacteriaceae (CRE) Infections

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**Background.** CREs are feared pathogens with resistance occurring through the production of carbapenemases. Identification of carbapenemase-producing (CP) organisms assists with proper antimicrobial selection of commonly used agents, such as ceftazidime/avibactam (CA), meropenem/vaborbactam (MV), and tigecycline (TG). AdventHealth Orlando implemented a CRE screening method based on meropenem (MER) and a confirmatory CRE PCR testing in March 2018. Prior to implementing this test, patients were deemed to have CRE infections (CREI) if the organism demonstrated resistance to any carbapenem. The objective of this study was to evaluate the impact of this testing on the utilization of anti-CRE antibiotics.

**Methods.** This was a retrospective pre (March 2017–February 2018) and post (March 2018–February 2019) implementation study examining the impact of CRE PCR testing. Outcomes included the number of antibiotic days saved, average duration of therapy (DOT), median length of stay (LOS), and change in CP-CRE prevalence. The intervention consisted of the implementation of CRE PCR testing and included inpatients > 18 years old who received either CA, MV, or TG for the treatment of a CREI.

**Results.** Post-implementation, 30 unique patients were identified as having a positive K. pneumoniae carbapenemase gene by PCR, indicating a CP-CRE and received CA, MV, or TG; whereas, 42 patients in the pre-implementation group had a CREI and received CA, MV, or TG. Testing to identify CP-CREs led to a 50% reduction in the number of antibiotic days for CA, MV, and TG (575 vs. 287 days, P < 0.0001). Additionally, the average DOT decreased by 2.5 days in the post-implementation group (10.5 days vs. 8 days, P = 0.18) along with a 3.5-day shorter median LOS (15 days vs. 11.5 days, P = 0.48). The CRE prevalence based on resistance only to MER was 21.4% in the pre-implementation period and 32.7% in the post-implementation period.

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