How Modern is your Microbiology Laboratory? Results of the 2017 Institute for Quality Management in Healthcare (IQMH) Patterns of Practice Survey

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The objective of this study was to summarize the adoption of new technologies amongst microbiology laboratories participating in IQMH proficiency programs and to summarize post-implementation quality indicators.
Methods

- In June 2017, a web-based patterns-of-practice qualitative survey was sent by the IQMH Centre for Proficiency Testing to all 73 participating microbiology laboratories [all licensed Ontario laboratories (majority) and voluntary non-Ontario laboratories] to assess the adoption of novel technologies

- Primary question addressed adoption of technologies
- Secondary questions addressed rationale for adoption and post implementation outcome measures
69 of the 73 (94.5%) laboratories to whom the survey was sent responded.
Results

Laboratories with dedicated methods evaluation staff

![Bar chart showing percentage of laboratories with dedicated methods evaluation staff across different types of facilities. University Hospital has the highest percentage, followed by Community Hospital, and Non-Hospital based facilities have the lowest percentage.](chart.png)
Results

Adoption of MALDI-TOF

• 30% of all laboratories reported implementing MALDI-TOF

• Post implementation improvements:
  – turn-around-time
  – time to appropriate treatment
  – costs
Results

Adoption of MALDI-TOF

Applications of MALDI-TOF

- University Hospital
- Community Hospital
- Non-Hospital based

- Routine bacteria
- Yeast
- Mycobacteria
- Bioterrorism agents
- Epidemiology
- Resistance detection
- Filamentous fungi
Results

- 14% of laboratories adopted automated specimen processors (37.5% univ., 10% com., 18% non-hosp labs), but only 4% implemented TLA

- Post implementation improvements:
  - turn-around-time
  - error rates
  - costs
Results

- 7% of laboratories implemented syndromic (either respiratory, gastrointestinal, or meningoencephalitis) multiplex testing

- Post implementation improvements:
  - turn-around-time
  - diagnostic yield
A. Weekday Service

University Laboratories

Community Laboratories

Non-hospital Laboratories

Non-hospital Laboratories
Weekend Service

University Laboratories

Community Laboratories

Non-hospital Laboratories

- STATS only % of Labs
- Limited Service % of Labs
- Full Service % of Labs
- On Call Available % of Labs
- Any Service Available
Weekend Service

University Laboratories

Community Laboratories

Non-hospital Laboratories

- STATS only % of Labs
- Limited Service % of Labs
- Full Service % of Labs
- On Call Available % of Labs
- Any Service Available
Results

Top five tests performed during limited service

![Bar chart showing the percentage of tests for different categories: Sterile fluids/tissues, Blood cultures, CSF, STAT Gram stain, and Serology. Blood cultures have the highest percentage, followed by CSF, STAT Gram stain, and Serology with the lowest.]
Conclusions

1. Adoption of new technologies vary between lab types
2. Notable discrepancies were seen in:
   – dedicated methods evaluation technologists^
     ^potentially limiting update of new technologies
   – provision of full evening and weekend service*
     *potentially limiting full benefit of rapid TAT tests
3. Laboratories should reflect on these discrepancies
4. These data may be helpful benchmarks for future business cases
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