Fake News! Regionalization is not the Enemy of Diagnostic Microbiology

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- I have no financial disclosures
Objectives

• Discuss the regionalization and governance model of the Eastern Ontario Regional Laboratory Association (EORLA)

• Identify key components for the successful regionalization of microbiology services

• Tabulate the successes, benefits and irritants of working in a centralized microbiology laboratory

• I will not:
  • Review or debate the pros or cons of regionalization of laboratory services
  • Promote EORLA as the model to follow
Regionalization

• Not new, has been happening in one form or another for years

• In Ontario:
  • Number of licensed/accredited Microbiology laboratories participating in IQMH EQA bacteriology surveys has been going down:
    • 2015 – 2016: 73 participants
    • 2016 – 2017: 67 participants*
    • 2017 – 2018: 63 participants
    • 2018 – 2019: 60 participants
    • * 3 of the 6 labs were transfers to EORLA
Motivation for Regionalization

• The initial motivation for regionalization of lab services was to improve quality for all patients across the region. However, quickly became financial and is primary driver

• But for many EORLA members there were other considerations:
  • Staff retention – retirements and inability to recruit, loss of quality of service, loss of experience, poor training
  • Physical facility – Human Pathogens and Toxin Regulation, no space, lack of resources to maintain equipment, unsafe environment
  • Labs occupying space intended for other uses i.e negative pressure rooms for bronchoscopies
What is EORLA?

- Delivers a Regional Laboratory Service
- 16 acute and community Hospitals of the Champlain Local Health Integration Network (LHIN)
- Public not for profit
- Board of Governors
- Fee for service

17,714 km², population 1.3 million
What is EORLA?

• Administration:
  • CEO, VP ops, CFO, VP HR, Regional, site and divisional managers
• Med/Sci:
  • Medical Scientific Head
  • Each site has a Laboratory Director
  • Divisions: Regional Division Lead, Site Specific Leads
  • Med/Sci staff
What is EORLA?

• The reference labs
  • Bacteriology, mycology and mycobacteriology located at The Ottawa Hospital (TOH) site (General Campus)
  • Regional Virology Laboratory located at CHEO

• Microbiology:
  • All microbiology across Eastern Ontario is performed at the Regional Microbiology Referral laboratory
  • Provides 24 hours, 7 days a week service
  • Reading benches operate between 07h00 and 11h30
  • Serve approximately 3000 beds
  • Process ~ 320,000 specimens/ year – 97000 urines
Early 2000: Regionalization discussions begin

2004: Approval of final Regionalization plan (MOHLTC)

2010-2011: TOH Model developed

2011-2012: EORLA created Regionalization of Winchester, HGH, Barry’s Bay

2012-2013: Regionalization of Glengarry and Cornwall

2014-2015: Regionalization of Pembroke, Deep River, Renfrew

2016-2017: Regionalization of CHEO, Montfort, QCH and valley labs (Almonte, Kemptville, Arnprior, Carleton place)
Process of Regionalization

- In 2004 Regional Discipline Working Groups (DSWG) were created to define the process of regionalization of services across Eastern Ontario.

- Micro DSWG:
  - Med/Sci, lab managers, seniors/supervisors, technologist
  - Look at practices across the regions & standardize
    - Organism dictionaries for LIS builds, SOPs, reporting, antibiograms

- With regionalization changed to Regional Discipline Groups
  - Focus changed from standardization of protocols to QM
Transportation Times

• Transportation schedules based on site location, patient population, size, volumes, peak specimen delivery

• Within city limits:
  • Weekdays 8am to 20h00 – couriers approximately every 2 hours, one evening and one night courier (03h45)
  • Weekend 8 to 22h00 – reduced schedule, transport ranges from 3 to 12 hours

• Outside city limits:
  • 1 to 3 transports on weekdays
  • 1 to 2 transports on weekends
Special Considerations

- What about critical samples, STATs…?
  - If the sample is received within ½ hour of the next scheduled run, it is packaged and sent.
  - If it can’t be sent on the next courier within ½ hour, sample sent by STAT courier or Taxi.
Process of Regionalization

• The worst part was interfacing LIS – IT is the dark side

• Communication is central
  • Facilitates regionalization of services
  • Changes and process communicated to MACs and Chief’s of staff
  • Engage ICP and other key stake holders in the process
  • Communicate and keep staff informed
Continuing Quality Management

- Board mandated KPIs have limited value for QM programs

- Microbiology QM monitors level of service and quality
  - Audits
  - Non-conformance program – monitor, assess and determine the impact on patient care
  - Risk assessments, Root cause analysis
  - Feedback & recommendations are provided to the members and EORLA operation
• Although distance impacts transportation times, timing and frequency of transportation had a greater impact on delayed entry.

• Need to reassess how samples are transported

• Valuable information but little support from operations to perform in-depth audits
What About Lab Automation?

- In January 2016 expected to have a 44 to 48% increase in sample volume:
  - Could not change location, crowded – safety concerns, insufficient capacity

- How to accommodate increase in volume without changing the lab’s footprint?
  - Automation – Kisterra Total Lab Automation (TLA)
  - Doesn’t matter what system you choose
TLA

• ReadA browser and the TLA (double track) improved workflows and benches are now more efficient
  • Reduced incubation times
  • Benches are clean & uncluttered
  • All cultures are on one screen
  • Reader-worker model
BUT!!!! Key lessons

• Don’t believe the return on investment promised for automated TLA systems
  • Will be creating new job descriptions – runners, key users

• Change management: staff were apprehensive of going from traditional micro to reading plates off of a screen and changes to reading benches

• Expect it will take at least 14 to 18 months to stabilize the system
Financial control:

2015

94.6 FTE

PLAN

post live

78.7

2016

87.9 FTE

Actual

Full Plan Aug YTD

76.4 FTE
The Bad – not all a bed of roses

• Changes are a challenge i.e transportation schedule, new test (scope)
• Academia suffers: Community hospitals vs Academic centers
• The lab staff at client sites no longer see Micro as a priority
• EORLA is very operationally driven – where’s the patient?
  • When is big too big?
The Good - It’s not all bad

- Regionalization allowed investments in state of the art technologies
- Automated incubators - reduced incubation times, faster TAT, AST
- MALDI (smudge plates), Molecular dx – direct mecA/C/nuc/16s detection, 16s, CPO PCR, PJP PCR...

- 24/7 service, available Microbiologist, standardized antibiogram...

- Even academic teaching benefits – diverse Microbiology, exposed to the community hospital environment, developing new strategies for teaching – exploiting digital Microbiology
Conclusion

• Delays are unavoidable, transportation is key and IT will ruin everything

• Automation (TLA, molecular, MALDI...) can mitigate delays but only to a certain extent

• Despite initial problems overall the outcome is a positive one

• There has been an improvement in Microbiology services

• Communication, flexibility and collaboration are key to the success

• Can we consider EORLA a success: Still too early to say but moving in the right direction
Blood Culture TAT

• Looked at 69657 blood culture bottles collected from June 2017 to July 2018
  • Of these there were 10535 positive bottles

• Looked at time from collection to loading in instrument and time from collection to detection of positive

• General Campus was the gold standard
Median time to loading (Hrs) as a function of distance (km)