



Cytopathology Practice Patterns: A decade in review

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Presentation Objectives

- Describe general trends in specimen types, volumes and distribution of cases in Ontario Cytopathology laboratories
- Describe changes in the cytotechnologist workforce over the last decade
- Newer technologies (immunocytochemistry, molecular)

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Institute for Quality Management in Healthcare (IQMH)

- IQMH is a not-for-profit corporation with over 40 years of history and offers proficiency testing, accreditation and education services.
- Centre for PT offers 21 proficiency testing programs in 7 disciplines and includes:
 - Clinical or simulated clinical sample challenges
 - Web-based surveys including scanned/digital images
 - Consensus practice recommendations and guidelines
 - Patterns-of-practice surveys

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Cytopathology Patterns-of-Practice Surveys

- Issued every two years
- Gather information about cytopathology practice and assess general trends in the discipline
 - Specimen volumes
 - Processing methods
 - Distribution of cases
 - Quality assurance
 - Workforce

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Cytopathology Patterns-of-Practice Surveys

Due to the variability in practice patterns noted, often the data is analyzed in two separate groups:

- **Community laboratories** – private laboratories not affiliated with a hospital
- **Hospital laboratories** – those laboratories contained within or affiliated with a hospital

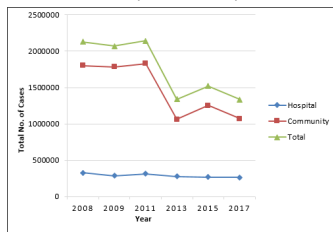
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Cytopathology Testing Across Ontario

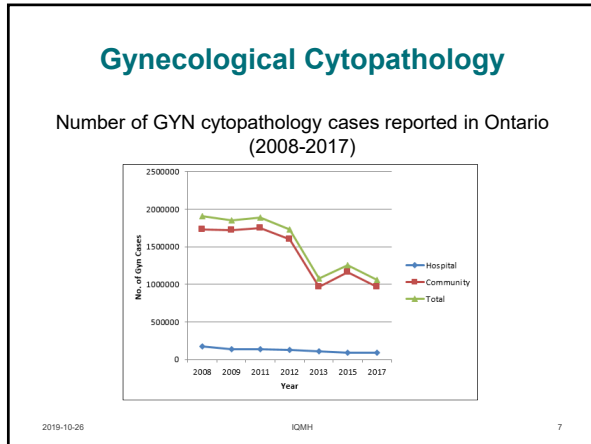
Total number of cytopathology cases reported in Ontario (2008-2017)



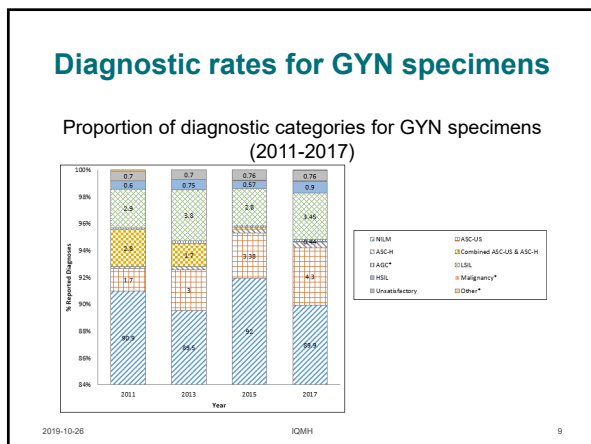
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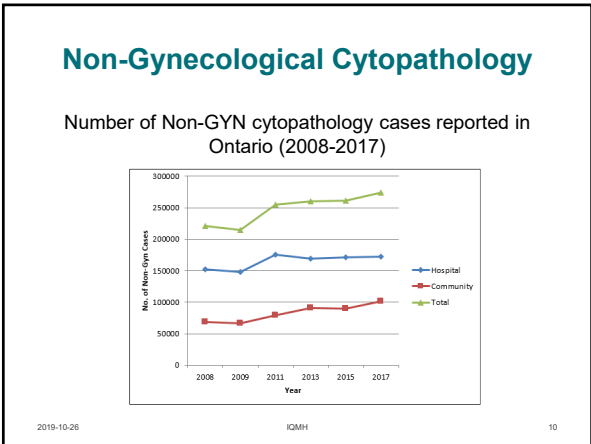
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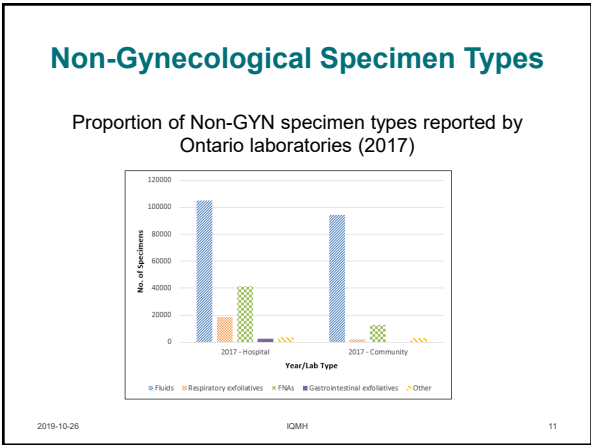
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- ### Gynecological Preparation Types
- L713 Conventional – 29 Ontario laboratories are licensed; 1134 cases (0.1% of total GYN volume) reported out in 2017; 20 labs reported out 0 in 2017
 - L733 Monolayer cell methodology – 36 Ontario laboratories are licensed; all laboratories reported using ThinPrep® or SurePath™ (with 2 labs reporting they use both)
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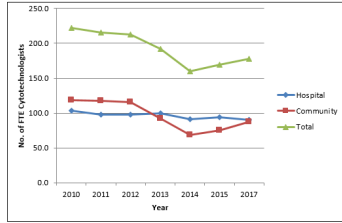
Cytotechnologist Workforce

- IQMH started collecting workforce data in 2010
- 2010: 222.5 FTE cytotechnologists were reported in Ontario laboratories
 - 118.9 in community laboratories
 - 103.6 in hospital laboratories
- 2017: 177.96 FTE cytotechnologists were reported in Ontario laboratories
 - 87.46 in community laboratories
 - 90.5 in hospital laboratories

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Cytotechnologist Workforce

FTE Cytotechnologists – Hospital and Community Laboratories (2010-2017)



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Cytotechnologists – Other Duties

Hospital Laboratories	Community Laboratories
Education of trainees	Education of trainees
Quality assurance	Quality assurance
Administration	Administration
Grossing specimens	Grossing specimens
LIS	LIS
Cytopreparation	
ROSE	
Histopathology duties	
Immunohistochemistry/ immunocytochemistry	

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New Technologies

1. Immunocytochemistry
2. Molecular testing on Cytopathology specimens

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Immunocytochemistry

- In 2017:
 - 98% of hospital laboratories offer immunocytochemistry on cytopathology specimens; 31 (78%) hospital laboratories perform the test on site
 - 50% of community laboratories offer immunocytochemistry on cytopathology specimens; no community laboratories perform the test on site

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Preparations Provided for Immunocytochemistry

- The most common preparation types provided for ICC testing are:
 - Formalin fixed cell blocks
 - Cytolyt fixed cell blocks

More uncommonly, laboratories sent residual ThinPrep® material, cell blocks of other fixation methods and other samples including direct smears, cytospin and fragments of cytology specimens

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Immunocytochemistry Testing

- Class I – interpreted in the context of histo/ cytomorphological features and clinical data
- Class II – reported as a stand-alone result to a clinician for prognostic or predictive purposes
- Not performed by community laboratories
- Performed by subset of hospital laboratories

	Class I	Class II
Performed	20	4
Validated fully	2	3
Validated partially	11	0
Not validated	7	1

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Molecular Testing on Cytopathology Specimens

- Asked about non-GYN only
- In 2017:
 - Hospital laboratories – 34 have molecular testing available for cytopathology specimens with one performing it within their laboratory; six do not offer molecular testing
 - Community laboratories – two have molecular testing available for cytopathology specimens through referral to another organization; three do not offer molecular testing

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Molecular Tests Available

- EGFR (85%)
- ALK (77%)
- BRAF (85%)
- Other (77%); includes PDL1, T790M, HPV, lymphoma tests

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Preparations Provided for Molecular Testing

- The majority of laboratories provide cell blocks (formalin-fixed or alcohol-fixed) for molecular testing
- Slides or residual mixture in cytology preservative is rarely provided for molecular testing
- Adequacy is determined by either counting the number of tumour cells, providing % of tumour cells or other assessment method.

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Take Home Messages

- Landscape of GYN testing is changing according to screening guidelines; fewer patients but increased “abnormal” test results
- Non-GYN testing is increasing
- Cytotechnologist workforce is adapting to changing workloads by diversifying and transferring skills
- New testing technologies available which have the ability to enhance patient care

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THANK YOU!



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