TARRANT & The Role of The Lab

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Themes

- New Testing Algorithm
- Swabs & Transport Medium
- Update from CPHLN
- The Pandemic – role of the Sentinels

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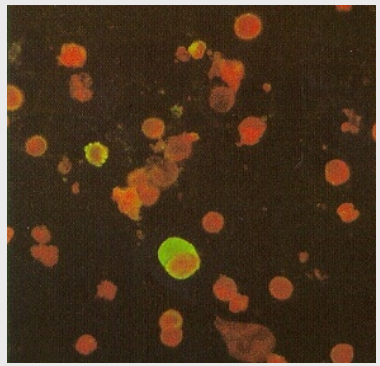
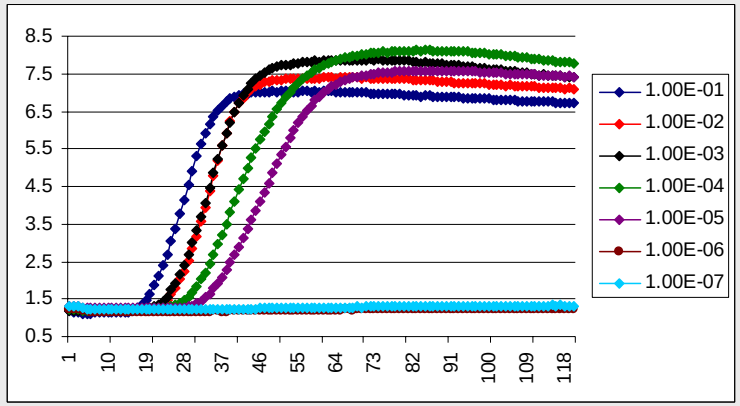
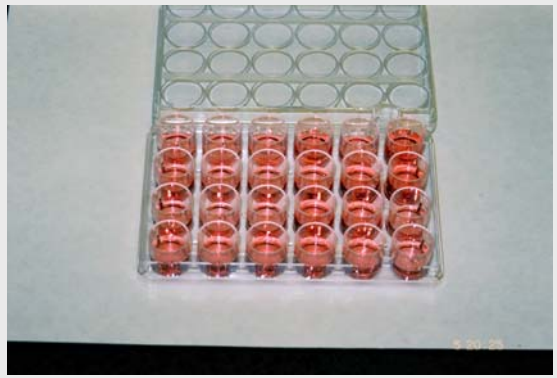
Lab Diagnosis

- Antigen Test (DFA)
- Molecular Assays
  - PCR
  - NASBA
- Viral Culture







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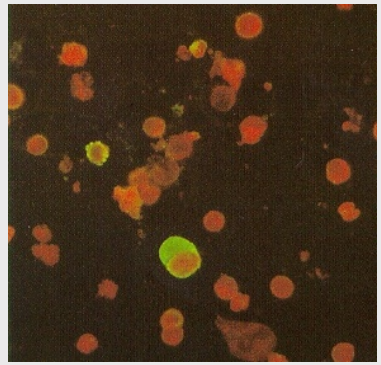
Usefulness of DFA vs Molecular for Screening Respiratory Agents

Virus	Sensitivity
Influenza A	(6/13) 46%
Influenza B	Not Sure (80%)
Parainfluenza gp	Not sure
RSV	Good
Adenovirus	ND
Human metapneumovirus	No Reagents



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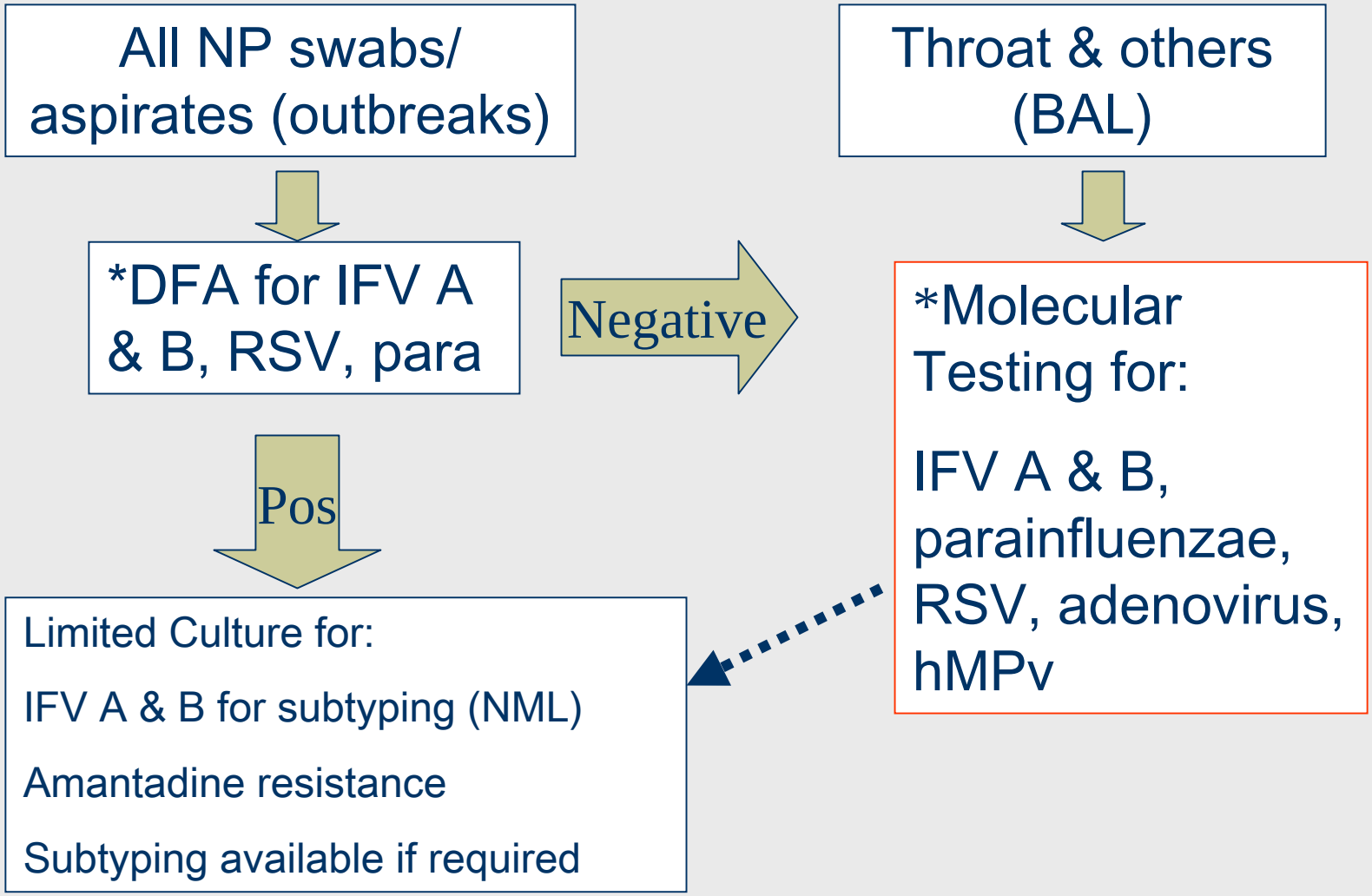
ProvLab Algorithm of Testing



*Copies of positive Influenza A & B patients are sent to MOH/designate for that Health Region

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Advantages of Molecular Testing

- Highly Sensitive
  - Detects many more “DFA negative” samples
  - Virus may be difficult to culture
  - Verify “False Positive DFA”
  - May be positive for longer
- Virus does not need to be viable
- May detect patient’s with lower viral load
- May be used with alternate sample types
- Identify other non or slow culturable viruses
- Research – use to determine oseltamivir resistance

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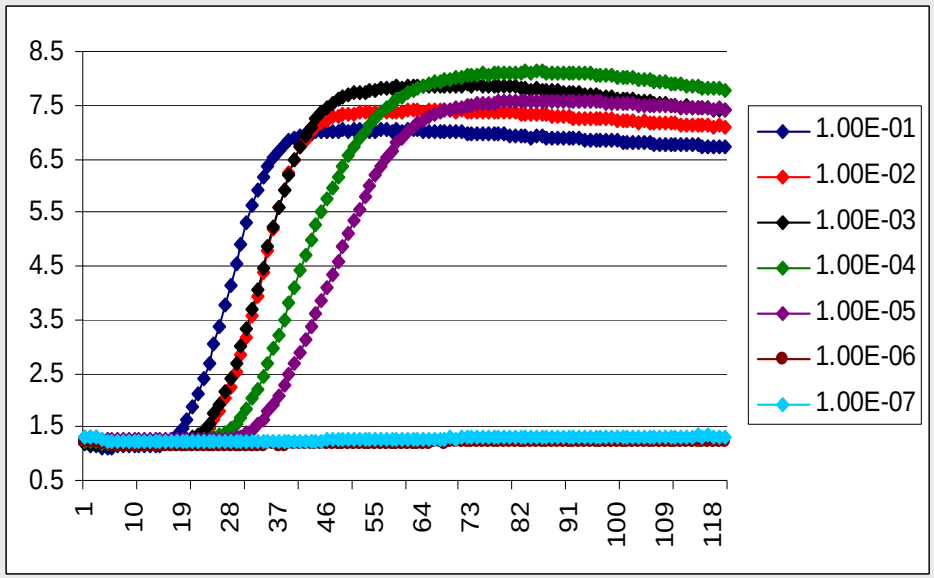
Molecular Assays

- **Subtyping** – sequencing
- **Antiviral resistance -** amantadine



Influenza A
Influenza B
RSV (A+B)
Parainfluenza 1
Parainfluenza 2
Parainfluenza 3
Parainfluenza 4a+4b
Metapneumovirus
Respiratory adenoviruses

SARS coronavirus
Enteroviruses
Rhinoviruses
Coronavirus 229E/OC43
Coronavirus NL63
(Human bocavirus)

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Comparison of viruses detected from last season to this season

	Aug 2004 to 2005	Sep 2005 to Mar 2006
Total samples	424	295
Total Pos	75 (17.7%)	87 (29.5%)

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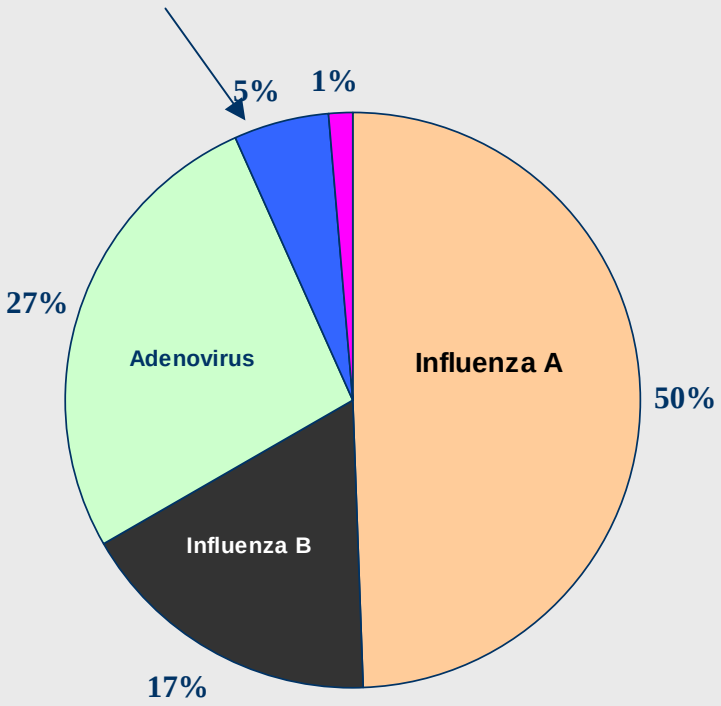
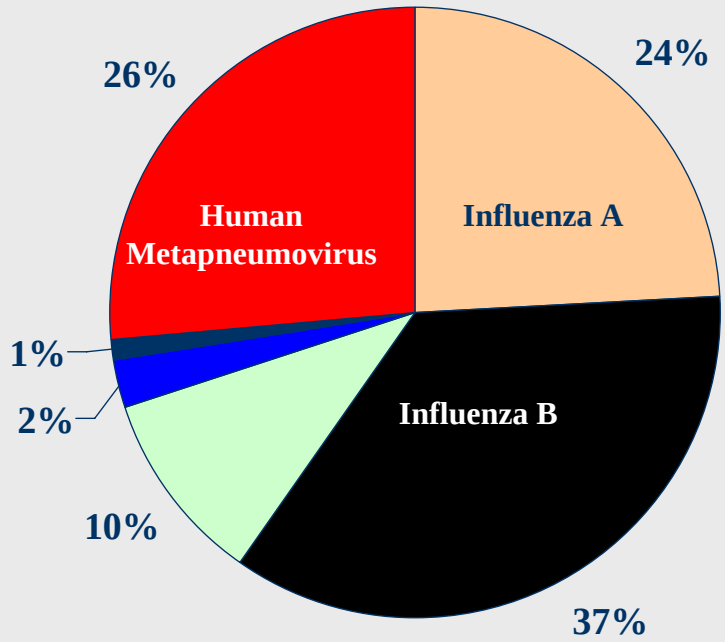
Distribution of viruses for each season



2004 to 2005



2005 to 2006

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Message

- Many more viruses out there !!
- Distribution could change with each Respiratory season
- Mixed infections with 2 or more viruses occur
- Molecular offers improved sensitivity

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Subtyping of Influenza

- First “flu” of the season
- First case from each Health Region
- Outbreaks
- Unusual clinical features – clinical history important !!
- Travellers – clinical history !!
- “Vaccine failures” – immunization history !!
- Age distribution

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Update:

New Viral Transport Medium & Swabs

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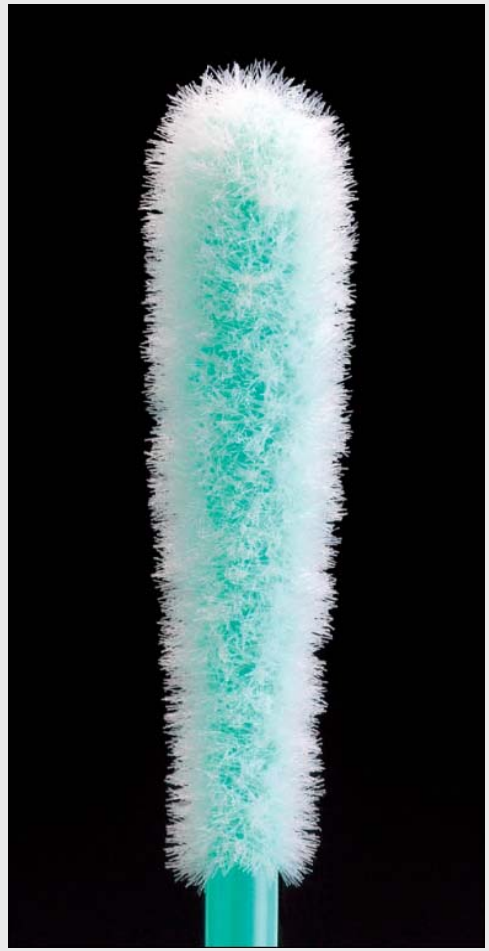
Swabs & Transport Medium

- Transition to use of Flock Swabs for **<u>nasopharyngeal samples</u>**



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Why Change ?

OLD	NEW (UTM)
Had to be stored in the fridge/freezer	Can be stored at room temp
Expiry 1 yr	Expiry 1 yr
Conical bottom	Flat bottom
Sample must be stored in fridge to maintain virus viability	?? Maybe can be sent at ambient temp !!

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Update from CPHLN

- CPHLN – Canadian Public Health Laboratory Network
- Goals:
  - Establish an inventory of influenza testing in Canada
  - Determine laboratory capacity
  - Review testing algorithms
  - Look at lab based surveillance to identify changes in the virus – emergence of new subtypes
  - Help each other during a crisis
  - Identify nodes of Reference Labs to assist the National lab
  - Self sufficiency of reagents in a Pandemic

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Role of TARRANT

- Surveillance for antiviral resistance in the community
- ? Value of Rapid influenza testing as a R/O
- ? Determine oseltamivir resistance

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	Phase	Characterized By	Laboratory Role
INTER-PANDEMIC	**Phase 1**	No new subtypes	Normal Surveillance
	Phase 2	No new subtype in humans but novel subtype in animals	Enhanced Surveillance
PANDEMIC ALERT	**Phase 3**	Human infections with novel subtype – but no person-to-person spread	Enhanced Surveillance
	Phase 4	Small clusters with limited person-to-person spread	Enhanced Surveillance
	Phase 5	Larger cluster(s) but still limited person-to-person spread	As above
PANDEMIC PERIOD	**Phase 6**	Increased and sustained transmission in population (including waves)	Primarily diagnostic testing

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Pandemic Influenza virus

- Is a novel subtype – no previous or low levels of immunity
- Same or higher levels of person-to-person transmission
- May be unusual clinical presentation
- Higher levels of mortality/morbidity
- Mortality may be associated with unusual age groups
- Will come as one or more waves (4 to 10 weeks duration – summer & winter)

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Role of TARRANT

- Detection of first pandemic influenza community cases
- Monitor for changes in the pandemic subtype
- Monitor for change to “seasonal subtype”
- Monitor for antiviral resistance
- ? Help with assessing effectiveness of pandemic vaccine

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Goals

- Strengthen surveillance/partnership
- Improve on data sampling from some regions
- Hear how changes in lab testing affect your practice

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Acknowledgements

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