



How Rapid Influenza Testing Reduces Patient Isolation Days

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Dr. Larissa M. Matukas, MD, FRCPC
Head, Division of Microbiology, St. Michael's Hospital
Medical Microbiology Consultant, St. Joseph's Health Centre
Assistant Professor, University of Toronto,
Department of Laboratory Medicine and Pathobiology

St. Michael's

Inspired Care. Inspiring Science.

Conflict of Interest

- none



Objectives

- 1) Describe the impact of rapid influenza diagnostic testing on managing isolation precautions

- 2) Highlight the roles of clinical microbiology and infection prevention and control for successful patient management interventions





Infection Control Practices

- Patients with febrile respiratory illness (FRI) require contact/droplet precautions until afebrile x 1 day
- Patients with suspected influenza require contact/droplet precautions x 5 days from symptom onset and until afebrile x 1 day
- Is there a test that has a high sensitivity to rule out disease with a faster TAT than our current batched molecular real time PCR?
- Could we improve patient flow and reduce isolation days during flu season?



e.g. Acute respiratory illness (ARI)
Influenza (Flu)

Proper attire must be worn



Influenza Season 2012-2013

- Division head away on mat leave
- During peak of epidemic, almost daily or at least weekly meetings to assess bed flow
 - Since patients stayed in isolation until results returned, bottleneck of patients in ER and on wards
- Pressure on IPAC to remove patients from isolation
- Lack of staff awareness of indications for testing
- TAT not clinically useful, testing was 2-3x/week, occasionally on weekends



Reduction in Total Patient Isolation Days with a Change in Influenza Testing Methodology

M.P Muller, S. Junaid, L.M. Matukas

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Cepheid GeneXpert[®]



- Initially purchased for the second step of our two step algorithm for *C. difficile* molecular detection
 - ~1-3 samples/day
- Random access, continuous testing
- Daily testing 7d/wk
- ~60-90 min per sample
- Minimal technical expertise required
- Located in microbiology
- NP swabs only
- \$\$\$ /test



Hypothesis

- Adoption of a fully automated influenza testing method that allows random access (as compared to a conventional RT-PCR method run in batches 3-5 times per week) will reduce TAT and reduce days in respiratory isolation
- Small increase in lab costs will lead to larger cost savings downstream



Methods



- **Design:** pretest-posttest study
- **Intervention:** change in testing methodology between 2012/13 and 2013/14 influenza seasons
 - RT-PCR using RealStar Influenza S&T RT-PCR kit 3.0
 - Xpert Flu Assay, Cepheid



Methods

- **Outcomes:**

1. Turnaround time (TAT)
2. Total mean daily inpatient isolation days and type of isolation (contact, contact/droplet, airborne)

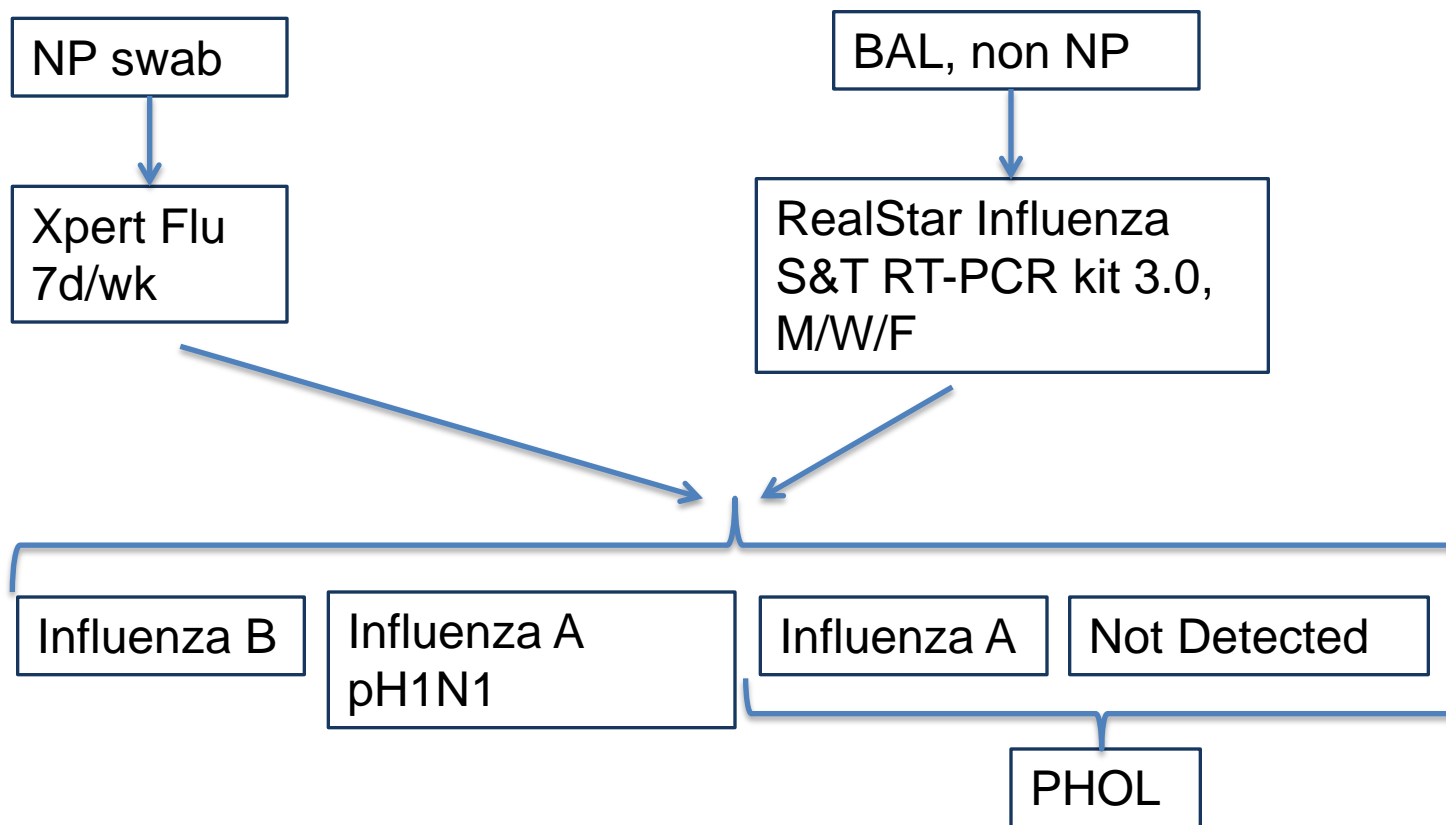
Isolation Day Tracking:

- All patients in isolation and the type of isolation (contact, contact/droplet, airborne) is recorded on a daily census (weekdays)
- Daily data is entered into a database for tracking and analysis



Methods

- Testing algorithm:



Estimated Sensitivity and Specificity

	Sensitivity	Specificity
Xpert Flu Cepheid	84%*	100%
RealStar Influenza S&T RT-PCR kit 3.0	94%	100%

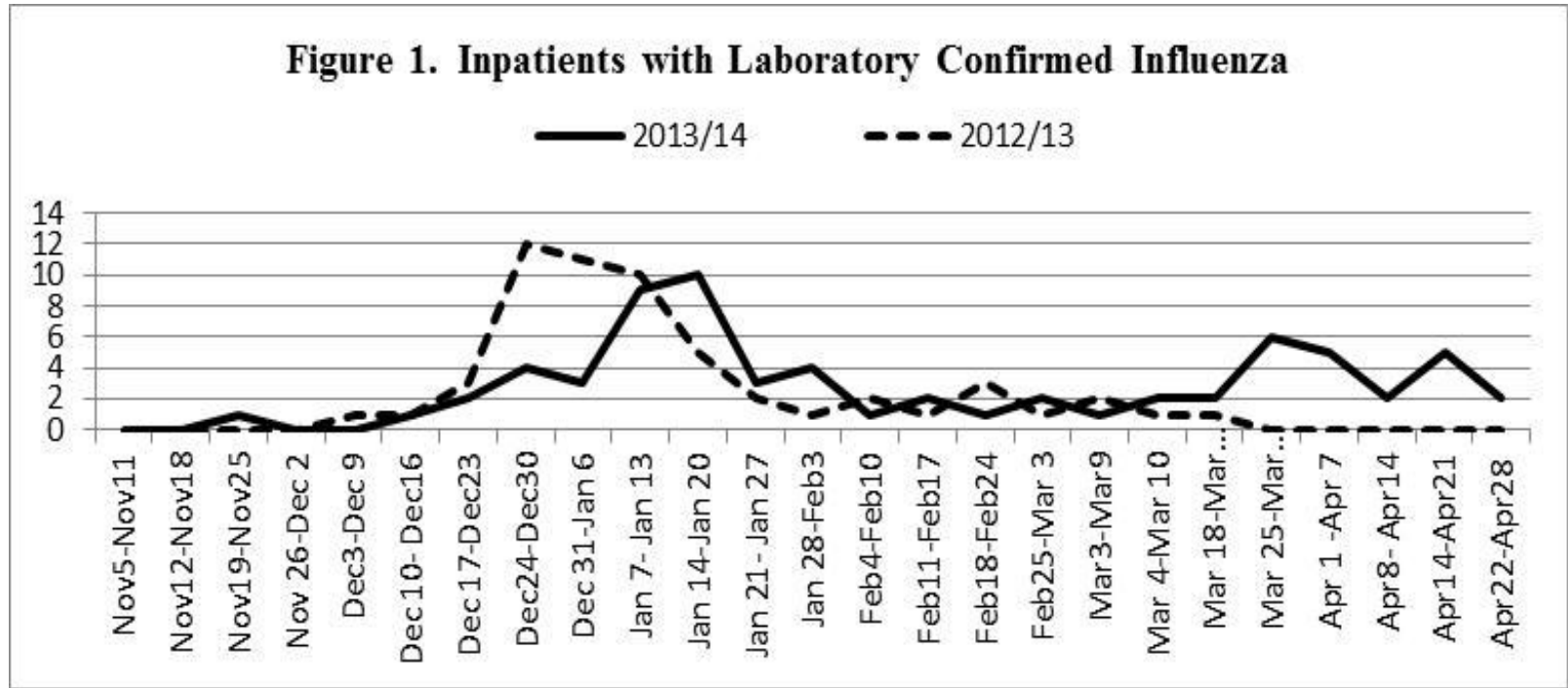
*lower than expected

No documented nosocomial transmission

- patients remained in precautions until afebrile x24hrs
- discrepancies more likely when viral burden was low



Results

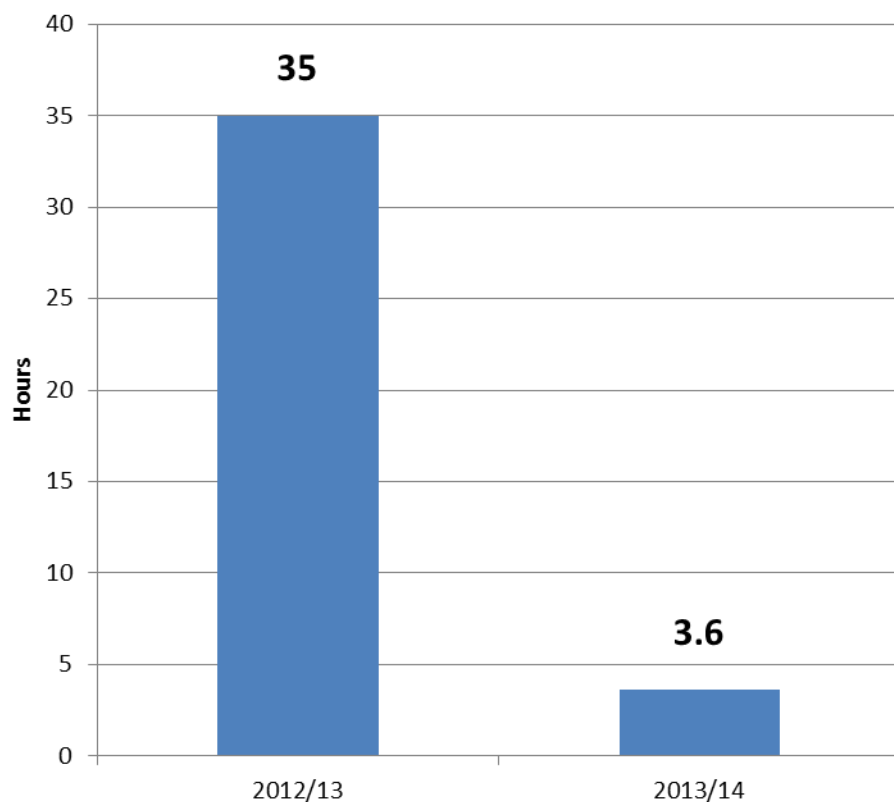


- Total laboratory confirmed cases were 57 (2012/13) and 68 (2013/14)
- Total patient days were similar in both years (66,308 vs. 66,366)

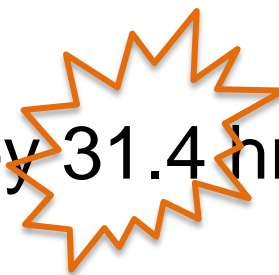


Results

Turnaround Time for Influenza Testing



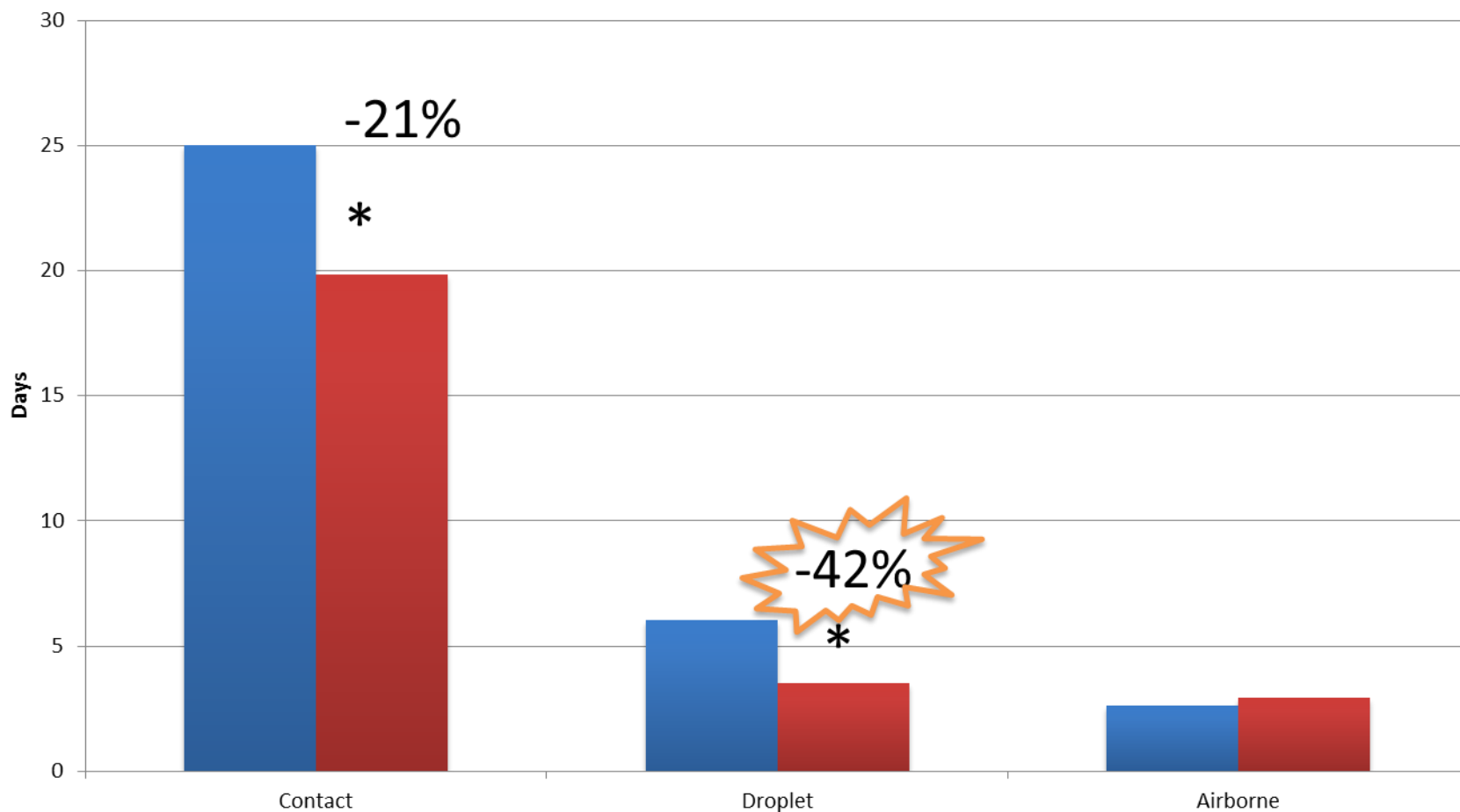
TAT reduced by 31.4 hrs:



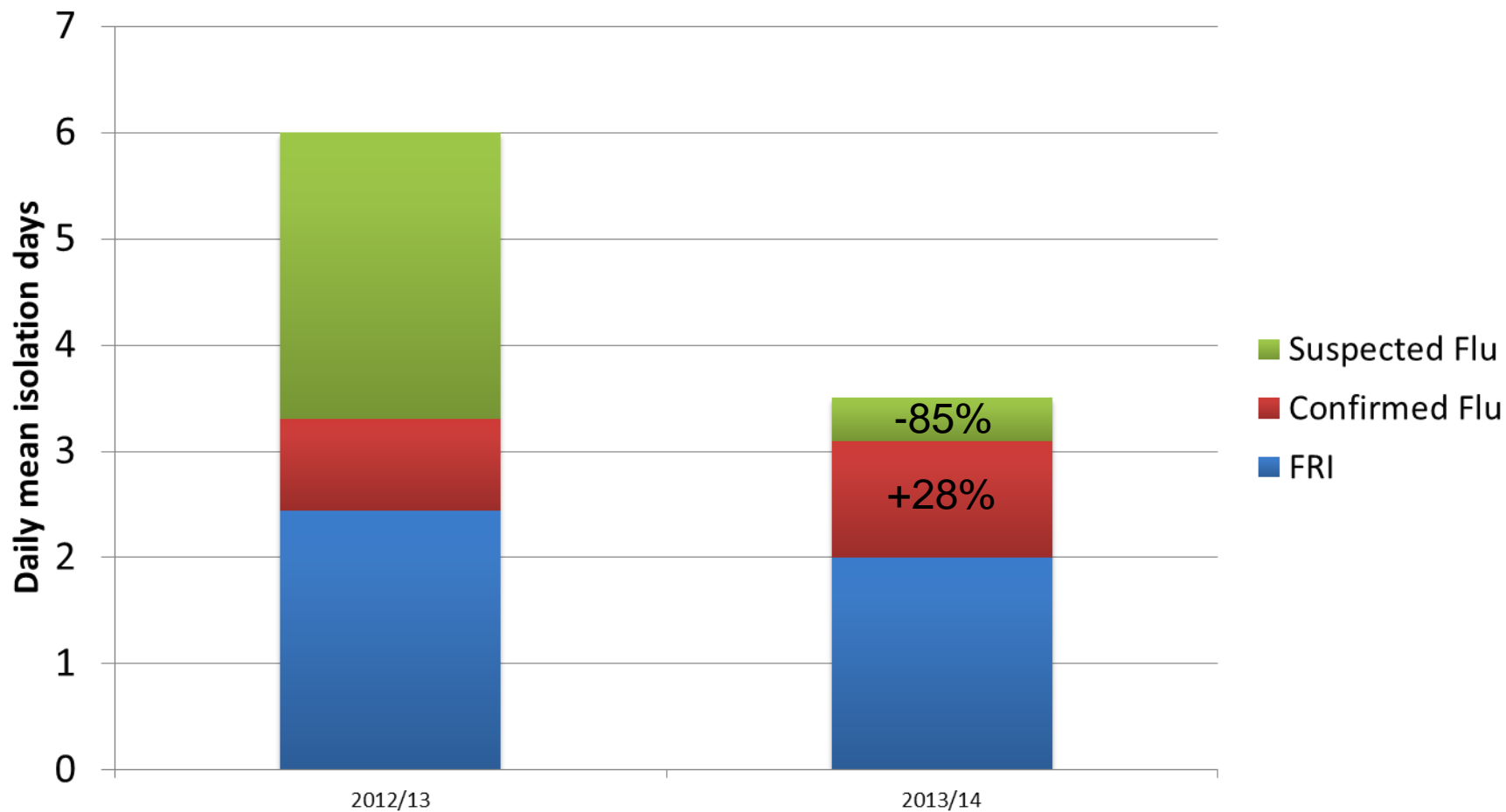
- Rapid results <60-90min
- Random access
- Simplicity = minimal training → Continuous testing



Contact, Droplet and Airborne Isolation: 2012/13 vs. 2013/14



Daily Mean Respiratory Isolation Days



Summary

- Significant reduction in TAT
- 16% reduction in overall isolation days
 - 21% reduction in contact isolation days
 - 42% reduction in respiratory isolation
 - 11% increase in airborne isolation
- 85% reduction in isolation for ‘suspected’ influenza with 28% increase in isolation for ‘confirmed’ influenza



Summary

- Cost savings of ~2.5 isolation days saved per patient vs cost of incremental cost/test/patient
- Anectodally patient flow improved with very few bottlenecks (no bed flow meetings in 2013/14 season)
- No nosocomial transmissions
- Example of how reducing TAT for testing reduces overall isolation days



Thank you

Expertise
Stewardship
Matthew Muller
Communication Value
Appropriateness
MUST
Quality Improvement
Microbiology Staff
Utilization
Efficiency Collaboration
Shared Vision Cost Savings
Common Goals
IPAC Staff Shara Junaid

