



COMPARING RAPID TEST AND PCR RESULTS IN ACTIVE SURVEILLANCE

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Background

- Tarrant County Public Health flu surveillance
 - ▣ Year round active and passive surveillance
- Active surveillance
 - ▣ Specimens collected by local hospitals
 - avg. 10 a week
 - ▣ Tested at North Texas Regional Laboratory
 - ▣ PCR tested for Influenza A H3, Influenza A H1, Influenza B, Rhinovirus, Adenovirus, Metapneumovirus, RSV, Parainfluenza 1, 2, & 3



Available Data

- Collect rapid test information on specimen lab form
 - ▣ Influenza A, B, positive unsubtyped, negative
- Database started in Oct 2009 including data on specimens for each season through July 2016
- 2967 specimens in total
 - ▣ 2671 had reported rapid test results and confirmatory PCR results

Measures



- Sensitivity
 - ▣ Proportion of PCR positives that had a positive rapid test
- Specificity
 - ▣ Proportion of PCR negatives that had a negative rapid test
- Positive Predictive Value (PPV)
 - ▣ Proportion of rapid positives that were positive via PCR
- Negative Predictive Value (NPV)
 - ▣ Proportion of rapid negatives that were negative via PCR



All Seasons, 2009-2016

	PCR Flu Results		
	Postive	Negative	Total
Positive Rapid Test	651	176	827
Negative Rapid Test	116	1728	1844
Total	767	1904	2671

- ❑ Sensitivity: 85%
- ❑ Specificity: 91%
- ❑ PPV: 79%
- ❑ NPV: 94%



All Seasons, Wk. 20-40 only

	PCR Flu Results		
	Postive	Negative	Total
Positive Rapid Test	630	149	779
Negative Rapid Test	114	1161	1275
Total	744	1310	2054

- ❑ Sensitivity: 85%
- ❑ Specificity: 89%
- ❑ PPV: 81%
- ❑ NPV: 91%

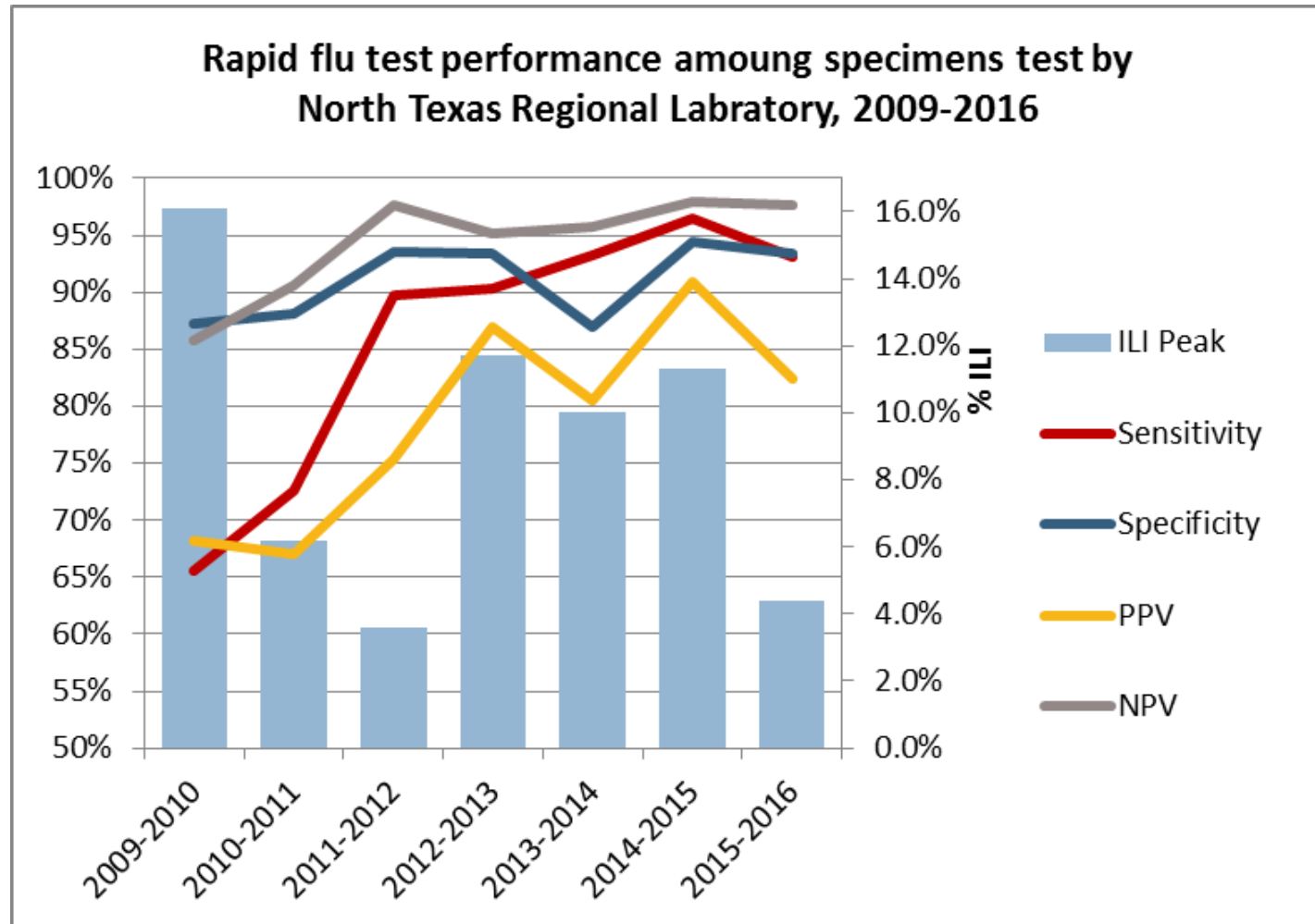


Results by Season

	Influenza Season						
	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Sensitivity	66%	73%	90%	90%	93%	96%	93%
Specificity	87%	88%	93%	93%	87%	94%	93%
PPV	68%	67%	75%	87%	81%	91%	82%
NPV	86%	91%	98%	95%	96%	98%	98%
ILI Peak	16.1%	6.2%	3.6%	11.7%	10.0%	11.3%	4.4%
Predominant strain	H1	H3	H1	H3	H1	H3	B



Results by Season





Results

- According to the CDC*, rapid flu tests compared with viral culture or PCR:
 - ▣ Sensitivities are approximately 50-70%
 - ▣ Specificities are approximately 90-95%

- Our results:
 - ▣ Sensitivities ranged from 66-96%
 - ▣ Specificities ranged from 87-94%

Conclusions



- Why are our sensitivities higher?
 - ▣ Possibly due to type of providers
 - Mostly hospitals provide specimens
 - Flu symptoms severe enough to be seeking care at a hospital
 - Possibly better testing technique or better quality tests in hospitals
 - ▣ Possibly better tests in recent years
 - Sensitivity improved from 66% & 75% in 2009-10 & 2010-11 to 90% and over the following seasons

What's next?



- Further analyze data for differences between active and inactive flu weeks
- Begin including data regarding submitter in specimen database
- Include season level data in end of season summary

Questions?



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