

# *GermWatch*: Providing Pathogen-Specific Information About Regional Infectious Disease Activity in Utah to Clinicians, Public Health and the General Public

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# GermWatch is made possible by...

- Integrated Healthcare Delivery System
  - Data, IT, culture, clinical programs
- Collaboration
  - Intermountain, U of Utah, Utah Health Dept.
- Routine use of molecular diagnostic testing
- Funding
  - Health Dept. PCMC Foundation, CDC, AHRQ

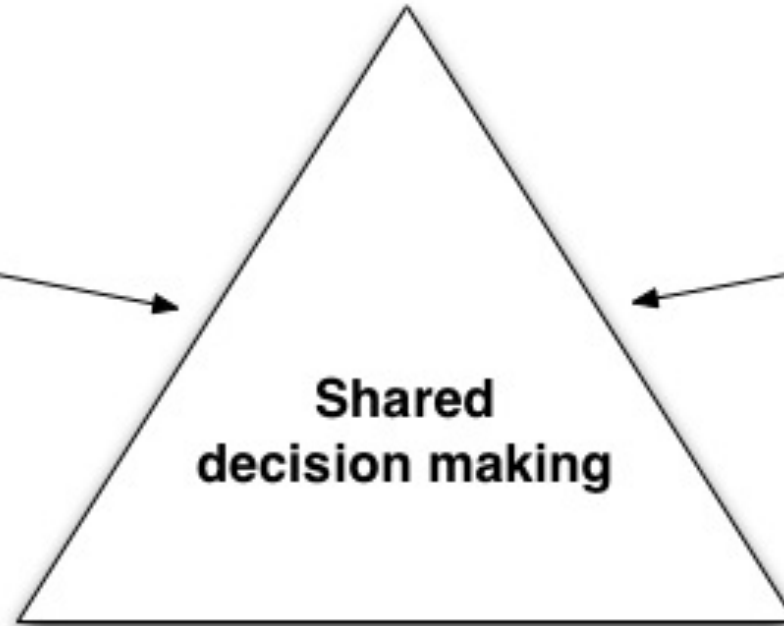
# Population-Based Clinical Practice

## Acute Respiratory Infection (ARI)

- **Community perspective**
  - What is going around and who is at risk?
- **Clinical epidemiology perspective**
  - How different pathogens behave?
- **Emphasis on outcomes**
  - Knowing likely, and how to optimize outcomes
- **Emphasis on evidence-based practice**
  - Knowing which tests and treatments work
- **Emphasis on prevention**
  - Vaccine advocacy & education re transmission

# Bringing data to “the discussion”

**DISEASE**  
ACUTE RESPIRATORY TRACT INFECTION



Knowledge, attitudes  
and beliefs

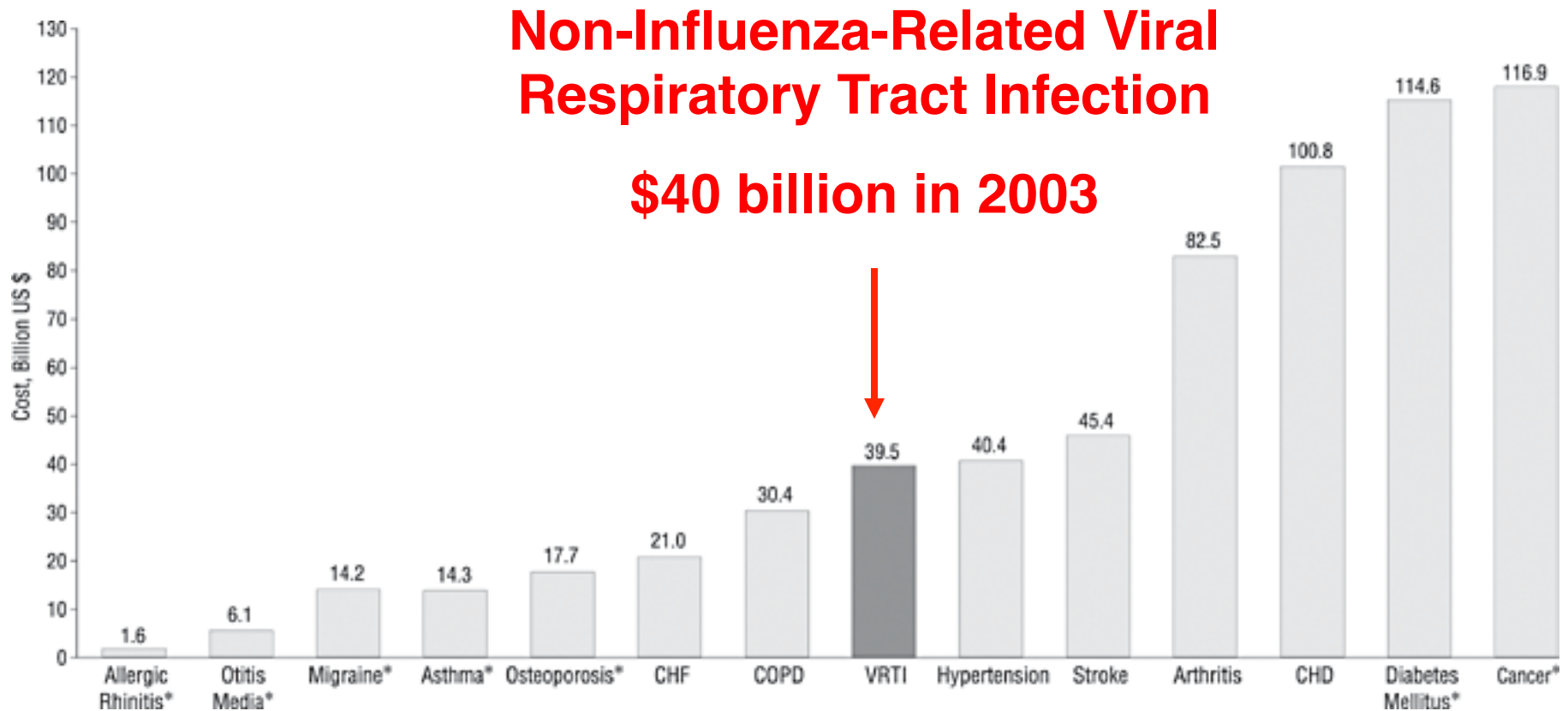
Knowledge, attitudes  
and beliefs

**PATIENT**

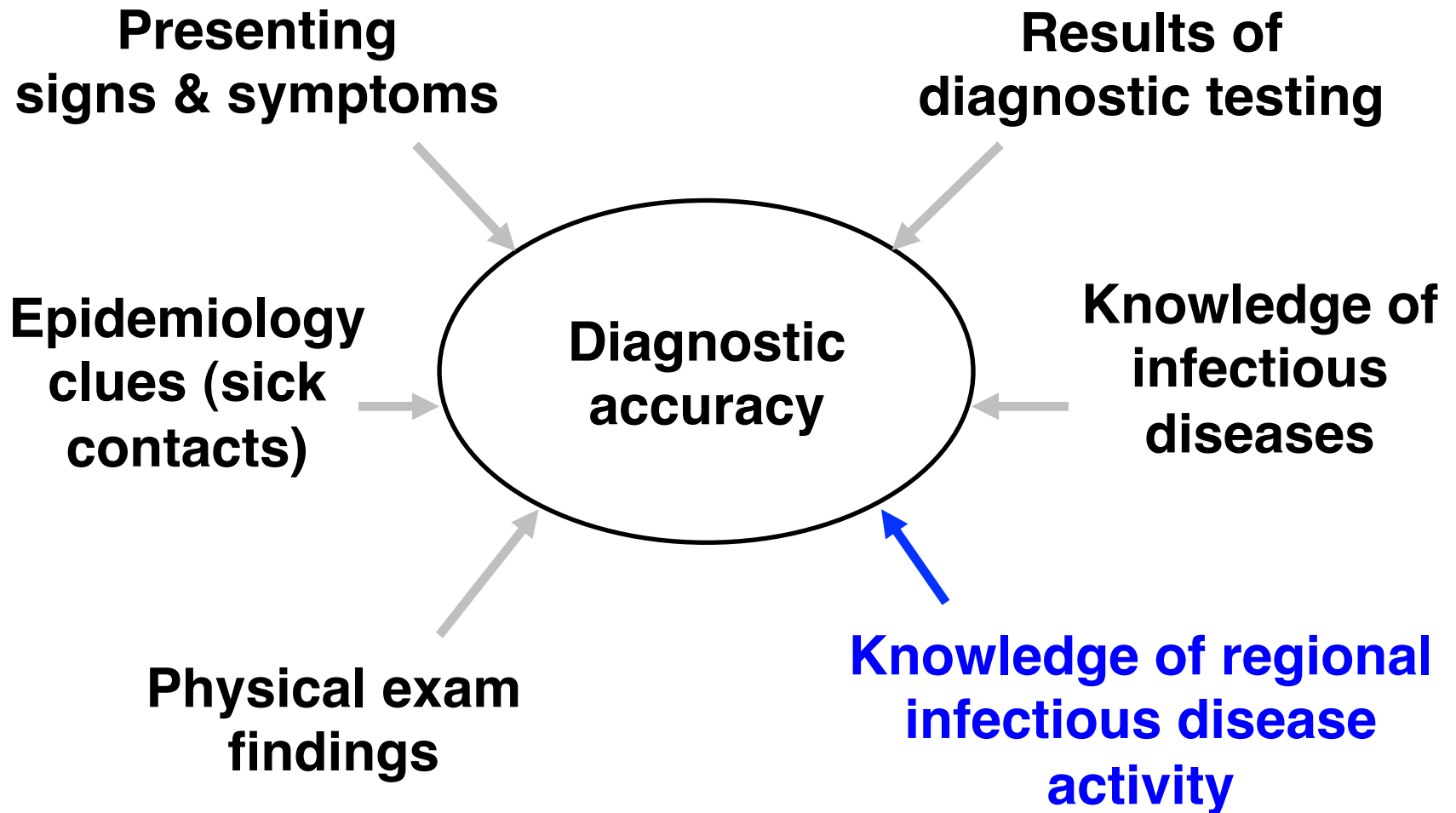
**PROVIDER**

Perceived needs, wants,  
desires, goals

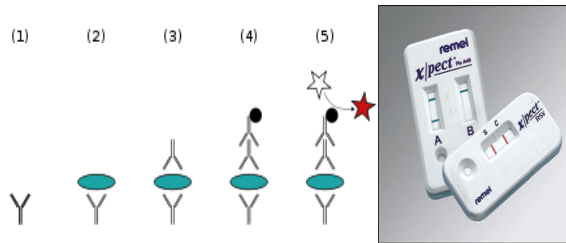
# Cost of illness for selected diseases in the United States



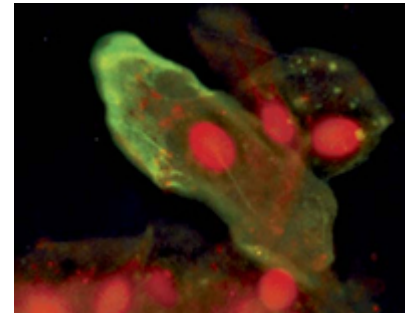
# Viral vs. Bacterial? Virus vs. virus?



# Advances in Molecular Microbiological Diagnostics



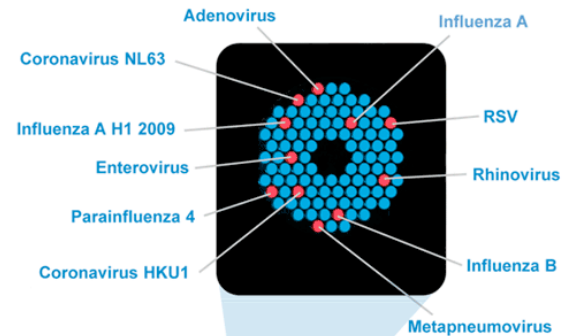
Enzyme-linked Immunoassay



Direct fluorescent antibody



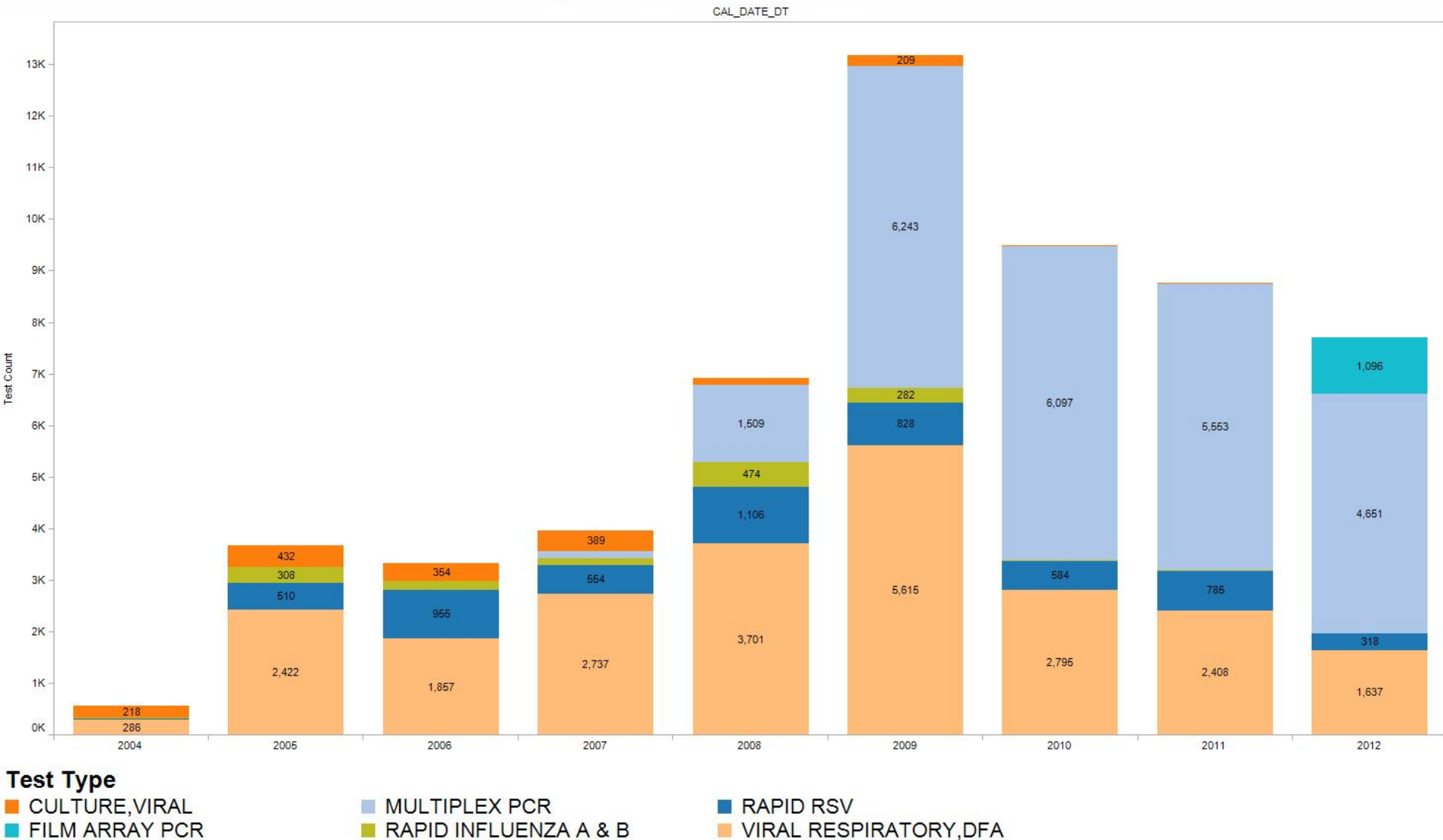
Multiplex PCR



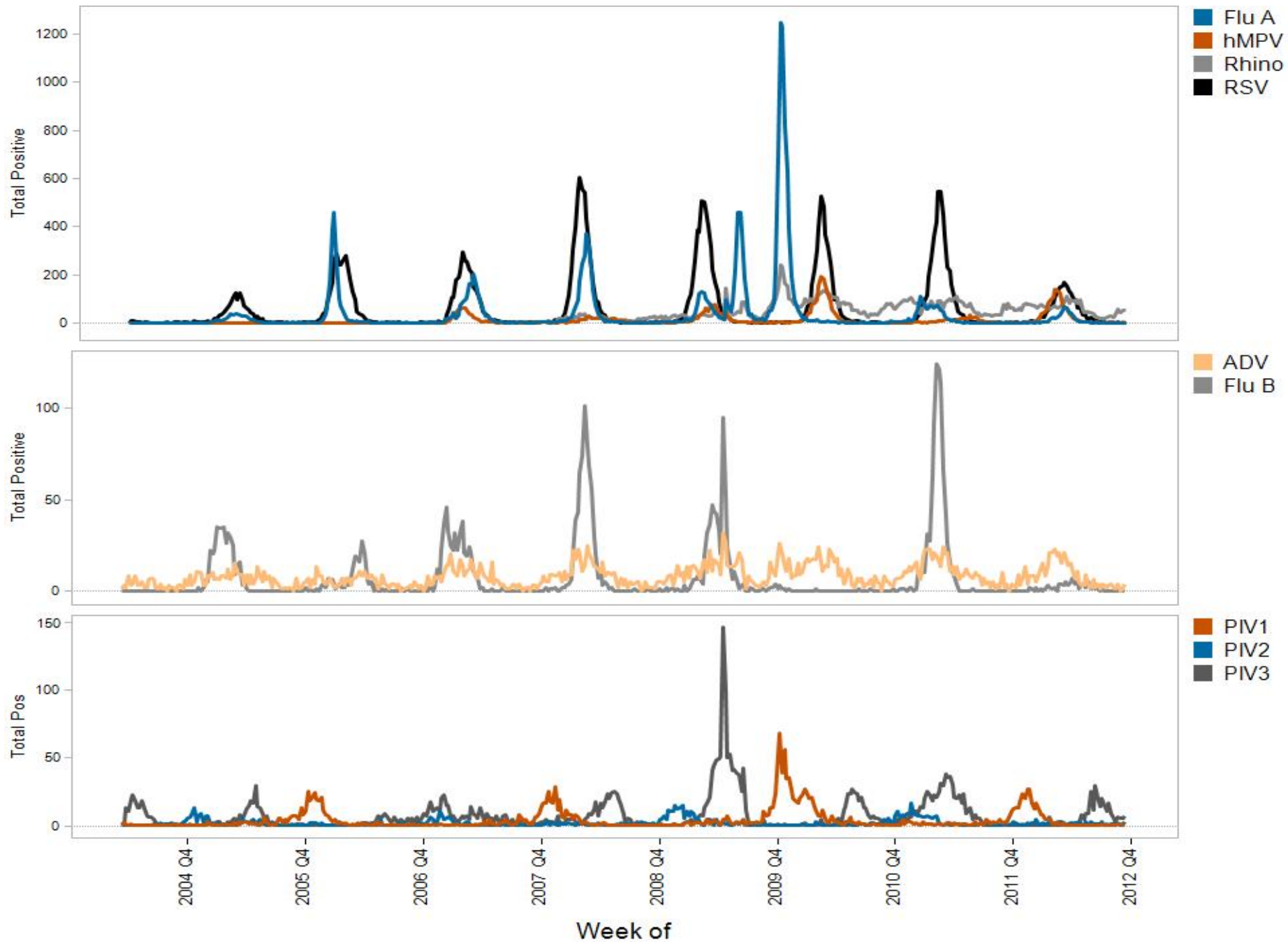
Film Array

# Viral Testing at Intermountain

## Trends in Respiratory Viral Testing at Intermountain



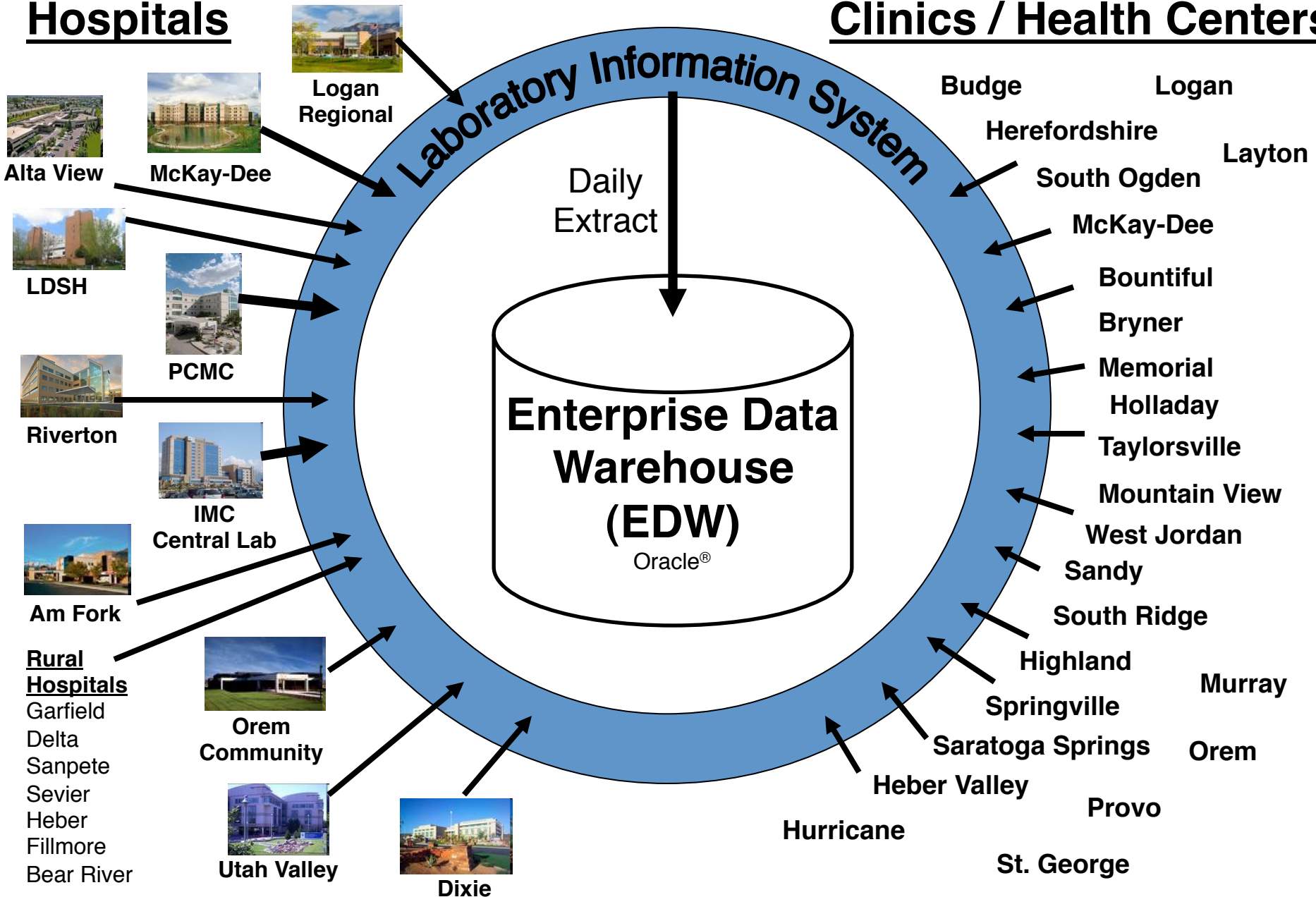




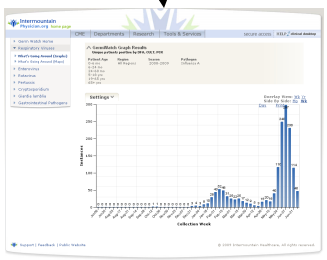
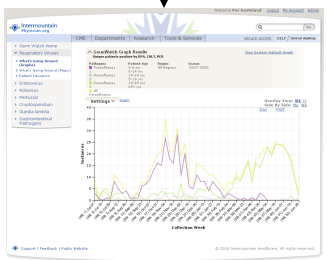
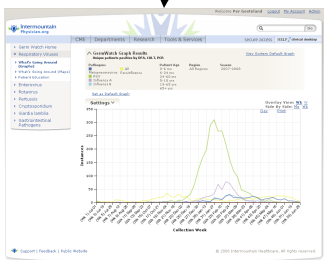
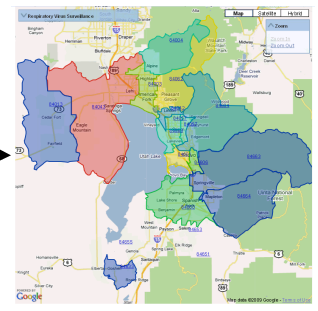
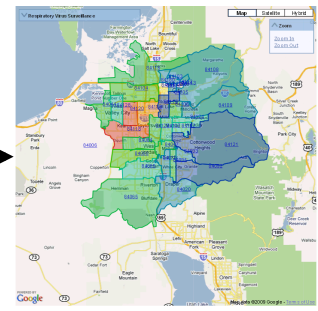
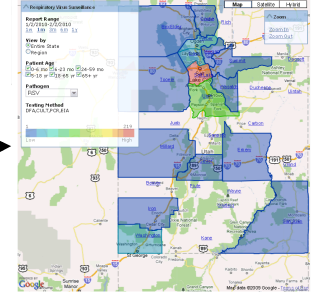
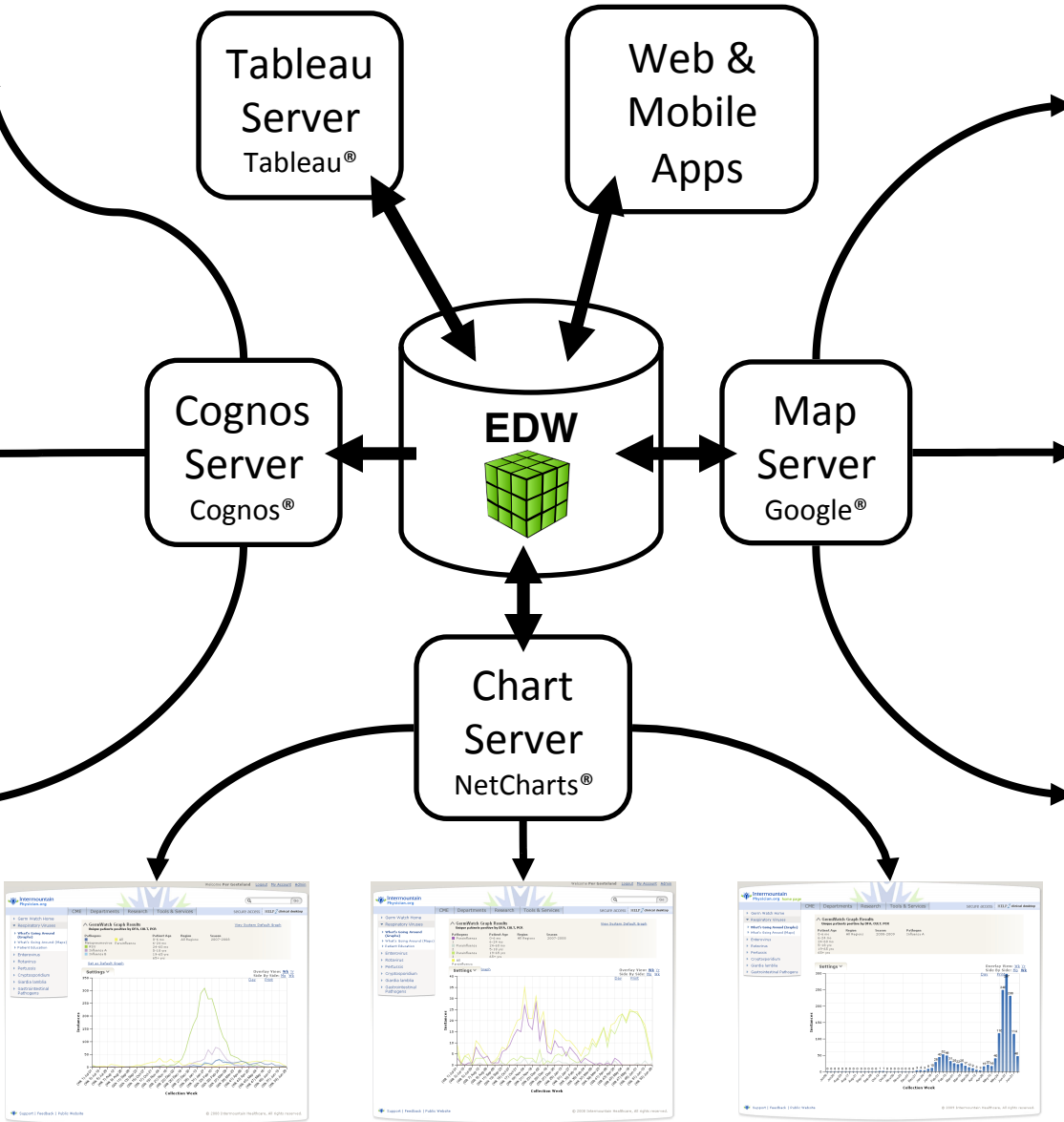
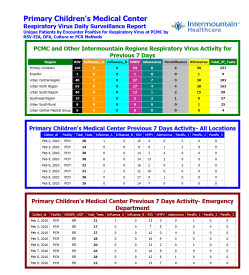
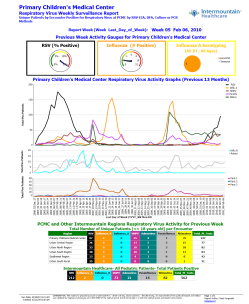
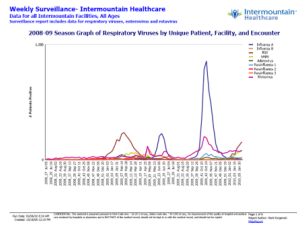
# Capturing Intermountain Micro Data

## Hospitals

## Clinics / Health Centers



# Online Analytical Processing



# GermWatch e-mail list

Intermountain Healthcare Germ Watch Surveillance

All Facilities, All Ages

Report Week: 2013-3 Ending Jan 26



Pathogen	n (Pos)	% Pos Tested	Last Week		Region (% Pos)	Past 52 Weeks	Subtypes
			Activity Level	Severity			

Level based upon individual pathogen thresholds set from previous seasons  
**Green Bar: Total Number**  
**Yellow Bar: Hospital Admit**  
**Red Bar: ICU Visit**

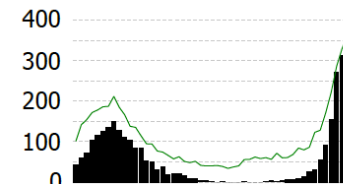
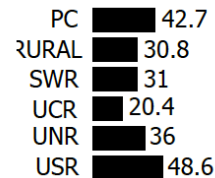
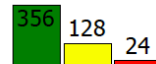
RV: Perc Pos, Min. 20 Total Tests Performed  
 EV: Total Num Pos

Bar: Total Pathogen by Unique Encounter  
 Line: Total Tests by Unique Encounter

RSV

356 33.2%

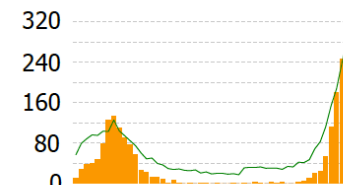
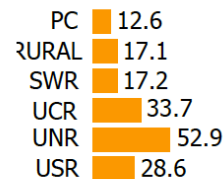
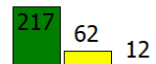
Season at >10% Positive Rate



Influenza A

217 24.7%

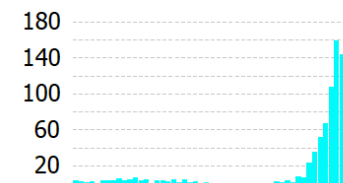
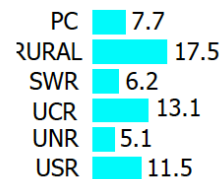
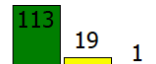
**Intense**



Influenza B

113 10.1%

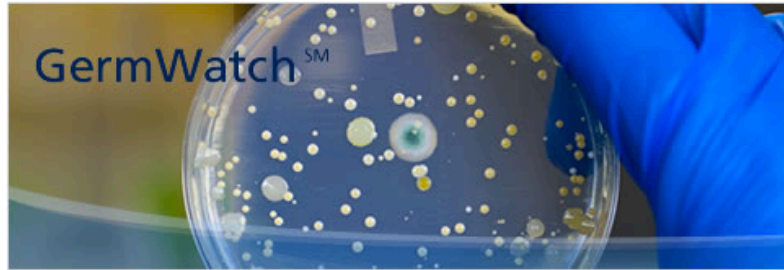
**Intense**



2009 H1N1  
 Seasonal H1  
 Seasonal H3  
 Seasonal Not Typed

Home

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- [Gastrointestinal Pathogens](#)
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- [Pertussis](#)
- [Respiratory Viruses](#)
- [Rotavirus](#)
- [Antibiograms](#)
- [Test Pages](#)



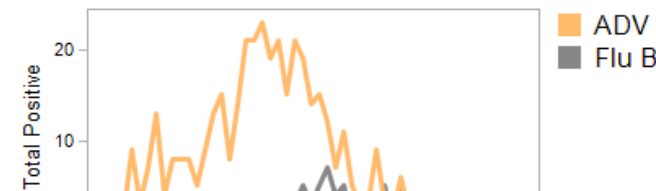
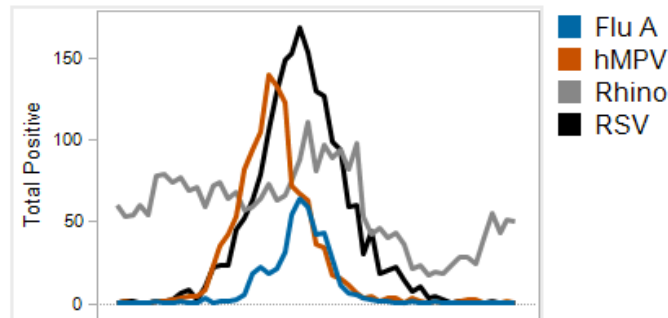
Welcome to GermWatch<sup>SM</sup>, the source for up-to-date information about infectious diseases currently affecting Utah communities.

[Edit item 6](#) ▾

**Disease Update – Friday, September 14th, 2012**

- Rhinovirus and parainfluenza were the main viral respiratory trouble makers this past week. Rhinovirus appears to be picking up with the kids back in school.
- Pertussis remains a problem and should be a consideration.
- Coxsackie virus (enterovirus) activity is dropping off.

[Edit item 9](#) ▾



Quick Links

- [UDOH Epidemiology](#)
- [AAP Red Book](#)
- [Influenza - Utah](#)
- ✚ [Add New Link](#)

Suggestion?

Let us know what you think! Make a suggestion or sign up for the weekly email updates by including your email address and putting "add me" in the subject line.

[Submit](#)

# Influenza 2012-2013.

11/12/2012 - We have seen a handful of Influenza cases (8 type B and 3 type A).

Lab-confirmed Influenza Cases - Past 10 Weeks

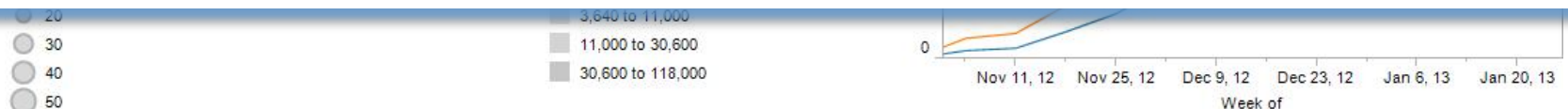
2012-2013 Influenza Epidemic (thru 1/19/2013)

11/19/2012 - Modest amounts of Influenza A (n=4) and B (n=7), similar to what is being seen nationally. Per the CDC, no neuraminidase inhibitor resistance has been seen in the samples tested to date.

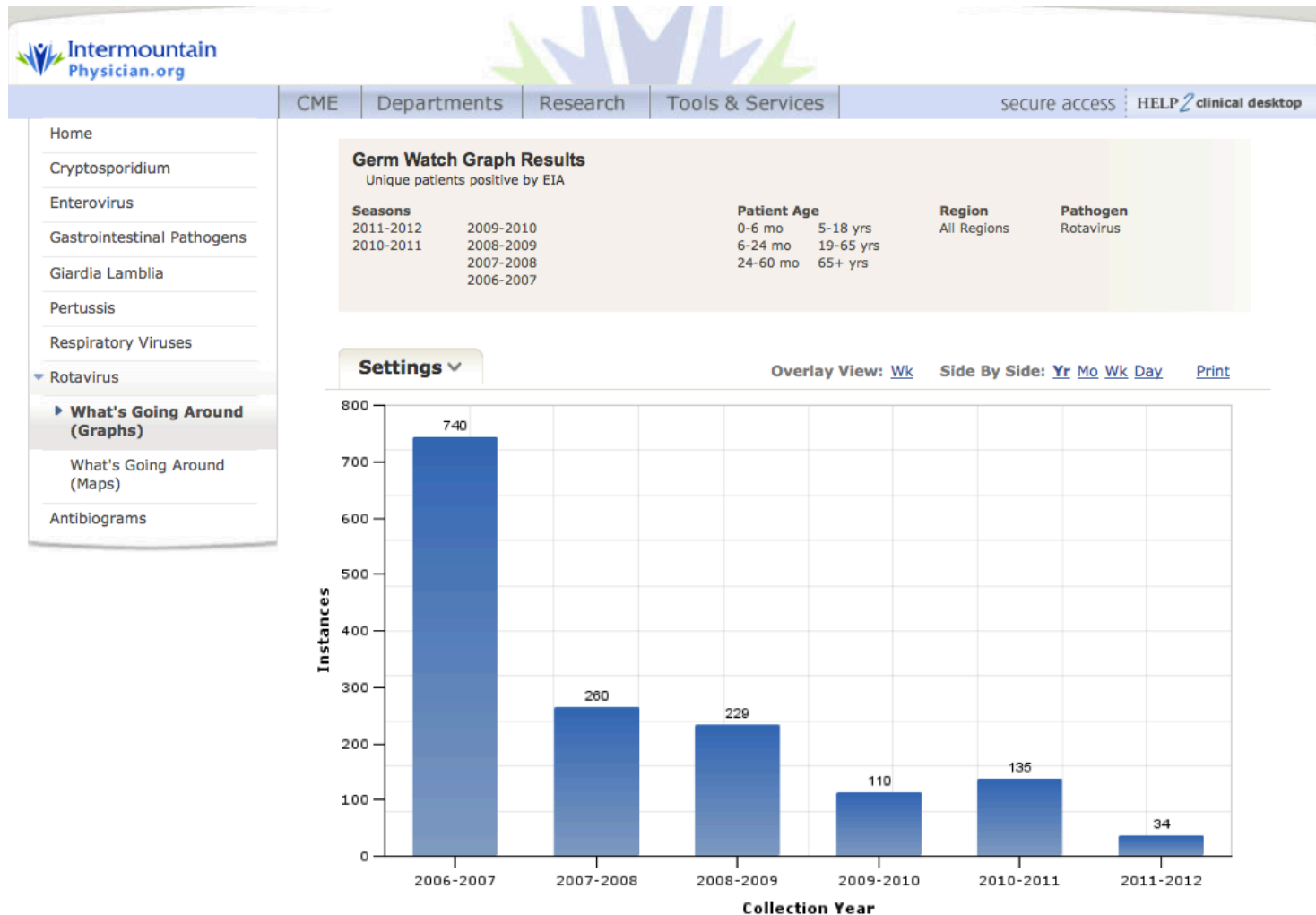
12/6/2012 - We are seeing a fairly brisk uptick in Influenza cases with a mix of A and B. The CDC is predicting a bad flu season based on the early activity in southern states. The good news is that the circulating strains appear to be a good match to this year's vaccine.

12/10/2012 - Influenza activity continues to pick up with lots of Flu B in the urban north and south regions. Lots of Flu A in the southwest and urban central regions. Get your patients immunized and spread the word!

12/17/2012 - This is brand new in this weeks data from the CDC – 1/3 of flu B is now Victoria lineage – not in this years vaccine! Given the lag of testing, that may explain the vaccine failures of the last 2-3 weeks.



# Immunization discussions: “Look, the rotavirus vaccination works..”



# Germ Watch Graph Results

Unique patients positive by DFA, CULT, PCR

Seasons

2012-2013    2009-2010

Patient Age

0-6 yrs    5-18 yrs

Region

All Regions

Pathogen

Pertussis

▼ Pertussis Surveillance

Map

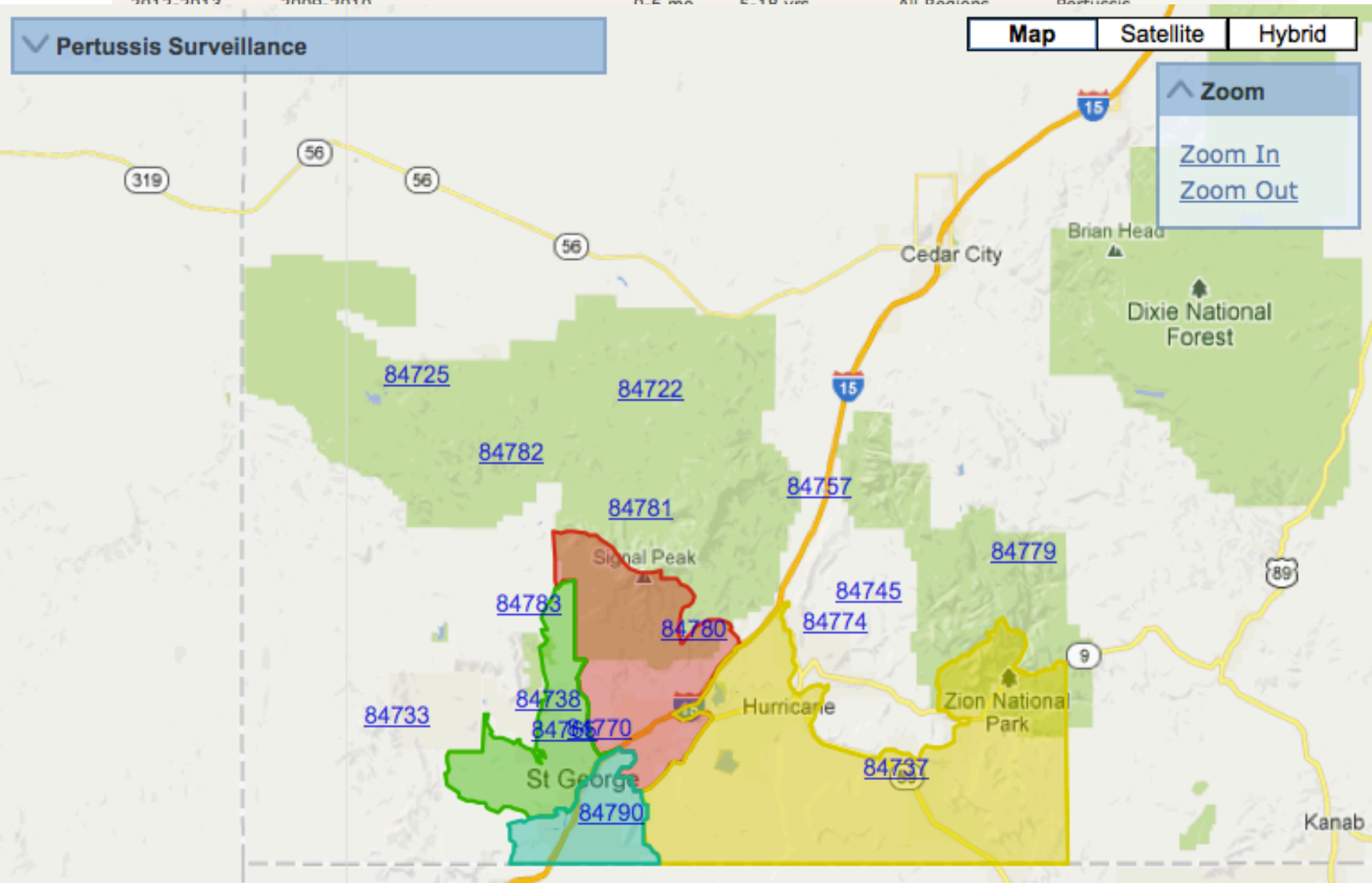
Satellite

Hybrid

^ Zoom

[Zoom In](#)

[Zoom Out](#)



Collection Year



# Administrative Uses

- Defining RSV season
  - Monoclonal antibody administration
- Infection control
  - Visitation policies, patient cohorting
- Surge management
  - Staffing, respiratory outpatient care clinics
- Forecasting and projection
  - RSV, Influenza, others

# Lessons

- Timely and meaningful information possible
  - >400 physicians getting weekly updates
  - Web site being utilized
- Clinicians attitudes and beliefs
  - Understand how it can be applied
  - Believe it improves their performance
    - Diagnostic accuracy and treatment decisions
    - Discussions with patients about viral diagnoses
  - Peers and patients expect them to be knowledgeable
- Clinicians want it quick, easy and at their finger tips

# More Lessons

- Providers want population data that is
  - Clinically relevant and locally applicable
  - Generated by a trusted source and readily accessible
  - Synopses and easily interpreted visualizations
  - Pushed over pulled & integrated with CIS workflow
- They want other stuff too
  - Integration with patient education materials
  - Information about clinical presentations in different groups
  - Information about testing (e.g., availability and cost)
  - Regional antibiotic resistance patterns

# Ongoing Work / Future Directions

- Public facing web site
  - Social media, media relations/partnership
- Refinement of provider tools
  - Tableau visualizations
  - Mobile application
  - Additional conditions / pathogens
- Evaluation of 'complete tool set'