

# Back to the Future: Utilizing a PBRN for Real-Time Influenza Surveillance



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## Background

- Traditional influenza reporting methods are inherently delayed, as they require active submission of results. This can be a multi-step process in which lag-time is magnified, often delaying influenza reporting trends by up to 3 weeks.
- Disease surveillance in clinic settings was a core function of the first primary care PBRN in the US (Ambulatory Sentinel Practice Network, ASPN). ASPN was created and functioned prior to the era of computing.
- Given primary care PBRNs' long history of disease surveillance, PBRNs are uniquely qualified to test a novel, real-time approach to influenza surveillance.

## Objective

- Describe the feasibility of implementing and maintaining real-time rapid influenza detection test (RIDT) analyzers connected to wireless routers for real-time reporting in typical primary care settings.

## Methods

- Wisconsin Research and Education Network (WREN) research coordinators:
  - Installed RIDT analyzers in clinics;
  - Briefly trained clinic providers and staff to identify eligible patients, collect anterior nasal samples, and process these samples using the RIDT analyzers.
- RIDT results were automatically reported to surveillance staff on a daily basis and analyzed weekly to identify trends at the clinic level, public health region, and for the entire state of WI.
- Aggregate results were also disseminated back to clinics on a weekly basis.

## Clinic Eligibility

- Clinics agreed to use RIDT analyzers on at least some patients meeting eligibility criteria.
- On-site laboratory not mandatory.

## Clinician/Staff Protocol

### Patient Selection

- Clinic visit for any reason (any age)
- Acute Respiratory Infection (within 4 days)
- 2+ symptoms: fever, cough, sore throat, nasal congestion, runny nose

### Specimen Collection

- No written consent (fill out requisition form)
- Collect from nostril (sponge tip nasal swab)
- Place swab in paper sheath; attach patient label
- Send to clinic lab personnel for testing

### Laboratory Processing

- Clinic lab processes samples using RIDT
- Send sample and requisition form to WI State Laboratory of Hygiene (WSLH) for confirmation of real-time results

## Results

### Clinics (n=15)

- At least 1 clinic was from each of the 5 public health regions in WI (Figure 2).
- Clinic demographics varied in size, personnel, Institutional Review Board (IRB) status, laboratory infrastructure, and level of integration into health systems (Table 1).

### Clinic Staff

- 194 clinic staff (median 9 per clinic, range 3-38) were trained on the study protocol.
- Staff included providers (MD, DO, PA, NP, CNM), nurses, medical assistants, laboratory staff, pharmacists, dieticians, and administrative staff (reception, clinic managers).

### Patient Sample Population

- As of 5/19/2014, 575 samples have been analyzed at participating WREN clinics (Table 2, Figure 1).
- The median number of samples collected per clinic is 24 (range 2-188).
- Mean patient age of 30.82 years (standard deviation 21.16 years, range 0.13 to 88 years).

**Table 1. Clinic Demographics**

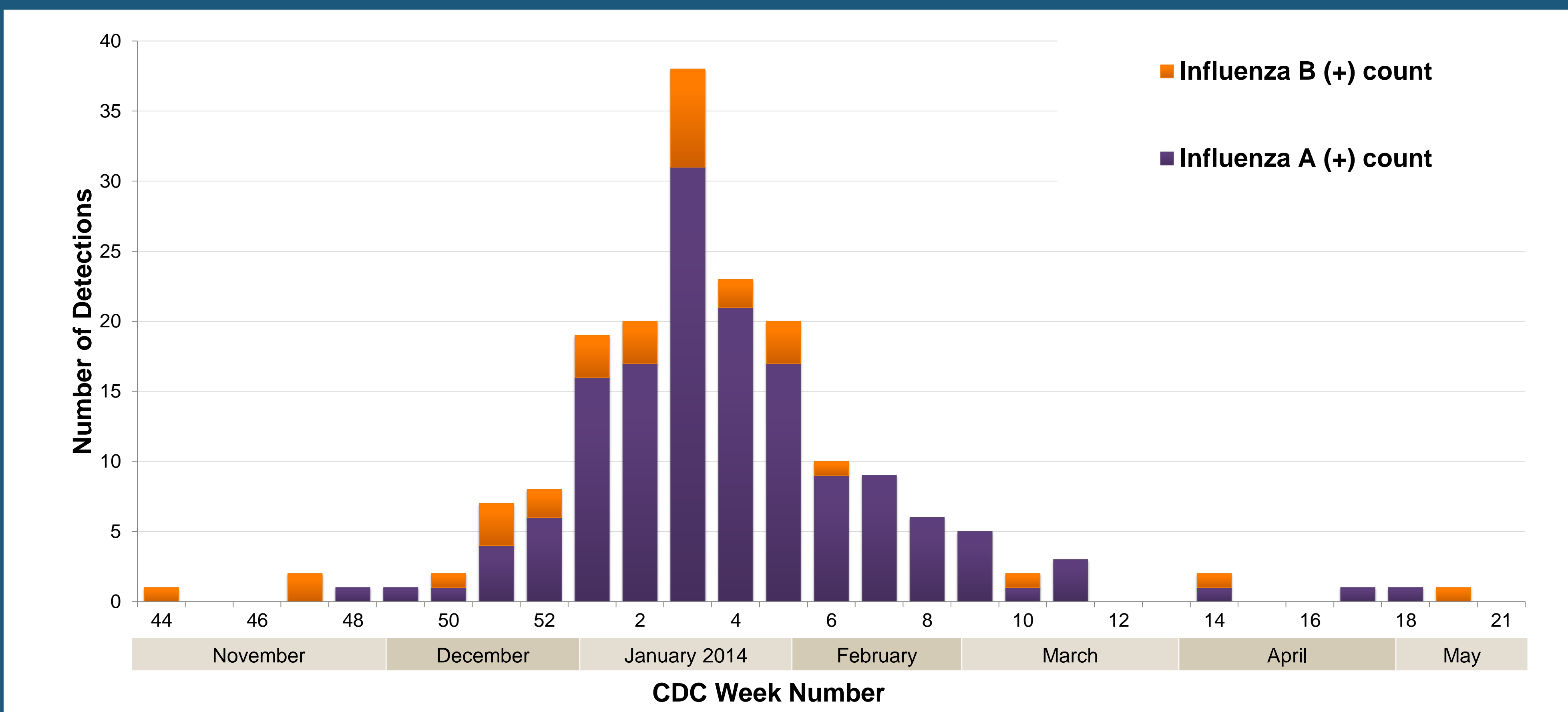
	Count (Percent)
<b>Clinic Ownership</b>	
Hospital or health system	7 (46.7%)
Clinic physicians	4 (26.7%)
Other organization	4 (26.7%)
Federally Qualified Health Center	3 (20.0%)
Community Health Center	1 (6.7%)
<b>Clinics requiring IRB approval*</b>	7 (46.7%)
<b>Geographic Location</b>	
Rural	9 (60.0%)
Urban	5 (33.3%)
Suburban	1 (6.7%)
<b>Specialty</b>	
Single	5 (33.3%)
Multiple	10 (66.7%)
<b>EMR implemented*</b>	15 (100%)

\*4 IRB approvals were obtained; one of the IRBs covered 3 participating clinics within a single health system.  
\*EMRs include Epic, GE Centricity, Cerner, NextGen, MacPractice, Meditech, and Practice Partner

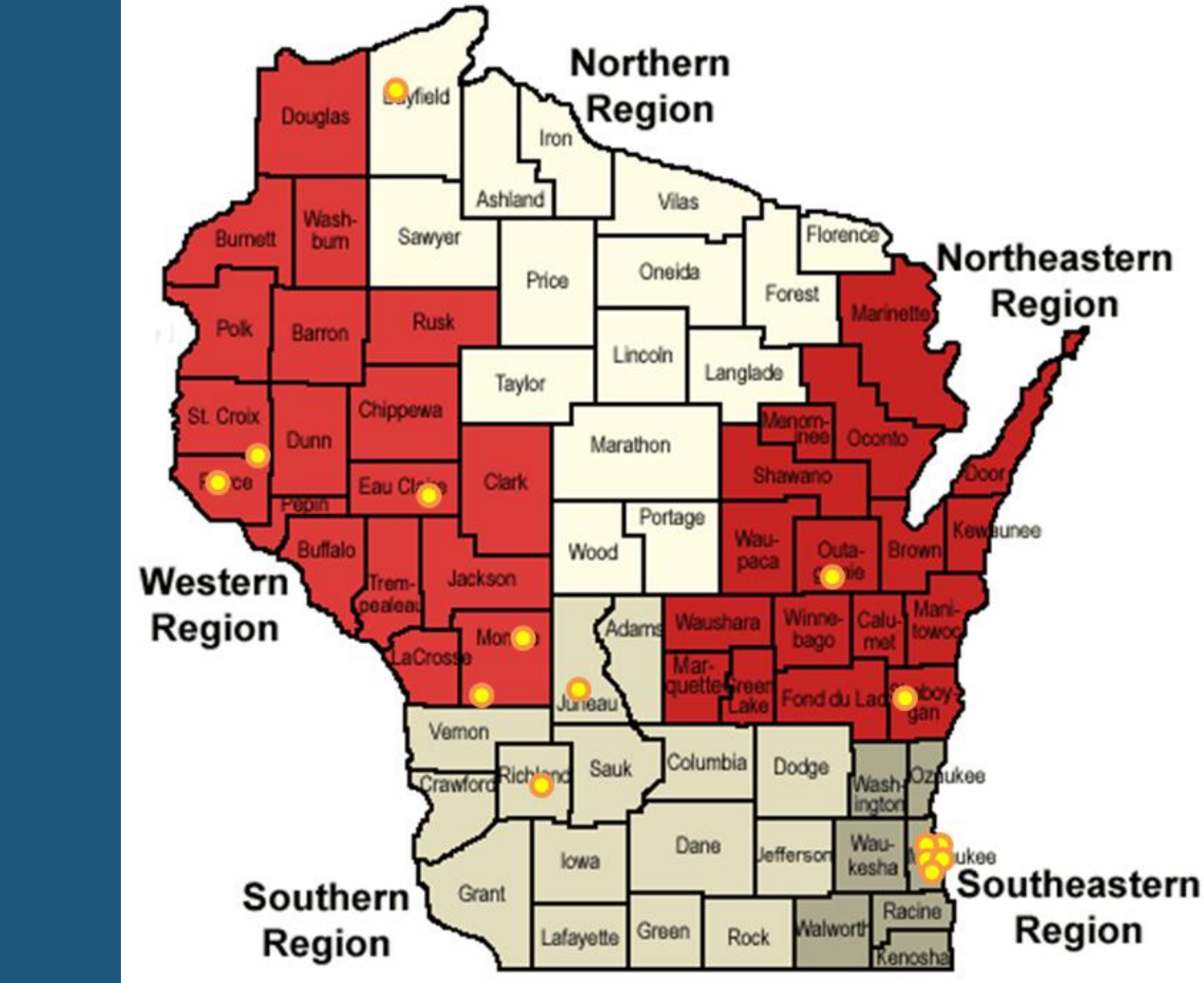
**Table 2. Samples collected by age**

Age Group	Count (n=575)	Percent
0 - 5 Years	94	16.3%
6 - 21 years	123	21.4%
22 - 59 years	295	51.3%
60+ years	62	10.8%
Missing	1	0.2%

**Figure 1. Number of Positive Influenza Detections by Week**



**Figure 2. Map of participating WREN clinics**



## Discussion: Problems & Complexities

### Clinic Sites

- Clinic recruitment**
  - Miscommunication at one site meant appropriate staff weren't included early.
- Site-specific IRB issues**
  - Is routine surveillance considered a "study"? (exempt vs. not exempt status)
  - To bill or not to bill? This decision impacted IRB processes, clinic workflows, and clinic implementation procedures.
- Clinician Participation**
  - Finding time to train heterogeneous mix of clinicians (competing demands).
- Adherence to protocol**
  - Completing requisition forms
  - Sending samples to WSLH (courier problems)

### Technology

- Bugs in System:** Wireless devices
- Connectivity issues:** Physical location of lab and wireless device (poor reception in basement and internal locations); cellular network coverage
- Emergent issues:** Is incoming data from patients or proficiency testing?

## Discussion: PBRN Lessons Learned

- An "easy" PBRN project is never an "easy" PBRN project. Plan for more time than you think you'll need.
- Involve relevant clinic staff early in planning process (e.g., lab supervisors).
- Allow adequate time for clinic teams to plan workflow.
  - Each site needs to tailor project plans to fit within internal processes.

## Conclusion

- Despite initial setup challenges, successful implementation of real-time RIDT surveillance system in a statewide PBRN allowed detection of the 2013-2014 Wisconsin seasonal influenza outbreak.
- This project has implications for public health departments interested in detecting real-time trends.
- The diverse clinic environments seen in this project also highlight to manufacturers the importance of real-life testing (equivalent to effectiveness) in addition to analytic validity (equivalent to efficacy).

