

Electronic Case Reporting

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Disease Surveillance

- London, 1854 - John Snow proved over 500 deaths associated with the London Broad Street water pump
- Defined and collected cases, linked association/source, visualized relationship, guided follow-up action
- Surveillance data is still the basis for most public health activities
- Lab results -> Electronic Lab Reporting
- ADT -> Syndromic Surveillance
- **EHRs -> Electronic Case Reporting (eCR)**



“Dual Use” - from Anthrax, SARS, and Ebola to Chronic Diseases and Population Management

“The New Public Health Normal”

Mystery outbreak's global reach grows

By M.A.J. MUKENNA
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The mysterious and deadly pneumonia that has alarmed global health authorities appeared to spread to additional countries Monday and scientists at the Centers for Disease Control and Prevention and the World Health Organization ramped up research into possible causes.

New suspected cases were identified Monday in Australia, England, France, Israel, Slovenia and Switzerland.

In Germany, two women were hospitalized, bringing the total of suspected cases there to four. On Saturday, a Singaporean doctor who treated one of the earliest



Travelers wear masks to ward off Asia's mysterious illness at Hong Kong's Chek Lap Kok airport on Monday.

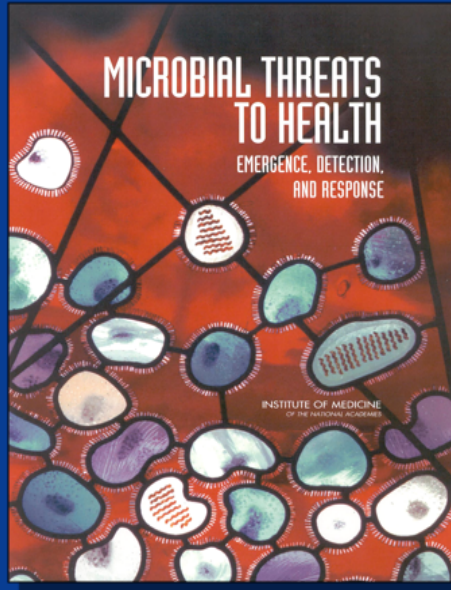
WEST NILE CASES RAISING QUESTIONS OVER TRANSPLANTS

NO TEST TO SCREEN BLOOD

Weeks Needed to Determine if Operation or a Transfusion Allowed Transmissions

By LAWRENCE K. ALTMAN

It will take at least two weeks to determine whether the West Nile virus was transmitted through organ transplants or blood transfusions to a cluster of four transplant recipients in whom encephalitis has been diagnosed or suspected, federal health officials said yesterday.



Anthrax Found in NBC News Aide

Suspicious Letter Is Tested at Times — Wide Anxiety

By DAVID BARSTOW

An assistant to the NBC anchor Tom Brokaw has tested positive for anthrax infection more than two weeks after she opened a threatening letter addressed to Mr. Brokaw that contained a white powder, officials said yesterday.

Even as law enforcement officials were combing off Rockefeller Center, the newsroom at The New York Times was evacuated when a report of opened an envelope that also contained a white powder.

The substance was still being tested last night, as investigators explored potential links between the two incidents. Both letters were mailed from St. Petersburg, Fla., and had similar handwriting, according to law enforcement officials.

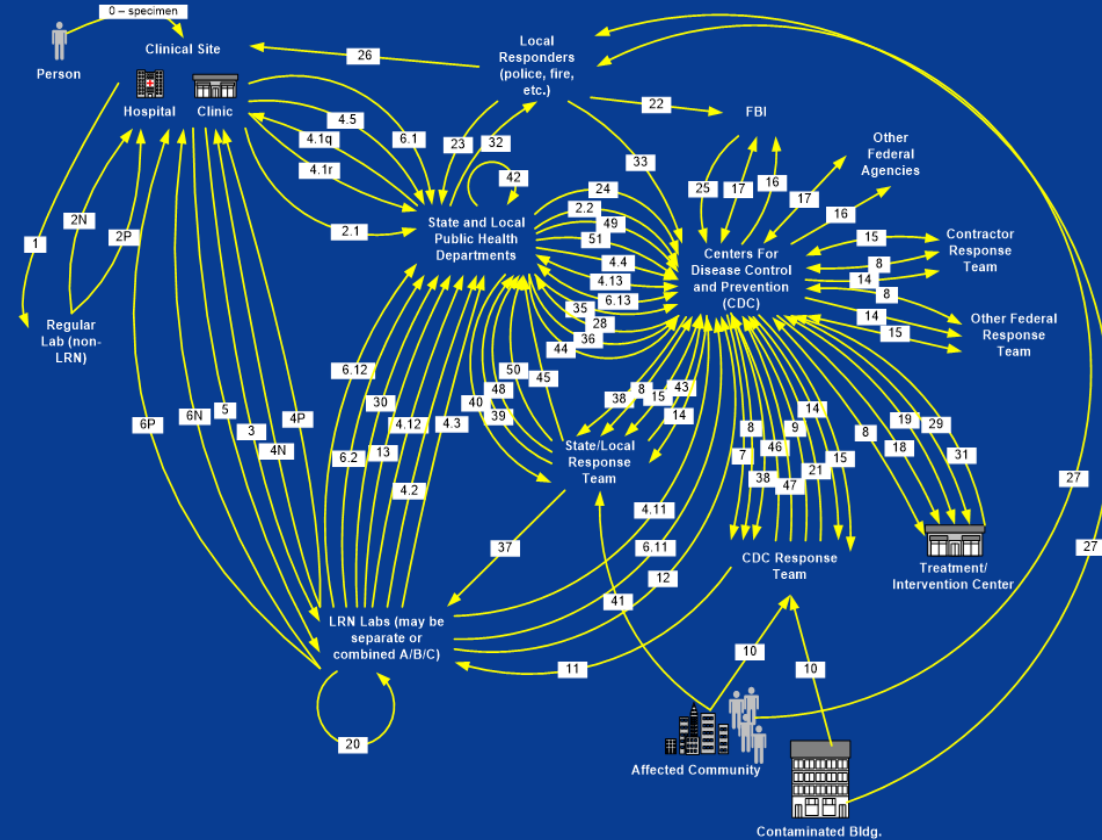
The reports of possible bio-terrorism caused widespread anxiety in New York and across the country. People depleted supplies of antibiotics at drugstores and besieged their doctors. Offices were evacuated after they received mail. (Page B8)

The NBC case marked the second time an American has been stricken with a form of anthrax since the Sept. 11 terror attacks.

In the other case, a man died after he contracted an inhalable form of the disease at a newspaper office in Boca Raton, Fla. Two other people at the office were exposed to anthrax



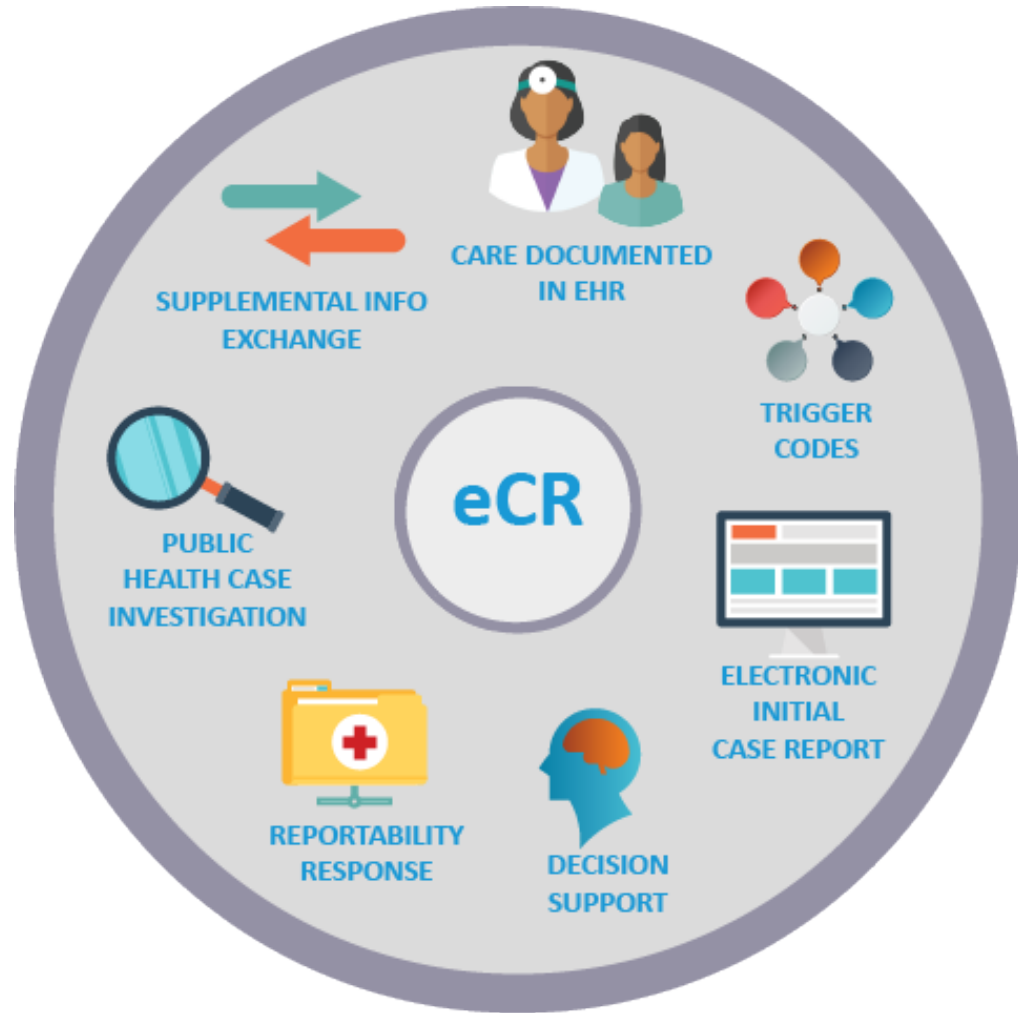
Mayor Rudolph W. Giuliani after a news conference yesterday at NBC where he tried to calm new fears that were raised by an anthrax case.



Why is public health surveillance so hard?

1. Many jurisdictions X many conditions X many clinical care sites = major interoperability problem
2. Differing state laws define what data are needed where and when
3. Specific public health data authorities are strictly enforced
4. Top down funding leads to siloed surveillance activities
5. Dependency on complex, poorly structured, and until recently, not in electronic clinical data
6. Reporting triggers and case definitions change during events
7. Little or no feedback clinical care participants
8. Perceived provider burden

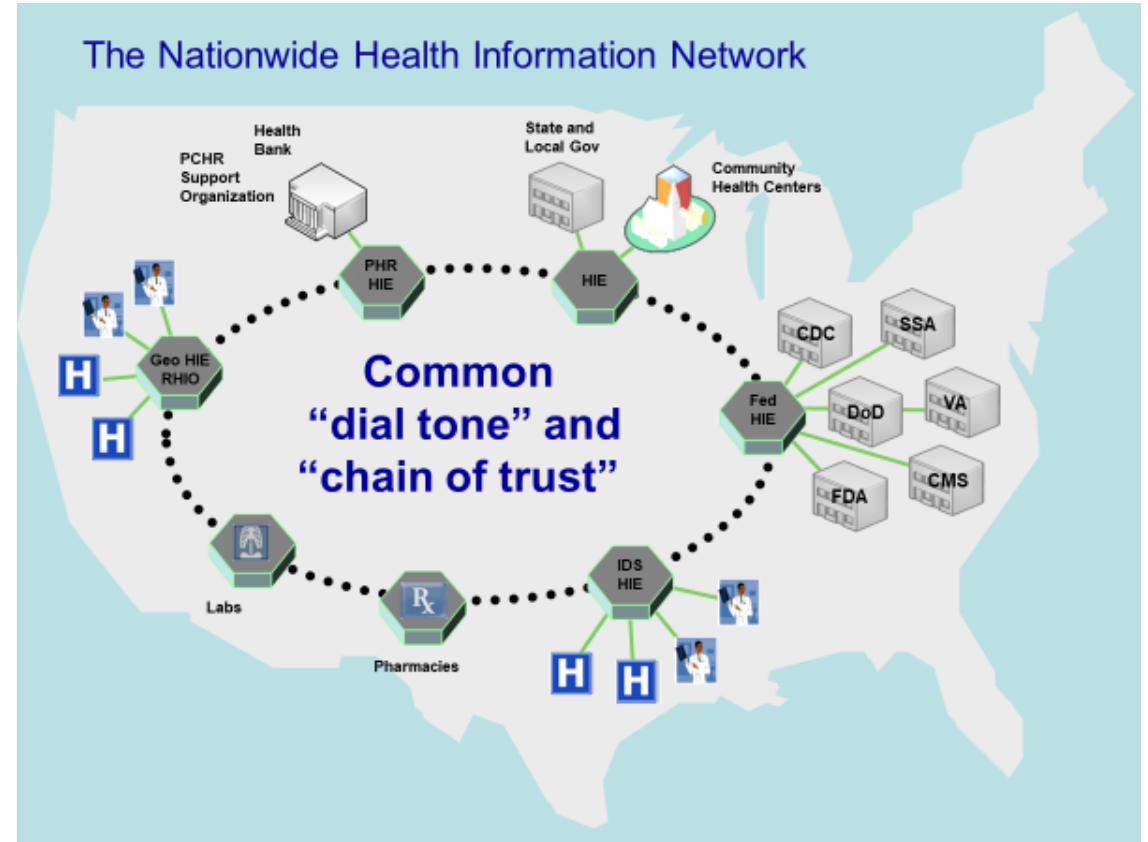
What is Electronic Case Reporting (eCR)?

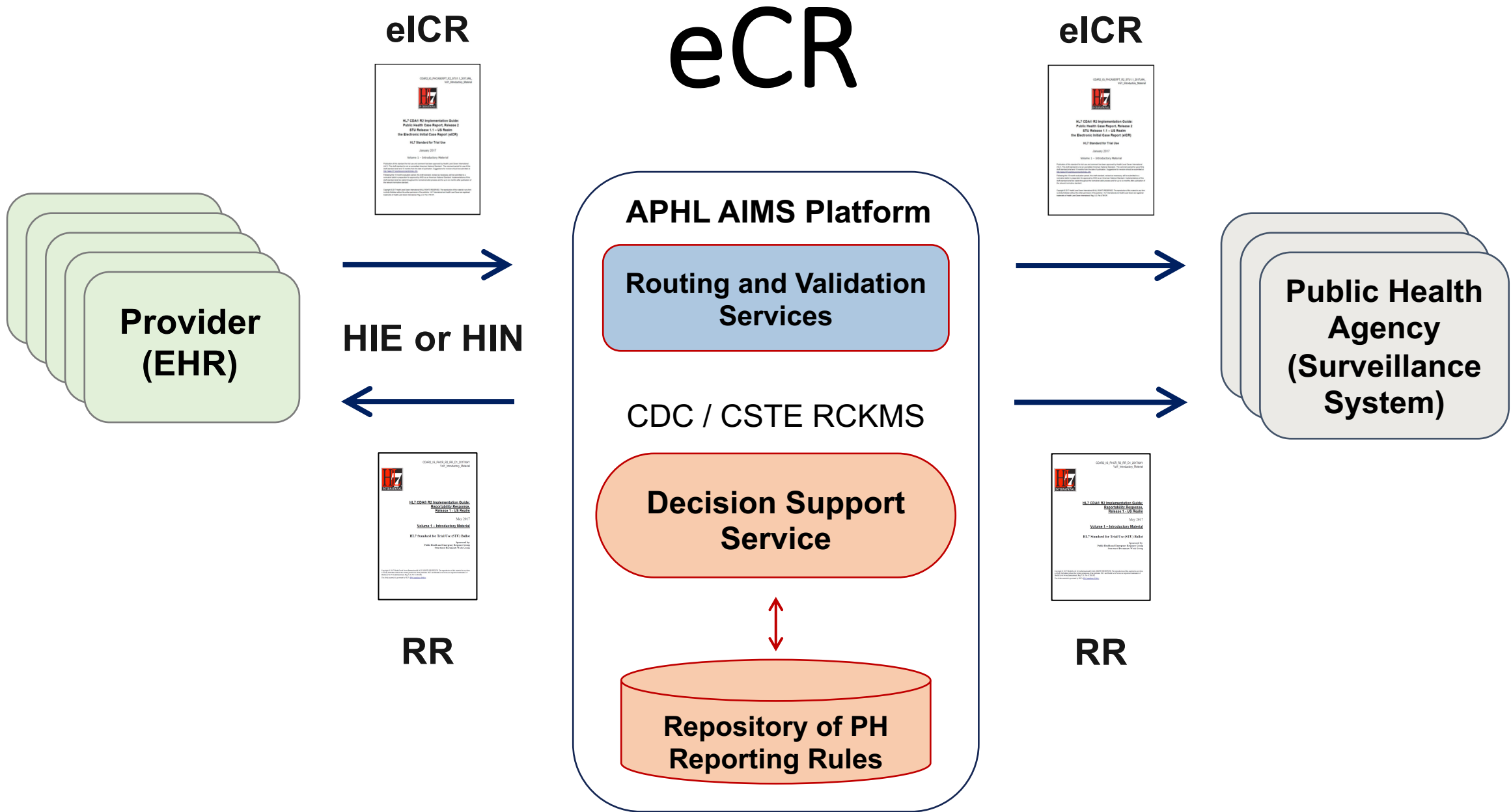


The automated identification of reportable health events in electronic health records (EHRs) and their transmission to state and local public health authorities for review and action.

Data Authorities and Policy Scalability

- HIPAA plus authorizing laws needed for public health, unconsented disclosures
- EHRs cannot now implement complex, distributed logic
- Need a platform to support complex rules / decision support operating as a Business Associate
- And need a chain of trust – provider to HIE / HIN to platform
- DURSA public health permitted purpose for exchange and APHL a contractor / Business Associate of eHealth Exchange





HL7 Electronic Initial Case Report (eICR)

History of Present Illness	Hospital Unit	Date of the Report
Reason for Visit	Visit Date/Time	Report Submission Date/Time
Date of Onset	Admission Date/Time	Sending Application
Diagnoses Date of Diagnosis	Discharge Date	Trigger Condition Codes
Symptoms	Patient Class	HL7 Document ID
Laboratory Results	Patient ID Number	SetID and Version Number
Laboratory Order Code Placer	Patient Name	Provider ID
Order Number	Parent/Guardian Name	Provider Name
Medications Administered	Patient or Parent/Guardian	Provider Phone
Immunization Status	Phone	Provider Fax
Death Date	Patient or Parent/Guardian	Provider Email
	Email	Provider Facility/Office Name
Patient's Travel History	Street Address	Provider Facility/Office Name
Travel History Start Date	Birth Date	Provider Address
Travel History End Date	Patient Sex	Facility ID Number
Text Description of Travel	Race	Facility Name
Travel Location Code	Ethnicity	Facility Type
Travel Location Address	Preferred Language	Facility Phone
	Occupation	Facility Address
	Occupational health	Facility Fax
	Pregnancy	

CDA and
now FHIR

HL7 Reportability Response

- Confirmation and compliance
- Bidirectional communications / feedback in EHR less than two clicks away
- eCR - a positive provider EHR outcome?!

Patient	Everywoman, Eve
Patient ID(s)	123453 2.16.840.1.113883.19.5 111-00-1234 2.16.840.1.113883.4.1
Contact info	Home: 2222 Home Street Ann Arbor, MI 99999, US
Date of Birth	April 22, 1990
Sex	Female
Race	White
Ethnicity	Hispanic or Latino
Information recipient:	Dr. Seven, Henry
Contact info	1002 Healthcare Drive Ann Arbor, MI 99999, US

Subject:
Reportable condition notification: An initial report for Zika has been sent to the Health Authority West.

eICR Information:
eICR Identifier ca316e79-aaf2-4e8c-aa5f-848093bb8bb1

Summary:
An initial case report was submitted electronically by your organization to determine if a patient has a public health reportable condition. The condition of Zika was identified and is a reportable condition in Michigan. The initial case report was forwarded to the Health Authority West.

Additional information for the required reporting of Zika must be submitted to the Health Authority West immediately. This additional information can be submitted here: http://health.authoritywest.gov/epi/diseases/zika/Supplemental_data_form.pdf

Zika has particular risks for pregnant women. Follow-up guidance for pregnant women and couples who are planning pregnancy: http://health.authoritywest.gov/epi/diseases/zika/Zika_Virus_Testing_Guidance.pdf

Further Laboratory testing for Zika may be needed. Guidance for additional testing and specimen collection: http://health.authoritywest.gov/epi/diseases/zika/Zika_Virus_Testing_Guidance.pdf

A disease plan and treatment guidance for Zika: <http://health.authoritywest.gov/epi/diseases/zika/plan.pdf>

If you have additional questions regarding Zika or reporting, contact information for the Health Authority West is available here: <http://health.authoritywest.gov/epi/diseases/zika/>

Additional References:

Control and prevention information for providers <http://health.authoritywest.gov/epi/diseases/zika/plan.pdf>

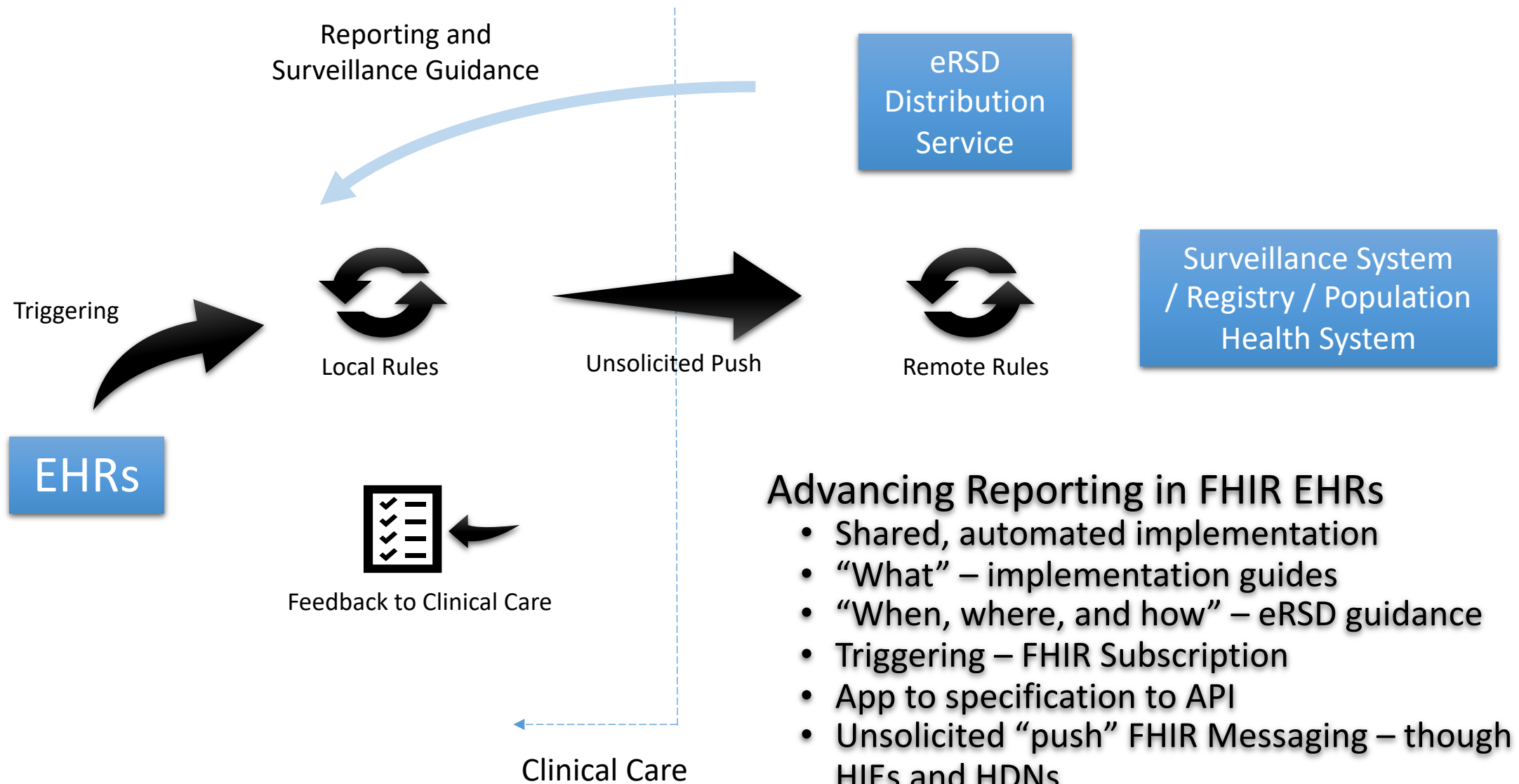
Current prevalence information for Health Authority West <http://health.authoritywest.gov/epi/diseases/zika/>

CDC webpage <https://www.cdc.gov/zika/index.html>

Patient information factsheet <http://health.authoritywest.gov/epi/diseases/zika/factsheet.pdf>

UT Resident information http://health.authoritywest.gov/epi/diseases/zika/ZikaVirus_QA_authoritywest.pdf

General FHIR Design Pattern – Automated Reporting



Advancing Reporting in FHIR EHRs

- Shared, automated implementation
- “What” – implementation guides
- “When, where, and how” – eRSD guidance
- Triggering – FHIR Subscription
- App to specification to API
- Unsolicited “push” FHIR Messaging – though HIEs and HDNs

Electronic Case Reporting (eCR)

- Revolutionary for public health surveillance and outbreak management
- Automates provider reporting
- Can put providers into legal compliance
- Hides jurisdictional variability – single EHR interface
- Provides public health information about conditions in community back to providers
- No cost network service that you can “sell”