

Local Outbreak Management in a Global Society

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Outbreak Management Today

- West Nile Virus
 - Unpredictable zoonotic
 - Vectors? Reservoirs? Symptoms? Victims?
- Sudden Acute Respiratory Syndrome
 - Economically devastating
 - Reservoirs? Clinical spectrum? Transmission?
- Monkeypox
 - Inter-hemispheric zoonotic
 - Reservoirs? Transmission? Vaccination?

FEMA Disaster Response Cycle



Outbreak Response Cycle

EPIDEMIOLOGIC CHARACTERIZATION
SOURCE HYPOTHESIS

CASE FINDING
CASE THERAPEUTICS
(prophylactic or curative)

INTERIM ENV. CONTROLS
HYPOTHESIS TESTING
OUTBREAK TRACKING
REFINEMENT

CASE DEFINITION
INTERIM CONTROLS
Infection Control
Isolation and Quarantine

RESOLUTION
DEMobilIZATION
DEBRIEFING
PLANNING

INITIATE (Yes/No)
CLINICAL
CHARACTERIZATION
AGENT HYPOTHESIS

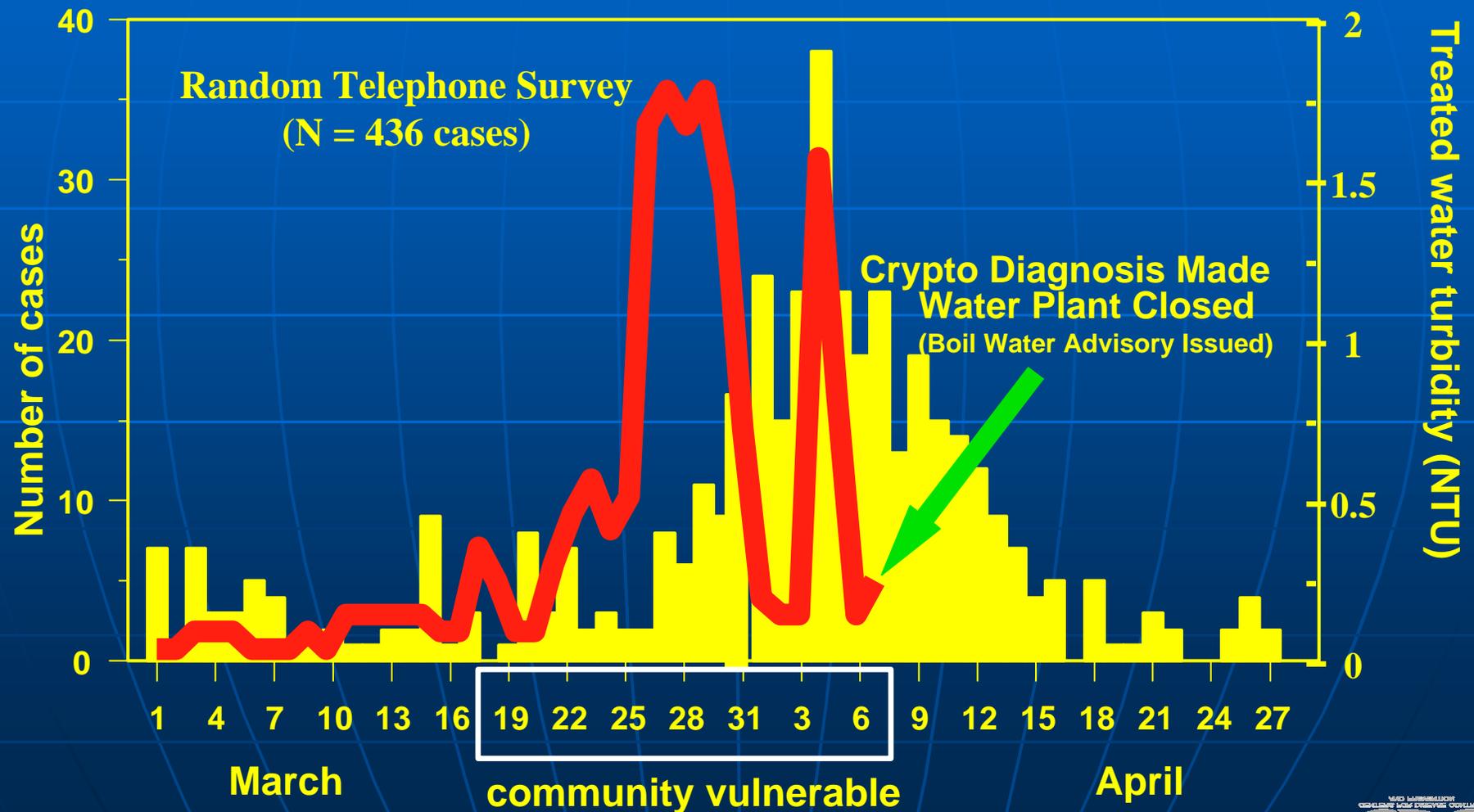
DETECTION
Report, Aberration
Baseline comparison



Detection

- Diagnosis, suspicion, “weird event” or syndromic aberration
- Need up-to-date information on disease baseline
 - Milwaukee SurvNet
 - 14 jurisdictions
 - Logging all confirmed and unconfirmed reports
 - Database available real-time
- A system should minimize work to convert diagnosed cases or anonymous syndromic data into “preliminary outbreak cases”

Dates of Illness Onset & Water Turbidity (Milwaukee 1993)



SARS 2003

EDs report
syndrome volumes

**SEVERE ACUTE RESPIRATORY SYNDROME (SARS)
EMERGENCY DEPARTMENT TRIAGE FORM (5/5/03)**
City of Milwaukee Health Department

EMERGENCY DEPARTMENT TRIAGE:
-Complete this form for every patient with FEVER or RESPIRATORY COMPLAINT
-Apply patient stamp or addressograph to upper right corner of form

1	Does the patient have a complaint of fever? ($\geq 38^{\circ}\text{C}$ or $> 100.4^{\circ}\text{F}$. Use clinical judgment if undocumented history only.)	YES GO TO 2	NO GO TO 2
2	Does the patient have any of: cough, shortness of breath, difficulty breathing, or pneumonia(RX)? If Pulse Oximetry $\leq 95\%$ please check HERE	YES GO TO 3	NO GO TO 3
3	Travel* to People's Republic of China (i.e., mainland China and Hong Kong Special Administrative Region), Hanoi, Vietnam, Singapore, Toronto, Canada, and/or Taiwan within the 10 day preceding symptom onset? *Does include SARS as a destination as appropriate (see above)	YES GO TO 4	NO STOP
4	Close contact** with a person known or suspected to have SARS infection within 10 days of onset of that person's symptoms. **See notes on close contact or contact with respiratory isolation or protective and person known to have SARS. Respiratory isolation, wearing, using, or removing masks, use of gloves, eye protection and isolation negative pressure room. Consult Infection Control or public health if needed.	IF ALL ABOVE CHECKED YES (1, 2 & 3) THEN YES GO TO 5	NO STOP
5	If box 1 & 2 & 3 are ALL checked notify SURVNET IMMEDIATELY (City of Milwaukee Health Department at 414-266-3606)		

Please keep forms together by date of triage (midnight to midnight). Data entry on EMSystem™ is requested by 10:00 AM for each 24-hour report.
After data entry, please maintain a file of these forms in the ED until you are advised by the Milwaukee Health Department they are no longer needed.

Based on CDC Initial Case Definition (2003) and revised Version 2 (October 16, 2003) of the Initial Case Definition (2003).
THE RESULTS OF PATIENT SCREENING CONDUCTED UNDER THIS PLAN ARE CONFIDENTIAL.
PROVIDED BY THE CITY OF MILWAUKEE HEALTH DEPARTMENT. REPRODUCED IN COOPERATION WITH SURVNET™.

ED screening tool

SARS Daily Report

Please input the daily surveillance data collected for your facility during the 24 hour period from 00:00 until 23:59 on the date noted. Questions 1-3 below correspond to totals from Questions 1-3 on the ED Surveillance Form.

*Indicates the information is required.

Date of 24 hour reporting period: _____

Total ED visits: _____

#1 ONLY checked above: _____

#1 AND 2 ONLY checked above: _____

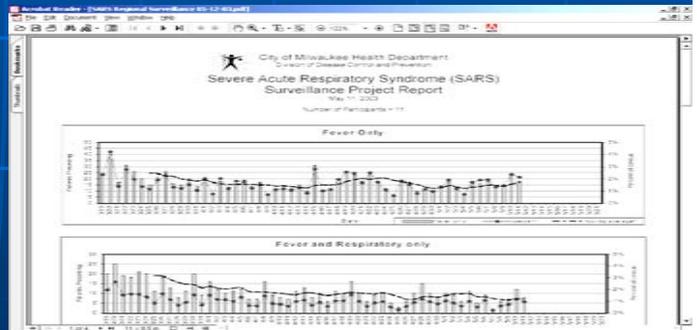
#1 AND 3 ONLY checked above: _____

#1 AND 2 AND 3 checked above: _____

#1 AND 2 AND 3 checked above: _____

Comments or questions: _____

Print Message



Downloaded
by local PH

Metastatic Surveillance

Local analysis

Last Updated May 13, 2003

SARS SP Downloads

- SARS Letter (see listed below, in pdf format)
- SARS Overview
- SARS ED Surveillance Form (Updated 05/05/03) (may be viewed, printed or saved to your computer)
- SARS Regional Implementation Guide

To: Potential SARS-SP Participants
From: SARS-SP Task Force, Frontlines of Medicine Workgroup
Re: Severe Acute Respiratory Syndrome Surveillance Program

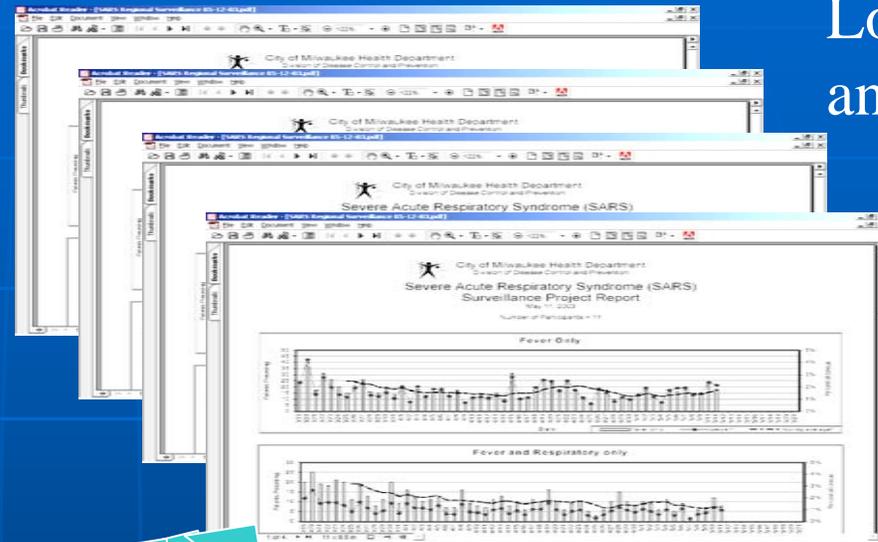
Severe Acute Respiratory Syndrome (SARS) is a new disease that has been reported in several States and our healthcare system. This document provides information on the implementation of the program in your hospital and with the American College of Emergency Medicine.

If you wish to be informed when the SARS ED Surveillance Form is updated please enter your email address in the text field below. This is **NOT** REQUIRED to download the form.

Please enter your email address and click the button below.

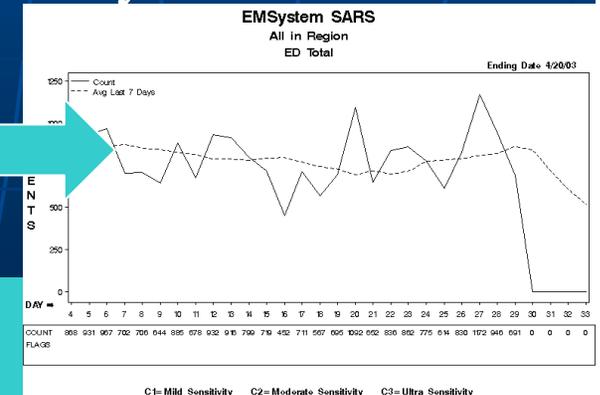
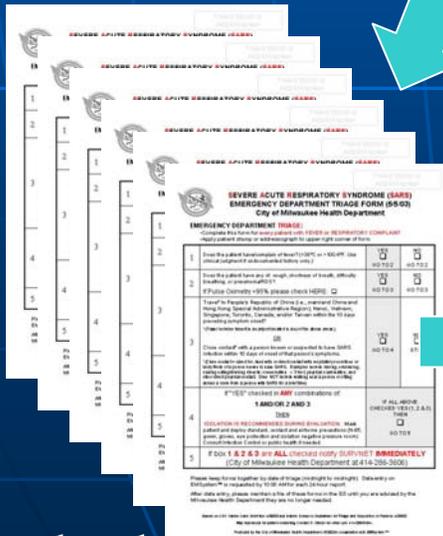
Submit email address/download SARS ED Surveillance Form

[Download SARS ED Surveillance Form without submitting email address.](#)



Email/
Internet
Push Notification

Centralized aberration analysis at CDC



Hundreds downloaded

27 hospitals in 4 regions performed surveillance

Investigation Initiation

- For the local health officer a
 - Communications problem
 - Informed or not?
 - Political problem
 - Resource problem
 - Is this a priority?
 - Perception problem
 - Astuteness of reporter, staff, HO
 - Index of suspicion
 - Information problem
 - Lack of meaningful baseline

Clinical Characterization and Agent Identity Hypothesis

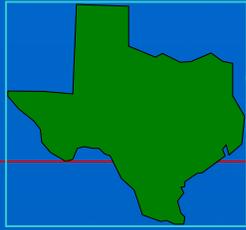
- Good to gather clinical information UP FRONT
 - Monkeypox: little info on clinical exam, white cell counts, liver functions, etc.
- Need to receive and store laboratory information on each suspect include date, type of specimen, analysis, etc.
- Environmental investigation may precede firm hypothesis (animal traceback/traceforward)

Case Definition

- Slow development of state and federal definitions
- Contradictory local, state and federal definitions
- Case definition has great impact on
 - Isolation and quarantine = work/school
 - Infection control and prophylaxis
 - Environmental measures
- Anticipate change but minimize tinkering

Case Finding/Line List

- One system to track
 - Suspects
 - Confirmed
 - Contacts
 - Environmental features (pets, restaurant, school)
- The line list should **generate** hypotheses
- Shared line list across local, state, Federal
- Healthcare contacts: may be **"managed"** by Occupational Health or Infection Control
- Veterinary, animal handlers, agriculture, other workers have underdeveloped IC infrastructure



The Saga of Prairie Dog C



Spring, 2003 - Tranquil subterranean life in SD or TX
likely aborted by vacuum extraction from burrow

April - Sold by Distributor A in TX to Distributor B in IL with
subsequent interim contact to GGR / African exotic rodents

4/14 - early May - Sold by Distributor B in IL to Distributor C
in Milwaukee

5/ 5 - Sold by Distributor C to Pet Shop A

5/17 - Purchased from Pet Shop A in Milwaukee to Household A

5/18 - Onset of conjunctivitis, ocular & nasal discharge

5/22 - Worsening symptoms, anorexic - presented to Vet Clinic A,
treated with enrofloxacin and ophthalmic ointment

5/23 - Not improving, presented to Vet Clinic B

5/25 - Hospitalized at Vet Clinic B (continuation of antibiotics,
s.q. fluids, nebulization)

5/27 - Died at Vet Clinic B

The Saga of Prairie Dog C

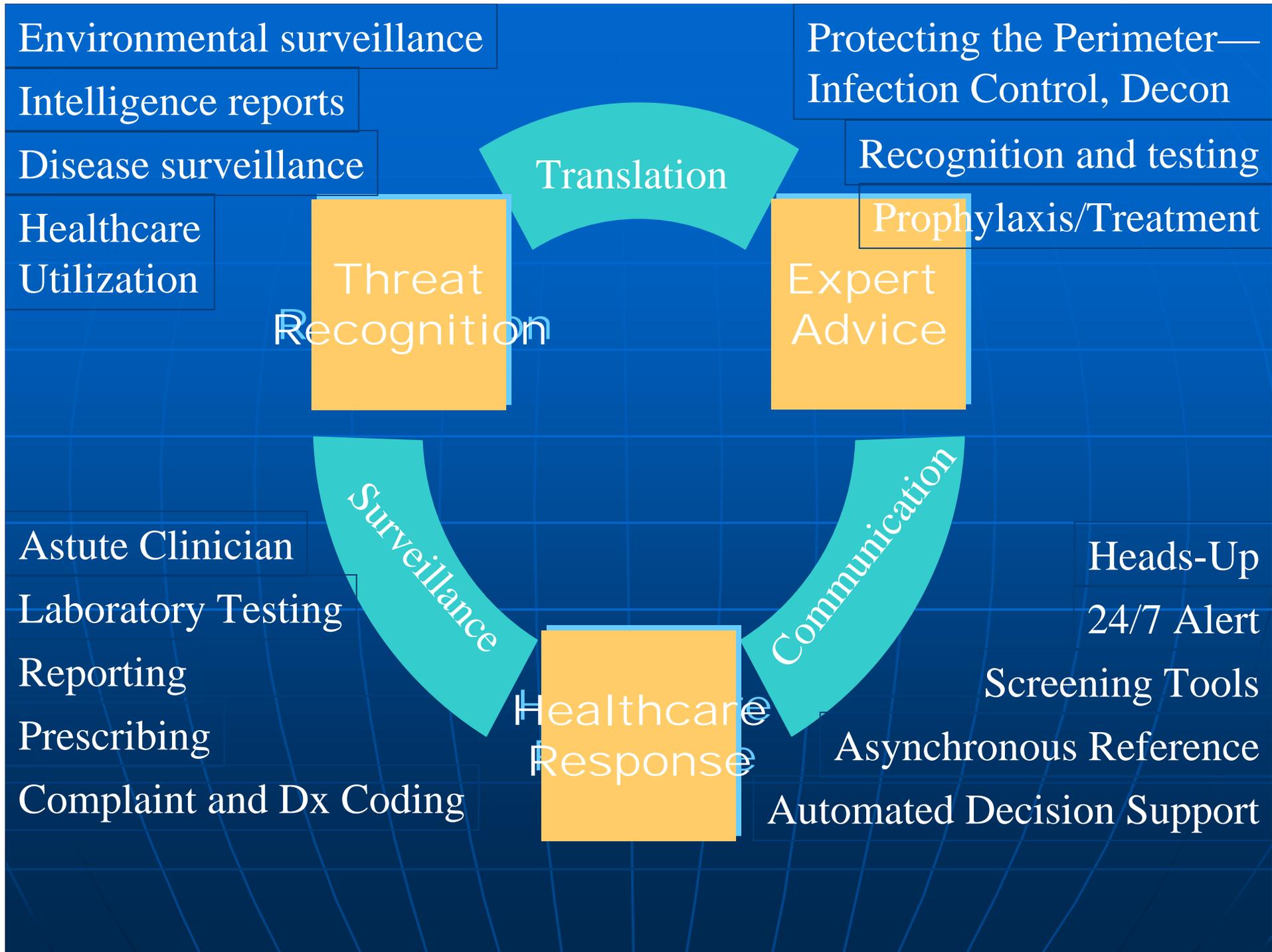
- Cases attributable to P dog C
 - 14 cases: 5 confirmed, 7 probable, 2 suspect
 - 1 household, 2 vet clinics
 - 14/27 confirmed and probable cases in WI
- Illnesses potentially or in part attributable to P dog C
 - 12 cases: 3 confirmed, 3 probable, 6 suspect
 - pet store, distributor

Line List/Contact List & Isolation, Quarantine, Therapeutics and Environmental Measures

- Line list/contact list system should support isolation and quarantine functions (orders served, date lifted, etc.) and compliance with environmental orders (e.g., containment of animal bedding, animal isolation)
- Line list/contact list system should support communicating with those needing therapeutics
- Line list/contact list system should record therapeutics (and refusals)
- Pivot tables for people and environmental (e.g., animals, restaurants)

Outbreak Tracking, Refinement, Demobilization, Debriefing

- Support epi curve analysis
- Identify secondary spread within households, workplaces, healthcare and veterinary facilities
- **DEBRIEFING FEEDBACK**: Always add **NEW** questions to **END** of questionnaire



Milwaukee-Waukesha Operational Goals and Activities

- Find and characterize animal and human cases
 - Case definition and case finding
 - Trace forward and trace back
 - Define routes and risks of infection, clinical spectrum
- Prevent secondary spread
 - Human case isolation
 - Identify and track human contacts for illness
 - Clinical infection control
 - Animal case and contact quarantine
 - Environmental decontamination
 - Vaccinia (smallpox) vaccination for staff and contacts

Operational Goals and Related Activities (cont.)

- Prevent zoonotic spread to wild animals
 - Identification of ill animals
 - Prevent animal release or escape
 - Quarantine animal contacts
 - Isolation/destruction of bedding and waste
 - Survey of local sylvan mammals
- Coordinated management and communications
 - Participation in federal and state conference calls
 - Establishment of unified incident command across public health agencies of 2 SE Wisconsin county
 - Single Public Information Officer for two-county area

For More Information

- Foldy S. Monkeypox, Wisconsin 2003: Local response to global zoonosis. Public Health Readiness e-Link: Advancing Local Practice. December 2003 (accessible at <http://bt.naccho.org/E-newsletter-archive/Monkeypox-Article.htm>)
- Foldy SL. Linking better surveillance to better outcomes. MMWR Suppl. – [accepted; target publication date July 2004].
- Foldy S, Barthell EN, Silva JC, Biedrzycki P, Howe DS, Erme M, Keaton B, Hamilton CL, Brewer LK, Miller G, Bernstein R, Eby E, Pemble K, Fenton C. SARS Surveillance Project: Internet-enabled multi-region syndromic surveillance for rapidly emerging disease. MMWR Suppl – [accepted; target publication date July 2004]