

Outbreak investigation and Healthcare-acquired infections—a local public health perspective

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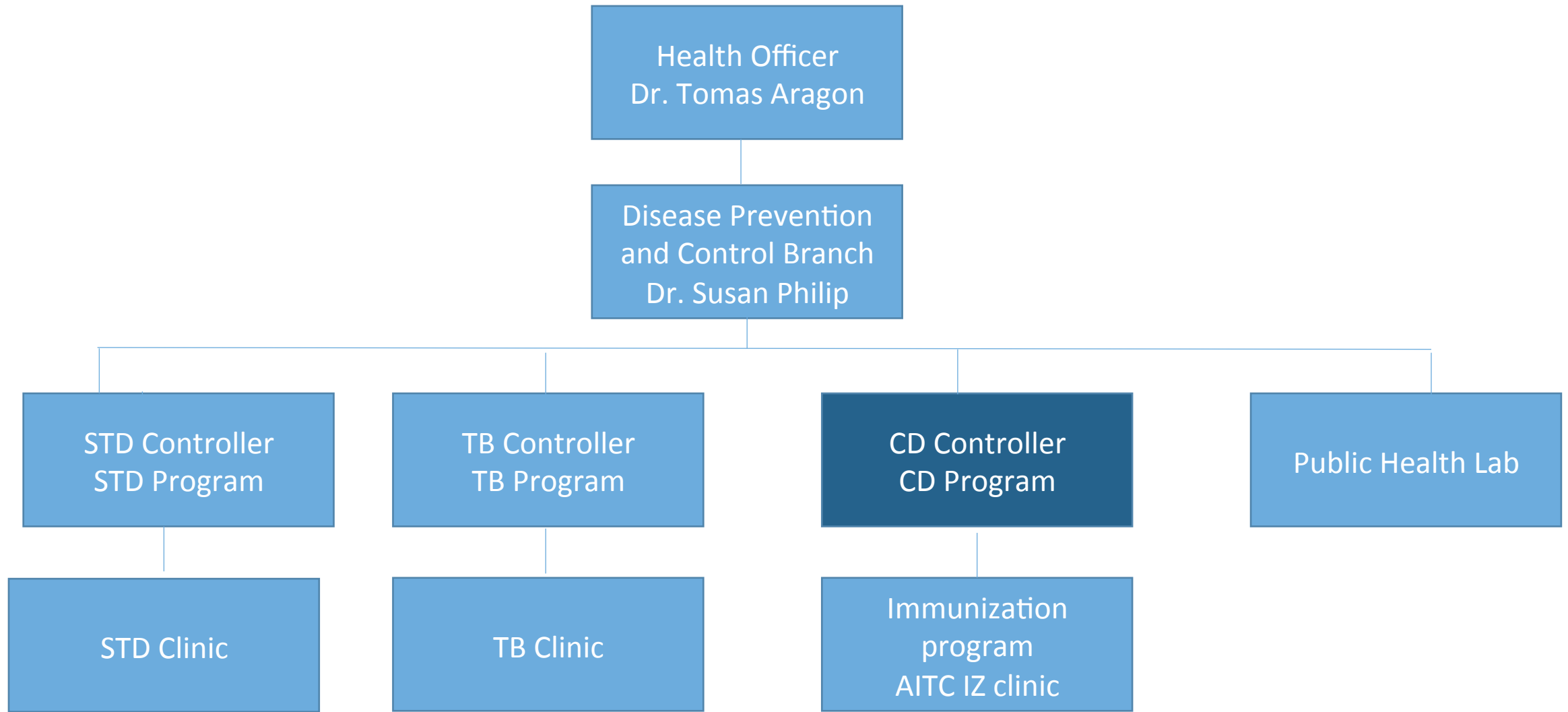
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POPULATION HEALTH DIVISION
SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH
DISEASE PREVENTION & CONTROL



SFPDH Disease Control Programs

CD Control Unit team

Team members

- Director/CD Controller
 - Consultation/oversight/policy/prioritization/“public face”
- Coordinator/administrator
- Epidemiologists
- Disease Investigators
- Public Health Nurse
- Clerical Support

Partners

- CDPH
- CEIP
- SFUSD
- Medical Providers
- Environmental Health Branch
- Animal Care and Control
- Clinical and Public Health Labs

What diseases does the CD Control program track and investigate?

- “Everything else” (not STD, TB, HIV)
- >70 “reportable” diseases and outbreaks
- $\pm$ 1000 reports a year
- We deal with many unusual conditions and emerging infections
- But...we spend most of our time on common diseases and outbreaks
- Most frequent reports are enteric infections (Campy, Giardia, Salmonella, Shigella)

What is the CD Control Unit's role?

- Receive reports from labs and medical providers
- Investigate cases and outbreaks (medical records, interviews, field)
- Take action to interrupt transmission (depends on public health significance of the disease)
- Alert and educate medical community to trends and emerging situations
- Compile surveillance data; report publicly as appropriate
- Report cases/outbreaks to California Department of Public Health

List of Reportable Diseases and Title 17 Requirements

Title 17, California Code of Regulations (CCR) §2500, §2593, §2641-2643 and §2800-2812.

Every health care provider, knowing of or in attendance on a case or suspected case of any of the diseases or conditions listed below, must report to the local health officer for the jurisdiction where the patient resides. Where no health care provider is in attendance, any individual having knowledge of a person who is suspected to be suffering from one of the diseases or conditions listed below may make such a report to the local health officer for the jurisdiction where the patient resides.

§2500 (c) The Administrator of each health facility, clinic or other setting where more than one health care provider may know of a case, a suspected case or an outbreak of disease within the facility shall establish and be responsible for administrative procedures to assure that reports are made to the local officer.

COMMUNICABLE DISEASE CONTROL UNIT PHONE: (415) 554-2830 FAX: (415) 554-2848 M-F 8AM to 5PM		AIDS OFFICE PHONE: (415) 554-9050	ANIMAL BITES (mammals only) PHONE: (415) 554-9422 FAX: (415) 864-2866
For urgent reports after hours, follow the prompts to page the on-call MD	STD CLINIC PHONE: (415) 487-5555 FAX: (415) 431-4628	ENVIRONMENTAL HEALTH SERVICES PHONE: (415) 252-3862 FAX: (415) 252-3818	
	TUBERCULOSIS CLINIC PHONE: (415) 206-8524 FAX: (415) 206-4565		

DISEASE OR CONDITION / URGENCY REPORTING REQUIREMENTS			
URGENCY REPORTING KEY			
▲ Report immediately by telephone 1 Report within one working day of identification 7 Report within seven calendar days by FAX, phone or mail			
7 Acquired Immune Deficiency Syndrome (AIDS) to <i>AIDS Office</i> 7 Alzheimer's Diseases and Related Conditions 1 Amebiasis 7 Anaplasmosis/Ehrlichiosis 7 Animal bites (mammals only) to <i>Animal Care and Control</i> ▲ Anthrax*, human or animal 1 Babesiosis ▲ Botulism* (Infant, Foodborne, Wound, Other) 7 Brucellosis, animal (except infections due to <i>Brucella canis</i>) ▲ Brucellosis*, human 1 Campylobacteriosis 7 Cancer, including benign and borderline brain tumors (except (1) basal and squamous skin cancer unless occurring on genitalia, and (2) carcinoma in-situ and CIN III of the cervix) 7 Chancroid to <i>STD Clinic</i> 1 Chickenpox (only hospitalizations and deaths) 7 <i>Chlamydia trachomatis</i> infections to <i>STD Clinic</i> ▲ Cholera ▲ Ciguatera Fish Poisoning 7 Coccidioidomycosis 7 Creutzfeldt-Jakob Disease (CJD) 1 Cryptosporidiosis 7 Cyclosporiasis 7 Cysticercosis ▲ Dengue ▲ Diphtheria	7 Giardiasis 7 Gonococcal infections (including disseminated) to <i>STD Clinic</i> 1 <i>Haemophilus influenzae</i> invasive disease (less than 15 years of age) ▲ Hantavirus infections ▲ Hemolytic Uremic Syndrome 1 Hepatitis A, acute infection 7 Hepatitis B (specify acute case or chronic) 7 Hepatitis C (specify acute case or chronic) 7 Hepatitis D (Delta) (specify acute case or chronic) 7 Hepatitis E, acute infection 7 Human Immunodeficiency Virus (HIV) to <i>AIDS Office</i> 7 Influenza, deaths in laboratory-confirmed cases for age 0-64 years 7 Influenza, novel strains (human) 7 Legionellosis 7 Leprosy (Hansen Disease) 7 Leptospirosis 1 Listeriosis 7 Lyme Disease 7 Lymphogranuloma Venereum (LGV) to <i>STD Clinic</i> 1 Malaria ▲ Measles (Rubeola) 1 Meningitis (specify etiology) ▲ Meningococcal infections 7 Mumps ▲ Paralytic Shellfish Poisoning 7 Pelvic Inflammatory Disease (PID) to <i>STD Clinic</i>	7 Rickettsial Diseases (non-Rocky Mountain Spotted Fever), including Typhus and Typhus-like illnesses 7 Rocky Mountain Spotted Fever 7 Rubella (German Measles) 7 Rubella Congenital Syndrome 1 Salmonellosis (other than Typhoid Fever) ▲ Scombroid Fish Poisoning ▲ Severe Acute Respiratory Syndrome (SARS) ▲ Shiga toxin (detected in feces) 1 Shigellosis ▲ Smallpox* (Variola) 1 <i>Staphylococcus aureus</i> infections, severe (ICU/death) in a previously healthy person 1 Streptococcal infections, outbreaks of any type and individual cases in food handlers and dairy workers only 1 Syphilis to <i>STD Clinic</i> 7 Taeniasis 7 Tetanus 7 Toxic Shock Syndrome 7 Transmissible Spongiform Encephalopathies (TSE) 1 Trichinosis 1 Tuberculosis to <i>Tuberculosis Clinic</i> 7 Tularemia, animal ▲ Tularemia*, human 1 Typhoid Fever (cases and carriers) 1 <i>Vibrio</i> infections 7 <i>Viral Hemorrhagic Fever*</i> , human or animal	

Why do clinicians need to report to public health if labs are also required to report?

24/7 Disease Reporting - x Reportable Diseases list a x Reportable Diseases list e x

www.sfcddcp.org/diseasereporting.html

Apps Google Maps cdph dcde 28 Google Calendar ucsc email CAHAN EPIx COPC LCR rabid walkers sf weather edd cddp outlook coca Collections & Resc

Communicable Disease Control and Prevention
San Francisco Department of Public Health

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Disease Reporting & Control / 24/7 Disease Reporting

- Report a Disease
- List of Legally Reportable Diseases
- Why Report
- Reporting Forms
- Healthy Habits that Prevent Disease
- Disease Control Projects in San Francisco

24/7 Communicable Disease Reporting For Clinicians

The Communicable Disease Control Unit works around the clock to receive and respond to communicable disease reports. Physicians and health care providers, per Title 17 of the California Code of Regulations, are legally required to report suspected, lab-confirmed, and clinical diagnoses of specific diseases and conditions within specified time frames to the San Francisco Department of Public Health.

Reportable Diseases and Conditions

- List of legally reportable diseases and conditions
- Unusual conditions for which we request reports

Reporting Forms

Disease Reporting Numbers SF Department of Public Health

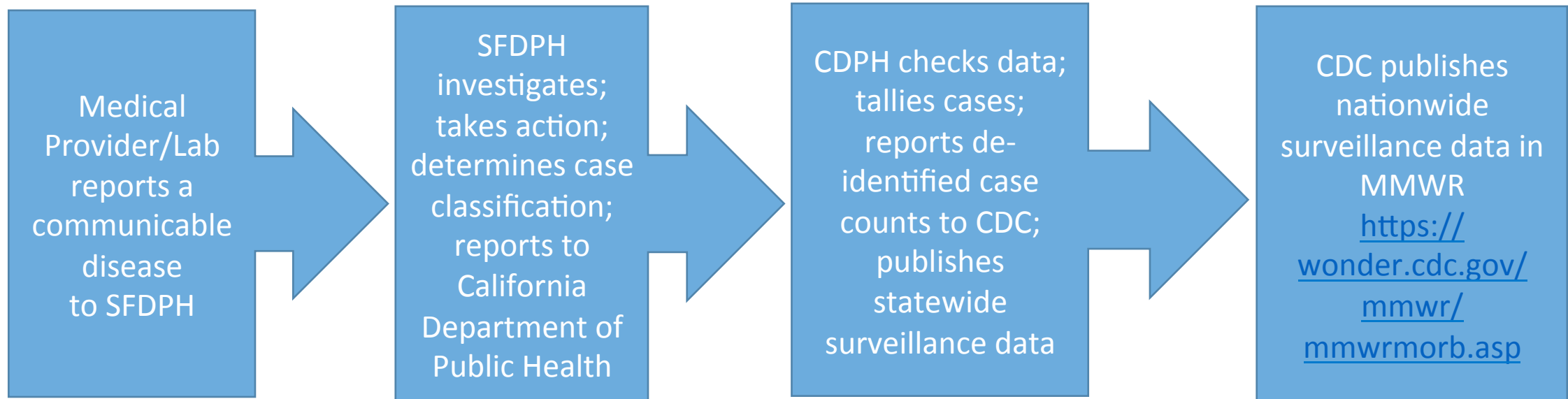
Communicable Disease Control

Urgent Reports 24/7
(415) 554-2830
After hours, follow instructions to page the on-call physician

Non-urgent Reports
(415) 554-2830
(415) 554-2848 fax
cdcontrol@sfdph.org

25 Van Ness Avenue, Suite 500
San Francisco, CA 94102
Business hours: Mon - Fri, 8 am - 5 pm

Communicable Disease: Case Reporting to National Surveillance



Healthcare-Associated Infections

- Why are healthcare facilities such effective settings for infection transmission?
- Why do these infections have such importance for facilities and patients?
- Why do they have public health importance?
- What are some distinctions between a public health approach to infection transmission vs a facility-based approach to infection transmission?

Facilities work together to protect patients.

Common Approach *(Not enough)*

- Patients can be transferred back and forth from facilities for treatment without all the communication and necessary infection control actions in place.

Independent Efforts *(Still not enough)*

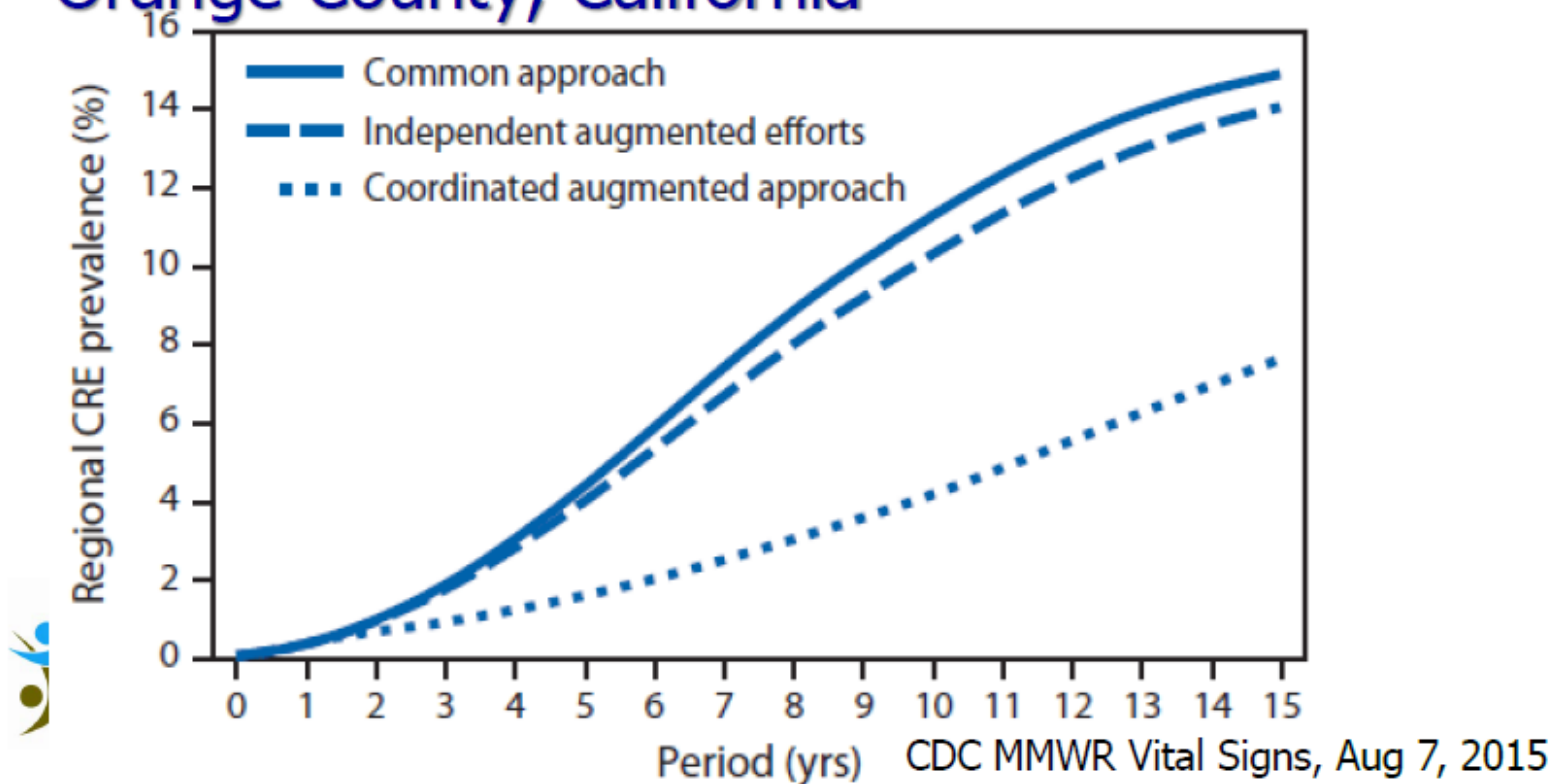
- Some facilities work independently to enhance infection control but are not often alerted to antibiotic-resistant or *C. difficile* germs coming from other facilities or outbreaks in the area.
- Lack of shared information from other facilities means that necessary infection control actions are not always taken and germs are spread to other patients.

Coordinated Approach *(Needed)*

- Public health departments track and **alert** health care facilities to antibiotic-resistant or *C. difficile* germs coming from other facilities and outbreaks in the area.
- Facilities and public health authorities share information and implement shared infection control actions to stop spread of germs from facility to facility.



Projected countywide prevalence of CRE over a 15-year period under three different intervention scenarios — 102-facility model, Orange County, California

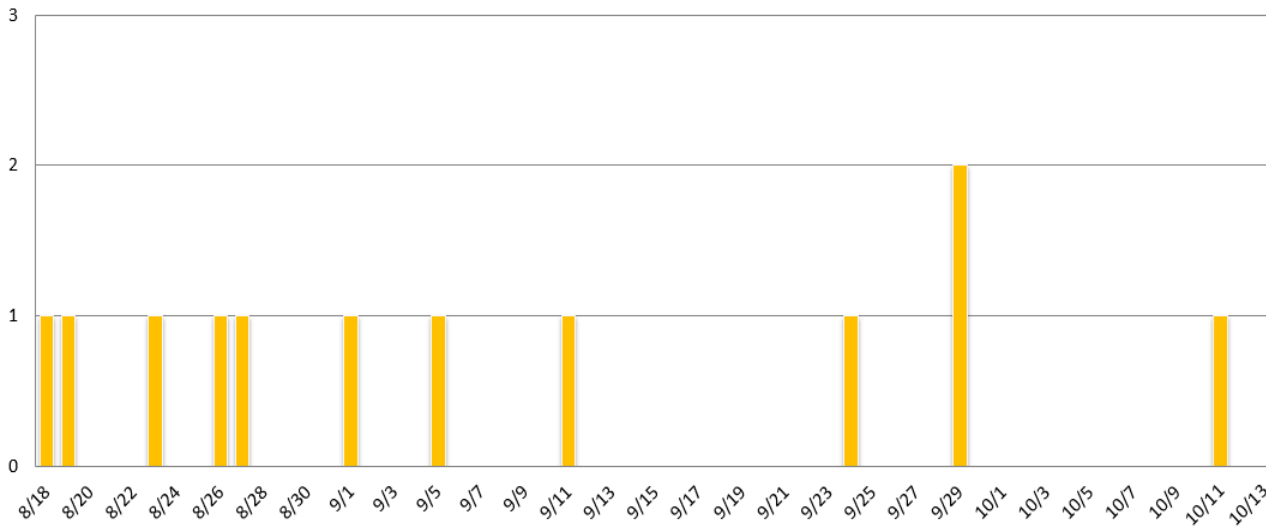


http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a4.htm?s_cid=mmmm6430a4_w

C. Difficile outbreak, San Francisco facility, 2016

A confirmed case was defined as any [person] of [location] with (1) 3x diarrhea or vomiting, and (2) had a duration of symptoms of 24 hours or more, with (3) positive laboratory test result for *C. diff* during [time period]

Previous Epi Curve



A confirmed case was defined as any [person] of [location] with (1) no recent *C. diff* infection, and (2) 3x liquid or watery stools above what is normal for a person within 24 hr, and (3) had a duration of symptoms of 48 hours or more, with (4) positive laboratory test result for *C. diff* during [time period]

Current Epi Curve



Outbreak investigation

“Official version”

Table 6.2 Epidemiologic Steps of an Outbreak Investigation

1. [Prepare for field work](#)
 2. [Establish the existence of an outbreak](#)
 3. [Verify the diagnosis](#)
 4. [Construct a working case definition](#)
 5. [Find cases systematically and record information](#)
 6. [Perform descriptive epidemiology](#)
 7. [Develop hypotheses](#)
 8. [Evaluate hypotheses epidemiologically](#)
 9. [As necessary, reconsider, refine, and re-evaluate hypotheses](#)
 10. [Compare and reconcile with laboratory and/or environmental studies](#)
 11. [Implement control and prevention measures](#)
 12. [Initiate or maintain surveillance](#)
 13. [Communicate findings](#)
-

“Real world” version

- How to define “outbreak” —very context-dependent
- Need to coordinate and communicate with multiple partners
- Passive vs active surveillance—delays in lab results, reporting, case finding and investigation
- Decision-making re control measures despite incomplete information
- Need to communicate re outbreak despite incomplete information
- Only know in retrospect when the outbreak is over