



Epidemiology and Public Health

Kelsey OYong, MPH CIC

Beyond the Basics of Infection
Prevention, Acute Care Settings

November 4, 2019





What and who is Public Health?



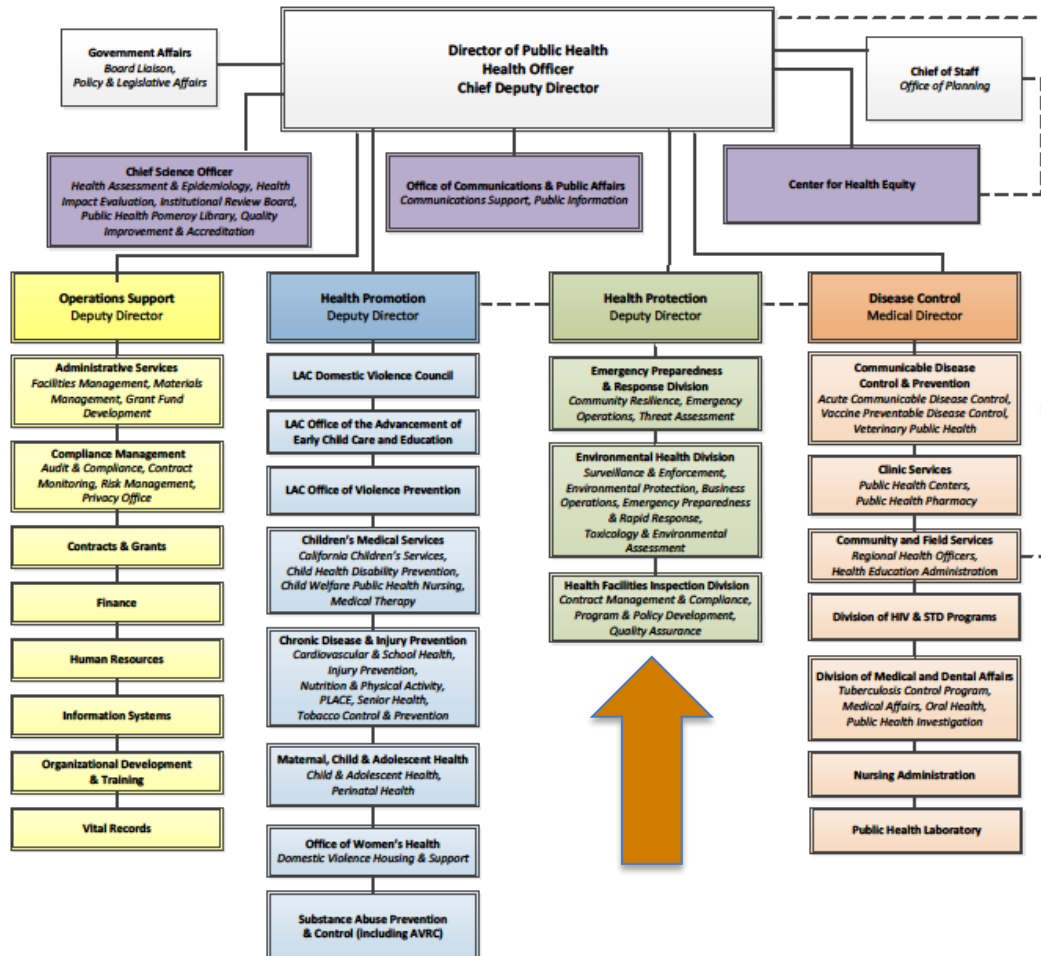
Public health in California

- California is a “home rule” state, meaning that local governments directly oversee public health issues in their county or city
- The state health department collects information from the local departments





**COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC HEALTH**



Barbara Ferrer
Barbara Ferrer, PhD, MPH, MEd
Director of Public Health
September 10, 2019



Communicable disease control duties

- Conducts ongoing surveillance
 - Investigates reported cases
 - Identifies additional cases
- Takes appropriate corrective action, which can include:
 - Isolation of case, removal from work, treatment
 - Identification and prophylaxis of contacts
- Environmental evaluation
 - E.g. Food, water, housing, place of work, etc.



Communicable disease control duties, cont.

- Investigation of “rule outs”
- Guidelines, protocols, information disseminated to clinicians
- Numerous talks to healthcare providers, community
- Diagnosis and treatment assistance
- Investigate and control outbreaks



HAI prevention and control duties

- Contain emergence/spread of antimicrobial resistance
- Educate and inform healthcare settings of public health issues
- Track healthcare associated infections (HAIs), antimicrobial resistance (AR)
- Enhance infection prevention in healthcare settings
- Prevent nosocomial influenza in patients
- Partner with organizations to protect patient safety



Reporting a case of disease





Reporting regulations

- California Code of Regulations
 - Title 17, Public Health
 - §2500. Reporting to the Local Health Authority
 - List of diseases and conditions
 - » Suspected outbreaks of any disease
 - » Suspected food- or waterborne disease
 - Time frame in which to report
 - §2505. Notification by Laboratories
 - List of diseases and significant test results
 - §2606, *et seq.* Animal Rabies and others
- Consider local statutes in your area



What is reportable?

- 85+ communicable diseases and syndromes
- Unusual diseases
- **Outbreaks of any disease**
- Cases AND suspected cases

(Revised 10/10/16)

Please Post

County of Los Angeles • Department of Public Health

REPORTABLE DISEASES AND CONDITIONS

Title 17, California Code of Regulations (CCR), § 2500

It is the duty of every health care provider, knowing or in attendance on a case or suspected case of any diseases or conditions listed below, to report to the local health officer for the jurisdiction where the patient resides. "Health care provider" encompasses physicians (surgeons, osteopaths, oriental medicine practitioners), veterinarians, podiatrists, physician assistants, registered nurses (nurse practitioners, nurse midwives, school nurses), infection control professionals, medical examiners/coroners, dentists, and chiropractors, as well as any other person with knowledge of a case or suspected case.

Note: This list is specific to Los Angeles County and differs from state and federal reporting requirements +

For laboratory reporting: www.publichealth.lacounty.gov/lab/index.htm For veterinary reporting: www.publichealth.lacounty.gov/vet/index.htm

Urgency Reporting Requirements

■ = Report **immediately** by telephone ● = Report by telephone **within 1** working day
☒ = Report by electronic transmission (including FAX), telephone or mail **within 1** working day from identification
☑ = Report by electronic transmission (including FAX), telephone or mail **within 7** calendar days from identification

REPORTABLE DISEASES

<ul style="list-style-type: none"> ☒ Amebiasis ● Anaplasmosis ■ Anthrax, human or animal + ■ Babesiosis ■ Botulism: infant, foodborne, or wound ● Brucellosis, animal; except infections due to <i>Brucella canis</i> + ■ Brucellosis, human + ☒ Campylobacteriosis ■ Chancre(s) + ■ Chickenpox (Varicella), only hospitalizations, deaths, and outbreaks (≥3 cases, or one case in a high-risk setting) ☒ Chikungunya Virus Infection ☒ <i>Chlamydia trachomatis</i> infection, including lymphogranuloma venereum (LGV) + ■ Cholera + ■ Ciguatera Fish Poisoning ● Coccidioidomycosis ● Creutzfeldt-Jakob Disease (CJD) and other Transmissible Spongiform Encephalopathies (TSE) ☒ Cryptosporidiosis ● Cyclosporiasis ● Cysticercosis or Taeniasis ● Dengue Virus Infection ■ Diphtheria + ■ Domoic Acid (Amnesic Shellfish) Poisoning ● Ehrlichiosis ☒ Encephalitis, specify etiology: viral, bacterial, fungal or parasitic ■ <i>Escherichia coli</i>, shiga toxin producing (STEC) including <i>E. coli</i> O157 + ■ Flavivirus infection of undetermined species ■ Foodborne Disease ■ Foodborne Outbreak; 2 or more suspected cases from separate households with same assumed source ☒ Giardiasis ☒ <i>Haemophilus influenzae</i>, invasive disease only, all serotypes, less than 5 years of age 	<ul style="list-style-type: none"> ☒ Hantavirus Infection ■ Hemolytic Uremic Syndrome ☒ Hepatitis A, acute infection ☒ Hepatitis B, specify acute or chronic ☒ Hepatitis C, specify acute or chronic ☒ Hepatitis D (Delta), specify acute or chronic ☒ Hepatitis E, acute infection ☒ Human Immunodeficiency Virus (HIV) Infection, stage 3 (AIDS) ■ (§2641.30-2643.20) ● Human Immunodeficiency Virus (HIV), acute infection ■ (§2641.30-2643.20) ☒ Influenza, novel strains, human cases only, all ages + ■ Influenza, novel strains, human ☒ Legionellosis ● Leprosy (Hansen's Disease) ☒ Leptospirosis ☒ Listeriosis + ☒ Lyme Disease ☒ Malaria + ■ Measles (Rubella) ☒ Meningitis, specify etiology: viral, bacterial, fungal, or parasitic ■ Meningococcal Infection ☒ Mumps ☒ Myellitis, acute flaccid + ☒ Novel virus infection with pandemic potential ☒ Paralytic Shellfish Poisoning ☒ Pertussis (Whooping Cough) ■ Plague, human or animal + ☒ Poliovirus Infection ☒ Psittacosis ☒ Q Fever ■ Rabies, human or animal ☒ Relapsing Fever ☒ Respiratory Syncytial Virus, deaths and less than 5 years only ● Rickettsial Diseases (non-Rocky Mountain Spotted Fever), including Typhus and Typhus-like Illnesses 	<ul style="list-style-type: none"> ☒ Rocky Mountain Spotted Fever ☒ Rubella (German Measles) ☒ Rubella Syndrome, Congenital ☒ Salmonellosis, other than Typhoid Fever + ☒ Scabies, atypical or crusted * ■ Scombrotoxic Fish Poisoning ■ Shiga Toxin, detected in feces ☒ Shigellosis ■ Smallpox (Variola) ■ Streptococcal Infection, outbreaks any type ☒ Streptococcal Infection, individual case in a food handler or dairy worker ☒ Streptococcal Infection, Invasive Group A, including Streptococcal Toxic Shock Syndrome and Necrotizing Fasciitis; do <u>not</u> report individual cases of pharyngitis or scarlet fever. * ☒ Streptococcus pneumoniae, invasive * ☒ Syphilis + ☒ Tetanus ☒ Trichinosis ☒ Tuberculosis + ■ ☒ Tularemia, animal ■ Tularemia, human + ☒ Typhoid Fever, cases and carriers + ☒ Vibrio Infection + ■ Viral Hemorrhagic Fevers, human or animal (e.g., Crimean-Congo, Ebola, Lassa and Marburg viruses) ☒ West Nile Virus (WNV) Infection ■ Yellow Fever ■ Yersiniosis ☒ Zika Virus Infection
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Reportable Non-Communicable Diseases or Conditions

<ul style="list-style-type: none"> ☒ Alzheimer's Disease and Related Conditions (CCR § 2802, § 2806, § 2810) 	<ul style="list-style-type: none"> ☒ Disorders Characterized by Lapses of Consciousness (CCR § 2806, § 2810) 	<ul style="list-style-type: none"> ☒ Pesticide-Related Illnesses (Health and Safety Code § 105200)
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* Reportable to the Los Angeles County Department of Public Health.
 + Bacterial isolates and malarial slides must be forwarded to Los Angeles County Public Health Laboratory for confirmation. Health care providers must still report all such cases separately. Public Health Laboratory (862) 456-1300
 ■ For questions regarding the reporting of HIV/AIDS, STDs or TB, contact the respective program:

Division of HIV and STD Programs
 HIV reporting (213) 351-8516 STD reporting (213) 744-3106
www.publichealth.lacounty.gov/hivstd/ReportCase.htm

TB Control Program
 (213) 745-0800
www.publichealth.lacounty.gov/tb/healthpro.htm

To report a case or outbreak of any disease, contact the Communicable Disease Reporting System
 Tel: (888) 397-3993 • Fax: (888) 397-3778
www.publichealth.lacounty.gov/acd/Cdrs.htm



Health Professional & Laboratory Mandatory Reporting Overview Grid



Home | Program Home | About | FAQ | Comment | Contact | A-Z Index

Font Size | A A A

Communicable Disease & Reporting-Related Programs

- Acute Communicable Disease Control Program (ACDC)
- Tuberculosis Control Program (TBC)
- Division of HIV & STD Programs (DHSP)
- Vaccine-Preventable Disease Control Program (VPDC)
- Veterinary Public Health Program (VPH)
- Public Health Laboratories (PHLabs)

Other Resources




- [Health Provider Public Health Resources Page](#)
- [LA County Public Health](#)

Health Professional & Laboratory Mandatory Reporting Overview Grid (updated 9/27/2019)

See also

- [About Mandatory Disease Reporting in California](#) (follows the table below)
- [Patient Confidentiality Concerns?](#) See California DPH (June 15, 2012): [Letter To All California Health Care Providers: HIPAA and Public Health Disclosures](#)

HEALTH PROFESSIONAL & LABORATORY MANDATORY REPORTING OVERVIEW GRID:

To report:	Form to use:	Disease Reporting-Related DPH Program's Webpage & Phone Number if needed:
 Labs Must Report: Laboratory-Reportable List - for LA County 	See Laboratory-Reportable List	 Phone Number if needed: Hotline: (888) 397-3993 Fax: (888) 397-3778 or (213) 482-5508 See also:



Reportable disease lists change

- Lists change periodically based on new public health threats
- In 2019, California added:
 - Carbapenem-resistant Enterobacteriaceae (carbapenemase-producing)



Who must report?

- Persons mandated to report include:
 - Laboratories
 - Health care providers
 - "Health care provider" means a physician and surgeon, veterinarian, podiatrist, nurse practitioner, physician assistant, registered nurse, nurse midwife, school nurse, infection control practitioner, medical examiner, coroner, or dentist.
 - Public health professionals
 - Officials of most types of schools
 - Others

How to report

- Several ways to report
 - Postal mail
 - Phone
 - Electronic reporting
 - Fax
- Priority of report on Reportable Diseases and Conditions list





How to report

- Reports must be submitted to the local health department (LHD) of the ***patient's jurisdiction of residence***.

California Local Health Department (LHD) Contact Information for Health Care Providers/Labs to Report Communicable Diseases and Submit Confidential Morbidity Report (CMR) forms

Confidential Morbidity Report (CMR) to report all conditions EXCEPT Tuberculosis and lapses of consciousness/ conditions reportable to the DMV ([CDPH 110 A Form](#))

Confidentiality Morbidity Report (CMR) to report Tuberculosis ONLY ([CDPH 110 B Form](#))

Confidential Morbidity Report (CMR) to report lapses of consciousness/conditions reportable to the DMV ([CDPH 110 C Form](#))

Confidential Morbidity Report to report conditions in animal patients ([CDPH 8572 Form](#))

LHD	Fax Number(s)	Phone Number(s)	Address	Link to Disease Reporting Information Website
Alameda County	CD: (510) 273-3744 TB: (510) 273-3916 STD: (510) 268-2036 Lab: (510) 382-4333	(510) 267-3250; After Hours: (925) 422-7595	Division of Communicable Disease Control & Prevention 1000 Broadway, Suite 500 Oakland, CA 94607	Alameda County Communicable Disease Reporting (http://www.acphd.org/communicable-disease/disease-reporting-and-control.aspx)
Alpine County	(530) 694-2770	(530) 694-2146	75-B Diamond Valley Road Markleeville, CA 96120	Alpine County Communicable Disease Reporting (http://www.alpinecountycalifornia.gov/index.aspx?NID=191)
Amador County	(209) 223-1562	(209) 223-6407	10877 Conductor Blvd, Ste 400 Sutter Creek, CA 95682	Amador County Communicable Disease Reporting (http://www.co.amador.ca.us/services/public-health)
Berkeley, City of	(510) 981-5345	(510) 981-5300 After Hours: Call City of Berkeley Dispatch at 510-981-5911. Ask for Health Officer on call	City of Berkeley Public Health 1947 Center St, Second Floor Berkeley, CA 94704	City of Berkeley Communicable Disease Reporting (http://www.cityofberkeley.info/ContentDisplay.aspx?id=13896)
Butte County	Chico: (530) 879-3309; Oroville: (530) 538-5387	Chico & Oroville: (530) 538-2840 After Hours: (530) 332-2462	Chico: 695 Oleander Ave Chico, CA 95926 Oroville: 202 Mira Loma Drive Oroville, CA 95965	Butte County Communicable Disease Reporting (http://www.buttecounty.net/ph/Programs/CommunicableDisease/OtherDiseases/Report.aspx)

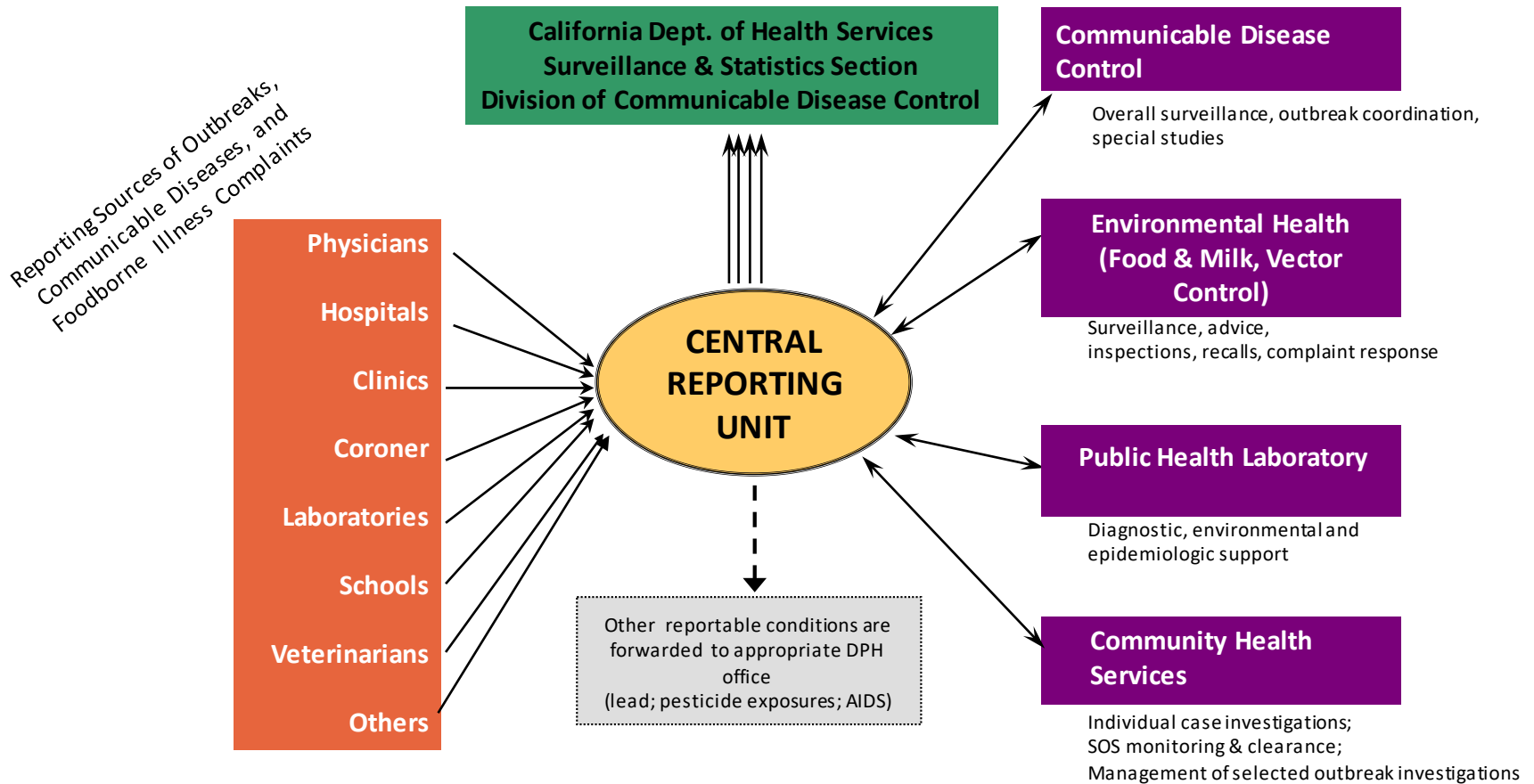


What happens after you report?





Overview of communicable disease reporting





Public Health follow-up

- Medical record, laboratory report review
- Patient interview
- Provider interview



Public Health resources post-reporting

- Consultation
- Laboratory diagnostic support
- Treatment
 - Botulism antitoxin; STDs; TB
- Vaccines for children
 - Routine administration
- Prophylaxis
 - Post-exposure: HBV, measles, pertussis



Prophylaxis for contacts

- Measles
- Pertussis
- Rabies
- Hepatitis A
- Hepatitis B (perinatal)
- Diphtheria
- Varicella (outbreaks)
- Meningococcal disease
- Gonorrhea
- Chlamydia (STD)
- Syphilis
- Tuberculosis
- H. influenzae type b (Hib)



Outbreak investigation

- Health departments are the experts in investigating outbreaks
 - Advanced epidemiologic analyses
- Key to identifying trends in infection sources
- Imperative to stop transmission
- Consult with CDC and subject matter experts




Epidemiologic investigation

- Describe
 - Count cases
 - Prevalence
 - Incidence
- Analyze
 - Compare rates by age group, geography
 - Common risk factors
 - Case-control studies
 - Cohort studies
- Predict
 - Calculate future trends



Health department published report

Acute Communicable Disease Control
2016 Annual Morbidity Report 

**ACUTE COMMUNICABLE DISEASE CONTROL PROGRAM
ANNUAL MORBIDITY REPORT
2016**

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Tables of Notifiable Diseases

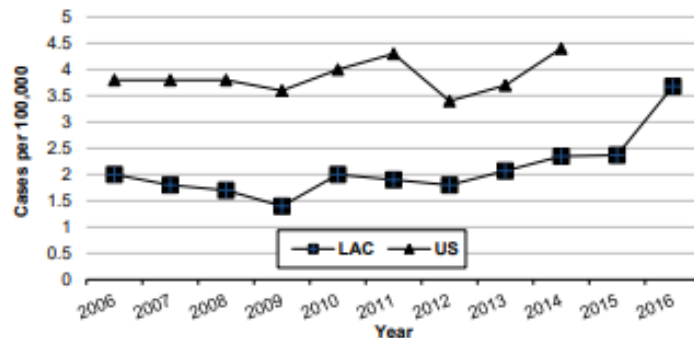
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Health department analysis (2)



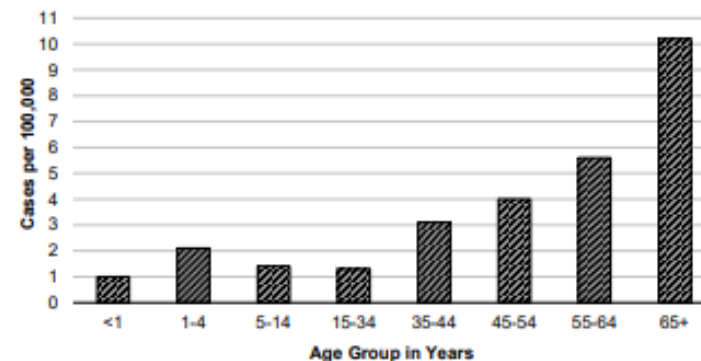
Acute Communicable Disease Control
2016 Annual Morbidity Report

Figure 1. Incidence Rates of Invasive Group A Streptococcus, LAC and US, 2005-2015*



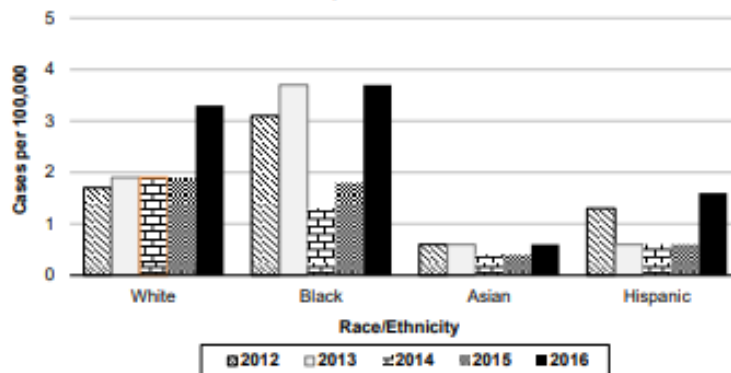
* Active Bacterial Core Surveillance Reports from 2000 to 2015 from the Centers for Disease Control and Prevention's Division of Bacterial Diseases. Report available at: www.cdc.gov/abcs/reports-findings/surv-reports.html

Figure 2. Incidence Rates* of Invasive Group A Streptococcus by Age Group, LAC, 2016 (N=353)



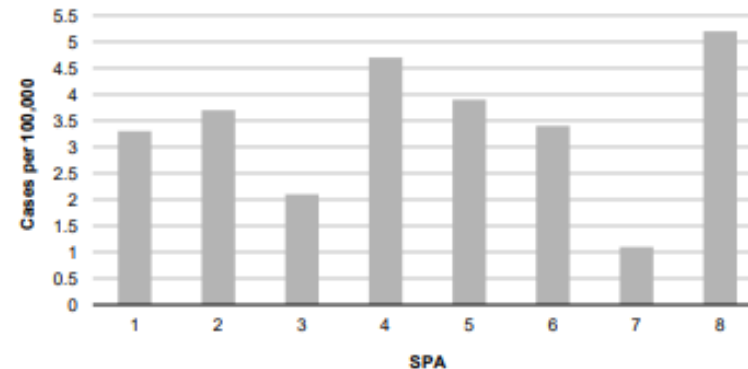
*Rates based on fewer than 19 cases are unreliable

Figure 3. Invasive Group A Streptococcus Incidence Rates* by Race/Ethnicity LAC, 2012-2016



*Rates based on fewer than 19 cases are unreliable

Figure 4. Incidence Rates* of Invasive Group A Streptococcus by SPA LAC, 2016 (N=353)



*Rates based on fewer than 19 cases are unreliable



Reporting HAIs to Public Health





HAI reporting regulations

- 35 states in the country mandate reporting of HAIs
- California state, LA County, and Centers for Medicare and Medicaid Services (CMS) regulations apply to LAC healthcare settings
- HAIs primarily reported through the National Healthcare Safety Network (NHSN)



NHSN

- Web-based surveillance system designed by CDC
- Facilities own their NHSN surveillance data
 - May edit at any time to improve accuracy, completeness
- Facilities can (or may be required) to join one or more NHSN Group
 - Ex: healthcare organization, CDPH, LAC DPH
 - Facility confers rights for data access to the Group
 - Facilities within Group cannot see each other's data



Elements of NHSN reporting

- Individual infections (with patient and procedure information)
- Denominators
 - Patient-days
 - Device-days
 - Number of surgeries
- Annual facility survey
 - Hospital and lab characteristics



Reporting an infection in NHSN



Form Approved
OMB No. 0920-0666
Exp. Date: 11/30/2021
www.cdc.gov/nhsn

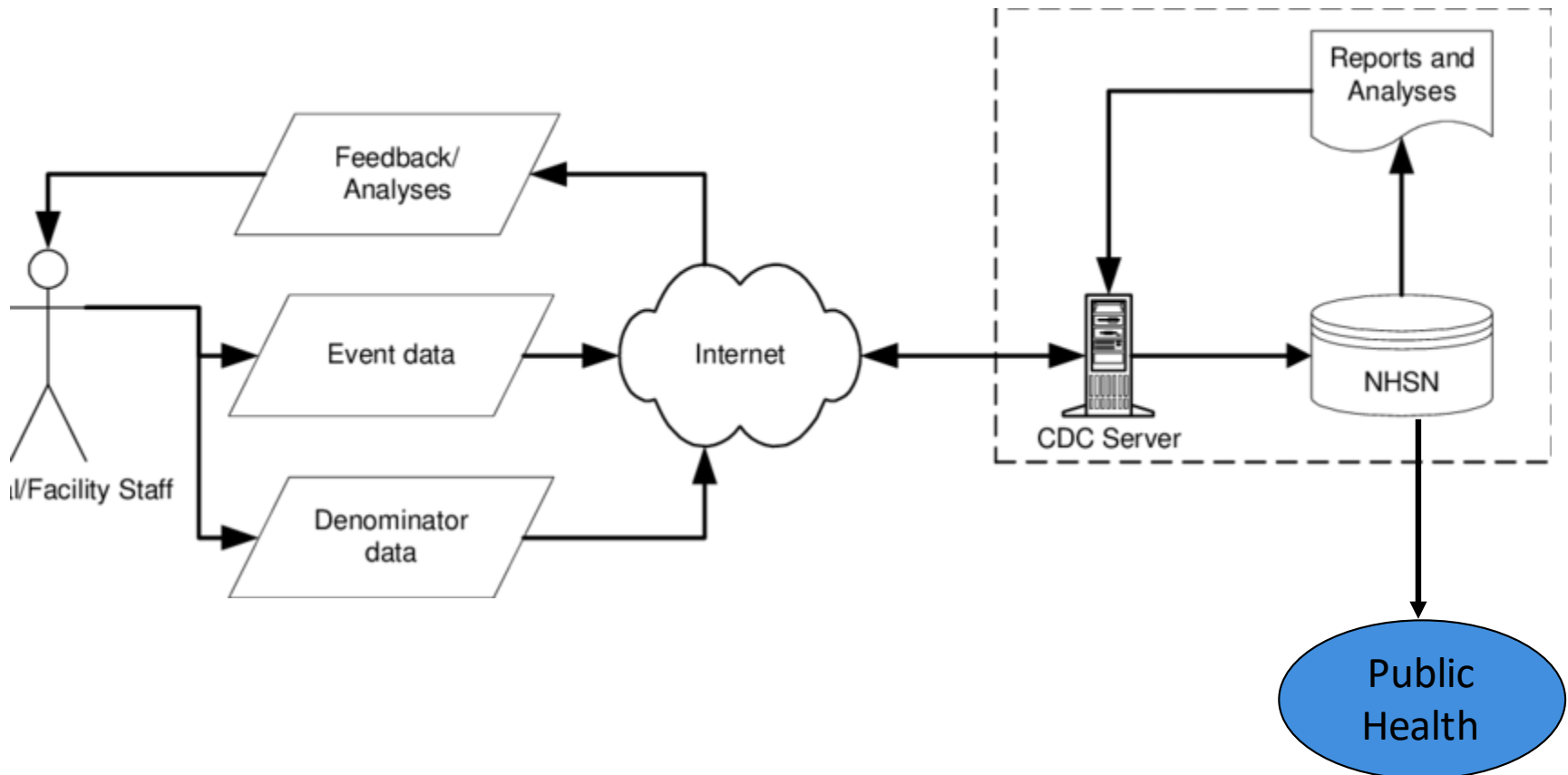
Primary Bloodstream Infection (BSI)

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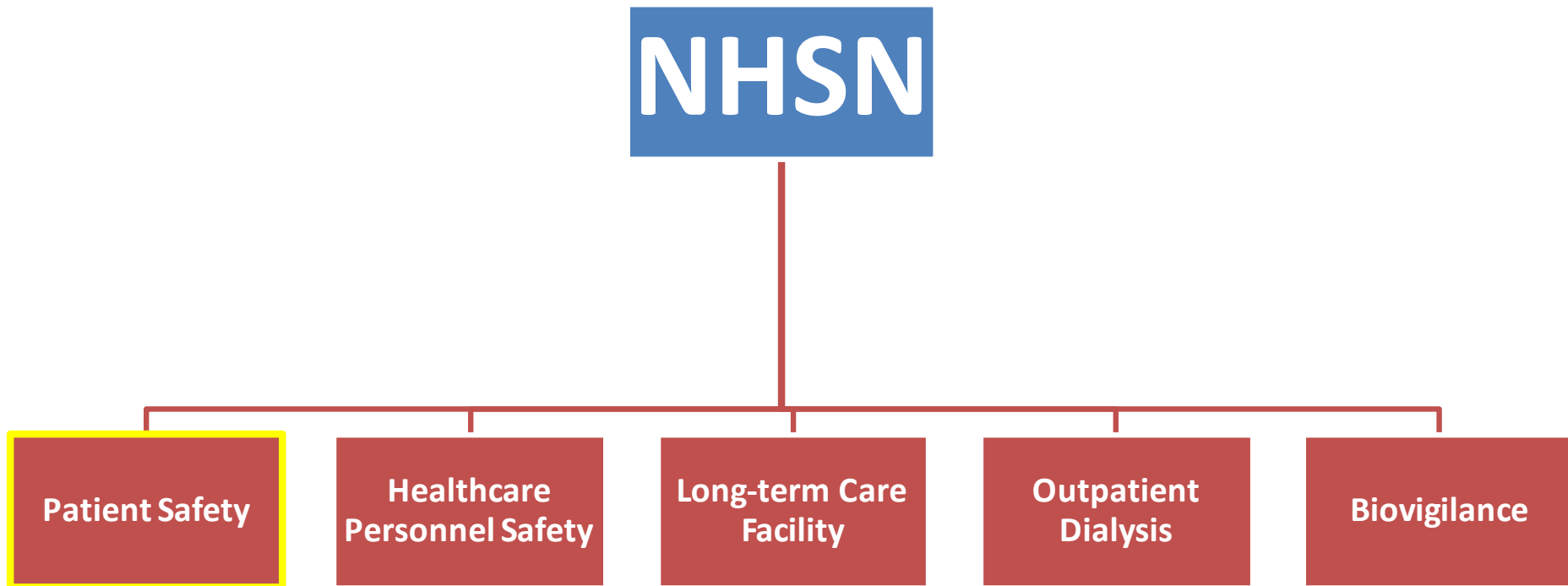
*required for saving **required for completion

Facility ID:		Event #:	
*Patient ID:		Social Security #:	
Secondary ID:		Medicare #:	
Patient Name, Last:		First:	Middle:
*Gender: F M Other		*Date of Birth:	
Ethnicity (Specify):		Race (Specify):	
*Event Type: BSI		*Date of Event:	
Post-procedure BSI: Yes No		Date of Procedure:	
NHSN Procedure Code:		ICD-10-PCS or CPT Procedure Code:	
*MDRO Infection Surveillance:			
<input type="checkbox"/> Yes, this infection's pathogen & location are in-plan for Infection Surveillance in the MDRO/CDI Module <input type="checkbox"/> No, this infection's pathogen & location are not in-plan for Infection Surveillance in the MDRO/CDI Module			
*Date Admitted to Facility:		*Location:	
Risk Factors			
*If ICU/Other locations, Central line: Yes No		Check all that apply:	
*If Specialty Care Area/Oncology,		Yes <input type="checkbox"/> No <input type="checkbox"/> *Any hemodialysis catheter present	
Permanent central line: Yes No		Yes <input type="checkbox"/> No <input type="checkbox"/> *Extracorporeal life support present (ECLS or ECMO)	
Temporary central line: Yes No		Yes <input type="checkbox"/> No <input type="checkbox"/> *Ventricular-assist device (VAD) present	
*If NICU, Central line, including umbilical catheter		Check all that apply: If any option(s) from below are checked 'Yes', then mark the "Central Line" risk factor field 'No' if an eligible central line was also in place.	
Yes No			
Birth weight (grams)		Yes <input type="checkbox"/> No <input type="checkbox"/> Known or suspected Munchausen Syndrome by Proxy	

NHSN reporting scheme

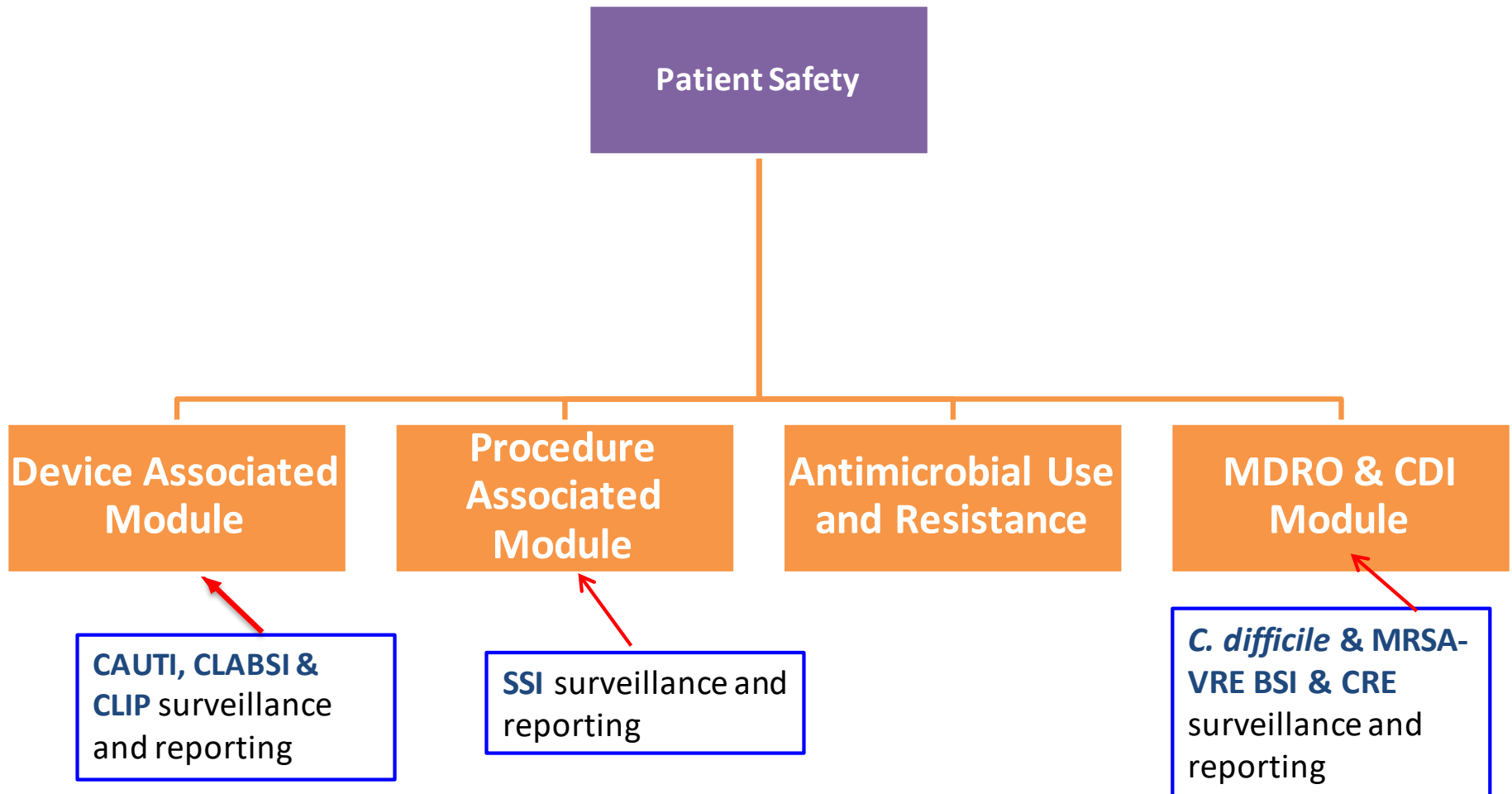


NHSN Structure – All Components





NHSN Structure – Patient Safety Component





National Healthcare Safety Network (NHSN)

- NHSN
- NHSN Login
- About NHSN +
- Enroll Here +
- Materials for Enrolled Facilities -**
- Ambulatory Surgery Centers +
- Acute Care Hospitals/Facilities +
- Long-term Acute Care Hospitals/Facilities +
- Long-term Care Facilities +
- Outpatient Dialysis Facilities +
- Inpatient Rehabilitation Facilities +
- Inpatient Psychiatric Facilities +
- MDRO & CDI LabID Event Calculator
- VAE Calculator
- Reporting in NHSN
- FAQs About the Hemovigilance Module
- Group Users +
- Analysis Resources +
- Annual Reports
- CMS Requirements +
- National Quality Forum (NQF)
- Newsletters
- E-mail Updates
- Data Validation Guidance
- HIPAA Privacy Rule +

CDC > >NHSN

Surveillance Reporting for Enrolled Facilities

Reporting & Surveillance Resources for Enrolled Facilities



Acute Care Hospitals/Facilities



Urgent care or other short-term stay facilities (e.g. critical access facilities, oncology facilities, military/VA facilities)

More >

Ambulatory Surgery Centers



Outpatient surgery centers.

More >

Long-term Acute Care Facilities



Long-term acute care hospitals (LTACs).

More >

Long-term Care Facilities



Nursing homes, assisted living and residential care, chronic care facilities and skilled nursing facilities.

More >

Outpatient Dialysis Facilities



Outpatient dialysis clinics.

More >

Inpatient Rehabilitation Facilities



Inpatient Rehabilitation Facilities.

More >

Inpatient Psychiatric Facilities



Get Email Updates

To receive email updates about this page, enter your

<http://www.cdc.gov/nhsn/enrolled-facilities/index.html>



Surveillance for C. difficile, MRSA, and other Drug-resistant Infections

Surveillance for BSI (CLABSI)

Surveillance for CLIP

Surveillance for SSI Events

Surveillance for Healthcare Personnel Exposure

Surveillance for Healthcare Personnel Vaccination

Blood Safety Surveillance

Long-term Acute Care Hospitals/Facilities +

Long-term Care Facilities +

Outpatient Dialysis Facilities +

Inpatient Rehabilitation Facilities +

Inpatient Psychiatric Facilities +

MDRO & CDI LabID Event Calculator

VAE Calculator

HAI & POA Worksheet Generator

FAQs about HCP Influenza Vaccination Summary Reporting in NHSN

FAQs About the Hemovigilance Module

Group Users +

Analysis Resources +

Annual Reports

CMS Requirements +

National Quality Forum (NQF)

HIPAA Privacy Rule +

Get Email Updates

To receive email updates about this page, enter your email address:

What's this?

Related Links

NHSN Manual: Biovigilance Component Protocol January 2016 [PDF - 2 MB]

Healthcare Personnel Safety Component Manual [PDF - 755 KB]

2016 NHSN Patient Safety Component Manual [PDF - 4 MB]

BSI - Surveillance for Bloodstream Infections

Central Line-Associated Bloodstream Infection (CLABSI) and non-central line-associated Bloodstream Infection

- Training
- Protocols
- Forms

AJR - Surveillance for Antimicrobial Use and Antimicrobial Resistance Options

- Training
- Protocols
- Forms

MDRO/CDiff - Surveillance for C. difficile, MRSA, and other Drug-resistant Infections

- Training
- Protocols
- Forms
- Support Materials
- Analysis Resources
- FAQs

UTI - Surveillance for Urinary Tract Infections

Catheter-Associated Urinary Tract Infection (CAUTI) and non-catheter-associated Urinary Tract Infection (UTI) and Other Urinary System Infection (USI)

- Training
- Protocols
- Forms
- Support Materials
- Analysis Resources
- FAQs

CLIP - Surveillance for Central Line Insertion Practices Adherence

- Training
- Protocols
- Forms
- Support Materials
- Analysis Resources
- FAQs

SSI - Surveillance for Surgical Site Infection Events

- Training
- Protocols
- FAQs

Surveillance for Healthcare Personnel Exposure

- Training
- Protocols
- Forms
- Support Materials
- Analysis Resources
- FAQs

Blood Safety Surveillance

- Training
- Protocols
- Forms
- Support Materials
- Analysis Resources
- FAQs

VAE - Surveillance for Ventilator-associated Events

* In Plan Adult Locations

- Training
- Protocols
- Forms
- Support Materials
- Analysis Resources
- FAQs

Surveillance for Healthcare Personnel Vaccination

- Training
- Protocols
- Forms
- Support Materials
- Analysis Resources

UTI - Surveillance for Urinary Tract Infections

Catheter-Associated Urinary Tract Infection (CAUTI) and non-catheter-associated Urinary Tract Infection (UTI) and Other Urinary System Infection (USI)

- Training
- Protocols
- Forms
- Support Materials
- Analysis Resources
- FAQs





Epidemiologic uses for HAI data





Using HAI data

- LACDPH epidemiologists study HAI data to monitor infection incidence and identify hospitals with high rates for intervention

Using HAI data (2)

- Calculate incidence of HAIs
 - # new infections per population
- Adjust rates to compare across facilities
 - Standardized infection ratio
 - # observed infections / # predicted infections
 - # predicted based on facility- and patient-level risk factors
- Analyze risk factors to find significant associations
 - E.g. are patients with femoral central lines more likely to have a bloodstream infection than those with jugular lines?



Tables and Line Lists

National Healthcare Safety Network

Line Listing for All Central Line-Associated BSI Events

As of: November 3, 2009 at 9:04 AM

Date Range: All CLAB_EVENTS

orgID	patID	dob	gender	admitDate	eventID	eventDate	eventType	spcEvent	location
10018	7425	09/22/1961	M	06/06/2005	1676	06/11/2005	BSI	LCBI	BMT
10018	MD-4937	09/19/1922	F	05/30/2005	1678	06/21/2005	BSI	LCBI	BMT
10018	85613	04/18/1951	M	07/08/2005	1685	07/13/2005	BSI	LCBI	S-ICU
10018	10222	01/04/1978	F	08/01/2005	1927	08/08/2005	BSI	LCBI	MICU
10018	01-88-145	10/07/1939	M	03/17/2006	3321	03/21/2006	BSI	LCBI	S-ICU
10018	122-501	02/29/1952	M	02/21/2006	4265	02/23/2006	BSI	LCBI	S-ICU
10018	34-22-100	03/22/1940	M	03/12/2006	4789	03/20/2006	BSI	LCBI	MICU
10018	86-990-01	12/12/1926	M	03/10/2006	4798	03/14/2006	BSI	LCBI	S-ICU
10018	26-22-678	03/28/2006	M	03/28/2006	4800	03/31/2006	BSI	LCBI	NICU
10018	32-54-731	02/21/1959	M	03/06/2006	4820	03/09/2006	BSI	LCBI	S-ICU
10018	13-19	04/18/1934	F	03/07/2006	4821	03/16/2006	BSI	LCBI	MICU
10018	44-18-004	08/16/1944	F	02/11/2006	4824	02/21/2006	BSI	LCBI	MICU



TAP Reports

- **T**argeted **A**ssessment for **P**revention
- Can run TAP report for a single facility or group
- Customizable by HAI type, time period of interest
- Uses cumulative attributable difference (CAD) metric
 - Number of infections that a facility would have needed to prevent to achieve an HAI reduction goal during a specified time period
 - Prioritization metric to identify units with highest burden of excess infections



NHSN - National Healthcare Safety Network

NHSN Home

Alerts

Dashboard

Reporting Plan ▶

Patient ▶

Event ▶

Procedure ▶

Summary Data ▶



NHSN Patient Safety Component Home Page

TAP Strategy Dashboard

Update

Data as of: May 15 2017 4:08PM

Data For Action: The TAP Report Dashboard

Facility CAD by HAI Type



- CAUTI Data for Acute Care Hospitals
- CLABSI Data for Acute Care Hospitals
- FACWIDEIN CDI Data for Acute Care Hospitals
- CAUTI Data for Inpatient Rehabilitation Facilities
- FACWIDEIN CDI Data for Inpatient Rehabilitation Facilities

Show All HAI Types

View Last 5 Quarters.

Print Graph



Creating a TAP report

NHSN - National Healthcare Safety Network

- NHSN Home**
- Reporting Plan ▶
- Event ▶
- Procedure ▶
- Summary Data ▶
- Surveys ▶
- Analysis ▶
- Users ▶
- Group ▶
- Logout



Analysis Reports

Expand All

Collapse All

Search

- Device-Associated (DA) Module
- Procedure-Associated (PA) Module
- HAI Antimicrobial Resistance (DA+PA Modules)
- Antimicrobial Use and Resistance Module
- MDRO/CDI Module - LABID Event Reporting
- MDRO/CDI Module - Infection Surveillance
- MDRO/CDI Module - Process Measures
- MDRO/CDI Module - Outcome Measures
- CMS Reports
- TAP Reports
 - Acute Care Hospitals (ACHs)
 - TAP TAP Report - ACH and CAH CLAB Data
 - TAP TAP Report - ACH and CAH CAU Data
 - TAP TAP Report - ACH and CAH FACWIDEIN CDI LabID Data
 - Long Term Acute Care Hospitals (LTACs)
 - Inpatient Rehabilitation Facilities (IRFs)



Interpreting a TAP report

<u>Facility Org ID</u>	<u>Facility Name</u>	<u>Facility CAD</u>	<u>Location Rank</u>	<u>Location</u>	<u>CDC Location</u>	<u>Events</u>	<u>Urinary Catherter Days</u>	<u>DUR %</u>	<u>CAD</u>	<u>SIR</u>	<u>Sir Test</u>	<u>No. Pathogens (EC, YS, PA, KS, PM, ES)</u>
1000	DHQP Memorial	5.73	1	SICU	IN:ACUTE:CC:S	5	502	81	3.38	2.31	SIG	5 (0, 3, 1, 1, 0, 0)
			2	NEURO	IN:ACUTE:CC:N	3	257	77	1.58	1.58		3 (0, 0, 1, 0, 2, 0)
			3	BURN	IN:ACUTE:CC:B	2	162	61	1.10	1.67		2 (1, 0, 0, 0, 0, 0)
			4	REHAB	IN:ACUTE:WARD:REHAB	1	76	11	0.18	0.91		1 (0, 0, 0, 0, 1, 0)
			5	2N	IN:ACUTE:WARD:M	1	239	20	-0.20	0.63		1 (0, 0, 0, 0, 0, 0)
			6	6S	IN:ACUTE:WARD:M	1	261	20	-0.31	0.57		1 (0, 0, 0, 0, 0, 0)

If location-level CADs are the same in a given facility, their ranks are tie
 (EC, YS, PA, KS, PM, ES) = No. of E. coli, yeast (both candida and non-candida species),
P. aeruginosa, *K. pneumoniae*/*K. oxytoca*, *Proteus Mirabilis*, *Enterococcus* species
 SIR is set to '' when expected number of events is < 1.0
 LOCATION CAD = (OBSERVED_LOCATION - EXPECTED_LOCATION*0.75)

Rounding the CAD up to a whole number when explaining the data to leadership ensures that they understand how many infections they would have needed to prevent to reach the SIRgoal.

The SIR will display as missing when the predicted number of events is less than 1.0.

If nothing is listed under SIRtest, the SIR is not significantly higher than the SIRgoal. 'SIG' will be displayed if the SIR is significantly higher than the SIRgoal.

Regional Summary

- HOU epidemiologists distribute an annual summary of LA County's HAI rates using NHSN data

**Los Angeles County
Healthcare-Associated
Infections:**
2017 Regional Summary Report

 Prepared by
Los Angeles County Department of Public Health
Acute Communicable Disease Control Program





Antibiogram

- Hospitals must submit antibiogram data annual to LACDPH
- Goal: create and improve antibiotic susceptibility data reporting to generate county-wide antibiogram
- Used by facilities to compare their rates to county's
- Allows DPH to track resistance trends through time
 - Analyze annual antibiogram data



2015 LOS ANGELES COUNTY ACUTE CARE HOSPITAL ANTIBIOGRAM

Gram-Negative Organisms



		Penicillins		Cephalosporins			Carbapenems		Aminoglycosides			Quinolone	Other
Percent Susceptible (Number of isolates tested)	# of all isolates tested (# of hospitals reporting)	Ampicillin/Sulbactam	Piperacillin/Tazobactam	Ceftriaxone	Ceftazidime	Cefepime	Ertapenem	Meropenem	Amikacin	Gentamicin	Tobramycin	Ciprofloxacin/Levofloxacin	Trimethoprim/Sulfamethoxazole
<i>Acinetobacter sp.</i>	3189 (66)	-	33 (1,873)	11 (1,475)	30 (2,184)	34 (1,864)	R	53 (1,561)	43 (2,004)	41 (2,970)	46 (2,126)	33 (3,024)	49 (2,859)
<i>Citrobacter freundii</i>	1975 (43)	R	97 (1,823)	82 (1,869)	83 (1,503)	98 (1,713)	99 (1,156)	99 (1,142)	100 (1,536)	92 (1,924)	93 (1,138)	91 (1,975)	81 (1,939)
<i>Citrobacter koseri</i>	631 (23)	-	99 (631)	96 (631)	97 (427)	100 (456)	100 (223)	100 (184)	99 (389)	99 (631)	99 (428)	99 (631)	96 (601)
<i>Enterobacter sp.</i>	8122 (66)	R	82 (7,507)	80 (7,307)	82 (6,204)	96 (7,040)	96 (4,417)	99 (4,638)	100 (6,235)	97 (7,972)	96 (4,630)	96 (8,120)	92 (8,018)
<i>Escherichia coli</i>	139212 (73)	55 (25,534)	93 (115,257)	86 (105,020)	86 (95,157)	86 (90,175)	100 (78,427)	100 (84,318)	99 (104,151)	86 (129,487)	81 (67,956)	70 (129,130)	66 (123,819)
<i>Klebsiella sp.</i>	30655 (72)	-	84 (25,586)	86 (23,006)	86 (19,120)	85 (19,895)	98 (15,578)	97 (17,025)	94 (22,223)	91 (27,934)	82 (16,128)	86 (28,047)	82 (26,934)
<i>Morganella sp.</i>	2235 (52)	-	96 (2,233)	88 (2,055)	81 (1,811)	98 (1,921)	100 (1,148)	100 (1,127)	99 (1,913)	71 (2,234)	86 (1,358)	60 (2,231)	55 (2,154)
<i>Proteus sp.</i>	16908 (68)	-	98 (15,836)	90 (15,682)	92 (13,067)	92 (13,832)	99 (9,018)	99 (9,903)	99 (13,470)	83 (16,554)	84 (10,176)	68 (16,738)	68 (16,491)
<i>Providencia sp.</i>	1618 (36)	-	73 (1,542)	66 (1,404)	55 (1,315)	77 (1,285)	88 (228)	90 (553)	91 (1,442)	11 (1,259)	14 (960)	11 (1,512)	46 (1,513)
<i>Pseudomonas aeruginosa</i>	22804 (73)	R	83 (20,040)	R	82 (18,315)	84 (19,015)	R	82 (14,261)	95 (19,491)	83 (22,271)	91 (19,850)	69 (22,132)	R
<i>Serratia sp.</i>	2676 (58)	R	91 (2,098)	90 (2,403)	91 (2,188)	97 (2,203)	97 (1,414)	98 (1,579)	97 (2,188)	97 (2,757)	85 (1,677)	88 (2,646)	97 (2,544)
<i>Stenotrophomonas maltophilia</i>	1719 (50)	R	R	R	37 (848)	R	R	R	R	R	R	79 (1,052)	90 (1,548)

Data not collected denoted by "-".

Public health uses for HAI surveillance data

- Even after adjusting for facility-level factors, we found that LTACs had infection ratios about twice that of GACHs
 - Formed LAC LTAC Collaborative in 2017 to reduce infections and find unique prevention solutions
- Identified hospitals with most excess CLABSI, CDI, and CAUTI
 - Assessed their frontline staff knowledge and behaviors to identify gaps and develop prevention plan



Public health uses for HAI surveillance data (2)

- Scan CDI data quarterly to identify possible clusters within each hospital
- Reduction in incidence of MRSA has slowed in recent years; more community-associated MRSA identified
 - Implementing MRSA decolonization strategy in hospitals with high infection burden



Conclusions

- Infection preventionists are key to timely disease reporting and follow up
- Health departments work with clinicians to investigate and prevent disease
- Use NHSN to report and analyze HAIs
- Refer to LACDPH reports to compare regionally



Resources

Practical Healthcare Epidemiology: Third Edition, Ebbing Lautenbach (Ed), Keith F. Woeltje (Ed), Preeti N. Malani (Ed)

Epidemiology: An Introduction, 2nd Edition, Kenneth J. Rothman

[cdc.gov/nhsn](https://www.cdc.gov/nhsn)



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