Infection Prevention and Communicable Disease Update 2014

OSHA Required Information

Satellite Conference and Live Webcast
Tuesday, March 18, 2014
9:00 – 11:00 a.m. Central Time

Produced by the Alabama Department of Public Health
Video Communications and Distance Learning Division

Faculty

Mary G. McIntyre, MD, MPH
Acting State Epidemiologist
Assistant State Health Officer for
Disease Control and Prevention
Alabama Department of Public Health

Standard Precautions

- **Hand washing – when to perform:**
  - **After touching blood, body fluids, or contaminated items, whether or not gloves are worn**
  - **After gloves are removed, between patient contacts, and if necessary, when performing procedures on the same patient to prevent cross contamination**

Standard Precautions

- **Hand Sanitizers**
  - **May use if hands are not visibly soiled**
  - **Certain ones not as drying as soap and water**
  - **Use as directed on the product label**
  - **Must be at least 60% alcohol**

Standard Precautions

- **Gloves**
  - **Wear when touching blood, body fluids, secretions, excretions, and contaminated items**
  - **Change between tasks and procedures on the same patient and after contact with materials that may contain a high concentration of microorganisms**

Standard Precautions

- **Face Protection**
  - **Wear mask and eye protection, or face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions**

Standard Precautions

- Gown
  - Wear during procedures and patient-care activities that are likely to generate splashes of blood, body fluids, secretions or excretions or cause soiling of clothing

Standard Precautions

- Gown
  - Remove soiled gown as promptly as possible and wash hands to avoid transfer of microorganisms

Disinfection

- Describes a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects (i.e., stethoscopes and exam tables)
- Disinfectant ends with the suffix cide or cidal for killing action of the product

Disinfection

- Virucide, fungicide, bactericide, sporicide, and tuberculocide can kill the type of microorganism identified by the prefix
  - http://www.cdc.gov/hicpac/Disinfection_Sterilization/6_0disinfection.html
  - http://www.cdc.gov/hicpac/disinfection_sterilization/3_3inactivbioagents.html

Disinfection in Ambulatory Care

- Adequate disinfection to provide safe patient environment
- Risk the same as the hospital, the Spaulding classification scheme should be followed
- Identify situations and areas where risk exists for transmission of pathogens to identify when disinfection is appropriate

CDC Guidelines: Disinfection in Healthcare Facilities, 2008

Object	Low-level (noncritical items; will come in contact with intact skin)
	Procedure (exposure time ≥ 1 m) [a]
Smooth, hard Surface[1,4]	K
	L
	M
	N
	O

K, Ethyl or isopropyl alcohol (70-90%)
L, Sodium hypochlorite (5.25-6.15% household bleach diluted 1:500 provides >100 ppm available chlorine)
M, Phenolic germicidal detergent solution (follow product label for use-dilution)
N, Iodophor germicidal detergent solution (follow product label for use-dilution)
O, Quaternary ammonium germicidal detergent solution (follow product label for use-dilution)

http://www.cdc.gov/hicpac/Disinfection_Sterilization/table_1.html

Human Immunodeficiency Virus (HIV)

- Retrovirus that attacks the immune system, resulting in impairment of the T-cell mediated immunity
- Loss of function of the T- cells results in the shut down of the immune system and causes patients to have opportunistic infections

Human Immunodeficiency Virus (HIV)

- This leads to the Acquired Immune Deficiency Syndrome (AIDS)

Hepatitis A

- Fecal-oral through contaminated food or water
- Travel to or live in countries where Hep A is common
- Sexual contact with someone who has Hep A
- Household members / caregivers of someone infected with Hep A

Hepatitis A

- There is a vaccine that will prevent Hep A

Hepatitis B and C

- Blood and body fluids transmission
- Sex with an infected person
- Sharing needles
- Occupational needle sticks or sharps exposures
- From infected mother to baby during birth
- There is a vaccine to prevent Hep B

Resources for Bloodborne Pathogen Exposure and Hepatitis B

Bloodborne Pathogen Exposure Plan (with Declination for Hepatitis B Vaccine form and SEICTF forms)

- Go to ADPH.org
- Section “B”
- Bloodborne Pathogens Exposure Plan

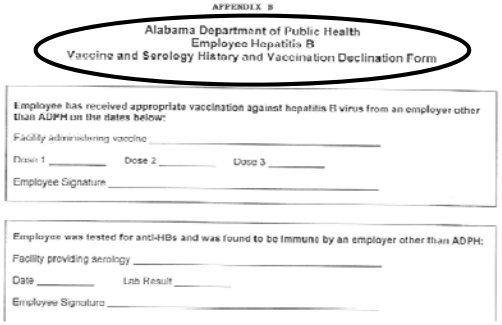
Resources for Bloodborne Pathogen Exposure and Hepatitis B

- **Hepatitis B Vaccine Declination Form is located on page 26 of this document (Appendix B)**

Bloodborne Pathogen Exposure Plan

www.adph.org/bcd

Hepatitis B Vaccine Declination Form


APPENDIX B

Alabama Department of Public Health
Employee Hepatitis B
Vaccine and Serology History and Vaccination Declination Form

Employee has received appropriate vaccination against hepatitis B virus from an employer other than ADPH on the dates below:

Facility administering vaccine _____

Dose 1 _____ Dose 2 _____ Dose 3 _____

Employee Signature _____

Employee was tested for anti-HBs and was found to be immune by an employer other than ADPH:

Facility providing serology _____

Date _____ Lab Result _____

Employee Signature _____

Additional Resources

ADPH also offers additional guidance on Employee Health, Isolation, and Precautions

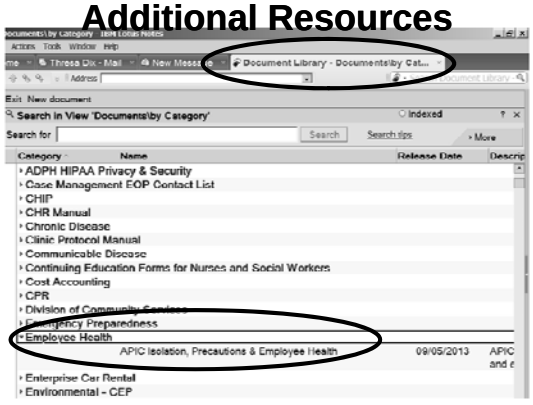
This information can be found in:

- **"Document library"**
- **Employee Health Tab**

Additional Resources

- **(APIC) Association of Professionals in Infection Control & Prevention – Isolation, Precautions & Employee Health section**

Additional Resources



Hepatitis E

- Also spread by fecal-oral route
- In developed countries, usually result of travel to a developing country where it is endemic
- Sporadic cases have occurred in US with no travel history and no clear exposure identified

Hepatitis E

- Usually self limited, acute illness BUT . . .
- There is no vaccine for Hepatitis E

Bureau of Communicable Diseases

- Epidemiology
- HIV / AIDS
- Immunization
- Sexually Transmitted Diseases
- Tuberculosis

Bureau of Clinical Laboratories (BCL)

- Montgomery
- Clinical Chemistry
- Metabolic
- Microbiology
- Respiratory
- Sanitary Bacteriology / Media
- Serology
- Mobile
- Clinical
- Environmental

www.adph.org/bcl

Bureau of Environmental Services (BES)

- Community Environmental Protection
  - Soil and onsite sewage
  - Indoor air quality and lead
  - Solid waste
- Food, Milk and Lodging
  - Food and lodging

Bureau of Environmental Services (BES)

- Seafood and shellfish
- Milk
- Quality assurance

www.adph.org/environmental

Epidemiology Division Branches

- Analysis and reporting
- Infection control
  - Healthcare - associated infections*
  - Infected healthcare workers program*
- Surveillance
- Toxicology
- Zoonotic

Epidemiology Mission Statement

- To protect the residents of Alabama through constant monitoring of the incidence and prevalence of communicable, zoonotic, and environmentally - related human disease

Who Must Report

- Physicians
- Dentists
- Nurses
- Medical Examiners
- Hospital Administrators
- Nursing Home Administrators
- Laboratory Directors
- School Principals
- Day Care Center Directors

Minimum Data Elements

- Name disease or health condition
- Patient name
- Patient DOB
- Patient gender
- Patient address
- Patient phone number

Minimum Data Elements

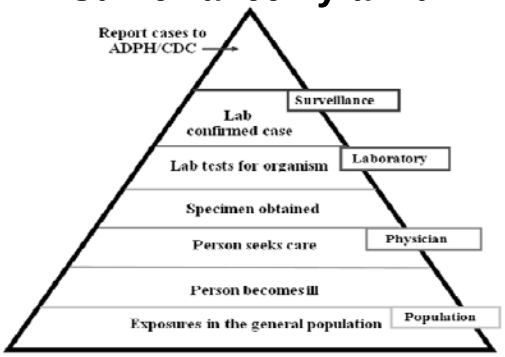
- Date of onset, date of lab results, and / or date of diagnosis
- Reporter's name
- Reporter's phone number

HIPAA

- ADPH is a public health authority as defined by the Health Insurance Portability and Accountability Act (HIPAA) to collect or receive Protected Health Information (PHI) for the purpose of surveillance, investigations, and interventions of notifiable diseases, without authorization of the patient

http://www.cdc.gov/mmwr/preview/mmwrhtml/m2e411a1.htm

Surveillance Pyramid



Alabama DETECT, TEST, and REPORT

Tina Pippin, RN, BSN
Surveillance Nurse Manager
Epidemiology Division
Alabama Department of Public Health

www.adph.org/epi

Objectives

- **Ensure the most accurate diagnosis, testing, treatment, and reporting of notifiable diseases**
- **Locate basic disease information and proper test methods on www.adph.org/epi**

Objectives

- **Determine what diseases need to be reported, how they can be reported, and timeframe for reporting**
- **Identify notifiable disease reporters**

Notifiable Disease / Condition Awareness Campaign

- **DETECT - Decrease Epidemiological Threats with Environmental Controls and Testing**
- **TEST - Take Epidemiological Specimens Today**
- **REPORT - Rules for Every Provider and Organization to Report on Time**

Notifiable Diseases / Conditions

- **Purpose of notifiable diseases**
  - **Prevent disease**
  - **Assist with medical decisions**
  - **Provider and patient education**
  - **Required by law**

Notifiable Diseases / Conditions

- **Purpose of Notifiable Diseases**
  - **ADPH administrative code authorizes and requires reporting,** **http://www.alabamaadministrativecode.state.al.us/docs/hlth/index.html**
  - **ADPH is exempt from HIPAA Privacy Rules,** **http://www.cdc.gov/mmwr/pdf/other/m2e411.pdf**

Report Within Four Hours of Diagnosis Immediate, Extremely Urgent

Anthrax, human
Botulism ★
Plague
Poliomyelitis, paralytic
Severe Acute Respiratory Syndrome-associated Coronavirus (SARS-CoV)

Smallpox
Tularemia
Viral hemorrhagic fever
Cases related to nuclear, biological or chemical terroristic agents

-Must request permission from Epidemiology before testing

***Select Agents,** **http://www.selectagents.gov/Select%20Agents%20and%20Toxins%20List.html**

Botulism

- **Contact Epidemiology Division (EPI) immediately:**
  - **Arrange for lab testing of specimens**
  - **Testing must be approved by the State Epidemiologist**
  - **EPI and Environmental investigation can be initiated**

Botulism

- **Obtain botulism antitoxin (if warranted)**
- **National Botulism Surveillance**
  - **http://www.cdc.gov/nationalsurveillance/botulism_surveillance.html**
- **CDC Resources**
  - **http://www.cdc.gov/nczved/divisions/dfbmd/diseases/botulism/**

Report Within 24 Hours Diagnosis Extremely Urgent

Brucellosis
Cholera
Diphtheria
Haemophilus influenzae, invasive disease*
Hepatitis A
Measles (rubeola)
Meningococcal Disease (*Neisseria meningitidis*)*
Novel influenza A virus infections

(Not seasonal flu)

Pertussis
Poliovirus infection, nonparalytic
Rabies, human and animal
Rubella
Tuberculosis
Typhoid fever
Yellow fever
Outbreaks of any kind
Cases of potential public health importance

Report Within Seven Days of Diagnosis Standard Notification

Arboviral disease
Babesiosis
Campylobacteriosis
Chancroid
Chlamydia trachomatis
Cryptosporidiosis
Dengue
E. coli, shiga toxin-producing (STEC), including O157:H7
Enrichiosis/Anaplasmosis
Encephalitis, viral
Giardiasis
Gonorrhea
Hansen's disease (Leprosy)
Hemolytic uremic syndrome (HUS), post-diarrheal
Hepatitis B, C, and other viral
Histoplasmosis
Human immunodeficiency Virus infection (including asymptomatic infection, AIDS, CD4 counts, and viral load)
Influenza-associated pediatric mortality
Lead, exposure screening test result
Legionellosis
Leptospirosis
Listeriosis
Lyme disease
Malaria
Mumps
Psittacosis
Q Fever
Salmonellosis
Shigellosis
Spotted Fever Rickettsiosis
Staphylococcus aureus, Vancomycin-intermediate (VISA)
Staphylococcus aureus, Vancomycin-resistant (VRSA)
Streptococcocus pneumoniae, invasive disease*
Syphilis
Tetanus
Toxic shock syndrome
Trichinellosis (Trichinosis)
Varicella
Vibriosis

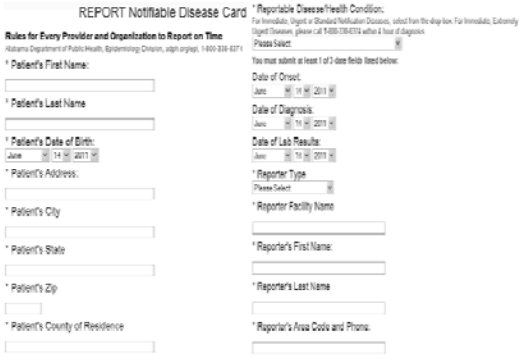
How to REPORT

- **Contact EPI for Immediate, Extremely Urgent within 4 hrs of dx**
  - **Phone -1-800-338-8374**
- **Immediate, Urgent within 24 hrs of dx**
  - **Online, REPORT Card**
  - **Email to report@adph.state.al.us**
  - **Fax (334) 206-3734**

How to REPORT

- **Phone 1-800-338-8374**
- **Standard within 7 days of dx**
  - **Online, REPORT Card**
  - **Email to report@adph.state.al.us**
  - **Fax (334) 206-3734**
  - **In writing – Mail green "REPORT Card"**

Online REPORT Card



REPORT Notifiable Disease Card

Rules for Every Provider and Organization to Report on Time

Alabama Department of Public Health, Epidemiology Division, adph.org/epi, 1-800-338-8374

* Patient's First Name:

* Patient's Last Name

* Patient's Date of Birth:

* Patient's Address:

* Patient's City

* Patient's State

* Patient's Zip

* Patient's County of Residence

* Reportable Disease/Health Condition:

For Immediate, Urgent or Standard Notification Diseases, select from the drop box. For Immediate, Extremely Urgent Diseases, please call 1-800-338-8374 within 4 hour of diagnosis

Please Select

You must submit at least 1 of 3 date fields listed below:

Date of Onset:

Date of Diagnosis:

Date of Lab Results:

* Reporter Type

Please Select

* Reporter Facility Name

* Reporter's First Name:

* Reporter's Last Name

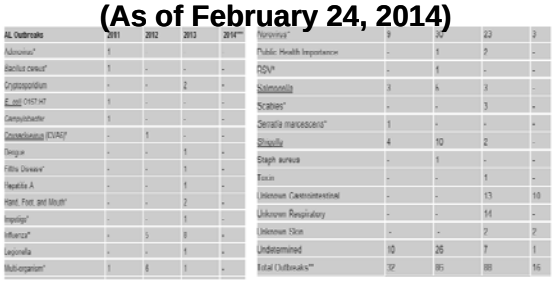
* Reporter's Area Code and Phone:

EPI Investigations and Cases
(Previous 12 Months)

Diseases	Investigations	Cases	Diseases	Investigations	Cases
Arboviral diseases (includes West Nile virus)	29	11	Hepatitis, other viral	6	4
Botulism	1	0	Histoplasmosis	66	24
Brucellosis	6	1	Legionellosis	62	41
Campylobacteriosis	436	354	Leptospirosis	1	0
Cryptosporidiosis (Vibriosis): Adults ≥ 18yrs	264	71	Listeriosis	7	5
Cholera	1	1	Lyme disease	406	23
Cyclosporiasis	129	164	Malaria	2	2
Dengue	1	0	Meningococcal disease	8	5
E. coli, Shiga toxin-producing (includes O157:H7)	88	58	Psittacosis	1	0
Ehrlichiosis/Anaplasmosis	29	16	Q Fever	7	2
Giardiasis	292	178	Rabies, human	1	0
Haemophilus influenzae, invasive	91	71	SARS-CoV (Severe Acute Respiratory Syndrome-associated Coronavirus)	7	0
Hansen's disease (Leprosy)	1	0	Salmonellosis	1,147	1,008
Hantavirus Pulmonary Syndrome (HPS)	2	2	Shigellosis	366	328
Hemolytic Uremic Syndrome (HUS)	2	2	Spotted Fever Rickettsiosis	697	258
Hepatitis A, acute	100	11	Streptococcus pneumoniae, invasive disease (IPD)	289	180
Hepatitis B, acute	719	88	Toxic-shock syndrome	1	1
Hepatitis C, acute	525	35	Trichinellosis (Trichinosis)	1	0
Hepatitis, other viral	6	4	Typhoid fever	4	4
			Vibriosis (non-cholera)	21	20
			Other	2	0
			Total 2/3/2013-2/1/2014	5,612	2,818

http://adph.org/epi/Default.asp?id=5455

Total Outbreaks
(As of February 24, 2014)



AL Outbreaks	2011	2012	2013	2014**
Adenovirus*	1			
Bacillus cereus*	1	-	-	-
Cryptosporidium	-	-	2	-
E. coli O157:H7	1	-	-	-
Campylobacter	1	-	-	-
Coxsackievirus (CVA9)*	-	1	-	-
Dengue	-	-	1	-
Fifths Disease*	-	-	1	-
Hepatitis A	-	-	1	-
Hand, Foot, and Mouth*	-	-	2	-
Impetigo*	-	-	1	-
Influenza*	-	5	8	-
Legionella	-	-	1	-
Multi-organism*	1	6	1	-

Norovirus*	9	22	23	3
Public Health Importance	-	1	2	-
RSV*	-	1	-	-
Salmonella	3	5	3	-
Scabies*	-	-	3	-
Serratia marcescens*	1	-	-	-
Shigella	4	10	2	-
Staph aureus	-	1	-	-
Toxin	-	-	1	-
Unknown Gastrointestinal	-	-	13	10
Unknown Respiratory	-	-	14	-
Unknown Rash	-	-	2	2
Undetermined	10	26	7	1
Total Outbreaks**	32	85	88	16

*Not a reportable disease, but reportable as an outbreak

**Does not include multi-state outbreaks in which exposure was outside Alabama, see numbers below

**As of 2/24/14

Who Must Report

- **Physicians**
- **Dentists**
- **Nurses**
- **Medical Examiners**
- **Hospital Administrators**
- **Nursing Home Administrators**
- **Laboratory Directors**

Who Must Report

- School Principals
- Day Care Center Directors
  - We expect and want multiple reports

Minimum Data Elements

- Name disease or health condition
- Patient name
- Patient DOB
- Patient gender
- Patient address
- Patient phone number

Minimum Data Elements

- Date of onset, date of lab results, and / or date of diagnosis
- Reporter's name
- Reporter's phone number
- Facility / organization name

Outbreaks

- An outbreak is defined as illness in 2 or more people, from separate households, with a common exposure
- ADPH bureaus involved in outbreak investigation:
  - Bureau of Communicable Diseases (BCD)
  - Bureau of Clinical Laboratories (BCL)
  - Bureau of Environmental Health (BES)

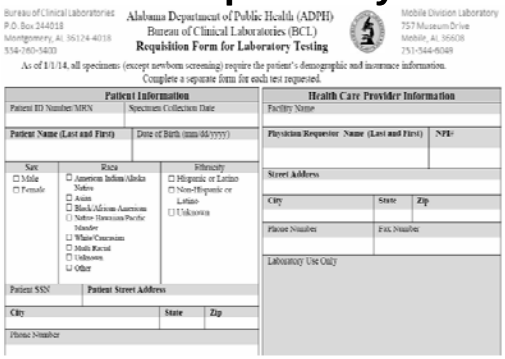
Outbreak Investigation Actions

- Notify EPI or local Field Surveillance Staff (FSS)
- FSS contacts facility to gather contact information
- FSS interviews ill and not ill
- Bureau of Clinical Lab (BCL) tests clinical and food specimens

Outbreak Investigation Actions

- County Environmentalist assesses the facility
- EPI analyses and reports on all results
- Outbreak report and facility education

New Lab Slip January 2014



Bureau of Clinical Laboratories
P.O. Box 244018
Montgomery, AL 36124-4018
334-260-3400

Alabama Department of Public Health (ADPH)
Bureau of Clinical Laboratories (BCL)
Requisition Form for Laboratory Testing

Mobile Division Laboratory
757 Museum Drive
Mobile, AL 36608
251-344-8048

As of 1/1/14, all specimens (except newborn screening) require the patient's demographic and insurance information.
Complete a separate form for each test requested.

Patient Information

Patient ID Number/MRN | Specimen Collection Date
Patient Name (Last and First) | Date of Birth (mm/dd/yyyy)
Sex: ☐ Male ☐ Female
Race: ☐ American Indian/Alaska Native ☐ Asian ☐ Black/African American ☐ Native Hawaiian/Pacific Islander ☐ White/Caucasian ☐ Multi Racial ☐ Unknown ☐ Other
Ethnicity: ☐ Hispanic or Latino ☐ Non-Hispanic or Latino ☐ Unknown
Patient SSN | Patient Street Address
City | State | Zip
Phone Number

Health Care Provider Information

Facility Name
Physician/Requestor Name (Last and First) | NPI#
Street Address
City | State | Zip
Phone Number | Fax Number
Laboratory Use Only

Insurance Information Now Required

Insurance Information (Please include copy of insurance card)

Bill To: ☐ Patient's Insurance ☐ Patient ☐ Ordering Facility ☐ ADPH Program
Insurance Carrier: ☐ BCBS ☐ United Healthcare ☐ Medicaid ☐ Medicare ☐ Other (Specify)
Policy Holder's Name (Last, First, MI) | ID Number | Group Number
Policy Holder's DOD (mm/dd/yyyy) | Policy Holder's Mailing Address | Patient's Relationship to Policy Holder (Self, Child, Spouse, Unknown)
Insurance Phone No. | Insurance Mailing Address | Coverage Effective Date
ICD 9 Diagnosis Code(s): Code 1 | Code 2 | Code 3

Test Requested

Specimen Type:

Frequently Ordered
☐ CT/GC/TV
☐ Syphilis
☐ HEV EIA HIV EIA Form #
☐ Blood Lead ☐ Capillary ☐ Venous Follow-up? Yes/No
☐ HIV Genotyping ☐ HIV Viral Load
☐ Lymphocyte Subset (CD4) Time collected:
☐ Hepatitis B Surface Antibody ☐ Hepatitis B Surface Antigen
Needle Stick? Yes/No Healthcare worker? Yes/No
☐ CBC with differential
☐ CBC without differential
Chemistry Panel
☐ Comprehensive Metabolic ☐ Lipid
☐ Basic Metabolic ☐ Thyroid

AFB/Mycology/Microbiology
☐ AFB
☐ Mycology
☐ Microbiology – Release/Gram Stain
☐ Microbiology – Salmonella/Shigella
☐ Microbiology – PCR Test
☐ Other
Agent suspected:
Special Instructions:

TEST Webpage

ADPH

TEST

Epidemiology Division

Clinical Specimen Collection Kits

- **Enteric Kits for Salmonella / Shigella**
- **Parasitology Kits**
- **Other clinical specimens**
  - **Contact Microbiology for assistance**

Enteric Kit

Parasitology Kit

DETECT Kits

DETECT KIT

Environmental Sampling

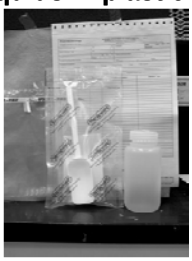
- **Collect as soon as outbreak is suspected**
- **Use aseptic technique, sterile containers**
- **50 grams (2 oz) solid food or more**
- **Take representative sample**
- **Commercially processed foods**

Environmental Sampling

- Identify product and processor
- Lot #'s, exp. dates, use - by dates
- Keep refrigerated unless collected frozen

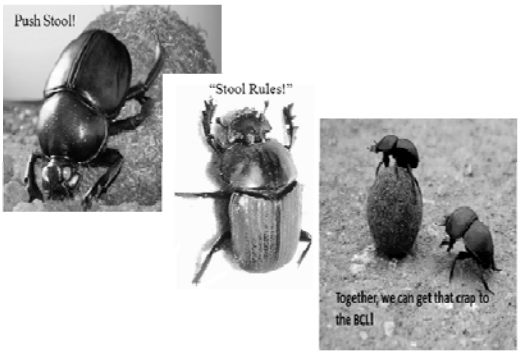
Environmental Collection Kits

- Submit solids in sterile plastic containers or plastic bags
- Submit liquids in plastic containers



Packaging and Shipping (P&S)

Unofficial Epi Logos



2013 Outbreak Examples

Mary G. McIntyre, MD, MPH
Acting State Epidemiologist
Assistant State Health Officer for Disease Control and Prevention
Alabama Department of Public Health

www.adph.org/epi

Epidemiology Outbreaks 2013

- Total outbreaks 2013 – 86
- Notable outbreaks
  - Sepsis and deaths at a dialysis center - Jefferson County
  - Investigation involving Cardiolite Stress Test patients at a health and wellness facility - Jefferson County

Epidemiology Outbreaks 2013

- Notable outbreaks (continued)
  - Fund Raiser Meal - Limestone County
  - Funeral Meal - Sumter County
  - Legionella in a nursing home rehabilitation center – Lauderdale County

Epidemiology Outbreaks 2013

- MRSA infections after joint injections at an orthopedic facility - Colbert County

Investigation at a Healthcare Facility in Jefferson County

- EPI notified on 5/10/2013 that nine clients of a full-service spa, fitness, wellness, rehabilitation, and diagnostic center became ill following Cardiolite stress tests on 5/7 and 5/9

Investigation at a Healthcare Facility in Jefferson County

- All individuals developed fever, "severe chills", headache, rigors, and nausea within 1 - 2 hours of the procedure

What is a Cardiolite / Technetium Stress Test?

- This test determines if the coronary arteries are supplying the heart with enough blood
- The cardiolite / technetium is injected through a vein in the arm
- Blood carries the tracer to heart muscle through the coronary arteries

What is a Cardiolite / Technetium Stress Test?

- The technetium is a radioactive tracer, and a nuclear medicine camera is able to detect its distribution in the heart

Immediate Response: Assessment for Contaminated Medication

- ADPH and Cardinal Health contacted all twelve medical facilities who received the same six lots
  - No other adverse events were reported
- Alabama Board of Pharmacy visited Cardinal Health

Immediate Response: Assessment for Contaminated Medication

- Radiation Control assessed the procedures for producing the Cardiolite

Immediate Response: Assessment for Contaminated Medication

- EPI staff visited the facility; conducted staff and patient interviews, reviewed procedures, policies, and protocols; examined the medical records; and assessed the notes recorded during the procedures

Immediate Response: Assessment for Contaminated Medication

- EPI staff interviewed 15 patients that had the Cardiolite stress test at St. Vincent's main campus that same week

Investigation Findings

- Many patients from the main campus reported similar symptoms to those at One Nineteen
- Individuals whose stress test was performed at One Nineteen were 2.5 times more likely to report nausea following the procedure than patients having the same procedure at St. Vincent's main campus

Investigation Findings

- The frequency of other symptoms was not significantly different between the two groups
- Lack of sufficient documentation during the procedure, e.g., times / intervals of injections and co-morbid conditions, prohibited more in-depth analysis

Demographics and Symptoms

	119 Health and Wellness Clinic N=9		STV Main Campus N=15		Relative Risk	p-value
Male	5	55.6%	5	33.3%		
Age (mean (SD))	64 (6.9)		67 (9.0)			0.54
Complained of Symptoms prior to test*	1	11.1%	4	26.7%		
Reported Signs/Symptom after test began	8	100.0%	7	63.6%	1.5	0.04
Nausea	8	100.0%	4	36.4%	2.5	**0.002**
Headache	4	50.0%	7	63.6%	0.8	0.59
Chills/Rigors	4	50.0%	2	18.2%	2.8	0.19
Fatigue	3	37.5%	6	54.5%	0.7	0.51
Vomiting	2	25.0%	3	27.3%	0.9	0.93
Abdominal Pain	0	0.0%	4	36.4%	0.2	0.30
Reported fever	1	12.5%	2	18.2%	0.7	0.79
Measured fever (>100.4)	0	0.0%	2	18.2%	0.3	0.78
Night Sweats	0	0.0%	2	18.2%	0.3	0.78
Diarrhea	0	0.0%	1	9.1%	0.4	0.86

* excluded from analysis

Testing of Specimens

- **Eight used and one unused Cardiolite syringes from 5/7 and 5/9 were submitted to the CDC for testing**
- **Two of the unused saline syringes were submitted as well**
- **Tests on all eight of the used syringes of Cardiolite revealed Pseudomonas oryzihabitans contamination**

Testing of Specimens

- **The unused syringe and saline showed no growth**

Results from CDC Testing Used and Unused Syringes

Lab ID	Description	Manufacturer, Lot #, Expiry	Condition	Growth Results	Endotoxin
01	Cardiolite	Cardinal Health, Rx 574560	Used, Empty	*Pseudomonas oryzihabitans*, 98% by Vitek 2	n/a
02	Cardiolite	Cardinal Health, Rx 574564	Used, Empty	presumptive *Pseudomonas oryzihabitans*	n/a
03	Cardiolite	Cardinal Health, Rx 574556	Used, Empty	presumptive *Pseudomonas oryzihabitans*	n/a
04	Cardiolite	Cardinal Health, Rx 574585	Used, Empty	presumptive *Pseudomonas oryzihabitans*	n/a
05	Cardiolite	Cardinal Health, Rx 574614	Used, Empty	*Pseudomonas oryzihabitans*, 98% by Vitek 2	n/a
06	Cardiolite	Cardinal Health, Rx 574558	Used, Empty	presumptive *Pseudomonas oryzihabitans*	n/a
07	Cardiolite	Cardinal Health, Rx 574559	Used, Empty	presumptive *Pseudomonas oryzihabitans*	n/a
08	Cardiolite	Cardinal Health, Rx 574588	Used, Empty	*Pseudomona oryzihabitans*, 91% by Vitek 2	n/a
09	Cardiolite	Cardinal Health, Rx 574586	Unused	No growth	<0.391 EU
10	10 mL saline	BD, 921177, 07/01/2012	Unused	No growth	<0.039 EU
11	10 mL saline	BD, 2083050, 03/01/2015	Unused	No growth	<0.039 EU

Discussion and Conclusion

- **Pseudomonas is an opportunistic pathogen of humans and is found in several environmental sources, from soil to extremely wet conditions and could explain some of the symptoms reported by patients**

Discussion and Conclusion

- **On 6/27/2013, EPI re-interviewed the IP**
- **During this subsequent call, it was revealed that the nuclear pharmacy technician, after delivering the Cardiolite dosage would reuse the Cardiolite syringe and needle to draw up sterile saline from the 10mL syringe and flush the line to insure all the Cardiolite was delivered**

Discussion and Conclusion

- Then, he would follow-up with sterile saline directly from the saline syringe
- The technician has since been educated that this was not proper procedure and was educated to discontinue his practice

Discussion and Conclusion

- Although the source of the contamination remains unclear, improper practice / technique is likely how the contamination to the used syringes occurred

Funeral Meal Outbreak

- Where: Church in Sumter County
- What: Meal following a funeral
- When: July 6, 2013 around noon
- Who: ~100 family and friends

EPI Surveillance

- Notified Monday, July 8, 2013 of surge in gastrointestinal illnesses (GI) at emergency departments
- Symptoms included fever, diarrhea, vomiting
- All 25 presenting to ED had attended meal following funeral at Eastern Star Baptist Church (initial report)

EPI Surveillance

- Attendees from 11 states identified: Alabama, California, Colorado, Florida, Georgia, Illinois, Kansas, Michigan, Mississippi, Missouri, and Oklahoma

EPI Investigation

- 80 reportedly ill with many admitted to hospital
- 43 attendees interviewed with outbreak-specific questionnaire
  - 38 ill
- 1 attendee died in sleep, found Tuesday morning

EPI Investigation

- Friends report that he complained of GI symptoms on Sunday
- UAB autopsy results – positive for Salmonella

- Clinical specimens submitted for testing to BCL and CDC
- Environmental samples from church kitchen collected Friday, July 12

Characteristics of Ill

- Age range: 4 to 75 years
  - Median 35 years
  - 36.8% male
  - 78.9% AA, 5.3% White, 92.1% Non-Hispanic
- Symptoms
  - Incubation range 2.5 to 42.5 hrs (median 5.5 hrs)

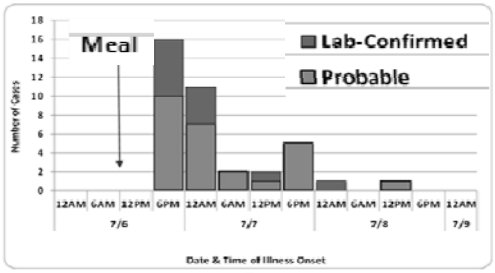
Characteristics of Ill

- Diarrhea 100.0%
- Abdominal 94.7%
- Fever >101ºF 81.6%
- Headache 78.9%
- Muscle aches 78.9%
- Vomiting 76.3%

Epidemic Curve by Illness Onset of 33 Ill Individuals

(Interviewed as of 7/12/2013; 7:30 PM)

Figure 1. Epidemic Curve Depicts Symptoms Onset Date and Time of Individuals (N=33) Involved in an Outbreak at a Church Event, Sumter County - Alabama, July 2013.



Environmental Assessment

- County Environmentalist visited the site Tuesday, July 9
- Meal prepared on site by three individuals
- Menu included baked / fried chicken, potato salad, macaroni and cheese, green beans, and creamed corn

Environmental Assessment

- Additional items brought in included:
  - Pulled pork BBQ
  - Potato salad
  - Dressing
  - Beverages

Environmental Assessment

- Refrigerator temperature noted to be 46 F
- Baked chicken cooked on Friday (176 pieces), cooled for 1 hour before storage in fridge
- Raw chicken (176 pieces), stored in bottom of fridge
  - Some raw chicken sat next to the prepared macaroni and cheese

Environmental Assessment

- Cooked potatoes were drained in the same sink where raw chicken was prepared

Laboratory Testing

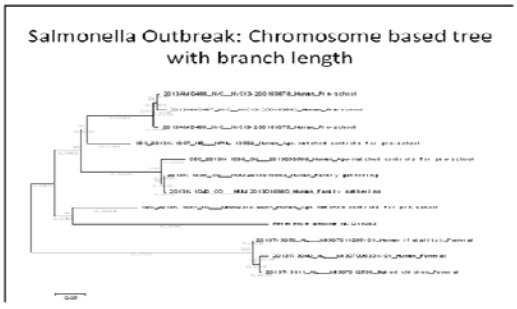
- 23 clinical specimens => Salmonella Heidelberg PFGE patterns matched
- Blood and stool from deceased individual isolated identical S. Heidelberg
- S. aureus coagulase (+) enterotoxin D in one clinical sample
- Norovirus, shiga toxin, and campylobacter negative

Laboratory Testing

- Among 28 environmental samples, the potato prep counter tested positive for S. aureus coagulase (+) and S. aureus coagulase (+) enterotoxin D
- Samples from faucet, faucet handles, stove handle and knobs were culture positive for B. cereus

Genome Sequencing

Appendix B. Genome Sequencing Performed by CDC on Clinical, Food and Environmental Specimens Related with a Salmonella Outbreak Among Individuals Attending a Funeral, Sumter County, Alabama – July 2013.



Epidemiologic Analysis

- Food item analysis indicated individuals who ate green beans were 27% more likely to become ill than individuals who did not eat green beans
- However, only 60.5% of the ill reported eating green beans
- The lowest attack rate associated with any consumed food was 90%

Discussion / Conclusion

- **The epidemic curve depicted a common point source of infection**
- **Although the green beans exhibited the only statistically significant association at 95% confidence level, the findings from the environmental assessment indicate that the culprit of the outbreak was unlikely only one food item**

Discussion / Conclusion

- **Contributing factors associated with this outbreak were likely a mixture of cross contamination, contaminated equipment and / or utensils, improper holding temperatures, and improper food storage placement**
- **Usage of gloves while preparing food was not reported**

Kitchen - Opportunities for Contamination