

Immunize, Investigate, Control: The Role of Local Public Health in Communicable Disease

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How
are
you?

SAN • JUAN • BASIN
HEALTH
D E P A R T M E N T

What Is Public Health?

- Public health protects and improves the health of individuals, families, communities, and populations, locally and globally.
- The mission of San Juan Basin Health (SJBH), your local public health agency, is to protect human and environmental health and inspire well-being in our community.



Colorado Core Public Health Services

- Recognize that an effective public health system needs clearly defined core public health services.
- Core public health services are intended to improve the health of individuals as well as the health of our communities.

Colorado Core Public Health Services

- Assessment, Planning, and Communication
- Vital Records and Statistics
- Communicable Disease Prevention, Investigation, and Control
- Prevention and Population Health Promotion
- Emergency Preparedness and Response
- Environmental Health
- Administration and Governance

Communicable Disease Prevention, Investigation, and Control



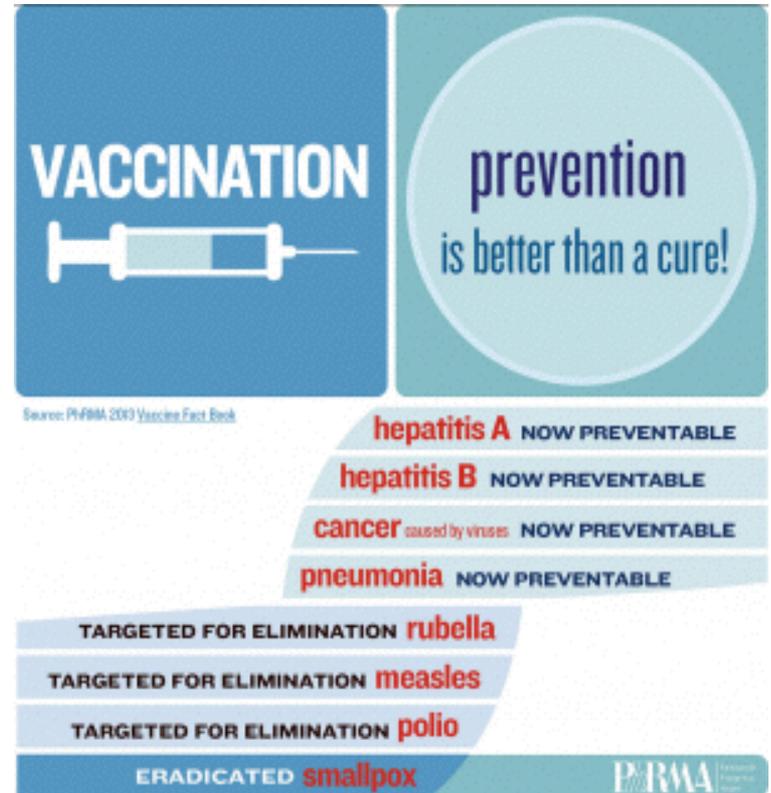
- All agencies are required to track the incidence and distribution of disease in the population.
- Prevent and control vaccine-preventable diseases, zoonotic, vector, air-borne, water-borne and food-borne illnesses, and other diseases that are transmitted person-to-person.

Prevention

Immunizations

One of 10 great public health achievements of the 20th Century.

- Smallpox eradication (globally)
- Polio elimination (most of the world)
- Rubella elimination (US, the Americas)



San Juan Basin Health Immunization Program

- Vaccines for Children (VFC) - Federally funded program provides vaccines for children without insurance or who lack access to a pediatric provider.
- 317- Federally funded program provides routine vaccines for adults
- International travel consultation and vaccination



Vaccines for Children

20 years of protecting America's children

The Vaccines for Children program was established in 1994 to make vaccines available to uninsured children. VFC has helped prevent disease and save lives...big time!



CDC estimates that vaccination of children born between 1994 and 2013 will:

prevent **322 million** illnesses


more than the current population of the entire U.S.A.

help avoid **732,000** deaths


greater than the population of Boston, MA.

save nearly **\$1.4 trillion** in total societal costs
(that includes \$295 billion in direct costs)


or \$4,473 for each American

MMWR. Benefits from Immunization During the Vaccines for Children Program Era — United States, 1994–2013. NCIRD 404 | 04/23/2014



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

www.cdc.gov/features/vfcprogram

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HEALTH
DEPARTMENT

How
are
you?

SJBH Community Immunization Projects

- Healthcare Worker Influenza Rule Project (HCW)
- Rates Assessments in Child Care and Kindergarten Project (RACK)
- Human Papillomavirus Vaccine Project (HPV)

HCW



- Implement successful strategies to increase local health care worker influenza immunization rates and reporting.
- Assist facilities with meeting the minimum threshold of 90% of all healthcare workers being immunized for influenza.

HPV

- Increase initiation and completion rates of the HPV vaccine series by making HPV vaccination a program priority and development of strategies to increase HPV vaccination.



HPV Facts

- HPV is very common. In fact, it is the most common sexually-transmitted infection in the US. HPV is so common that nearly all sexually-active men and women will get at least one type of HPV at some point in their lives.
- Clinical trials showed the vaccines provided close to 100% protection against precancers and, for Gardasil 4 and 9, genital warts.
- Since the vaccine was first recommended in 2006, there has been a 56% reduction in HPV infections among teen girls in the US, even with very low HPV vaccination rates.



RACK

- Improve the immunization up-to-date rates of kindergarten students in Colorado schools and children attending child care centers.
- Implement sustainable and efficient systems that promote disease prevention through regular immunization status assessment and immunization rate determination.

Vaccine Legislation

- In May 2014, House Bill 14-1288 was passed in order to improve access to immunization information and data. The act requires schools to make the immunization and exemption rates of their enrolled student population publicly available
- Starting in July 2016, parents or guardians seeking non-medical exemptions for:
 - Pre-kindergarten children, will submit exemption forms at each age when recommended vaccines are due. The rule will require the filing of a non-medical exemption form at 2 months, 4 months, 6 months, 12 months and 18 months of age.
 - Kindergarten through 12th grade students, will submit exemption forms annually.

Vaccine Trials Process

Center for Vaccine Development

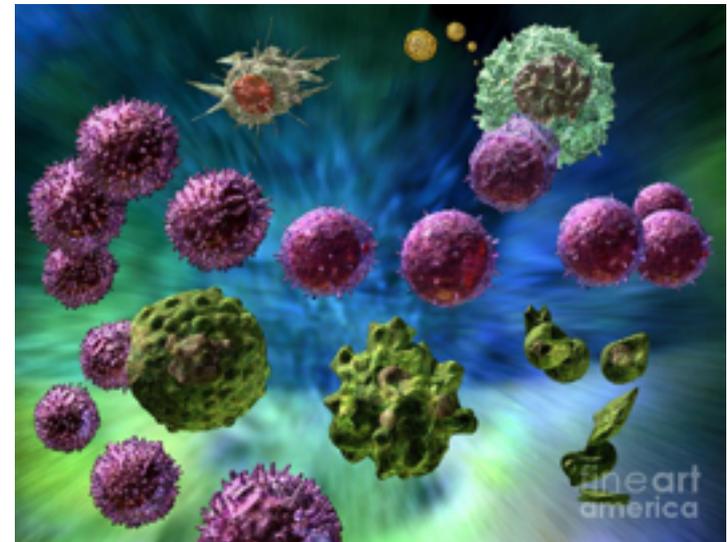
- Phase 1 – Preliminary safety & immune response in small numbers of subjects
- Phase 2 – Safety and immunogenicity in larger groups; target populations; selection of formulation; compatibility with concomitant vaccines
- Phase 3 – Efficacy in large-scale trials (randomized, controlled, double-blind design, when possible)
- LICENSURE
- Phase 4 – Impact and safety post-licensure under real life conditions; modifications in formulation and immunization schedule



How
are
you?

How Vaccines Work

- Vaccines work by mimicking disease agents and stimulating the immune response.
- A vaccine is like a pathogen imposter: it looks like a certain bacteria or virus to the immune system but doesn't make the body sick.
- It then programs the immune system to remember a particular disease by allowing it to practice on a weakened or killed version of the pathogen.



Vaccine Ingredients

- Antibiotics are present in some vaccines to prevent bacterial contamination when the vaccine is made.
- Additives such as gelatin, albumin, sucrose, lactose, MSG and glycine help the vaccine stay effective while being stored.
- Trying to make vaccines without adjuvants, additives, and preservatives is difficult—these ingredients keep vaccines safe and effective.



Myth: MMR Autism Link

MMR Controversy: Lancet Paper

- 1998: Wakefield reported 12 children with a new syndrome of GI inflammation and regressive autism with onset of days after receiving MMR.
- Hypothesized that combination MMR damaged the intestine allowing brain damaging proteins to cross to the bloodstream and enter the brain.
- At a press conference Wakefield sensationally called for MMR to be separated into 3 monovalent vaccines.

Myth: MMR Autism Link

Science has Debunked the MMR Myth

- Original study could not establish causality
- Studies prove the independence of MMR and autism and the absence of GI disease and autism following MMR
- Institute of Medicine rejected a “causal relationship” (2004)
- Special Masters judged the hypothesis implausible (2010)
- Lancet paper exposed as fraudulent and withdrawn (2011) Clin Infect Dis. 2009;48:456



Myth: Thimerosal

Thimerosal does not cause autism:

- Biologically implausible
- Clinical features of mercury poisoning differ from autism
- Thimerosal is ethylmercury; natural mercury is methylmercury
- Disproven in ecological and cohort studies in the US, Canada, and Europe examining populations over decades
- Autism rates increased in California after thimerosal was removed from vaccines.



Myth: Thimerosal

- Thimerosal is a mercury-containing compound that prevents the growth of dangerous bacteria and fungus.
- In 1999, as a precautionary measure, the U.S. Public Health Service recommended removing thimerosal as a preservative from vaccines to reduce mercury exposure among infants as much as possible.
- Today, except for some flu vaccines in multi-dose vials, no recommended childhood vaccines contain thimerosal as a preservative.

Myth: Disease Rates Have Dropped Due to Factors Other Than Vaccination

- Better living conditions (less crowded housing, better nutrition, etc.) have had an impact on disease rates. BUT, **the only real decrease in a VPD has occurred after the introduction of a vaccine to prevent it.**
- When some developed countries (U.K., Sweden, Japan) stopped using DTP vaccine, their pertussis rates jumped dramatically.
- Several recent outbreaks of measles, pertussis, and varicella in the U.S. have been traced to pockets of unvaccinated children in states that allow personal belief exemptions. **When vaccination rates go down, disease rates go up.**

Vaccine Safety



Vaccine Adverse Event Reporting System (VAERS)

- Voluntary reporting system where anyone can report any event that occurs after vaccination
- Manufacturers are required to report any adverse event
- Allows timely detection of possible associations
- Is a useful tool to guide in-depth assessment

Vaccine Safety Datalink (VSD)

- Linked database of 8 HMOs for population-based surveillance
- Researches safety issues raised by VAERS and other surveillance systems
- Gives accurate immunization information

CDC Statistics

<u>Diseases</u>	<u>Pre Vaccine Era Estimates</u>	<u>Most Recent US Estimates</u>	<u>Percent Decrease</u>
Diphtheria	21,053	0†	100%
<i>H. influenzae</i> (invasive, <5 years of age)	20,000	31‡	99%
Hepatitis A	117,333	2,890§	98%
Hepatitis B (acute)	66,232	18,800§	72%
Measles	530,217	187†	99%
Mumps	162,344	584†	99%
Pertussis	200,752	28,639†	86%
Pneumococcal disease (invasive, <5 years of age)	16,069	1,900‡‡	88%
Polio (paralytic)	16,316	1† >	99%
Rotavirus (hospitalizations, <3 years of age)	62,500	12,500††	80%
Rubella	47,745	9	99%
Congenital Rubella Syndrome	152	1	99%
Smallpox	29,005	0	100%
Tetanus	580	26	96%
Varicella	4,085,120	167,490	96%

Investigate and Control

Colorado Board of Health Reportable Diseases

- Requires the reporting of any unusual illness, outbreak, or epidemic of illnesses, which may be of public concern, whether known to be, or suspected of being, communicable.
- Those which may be a risk to the public and which may affect large numbers of persons.
- Cases of a newly recognized entity, including novel influenza.
- Those related to a health care setting or contaminated medical devices or products.
- Environmental contamination by any infectious agent or toxic product of such an agent.

Mandatory Reportables

- Two separate lists of conditions, one for providers and one for laboratories.
- Includes both 24 hour and 7 day reportable diseases.
- CDPHE requires reporting of all suspected cases whether or not supporting laboratory data is available or not.
- Relies on the support of community partners, public health cannot assist without local cooperation.
- Lists of both 24 hour and 7 day mandatory laboratory and provider reportables are available on the CDPHE website at: www.colorado.gov

24-Hour Reportables		
Animal Bites by dogs, cats, bats, skunks, foxes, raccoons, coyotes, or other wild carnivores	Haemophilus influenzae (invasive disease)	Severe Acute Respiratory Syndrome (SARS)
Anthrax (Bacillus anthracis)	Hepatitis A (Anti-HAV IGM)	Smallpox
Botulism (Clostridium botulinum)	Human Rabies - suspected	Syphilis, early (1 ^o , 2 ^o , early latent)
Cholera (Vibrio cholerae)	Measles (Rubella)	(Treponema pallidum)
Diphtheria (Corynebacterium diphtheriae)	Neisseria meningitidis (invasive disease)	Tuberculosis (active disease)
Group Outbreaks - known or suspected of all types including foodborne, waterborne or other illness	Pertussis (Bordetella pertussis)	Typhoid Fever (Salmonella typhi)
	Plague (Yersinia pestis)	
	Polio myelitis	
	Rubella	

7-Day Reportables		
AIDS and HIV infection	Hepatitis other viral	Rocky Mountain Spotted Fever
Brucellosis	Hantavirus	Rubella, congenital
Campylobacteriosis	Hemolytic uremic syndrome if < 18 yrs	Salmonellosis
Chancroid (Haemophilus ducreyi)	Influenza - associated hospitalization	Shigellosis
Chlamydia trachomatis	Influenza - associated death < 18 yrs	+TB skin test in workers exposed to active disease
CJD and other transmissible spongiform encephalopathies (TSEs)	Legionellosis	Tetanus
Cytospora	Leprosy (Hansen's Disease)	Toxic Shock syndrome
Escherichia coli O157:H7 & shiga toxin-producing E.coli	Listeriosis	Trichinosis
Encephalitis	Lyme Disease (Borrelia burgdorferi)	Tularia (Francisella tularensis)
Giardiasis	Lymphogranuloma venereum	Varicella (Chicken pox)
Gonorrhea, any site	Malaria (Plasmodium species)	
Hepatitis B	Mumps	
Hepatitis C	Psittacosis (Chlamydia psittaci)	
	Q Fever (Coxiella burnetii)	
	Relapsing Fever (Borrelia sp.)	

Any unusual illness, or outbreak, or epidemic of illnesses, which may be of public concern is also reportable. This includes viral hemorrhagic fever. Immediate reporting by phone is required of any illness suspected to be caused by Biological, Chemical, or Radiologic Terrorism

CEDRS

- Colorado Electronic Disease Reporting System
- All cases are to be reported with patient's name, date of birth, sex, race, ethnicity, and address (including city and county) and name and address of responsible physician or other health care provider.



CEDRS

Colorado Electronic Disease Reporting System
Department of Public Health & Environment

Case Investigations



- Review of pertinent, relevant medical records by authorized personnel.
- Confirm the diagnosis; to investigate causes; to identify other cases related to the outbreak or the reported communicable disease in a region, community, or workplace.
- Determine if a patient with a reportable disease has received adequate treatment to render him/her non-infectious or a person exposed to a case has received prophylaxis, if appropriate.
- Facilities are encouraged to provide remote electronic access to authorized health department staff for this purpose.

Public Health Investigations & HIPAA

- HIPAA does not change or eliminate any of the public health reporting requirements that are mandated by law.
- HIPAA specifically provides for public health reporting without a patient's authorization or consent.
- Under CO Statue C.R.S. 25-1-122

Colorado Department of Public Health and the Environment Regulation

- CDPHE Health Facilities and Emergency Medical Services Division (HFEMS) maintains licensing and regulatory authority over healthcare facilities.
- The Communicable Disease Branch (CDB) is responsible for investigation of communicable disease at such facilities.



Public Health is a Resource

- Lab results from CDPHE can be available much more quickly than your typical in house or send out laboratory testing procedures.
- Due to low incidence of communicable diseases, especially zoonotic diseases, frequently facilities are unfamiliar with specimen collection and testing.
- San Juan Basin Health can facilitate proper testing procedures and protocols for unfamiliar communicable diseases.
- SJBH has a contract in place with an overnight courier that transports specimens directly to CDPH



Thank You

Questions??