

EPI CONNECTIONS

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A Bimonthly Newsletter of the Communicable Disease Division

Vaccine Coverage Inadequate

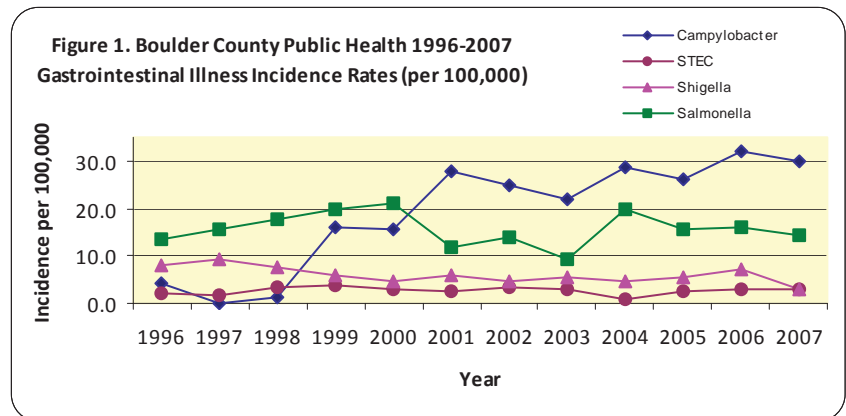
Childhood immunizations help prevent disease in individuals and thus protect the community. Unimmunized individuals are protected from infectious disease when herd immunity is strong - when sufficient numbers of people are immunized so that diseases can't be spread easily and unimmunized people are protected too. Herd immunity thresholds provide guidelines for adequate vaccination coverage in our communities. The National Network for Immunization Information provides herd immunity threshold estimates for various vaccine preventable diseases. For example, in order to protect unimmunized persons from pertussis it is estimated that 94% of the population must be vaccinated. Results from the 2005 Boulder County Childhood Immunization Rate Study reported that the immunization rate for the pertussis vaccine (given as DTap) was only 62% for 2-year-old children. Results from that study also reported the 4:3:1:3:3 series (4 Diphtheria, Tetanus and Pertussis, 3 Polio, one Measles, Mumps and Rubella, 3 Haemophilus influenzae type b, Hepatitis B) up-to-date immunization rate for children aged 19 to 35 months was 60.4%. Colorado's rate is 78.6% and the national average is 76.1% (National Immunization Survey, Centers for Disease Control and Prevention [CDC]).

In order to evaluate the health status of our community and determine any change in the up-to-date vaccination rate, Boulder County Public Health (BCPH) conducted a similar study to determine 2007 rates. Data collection for the 2007 study were supplied by public and private immunization providers in Boulder County. About 60% (23/38) of solicited practices participated and provided a random sample of 1,491 valid immunization records for inclusion in the study. Fifty-five percent (55%) of the immunization records were obtained from the Colorado Immunization Information System (CIIS), which is the Colorado immunization registry. Immunization rates

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FoodNet Tracks Enteric Illnesses

Each year, more than 76 million cases of gastrointestinal illnesses occur; many of them result from foodborne pathogens. Foodborne and enteric illnesses continue to present a burden of disease in Boulder County. In 2007, 226 cases of foodborne and waterborne diseases were reported in Boulder County, including 86 cases of campylobacteriosis, 41 cases of salmonellosis and 13 cases of cryptosporidiosis. Incidence rates of selected foodborne illnesses in Boulder County from 1998-2007 are shown in Figure 1. Overall, Colorado experienced higher rates of Campylobacter and Listeria and Cryptosporidium cases. However, the incidence of Salmonella cases was lower than the national average.



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Understanding Shiga Toxin

The Shiga toxin, also called verotoxin, is produced by both Shigella dysenteriae and enterohemorrhagic Escherichia coli, of which the O157:H7 strain has become the best known.

The action of the Shiga toxin on intestinal cells can produce a hemorrhagic colitis. Absorption of the toxin in the circulation can result in systemic complications that include hemolytic uremic syndrome (HUS) and post-diarrheal thrombotic thrombocytopenic purpura (TTP).

HUS occurs in 8% of children with E. coli O157:H7 infection. Adults are more likely to develop TTP. The illnesses are serious and develop during the 2 weeks after the onset of diarrhea. Fifty percent of the patients with HUS require dialysis and 3-5% die.

Shiga toxin-producing E. coli illness, which occurs 2-10 days after exposure, usually resolves in less than a week. For mild illness, antibiotics have not proven to shorten the duration of an E. coli infection. Some studies have suggested that individuals have a higher risk of developing HUS after treatment with antimicrobial agents.





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The Foodborne Disease and Active Surveillance Network (FoodNet, <http://www.cdc.gov/FoodNet>) of CDC's Emerging Infections Program collects data from 10 states in the United States, including Colorado, representing 15% of the U.S. population. Data is collected on diseases caused by pathogens commonly transmitted through food. Boulder County, as well as the other 6 metro-Denver counties, participates in the FoodNet program.

Nationally, the 2007 incidence of infections caused by Campylobacter, Listeria, Shiga toxin producing E coli 0157H7 (STEC 0157), Salmonella, Shigella, Vibrio, and Yersinia did not change significantly when compared to the 2004-2006 data. None of the national disease incidences met the national health objectives for decline despite U.S. Department of Agriculture (USDA) Food Safety and Inspection Service attempts to reduce the incidence of foodborne diseases. The complexities of food production in the U.S. make food safety a daunting challenge. A single food may be contaminated by multiple sources at multiple stages during production, processing and transportation. The consumer role, such as proper cooking and hand hygiene, is essential in helping to reduce the incidence of illness.

For more information regarding foodborne illness and food safety nationally, please visit <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5714a2.htm>.

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were assessed for the 4:3:1:3:3 and 4:3:1:3:3:1 (includes 1 Varicella) vaccination series based on the recommended CDC schedule.

As highlighted in Table 1, results from the 2007 study are concerning and demonstrate a need for improved vaccination administration and documentation. A comparison of CIIS records to non-CIIS records indicate that providers using the registry have significantly better immunization rates (Table 2). This may be attributed to the fact that registry data have more complete immunization records and providers using the registry find it easier to track when immunizations are due. The 2007 data are still being analyzed, and reports will be generated soon about single antigen coverage and missed opportunities for immunizing.

Results from the study will be used to evaluate current public health programs and provide evidence for program planning and interventions. Studies will be conducted every two years to continue to have access to information about our community's strength or vulnerability to vaccine preventable diseases.

Special thanks to all participating providers and partnering agencies for making this study possible. Please contact Jennifer Chase, BCPH Epidemiologist for any questions or comments about the study at 303-413-7560 or jchase@bouldercounty.org.

Epi-Eye

A Look Outside Our Community and Around the World

Hep C Transmitted in Nevada Clinic

Unsafe injection practices have been linked to the transmission of hepatitis C virus at an endoscopy clinic in Nevada. Six cases have been identified; 120 other patients have been tested; 40,000 patients have been notified of increased risk.

A clean needle and syringe were used to draw medication from a single-use vial and injected directly to an intravenous catheter into the patient's arm. If the patient required more medication, the needle was removed from the syringe, replaced with a new needle, and used again with the same vial. If medication remained, the vial was used again on the next patient. Backflow from the patient's intravenous catheter or from needle removal might have contaminated the syringe and vial with HCV.

Injection Safety Recommendations

- Never administer medications from the same syringe to more than one patient, even if the needle is changed.
- Consider a syringe or needle contaminated after it has been used to enter or connect to a patient's intravenous infusion bag or administration set.
- Do not enter a vial with a used syringe or needle.
- Never use medications packaged as single-use vials for more than one patient.
- Assign medications packaged as multi-use vials to a single patient whenever possible.

Table 1: Comparison of 2007 to 2005 Boulder County Up-to-Date Vaccination Coverage Estimates

	2007 4:3:1:3:3:1 Up-to-Date Coverage (95% CI)	2007 4:3:1:3:3 Up-to-Date Coverage (95% CI)	2005 4:3:1:3:3 Up-to-Date Coverage (95% CI)
All 19-35 months	55.8% (53.3-58.3)	57.4% (54.8-59.9)	60.4% (57.4-63.3)
At 24 months	53.4% (50.8-56.0)	55.0% (52.5-57.6)	59.4% (55.9-62.8)

Table 2: Comparison of 2007 4:3:1:3:3:1 CIIS and non-CIIS Up-to-Date Vaccination Coverage Estimates

	CIIS Up-to-Date Coverage (95% CI)	Non-CIIS Up-to-Date Coverage (95% CI)
All 19-35 months	66.4% (63.1-69.6)	44.2% (40.4-48.0)
At 24 months	64.2% (60.8-67.6)	41.6% (37.8-45.4)