

IMMUNIZATION

Overview

Vaccines are one of the most cost-effective public health interventions. Vaccines prevent many serious infections and save millions of lives every year.⁴⁷ Over the last four decades, routine childhood immunizations in the U.S. have led to the eradication of polio and smallpox and to dramatic decreases in measles, mumps, rubella, and other infections. In 2008, 79% of Colorado children were fully vaccinated by age three (35 months).⁴⁸ That means that nearly eight out of 10 children in Colorado are protected from 14 infections. Two vaccines—hepatitis B and human papillomavirus vaccines—can also prevent some forms of cancer.⁴⁹

Now that these infections have become rare, parental concern has shifted from preventing disease to vaccine safety. Parents are required to immunize their children for school. However, a small percentage of parents choose not to protect their children with vaccines because of medical, religious, or philosophical reasons. There is evidence to suggest that the number of parents who refuse immunizations has steadily increased over the last decade. A recent Colorado study showed that children who have not received the pertussis vaccine because of parental refusal are 23 times more likely to catch whooping cough.⁴⁷ Unvaccinated children create a risk for outbreaks of vaccine-preventable infections such as hepatitis A and pertussis (FIGURE 1 AND 2).⁴⁷

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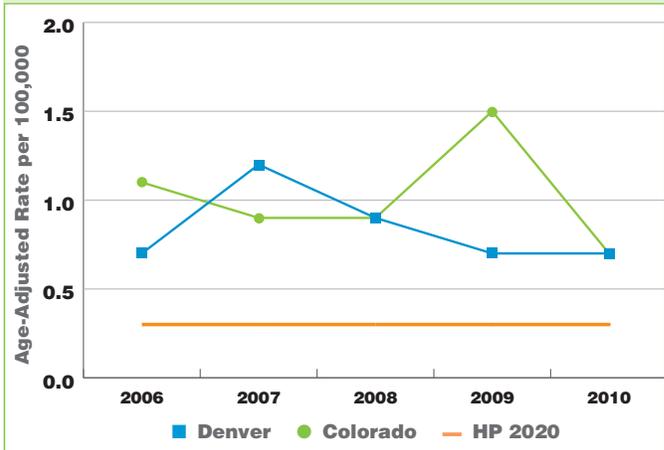
Cost Facts



Each dollar spent on vaccines can save \$10.20 in costs from treating the disease. The average case of whooping cough costs more than \$1,000 to treat compared to the cost of a vaccine, approximately \$50. In Denver in 2010, more than \$50,000 was spent treating the 58 cases that a vaccine could have prevented.^{50, 51}

FIGURE 1

Rate of Hepatitis A DENVER AND COLORADO, 2006 - 2010

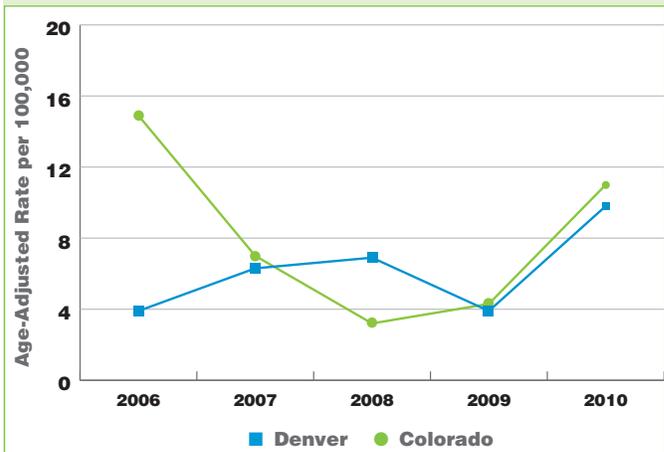


Hepatitis A is a virus spread by contaminated food and is preventable by vaccine. Local rates currently exceed the Healthy People 2020 goal of 0.3 cases per 100,000 people. This graph shows the age-adjusted rates of hepatitis A cases in Denver and Colorado from 2006 to 2010.

SOURCE: Colorado's Electronic Disease Reporting System

FIGURE 2

Rate of Pertussis DENVER AND COLORADO, 2006 - 2010



Pertussis or whooping cough is a serious disease that is common in Denver and in some cases, fatal. This graph shows the age-adjusted rate of pertussis cases in Denver per 100,000 residents from 2006 to 2010.

SOURCE: Colorado's Electronic Disease Reporting System

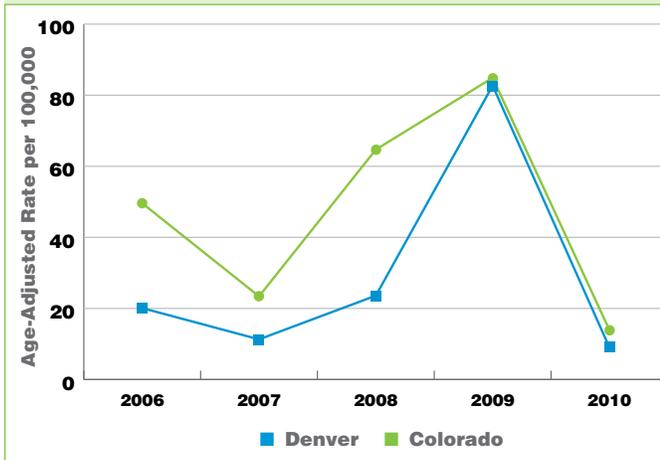
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The more children who are vaccinated, the more diseases can be kept at bay. This is true for adults as well, and is especially important with influenza (flu). Flu is a common cause of serious illness that can lead to hospitalization and death (FIGURE 3). Annual flu vaccines prevent the spread of flu through a community. Vaccinating children and older adults (over 65) can improve the health of the entire population during flu season (FIGURE 4). However, Denver and Colorado have yet to meet the Healthy People 2020 goal of having 90% of seniors vaccinated.

Immunization programs play an important role in delivering vaccines to keep people healthy. Individuals need to be aware of the risks associated with choosing not to vaccinate. Ensuring children and adults are vaccinated is vital to the health of Denver.

FIGURE 3

Hospitalized Influenza Cases DENVER AND COLORADO, 2006 - 2010

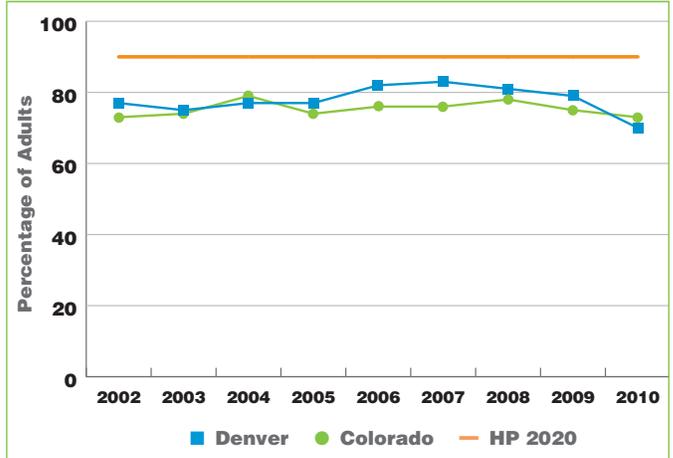


Influenza can cause serious illness among people who are infected. This graph shows the age-adjusted rate of people with influenza who were hospitalized in Denver and Colorado per 100,000 residents.

SOURCE: Colorado's Electronic Disease Reporting System

FIGURE 4

Percentage of Adults 65 and Older Vaccinated Annually Against Influenza DENVER AND COLORADO, 2000 - 2010



Adults over the age of 65 should receive a yearly influenza vaccine due to increased risk of developing complications from the disease. This graph shows the percentage of adults in Denver and Colorado vaccinated against influenza.

SOURCE: Behavioral Risk Factor Surveillance System

Local Story

Protecting Babies from Pertussis

Pertussis, or whooping cough, is a respiratory infection that spreads easily from person to person. A series of vaccine can protect against this disease (DTaP for kids and Tdap for adolescents and adults). Most pertussis deaths (85%) are in babies under three months of age. Babies usually get sick from people they spend time with the most, especially family members. To protect babies, a strategy called 'cocooning' has been supported by the Centers for Disease Control and Prevention (CDC). Parents and family members are vaccinated against pertussis to make a safe environment (cocoon) around the newborn baby. Another strategy for protecting babies from pertussis is to vaccinate the mother during the last few months of pregnancy.

Denver Health is piloting a program that offers pertussis vaccination to mothers before they go home from the hospital with their newborn. Vouchers for low-cost vaccination are provided to fathers and family members of the baby. Siblings of newborns are vaccinated in clinics and schools according to Colorado State Board of Health requirements. These efforts seem to be working: in 2010, Colorado ranked 2nd in the nation for teen Tdap vaccination rates.



Photo courtesy of Denver Zoo

Comparison Story

Vaccinating Health Care Workers Against Flu

One national strategy for reducing the spread of influenza (flu) is to vaccinate all health care staff against flu. Virginia Mason Medical Center (VMMC) in Seattle has required flu vaccinations of all staff for the last six years. Their program is a model endorsed by multiple hospitals in Denver and Colorado. Successful programs, like VMMC's, have activities to build interest in being vaccinated. Activities include mobile carts that bring the vaccine directly to all the hospital's floors and on-line education about flu. Staff who cannot be vaccinated must wear a protective mask during flu season. Thanks to this effort, VMMC is able to achieve a 99% staff vaccination rate through their "Save Lives—Immunize" program.⁵²



Did You Know

- Denver Public Health Department and Tri County Health Department provide vaccines to children through the "Shots For Tots" program. Every month, firefighters and Emergency Medical Technicians at a community center give vaccinations to children, and include a free tour of their fire truck.
- HPV vaccine series can prevent several types of cancer, including cervical cancer.⁴⁹ Denver's In School Immunization Program offers teens vaccines, including HPV, in select Denver middle schools. This protects students and provides an easy way for parents to get their children vaccinated.
- Many physicians do not report vaccines to the state registry. This makes it challenging to know how many children in Denver have received all the vaccines they need and to track the progress of vaccination programs.
- Nearly 90% of parents believe that vaccinations are a good way to protect children from disease. However, more than one-half of parents still have questions about vaccine safety. A Colorado partnership has started the Immunize for Good campaign to provide accurate, up-to-date information about the safety of vaccines.⁵³
- Zoster vaccine (the adult shingles shot) is now a covered benefit of Medicare Part D.⁵⁴
- Measles still occurs in children in the US. Nearly all measles cases in this country are 'imported' from visitors or from travel outside the U.S., making vaccination a key step to keeping children and communities healthy.⁵⁵

Recommended Immunization Schedule for Persons Ages 0 through 6 Years

VACCINE	Birth	1 Month	2 Months	4 Months	6 Months	12 Months	15 Months	18 Months	19-23 Months	2-3 Years	4-6 Years
Hepatitis B	Hep B	Hep B				Hep B					
Rotavirus			RV	RV	RV						
Diphtheria, Tetanus, Pertussis			DTaP	DTaP	DTaP		DTaP				DTaP
Haemophilus Influenzae Type B			Hib	Hib	Hib	Hib					
Pneumococcal			PCV	PCV	PCV	PCV				PPSV	
Inactivated Poliovirus			IPV	IPV		IPV					IPV
Influenza								Influenza (Yearly)			
Measles, Mumps, Rubella						MMR					MMR
Varicella						Varicella					Varicella
Hepatitis A							Hep A (2 doses)			Hep A Series	
Meningococcal										MCV4	