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Immunization and Infectious Diseases

Goal

Increase immunization rates and reduce preventable infectious diseases.

Overview

The increase in life expectancy during the 20th century is largely due to improvements in child survival; this increase is associated with reductions in infectious disease mortality, due largely to immunization.¹ However, infectious diseases remain a major cause of illness, disability, and death. Immunization recommendations in the United States currently target 17 vaccine-preventable diseases across the lifespan.

Healthy People 2020 goals for immunization and infectious diseases are rooted in evidence-based clinical and community activities and services for the prevention and treatment of infectious diseases. Objectives new to Healthy People 2020 focus on technological advancements and ensuring that States, local public health departments, and nongovernmental organizations are strong partners in the Nation's attempt to control the spread of infectious diseases. Objectives for 2020 reflect a more mobile society and the fact that diseases do not stop at geopolitical borders. Awareness of disease and completing prevention and treatment courses remain essential components for reducing infectious disease transmission.

Why Are Immunization and Infectious Diseases Important?

People in the United States continue to get diseases that are vaccine preventable. Viral hepatitis, influenza, and tuberculosis (TB) remain among the leading causes of illness and death in the United States and account for substantial spending on the related consequences of infection.

The infectious disease public health infrastructure, which carries out disease surveillance at the Federal, State, and local levels, is an essential tool in the fight against newly emerging and re-emerging infectious diseases. Other important defenses against infectious diseases include:

- Proper use of vaccines
- Antibiotics
- Screening and testing guidelines
- Scientific improvements in the diagnosis of infectious disease-related health concerns

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Understanding Immunization and Infectious Diseases

Immunization

Vaccines are among the most cost-effective clinical preventive services and are a core component of any preventive services package. Childhood immunization programs provide a very high return on investment. For example, for each birth cohort vaccinated with the routine immunization schedule (this includes DTap, Td, Hib, Polio, MMR, Hep B, and varicella vaccines), society:

- Saves 33,000 lives.
- Prevents 14 million cases of disease.
- Reduces direct health care costs by \$9.9 billion.
- Saves \$33.4 billion in indirect costs.

Despite progress, approximately 42,000 adults and 300 children in the United States die each year from vaccine-preventable diseases.² Communities with pockets of unvaccinated and undervaccinated populations are at increased risk for outbreaks of vaccine-preventable diseases. In 2008, imported measles resulted in 140 reported cases—nearly a 3-fold increase over the previous year. The emergence of new or replacement strains of vaccine-preventable disease can result in a significant increase in serious illnesses and death.



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Surveillance

The Nation's public health goals focus on reducing illness, hospitalization, and death from vaccine-preventable diseases and other infectious diseases; expanding surveillance is crucial to those ends. Further efforts to improve disease surveillance will allow for earlier detection of the emergence and spread of diseases. Increased surveillance will save lives by allowing the maximum time possible for public health responses, including vaccine production and development of evidence-based recommendations on disease prevention and control. Surveillance enables rapid information sharing and facilitates the timely identification of people in need of immediate treatment. Increasing laboratory capacity is essential for these efforts.

Respiratory Diseases

Acute respiratory infections, including pneumonia and influenza, are the 8th leading cause of death in the United States, accounting for 56,000 deaths annually. Pneumonia mortality in children fell by 97 percent in the last century, but respiratory infectious diseases continue to be leading causes of pediatric hospitalization and outpatient visits in the United States. On average, influenza leads to more than 200,000 hospitalizations and 36,000 deaths each year. The 2009 H1N1 influenza pandemic caused an estimated 270,000 hospitalizations and 12,270 deaths (1,270 of which were of people younger than age 18) between April 2009 and March 2010.[†]

Hepatitis and Tuberculosis

Viral hepatitis and TB can be prevented, yet health care systems often do not make the best use of their available resources to support prevention efforts. Because the U.S. health care system focuses on treatment of illnesses, rather than health promotion, patients do not always receive information about prevention and healthy lifestyles. This includes advancing effective and evidence-based viral hepatitis and TB prevention priorities and interventions.

Emerging Issues in Immunization and Infectious Diseases

In the coming decade, the United States will continue to face new and emerging issues in the area of immunization and infectious diseases. The public health infrastructure must be capable of responding to emerging threats. State-of-the-art technology and highly skilled professionals need to be in place to provide rapid response to the threat of epidemics. A coordinated strategy is necessary to understand, detect, control, and prevent infectious diseases.² Below are some specific emerging issues.

- Providing culturally appropriate preventive health care is an immediate responsibility that will grow over the decade. As the demographics of the population continue to shift, public health and health care systems will need to expand their capacity to protect the growing needs of a diverse and aging population.
- New infectious agents and diseases continue to be detected. Infectious diseases must be looked at in a global context due to increasing:
 - International travel and trade
 - Migration
 - Importation of foods and agricultural practices
 - Threats of bioterrorism
- Inappropriate use of antibiotics and environmental changes multiply the potential for worldwide epidemics of all types of infectious diseases.²

Infectious diseases are a critical public health, humanitarian, and security concern; coordinated efforts will protect people across the Nation and around the world.

References

¹Centers for Disease Control and Prevention (CDC). Achievements in public health, 1900–1999: Control of infectious diseases. MMWR. 1999 Jul 30;48(29):621-9.

²North Carolina Department of Health and Human Services, North Carolina Division of Public Health (NDPH). Healthy Carolinians. [Internet]. Raleigh: NDPH; updated 2010 May 3. Available from: <http://publichealth.nc.gov/hnc2020/docs/HNC2020-FINAL-March-revised.pdf>

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*This includes influenza, but does not include deaths due to 2009 H1N1.

†At the time of this printing, the pandemic was not yet over; hospitalizations and deaths were still occurring.

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