

Don't Procrastinate – Vaccinate!

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The speaker has no actual or potential conflict of interest in relation to this presentation

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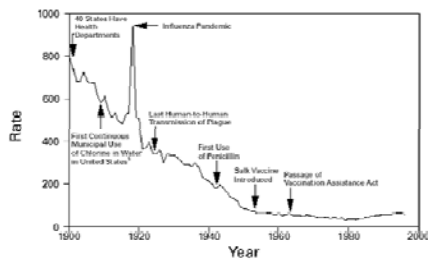
Objectives

- Pharmacists
 - Discuss the impact of vaccination rate changes on public health
 - Identify counseling strategies to improve vaccination schedule compliance
- Pharmacy Technicians
 - Discuss the impact of vaccination rate changes on public health
 - Identify how pharmacy technicians can help promote vaccination in the community

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Vaccinations and Public Health^{1,2}

FIGURE 1. Crude death rate* for infectious diseases — United States, 1900–1996[†]



*For 100,000 population per year.
[†]Adapted from Armstrong GL, Conn LA, Pinner RW. Trends in infectious disease mortality in the United States during the 20th century. JAMA. 1999;281:61-6.
 American Water Works Association. Water chlorination principles and practices: AWWA manual M20. Denver, Colorado: American Water Works Association, 1973.

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Benefits of Vaccines³

- Each birth cohort receiving routine immunizations:
 - Prevent 14 million illnesses
 - Saves 33,000 lives
 - Reduces direct health care costs \$9.9 billion dollars
 - Eliminates \$33.4 billion dollars of indirect health care costs

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Vaccinations Decrease Vaccine Preventable Diseases⁴⁻⁶

Disease	Vaccine Available	Peak Cases (Year)	2010	2011	2012	2013
Diphtheria	1928	30,508 (1938)	0	0	1	0
Hib Type B	1985	20,000 (1980s)	23	14	30	31
Measles	1963	763,094 (1958)	63	220	55	187
Pertussis	1914	265,269 (1934)	27,550	18,719	48,277	24,231
Polio	1955	42,033 (1949)	0	0	0	0
Rubella	1969	488,796 (1964)	5	4	9	9
Tetanus	1933	601 (1948)	26	36	37	26

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Among 13-17 year olds which vaccine has the lowest vaccination rate?

- A. Influenza
- B. Human papillomavirus (HPV)
- C. Measles
- D. Varicella
- E. Pertussis

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Vaccination Rates in Children 19-35 Months in 2012⁷

Vaccine (Population)	US Vaccination Rate (%)	IL Vaccination Rate (%)
DTaP (>=4 doses)	82.5	85.3
Polio (>=3 doses)	92.8	93.2
MMR (>=1 doses)	90.8	91.6
Hib Type B (Primary Series)	93.3	93.3
Hepatitis B (Birth Dose)	71.6	71.3
Hepatitis B (>=3 doses)	89.7	89.9
Hepatitis A (>=2 doses)	53	48.2
Pneumococcal (>=4 doses)	81.9	81.9
Rotavirus (Complete Series)	68.6	67.2
Varicella (>=1 doses)	90.2	90.6

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Vaccination Rates in Adolescents 13-17 Years in 2013⁸

Vaccine (Population)	US Vaccination Rate (%)	IL Vaccination Rate (%)
Hepatitis B (>=3 doses)	93.2	95.7
HPV (>=1 dose, female)	57.3	53.2
HPV (>=3 doses, female)	37.6	33.8
HPV (>=1 dose, male)	34.6	34.8
HPV (>=3 doses, male)	13.9	16.5
Influenza (>=1 dose, 2012-2013 season)	42.5	36.9
Meningococcal (>=1 dose)	77.8	78
MMR (>=2 doses)	91.8	93.5
Tdap (>=1 dose after 10 years of age)	86	87.3
Varicella (Hx of disease or >=2 doses)	84	86.2

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Vaccination Rates in Adults in 2012^{9,10}

Vaccine (Population)	US Vaccination Rate (%)
Hepatitis A (>=2 doses, 19-49 years)	12.2
Hepatitis B (>= 3 doses, 19-49 years)	35.3
Hepatitis B (>= 3 doses, >= 60 years)	15.1
Hepatitis B (>= 3 doses, diabetes)	28.6
Herpes Zoster (>=1 dose, >= 60 years)	20.1
HPV (>=1 dose, 19-26 years, female)	34.5
HPV (>=1 dose, 19-26 years, male)	2.3
Influenza (>=1 dose, >= 18 years, 2012-2013 season)	41.5
Pneumococcal (>=1 dose, 19-64 years, high risk)	20
Pneumococcal (>=1 dose, >65 years)	59.9
Tetanus, Past 10 years (>=1 dose, 19-49 years)	64.2
Tdap, Past 7 years (>= 1 dose, >= 19 years)	14.2

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Vaccine Preventable Disease Risks³

- Preventable disease
- Outbreaks
- Annual deaths in the US
 - 42,000 adults
 - 300 children

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In 2014, despite high vaccination rates, this disease is at its highest level in 20 years:

- A. Pertussis
- B. Varicella
- C. Measles
- D. Polio

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<http://www.npr.org/assets/img/2014/01/24/outbreaksvaccineLoop.gif>

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Vaccine Preventable Diseases in the US in 2008

<http://www.npr.org/assets/img/2014/01/24/outbreaksvaccineLoop.gif>

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Vaccine Preventable Diseases in the US Between 2008-2014

<http://www.npr.org/assets/img/2014/01/24/outbreaksvaccineLoop.gif>

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Increasing Pertussis Outbreaks⁴

Reported NNDSS pertussis cases: 1922-2013*

Number of cases

Year

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2014 Pertussis Epidemic in California^{12,13}

- 6930 cases
 - 352 (7%) were < 6 months
 - 3,629 (71%) in children 7-16 years
 - 11% never received pertussis vaccine
- 199 cases hospitalized
 - 37 (19%) required intensive care
 - 122 (62%) were infants < 4 months
 - 12% mothers vaccinated with Tdap in 3rd trimester
- 3 total deaths in 2014
 - All < 2 months of age at disease onset

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Measles Cases and Outbreaks

January 1 to August 1, 2014*

593 Cases reported in 21 states: Alabama, California, Connecticut, Hawaii, Illinois, Indiana, Kansas, Massachusetts, Minnesota, Missouri, New Jersey, New York, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, Wisconsin

18 Outbreaks representing 89% of reported cases this year

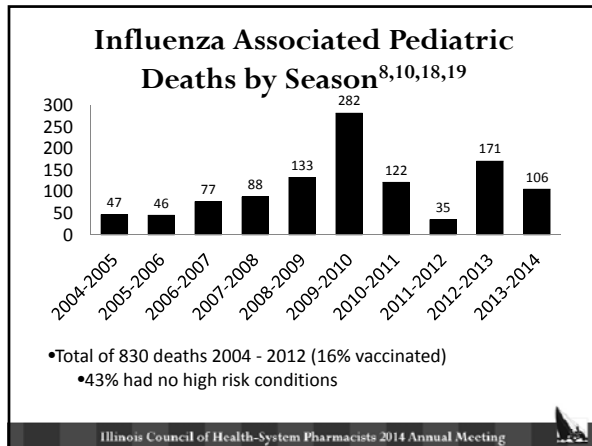
U.S. Measles Cases by Year

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Measles Outbreak^{8,14-17}

- 2014 Philippines outbreak - 47,000 cases
 - 77 deaths
 - 22 US travelers returned with measles and initiated outbreaks
- 2014 Ohio outbreak - 377 Cases
 - Ohio vaccination rate for measles 92.9%
 - Outbreak source was unvaccinated travelers to the Philippines
 - Measles spreads throughout pocket of unvaccinated people
- Outbreak in Illinois?
 - IL vaccination rate for measles 93.5%
 - Overall IL school religious 0.53% and medical 0.17% measles vaccine exemption rates are low
 - 76 IL schools have greater than 10x this rate of exemption
 - Highest exemption rate in IL 35%

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Chickenpox in a Healthy Child²⁰

- 15 yo with no PMH was admitted to the hospital
 - 3 day history of rash
 - 1 day history of fever and shortness of breath
 - Vaccines were incomplete DTaP x 4, HiB x 1, MMR x 2
 - She had a fever of 101.1, dyspnea, facial edema, petechiae rash, hypotension
 - She developed pneumonia, UTI, sepsis and multi-organ dysfunction
 - Vesicular fluid was positive for varicella-zoster virus
 - She died on day 21 of hospitalization

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A Call to Vaccinate²¹

- June 26, 2012 - Center for Disease Control (CDC) and the Department of Health and Human Services (DHHS) request pharmacists to
 - Increase awareness about vaccines among adults and adolescents
 - Vaccinate appropriate patients
 - Partner with local health departments, immunization coalitions and medical providers to increase collaboration and outreach to those who need vaccines

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Who can answer the DHHS/CDC's call to vaccinate and administer vaccines in the state of Illinois?

- Pharmacy Technicians Only
- Pharmacists Only
- Pharmacists and Pharmacy Technicians
- Pharmacists and Pharmacy students

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Pharmacist Roles in Vaccination²²

- Education
- Screening
- Immunizer
- Documentation
- Role Model
- Collaborate

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Pharmacy Technician Roles in Vaccination²²

- Screen patients
- Advocate for vaccination
- Assemble pre-vaccination paperwork
- Prepare and store vaccine doses
- Assist with documentation and transmission
- Complete billing for vaccines
- Role Model
- Disseminate immunization awareness materials

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Pharmacy Student Roles in Vaccination²²

- Technician roles plus
 - Administer vaccines under the supervision of a qualified pharmacist
 - Contribute to the establishment of pharmacy-based vaccine programs
 - Organize vaccine events

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Who are Under and Unvaccinated Children²³

- Under vaccinated
 - Black
 - Young unmarried mother
 - No parental college degree
 - Live near poverty level in a central city
- Unvaccinated
 - White
 - Married mother
 - Parental College degree
 - Household Income > \$75,000
 - Parents express concerns about safety of vaccines

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Guiding Style to Counsel a Vaccine Hesitant Parent²⁴

- Show care with body language
- Acknowledge relationship
- Ask them to share their concerns
- Acknowledge their concerns and empathize
- Ask for permission to share information
- Share pertinent scientific information related to concerns (benefits and risks)
- Share appropriate resources

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What Messages are Effective in Overcoming Parental Reluctance to Vaccinate²⁵

- Survey about child, vaccine attitudes and health care beliefs
- Randomized intervention using CDC messages
 - Correcting misinformation
 - Presenting information on disease risks
 - Using dramatic narratives
 - Displaying visuals to make risks more accessible
- Follow up survey
- Results
 - Correcting misinformation did reduce misperceptions
 - None of the interventions increased intent to vaccinate
 - Visuals and dramatic narratives increased serious vaccine side effect beliefs

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Good Resources

- CDC's
 - Vaccine web section
<http://www.cdc.gov/vaccines>
 - Morbidity and mortality weekly report
<http://www.cdc.gov/mmwr>
- Immunization Action Coalition
 - Vaccine concerns web section
<http://www.immunize.org/concerns>
 - Talking with parents web section
http://www.immunize.org/concerns/comm_talk.asp
 - Immunization action coalition's quick Answers to tough questions
<http://www.immunize.org/catg.d/s8030.pdf>

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Good Resources

- AAP's immunization website
<http://www.aap.org/immunization>
- National Network for Immunization Information
<http://www.immunizationinfo.org>
- APhA Immunization Center
<http://www.pharmacist.com/immunization-center>

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Pharmacy technicians can promote vaccination in the community by

- A. Administering Tdap Vaccine to 12 year olds
- B. Screening patients for annual influenza vaccine
- C. Administering vaccines under the supervision of a pharmacist
- D. Picking and choosing which vaccines they will receive

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When communicating with a vaccine hesitant parent to improve vaccine schedule compliance a pharmacist should?

- A. Provide the pharmacists beliefs about vaccines to the parents
- B. Use scare tactics to ensure compliance
- C. Acknowledge the parents concerns and empathize
- D. Provide parents with only the benefits of vaccines

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References

1. Centers for Disease Control. Achievements in public health, 1900-1999: control of infectious diseases. MMWR Morb Mortal Wkly Rep. 1999;48:621-9.
2. Centers for Disease Control. Achievements in public health, 1900-1999 impact of vaccines universally recommended for children – United States, 1900-1998. MMWR Morb Mortal Wkly Rep. 1999;48:243-8.
3. Healthy People. Immunizations and infectious diseases. Available at <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicId=23>. Accessed August 8th, 2014.
4. Centers for Disease Control. Pertussis surveillance & reporting. Available at <http://www.cdc.gov/pertussis/surv-reporting.html>. Accessed August 8th, 2014.
5. Roush SW, Murphy TV. Vaccine-Preventable Disease Table Working Group. Historical comparisons of morbidity and mortality for vaccine-preventable diseases in the United States. JAMA. 2007;298:2155-63.
6. Centers for Disease Control. Notifiable diseases and mortality tables. MMWR Morb Mortal Wkly Rep. 2014;63(31):ND-424-ND-437.

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References

7. Centers for Disease Control. National, state, and local area vaccination coverage among children aged 19-35 months – United States, 2012. MMWR Morb Mortal Wkly Rep. 2013;62(36):733-740.
8. Centers for Disease Control. National, state, and local area vaccination coverage among adolescents aged 13-17 years – United States, 2013. MMWR Morb Mortal Wkly Rep. 2014;63(29):625-633.
9. Centers for Disease Control. Noninfluenza vaccination coverage among adults – United States, 2012. MMWR Morb Mortal Wkly Rep. 2014;63(05):95-102.
10. Centers for Disease Control. Flu vaccination coverage, United States, 2012-13 influenza season. Available at <http://www.cdc.gov/flu/fluavaxview/coverage-1213estimates.htm>. Accessed August 8th, 2014.
11. National Public Radio. How vaccine fears fueled the resurgence of preventable diseases. Available at <http://www.npr.org/blogs/health/2014/01/25/265750719/how-vaccine-fears-fueled-the-resurgence-of-preventable-diseases>. Accessed August 8th, 2014.
12. Atwell JE, Van Otterloo J, Zipprich J, et al. Nonmedical vaccine exemptions and pertussis in California, 2010. Pediatrics. 2013;132(4):624-630.

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References

13. California Department of Public Health. Pertussis summary report. Available at <http://www.cdph.ca.gov/programs/immunize/Pages/PertussisSummaryReports.aspx>. Accessed August 12th, 2014.
14. Centers for Disease Control. Measles cases and outbreaks. Available at <http://www.cdc.gov/measles/cases-outbreaks.html>. Accessed August 8th, 2014.
15. Centers for Disease Control. Measles in the Philippines. Available at <http://www.nnc.cdc.gov/travel/notices/watch/measles-philippines>. Accessed August 8th, 2014.
16. Ohio Department of Public Health. 2014 Measles outbreak. Accessible at <http://www.odh.ohio.gov/features/odhfeatures/Measles%202014.aspx>. Accessed August 8th, 2014.
17. Illinois State Board of Education. Immunization status of school-age children in Illinois for school year 2013-2014. Available at http://www.isbe.state.il.us/research/xls/Immunization_13-14.xlsx. Accessed August 8th, 2014.
18. Wong KK et al. Influenza-associated pediatric deaths in the United States, 2004-2012. Pediatrics. 2013;134(5):796-804.

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References

19. Centers for Disease Control. Seasonal influenza (flu) past weekly surveillance reports. Available at <http://www.cdc.gov/flu/weekly/pastreports.htm>. Accessed August 8th, 2014.
20. Centers for Disease Control. Varicella death of an unvaccinated, previously healthy adolescent-Ohio, 2009. MMWR Morb Mortal Wkly Rep. 2013;62(14):261-263.
21. Department of Health and Human Services. Open letter to pharmacists and community vaccinators. Available at http://www.pharmacist.com/sites/default/files/http___www_pharmacist_com_AM_Template_cfm_Section%3DPharmacy_News%26Template%3D_CM_ContentDisplay_june_26.pdf. Accessed August 8th, 2014.
22. American Pharmacists Association. Guidelines for pharmacy-based immunization advocacy. Available at <http://www.pharmacist.com/guidelines-pharmacy-based-immunization-advocacy>. Accessed August 8th, 2014.
23. Smith PJ and Chu SY. Children who have received no vaccines: who are they and where do they live? Pediatrics. 2004;114(1):187-195.
24. Leask J, et al. Communicating with parents about vaccination: a framework for health professionals. BMC pediatrics. 2012;12:154
25. Nyhan B, et al. Effective messages in vaccine promotion: a randomized trial. Pediatrics. 2014;133:e835-e842.

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