

Module 1: SAFE - EFFECTIVE

Confident Parents – Intelligent Leaders – Articulate Activists

Part 2. Are Vaccines Effective?

Key points:

- **Key Take Away: Effective ≠ Protective**

+++++

ASSUMPTIONS BEHIND VACCINATION PRACTICES

1. Vaccines are safe
2. Vaccines are effective – i.e. they protect you from getting sick
3. Vaccines are the most significant public health advances of the 21st century
4. All vaccines should be mandatory for all

Webster's Dictionary defines "effective" as

- Adequate to accomplish a purpose
- Producing the intended or expected result
- Fulfilling a specified function
- Therefore, Are Vaccines Effective?

Yes! Vaccines are effective. Researchers investigate the ability of injected matter to stimulate the production of an antibody...but the presence of an antibody is not a guarantee of protection from illness.

Effectively Vaccinated but not Protected

- **2006:** 11-State outbreak of mumps
 - Vaccination status for 817 persons was known:
 - 51% had received 2 doses of MMR
 - 12% had received 1 dose of MMR
 - 6% were unvaccinated
 - Reference: Update: Multistate Outbreak of Mumps: US, Jan 1 to May 2, 2006. MMWR: May 26, 2006 / 55(20);559-563.
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5520a4.htm>
- **2014:** California Pertussis Outbreak
 - Between Jan 1 and Nov 26, 2014, a total of 9,935 cases of pertussis were reported to the CDOH
 - 2,006 cases were among 14 to 16 year olds
 - 87% were fully vaccinated + *Teen Booster*
 - Only 36 of 1665 students (2.2%) were completely unvaccinated
 - **REFERENCE:** CDC: Pertussis Epidemic — California, 2014. Dec 5, 2014 / 63(48);1129-1132
<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6348a2.htm>

- **2013-14: Chickenpox Vaccine**
 - 1995: The chickenpox vaccine was introduced
 - 2006: A second dose was added to the schedule
 - 2013-14: 54.7% of those who had chickenpox had at least 1 dose
 - Among these 7,000 vaccinated persons:
 - 2 doses: 1,331 persons
 - 3 doses: 14 persons
 - **REFERENCE:** CDC: Epidemiology of Varicella During the 2-Dose Varicella Vaccination Program — U.S., 2005–2014.
<http://www.cdc.gov/mmwr/volumes/65/wr/mm6534a4.htm>
- **Tetanus**
 - Tetanus is a condition manifested by severe muscle spasms with the slightest movement. The muscle spasms can involve the muscles of the neck and severe clenching of the teeth, hence the name “lock jaw.”
 - The spores release an extremely potent toxin called tetanospasmin
 - It can take 2-14 days for the toxin to migrate along the neuron to the spinal cord.
 - **A Few Tetanus Factoids**
 - There is no diagnostic laboratory test for tetanus; the diagnosis is entirely clinical
 - *C. tetani* is recovered from wounds in only about 30% of cases of clinical tetanus
 - The organism is sometimes isolated from patients with dirty wounds but do not have clinical tetanus
 - ***Tetanus can occur in the presence of “protective” levels of antitoxin (>0.1 IU/dL)***
 - The CDC says that while it can take months to heal from tetanus, 4 out of 5 persons recover
 - **REFERENCE:** Manual for the Surveillance of Vaccine-Preventable Diseases. Chpt 16: Tetanus.

Selected References: Tetanus in the Fully Vaccinated

- Crone, NE, Reder AT. “Severe tetanus in immunized patients with high anti-tetanus titers.” *Neurology*. April 42(4). 761-4. 1992
- Shimoni, Zvi, et. al. “Tetanus in an immunized patient.” *British Medical Journal (BMJ)*, Vol. 319. October 16, 1999.
- Beltan, Alvaro, et. al. “A Case of Clinical Tetanus in a Patient with a Protective Anti-tetanus Antibody Level.” *Southern Medical Journal (SMJ)*, Vol. 100, Issue 1. 2007.
- Ergonul O, et al. An unexpected tetanus case. *Lancet Infect Dis*. Jun;16(6):746-752. 2016.

Key Take Away: Effective ≠ Protective

DISCLAIMER and COPYRIGHT

This presentation is intended for educational purposes for course participants only. No portion of this presentation may be reproduced, stored in a retrieval system, or transmitted in any form by any means electronic, mechanical, photocopying, recording, or any other style, except for brief quotations, without the prior written permission. The information presented reflects the author’s opinions at the time the prezi was created. Some information will change over time, as new research, data and information become available. The author assumes no responsibility for updating information that may modify any information presented herein. All rights reserved. Copyright 2018.