

Module 2: The Details of Herd Immunity

Confident Parents – Intelligent Leaders – Articulate Activists

**“We must vaccinate to protect the herd,
to protect those who cannot be vaccinated.”**

Key points:

- Assumptions behind entire vaccine industry:
 1. Everyone one is susceptible
 2. Everyone will be exposed to “vaccine preventable” pathogens
 3. Once exposed, everyone will become sick
 4. Unless, of course, you are vaccinated – and THEN you are “immune”
- **Important Dates:**
 - 1932: The first use of herd immunity in the medical literature – evolved with confusion
 - 1971: Medical Herd Immunity was contrived
- **Natural herd immunity** came from real infection
 - Natural herd immunity is passed on to infants
- **Medical herd immunity** induced by vaccination
 - Causing loss of natural protection in infants and actually all of humanity
 - Most vaccines have nothing to do with “protecting” the herd
 - Based on mathematical models that do not transfer to real life models
- **Terminology differences:**
 - With Natural Herd Immunity, “immune” means “recovered”
 - With Medical Herd Immunity, “immune” means “vaccinated”
 - With Medical Herd Immunity, “susceptible” means “unvaccinated”

What is Herd Immunity?

Definition: Herd Immunity is the presence of adequate immunity within a population against a specific infection.

Loss of Natural Herd Immunity

- 2010 – Study of the measles antibodies in blood.
- **Result?**
 - Vaccinated mothers had nearly 4 times less antibody in their blood than unvaccinated mothers.
 - 26% of vaccinated mothers vs 8% of naturally immune mothers had values <300 mIU/ml in their blood, considered to be “non-protective.”
 - Infants of vaccinated mothers had significantly fewer antibodies at birth compared to infants of naturally immune mothers.
 - REFERENCE: Leuridan E, et al. Early waning of maternal measles antibodies in era of measles elimination: longitudinal study. *BMJ*. 2010 May 18. PMID: 20483946
- **Several other studies have confirmed these findings:**
 - **1992: Pabst** – US study - only 10% of infants of vaccinated women retained measles maternal antibodies by 7 months compared with 35% of infants of naturally immune women
 - **1997: De Serres** – Canada study - only 15% of infants of vaccinated women retained measles antibodies at 8 months compared to 50% of naturally immune mothers.

The passive protection to infants came from REAL antibodies formed during REAL infections experienced by their mothers offers REAL protection. We are eliminating NATURAL herd immunity and replacing it with FAULTY MEDICAL HERD IMMUNITY

Natural Herd Immunity

- Originally came from a 30 year measles study
- 1930: Dr. AW Hedrich – when 55% or more of children under 15 yrs of age had had **natural** measles, outbreaks in the community stopped. This lack of transmission protected the herd, those who had not yet contracted measles. THIS WAS NATURAL HERD IMMUNITY and what the phrase was intended to mean.
 - Only 55% natural infection protected the younger and most vulnerable
 - Natural protection due to naturally acquired immunity
 - **REFERENCE:** Hedrich AW. The corrected average attack rate from measles among city children. Am J Hyg 1930; 11:576-600

Three Theories of Herd Immunity

1. Mass-action principle: If proportion of those who were immune was greater than the number of those who were susceptible, the infection would stop.

2. Case reproduction rates: For an infection to persist, each infected person must transmit that infection to at least one other person. If transmission does not occur, the infection will disappear from a population.

3. Reed-Frost simulation approach: They used an extensive math equation that included the probability of spread to others in a specified community.

Notice how all of these theories are bad assumptions:

What if the person has NOT been vaccinated but is NON-SUSCEPTIBLE for other reasons: 1) hand washing 2) high Vit d and Vit C levels 3) good food/ plenty of sleep/low stress 4) good genetics or 5) healthy immune system

Theories Evolved Into:

"What if everyone was vaccinated? They would be NON-SUSCEPTIBLE. Maybe the spread of the infection would not occur in the first place..."

SUSCEPTIBLES = UNVACCINATED

"1971 – "Landmark Study" WHEN MEDICAL HERD IMMUNITY BEGAN

"The purpose of an immunization program is to **reduce the supply of susceptibles** to such an extent that the probability of spreading an illness is very small.... No matter how large the number of immunes [vaccinated] in the total population, if some pockets of the community, such as low economic neighborhoods, contain a large enough number of susceptibles [unvaccinated], the epidemic potential will remain high."

REFERENCE: Fox, John, et al. "Herd immunity" Basic concept and relevance to public health immunization practices. Am J Epidem, Sept. 1971, Vol. 94, No. 3. 179-189.

Medical Herd Immunity vs Natural Herd Immunity - table

- see slide handout in your DocBox

Purpose of medical herd immunity:

To “break the chain of transmission” and create a “disease resistant person” with vaccination.

- These vaccines have NOTHING TO DO with protecting others:
 - Hepatitis B
 - Tetanus
 - Diphtheria
 - IPV
- These vaccines can INCREASE the “transmission links”
 - OPV- polio ->Virus can shed
 - Rotavirus -> Virus can shed
 - Chickenpox /Zoster -> Virus can shed
 - Influenza (FluMist) -> Virus can shed

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 2017.