

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance. They are positioned in the top-left, bottom-right, and bottom-center areas of the slide.

THE HISTORY OF ANTI-VACCINATION

FROM JENNER TO WAKEFIELD

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A BULLITT HISTORY OF MEDICINE CLUB LECTURE

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****DISCLAIMER****

EARLIEST USES OF VARIOLATION

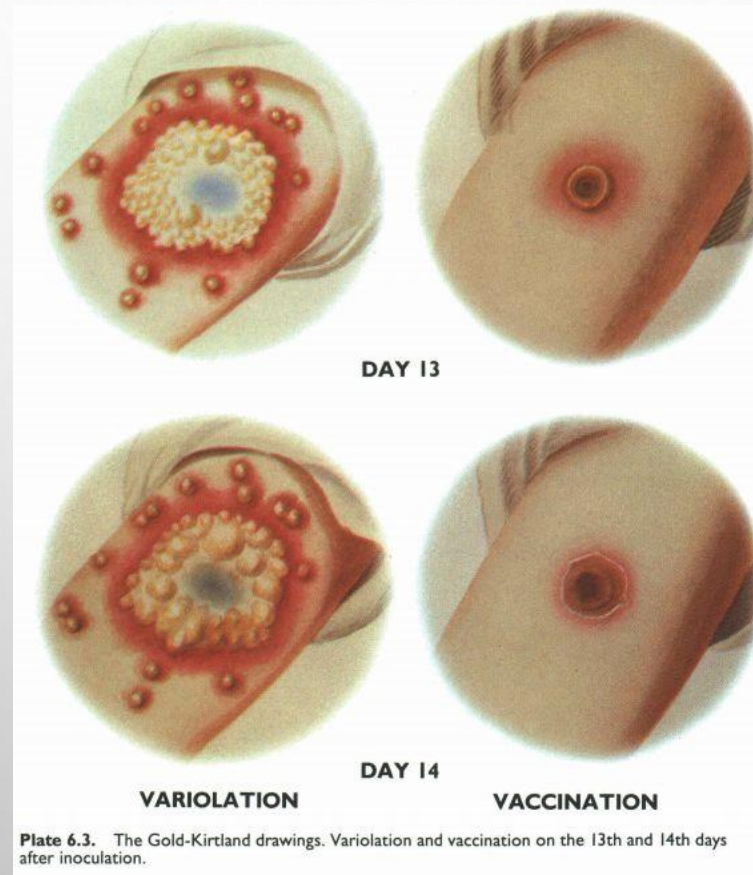
- CHINA (AD 590-1000) NASAL INOCULATION
- INDIA (PRE-1500S) CUTANEOUS INOCULATION
- EGYPT (MAMELUKE EMPIRE, 1200S)
- EUROPE (1700S)
- AMERICAN COLONIES (1706 VIA AFRICAN SLAVES)

RISKS OF VARIOLATION

- INOCULATION AGAINST SMALLPOX COULD SPREAD OTHER DISEASES, LIKE SYPHILIS
- INOCULATED INDIVIDUALS WERE STILL FULLY CONTAGIOUS
- 0.5-2% MORTALITY RATE

THE FIRST VACCINE

- 1796: JENNER'S DISCOVERY OF THE SMALLPOX VACCINE
- 1801: 1ST VACCINATION IN THE UNITED STATES (DR. BENJAMIN WATERHOUSE)



ANTI-VACCINATION SOCIETIES:

THE FOUNDATION OF THE ANTI-VACCINE MOVEMENT

- **VACCINATION ACT OF 1840** (ENGLAND) – OUTLAWED VARIOLATION, VACCINATION IS FREE FOR THE POOR
- **VACCINATION ACT OF 1853** (ENGLAND) –VACCINATION IS REQUIRED FOR ALL INFANTS, PARENTS WILL BE FINED OR IMPRISONED IF THEIR CHILD IS NOT VACCINATED
- 1853- **ANTI-VACCINATION LEAGUE** FOUNDED (LONDON)
- **VACCINATION ACT OF 1867** (ENGLAND) – VACCINATION IS REQUIRED FOR CHILDREN UP TO AGE 14, PARENTS WILL BE CUMULATIVELY PUNISHED UNTIL THEIR CHILD IS VACCINATED

CORE ANTI-VACCINATION ARGUMENTS

- MANDATORY VACCINATION
- SAFETY & EFFICACY
 - CONTAMINATION
 - ANTIGEN
 - ADDITIVES

MANDATORY VACCINATION

- **PRO-MANDATORY VACCINATION:** VACCINATION IS A RESPONSIBILITY OF CITIZENS TO CREATE A HEALTHIER SOCIETY
- **ANTI-MANDATORY VACCINATION:** VACCINATION IS A PERSONAL CHOICE THAT THE GOVERNMENT CANNOT MAKE FOR INDIVIDUALS OR PARENTS

MANDATORY VACCINATION: THE MILITARY

- 1776: THE BRITISH ARMY USE SMALLPOX AS A BIOLOGICAL WEAPON AGAINST AMERICAN SOLDIERS.
- 1776: WASHINGTON MANDATES SMALLPOX INOCULATION FOR AMERICAN SOLDIERS.
- RATIO OF DEATHS DUE TO DISEASE VS. COMBAT:
 - SPANISH-AMERICAN WAR (1898) – 13:1
 - WORLD WAR I (1914-1918) – 1:1
 - WORLD WAR II (1939-1945) – 1:87

MANDATORY VACCINATION: THE MILITARY YELLOW FEVER VACCINE (1941)

- 1941 – YELLOW FEVER VACCINE REQUIRED FOR ALL U.S. ARMED FORCES MEMBERS
 - MADE WITH HUMAN SERUM, WHICH WAS POOLED IN THE PRODUCTION PROCESS
 - HEPATITIS B UNKNOWINGLY CONTAMINATED THE VACCINE
 - 50,000 SOLDIERS HOSPITALIZED WITH JAUNDICE
 - 100 DEATHS
 - UNKNOWN LONG TERM EFFECTS

MANDATORY VACCINATION: SCHOOLS

- 1855 (MASSACHUSETTS): MANDATORY SMALLPOX VACCINATION FOR ALL SCHOOLCHILDREN
- 1905: *JACOBSON V. MASSACHUSETTS* (SUPREME COURT)
 - MANDATORY VACCINATION IS CONSTITUTIONAL
 - GOVERNMENT HAS A RESPONSIBILITY TO ACT IN THE INTEREST OF SOCIETY AS A WHOLE

North Carolina School Vaccination Requirements

Vaccine	Doses Required Before School Entry
Kindergarten	
Diphtheria, Tetanus, Pertussis (DTaP)	5 doses
Polio	4 doses
Measles	2 doses
Mumps	2 doses
Rubella	1 dose
Haemophilus Influenzae Type B	4 doses
Hepatitis B	3 doses
Varicella	2 doses
Pneumococcal conjugate	4 doses
7 th Grade	
Tetanus, Diphtheria, Pertussis (Tdap)	1 dose (booster)
Meningococcal conjugate	1 dose

MANDATORY VACCINATION: SCHOOLS

ARGUMENTS IN FAVOR OF MANDATORY SCHOOL VACCINATIONS

MANDATORY VACCINATION OF SCHOOLCHILDREN IS A PUBLIC HEALTH OPPORTUNITY TO ENSURE THAT OUR POPULATION AS A WHOLE IS VACCINATED AGAINST AS MANY DISEASES AS POSSIBLE

OR

CHILDREN SHOULD BE VACCINATED AGAINST COMMUNICABLE DISEASES BECAUSE THEIR DAILY ENVIRONMENT FACILITATES THE RAPID SPREAD OF DISEASE

MANDATORY VACCINES: HEPATITIS B AND HPV

- HEPATITIS B – DSDNA VIRUS, DISCOVERED IN 1965
 - TRANSMISSION: BODILY FLUIDS (BLOOD, SEMEN)
 - CAUSES ACUTE ILLNESS AND CHRONIC ILLNESS, CAN CAUSE LIVER CANCER
 - VACCINE: RECOMBINANT (1986)
- HPV – group of DNA viruses
 - Transmission: vaginal or anal sex
 - At least 50% of sexually active individuals will become infected with HPV
 - Causes genital warts, cervical, vaginal, and vulvar cancer
 - Vaccine: recombinant; multiple types that cover different strains of HPV

SAFETY & EFFICACY

- CONTAMINATION OF VACCINES
 - SMALLPOX VACCINE
 - DIPHTHERIA
- VACCINE ANTIGENS
 - CUTTER INCIDENT (SALK POLIO VACCINE)
 - DPT
 - MMR
- VACCINE ADDITIVES
 - THIMEROSAL

Stage	Description	Purpose
Exploratory Stage	2-4 years of basic lab research	Develop scientific background and framework for a potential vaccine
Pre-Clinical Stage	Explore cellular responses to vaccine in cell and tissue cultures, animal testing	Test vaccine efficacy Develop suggested dose and administration route
IND Application	Submit Investigational New Drug application to FDA (reviewed and approved within 30 days)	1 st of many checkpoints
Phase I	20-80 test subjects (adults), may or may not be blinded, subjects may or may not be challenged with pathogen	Assess safety of vaccine and immune response elicited
Phase II	100s of participants, randomized control trial	Assess safety of vaccine and immune response elicited; Dosing and delivery method
Phase III	1,000s-100,000s of participants, randomized double blind trial	Attempt to detect rarer side effects, assess immune response
Approval and Licensure	Biologics License Application submitted to FDA, who inspects manufacturing facilities and approves or denies vaccine. FDA continues to monitor vaccine post-licensure	Checkpoint
Phase IV	Optional. Testing by manufacturer continually	Assess safety and effectiveness, look for potential additional uses
VAERS	Vaccine Adverse Event Reporting System; voluntary reporting system for possible adverse events associated with vaccination	Starting point for CDC to investigate reports of adverse events

SAFETY & EFFICACY: CONTAMINATION

- SMALLPOX VACCINE – RISK OF TETANUS, OTHER INFECTION, TOXIC SHOCK, ENCEPHALITIS, WIDESPREAD RASH
- DIPHTHERIA ANTITOXIN – CONTAMINATED WITH TETANUS
- U.S. BIOLOGICS CONTROL ACT – REGULATES PRODUCTION OF VACCINES ACROSS STATE LINES

SAFETY & EFFICACY: THE CUTTER INCIDENT

- **1954** SALK'S PLACEBO-CONTROLLED TRIAL FOR THE INACTIVATED POLIO VACCINE
- **APRIL 12, 1955** SUCCESS OF SALK'S VACCINE ANNOUNCED
- **APRIL 13** VACCINE DISTRIBUTION IN THE U.S. BEGAN
- **APRIL 25** 1ST CASE OF VACCINE-ASSOCIATED PARALYTIC POLIO REPORTED
- **APRIL 26** 5 MORE CASES OF PARALYTIC POLIO REPORTED
- **APRIL 27** SURGEON GENERAL HALTS USE OF CUTTER POLIO VACCINE
- **APRIL 28** POLIOMYELITIS SURVEILLANCE UNIT CREATED
- **MAY 7** ALL USE OF POLIO VACCINE SUSPENDED

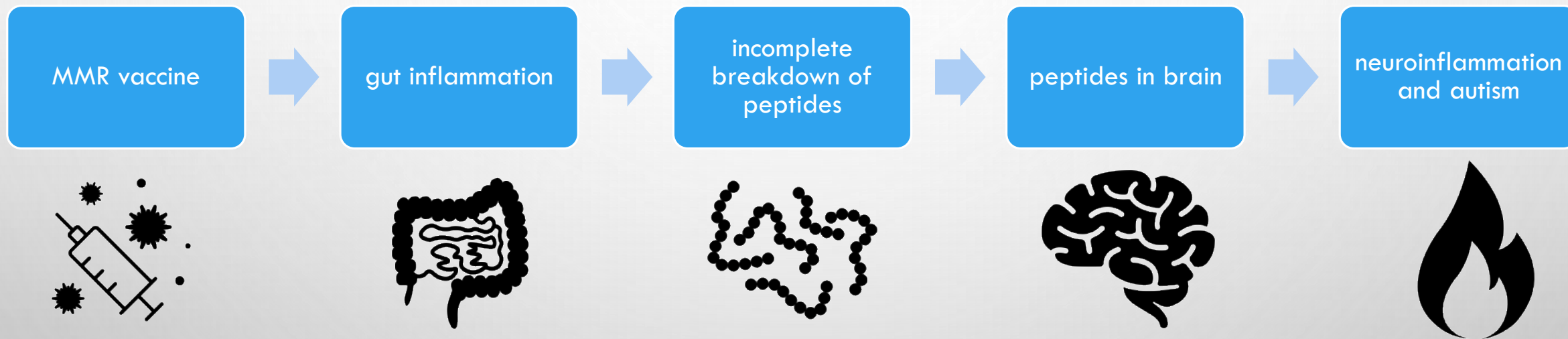
SAFETY & EFFICACY: DPT VACCINE

- **1912** 1ST WHOLE-CELL PERTUSSIS VACCINE CREATED
- **1942** PERTUSSIS VACCINE COMBINED WITH DIPHTHERIA AND TETANUS (DPT)
- **1944** DPT VACCINE APPROVED BY THE AMERICAN ACADEMY OF PEDIATRICS
- **APRIL 19, 1982** *DPT: VACCINE ROULETTE* BROADCAST ACROSS AMERICA

SAFETY AND EFFICACY: DPT VACCINE

No Known Association	Insufficient Evidence	Known Relation
Infantile spasms	Permanent brain damage	Acute encephalopathy
SIDS	Erythema Multiforme	Anaphylactic reaction
Autism	Guillain-Barré Syndrome	Fever
ADD (Attention Deficit Disorder)	Peripheral Neuropathy	Crying, screaming
Reye Syndrome	Hemolytic Anemia	HEE (Hypotonic, Hypo-responsive Episodes)
	Juvenile Diabetes	
	Thrombocytopenia	

SAFETY & EFFICACY: WAKEFIELD



SAFETY & EFFICACY: THIMEROSAL

Don't mix your **ethyls** with your **methylys**



Do you think **methyl mercury** is the same as **ethyl mercury**?

By that logic pouring yourself a glass of methyl alcohol instead of ethyl alcohol would be the same. Except it's not. With methyl alcohol, you may wake up blind, or you may not wake up at all.

Ethyl mercury is a metabolite of thimerosal, the kind found in some flu vaccines (but removed from all other US routine childhood vaccines). It does not accumulate in the body. Methyl mercury, the kind found in deep sea fish, has environmental concerns and it DOES bioaccumulate.

CONCLUSION: ANTI-VACCINE MOVEMENT TODAY

- VACCINES CAUSE AUTISM (AND ADHD, LEARNING DISABILITIES, ETC.)
- MANDATORY VACCINATION VIOLATES PARENTAL RIGHTS
- VACCINE ADDITIVES ARE NOT GOOD BECAUSE THEY ARE NOT NATURAL
- TOO MANY VACCINES WILL OVERWHELM YOUR CHILD'S IMMUNE SYSTEM
- IMMUNITY FROM VACCINES IS INFERIOR TO NATURAL IMMUNITY
- HYGIENE AND SANITATION, NOT VACCINES, ARE RESPONSIBLE FOR DISEASE REDUCTION
- VACCINES INFECT YOU WITH THE DISEASE IT CLAIMS TO PREVENT

THANK YOU!