

The Measles Epidemic Here and Abroad What can be done?

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Take Away Points

- ❑ Measles is the most common cause of vaccine preventable death in the world
 - ❑ Eradication of measles is a WHO health objective for 2015
 - ❑ For herd immunity to protect a community the vaccination rate must be 95%
 - ❑ Each practitioner should know who and how to vaccinate their patient populations
 - ❑ Strategies on handling of antivaccine sentiment
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Global Eradication

- In 2008, the World Health Assembly requested a study on the possibility of eradicating measles
 - No scientific or technical barriers identified
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WHO-Sixty-third World Health Assembly

- Endorsed the target of eradicating measles worldwide by 2015
-

Global eradication of measles

- competing public health priorities**
 - weak immunization systems**
 - sustaining high routine vaccination coverage**
 - addressing the US \$298 million funding gap**
 - vaccinating the hard-to-reach population**
 - addressing an increasing number of measles outbreaks particularly in cross-border areas.**
-

Measles

- ❑ Felt to be one of the most highly transmissible contagious human diseases
 - ❑ Will affect >95% of population in absence of vaccination
 - ❑ Only reservoir are humans
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Measles

- Leading cause of vaccine preventable death worldwide
 - 94% of measles associated deaths occurred in 47 priority countries
 - The majority were in Africa
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Measles

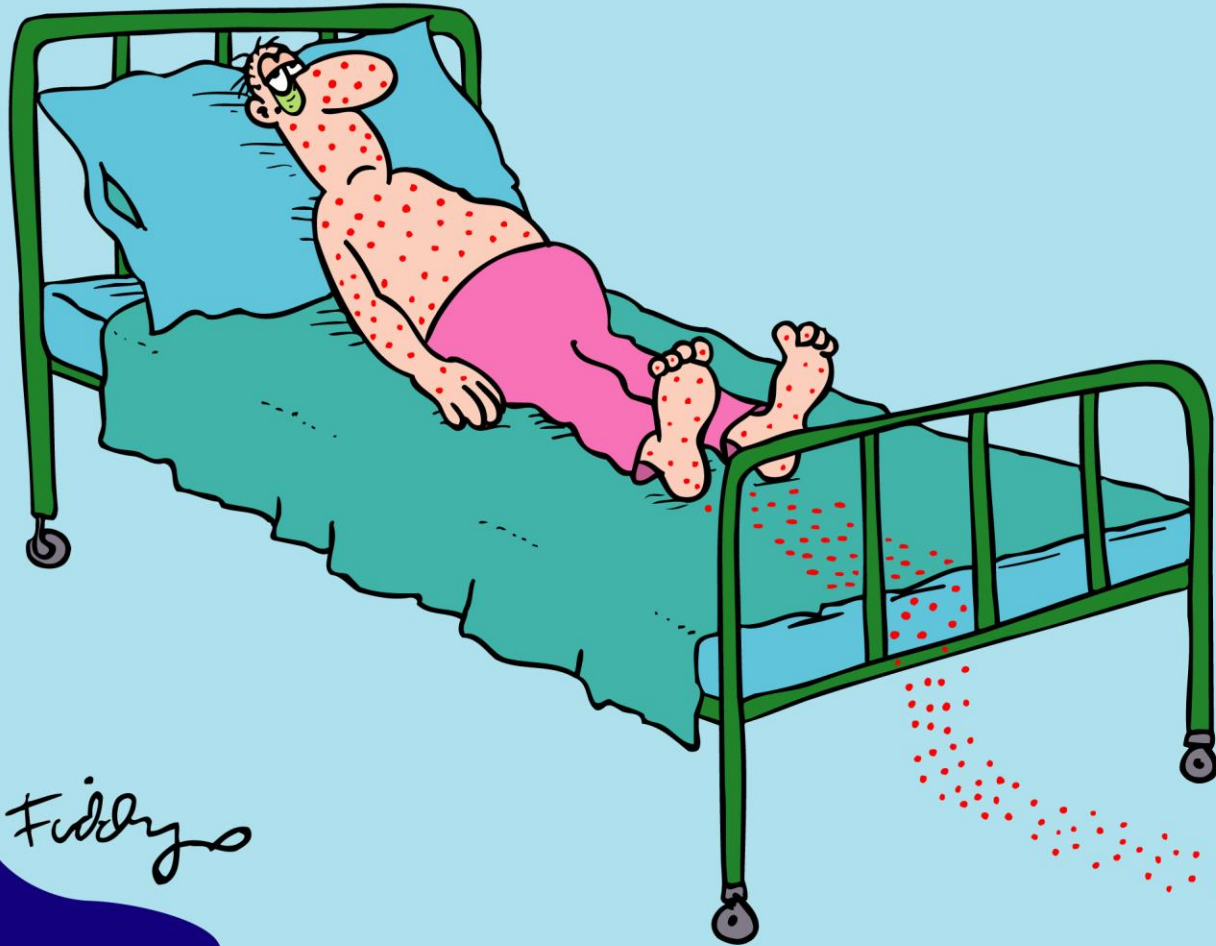
- ❑ The incubation period of measles is usually 10 days with a range generally of 8 to 10 days.
 - ❑ Infected individuals are characteristically asymptomatic during the incubation period, although some have been reported to experience transient respiratory symptoms, fever, or morbilliform rash
-

Measles

- ❑ Incubation period — measles virus enters via the respiratory mucosa or conjunctivae.
 - ❑ The virus replicates locally, spreads to regional lymphatic tissues,
 - ❑ Felt to disseminate to other reticuloendothelial sites via the bloodstream.
-

Prodrome

- ❑ The appearance of symptoms include fever (40C), malaise and anorexia
 - ❑ Followed by possible photophobia and lacrimation
-



Fiddly

Boy with measles



Source: Centers for Disease Control and Prevention.



Measles exanthem



Blanching erythematous rash with some confluent areas on the trunk in a patient with measles.

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□ Koplick's Spot



Worldwide

- In 2008, it is estimated that 8.8million children died from measles
 - Down from 12million death in 1990
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Vaccines Save Lives

- Vaccination is the top Public Health achievement of the 20th Century
 - MMWR 1999 48:241

Measles Vaccine

- First licensed in 1963
 - Has offered a high return on investment
 - UNICEF price for procurement (bundled)
 - \$0.37
-

Vaccine

- ❑ 1963 Killed and live vaccines
 - ❑ 1965 Live vaccine further attenuated
 - ❑ 1967 Killed vaccine taken off market
 - ❑ 1968 Live vaccine further attenuated
 - ❑ 1971 Combined measles-mumps-rubella
 - ❑ 1989 Two dose schedule started
 - ❑ 2005 Combined MMR-varicella
-

MMR Vaccine

- Live attenuated
 - Immune response to a live attenuated vaccine is a very similar to natural infection
-

Vaccine

- 95% of children develop protective antibodies if the vaccine is given by 12mos
 - 98% of children develop protective antibodies if administered at 15mos
 - 99% develop protective antibodies after a second dose
-

Eliminated

- Measles was declared eliminated in the United States in 2000 due to our high 2-dose measles vaccine coverage
 - 1st dose 12-15mos
 - 2nd dose 4-6yrs
 - At least 1 month between doses
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July 2008

□ United States

- Measles outbreak largest in 10 years
 - 90% of the victims were not vaccinated
 - CDC linked the outbreak to foreign travelers
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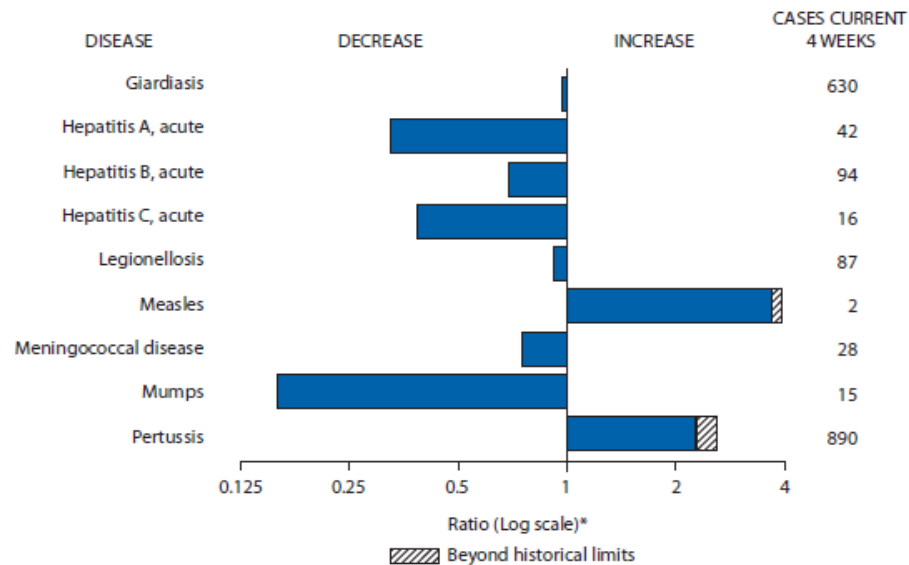
January-May 2011

- More measles cases were reported in the U.S. than any other time period since 1996

- MMWR 5/24/2011
-

United States Diseases

FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals January 8, 2011, with historical data



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

2009-2010

- ❑ Malawi (118,712 cases)
- ❑ Burkina Faso (54,118)
- ❑ Iraq (30,328)
- ❑ Bulgaria (22,004)
- ❑ South Africa (18,356)
- ❑ Zambia (15,754)
- ❑ Zimbabwe (9,696)
- ❑ Vietnam (9,391)
- ❑ Nigeria (8,491)
- ❑ Namibia (7,214)
- ❑ Philippines (6,368),
- ❑ DRC (5,407),
- ❑ France (5,048),
- ❑ Ethiopia (4,235)

▪ CDC.MMWR. 2012:73-78

Worldwide

- ❑ Ethiopia- 4/12/2011 17,584 cases of measles and 114 deaths. 2mil children at risk
 - ❑ Somali refugee children in Kenya(one camp) 462 cases and 11 deaths
-

Vietnam

- Measles containing vaccine was introduced to the routine vaccination series in 1982
 - National coverage reached 89% in 1989
 - Approx 95% in 2009
-

Vietnam

□ Epidemic of 2009-2010

- Young adults 18-27 who were not immunized as children
 - Not enough herd immunity
 - No “catch up”
-

Poland

- Review of high numbers of cases reveal strategies there to focus immunization efforts on females problematic
 - Everyone needed the vaccine
-

Other reasons for lack of success

Vaccine delivery

No success with polio

- Claims that vaccine was being used to sterilize Muslims

High cost?

Impact on health system

- Due to political unrest
 - War
 - Migration
-



- The government has established harsh penalties against the teaching of science or English including the use of traditional medical therapies such as vaccines. Vaccinated children have been known to have limb cut off.
-

Somali refugees fight cholera measles and hunger

- 8/13/2011
 - Rebels not allowing aid through
 - Crowded Camps
 - No heard immunity
-

Bill Gates Continues 'God's Work', Third World Vaccine Workers Shot Dead

2/27/2013



Zimbabwe Outbreak

- Due to religious extremists counseling against vaccines, outbreaks high in Zimbabwe



Fighting Back

- ❑ Zimbabwe, with the help of UNICEF and the World Health Organization, planning a measles vaccination campaign for May/2011.
 - ❑ Organizers hoped to reach teenagers as well as young children — the usual vaccination targets.
 - ❑ The necessary \$8.5 million in funding had not yet been raised.
-

\$

- ❑ **Cost-effectiveness:** Expanded vaccine coverage is highly cost-effective .
 - ❑ In Sub-Saharan Africa, available estimates claim that it costs approximately \$14 to fully vaccinate a child.
-

The Rest of the World

- ❑ Europe, especially France, hit by a major outbreak of measles
- ❑ U.N. health agency “failure to vaccinate all children”



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- UK measles outbreak**
 - Numbers of measles cases in the UK have risen to their highest level in nearly 20 years**
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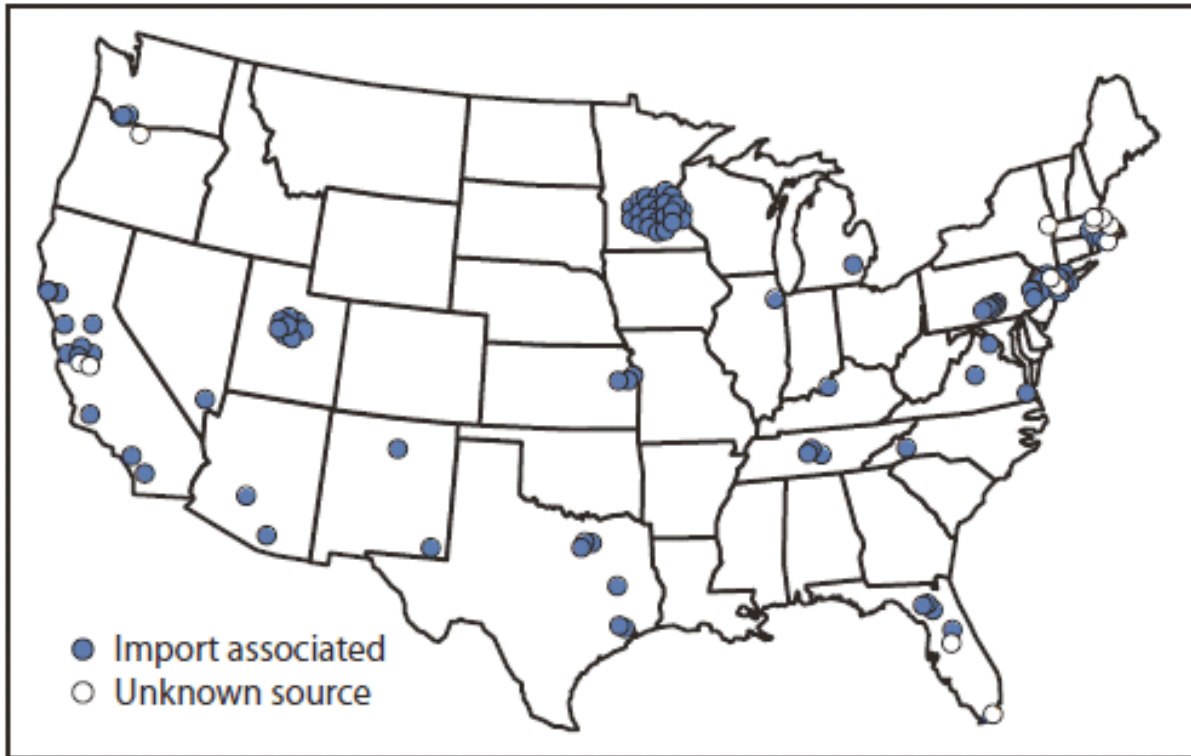
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- ❑ People fear the vaccine more than the disease
 - ❑ People forget how severe measles can be:
 - ❑ Blindness
 - ❑ Pneumonia
 - ❑ Encephalitis
 - ❑ Death
 - ❑ Spontaneous Abortion
 - ❑ Diarrhea
 - ❑ Otitis Media
-

□ High Number of Reported Measles Cases in the U.S. in 2011—Linked to Outbreaks Abroad

CDC Health Alert June 22, 2011

-
- 136 of 156 were associated with importations from measles-endemic countries or countries where large outbreaks were occurring
 - The imported cases involved unvaccinated U.S. residents who recently traveled abroad, unvaccinated visitors to the United States, and people linked to these imported cases.
-

Imported Measles Cases



Vaccines

Do I really
need to get
the jab?



Vector



Travel

- ❑ CDC recommends that all U.S. residents older than 6 months be protected from measles and receive MMR vaccine, if needed, prior to departure.
 - ❑ Infants 6 through 11 months old should receive 1 dose of MMR vaccine before departure.
 - ❑ Children 12 months of age or older should have documentation of 2 doses of MMR vaccine (separated by at least 28 days).
-

Immunity

- ❑ One of the following is considered evidence of measles immunity for international travelers:
 - ❑ 1) birth before 1957
 - ❑ 2) documented administration of 2 doses of live measles virus vaccine (MMR, MMRV, *or* measles vaccines),
 - ❑ 3) serologic proof of immunity
 - ❑ 4) documentation of physician-diagnosed measles
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Vaccine safety

- Vaccination rates fell sharply after Dr. Wakefield questioned the safety of MMR fueling the measles epidemic.
 - His initial Lancet paper has since been disowned by the journal
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Vaccine

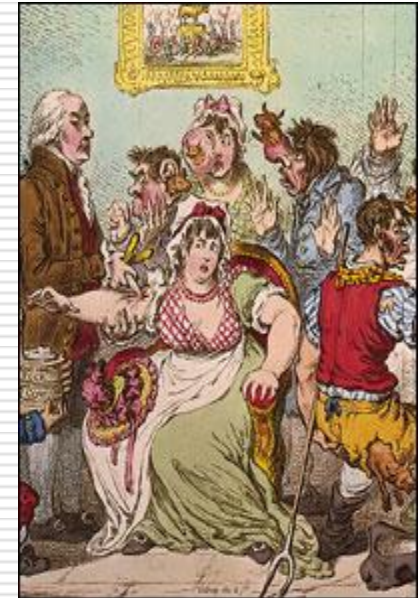
- The main thrust of the paper was that MMR was linked:
 - Autism
 - Crohn's disease.
 - Small-scale US research had subsequently produced similar findings.
-

-
- The majority of large scale studies has since failed to find any evidence of a link between MMR and autism.
 - In addition ten doctors who co-authored the paper issued a statement in 2004 arguing there was insufficient evidence to draw the conclusion that the MMR vaccine was not safe
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-
- The Danish research, which examined the medical records of more than 500,000 children born over eight years, concluded there was no link between children given MMR and the onset of autism.
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Antivaccine Movement

- ❑ 1700s-Smallpox vaccine
- ❑ 1850s-Englands compulsory
- ❑ 1970s-Flu
- ❑ 1980s-Polio
- ❑ 1990s-AIDS, Rotavirus



Antivaccine Movement

- Jenny McCarthy
- Robert Sears Alternative vaccine Series
- Dr. L'Hommedieu alternative health
 - right to make healthcare choices



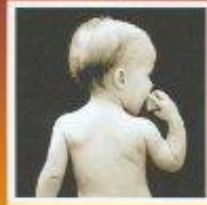
Influences

- Reading an antivaccine site for even 5 to 10mins has been known to change perceptions about vaccine safety and negatively influence vaccine decisions.
 - Noni MacDonald MD, MS Prof of Pediatrics, Dalhousie University Halifax, Nova Scotia
-

□ The Panic Virus: A True Story of Medicine, Science, and Fear

By Seth Mnookin





**AUTISM'S
FALSE
PROPHETS**

**BAD SCIENCE, RISKY MEDICINE,
AND THE SEARCH FOR A CURE**

PAUL A. OFFIT, M.D.

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Other Problems

- ❑ Mercury-found in thimerasol
 - ❑ Theoretical potential for neurotoxicity
 - ❑ FDA-called for a review of all vaccines containing mercury; performed in 1999
 - ❑ No evidence of harm except for possible hypersensitivity
-

Mercury

- All vaccines manufactured in the United States that are used in children under the age of 7 do not have thimerosal
 - Based on recommendation from the American College of Pediatrics
-

Educating the Consumer

Mom

Dad

Grandma

Aunt Jane

- Breakdown the misconceptions
 - Provide reliable resources
-

Contraindications

- Severe allergic reaction after first dose or to vaccine component
 - Pregnancy
 - Severe immunodeficiency
-

Immunosuppressed

- Healthy contacts of immunocompromised need vaccine
 - Leukemia if no chemo for at least 3 mos and in remission OK
 - HIV CD4 counts over 200
 - No MMRV
 - Steroids
 - High dose no vaccine for 1 mos
 - Low dose no vaccine for 2 weeks
-

Egg Allergy

- ❑ Studies have demonstrated safety of MMR in egg allergic patients

 - ❑ Vaccinate without testing
-

Precautions

- ❑ Moderate to severe acute illness
 - ❑ Receipt of antibody containing blood product within 11 mos-interfer with seroconversion
 - ❑ Thrombocytopenia or thrombocytopenic purpura-may worsen disease
 - ❑ Need for Tb skin testing-suppress the test
-

Recommended Reading

- ❑ Advisory Committee on Immunization Practices 2011 general recommendations
www.cdcmmwr/pdf/rr/rr6002.pdf
 - ❑ CDC Quick Guide to Contraindications and Precautions to Commonly Used Vaccines
www.immunize.org/catg.d/p3027a.pdf
 - ❑ Epidemiology and Prevention of Vaccine Preventable Disease CDC 12th edition
-

Top 5 Reasons People Change Their Minds about Vaccines

- Reconsider after talking with HCP
 - Just thought about it
 - Information from another source
 - HCP refuses to care for them or child
 - Discussed with spouse
-

The 7C's of Effective Communication

- Competency
 - Caring
 - Credibility
 - Clarity
 - Chemistry
 - Consistency
 - Collaboration
-

Clarity of language

- Use standard terms to describe risks of disease and vaccine
 - Loss framing is usually more effective than gain framing
-

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- For example.... “If you decide not to be immunized against influenza, you may increase your chances of getting the flu and being sick” vs “If you decide to get the vaccine, you decrease your chances of getting flu and giving it to your it to your patients”
-

Tell stories about vaccine preventable illness

- Pictures
 - Newspaper articles
 - Statistics about hospital admissions in your local hospital
-

Firing Patients

- As reported by Shirley Wang in The Wall Street Journal: 20 to 30 percent of doctors in two different surveys, in Connecticut and the Midwest, reported having to kick patients out of their practices because of vaccine refusal.
-

Firing Patients

- Numbers have roughly doubled over the past ten years, according to the American Academy of Pediatrics. "Doctors may have to keep firing the parents of their young patients, but I hope they'll first make every effort to educate them," says Mr. Salzberg. "They need to explain that vaccines do not cause autism, nor do the ingredients in vaccines, and that scientific studies involving hundreds of thousands of patients support these conclusion"
-

Get to who is at Risk

- ❑ Keep children on the appropriate vaccine schedule
 - ❑ Use every visit as an opportunity to “catch up” and vaccinate.
-

Get to who is at Risk

- International travel
 - Student in post-secondary setting
 - Working in health care
 - Recent exposure
 - Previous vaccination with killed vaccine or unknown vaccine between 1963-67
 - Healthcare worker w/o evidence of immunity
-

Questions?

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