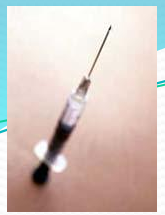
IMMUNIZATION IN CHILDREN

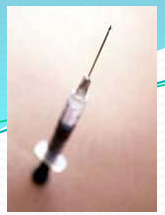
PROF. FAHAD AL ZAMIL

Professor & Consultant
Pediatric Infectious Diseases
College Of Medicine
King Saud University, Riyadh

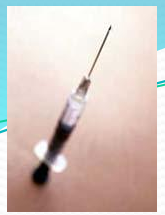


History of vaccination

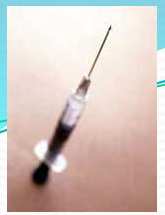
- *Vaccine* Ultimate goal: do eradicate disease



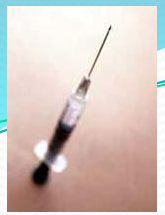
Smallpox:



Smallpox:



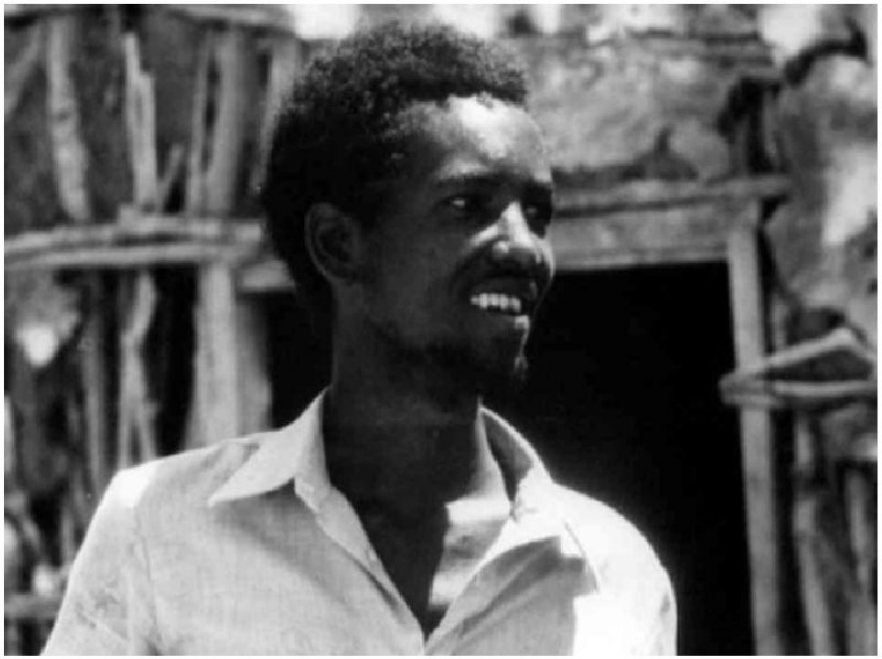
Smallpox:



The Last Smallpox Patient on Earth

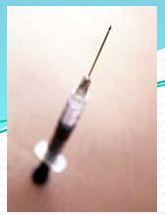
The case of Ali Maow Maalin, a Somalian cook

ALEXIS C. MADRIGAL DECEMBER 9, 2013



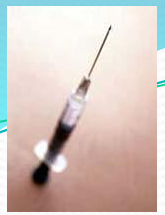
Ali Maow Maalin (World Health Organization)

On December 9, 1979, the Global Commission for the Certification of Smallpox Eradication signed their names to the statement that "smallpox has been eradicated from the world."



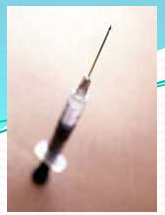
Historical Milestones

- 1000 years ago: Chinese inhaled dried crusts from smallpox pustules
- 1721: "variolation" was introduced from Turkey to Britain by Lady Montagu
- 1796: Edward Jenner: 1st scientific attempt of immunization (cowpox)
- 19th Century: Anthrax 1881, Rabies 1885, Diphtheria antitoxin 1891, Plague 1895, Cholera 1896, Typhoid 1898



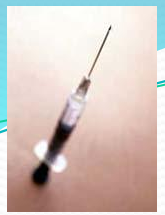
Historical Milestones

- Early 20th Century: BCG 1921, Diphtheria toxoid 1923, Pertusis 1926, Tetanus 1927, Yellow fever 1937, Influenza 1941
- Post World War II: Polio, MMR, Pneumococcal, Meningococcal, HiB, Hepatitis B, Hepatitis A
- 1980: Eradication of Smallpox
- What's New in the 21st Century??



Edward Jenner

Edward Anthony Jenner (17 May 1749 – 26 January 1823) was an English scientist who studied his natural surroundings in Berkeley, Gloucestershire. Jenner is widely credited as the pioneer of smallpox vaccine,[1] and is sometimes referred to as the "Father of Immunology"; his works have been said to have "saved more lives than the work of any other man".[2][3][4]

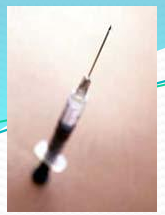


James Phipps

James Phipps (1788-1853), as an eight year old boy, and the son of Edward Jenner's gardener, was the first person given the cowpox vaccine by Edward Jenner. Phipps was often used as an living proof that Jenner's vaccine worked.

Phipps was exposed to the smallpox virus multiple times over the next twenty years, but successfully resisted infection, proving the efficacy of Jenner's vaccination.

Edward Jenner Vaccinating 8 year old James Phipps on 14 May 1796



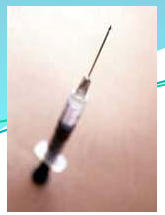
Louis Pasteur

27 December, 1822 – 28 September, 1895

- The great revolution in the vaccination science occurred thanks to the genius French chemist and microbiologist Louis Pasteur who developed an attenuated vaccines to prevent cholera, anthrax and rabies.

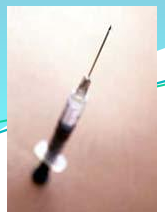
- Louis Pasteur was the first person to use the terms Vaccine and attenuated.

- His body lies beneath the Institute Pasteur in France



Joseph Meister

Joseph Meister (21 February 1876 - 16 June 1940) was the first person to be inoculated against rabies by Louis Pasteur, and the first person to be successfully treated for the infection.
In 1885, nine-year-old Meister was bitten by a rabid dog after provoking it by poking it with a stick. Pasteur decided to treat the boy with a rabies virus grown in rabbits and weakened by drying, a treatment he had earlier tried on dogs. The treatment was successful and the boy did not develop rabies.



Article from the French newspaper "Le Petit Journal" regarding Joseph Meister's reported suicide during the German occupation of Paris during World War 1. During the German occupation of Paris, Meister committed suicide by shooting himself with his World War I service revolver rather than allow German soldiers enter Pasteur's crypt(secret burial place or tomb).

Le Petit Journal

Le Petit Journal — SUPPLÉMENT ILLUSTRÉ

Se suicida Joseph Meister para proteger la cripta de Pasteur

París, 17 junio 1940. Ayer se encontró el cadáver de Joseph Meister, portero del Instituto Pasteur y guardián de su cripta.

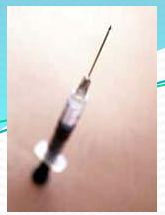
Joseph Meister conoció por primera vez a Louis Pasteur en 1885, cuando tenía 9 años de edad.

Muchas personas acudieron a los laboratorios de la rué d'Ulm en busca de la cura para la rabia, abarrotando todas las estancias.

Cerca de 2500 personas afectadas recibieron la milagrosa vacuna en los 15 meses siguientes.

La madre de Joseph le llevó al hospital del doctor Pasteur porque había sido atacado por un perro rabioso y estaba condenado a una muerte terrible. El doctor que estaba investigando una posible cura, se decidió a probarla en el niño. Tras doce días de tratamiento y hasta diez inyecciones diarias, el niño sanó milagrosamente, dando esperanzas a los demás afectados.

Algunos de los soldados nazis que llegaron con la ocupación a París, decidieron visitar ayer el Instituto Pasteur, pero al pedirle a Joseph Meister que les dejara entrar a la cripta donde descansa el doctor desde 1895, éste prefirió cometer suicido antes que permitirles la entrada a la tumba de su salvador.

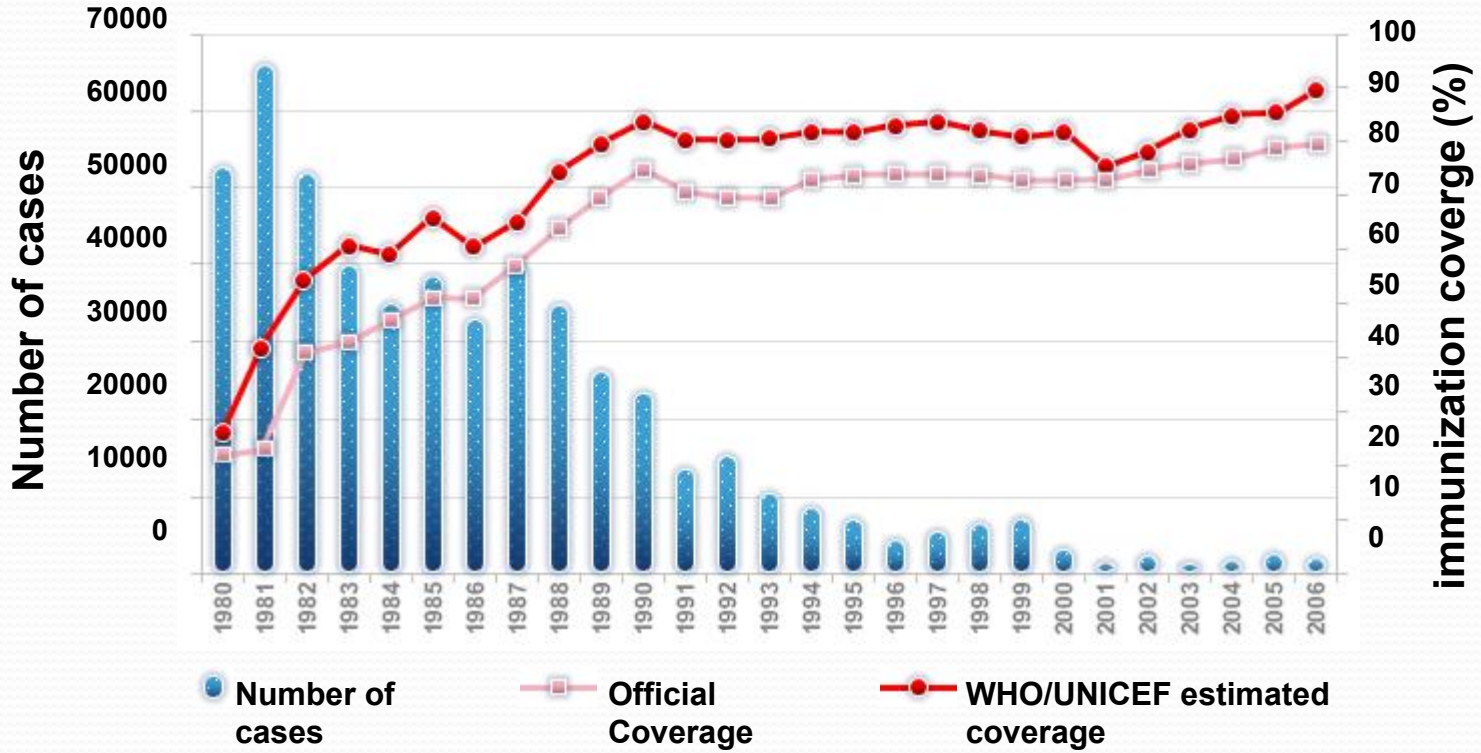


This graph shows that the more people vaccinated the less cases arise, they achieved herd immunity b vaccinating 60% or more of the population

POLIOMYELITIS Global Epidemiology

The global decline in reported poliomyelitis incidence in the 1980s is consistent with the overall increases in immunization coverage

Poliomyelitis global annual reported incidence and third-dose polio vaccine coverage 1980-2006

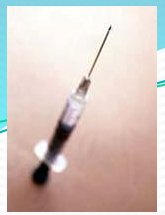


WHO estimates for 2007: 1278 reported cases worldwide

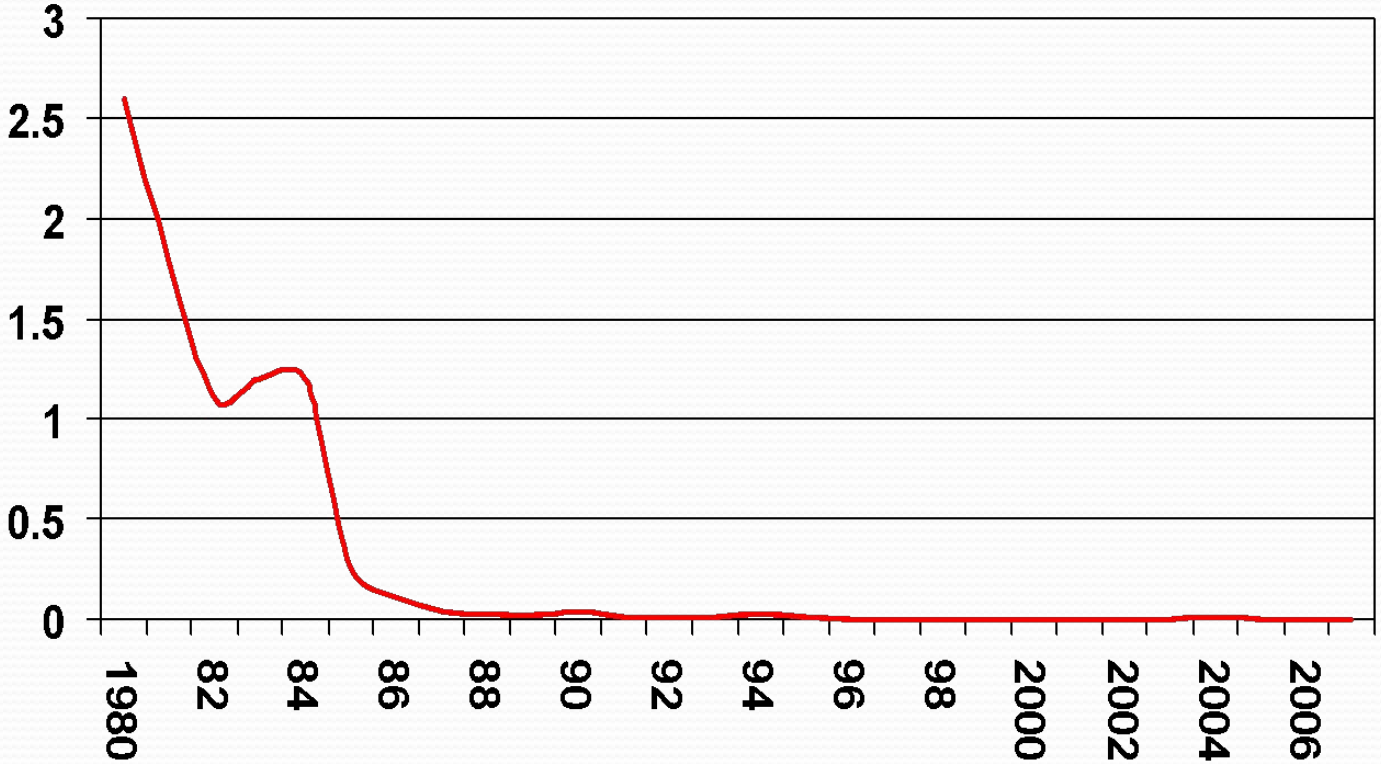
[1] WHO. Vaccine preventable diseases monitoring system Global Summary 2007. WHO. Immunization Vaccines and Biologicals. Global and regional summary. Accessed Feb 2008. Available from: http://whqlibdoc.who.int/hq/2007/WHO_IVB_2007_eng.pdf

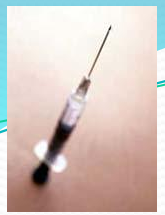
[2] WHO Global Polio Eradication Initiative Wild poliovirus weekly update. Accessed February 2008. Available from: http://www.polioeradication.org/casecount.asp

[3] WHO. Global Polio Eradication Initiative Strategic Plan 2004-2008. 2003



Polio Incidence, KSA 1980 – 2007

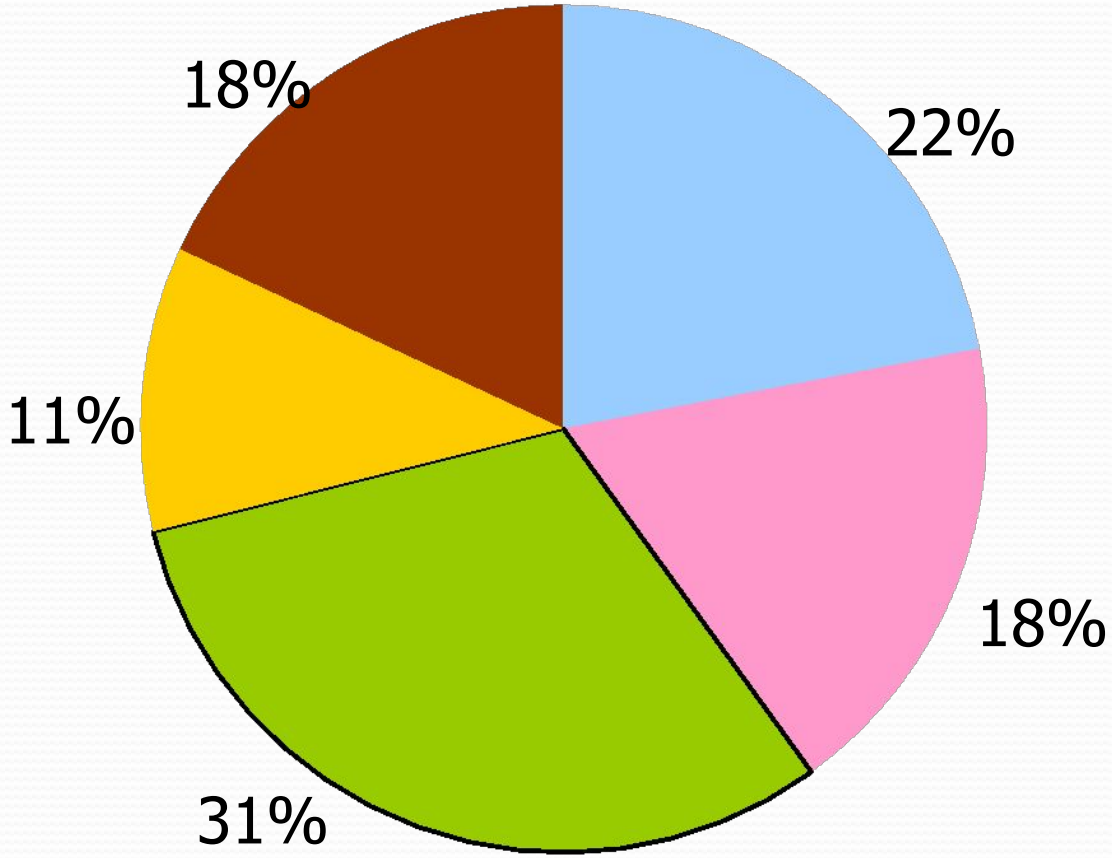


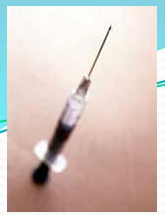


Measles Outbreak KSA,

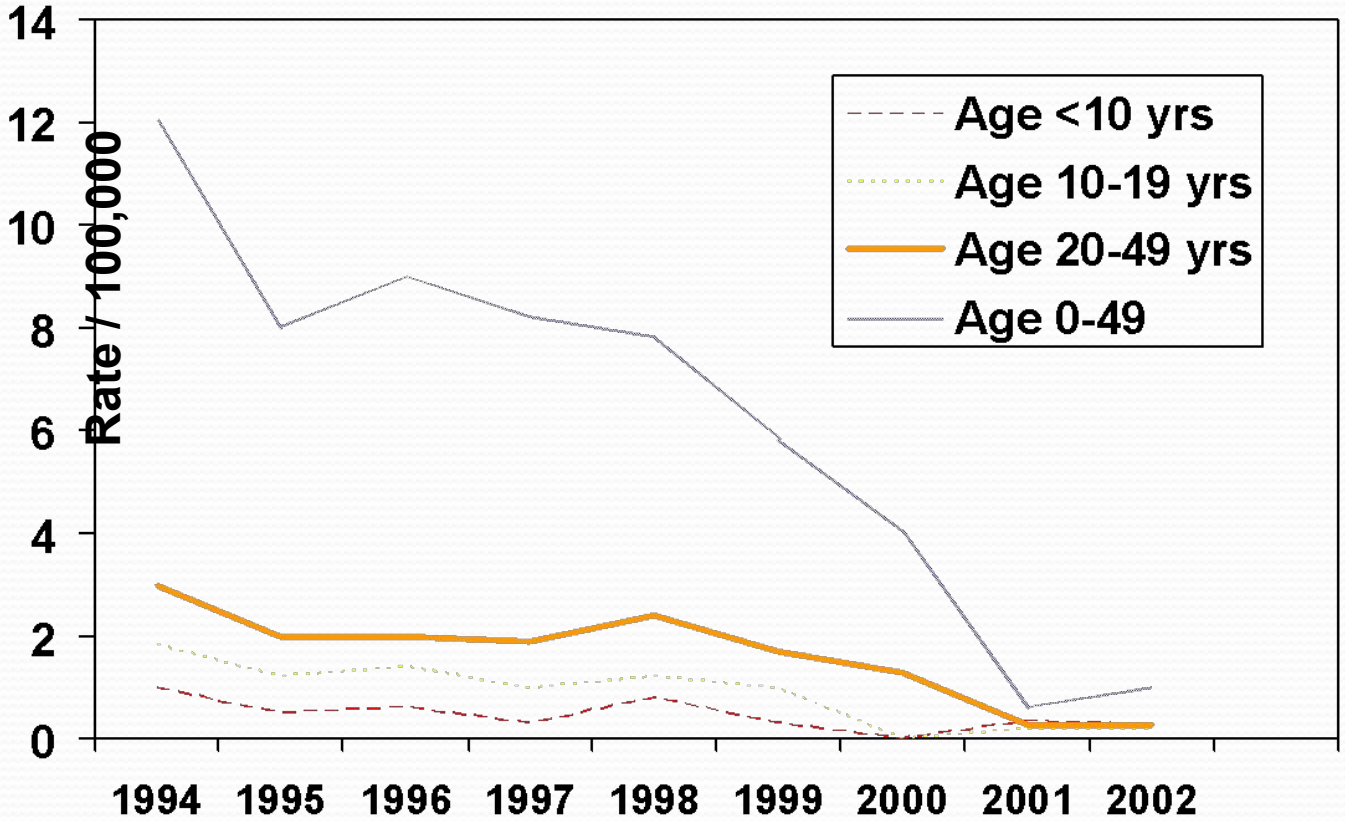
January – February 2007

736 Cases by Age

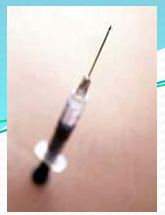




Varicella-related hospitalization rates among persons aged <50 years, by year and age group United States, 1994-2002

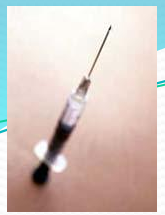


JAMA 2005;294:797-802

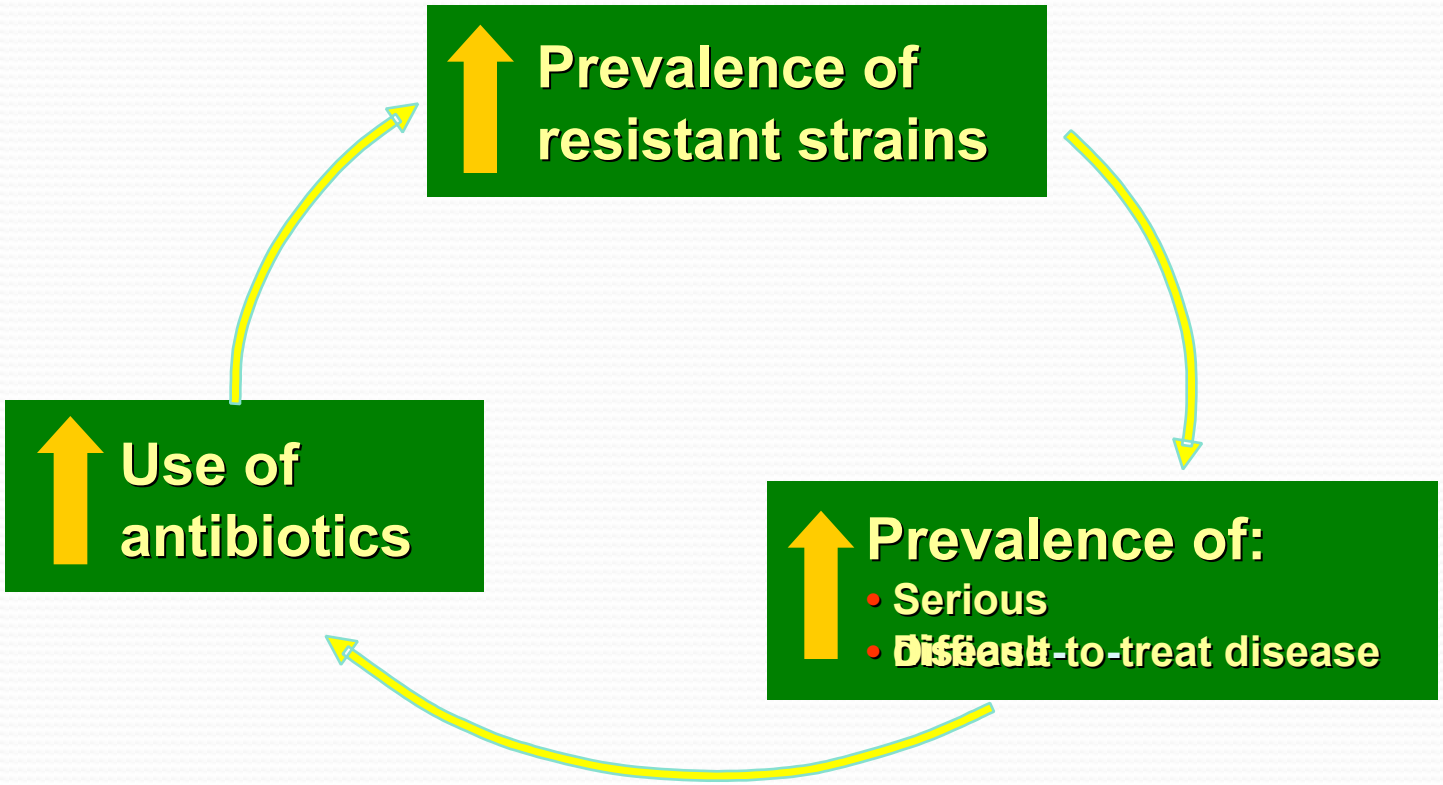


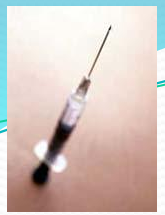
Summary of the studies on anti-HAV IgG prevalence in Saudi Arabia (1986-2006)

Percent anti-HAV (IgG)	Age Group (years)	No. of Subjects	Area (Region)	Year	Reference No.
76.5	1-15	1015	Western	1986	Ramia et.al
79	6-18	5876	Eastern	1987	Fathalla et.al
92	1-10	2582	All Regions	1989	El-Hazmi
52.4	1-10	4375	All Regions	1989	Al-Rashed
50.5	1-12	4575	All Regions	1989	Al-Faleh et.al.
24.7	1-12	243	Central (Riyadh)	1995	Arif M et.al.
30.2	1-15	592	Central (Riyadh)	1996	Khalil et.al.
24.9	1-12	5355	All Regions	1997	Al-Faleh
28.9	All (mostly children)	2399	Central (Riyadh)	2005	Al Muneef



Cycle of Antibiotic Resistance



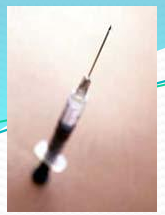


Meningitis in Saudi Children under 5 Years of Age

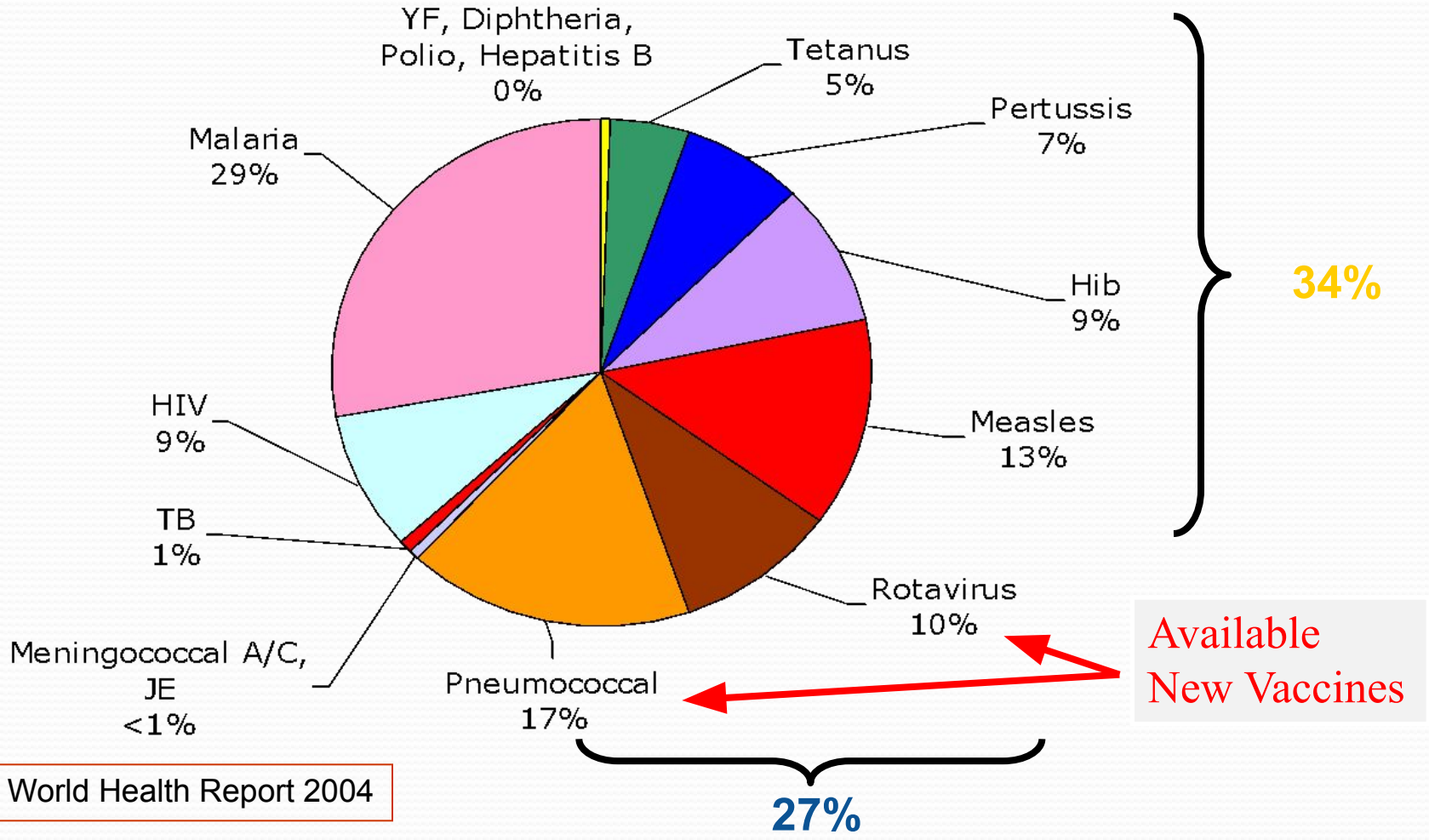
Etiology	# of Cases (%)	Incidence/100,000
H. influenzae type B	58 (28)	17
N. meningitides	37 (18)	11
S. pneumoniae	23 (11)	7
Other bacteria	23 (11)	7
Aseptic	67 (32)	19
Total	208 (100)	61

Y Al Mazrou et. al. J trop pediatr 2004; 50(3): 131-6

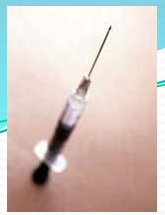
Always ask about vaccination history to rule out etiologies the patient is already immune to

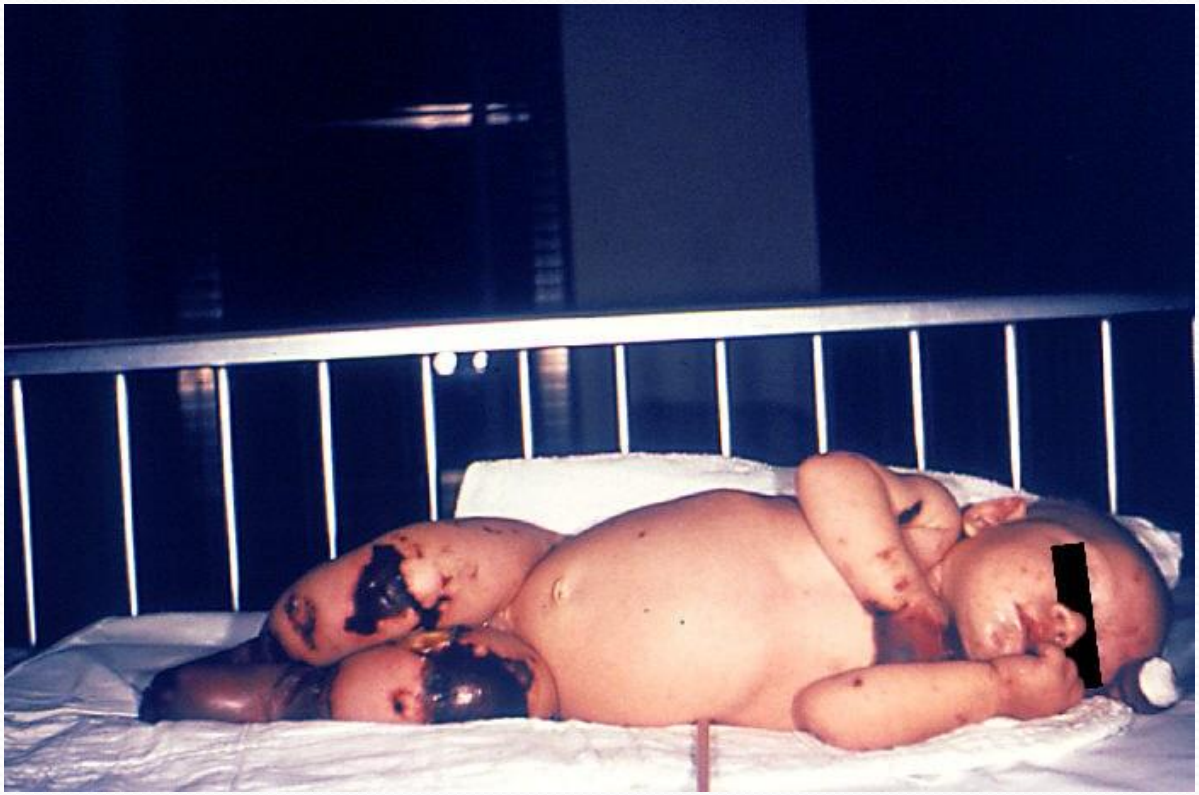


Causes of 4.1 million deaths in under-five (out of 10.5 million total deaths) in 2002

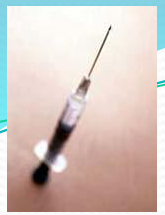


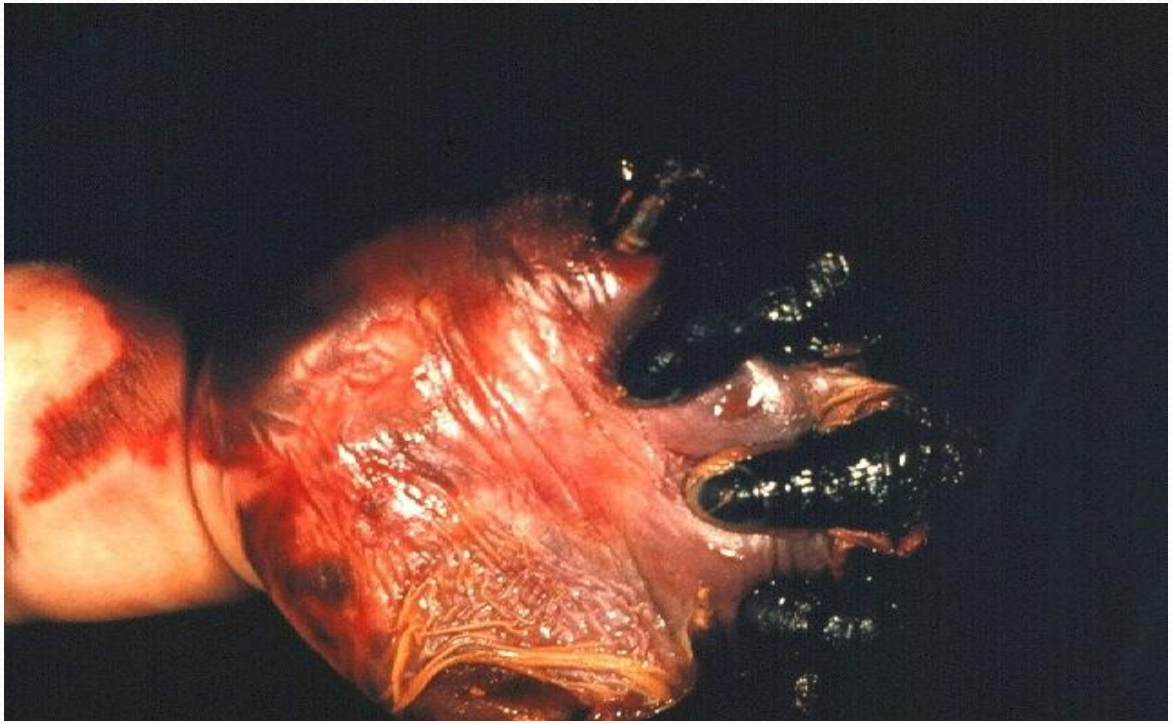
Source: World Health Report 2004





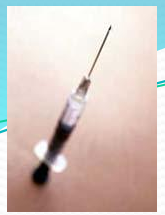
- Four-month-old female with gangrene of hands and lower extremities due to meningococcemia



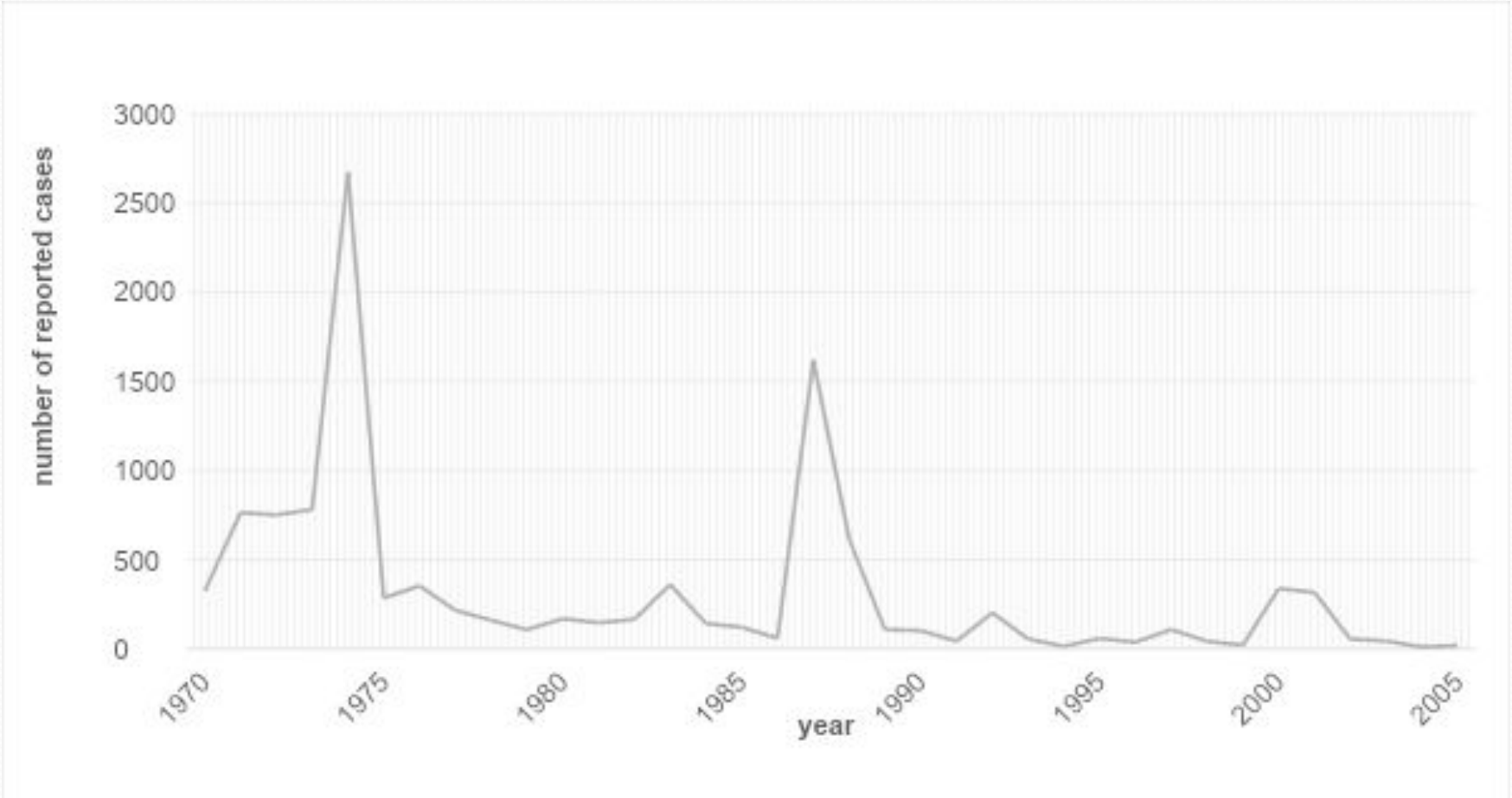


- Four-month-old female with gangrene of hands and lower extremities due to meningococcemia

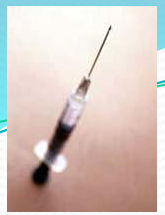
Vaccine is now available alhamdullilah!



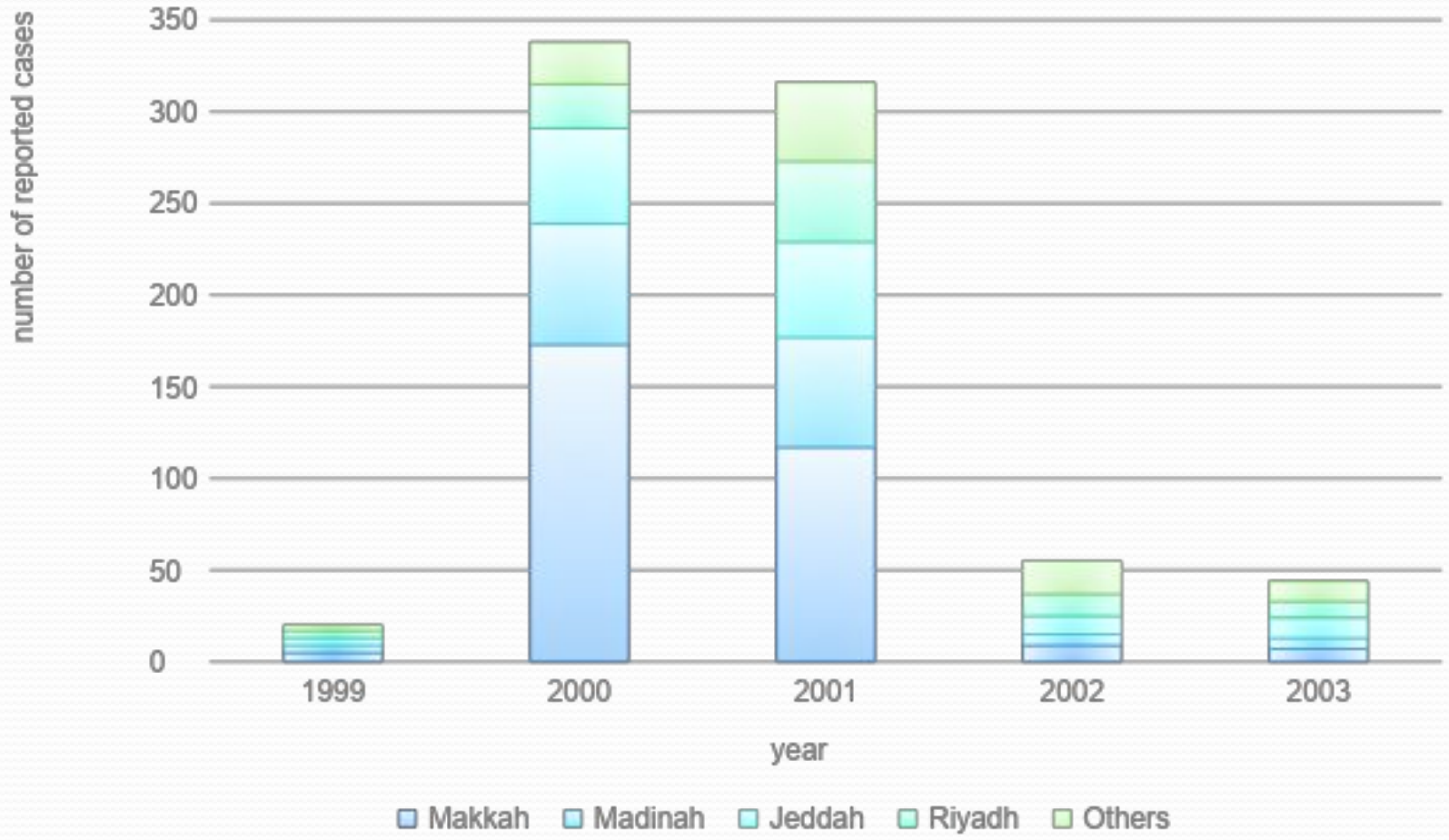
Reported Cases of Meningococcal Disease
Saudi Arabia, 1970 – 2008

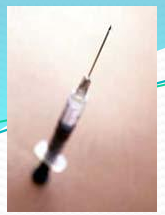


Source: Kingdom of Saudi Arabia, Ministry of Health, February 2009

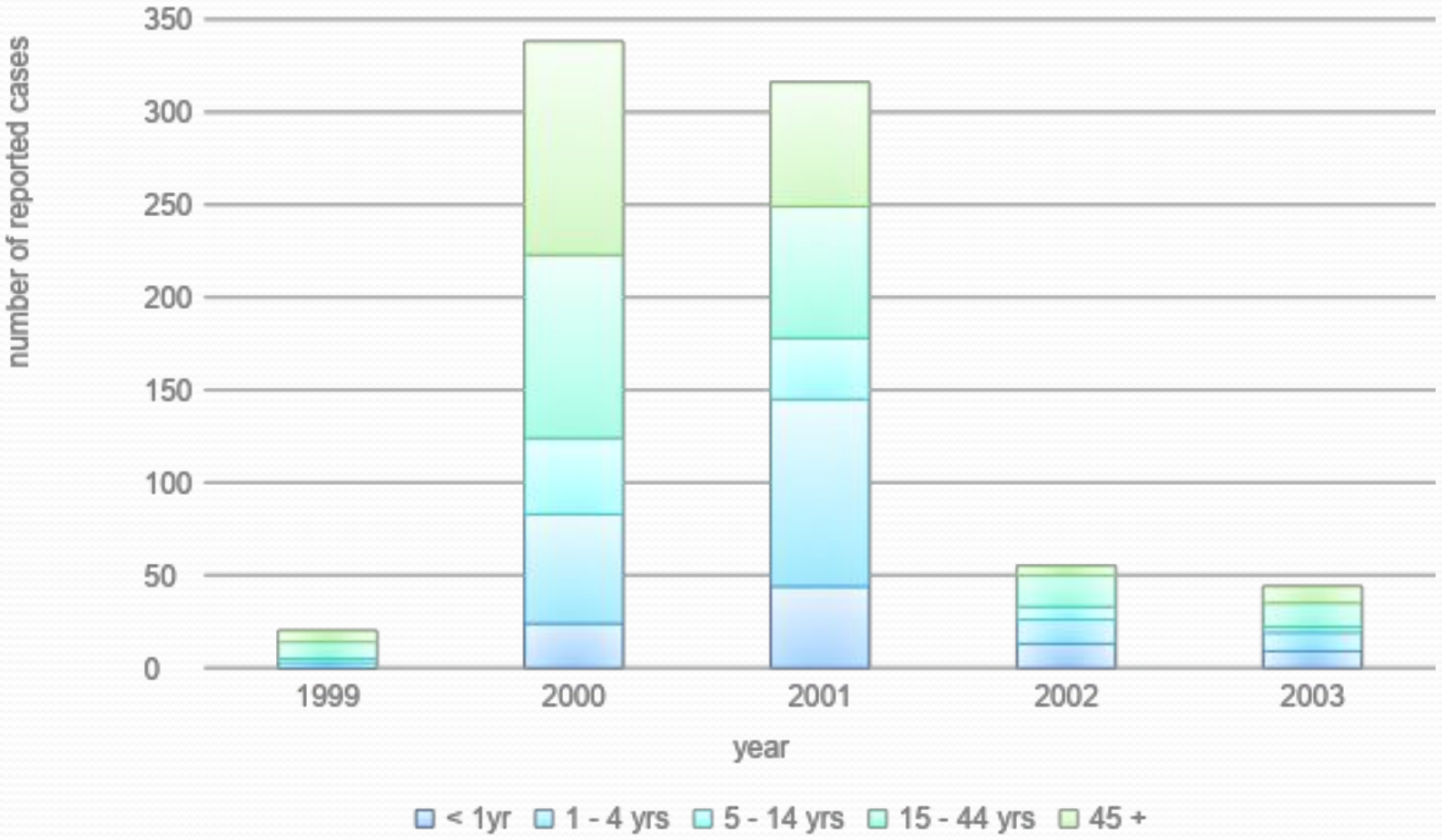


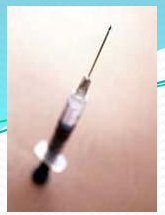
Meningococcal Cases by Region, Saudi Arabia, 1999 - 2003





Meningococcal Cases by Age Group, Saudi Arabia, 1999 - 2003

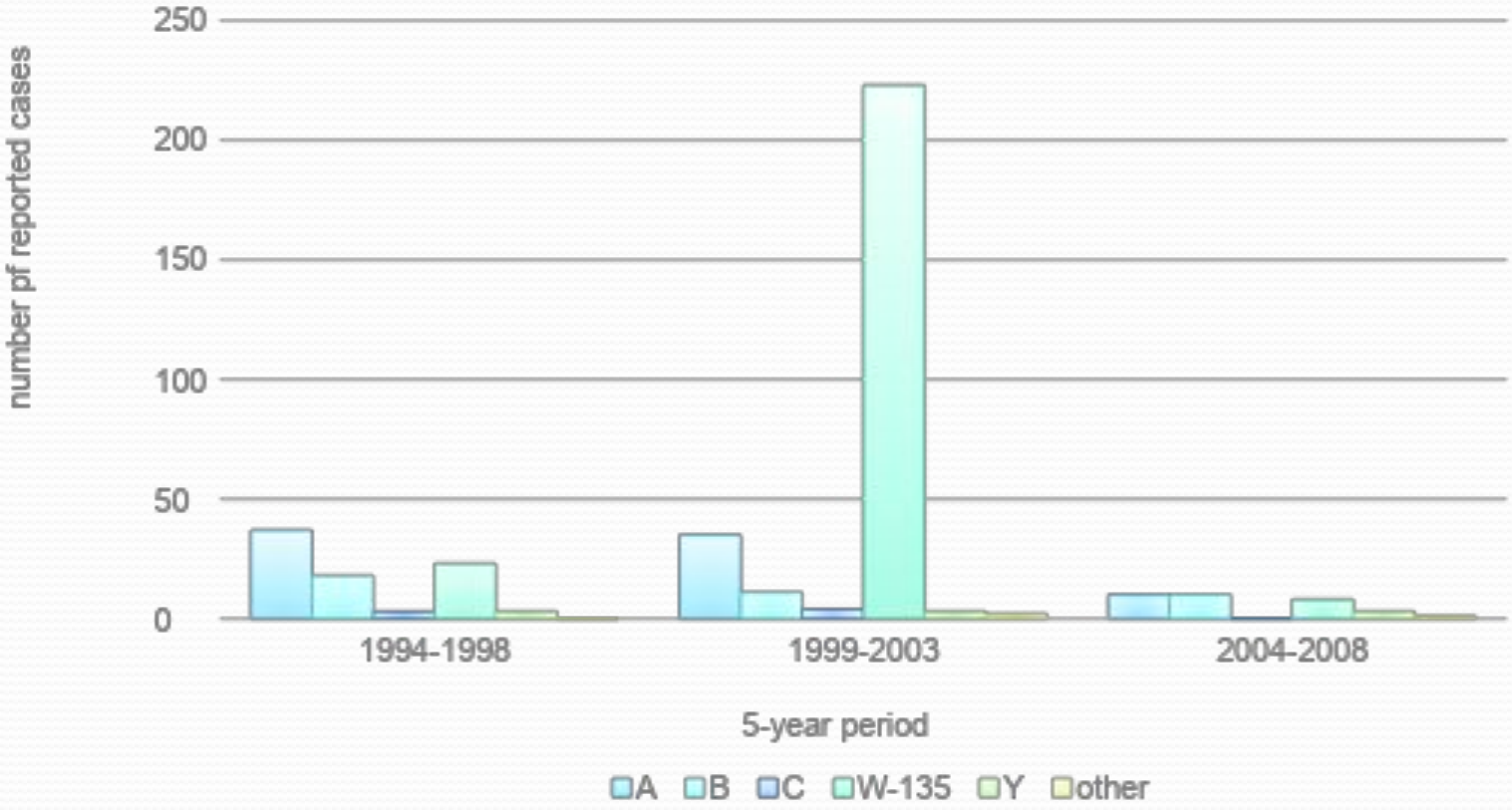




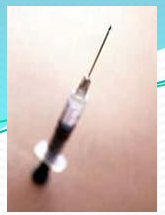
Meningococcal Disease by Serogroup*
Saudi Arabia, 1994 – 2008

* **Cases for whom a serogroup was identified and reported**

Our vaccine contains **A, C, W-135, and Y** (tetravalent vaccine) since they are the most common in our region, while in Europe they add B as it is common there.



Source: Kingdom of Saudi Arabia, Ministry of Health, February 2009



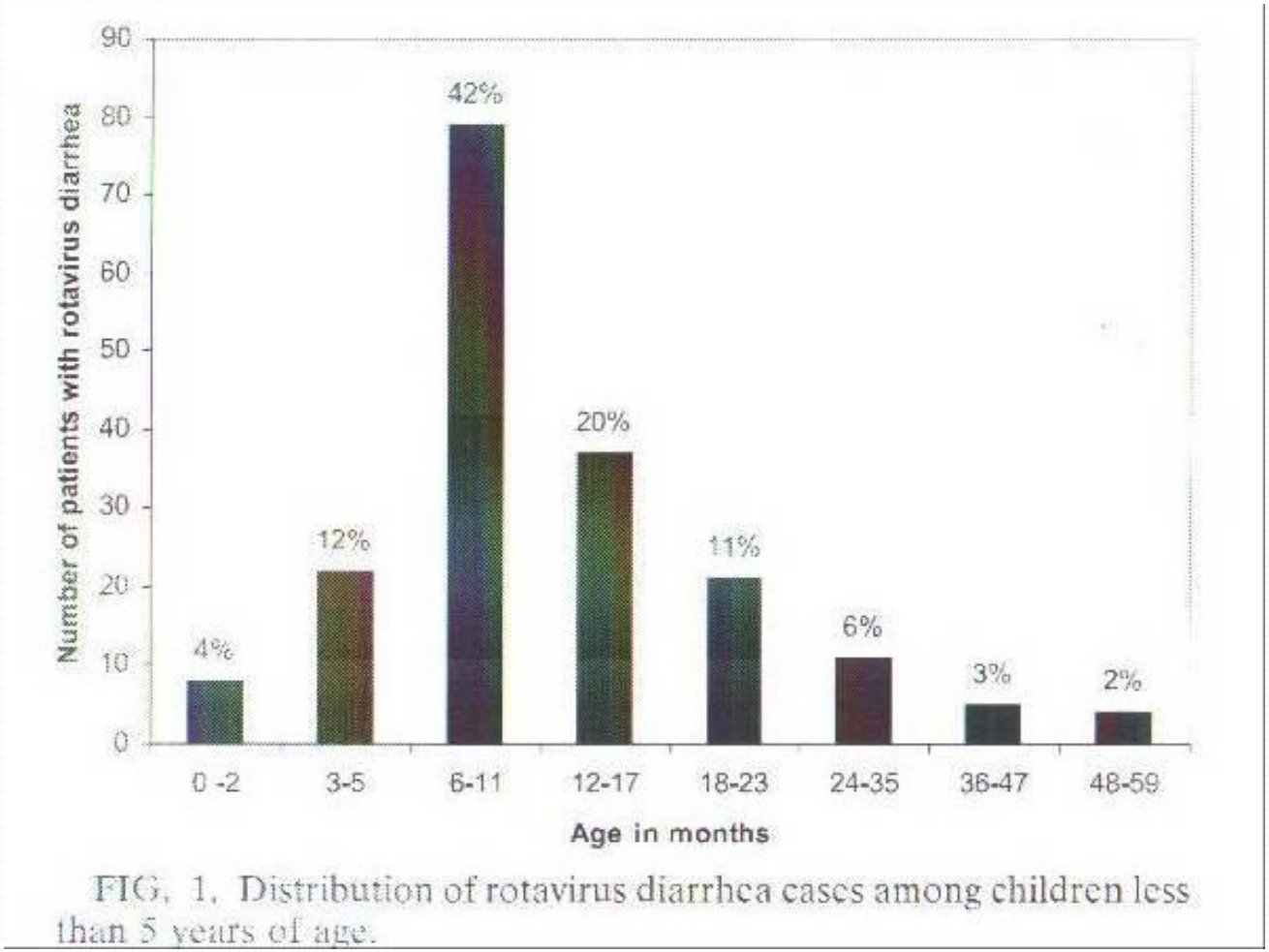
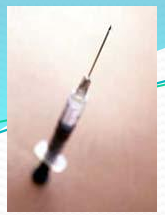


FIG. 1. Distribution of rotavirus diarrhea cases among children less than 5 years of age.

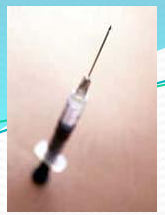
Rotavirus was the most common cause of diarrhea among children



The Nobel Prize in Physiology for Medicine 2008 Harald Zur Haussen

"for his discovery of human papilloma viruses causing cervical cancer"

October 6th 2008



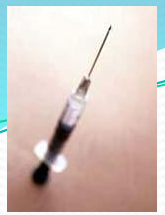
IMMUNITY & IMMUNIZATION

II. Immunizations:

A. Types:

- **Active** : immunity generated by the patient's immune system so it takes longer but provides **lifelong immunity**
  we introduced the whole organism or the killed (attenuated) form of it or any product of the organism i.e. tetanus toxoid

- **Passive** : immunity generated by pre-antibodies injected within the vaccine so it can be used in emergencies but it has a **short life = 3 months approx!**



IMMUNITY & IMMUNIZATION

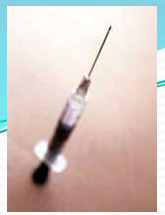
Active:

Types of vaccines:

1. Live or attenuated
2. inactive or killed

- **Immunizing antigens**
- **Site, route and dose** **Best site is the anterolateral thigh** due to its bulkiness and the lateral side doesn't contain any important or large arteries and veins, later on we can use the upper outer quadrant of the buttock.
- **Scheduling** is very important to stick to
- **Simultaneous administration of vaccines**
  - If you give one live and one killed dont give them on the same site as the live material may interfere with the killed material
  - slow absorption vaccines are given SC while fast absorption ones are given IM
  - Hep B vaccine does not produce antibodies if injected into the arm for some reason so we prefer anterolateral thigh

Important for OSCE



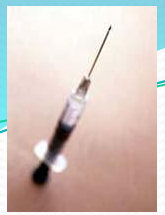
Basic Immunization Schedule — جدول التطعيمات الأساسية

الزيارة Visit	التطعيم Vaccine	التاريخ Date	التوقيع Sign.	الختم Stamp	تاريخ الزيارة القادمة Next Visit
عند الولادة At Birth	• درن • التهاب كبدي (ب) • Hepatitis B				
عمر شهرين 2 Months	• شلل أطفال • الثلاثي البكتيري • التهاب الكبدي (ب) • المستدمية النزلية • IPV • DTaP • Hep B • Hib • الروتا • البكتيريا العقدية الرئوية • Rota • Pneumococcal Conjugated Vaccine (PCV13)				
عمر ٤ شهور 4 Months	• شلل أطفال • الثلاثي البكتيري • التهاب الكبدي (ب) • المستدمية النزلية • IPV • DTaP • Hep B • Hib • الروتا • البكتيريا العقدية الرئوية • Rota • Pneumococcal Conjugated Vaccine (PCV13)				
عمر ٦ شهور 6 Months	• شلل أطفال • الثلاثي البكتيري • التهاب الكبدي (ب) • المستدمية النزلية • IPV • DTaP • Hep B • Hib **BCG** • الروتا • البكتيريا العقدية الرئوية • Rota • Pneumococcal Conjugated Vaccine (PCV13)				
عمر ٩ شهور 9 Months	• الحصبة المفرد • الحمة الشوكية المدمج (المطور) • Measles • MCV4				
عمر ١٢ شهر 12 Months	• الثلاثي الفيروسي • الجديري المائي • البكتيريا العقدية الرئوية • الحمة الشوكية المدمج (المطور) • MMR • Varicella • Pneumococcal Conjugated Vaccine (PCV13) • MCV4				
عمر ١٨ شهر 18 Months	• شلل الأطفال • الثلاثي البكتيري • المستديمة النزلية • التهاب الكبدي (أ) • IPV • DTaP • Hib • Hepatitis A				
عمر ٢ سنة 2 Years	• التهاب الكبدي (أ) • Hepatitis A				
جرعات التطعيم عند دخول الصف الأول الابتدائي من المدارس Vaccination on entry first class of primary school	• شلل الأطفال • الثلاثي البكتيري (الثاني البكتيري) • الثلاثي الفيروسي • الجديري المائي • IPV • DTaP • MMR • Varicella				

BCG is given in the 6th month of life because by then we will know if the patient has any form of immunodeficiency

DTaP = acellular pertussis vaccine (immunogenic but less reactogenic)!

Important for OSCE



Other Vaccinations

تطعيمات أخرى

التوقيع Signature	الختم Stamp	التاريخ Date	اللقاح Vaccine
			الإنفلونزا الفيروسية Viral Influenza
			الحمة الشوكية المدمج (المطور) Meningococcal Conjugate (MCV4)
			فيروس الورم الحليمي البشري Human Papilloma Virus (HPV)

KSU HOSPITALS

كلية الطب

المستشفيات الجامعية

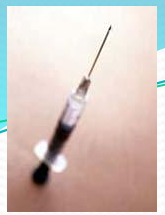
سجل التطعيمات

Vaccination Card

Name : _____ الاسم

Record No: ☐☐☐☐☐☐☐☐ رقم الملف

Date of Birth : ____ / ____ / ____ تاريخ الميلاد



IMMUNITY & IMMUNIZATION

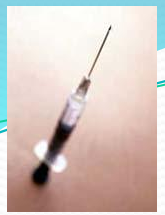
Immunization in special clinical circumstances:

- **Preterm** gets full vaccinations, and age is calculated by chronological age = from day 1 of birth
- **Pregnancy** is not a contraindication in children with pregnant mothers (misconception)
- **Immunodeficient**

  if it were primary (organic) we give them a killed form NEVER give live attenuated, if their immunodeficiency is secondary (due to an illness like leukemia), wait until the disease goes away or they stop cehmotx and their immune system recovers (lymphocytes and CD4 goes back to normal range)

- **Asplenic children**

loss of spleen due to surgery, trauma or sickle cell crisis, we must vaccinate them against encapsulated organisms like: h. influenza, neisseria meningitidis and strep. pneumonia because they lost splenic function!



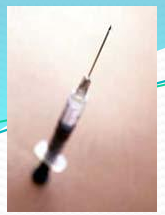
IMMUNITY & IMMUNIZATION

- **History and family seizures** is not an absolute contraindication.

If you know the reason, i.e, CP then NO contraindication but
If the cause is unknown then it is a mild contraindication

- **Children with chronic diseases** get full vaccinations

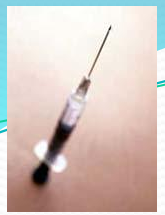
- **Foreign travel** get full vaccinations for endemic diseases in the region they are traveling to before travelling i.e. Chloroquine for Malaria, meningococcal vaccine, etc.



Immunization

Misconceptions concerning vaccine contraindications

- Mild acute illness with low-grade fever or mild diarrhea illness in an otherwise well child. The child can be vaccinated
- Current antimicrobial therapy or the convalescent phase of illness. The child can be vaccinated



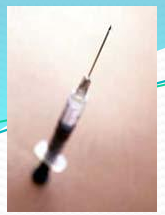
Immunization

- Recent infection to an infectious disease The child can be vaccinated
- Breast feeding The child can be vaccinated

  - You can feed a child directly after the vaccination
  - Rotavirus vaccine is NOT given beyond 6 months even if it was missed because there aren't any studies showing its safety beyond 6 months

- A history of non-specific allergies or relatives with allergies

The child can be vaccinated, even if they have a dairy allergy as vaccines are no longer made inside chick embryos



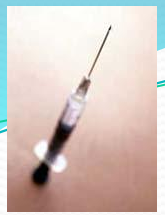
Immunization

- Reaction to a previous DTP dose that involved only soreness, redness, or swelling in the immediate vicinity of the vaccination site or temperature less than 105F (40.5 C).

  (The child can be vaccinated as long as the temp after previous vaccination was <40.5 C)

- Prematurity
- Pregnancy of mother or other household contact.

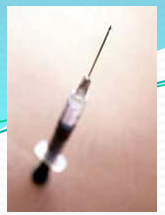
  All of the above points hold no contraindication, the child can be vaccinated



Immunization

- Family history of Sudden Infant Death Syndrome in children considered for DTP vaccination.
- Family history of an adverse event, unrelated to immunosuppression, after vaccination.
- Malnutrition

All of the above points hold no contraindication, the child can be vaccinated



IMMUNITY & IMMUNIZATION

- Lapsed immunizations and unknown immunization status.

- If immunization history not known start from month 2 vaccinations at any age along with required vaccinations for current age (you can give them 5 days apart so you don't give the child multiple injections at once)
  If immunization history known but the patient stopped at a certain vaccine, continue from last received vaccine
  There is no age to decide not to vaccinate an unvaccinated child

- Reimmunization may be required in outbreaks

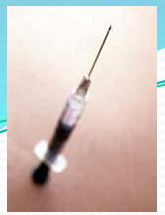
- Interference with immunoglobulin

IMP: No interference with killed vaccines, but in live or attenuated vaccines they interfere through immunoglobulins given for tx with vaccine products, so try to have enough time between giving them (either vaccinate 2 weeks prior to Ig infusion), but in some cases, like **kawasaki** disease you must wait 6 months after administering Ig before vaccinating the child as the patient requires a huge amount of Ig

- Vaccine safety and contraindications (severe combined immunodeficiency)

- Immunization after exposure to disease.

After exposure: administer vaccine within 48-72 hours for it to work otherwise give Ig -passive immunity-



IMMUNIZATION

Questions to be answered:

Q. Is it possible to immunize a child with neurological disorder?

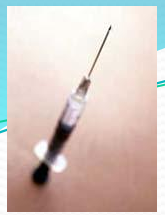
If known, yes, if unknown hold the vaccination until a diagnosis has been made

Q. Is it possible to immunized a child during a minor illness?

YES

Q. My child is having eczema and evidence of atopy. Can he be immunized?

YES



IMMUNIZATION

Questions to be answered:

Q. Is it possible to administer multiple vaccines simultaneously?

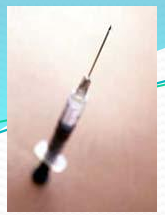
YES

Q. Does the lapse in the immunization schedule require re-institution of the entire series?

NO

Q. If a child immunization status is unknown – what to do?

Check the card, if blank or unattainable, vaccinate from start



IMMUNIZATION

Questions to be answered:

Q. Is it possible to give vaccines during immunosuppressive therapy?

NO, wait until he's done and back to usual health

Q. Is it possible to immunize a child who recently received immune globulins?

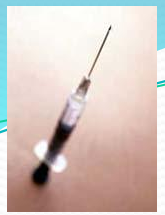
Killed = YES
Live = refer to slide n.40

Q. When to immunize a child born prematurely?

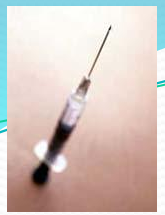
Normally at chronological age

Q. My child is allergic to egg, can he be immunized?

Take brief history, if not severe, vaccinate as outpatient
If severe vaccinate and admit for observation and give Epinephrine in case of acute anaphylaxis

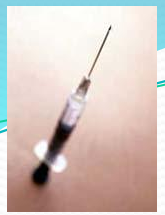


Q & A

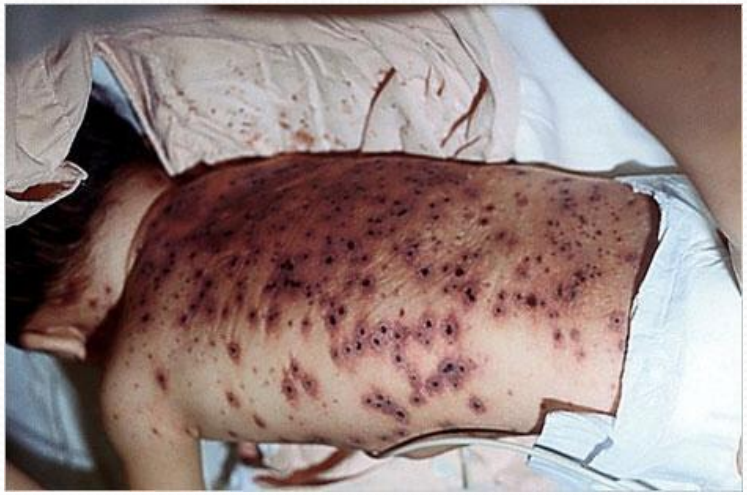


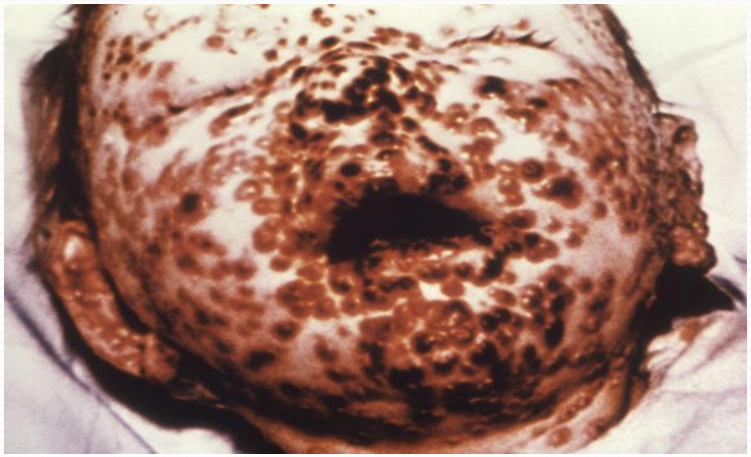
Why Vaccine Hesitancy ?

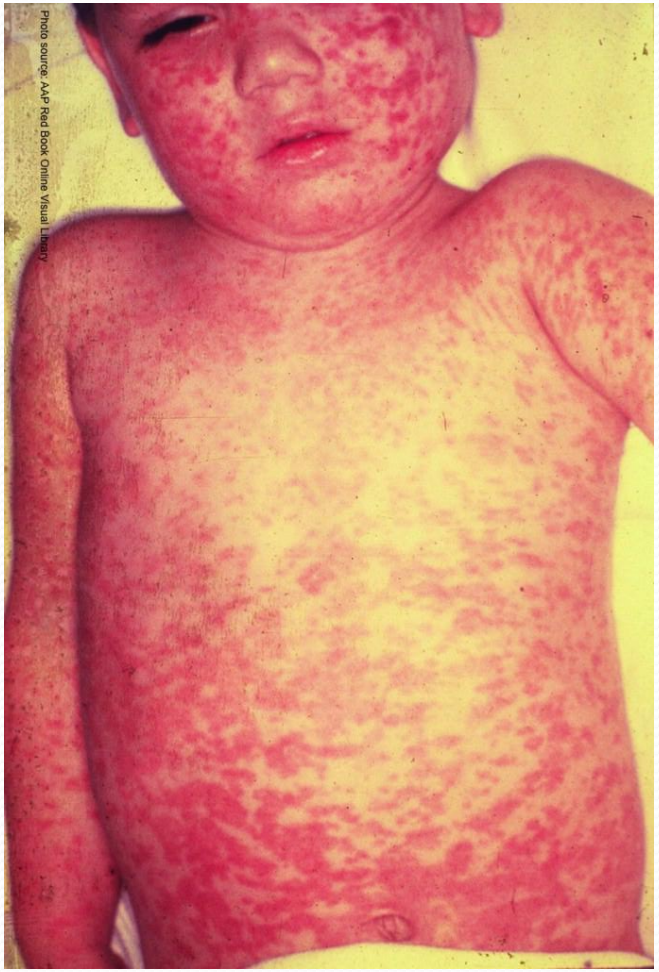
- Wakefield
- Anti-Vaccine Group
- Social Media In KSA

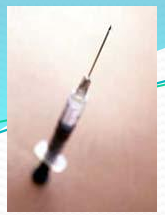


Figures of infection

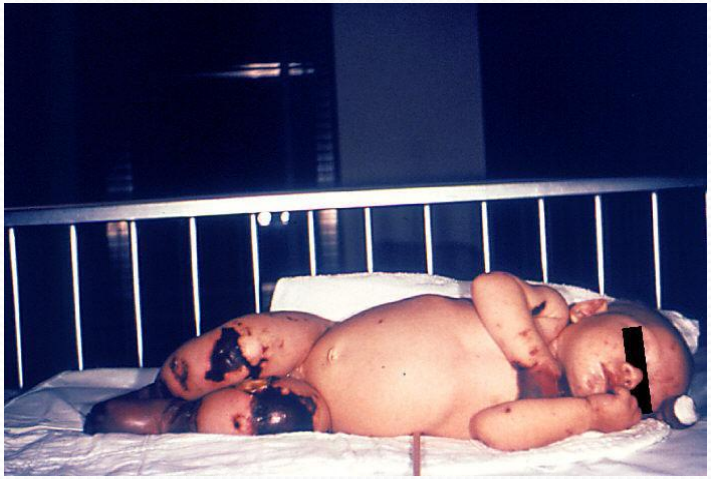


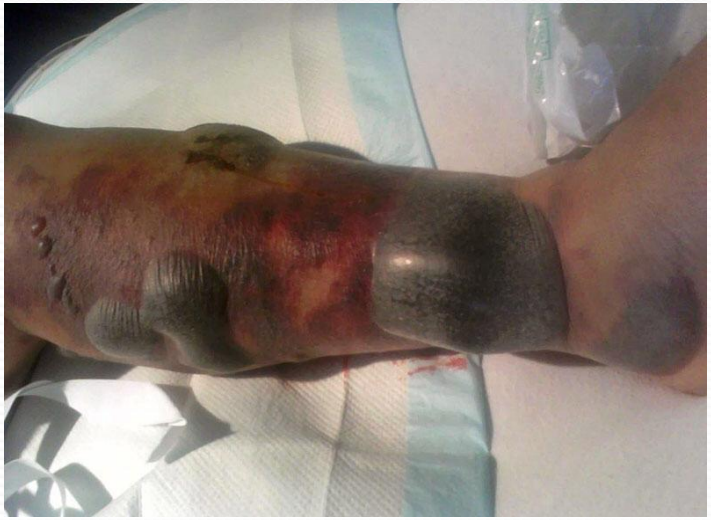


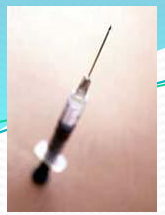


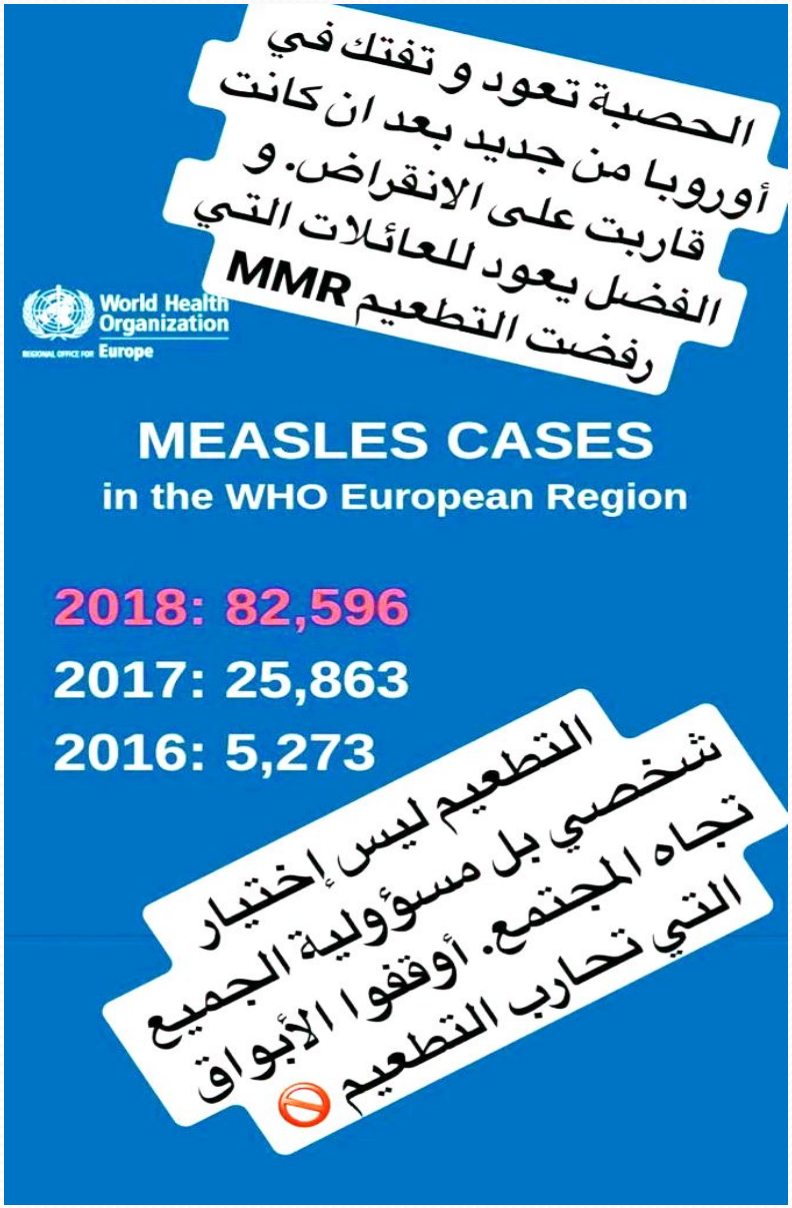


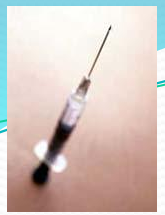

© jennahansford/ Gofundme








الحصبة تعود و تفتك في أوروبا من جديد بعد ان كانت قاربت على الانقراض. و الفضل يعود للعائلات التي رفضت التطعيم MMR
World Health Organization
REGIONAL OFFICE FOR Europe
MEASLES CASES
in the WHO European Region
2018: 82,596
2017: 25,863
2016: 5,273
التطعيم ليس إختيار شخصي بل مسؤولية الجميع تجاه المجتمع. أوقفوا الأبواق التي تحارب التطعيم



Vaccine 36 (2018) 23–28

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Parental perceptions, attitudes and acceptance of childhood immunization in Saudi Arabia: A cross sectional study

Thamir M. Alshammari[a,b,c,*], Gehad M. Subaiea[a], Talib Hussain[a], Afrasim Moin[a], Kazeem B. Yusuff[d]

[a] University of Hail, College of Pharmacy, Hail, Saudi Arabia
[b] Medication Safety Research Chair, King Saud University, Riyadh, Saudi Arabia
[c] Saudi Food and Drug Authority, Riyadh, Saudi Arabia
[d] King Faisal University, College of Clinical Pharmacy, Alahsa, Saudi Arabia

ARTICLE INFO

Article history:
Received 14 August 2017
Received in revised form 29 October 2017
Accepted 15 November 2017
Available online 22 November 2017

Keywords:
Vaccine
Immunization
Parents
Cross sectional
Children
Saudi Arabia

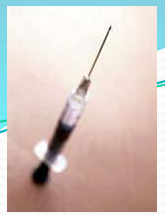
ABSTRACT

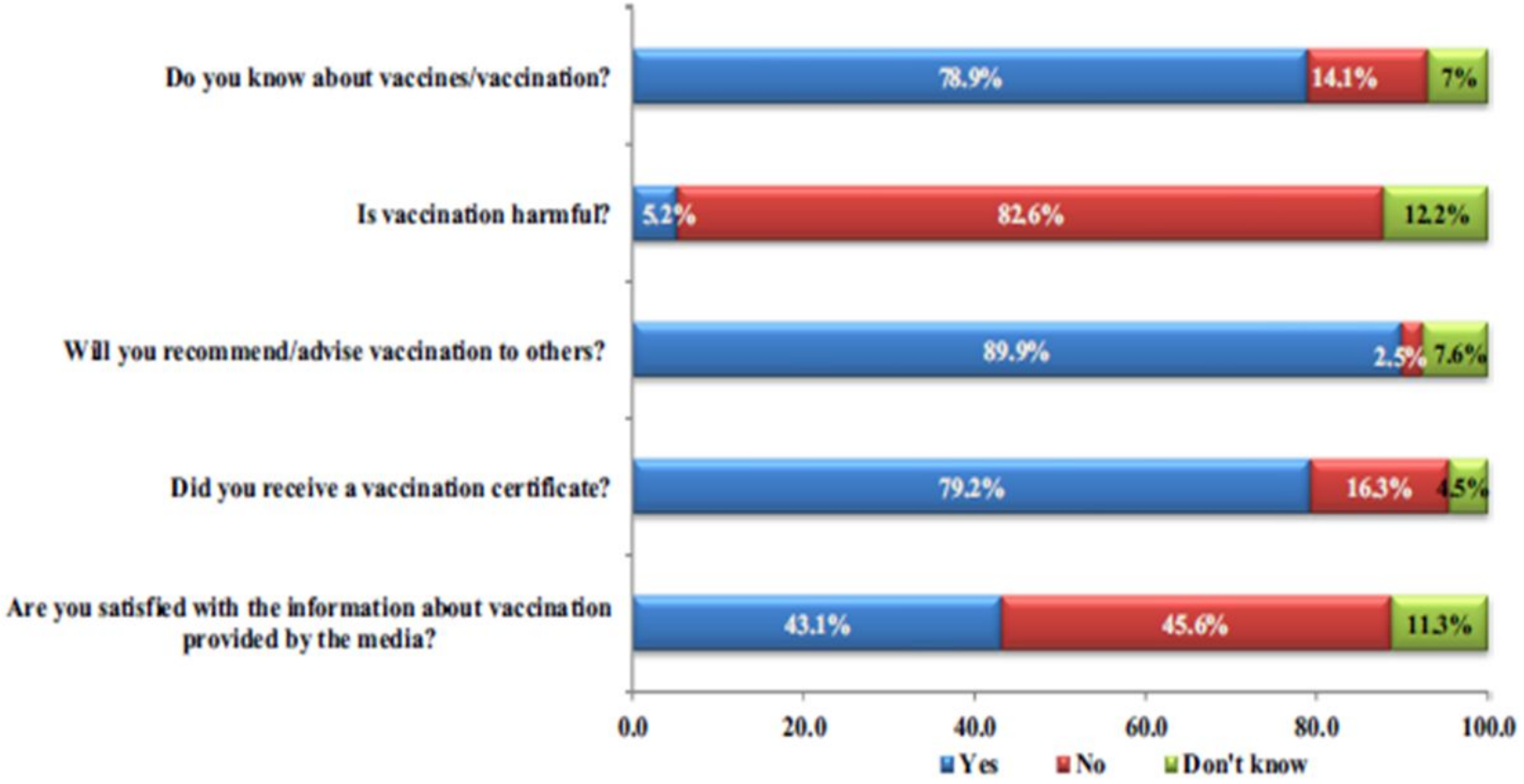
Objectives: The widespread availability and use of vaccines have tremendously reduced morbidity, mortality and health care costs associated with infectious diseases. However, parental beliefs about vaccination are one of the major factors in achieving high vaccination rates. Thus, this study aims to assess the perceptions and attitudes regarding routine childhood immunization among Saudi parents.

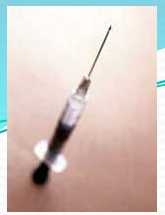
Methods: A cross sectional study with a pre-tested 18-item questionnaire was conducted using 467 randomly selected parents from the Hail region of Saudi Arabia in the period between February 1st, 2016, and February 1st, 2017. The validated questionnaire consisted of three sections that collected information on participants' demographics, parents' awareness of vaccine benefits, and parents' practices regarding the immunization of their children.

Results: Female and male parents comprised 54.5% (255) and 45.5% (212) of the sample, respectively, and the response and completion rates were 97%. The majority of the respondents had received a formal education (94.1%, 439), were gainfully employed (62.9%, 294) and had a regular monthly income (73.3%). The majority of the respondents were aware of childhood vaccinations (78.9%), completed vaccinations mandated for children up to 5 years (86.2%), encouraged other parents to do so (89.9%), and had easy access to vaccines (90.5%). Sixty to ninety percent of the respondents were knowledgeable regarding the health benefits of vaccinations in children, even though 18.4% of their children had experienced vaccination-related minor adverse effects during or after vaccination of which 23.2% required doctor's visits. Health care professionals were the most frequent source of parents' vaccine-related information (65.2%), and vaccination reminder services provided by the Ministry of Health (MOH) via mobile phones were cited by 57.5% of respondents.

Conclusions: Confidence in and acceptance of childhood vaccinations, perceptions of vaccine-related health benefits and ease of access to immunizations appeared to be quite good among Saudi parents.

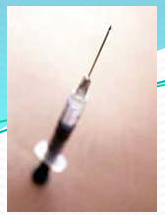



Do you know about vaccines/vaccination?
78.9%
14.1%
7%
Is vaccination harmful?
5.2%
82.6%
12.2%
Will you recommend/advise vaccination to others?
89.9%
2.5%
7.6%
Did you receive a vaccination certificate?
79.2%
16.3%
4.5%
Are you satisfied with the information about vaccination provided by the media?
43.1%
45.6%
11.3%
0.0
20.0
40.0
60.0
80.0
100.0
Yes
No
Don't know



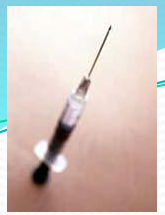
10 Great Public Health Achievements - Industrialized Countries

- Vaccination
- Motor-vehicle safety
- Safer workplaces
- Control of infectious diseases
- Decline in deaths from coronary heart disease and stroke
- Safer and healthier foods
- Healthier mothers and babies
- Family planning
- Fluoridation of drinking water
- Recognition of tobacco as a health hazard



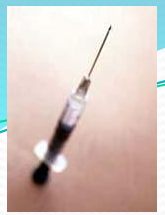
10 Great Public Health Achievements - Industrialized Countries

- Vaccination
- Motor-vehicle safety
- Safer workplaces
- Control of infectious diseases
- Decline in deaths from coronary heart disease and stroke
- Safer and healthier foods
- Healthier mothers and babies
- Family planning
- Fluoridation of drinking water
- Recognition of tobacco as a health hazard



Questions Parents Have About Vaccines

- Now that illnesses have disappeared do we really need all of these vaccines? Yes to avoid resurgence
- Can some vaccines be delayed until my child is older or spread out over time? No
- Since so many other children are immunized, do mine need vaccines? Yes
- Vaccines contain preservatives and other additives, are they harmful? No, no antibiotics, mercury or any other preservatives
- There are so many vaccines, do they overwhelm the immune system or case long term harm? No



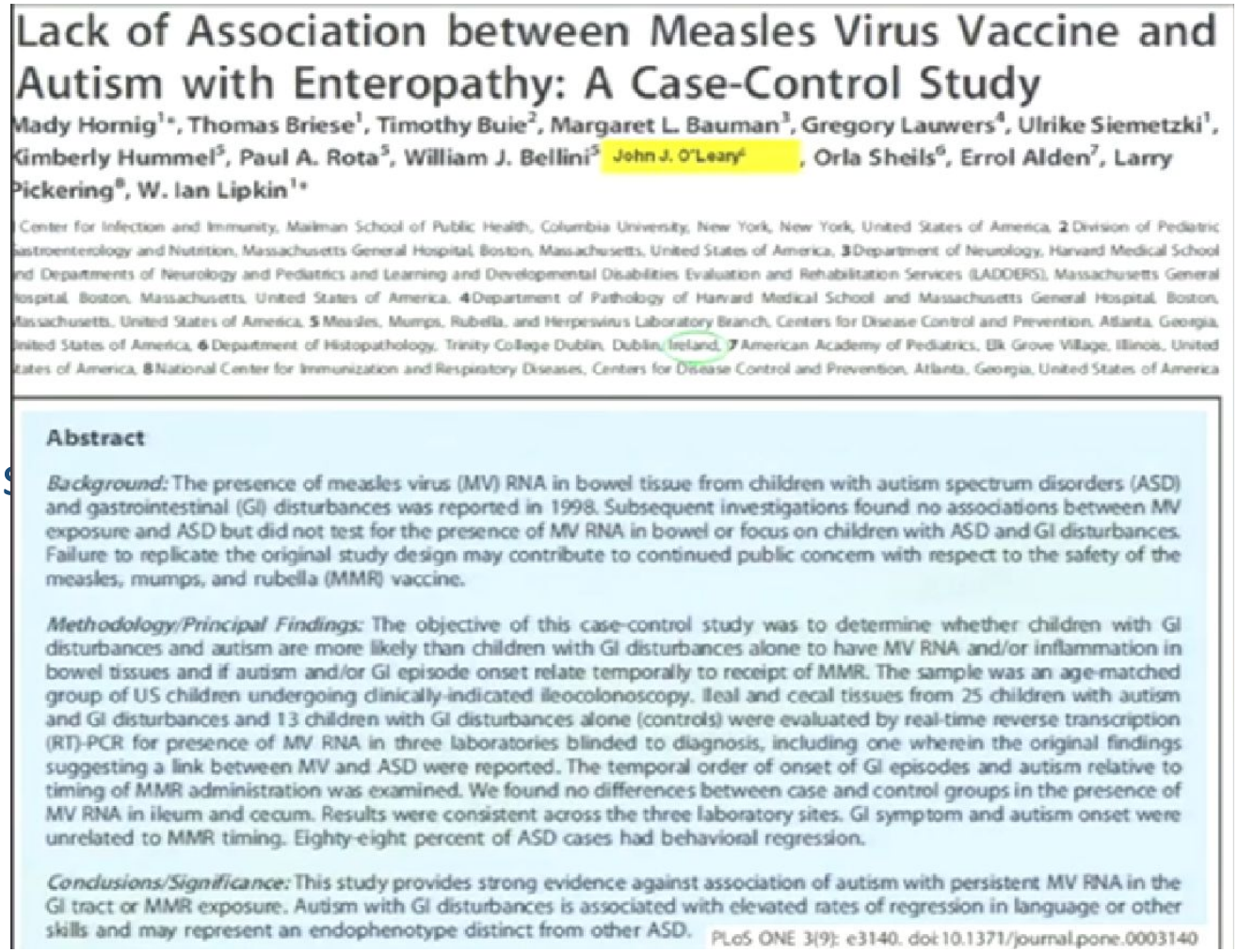
Questions from Health Care Workers

- Influenza vaccine is not effective, so why should I take it? It is effective against strains within it, if you get the flu after getting the vaccine then it is a strain not covered in the vaccine

- I have never had influenza infection in my life and so why should I still take the vaccine?

MMR and Autism

Strong Evidence against an association of Autis with MMR Vaccine



Lack of Association between Measles Virus Vaccine and Autism with Enteropathy: A Case-Control Study

Mady Hornig[1]*, Thomas Briese[1], Timothy Buie[2], Margaret L. Bauman[3], Gregory Lauwers[4], Ulrike Siemetzki[1], Kimberly Hummel[5], Paul A. Rota[5], William J. Bellini[5] John J. O'Leary[6], Orla Sheils[6], Errol Alden[7], Larry Pickering[8], W. Ian Lipkin[1]*

Center for Infection and Immunity, Mailman School of Public Health, Columbia University, New York, New York, United States of America, 2 Division of Pediatric Gastroenterology and Nutrition, Massachusetts General Hospital, Boston, Massachusetts, United States of America, 3 Department of Neurology, Harvard Medical School and Departments of Neurology and Pediatrics and Learning and Developmental Disabilities Evaluation and Rehabilitation Services (LADDERS), Massachusetts General Hospital, Boston, Massachusetts, United States of America, 4 Department of Pathology of Harvard Medical School and Massachusetts General Hospital, Boston, Massachusetts, United States of America, 5 Measles, Mumps, Rubella, and Herpesvirus Laboratory Branch, Centers for Disease Control and Prevention, Atlanta, Georgia, United States of America, 6 Department of Histopathology, Trinity College Dublin, Dublin, Ireland, 7 American Academy of Pediatrics, Elk Grove Village, Illinois, United States of America, 8 National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia, United States of America

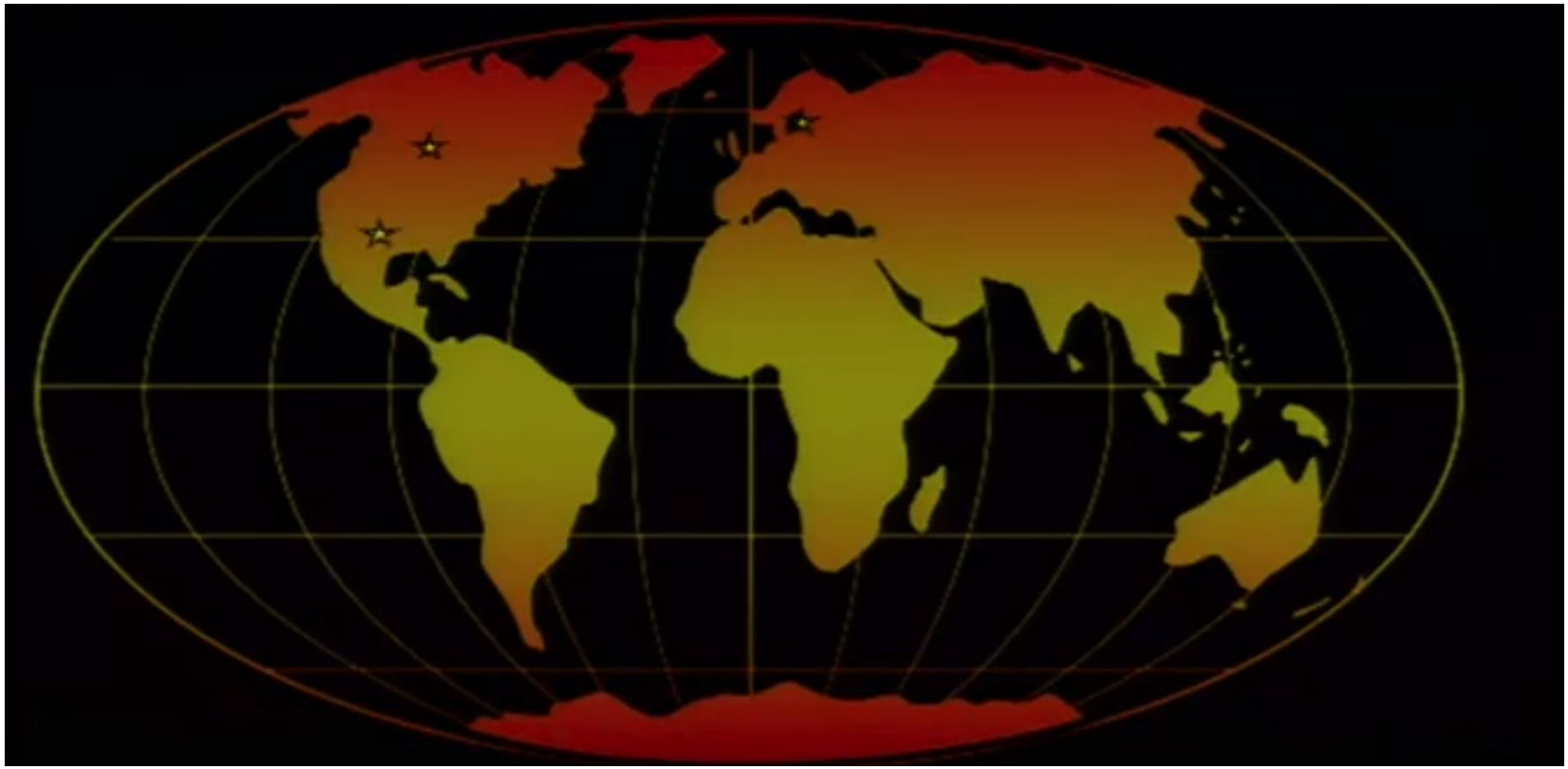
Abstract

Background: The presence of measles virus (MV) RNA in bowel tissue from children with autism spectrum disorders (ASD) and gastrointestinal (GI) disturbances was reported in 1998. Subsequent investigations found no associations between MV exposure and ASD but did not test for the presence of MV RNA in bowel or focus on children with ASD and GI disturbances. Failure to replicate the original study design may contribute to continued public concern with respect to the safety of the measles, mumps, and rubella (MMR) vaccine.

Methodology/Principal Findings: The objective of this case-control study was to determine whether children with GI disturbances and autism are more likely than children with GI disturbances alone to have MV RNA and/or inflammation in bowel tissues and if autism and/or GI episode onset relate temporally to receipt of MMR. The sample was an age-matched group of US children undergoing clinically-indicated ileocolonoscopy. Ileal and cecal tissues from 25 children with autism and GI disturbances and 13 children with GI disturbances alone (controls) were evaluated by real-time reverse transcription (RT)-PCR for presence of MV RNA in three laboratories blinded to diagnosis, including one wherein the original findings suggesting a link between MV and ASD were reported. The temporal order of onset of GI episodes and autism relative to timing of MMR administration was examined. We found no differences between case and control groups in the presence of MV RNA in ileum and cecum. Results were consistent across the three laboratory sites. GI symptom and autism onset were unrelated to MMR timing. Eighty-eight percent of ASD cases had behavioral regression.

Conclusions/Significance: This study provides strong evidence against association of autism with persistent MV RNA in the GI tract or MMR exposure. Autism with GI disturbances is associated with elevated rates of regression in language or other skills and may represent an endophenotype distinct from other ASD.

PLoS ONE 3(9): e3140. doi:10.1371/journal.pone.0003140



Autism Rates Following Removal of Thimerosal from Vaccines

Location	Year Removed	Result	Journal
Denmark	1992	Incidence of Autism increased	Pediatrics 112:604 2003
Canada	1996	Prevalence of Autism increased	Pediatrics 118:139 2006
USA	2001	Prevalence of Autism Increased	Arch Gen Psychiat 65:19 2008

No association between vaccines and autism!

Vaccine hesitancy among Saudi parents and it's determinants: result from the WHO SAGE Working Group on Vaccine Hesitancy survey tool

Sarah S. Alsubaie, *MD,* ***Ibrahim M. Gosadi,*** *PhD,* ***Basma M.Alsaadi,*** *MD,* ***Nouf B. Albacker,*** *MD,* ***Maryam A. Bawazir,*** *MBBS,* ***Nada D. Bin Daud,*** *MBBS,* ***Waad B. Almanie,*** *MBBS,* ***Muslim M. Alsaadi,*** *MD,* ***Fahad A. Alzamil,*** *MD,*

From the department of Pediatrics (Alsubaie, BAlsaadi,Albacker, MAlsaadi, Alzamil), College of Medicine, King Saud University, Riyadh, from the department of Family and Community Medicine (Gosadi), College of Medicine, Jazan University, Jazan, and Fifth-year medical students (Bawazir, Bindaud,Almanie), College of Medicine, King Saud University, Riyadh, Saudi Arabia

Address correspondence to:

Sarah S. Alsubaie

Consultant, Pediatric Infectious Diseases and Infection Control
Department of Pediatrics (39)
College of Medicine, King Saud University
King Saud University Medical City
PO Box 2925, Riyadh 11461, Saudi Arabia.
Email: salsubaie@ksu.edu.sa

Hesitancy and Refusal According to Type of Vaccines

Vaccine	Hesitant		Refused	
	Frequency	Proportion	Frequency	Proportion
Chickenpox	10	2	2	0.4
Hemophilus influenza B	13	2.6	5	1
Hepatitis B	7	1.4	6	1.2
Human papilloma virus	8	1.6	3	0.6
Influenza	58	11.6	43	8.6
Polio	14	2.8	10	2
MMR	47	9.4	7	1.4
Meningococcal	10	2	2	0.4
Pentavelent/hexalent	7	1.4	2	0.4
Pneumococcal	10	2	4	1.4
Rotavirus	11	2.2	4	0.8
Tetanus, diphtheria, pertusis	23	4.6	10	2
All vaccines	14	2.8	3	0.6

Main Worries & Concerns Reported by 100 Vaccine Hesitant Parents

Concern/worry	%
Concerns related to vaccine safety	53
Vaccine may cause:	
Autism (MMR)	26
Seizure (DTaP)	14
Paralysis (oral polio vaccine)	7
Attention-deficit hyperactivity disorder	7
Bronchial asthma	4
Diabetes (influenza)	4
Infertility (human papillomavirus)	2
Fear of side effects (allergy, fever, local pain)	41
Mistrust in vaccine effectiveness	26
Low perception of disease severity (influenza)	17
Negative information on vaccination	9
Vaccine may affect child's immunity	8
Previous reaction to a vaccine	3

Conclusion:

- Vaccine hesitancy among parents in Saudi is a concern.
- Countering concern related to vaccine must be tailored, particularly in higher-educated groups.

Respond to Parents

- Vaccines are safe and effective
- Vaccines are tested thoroughly prior to license
- Unvaccinated children at risk
- Commitment to vaccination

Vaccine Hesitancy and Health Promotion

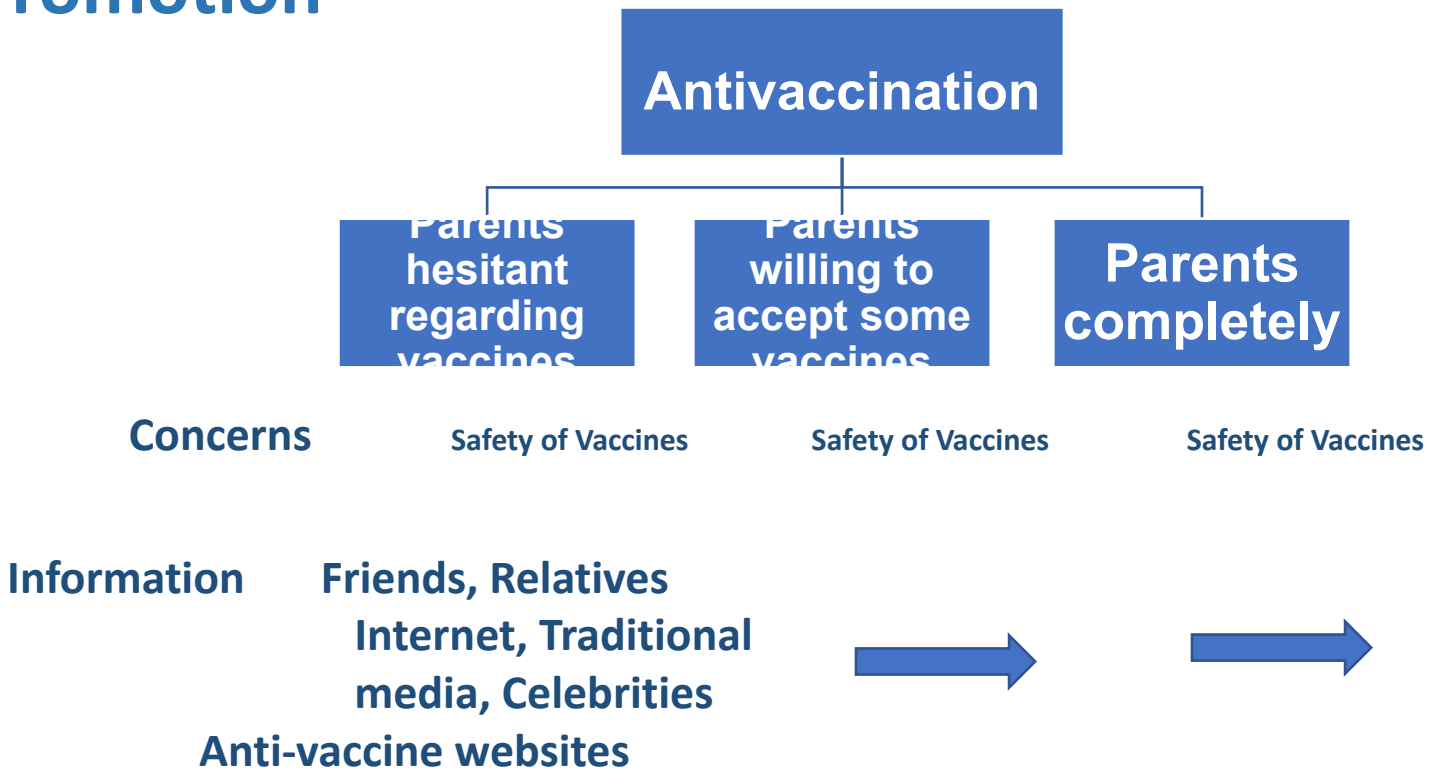
Communication

Speech or writing should be simple, direct, clear, brief, sincere, unambiguous and targeted

Clear Language

A thorough review of the research involving people and animals provides no evidence that the measles-mumps-rubella (MMR) vaccine causes autism. However, because the cause of autism are unknown, research on autism needs to continue.

Vaccine Hesitancy and Health Promotion



Annals of Internal Medicine

ORIGINAL RESEARCH

Measles, Mumps, Rubella Vaccination and Autism

A Nationwide Cohort Study

Anders Hviid, DrMedSci; Jørgen Vinsløv Hansen, PhD; Morten Frisch, DrMedSci; and Mads Melbye, DrMedSci

Background: The hypothesized link between the measles, mumps, rubella (MMR) vaccine and autism continues to cause concern and challenge vaccine uptake.

Objective: To evaluate whether the MMR vaccine increases the risk for autism in children, subgroups of children, or time periods after vaccination.

Design: Nationwide cohort study.

Setting: Denmark.

Participants: 657 461 children born in Denmark from 1999 through 31 December 2010, with follow-up from 1 year of age and through 31 August 2013.

Measurements: Danish population registries were used to link information on MMR vaccination, autism diagnoses, other childhood vaccines, sibling history of autism, and autism risk factors to children in the cohort. Survival analysis of the time to autism diagnosis with Cox proportional hazards regression was used to estimate hazard ratios of autism according to MMR vaccination status, with adjustment for age, birth year, sex, other childhood vaccines, sibling history of autism, and autism risk factors (based on a disease risk score).

Results: During 5 025 754 person-years of follow-up, 6517 children were diagnosed with autism (incidence rate, 129.7 per 100 000 person-years). Comparing MMR-vaccinated with MMR-unvaccinated children yielded a fully adjusted autism hazard ratio of 0.93 (95% CI, 0.85 to 1.02). Similarly, no increased risk for autism after MMR vaccination was consistently observed in subgroups of children defined according to sibling history of autism, autism risk factors (based on a disease risk score) or other childhood vaccinations, or during specified time periods after vaccination.

Limitation: No individual medical charts were reviewed.

Conclusion: The study strongly supports that MMR vaccination does not increase the risk for autism, does not trigger autism in susceptible children, and is not associated with clustering of autism cases after vaccination. It adds to previous studies through significant additional statistical power and by addressing hypotheses of susceptible subgroups and clustering of cases.

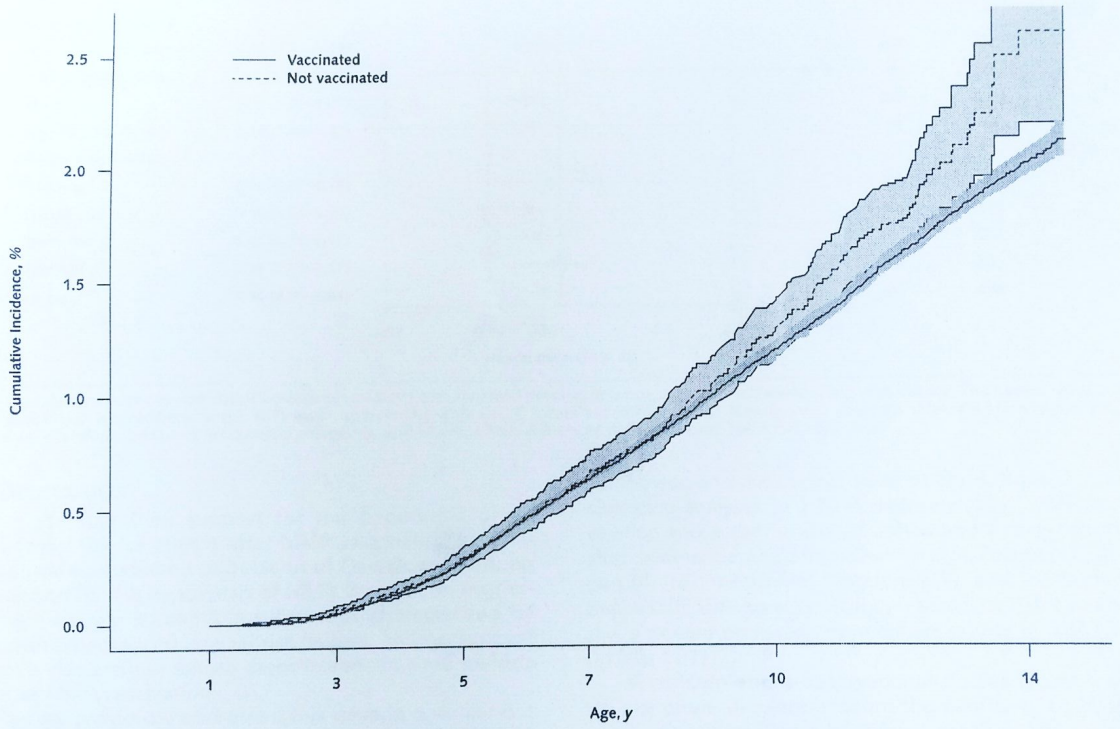
Primary Funding Source: Novo Nordisk Foundation and Danish Ministry of Health.

Ann Intern Med. *doi:10.7326/M18-2101* **Annals.org**

For author affiliations, see end of text.

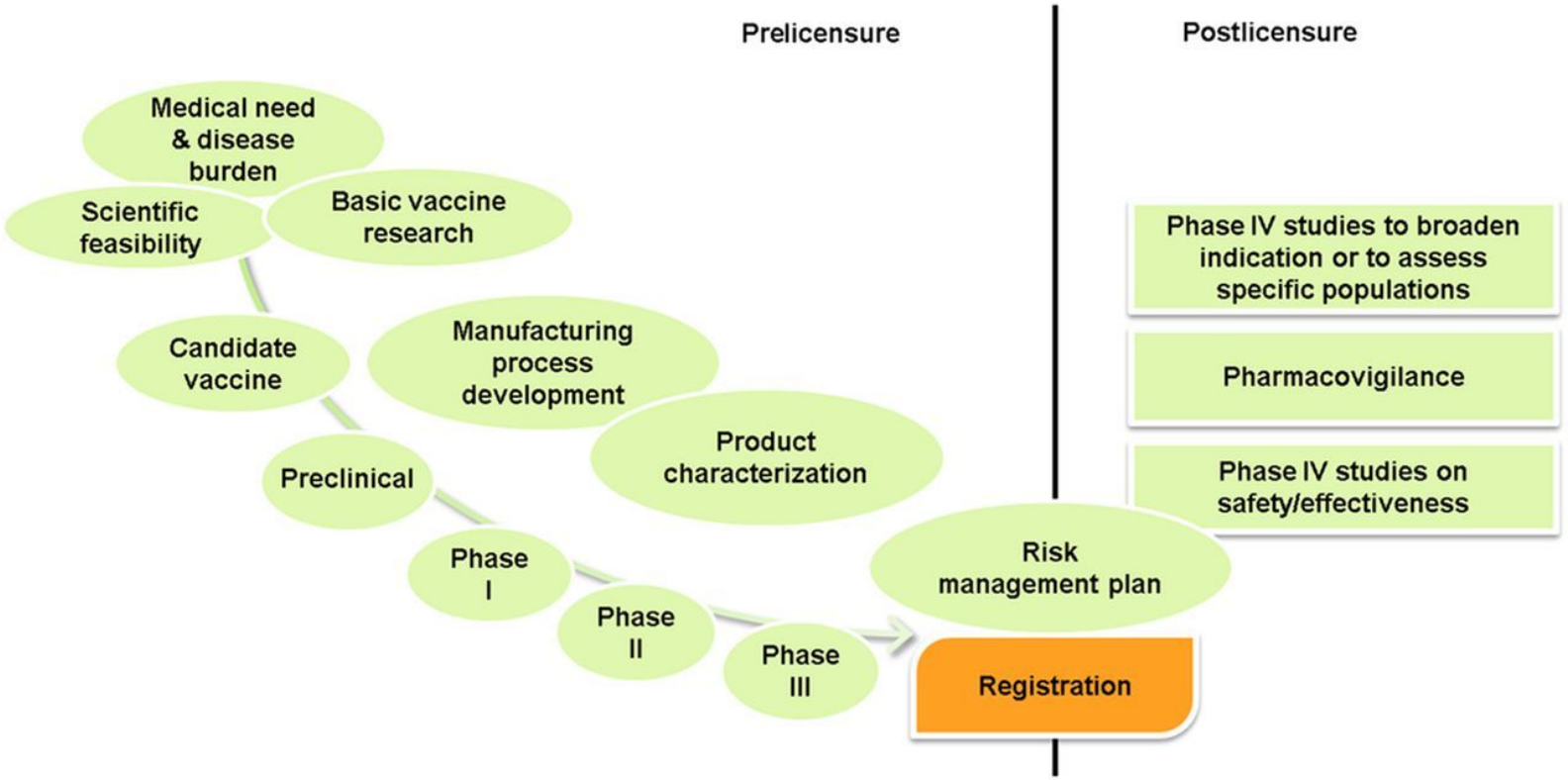
This article was published at Annals.org on 5 March 2019.

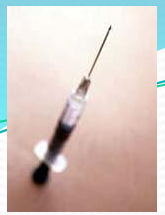
Figure 2. Cumulative incidences of autism (unadjusted and with 95% CI bands) in 657 461 children born in Denmark between 1 January 1999 and 31 December 2010, by vaccination status and age.



Children at risk, *n*						
Vaccinated	3457	571 550	493 444	391 259	235 016	37 267
Not vaccinated	654 004	66 497	36 343	27 392	18 949	823

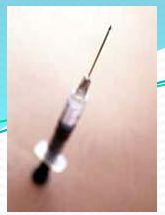
Testing of Vaccines





VACCINE MYTHBUSTING

1) If you want to pump your kid full of massive amounts of toxins . .

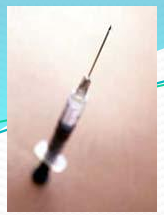


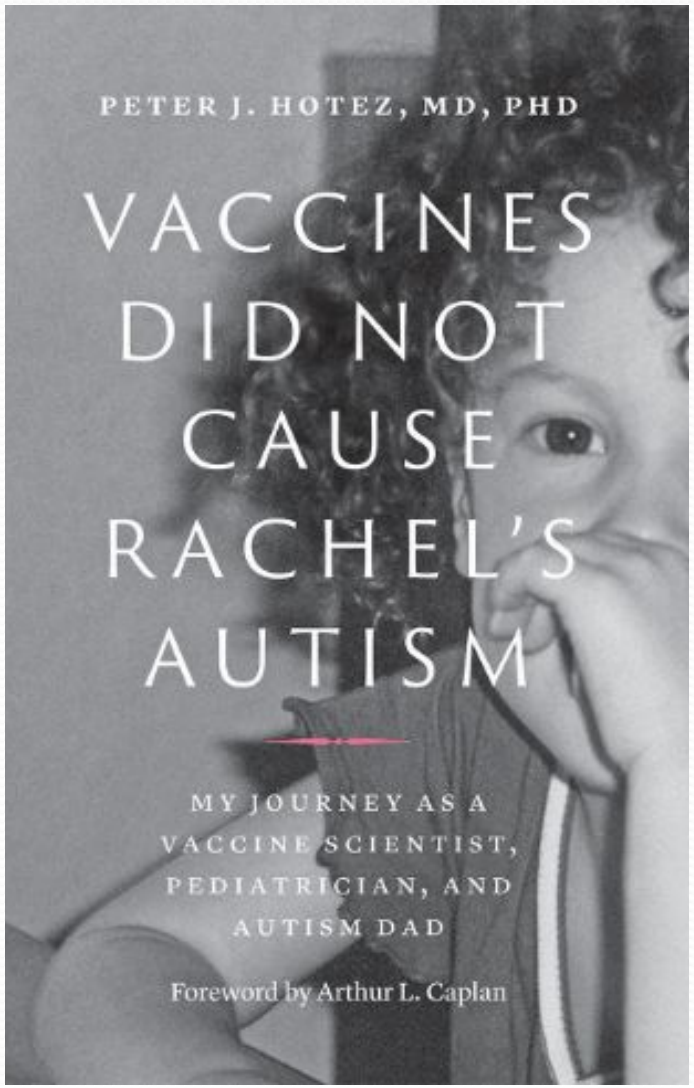
2) toxins like mercury

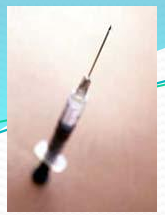
3) and aluminum . . .

4) and polysorbate 80 . . .

5) aborted foetal tissue . . .




PETER J. HOTEZ, MD, PHD
VACCINES DID NOT CAUSE RACHEL'S AUTISM
MY JOURNEY AS A VACCINE SCIENTIST, PEDIATRICIAN, AND AUTISM DAD
Foreword by Arthur L. Caplan



Vaccines cause autism

1) Danish study of MMR and 537,000 children - no link

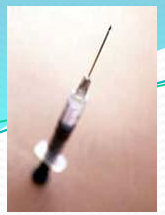
2) Finnish study of MMR and 535,000 children - no link

3) US study of MMR and 95,000 children - no link

4) UK study of thimerosal and DPT/DT and 109,000 children - no link

5) Danish study of thimerosal-containing vaccines and 467,000 children - no link

6) US study of thimerosal-containing vaccines and 124,000 children - no link



CNN ✓
@CNN

New York is requiring all schoolchildren to be vaccinated, even if parents have religious objections

New York ends religious exemptions for vaccines
cnn.com

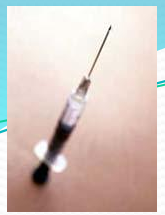
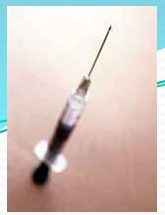


Table 2 Catch-up immunization schedule for persons aged 4 months–18 years who start late or who are more than 1 month behind, United States, 2019.

The figure below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. Always use this table in conjunction with Table 1 and the notes that follow.

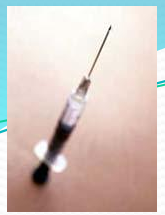
Children age 4 months through 6 years					
Vaccine	**Minimum Age for Dose 1**	**Minimum Interval Between Doses**			
		Dose 1 to Dose 2	**Dose 2 to Dose 3**	**Dose 3 to Dose 4**	**Dose 4 to Dose 5**
Hepatitis B	Birth	**4 weeks**	**8 weeks *and* at least 16 weeks after first dose.** Minimum age for the final dose is 24 weeks.		
Rotavirus	6 weeks Maximum age for first dose is 14 weeks, 6 days	**4 weeks**	**4 weeks** Maximum age for final dose is 8 months, 0 days.		
Diphtheria, tetanus, and acellular pertussis	6 weeks	**4 weeks**	**4 weeks**	**6 months**	**6 months**
Haemophilus influenzae type b	6 weeks	**No further doses needed** if first dose was administered at age 15 months or older. **4 weeks** if first dose was administered before the 1st birthday. **8 weeks (as final dose)** if first dose was administered at age 12 through 14 months.	**No further doses needed** if previous dose was administered at age 15 months or older. **4 weeks** if current age is younger than 12 months ***and*** first dose was administered at younger than age 7 months, ***and*** at least 1 previous dose was PRP-T (ActHib, Pentacel, Hiberix) or unknown. **8 weeks *and* age 12 through 59 months (as final dose)** if current age is younger than 12 months ***and*** first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months ***and*** first dose was administered before the 1st birthday, ***and*** second dose administered at younger than 15 months; OR if both doses were PRP-OMP (PedvaxHIB; Comvax) ***and*** were administered before the 1st birthday.	**8 weeks (as final dose)** This dose only necessary for children age 12 through 59 months who received 3 doses before the 1st birthday.	
Pneumococcal conjugate	6 weeks	**No further doses needed** for healthy children if first dose was administered at age 24 months or older. **4 weeks** if first dose administered before the 1st birthday. **8 weeks (as final dose for healthy children)** if first dose was administered at the 1st birthday or after.	**No further doses needed** for healthy children if previous dose administered at age 24 months or older. **4 weeks** if current age is younger than 12 months and previous dose given at <7 months old. **8 weeks (as final dose for healthy children)** if previous dose given between 7-11 months (wait until at least 12 months old); OR if current age is 12 months or older and at least 1 dose was given before age 12 months.	**8 weeks (as final dose)** This **dose** only necessary for children aged 12 through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age.	
Inactivated poliovirus	6 weeks	**4 weeks**	4 weeks if current age is < 4 years 6 months (as final dose) if current age is 4 years or older	**6 months** (minimum age 4 years for final dose).	
Measles, mumps, rubella	12 months	**4 weeks**			
Varicella	12 months	**3 months**			
Hepatitis A	12 months	**6 months**			
Meningococcal (MenACWY-D 9 mos; MenACWY-CRM 2 mos)	8 weeks	**8 weeks**	See Notes	See Notes	
Children and adolescents age 7 through 18 years					
Meningococcal (MenACWY-D 9 mos; MenACWY-CRM 2 mos)	Not Applicable (N/A)	**8 weeks**			
Tetanus, diphtheria; tetanus, diphtheria, and acellular pertussis	7 years	**4 weeks**	**4 weeks** if first dose of DTaP/DT was administered before the 1st birthday. **6 months (as final dose)** if first dose of DTaP/DT or Tdap/Td was administered at or after the 1st birthday.	**6 months** if first dose of DTaP/DT was administered before the 1st birthday.	
Human papillomavirus	9 years	**Routine dosing intervals are recommended.**			
Hepatitis A	N/A	**6 months**			
Hepatitis B	N/A	**4 weeks**	**8 weeks *and*** at least 16 weeks after first dose.		
Inactivated poliovirus	N/A	**4 weeks**	**6 months** A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.	A fourth dose of IPV is indicated if all previous doses were administered at <4 years or if the third dose was administered <6 months after the second dose.	
Measles, mumps, rubella	N/A	**4 weeks**			
Varicella	N/A	**3 months** if younger than age 13 years. **4 weeks** if age 13 years or older.			



BREAKING NEWS

1. BGC vaccine delayed to six months
2. HPV on the way for Saudi citizen
3. Irradication of polio virus type 3
4. Dengue virus vaccine is available

World Health Organization



Further Reading

1. http://www.vaccineinformation.org
2. Red Book 2009 (28th Edition) Report of the Committee on Infectious diseases
3. Immunization – Childhood and Travel Health 3rd Edition

THANK YOU!