

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

الحمد لله رب العالمين والصلاة والسلام
على سيدنا محمد الصادق الوعد الأمين
أما بعد..

Prevention and control of Communicable Diseases

- Communicable diseases are diseases that can be transmitted from a person to another through different means (direct contact, droplet infection, sexual contact, or mother fetus infection.)

Steps followed to accomplish control of communicable diseases:

- 1- Reporting
- 2- Observing of the coming foreigners and tourist who are going to stay in the country for more than one month and testing them for certain disease e.g AIDS, Malaria etc..
- 3-Sending teams in cases of outbreaks and epidemics.
- 4-Coordination with other ministries (Ministry of agriculture and Brucellosis)
- 5-Vaccination



11/11/2013

students- Vaccination

CHILDHOOD DISEASES



How Some Childhood Infectious Diseases Are Spread

- **Direct Contact with infected person's skin or body fluid**
- **Respiratory Transmission (passing from the lungs, throat, or nose of one person to another person through the air)**
- **Fecal-Oral Transmission (touching feces or objects contaminated with feces then touching your mouth)**

Direct Contact with infected Person's skin or body fluid

- Chickenpox*
- Cold Sores
- Conjunctivitis
- Head Lice
- Ringworm
- Scabies



Respiratory Transmission

- ***Chickenpox***
- ***Common Cold***
- ***Diphtheria***
- ***Bacterial meningitis***
- ***Influenza***
- ***Measles***
- ***Mumps***
- ***Pertussis***
- ***Pneumonia***
- ***Rubella****



Fecal-Oral Transmission

- ***E. Coli***
- ***Enterovirus***
- ***Giardia***
- ***Hepatitis A***
- ***Infectious Diarrhea***
- ***Pinworms***
- ***Polio***
- ***Salmonella***
- ***Shigella***



Vaccination

- *Protecting Your Newborn From Disease*
- *How do vaccines work?*
- *Are vaccines safe?*
- *Keeping an immunization record*

Immunity

- It is the defense mechanism of the body against the invasion of pathological microorganisms.
- **General immunity**

General defensive mechanisms available from birth . eg skin, mucosal barriers, tears, blood substances that inhibit motility or multiplication of organisms ...etc

Immunity (contd)

- **Specific Immunity**

This type develops against specific microorganisms. It can be acquired in 2 ways:

- ***Active immunity***. acquired by coming in contact with the pathogen either by contracting the disease itself or by vaccination.

Passive immunity

- Acquired by receiving antibodies from an actively immunized person or animal.
- It is quickly acquired
- Short lived in comparison to actively acquired immunity.
- Can be acquired in two ways:

Passive Immunity

- **Natural** : Antibodies passing from mother to newborn via placenta start falling during the first weeks and disappear within the first 6 months.
- **Artificial**: acquired by injection of specific or standard (non-specific gamma globulins).e.g. Specific immunoglobulins are available for hepatitis B, tetanus, mumps..etc.

Importance of vaccination

- Diseases that are common, can kill or cause disability,
Can be prevented.

The main diseases are:

- Measeles,
- TB,
- Pertusis ,
- Diphtheria ,
- Poliomyelitis,
- Tetnus.

Diphtheria

- can cause serious illness
- kills 1 of 10 people infected with it
- **Diphtheria bacteria**
 - lives in mouth, nose, and throat of an infected person spreads through droplet infection.
- If not treated, the child could die from suffocation

Diphtheria

- **Once infected** :The incubation period is two to seven days, with an average of three days.
- **Symptoms**
 - some people might not feel any thing or just look sick
 - others might have
 - sore throat
 - fever
 - chills
 - difficulty swallowing
 - thick gray coating over the back of the throat

Complications

- within 6-10 days serious problems can occur
 - suffocation
 - paralysis
 - heart failure (myocarditis)
 - coma
 - death

Treatment

- **Antitoxin**
- The most important step is prompt administration of diphtheria antitoxin, without waiting for laboratory results.
- **Antibiotics**
are given to wipe out the bacteria, to prevent the spread of the disease, and to protect the patient from developing pneumonia.

Isolation of patients

- Diphtheria patients must be isolated for one to seven days or until two successive cultures show that they are no longer contagious. Children placed in isolation are usually assigned a primary nurse for emotional support.

Identification and treatment of contacts

- Because diphtheria is highly contagious and has a short incubation period, family members and other contacts of diphtheria patients must be watched for symptoms and tested to see if they are carriers. They are usually given antibiotics for seven days and a booster shot of diphtheria/tetanus toxoid.

- **Reporting cases to public health authorities**
- Reporting is necessary to track potential epidemics, to help doctors identify the specific strain of diphtheria, and to see if resistance to penicillin or erythromycin has developed.





Tetanus

- Is a medical condition characterized by a prolonged contraction of skeletal muscle fibers. The primary symptoms are caused by tetanospasmin, a neurotoxin produced by the Gram-positive, rod-shaped, obligate anaerobic bacterium *Clostridium tetani*

Tetanus

- **Once infected: Incubation period**
- The incubation period of tetanus may be up to several months but is usually about eight days.
- **Symptoms**
 - stiff muscles in the jaw and neck with difficulty swallowing
 - difficulty opening mouth
 - muscle rigidity in the arms, legs, and stomach with painful convulsions

Tetanus

- **Complications**
 - broken bones from muscle spasms
 - breathing problems/lung infections
 - coma and death
- child has painful muscle spasms from tetanus
 - nearly impossible for her to move or control the muscles in her body

Tetanus

- baby has tetanus cannot breast-feed or open his mouth because the muscles in his face have become so tight
- **Tetanus**
 - can cause serious illness and death
- **Tetanus bacteria**
 - lives in dirt and the intestines and feces of animals
 - enters the body through cuts, punctures, or other wounds

- baby has neonatal tetanus; baby is completely rigid
- tetanus kills most babies who get it
- infection can happen when newly cut umbilical cord is exposed to dirt

Treatment

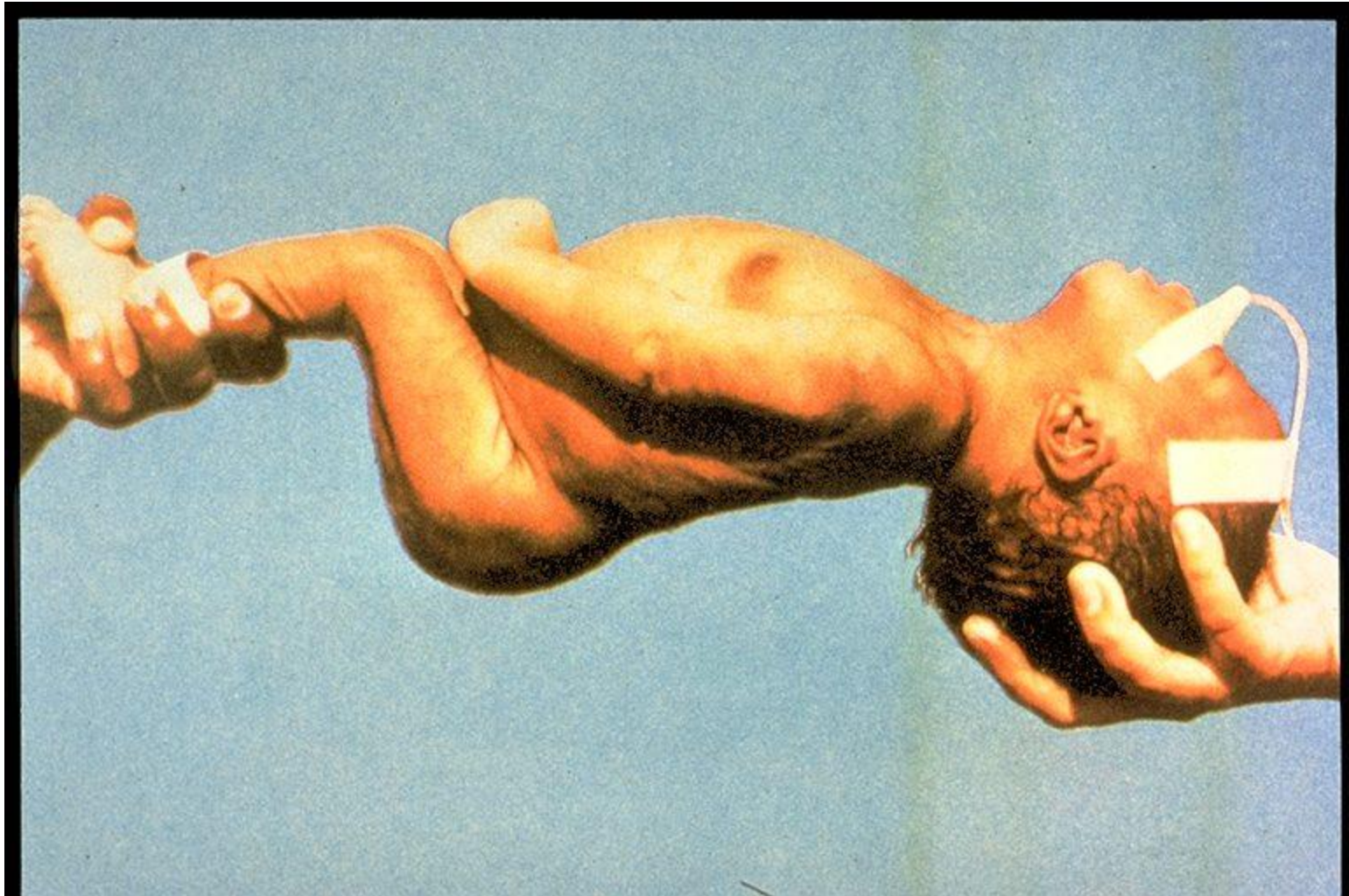
- Mild Cases
- Anti -toxins
- tetanus immunoglobulin IV or IM
- metronidazole IV for 10 days
- diazepam

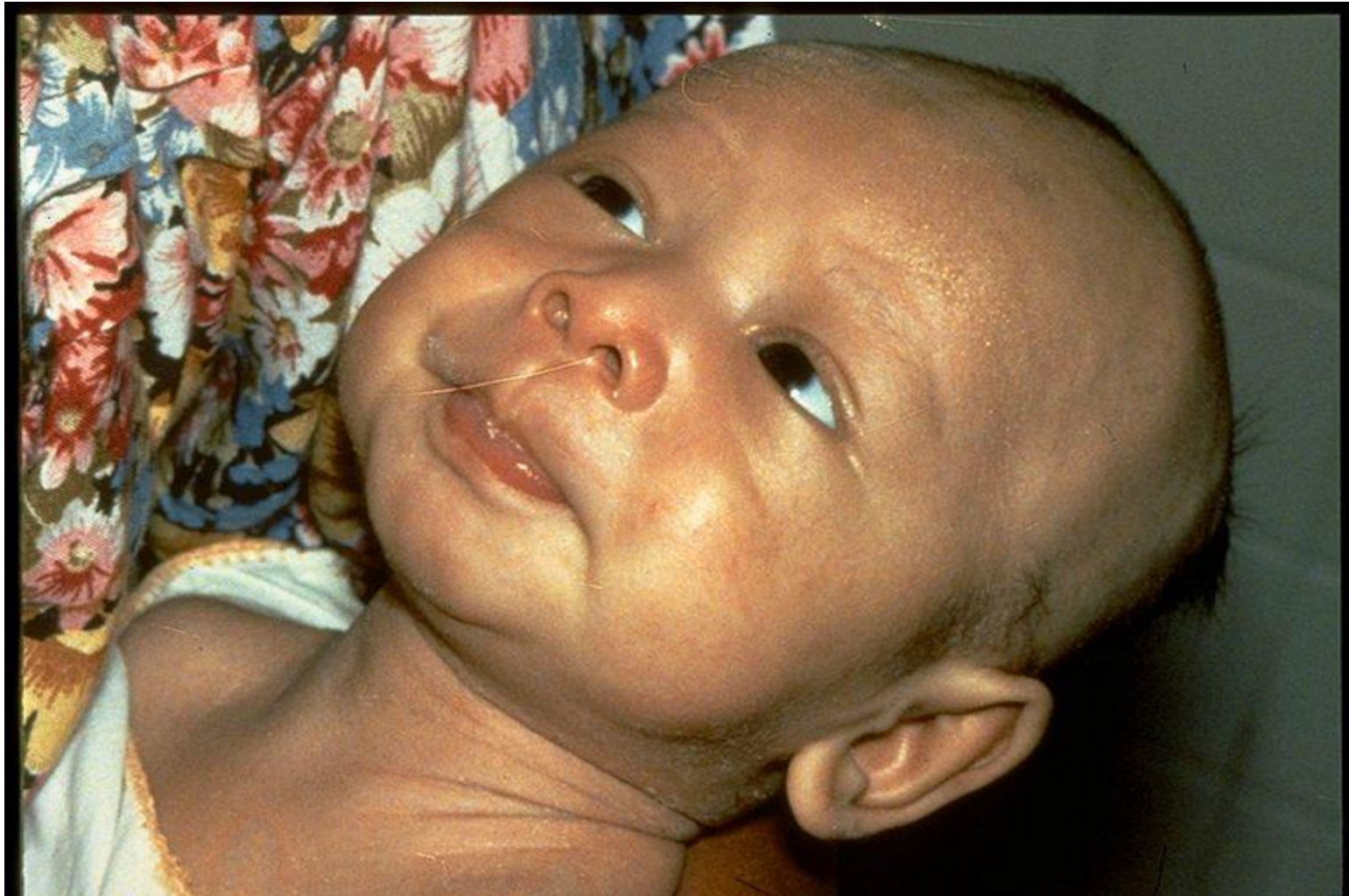
Severe Cases

- Severe cases will require admission to intensive care. In addition to the measures listed above for mild tetanus:
- human tetanus immunoglobulin injected intrathecally (increases clinical improvement from 4% to 35%)
- tracheotomy and mechanical ventilation for 3 to 4 weeks

- magnesium, as an intravenous (IV) infusion, to prevent muscle spasm
- diazepam as a continuous IV infusion
- the autonomic effects of tetanus can be difficult to manage (alternating hyper- and hypotension hyperpyrexia/hypothermia) .







Pertussis

- — commonly called **whooping cough**
- — is a highly contagious bacterial disease caused by *Bordetella pertussis*. In some countries, this disease is called the 100 days' cough or cough of 100 days.[\[1\]](#)

- Symptoms are initially mild, and then develop into severe coughing fits, which produce the namesake high-pitched "whoop" sound in infected babies and children when they inhale air after coughing.[\[2\]](#) The coughing stage lasts approximately six weeks before subsiding.

- Prevention by vaccination is of primary importance given the seriousness of the disease in children.[3] Although treatment is of little direct benefit to the person infected, antibiotics are recommended because they shorten the duration of infectiousness.[3] It is estimated that the disease currently affects 48.5 million people yearly, resulting in nearly 295,000 deaths.[4]

Pertussis

- **Pertussis**

- serious disease especially for babies
- most babies who get pertussis have to be hospitalized and some even die

Pertussis germ

- lives in the mouth, nose, and throat
- spreads through coughing and sneezing
- spreads very easily from parent to child or child to child

Pertusis

Once infected

- takes 5-10 days to get sick

Symptoms

- adults usually do not get very sick
- children can have
 - fever
 - coughing
 - severe cough with a "whooping" sound
 - vomiting and exhaustion after severe coughing
- difficulty breathing

Complications

- pneumonia
- seizures
- brain damage
- death

Children under 7 years of age need to be vaccinated against pertussis.

Prevention

- The primary method of prevention for pertussis is vaccination. There is insufficient evidence to determine the effectiveness of antibiotics in those who have been exposed but are without symptoms.[\[7\]](#) Prophylactic antibiotics, however, are still frequently used in those who have been exposed and are at high risk of severe disease (such as infants).[\[3\]](#)

Prevention

- The duration of protection is between five to ten years. This covers childhood, which is the time of greatest exposure and greatest risk of death from pertussis.[\[5\]\[11\]](#) For children, the [immunizations](#) are commonly given in combination with immunizations against [tetanus](#), [diphtheria](#), [polio](#) and [haemophilus influenzae type B](#).

Management

- Persons with pertussis are infectious from the beginning of the catarrhal stage (runny nose, sneezing, low-grade fever, symptoms of the common cold) through the third week after the onset of paroxysms (multiple, rapid coughs) or until 5 days after the start of effective antimicrobial treatment

- Antibiotics decrease the duration of infectiousness and thus prevent spread.[\[3\]](#)
- The antibiotic [erythromycin](#) or [azithromycin](#) is a front line treatment[\[7\]](#)



Poliomyelitis

- **Poliomyelitis** , often called **polio** or **infantile paralysis**, is an acute, viral, infectious disease spread from person to person, primarily via the fecal-oral route.^[1]

- Although approximately 90% of polio infections cause no symptoms at all, affected individuals can exhibit a range of symptoms if the virus enters the blood stream.^[3] In about 1% of cases, the virus enters the central nervous system, preferentially infecting and destroying motor neurons, leading to muscle weakness and acute flaccid paralysis

- The time between first exposure and first symptoms, known as the incubation period, is usually six to 20 days, with a maximum range of three to 35 days.^[19] Virus particles are excreted in the feces for several weeks following initial infection.^[19]

- The disease is transmitted primarily via the fecal-oral route, by ingesting contaminated food or water. It is occasionally transmitted via the oral-oral route. Polio is most infectious between seven and 10 days before and after the appearance of symptoms, but transmission is possible as long as the virus remains in the saliva or feces.

- Factors that increase the risk of polio infection or affect the severity of the disease include immune deficiency,^[20] malnutrition,^[21] tonsillectomy,^[22] physical activity immediately following the onset of paralysis,^[23] skeletal muscle injury due to injection of vaccines or therapeutic agents,^[24] and pregnancy.

Polio

Symptoms

- fever
- severe muscle pain or spasm
- paralysis
- headache
- some people do not look or feel sick, but can still spread the disease to others

Complications

- long-term paralysis
- inability to breathe without the help of a machine
- death

Treatment

- There is no [cure](#) for polio. The focus of modern treatment has been on providing relief of symptoms, speeding recovery and preventing complications. Supportive measures include [antibiotics](#) to prevent infections in weakened muscles, [analgesics](#) for pain, moderate exercise and a nutritious diet.^[55] Treatment of polio often requires long-term rehabilitation, including [occupational therapy](#), [physical therapy](#), braces, corrective shoes and, in some cases, [orthopedic surgery](#).

Prevention

Passive immunization



Polio Vaccines

- Two types of vaccine are used throughout the world to combat polio.
- A- Oral Polio Vaccine: based on one serotype of a live but attenuated (weakened) virus.
- B- Injectable Polio vaccine : inactivated or killed virus vaccine .

- As a precaution against infection, public swimming pools were often closed in affected areas during poliomyelitis epidemics.
- Hygiene
- Good Nutrition



Measles

- spreads easily between people
 - can cause serious illness in children
 - can cause death in serious cases
- ; Measles virus is the cause of measles. This virus is a single-stranded RNA virus,
- spreads through coughing, sneezing, or just talking to an infected person

Once infected

incubation period : takes 8-12 days to get sick

Is a Person Contagious During the Incubation Period for Measles?

A person is not contagious during the measles incubation period. A person is mildly contagious when he or she first experiences symptoms, and is most contagious about four days before the onset of the measles rash. Some risk of measles transmission lasts until about four days after the rash starts.

Measles

Early Measles Symptoms

Early symptoms of [measles](#) occur several days before the measles rash begins. These can include:

- High fever (up to 105°F or 40.6°C)

- Hacking cough

- Red, watery eyes ([pink eye](#))

- Tiredness

- Muscle and body aches

- Irritability

- Swelling of the eyelids

- Runny nose

- Rash that begins along the hairline and moves downward to the face, neck, body, hands, and feet

Complications

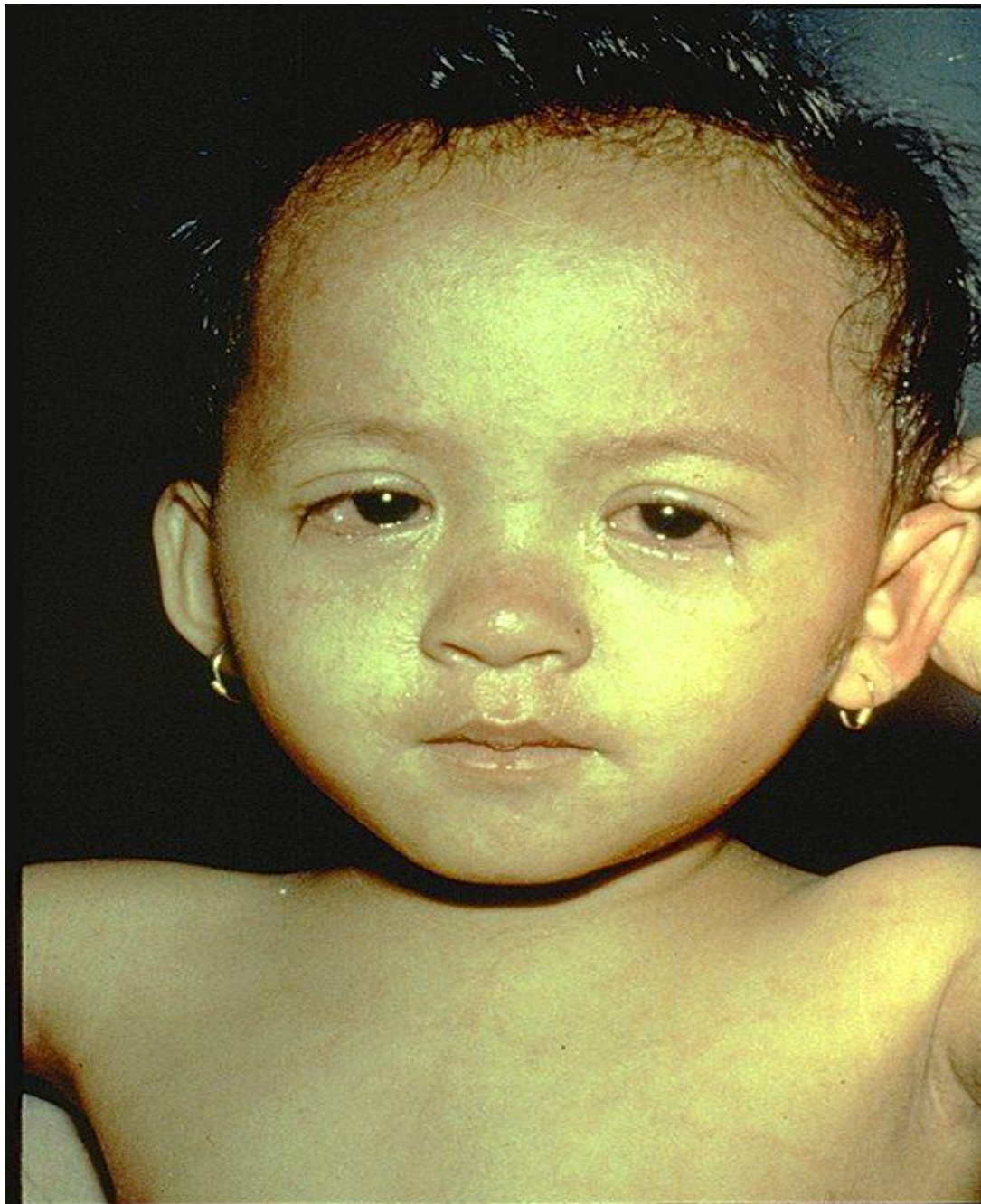
- pneumonia
- ear infections
- encephalitis : brain damage
- seizures
- death



child has a bad rash caused by measles

- eyes are red and runny
- has a runny nose and fever





11/11/2013



Vaccination

Two types of vaccines:

- Live/ attenuated
- Killed/ Inactivated

Live/attenuated Vaccines

- Highly effective
- They induce slight infection—→long lasting protection even with a small dose.
- BCG, measles, MMR, and polio (trivalent oral polio vaccine – TOPV or Sabin vaccine) are live vaccines.

Inactivated/killed Vaccines

- Produce a lower immune response to a single dose in comparison to live vaccines
- Multiple doses are usually required to give long-term protection
- Pertussis , polio (injectable, inactivated polio vaccines IPV), are inactivated vaccines
- The vaccines for diphtheria and tetanus are prepared from the bacterial exotoxin rather than the bacteria organism itself. These are referred to as toxoid vaccines.

Rationale for Immunization

Every year, out of 100 children in the world:

- 3 die from measles
- 2 from pertussis
- 1 from tetanus

For every 200 children who are infected with polio virus, one will be crippled for life.

Expanded Program on Immunization

- WHO set Target: 90% of all children below one year be fully immunized by the year 2000.
- Immunization is an essential part of PHC
- It is a program that was started worldwide by WHO / UNICEF, called (EPI).

Immunization

- EPI (Expanded Program on Immunization) was launched in Jordan in 1979
- Jordan achieved universal child immunization in 1988.

2004 Recommended vaccination schedule/ CDC

type/age	0m	1m	2m	4m	6m	12m	15m	18m
HeptB								
D, T, P								
Inact polio								
MMR								
hib								
flu								

National vaccination schedule/ Jordan

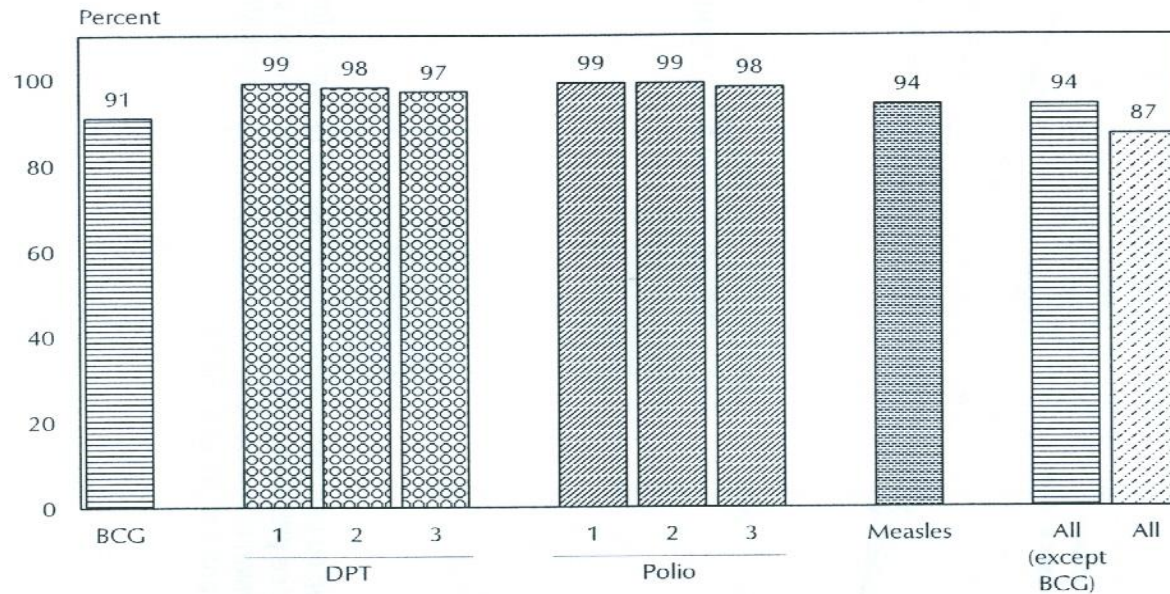
type/age	Bir	1m	2m	3m	4m	6m	9m	15	18
BCG									
HB									
DPT									
OPV									
MMR									
measl									
tetnus									

Age	Type of Vaccine	Date given , Initials & comments	Wt. Kg	Ht. cm	Hc. cm
after birth & up to 2 weeks	BCG	I.D. 31/03. 2003			
	PKU , TSH , T4 & B- Thal.				
	Hep. B1	I.M. 31.03. 2003	3.6	54	33
6 weeks	Hep. B2	I.M. 28.04. 2003	4.9	55	36
2 Mon.	DTP 1	DTaP 1 I.M. 10.06. 2003			
	OPV 1	IPV 1 10.06. 2003			
	Hib. 1	I.M. 10.06. 2003	6.0	61	38
3 - 4 Mon.	DTP 2	DTaP 2 I.M. 10.07. 2003			
	OPV 2	IPV 2 10.07. 2003			
	Hib. 2	I.M. 10.07. 2003	6.5	65	39
5 - 6 Mon.	DTP 3	DTaP 3 I.M. 10.08. 2003			
	OPV 3	IPV 3 10.08. 2003			
	Hib. 3	I.M. 10.08. 2003	7.2	67	40.5
6 Mon.	Measles	S.C. 28.09. 2003	8.0	70	42
7 Mon.	Hep. B3	I.M. 15.09. 2003	7.9	69	41
9 - 10 Mon.	MMR 1	S.C.			
11 - 12 Mon.	Tuberculin Test (PPD)	I.D.			
12 - 13 Mon.	Varicella (Chickenpox)	S.C.			

Age	Type of Vaccine		Date given , Initials & comments	Wt. Kg	Ht. cm	Hc. cm
15 Mon.	MMR 2		S. C.			
15 - 18 Mon.	DTP 4	DTaP 4	I. M.			
	OPV 4	IPV 4				
	Hib. 4		I. M.			
24 - 25 Mon.	Meningococcal A+C		S. C.			
	Hep. A1		I. M.			
	Hep. A2					
	Urine Screening					
4 - 6 Years.	DTP 5	DTaP 5	I. M.			
	OPV 5	IPV 5				
	MMR 3		S. C.			
10 Years & More	Typhoid (strain Ty2) No.1		I. M.			
	Typhoid (strain Ty2) No.2		I. M.			
11 - 12 Years	TD		I. M.			
	Hep. B4		I. M.			
	Varicella 1		S. C.			
	Varicella 2		S. C.			
Years For high risk patients	Influenza		I. M.			

Vaccination Coverage

Figure 10.1 Percentage of Children Age 12-23 Months with Specific Vaccinations



JPFHS 2007

Coverage for the first and second doses of DPT is slightly higher (about 99 percent for the first dose and 98 percent for the second dose) than that for the third dose of DPT (97 percent). Although DPT and polio vaccines are often administered at the same time, polio coverage is slightly higher than DPT coverage. The dropout between the first and third doses of the polio vaccine is slightly higher than that between the first and third doses of DPT.

Polio eradication goal

- 14 years back the initiative of Polio eradication was launched by WHO
- Cuurently 19 countries of the Middle East Region are free of polio.
- Jordan is polio free since 1995

Factors affecting immunization coverage

- Parental/ gurdian knowledge and awareness
- Health workers knowledge and counseling skills
- Mass media
- Interpersonal communications

Cold Chain

- Vaccines must stay cold all the way from the manufacturer to the child
- The equipment and people that keep vaccines cold from the manufacturer to child are altogether called cold chain.
- Requirements for storage and refrigeration are important info to know.
- All vaccines must be used within 8 hours after dissolution.

Evaluation of immunization programs

Target population must be identified:

- Number of births
- Number of visits in a year
- Number of children needing vaccination in a particular year (deaths, drop outs..etc).
- Immunization records should be kept at health facility
- A copy of the immunization record should be available with parents

Child Morbidity

Acute Respiratory Infection

- Acute respiratory infections cause four and a half million deaths among children every year, the overwhelming majority occurring in developing countries.

- Pneumonia unassociated with measles causes 70% of these deaths; post-measles pneumonia, 15%; pertussis, 10%; and bronchiolitis and croup syndromes, 5%. Both bacterial and viral pathogens are responsible for these deaths.

Bacterial Causes

- The most important bacterial agents are:
- a-*Streptococcus pneumoniae*
- b-*Haemophilus influenzae*
- c-*Staphylococcus aureus*.

Viral Causes

a-Respiratory syncytial virus, 15%-20%;

- b-Parainfluenza viruses, 7%-10%;
- c- Influenza A and B viruses and Adenovirus, 2%-4%.
- Mixed viral and bacterial infections occur frequently.

Risk Factors

- Risk factors that increase the incidence and severity of lower respiratory infection in developing countries include:
- A- large family size,
- B-Lateness in the birth order,
- C- Crowding,

Risk Factors

- D-low birth weight,
- E- malnutrition,
- F-vitamin A deficiency,
- G-lack of breast feeding,
- H- pollution,
- E- young age.

- Effective interventions for prevention and medical case management are urgently needed to save the lives of many children predisposed to severe disease.

Diarrhea

- Diarrheal diseases are one of the leading causes of childhood morbidity and mortality in developing countries. An estimated 1,000 million episodes occur each year in children under 5 years of age. Diarrhea causes an estimated 5 million deaths in children under 5 years of age per year.

- About 80% of these deaths occur in children in the first 2 years of life.

Approximately one third of deaths among children under five are caused by diarrhea.

- Most diarrheal illnesses are acute, usually lasting no more than 3-5 days and are secondary to
- infectious causes (bacterial, viral, and parasitic). Infectious agents that cause diarrheal disease are
- usually spread by the fecal-oral route, specifically by a) ingestion of contaminated food or water
- b) contact with contaminated hands.

Causes

- The following are the commonest etiologic agents of diarrhea for all ages in decreasing order of prevalence obtained from pooled data worldwide:
- Rotavirus, Enterotoxigenic Escherichia coli (ETEC) Bacteria , shigella, campylobacter, *Vibrio cholerae*, and non-Typhoidal Salmonella.

- Noninfectious causes of diarrhea include drugs, surgical conditions, systemic infections and food intolerance.