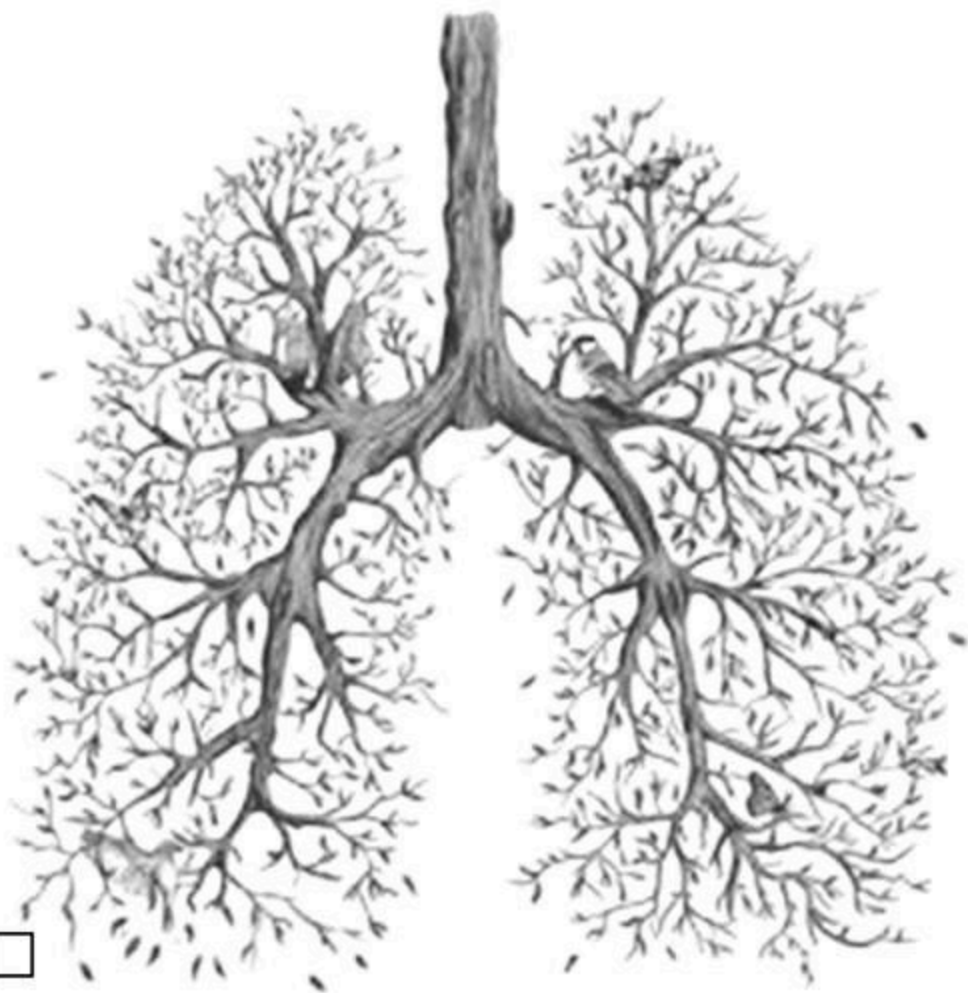


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Medical Committee
The University of Jordan

Community Medicine



Slides

Sheet

Lecture # 12

Date: 17/10/2014

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Vaccination

I know your intentions for apologizing (you want the slides), But don't worry I will be giving you the slides on Sunday 😊 😊 😊.

Today I'll discuss a very important topic about vaccination which is considered as one of the preventive exercises (actions) of evacticous diseases.

It is really important topic considering children because the main cause of morbidity and then mortality is infectious diseases, whereas in adults the non-communicative diseases is the major reason for death not infectious diseases.

We talked about the methods of spread in the last lecture but in this lecture we will cover the treatment which is vaccination.

Important points:

-vaccination: is protecting your newborn from diseases by producing or increasing their immunity.

-How does vaccines work and are they safe? She didn't answer the question 😞

-It is really important to keep an immunogenisation record.

-when talking about vaccination we are actually considering infectious diseases.

-The first line of defense against those (infectious diseases) is the immunity of the body.

-**Immunity**: It is the defense mechanism of the body against the invasion of pathological microorganism.

-We care about children vaccination because their immunity is in the development stages (not complete), so we give them vaccines to provide them with a boost for their immunity in order to help the body defend itself against bacteria and viruses.

Human body immunity includes:

A) **General immunity** (General defensive mechanisms):

It is available from birth and it is the first barrier in human immunity, Ex:

1-Skin.

2-Mucosa (also called the second gate of defense): which surrounds many organs in the body such as the heart, kidney and abdomen.

3- Tears and blood... substances that inhibit motility and multiplication of microorganisms.

B) **Specific immunity**: develops against specific microorganisms and is acquired by two ways:

1-**Active immunity**: you get it by getting the disease itself.

Features of active immunity:

A-Long lasting and need long time to be produced.

B-More effective and specific.

2-passive immunity: you receive it by receiving antibodies and by reducing the toxins of the microorganism rather than killing it.

-Where do you think we can get a disease in which we fight toxins rather than killing the microorganism that produce it?

Diphtheria and Tetanus.

-Once you get the disease it starts it work so it is faster than active immunity.

-How do we get it (passive immunity)?

1-Ether from the antibodies passing from the mother to the fetus through the placenta, It does its action through the first 6 months of age even If we didn't give him vaccines for measles or polio he has antibodies from the mother (After 6 months it ends the passive immunity so we should give the new born posters doses to increase his immunity.

2-non-specific by injecting non-specific α -globulins or specific immunoglobulins for specific diseases such as hepatitis B, Tetanus, and mumps virus.

Active immunity	Passive immunity
Long lasting	Multiple doses are required
Highly effective	Given by injection
Ex: BCG, MMR	EX: pertussis, polio

-Direct and indirect methods can't prevent the disease at all but it can reduce its complications to subclinical level and will not develop further.

For example children may have measles disease but they will only have simple symptoms such as runny nose but they will not develop to a much further complications. (A sub clinical disease).

-government should give priority to certain vaccines over other (especially in developing worlds, because certain vaccines are very expensive to these developing worlds) considering the following:

1) The prevalence of the disease for example why to give a vaccine for a HIV when there aren't much people who have the disease (we don't have such vaccines but for example), so we give priority for other vaccines (but some developing countries give priority for disease even if they do not have the disease.

تبي vaccine :p vaccine

2) Complications of the disease (How severe is the disease ?) we have some infectious disease that don't have much risky complications such as influenza which causes for example a runny nose, on the other hand, measles and rubella have a dangerous complications.

3) How much the country can afford to buy vaccines (finance of the country).

***reverse complication like suster vaccines and post sympathetic neuralgia
(please check the names after you receive the slides)

-We have two types of vaccines which are:

1) **Attenuated vaccines** and it stimulates the immune system: they have to be light and attenuated at the same time, and it stimulates the immune system more than the killed vaccine (inactivated vaccine) so they are:

A) Long lasting vaccine.

B) Highly effective.

C) Given by injection or orally like MMR (Measels, Mumps and Rubella vaccine), MCG, and polio.

2-**Light inactivated vaccine**: multiple doses are required because it doesn't stimulate the immune system (reverse of the attenuated vaccine) and given by injection, examples include lepromatosis and polio (the one given orally)

Note: we have two types of vaccines for polio one given orally for children's and this type is attenuated vaccine and the other type is injectable and it is a killed vaccine.

-How much is it important to have a vaccine schedule as a primary health preventive exercise (action)?

It is of huge importance for example:

A) Diphtheria in developing world is one of the killing diseases, also one of ten individuals that are infected with it die. And causes a lot of complications such as; paralysis and heart failure, also may cause coma and death within 6_10 days, (those are present at the end of the sheet don't memories them now).

B) Titanus: it is very serious in neonates because it affects muscles (especially respiratory muscles).

This disease (Titanus) kills most infected children and caused 6.7 thousand deaths in Afghanistan according to a study made in 2002.

C) Polio: in 1% of the cases it (virus) can enter the central nervous system causing paralysis, destruction of motor neurons leading to muscle weakness and acute muscle paralysis and lifelong deformity.

(Polio was not detected form 2005 so it is not a big deal in these days but in 1994 polio was one of the important disease in the communities)

Incubation period: Time from entry of the disease to the system till the symptoms appear (it is important to know the percentage of carriers in the society).

Universal immunizatioon of children sex vaccine preventable diseases (We will be talking about them at the end of this lecture).

Note: Measels when it hits well-immune child it only cause rash, heat and runny nose (subclinical) and end up in 3-4 days, where if it hits a poor-immune child it will cause complications such as: encephalitis, pneumonia.

***Nutrition affects directly the immunity of children.

Differences in the vaccination coverage among subgroups of population are of great assistance for program planning and targeting recorders to areas mostly. Ex: we will have high coverage for tuberculosis vaccine mostly in Amman and only 50% coverage in other places and that is definitely a problem because the coverage reduces the prevalence of a disease, the complications and the mortality.

There is something called expanded program in immunization in which they make a national program for the important vaccines, it started worldwide in 1974 and in Jordan it started in 1979.

At the moment we have a universal vaccine program starting from the early eighties.

Jordan Has stopped using polio virus vaccine since 2005 despite that it was last epidemic in 1994 (but it hasn't been eradicated until few years later).

***2012 JPFHS (Jordan population family health survey) has surveyed information about vaccines coverage for all children (5 years old) preceding the survey (to see the coverage of the vaccine).

***according to the world health organization (WHO) children are considered fully vaccinated when they have received the vaccination against:

1- Tuberculosis.

2-Three doses of DTP (diphtheria, tetanus, and pertussis)

3-Three doses of polio.

4-One dose of Measels vaccine at the age of twelve months.

-How to know that this child had a vaccine?

1-Vaccination card (more accurate so we depend mostly on it).

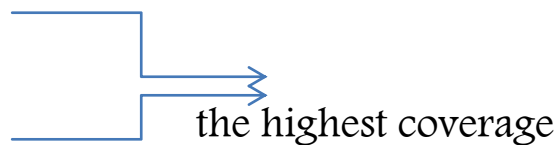
2-Verbally.

Coverage

According to the figures in the slides we are talking about each disease individually. 😊

1-Triple vaccine coverage 99%

2-polio coverage of 97%



3-measels slightly less than those above with a percentage of 93%

4-BCG has the lowest coverage of 59%.

-Slight variation in vaccine coverage can be seen according to:

1-Gender: according to JPFHS girls are better vaccinated than boys (88% of girls are vaccinated compared to 86% of boys), and we can't give a clear reason about this percentage.

Note: rules must be applied to increase the coverage and so as improving it by creating health centers with fair distribution also restrictions must be applied in schools to make sure children are getting proper vaccination.

2-Geographical region: urban areas are better vaccinated with a total percentage of 89% compared to 77% according to JPFHS in 2007.

3-Education of the mother (don't memorize the numbers): those with no education so relatively low vaccination coverage for their children (particularly that for BCG), 59% for children with non-educated mothers and 89% for children with educated mothers.

***Before 2002 children in Jordan didn't always receive the BCG vaccine, it was included as part of the national vaccination program only following JPFHS surveys (the most important statistical health study in Jordan).

Control of elimination and eradication of vaccine preventable diseases results in:

A) Reducing illness outcomes.

B) Limits the disruptive impacts associated with outbreaks of diseases in communities, schools and institutions.

So it reduces illness and if we have an outbreak the reaction will be lower if we have good vaccine coverage.

***Elimination of a disease: requires the reduction of the causes of a disease to zero in defined geographic region.

***Eradication of a disease: is achieved when the elimination can be sustained without ongoing intervention (at least for 10-20 years). The only vaccine preventable disease that has been globally eradicated so far is smallpox in many countries in the world including Jordan.

*****Indication and contraindication of vaccines.**

-Indicated vaccine: you have to give it now.

-Contraindicated vaccine: you can postpone it.

*****All vaccines have limitations and contraindications such as:**

A) Severe allergic reactions especially in whooping cough vaccine which leads to anaphylactic shock, so they don't give it if it causes allergy, so precautions must be taken to prevent that from happening.

B) For pregnant women we shouldn't give them the light attenuated vaccine, instead we use the inactivated or antitoxins such as (tetanus vaccine).

*****Storage and handling**

There are certain ways for storing and handling each type of vaccines as following:

1-Injectable vaccines: they are packed in multi dose vials or manufacture filled single-dose syringes (in the past days they used to store 5 or 10 vaccines together).

2-The live attenuated vaccine: Nasal spray influenza vaccine is packed in single dose sprays.

3-vaccines are stored either in the refrigerator (temperature from 2-8), while other need to be stored at freezers with a Temp of -15.

*****How are vaccines administrated?**

1-intramuscular.

2-subcutaneous (under the skin)

3-orally (she didn't mention it here, but we said so at the beginning of the sheet)

***The main diseases that we will be talking about which are covered by national vaccine program in Jordan:

1-Measels 2-Tuberculosis 3-Pertussis 4-Diphtheria 5-Polio 6-Titanis

Diphtheria

1-bacterial infection (Bacteria gives more symptoms of infection than viruses).

2- Can cause serious illness.

3-Kills 1 of 10 people infected with it (if not treated) .

General feature of diphtheria:

1) Lives in mouth, nose and throat of an infected person.

2) Spreads through droplet infection (through the air).

3) If not treated the child could die from suffocation.

4) Once infected with diphtheria the incubation period is 2-7 days with an average of three days (considered as short incubation period).

Symptoms:

A) Some people might not feel anything or just look sick.

B) Others might have:

1-sore throat 2-fever 3-chills 4-difficulty in swallowing

5- Thick gray coating of the throat

(I will not be asking about symptoms bas ba7o6esh bthemti 9ara7a)

***All infections give us a common sign infection which is fever.

***Most respiratory drug diseases show signs of:

1-runny nose 2-caugh 3-fever (the most important)

Complications of diphtheria

Within 6-10 days serious problems and complications begin to appear such as:

1) Suffocation 2) paralysis 3) heart failure 4) coma 5) Death

How to treat diphtheria:

1) Anti-toxins:

Is the most important thing, while waiting the laboratory result we should fight toxins.

2) Antibiotics:

Are given to wipe out the bacteria to prevent the spread of the disease and to protect the patient from developing symptoms.

Management slide is not important.

Isolation of the patient:

According to the incubation period.

We should keep a nurse with the child in the isolation to maintain the right emotional environment for the kid and this is missing in our societies (3enna zhorat o Panadol o rawa7at).

The most primary health care service that we are still behind in is counseling.

Note: it is really important to know the incubation period to know the period of isolation required.

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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.... (Don't have the slide to complete☺)

In Diphtheria we have a very thick membrane in the throat with a very bad smell. So when the patient comes in you can tell that he has infection from the very bad smell.

Tetanus

Is one of the most important diseases (bacterial infection) that need vaccination in the national program of vaccination in Jordan and all over the world.

It is a medical condition characterized by a prolonged contraction of skeletal muscle fiber, the primary symptoms are caused by Tetanospasim, neurotoxins produced by the Gram positive, Rod-shaped, obligate anaerobic bacteria, clostridium tianic.

Once infected the incubation period of tetanus may be up to several months but is usually about eight days, (notice that the incubation period of tetanus is larger than that of diphtheria).

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Symptoms:

- 1) Stiff muscles in the jaw and neck with difficulty in swallowing; it is also the most dangerous symptom in children because it may affect the respiratory muscles and the sucking muscles that help neonates in breast feeding.
 - 2) Difficulty opening mouth.
 - 3) In the slide
-

Complications:

- 1-broken bones from muscles spasm.
 - 2-breathing problems and lung infection.
 - 3-coma and death.
- *Child has painful muscle spasm from tetanus.

*nearly impossible for him to move or control muscles in the body.

*Baby who has tetanus cannot breast-feed or opens his mouth because the muscles in his face have become so tight (Needs a test tube to eat)

Tetanus Bacteria transfer:

1) Lives in dirt and the intestines and feces of animals (transferred to babies through infectious instruments used during delivery of a baby (exposed to umbilical cord during baby delivery.

2) Enters the body through cuts and other wounds.

*Baby who has tetanus is completely rigid.

*tetanus kills most babies who get it.

*infection can happen when newly cut umbilical cord is exposed to dirt that's why it's really important to have vaccines for newborns against tetanus.

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Treatment

1) Anti-toxins (most important).

2) Tetanus immunoglobulin IV or IM.

3) Metronidazole IV for 10 days.

4) Diazepam.

Pertusis

We give triple vaccine for diphtheria and tetanus and pertussis commonly called whooping cough associated with vomiting.

Called 100 days cough because it gives prolonged action, children for example even when treated keep coughing for 3-4 months.

*it is a highly contagious bacteria disease caused by *Bordetella pertussis*; in some countries the disease is called the 100 days cough.

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, the coughing lasts approximately six weeks before subsiding.

***prevention of pertussis by vaccination is of primary importance given the sinusness of the disease in children, although treatment is of little direct benefit to the person infected, antibiotics are recommended because they reduce the duration of the infectiousness , It is estimated also that the disease currently affects 48.5 million people yearly resulting in nearly 295000 deaths.

*Why is it dangerous in children?

Because a lot of mucus is excreted and it usually gets out by coughing but babies with age from 6-12 months don't have a strong cough that can excrete mucus that's why they die by suffocation.

It has an incubation period of 5-10 days so it is also considered as a disease with short incubation period.

Symptoms:

1- fever 2- cough 3- severe cough

Complications:

1- pneumonia

2- measles

3- brain damage

4- death

Children below 7 years need to be vaccinated against pertussis.

-The primary method of prevention is vaccination (inactivated vaccine) , there is insufficient evidence to determine the effectiveness of antibiotics in those who have been exposed but are without symptoms, prophylactic antibiotics are still frequently used in those who have been exposed and at high risk of developing the disease such as infants.

Management not really important

They give antibiotics to deal with the suction of mucus and thus prevent spread and the drug that is used is erythromycin and streptomycin (not important).

If you believe then you can succeed

حاولت أساويها أم الفلن بس والله ما زبط ☹️



Sheet # 12

Community Medicine

Dr. Samar

سامحونا على أي خطأ 😊

Date: 17/10/2014



The end