This lecture will include three subjects:

1- Vaccination
2- Child morbidity
3- Adolescence

Vaccination

There are two type of vaccination:

1- live/ attenuated
2- killed/ inactive

live/attenuated

- it's usually given for ill child or immunocompromized child.
- It causes the infection itself (slight infection)
- Live/attenuated vaccines are much better than killed vaccines because cause a quite immunity response not passive immunity.
- They induce slight infection long lasting protection even with a small dose.
- Examples: BCG, measles, MMR (measles mumps rubella) , and polio (trivalent oral polio vaccine – TOPV or Sabin vaccine) are live vaccines.
- injectable polio vaccine is a killed vaccine

Killed/inactive

- Produce a lower immune response to a single dose in comparison to live vaccines
- They don't give long-term immunity, that's why every 5,6 years a dose is injected.
- 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.
- Whooping cuff vaccine, injectable polio vaccine and pertussis vaccine are examples of killed vaccines.

Rationale for Immunization

Vaccination: it's an important rationale and universal preventive and protective service.

In developing world (3rd year countries) every year, out of 100 children:

3 die from measles
2 from pertussis
1 from tetanus

so these main infectious diseases constitute 6% of deaths in the world (developing in this case)

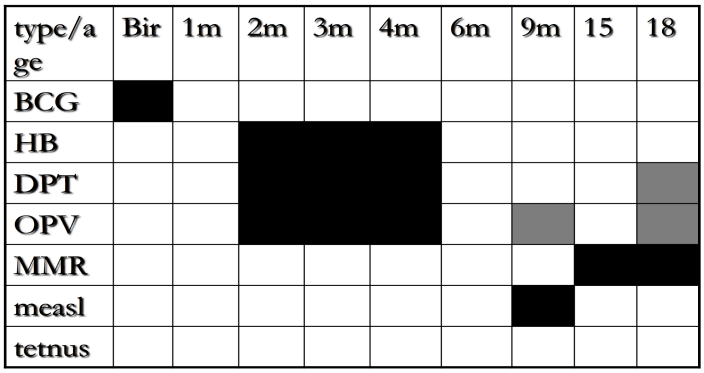
For every 200 children who are infected with polio virus, one will be crippled for life.

Expanded Program on Immunization

- The target is to have vaccine coverage more than 90% for all children in developing world for children less than one year by the year of 2000
- EPI focuses more on developing world, because developed world has already passed the 90 % coverage
- Immunization is an essential part of PHC.
- It is a program that was started worldwide by WHO / UNICEF, called (EPI).
- In Jordan:

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

National vaccination schedule/ Jordan



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

- The recommended vaccination schedule differ from country to another depending on epidemic, diseases and seriousness of the disease.
- In Jordan : BCG is given at birth

  Hepatitis B, Triple vaccine DPT and OPV (oral polio vaccine) are given at 2nd, 3rd,and 4th month.

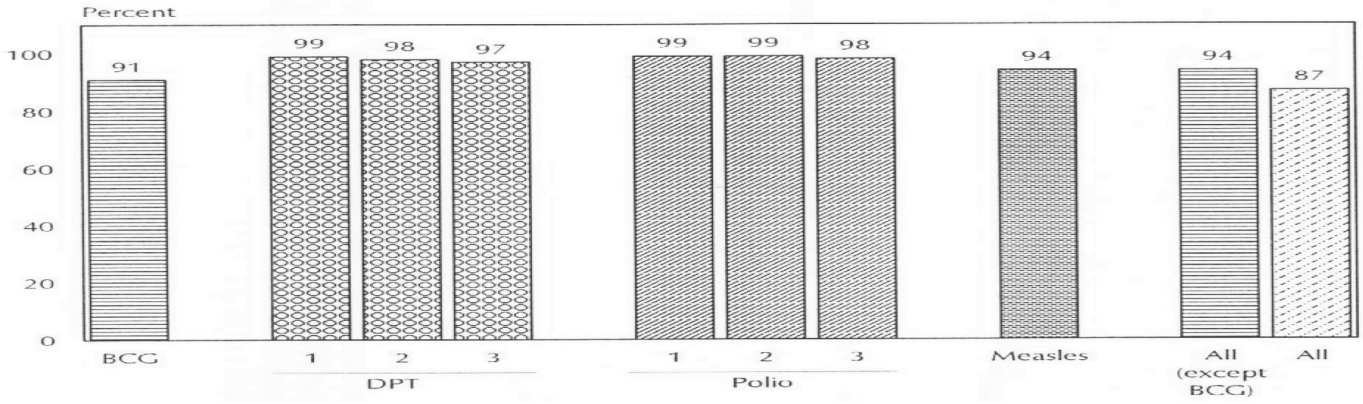
  MMR is given at 9th and 18th month. Not the 15th, WHY?

  Because they found children get measles before the 15th month.

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 Hep. A2	I. M.			
	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.			

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	39
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	6.6	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
6 Mon.	Measles	S.C. 28.09.2003	8.0	70	42
7 Mon.	Hep. B3	I.M. 15.09.2003	7.9	69	34
9 - 10 Mon.	MMR 1				

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



- According to 2012 study:
- we have and overall coverage (without BCG) of 94%, and with BCG 87% (many children skip BCG vaccination).
- First Dose is always the highest percentage as in DPI & Polio.
- NOTE (The Doctor read the number so you have to look at them).

Polio eradication goal

• 14 years back the initiative of Polio eradication was launched by WHO
• Currently 19 countries of the Middle East Region are free of polio.
• Jordan is polio free since 1995, unfortunately, they've found some cases in Syrian Refugee camp "AlZa'tari"

Factors affecting immunization coverage

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

Cold Chain

- ✓ It talks about how to storage and transport vaccines.
- ✓ Short time ago, there was a measles outbreak because of bad-vaccination storage.
- ✓ Vaccination should be stored in cold areas and transported in covered-icebox and not exposed to light.
- ✓ 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:

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

Child Morbidity

What are the common causes of child morbidity?

- Acute respiratory tract infection
- Diarrhea

Acute respiratory tract infection

Acute respiratory infections are number one cause of morbidity in general, cause four and a half million deaths among children every year, the overwhelming majority occurring in developing countries(actually number one cause in developing countries).

Pneumonia unassociated with measles causes

- 70% of these deaths are first attack pneumonia.
- post-measles pneumonia, 15% (mainly with children with malnourishment and can cause infectious diseases and diarrhea – decrease absorption)
- pertussis, 10%
- 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 pneumonia
b-Haemophilus influenza
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 (starts with viral infections, then secondary bacterial infections occur; due to drop in immunity)

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,

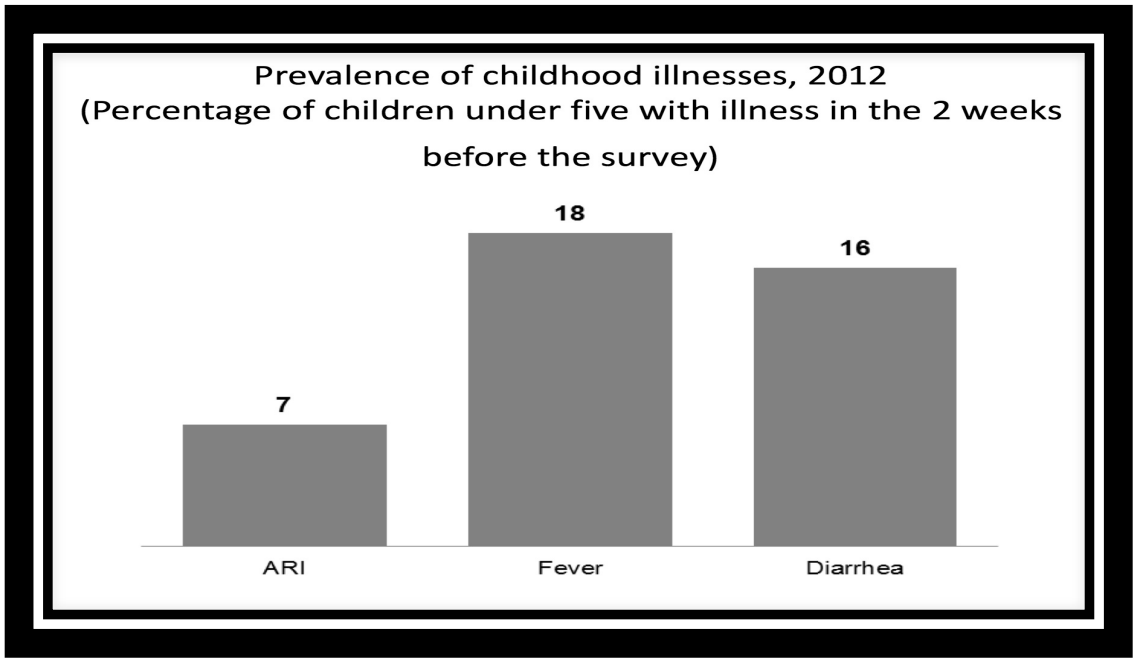
C- Crowding, (respiratory infections are easily transferred in crowded areas by droplets)
D-low birth weight,
E- malnutrition,
F-vitamin A deficiency,
G-lack of breast feeding(which means no Igs " passive immunity " for the child).
H- pollution,
E- young age.
Effective interventions for prevention and 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 (by dehydration) in developing countries. Diarrhea causes an estimated 5 million deaths in children under 5 years of age per year.
Children who lose more than 20% of their body weight this will lead to dehydration and if it increase to 25% they will go into a shock. (which means death)

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. Because they have less weight so it's easy to reach the 20%. (so children are more prone to go into dehydration)
Most diarrheal illnesses are acute, usually lasting no more than 3-5 days and are secondary to Infectious causes (bacterial, viral, and parasitic). The fecal-oral route usually spreads infectious agents that cause diarrheal disease, 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 (#1 cause) , Enter toxigenic 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 (glucose intolerance, lactose intolerance).



Adolescence

Adolescence: that period in a person's life which extends from the onset of the physical changes of puberty until the achievement of adulthood and independence. WHO defines adolescenceas individuals between the ages 10-19 years

It is a period of rapid change and great turmoil, as the adolescent endeavors to come to terms with himself, his limitations and his potential, and with the world outside himself.
Nowadays, adolescence range is increasing and may reach 25 years.
We start diagnosing personality disorders after the age of 19 years; when individuals have already created their personalities (ex. of personality disorders: obsessive personality, border line disorder, etc...),adolescence also includes psychological changes.
Adolescence differences varies depending on whether it is biological, psychological, social, or economic , legislative in nature

Important milestones include:
Late childhood (5-10yrs)
Puberty (10-15yrs)
Early adolescence (13-16)
Late adolescence (16-19)
are often cited as important milestones within the 10-19 category.

Why adolescents are important ?

1- They are a demographic force: Adolescents comprise one –fifth of every community population,or 1.2 Billion people world wide (Adolescents in the Arab world in 2000 were 31 millions. In 2020, it is expected to be 41 millions). In many parts of the developing world, where the growth rate is high, you can find that adolescents constitute (35-40 %) of the community
2- They are an economic force:
Adolescents contribute significantly to their families and communities through paid and unpaid labor. In many parts of the developed world, adolescents at the age of 16, they start to become independent; working & studying, and this is a positive economical force, Whereas in developing world, adolescents have more demands; education is the parents' responsibility, any problem they face, they rely on their parents, and most importantly they don't work, and this is a negative economical force
3- They are the future health:
Adolescents is a formative stage which presents a unique opportunity to shape young people's health behaviors and social attitudes, unhealthy adolescent (physically, psychologically or socially unhealthy) , will be an unhealthy adult (the problem usually stays with him/her)

CHANGES DURING ADOLESCENCE

1- PHYSICAL

Sexual changes
Puberty: norms and variations
Psychological aspect of biological change

2- PSYCHOLOGICAL DEVELOMENT

A. Cognitive and value system development: At the age of 12 years, young people first become capable of "formal operations: that is the ability of systematic and rational abstract thinking.

B. Identity formation

C. Social factors in adolescent development:
I. Transitional societies:
Gaps between the generations, nowadays these gaps are increasing because of the increase in marriage and delivery age to 30-40 yrs, specially in developed countries. in developed countries, where they marry at age of 30 and the age at first delivery is 32,, in Jordan, it is also increasing
II. New stresses (adolescents (including students) undergo some new stresses, like competitions in schools, etc)

III Modern life- style (Smoking, Junk food, no exercising and obesity)
IV. Urbanization and migration (cultural shock, migration from Tafileh to Canada)
V. New directions versus traditional societies
VI. Lack of economic or educational opportunity in a society where increasingly complex demands are made on young people and traditional family support is weakened.

Adolesence relationship with adults and peers

- 1- Generation Gap
- 2- Parents Guideness (in the developed world, parents guidance is poor, adolescents don't listen to their parents, even in Jordan, we have similar phenomenon (one or 2 children in a family will drive their parents CRAZY when they become adolescents))

3- SOCIAL FACTROS AND CHANGES AFFECTING ADOLESCENTS HEALTH

I. Demographic
II.Economic
III.Political
IV.Legal
V. Religious (it's a very important factor)
VI. Educational
VII. Technological and Scientific

Health and health-related issues of concern to adolescents

1- Life- Style and risk tailing behavior:

A. Smoking:

-One of the greatest health Hazards of modern times" as well as " the major cause of avoidable death"
A study shows that in high-class schools, students ,in the 10th to 12th grades, who admit smoking can reach up to 30%. This phenomenon is seen worldwide, but in developed countries, there are some policies to control it

B. Use of drugs:

-Experimentation and risk taking
-The problem exists in all societies and socioeconomic groups
- Multiple drug use has become more common
- Drug taking reflects self destructiveness.
-Danger of HIV leading to AIDS as well as suicide and accidents
-Damage of adolescent's life including their relationships with people, performance at school and recreation.
Drug abuse includes panadol, sleeping pills.

C. Use of alcohol

-Alcohol consumption has increased in quantity and frequency and the age at which drinking starts has declined. In Jordan, it is present, but in limited levels; due to religious factor

Lead to:

- Problems of road accidents, physical disorders, Crime, arrest for drunkenness, aggressiveness, Malnutrition, loss of (friends, family health Self esteem, and means of support).
- The consequences for adolescents include under attainment of developmental tasks, social decline , educational loss and unemployment.
- Accessibility plays a major role in the use of alcohol by adolescents. In developed world, it is highly accessible, whereas in KSA & UAE for example, it is less accessible

d. Accidents:

- Accidents number one cause of death and disabilities
- It is one of the major causes of death in adolescents throughout the world Costing lives, leave many disabled
- Many accidents have a behavioral component that may increase the risk of a harmful outcome -Adolescents lack life experience and needs supervision
- Adolescents should participate in activities that provide them with healthy outlets. One ex. Of policies regarding reduction of accidents is to increase the legal age of having a license (from 16 to 18 or 20)

E. Suicide

- It's the 2nd cause of death.
  The following numbers aren't for memorization.
- 68% of adolescents (males and females)usually or even always have a feeling of loneliness.
- 53% of these try to get rid of such feeling through bad friends, alcohol or drugs, and getting indulged in out-of-law acts.
- Out of these 30% (males) and 33%(females) think of suicide, 10% did try practically to put an end of their lives.
- (In Russia, reports show that 125,000 individuals, male and females , committed suicide).
- Suicide is one of the first 3 killers of adolescents in the USA.
- Also, it is one of the main causes of what is called (compulsory death) :non-natural " in all age groups of the American society .90% of adolescents who committed suicide were suffering nervous diseases or psychic problems (mental health problems).

2- EMOTIONAL PROBLEMS:

I. Adolescents subjected to special stresses:
A. Individual:
* Uncertain times
*Competition with peers
B. Social
* Conflict by new opportunities
*Conflict by new frustrations
II. Vulnerable or High-Risk –Groups:
♦Those who have experienced significant loss, bereavement , disrupted homes or parental
rejection and those in institutional care.
♦ Those suffering from physical or intellectual Impairment
due to chronic illness and or disability
♦ Those whose parents suffer from chronic physical or Mental illness
♦ They were poor, the unemployed
♦ Victims of physical, emotional or sexual abuse
♦ Pregnant adolescents and teenage parents
♦ Racial and ethnic minorities etc.

3- Biological and Medical Problems:
A. Common medical problems of adolescence:
♦Growth development image (height , body size, breast size) ♦Menstrual disorders(2nd amenorrhea - when a woman has a normal menstrual cycle, and then stops getting her period for 6 or more months
-, delayed menarche- late start of menstruation (at age of 16 or 17),Dysmenorrhea-painful periods-)
♦Acne (The more stress, the more acne, which causes psychological problems)
♦Scoliosis (Scoliosis is an abnormal curving of the spine)
♦Slipped upper femoral epiphysis
♦ Dental caries and bad oral hygiene.
B- Nutrition related disorders:
♦The problems of under and over nutrition in adolescents and youth are important
♦Boys double their body weight between 10-16 years of age
♦Pregnancy and sport increase nutritional needs
♦Malnutrition constitutes a particular risk factor for pregnancy in a adolescents
♦ Food faddism and extreme diets
♦ Fast food
♦ Most common nutritional disorder in adolescents is obesity, whereas for children, it's iron deficiency

• Two reports have outlined the results of screening adolescents for mental health problems within primary care. Donovan & McCarthy (1988) invited all 16–17 year olds registered with their practice to attend to discuss "any medical or general problems".

• Depression, acne and obesity were the most common problems reported in the Arab world and in Jordan.

4- Chronic And Disabling Conditions:

Physical handicaps:

-Dwarfism
- Cerebral palsy/paresis
-Visual, hearing , or speech defects
- Spine bifida/ other Genetic disorders
-Facial deformity
- Marked obesity

Chronic disease

- Epilepsy
- Asthma cystic fibrosis -Diabetes Juvenile
- Rheumatoid arthritis - Cardiovascular disorders - Malignancy
- Neurological infection

- ✓ Intellectual Handicaps, Learning disorders(ADHD) ,Mental retardation

Global School –base Student Health Survey

GSHS is a school –based survey conducted primarily among students aged 13-15 years. GSHS provides data that can help countries develop priorities establish programs, and advocate for school and youth health resources. This survey includes general screening (psychological & physical) for students aging (13-15) years, in Jordan, it's done every 5 years, it's aim is to study the most important physical & psychological problems, including attitudes

School Health Index

This is a popular self- assessment and planning tool for schools is now online and addresses safety .In addition to physical activity, health eating, and tobacco prevention programs and polices.

It measures behaviors and protective factors related to the leading causes of mortality and morbidity among youth and adults in Jordan:

• Alcohol and other drug use
• Dietary behaviors
• Hygiene
• Mental health
• Physical activity
• Protective factors
• Sexual behaviors that contribute to HIV infection.
• Tobacco use

• Violence and unintentional injury

School health services that should be provided at no cost to students include:
* Health physicals (routine, school and sports physicals) *Immunizations
*Administration of prescriptions for routine medications *Health education
*Care for acute illness and injury
*Care for common adolescent physical problems *Follow-up as requested by physician
*Nutrition counseling
• *Social, emotional ,and mental health counseling
*Family counseling
*Drug and alcohol counseling *Social service assistance *Pregnancy check-ups
*Abstinence counseling and family planning information
*Referral services

RECOMMENDATIONS

1. Building a database and indicators for adolescents in the Arab and Gulf States.
2- More effort should be done to build personalities having a great deal of awareness to assist the community in dealing with such group (adolescents) and strengthening the type of relation both at home and in the school.
3- Integrating health education, preventive and sexual education in the educational curricula where the school is a safe environment providing sound and scientific information in these fields
4- Organization of orientation courses for parents, teachers, social counselors in the educational institutions, and societies that are interested and active in the field of adolescence health.
5- more in depth studies of early marriage, late marriage and building relations and strong links
6- Conduction of national as well as regional studies about adolescents with special needs.
7- Governmental and non- governmental agencies should sponsor such studies especially those concerned with research work directed to the Arab girls.
8- Counseling Via Schools or Youth Centers.

"Science may set limits to knowledge, but should not set limits to imagination. "

Bertrand Russell

I'm sorry for this long sheet, please accept my apology and as you all know the doctor in this lecture kept reading the slides. So I re-typed them and added some extra information mentioned by the doctor.

Raad Zaid AlMuhaisen