بسم الله الرحمن الرحيم

الحمد لله رب العالمين والصلاة
والسلام على نبينا محمد خاتم الأنبياء
وسيد المرسلين وعلى آله وصحبه
أجمعين وبعد

Infant and Child Mortality/The five measures of infant and child mortality

- **Neonatal mortality,** the probability of dying in the first month of life
- **Postneonatal mortality**, the probability of dying after the first month of life but before the first birthday (the difference between infant and neonatal mortality rates)
- **Infant mortality** (1q0), the probability of dying before the first birthday

- **Child mortality** (4q1), the probability of dying between the first and fifth birthday

- **Under-five mortality** (5q0), the probability of dying before the fifth birthday.

- All of these rates are calculated per 1,000 live births, except for child mortality which is calculated per 1,000 children surviving to age one.

Children health.

- Child's health includes physical, mental and social well-being too.
- Each year more than 10 million children under the age of five die.
- At least 6.6 million child deaths can be prevented each year if affordable health interventions are made available to the mothers and children who need them.

Underlying causes of Child illness and death.

- **Poverty: More than 200 million children under five live in absolute poverty, on less than $1 per day.**
- **Under-nutrition and malnutrition: At least 200 million children under five are malnourished.**
- **High fertility and short birth intervals.**

Under-five mortality rate (U5MR) .

- **Indicates the probability of dying between birth and exactly five years of age, expressed per 1,000 live births, if subject to current mortality rates.**

- **It has several advantages as a barometer of child well-being in general and child health in particular. I**t measures an ‘outcome’ of the development process.

Under-five mortality rate (U5MR)

- **Is known to be the result of a wide variety of inputs:**
- **nutritional status and the health knowledge of mothers;**
- **level of immunization and oral rehydration therapy;**
- **availability of maternal and child health services (including prenatal care);**

Under-five mortality rate (U5MR)

- Income and food availability in the family;
- Availability of safe drinking water and basic sanitation;
- Safety of the child's environment, among other factors

- U5MR is less susceptible to the fallacy due that is a picture of the health status of the majority of children (and of society as a whole).

Post-2015 UN development agenda

- MDG 1: eradicate extreme poverty and hunger
- **MDG 2: Achieve universal primary education**
- MDG 3: promote gender equality and empower women
- MDG 4: reduce child mortality
- MDG 5: improve maternal health
- MDG 6: combat HIV/AIDS, malaria and other diseases
- MDG 7: ensure environmental sustainability
- MDG 8: develop a global partnership for development

MDGs and maternal/child health

- **Millennium Development Goal 4 aims to reduce child deaths by two-thirds between 1990 and 2015.**

- **Millennium Development Goal 5 has the target of reducing maternal deaths by three-quarters over the same period.**

MDGs and maternal/child health

- **Unfortunately, on present trends, most countries are unlikely to achieve either of these goals.**

- **A recent review of MDG progress, show that the world have only 32% of the way to achieving the child health goal and less than 10% of the way to achieving the goal for maternal health.**

Key facts (as of May 2012)

1-Every day approximately 800 women die from preventable causes related to pregnancy and childbirth.

2- 99% of all maternal deaths occur in developing countries.

3- Young adolescents face a higher risk of complications and death as a result of pregnancy.

- Skilled care before during and after childbirth can save the lives of women and newborn babies.
- Between 1990 and 2010 maternal mortality worldwide dropped by almost 50%
- Everyday 8000 newborn babies die from preventable causes.
- Nearly 99% of all neonatal deaths occur in low and middle income countries

- 70% of global deaths among newborn babies happen in just two WHO regions: Africa and South East Asia
- Essential maternal and newborn care and access to care for complications can save the lives of mothers and newborn babies.

Some conclusions.

- Maternal, neonatal and child mortality has been very persistent in a global context.
- Now 38 percent of all child deaths (4 million) occur in the first month of life.
- More than 10 million children under 5yr die each year. Most result from preventable and treatable causes. That's 30,000 children a day.
- Most of these children live in developing countries

Conclusions

- Improving newborn health and care is critical to attaining the MDG targets for child survival
- To do so would require concerted efforts to improve maternal care, outreach and provide innovative models of community support and education
- Emerging data from demonstration projects in health system settings indicate that this is doable and can be scaled up using affordable models of care
- Community engagement and ownership is a critical element in successful intervention models for maternal and newborn care

Few indicators for health status of children

- MCH coverage;
- Vaccination Coverage
- % of Fully Immunized
- Infant mortality rate
- Under five mortality rate
- ORT use rate

Well Baby Clinic

Very imp. Preventive child health clinic.

From 6 weeks of age to 5 years.

Main goals:

A-Health education

B- Growth and development.

C- Vaccination

D- Nutritional and Psychological counseling.

WBC

- baby should be seen by a health care provider at the following ages:
  - two months
  - Four months
  - Six months
  - Nine months
  - Fifteen months
  - Eighteen months
  - Two years
  - Three years

Assessing the baby's capabilities

- Monitoring Growth and Development.
- Growth : Head circ. Length and weight.(Growth chart.)
- Infant Feeding.
- Skills and Behavior.

Infant Morbidity

- Morbidity is a measure of disease, illness or injury within a population. Like infant mortality, conditions resulting from prematurity and low birth weight are strongly associated with infant morbidity.[1,2] Infant morbidity can be measured by the presence of diagnosed conditions, such as respiratory distress and hyperbilirubinemia (or jaundice), as well as by service utilization indicators, including admission to a neonatal intensive care unit (NICU) and length of hospital stay.[3]

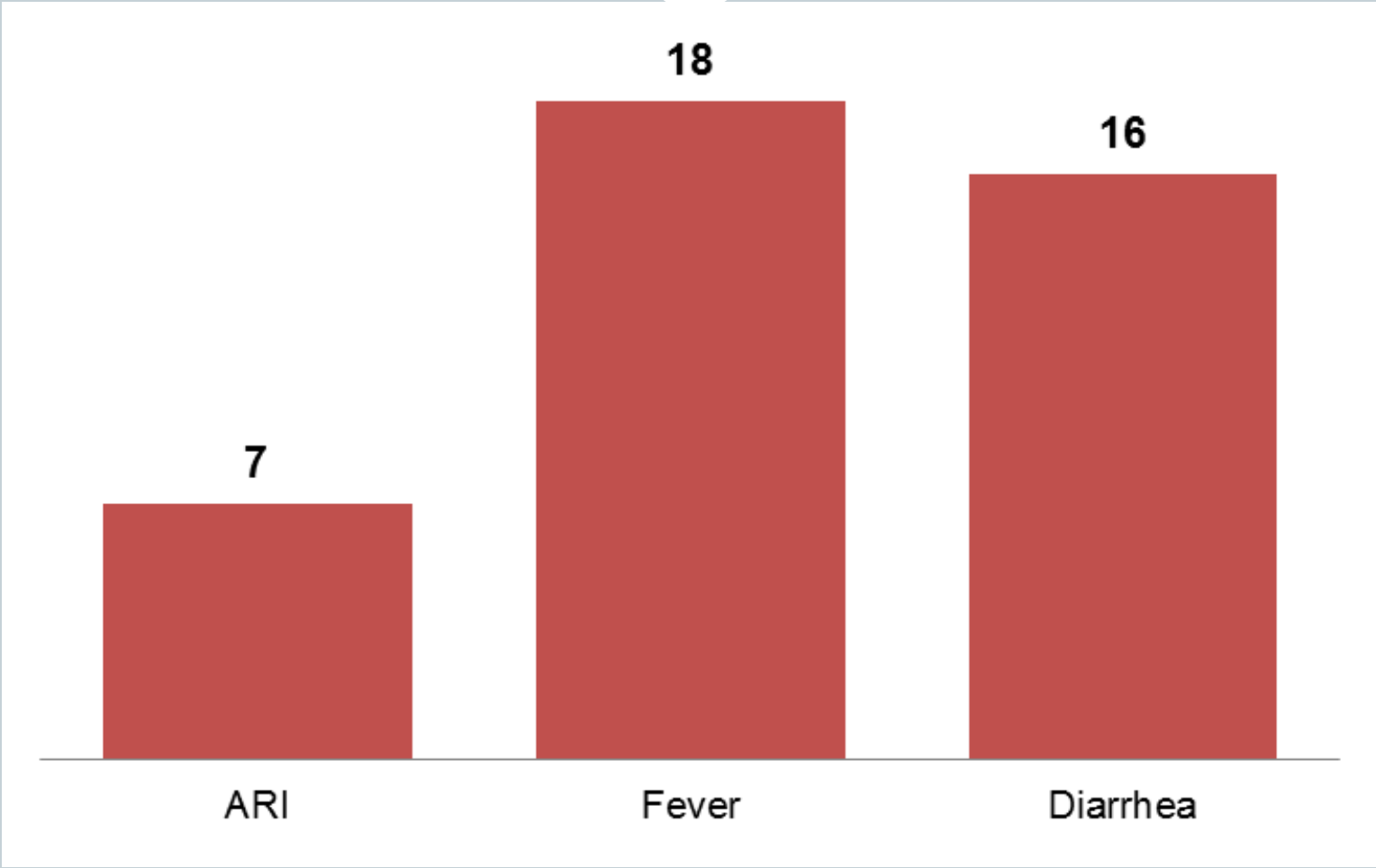
Prematurely and low birth (differentiate)

Higher Morbidity and Mortality rates

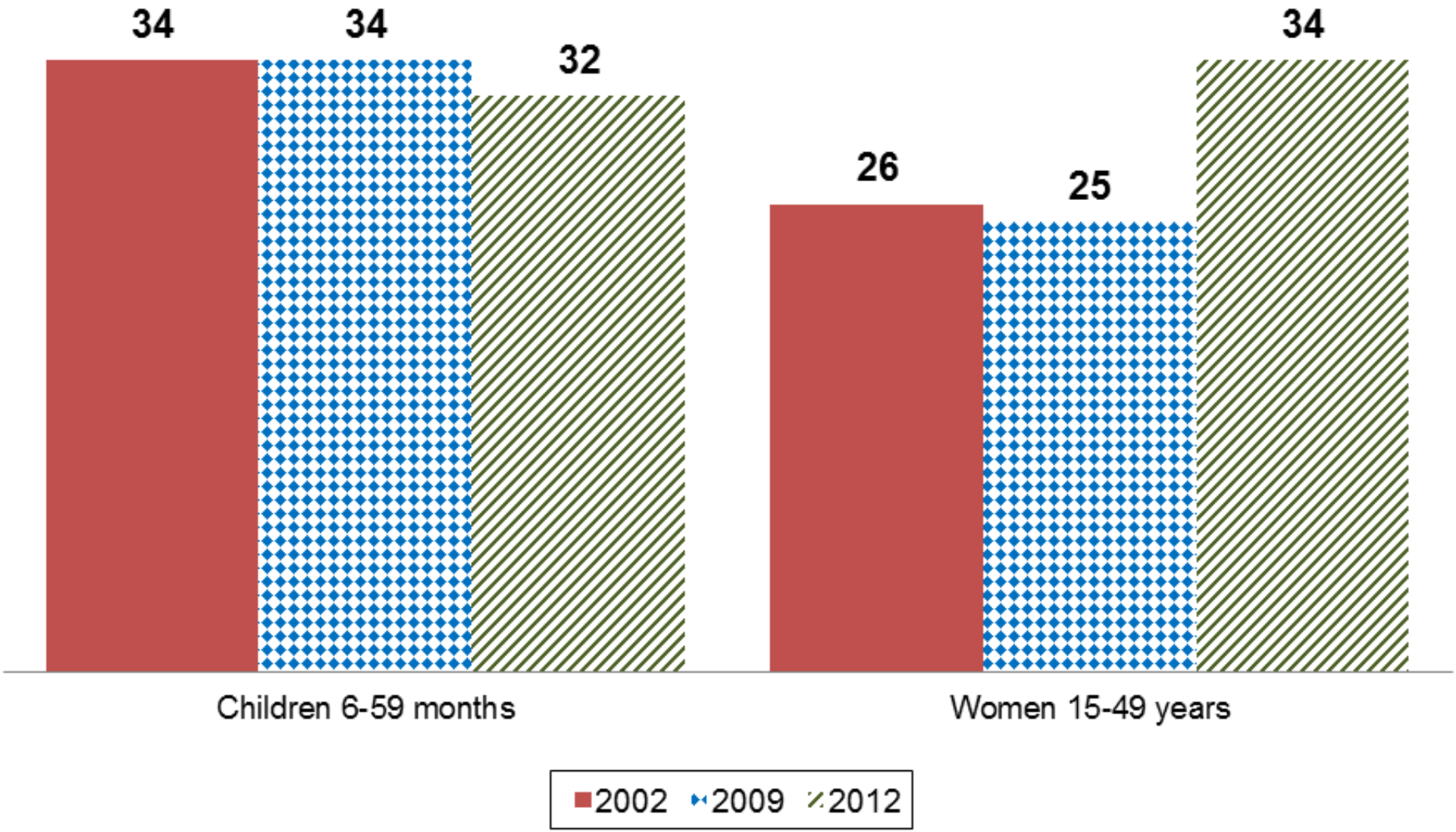
1- Respiratory distress syndrome
2- Birth Trauma
3- Hemorrhages.
4-Feeding problems
5-Infections
6-Failure to thrive

CHILDHOOD DISEASES

(Percentage of children under five with illness in the 2 weeks before the survey)



Trends in prevalence of anemia, 2002, 2009 and 2012



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 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

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 •

D- low birth weight •

E- malnutrition •

F-vitamin A deficiency •

G-young age - •

H- lack of breast feeding

I- Pollution

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 or 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 world wide.

Rotavirus, •

Enterotoxigenic •

Escherichia coli (ETEC) bacteria, •

Shigella, Campylobacter, Vibrio Cholera, and non- •
Typhoidal Salmonella,

Noninfectious causes of diarrhea include drugs,

surgical conditions,

systemic infections

and food intolerance.

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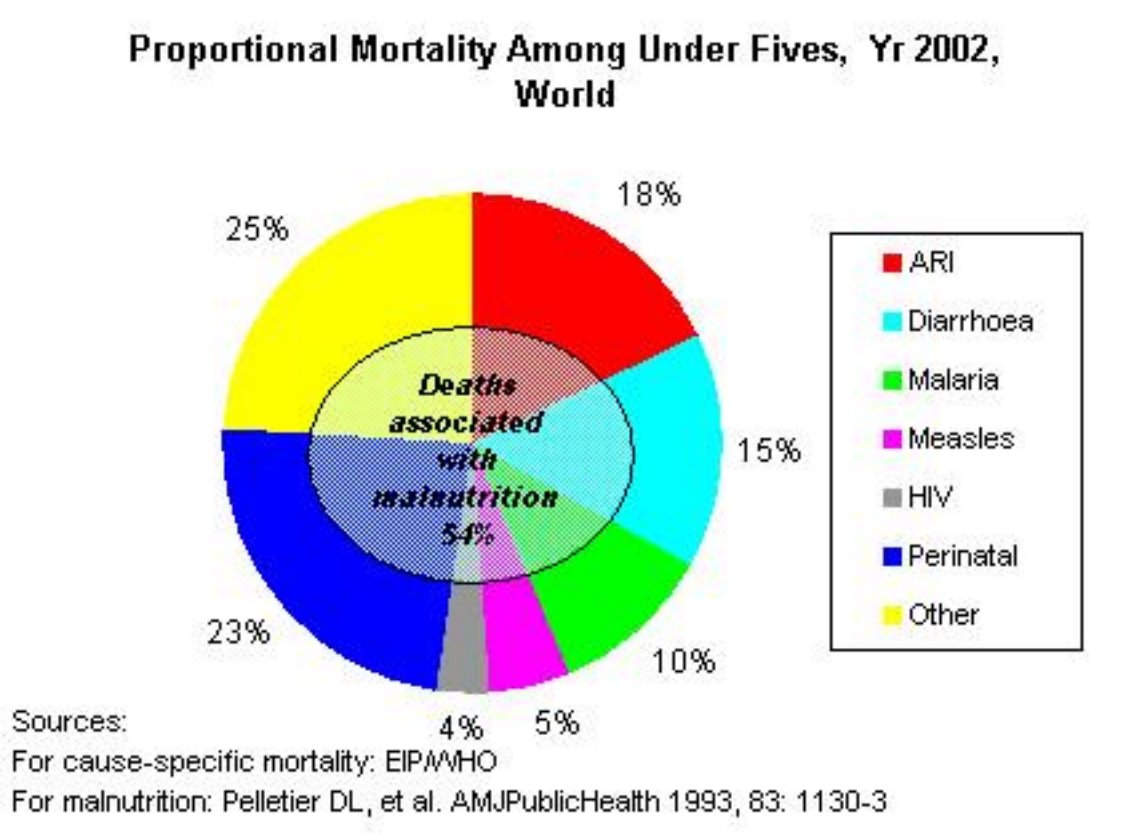
Proportional Mortality among<5 yrs. WHO Report 2002/World Wide



Children < 5 years mortality (2008).

- Globally, 80 percent of all child deaths to children under five are due to only a handful of causes:
- pneumonia (19 %),
- diarrhea (18 %),
- malaria (8 %),
- neonatal pneumonia or sepsis (10 %),
- pre-term delivery (10 %),
- asphyxia at birth (8 %),
- measles (4 %),
- HIV/AIDS (3 %).

Causes of Infant and Child Mortality in Jordan

The 3 leading causes of infant death were

1-Conditions originating in the perinatal period.

2-Congenital malformations.

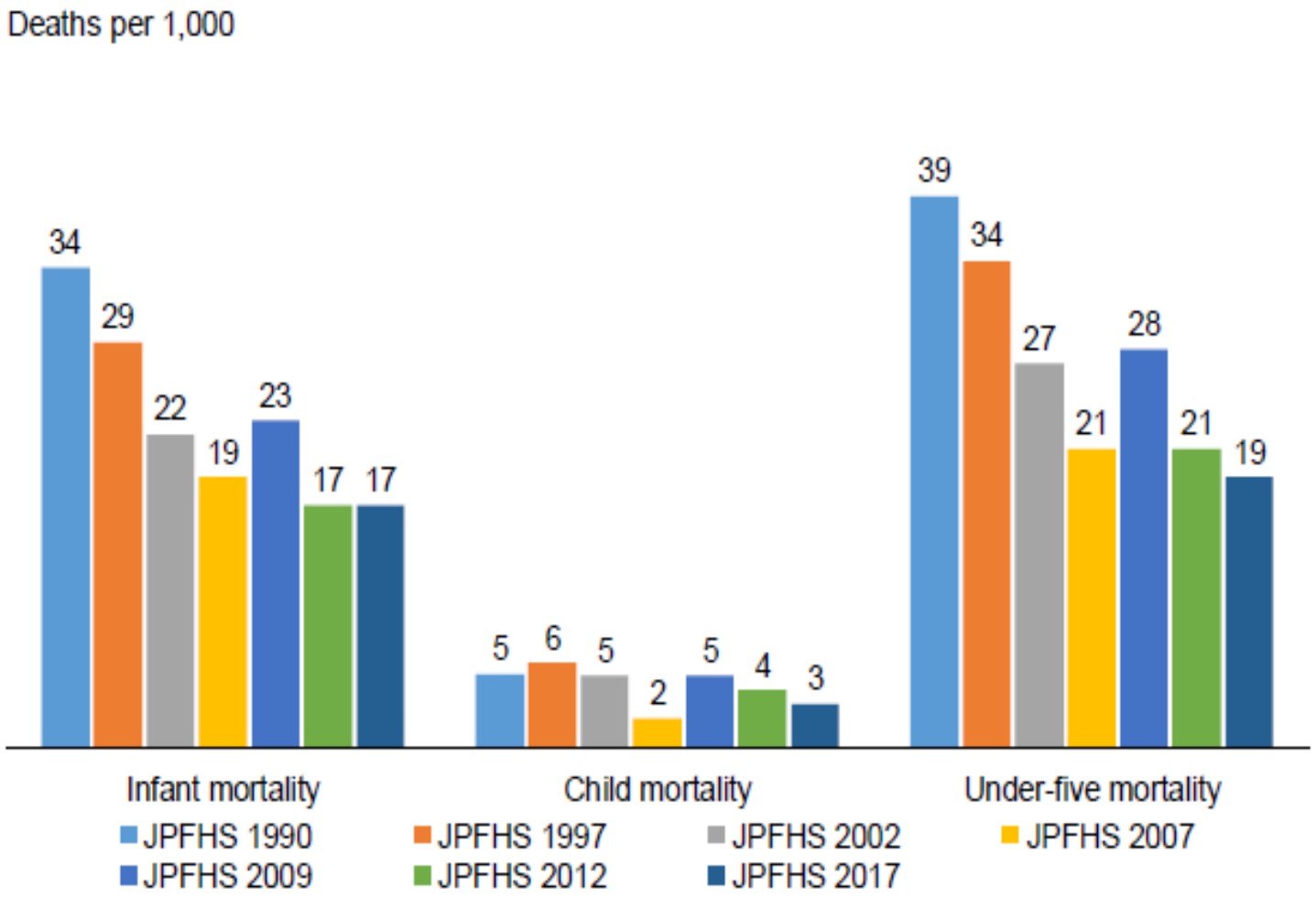
3- Diseases of the respiratory system.

- The leading cause of death in the neonatal period was conditions originating in the perinatal period, while in the post-neonatal period, it was congenital malformations.
- Prematurity was the leading contributory cause of infant death.

CONCLUSION:

- This study showed that causes of infant mortality in Jordan tend to be similar to those prevailing in developed countries.
- Khoury SA, Mas'ad DF.
- Department of Family and Community Medicine, University of Jordan, Amman, Jordan. Saudi Med J. 2002 Apr;23(4):432-5.

Figure 4 Trends in childhood mortality, 1990-2017



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)

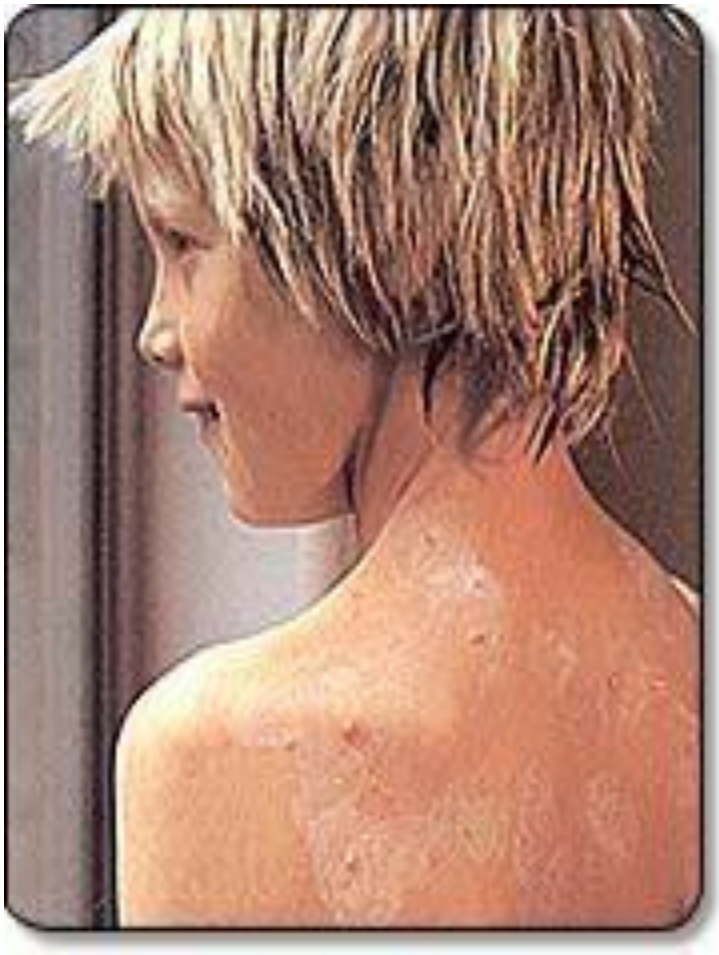
5-Vaccination

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)**

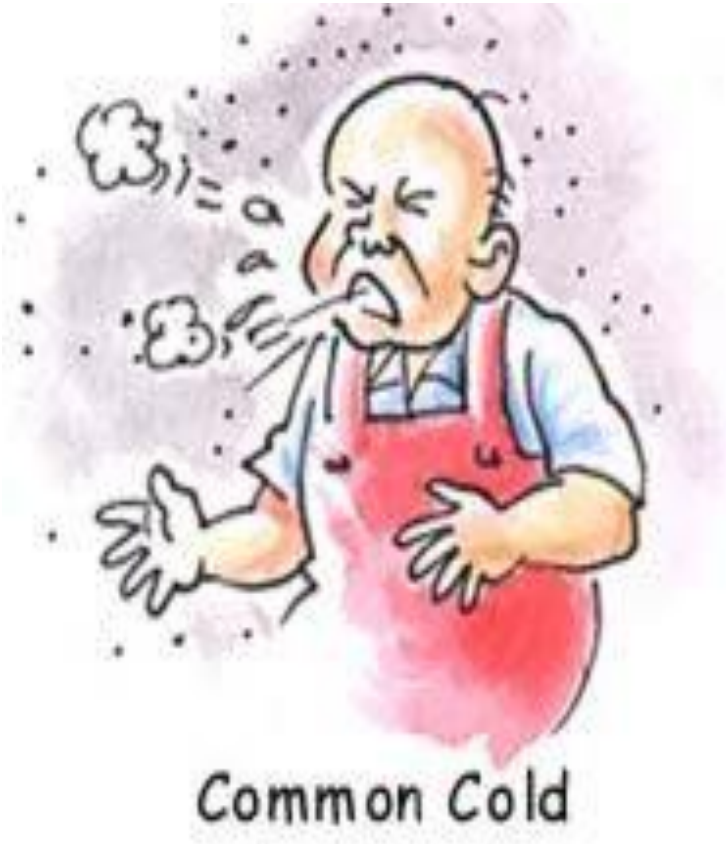
Direct Contact with infected Person's skin or body fluid

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



Respiratory Transmission

- ***Chickenpox***
- ***Common Cold***
- ***Diphtheria***
- ***Fifth Disease***
- ***Bacterial meningitis***
- ***Hand-Foot-Mouth Disease***
- ***Impetigo***
- ***Influenza***
- ***Measles***
- ***Mumps***
- ***Pertussis***
- ***Pneumonia***
- ***Rubella****



Fecal-Oral Transmission

- ***Campylobacter***
- ***E. Coli***
- ***Enterovirus***
- ***Giardia***
- ***Hand- Foot- Mouth Disease***
- ***Hepatitis A***
- ***Infectious Diarrhea***
- ***Pinworms***
- ***Polio***
- ***Salmonella***
- ***Shigella***

Vaccination

- Vaccination against childhood communicable diseases through the Expanded Program on Immunization (EPI) is one of the most cost-effective public health interventions available (UNICEF 2002; World Bank 1993). By reducing mortality and morbidity, vaccination can contribute substantially to achieving the Millennium Development Goal of reducing the mortality rate among children under five by two-thirds between 1990 and 2015.

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:**
- TB,
- Pertusis ,
- Diphteria ,
- Poliomyelitis,
- Tetnus.
- Measles

Vaccination

TWO TYPES OF VACCINES:

- LIVE/ ATTENUATED
- KILLED/ INACTIVATED

Types of vaccines

- Live attenuated viruses (measles, mumps, rubella, varicella, oral polio)
- Inactivated viruses (injectable polio (Sabin), hepatitis B, influenza)
- Inactivated bacteria (pertussis, diphtheria, tetanus, H. influenzae type b, pneumococcus)

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) are live vaccines.

Inactivated 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), typhoid, tetanus, are inactivated vaccines
- The vaccines for diphteria and tetnus are prepared from the bacterial exotoxin rather than the bacteria organism itself. These are referred to as toxoid vaccines.

How serious is the situation?

Rationale for Immunization

Every year, out of 100 children in the world:

- 3 die from measels
- 2 from pertusis
- 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

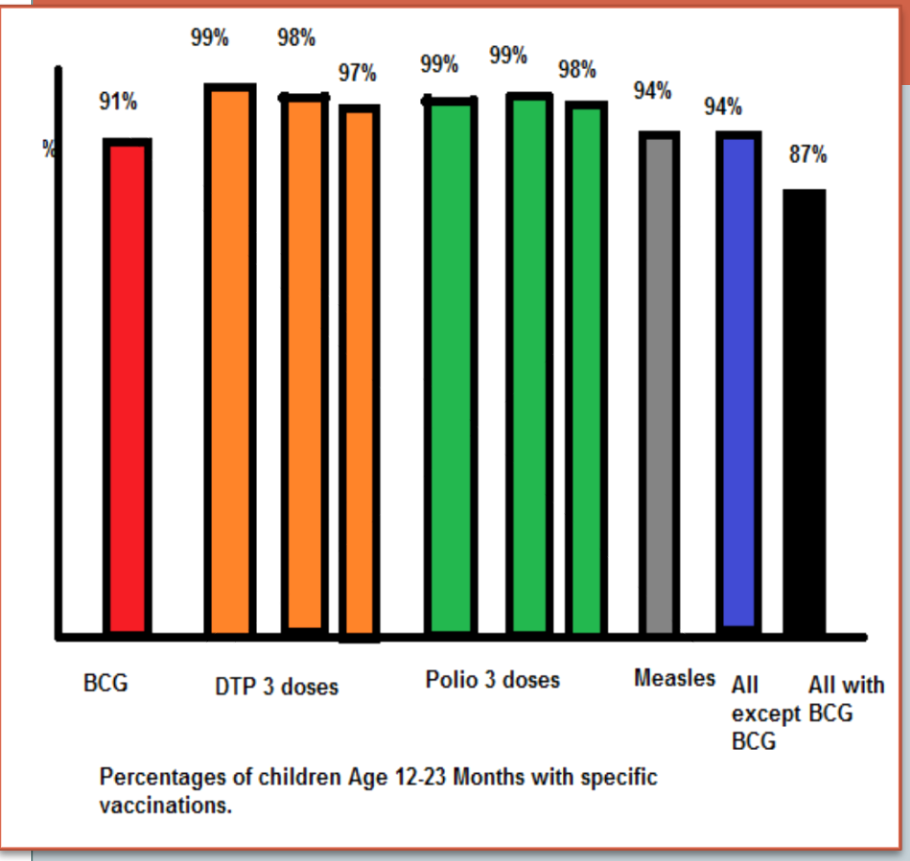
- EPI (EXPANDED PROGRAM ON IMMUNIZATION) WAS LAUNCHED IN JORDAN IN 1979
- JORDAN ACHIEVED UNIVERSAL CHILD IMMUNIZATION IN 1988.

Vaccination schedule preschool -Jordan

Age	Vaccine
1st contact	BCG
2 months	DaPT1 IPV1+Hib+1HepB1
3 months	DaPT2 IPV2+Hib2+HepB2+OPV
4 months	DaPT3 IPV3+Hib3+HepB3+OPV
9 months	Measles + OPV
12 months	MMR1
18 months	DPT booster1 +OPV booster1 +MMR2

months with specific vaccination

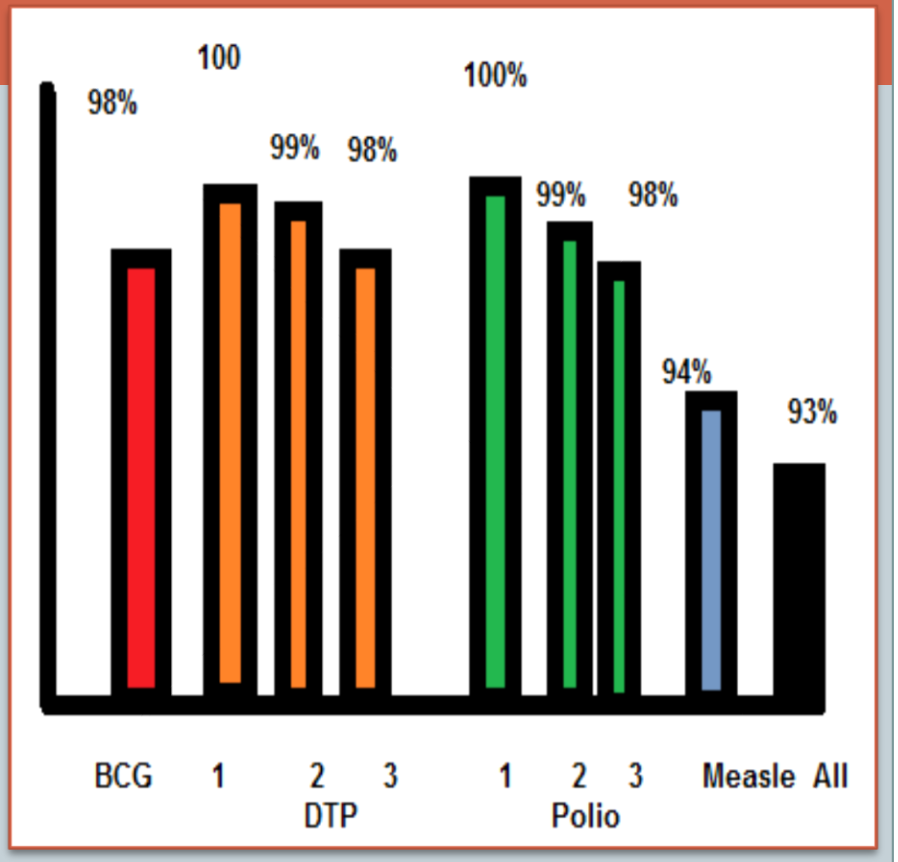
2007



Percentages of children Age 12-23 Months with specific vaccinations.

(*JPFHS*, "2007", Section 10.2, Table 10.2, pg.117)

2012



(*JPFHS*, "2012", Section 10.2, Table 10.3, pg.127)


Thank you!!!

تم بحمد الله