Preventive medicine

DR.DUAA HIASAT
CURATIVE MEDICINE
“What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?”
OBJECTIVES

On the end of this lecture the audience should know what is:
• Prevention and define levels of Prevention
• The objectives of screening and the elements that constitute a useful screening test
• The role and the importance of Periodic Health Examination (PHE) in primary care
Phenomenon of health

World Health Organization:

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”

Signed on 22 July 1946 by the representatives of 61 States (and entered into force on 7 April 1948)

The Definition has not been amended since 1948.

The Declaration of Alma-Ata 6-12 September 1978 reaffirms the WHO definition of health.
Phenomenon of disease:

Difficult to define, e.g.:

“A state that places individuals at increased risk of adverse consequences”

(Temple LKF et al., Defining disease in the genomics era. Science 3 Aug 2001;293:807-808)
The goals of medicine

The goals of medicine are to promote health, to preserve health, to restore health when it is impaired and to minimize suffering and distress.

These goals are embodied in the word “prevention”.

WHAT IS PREVENTION?

Prevention includes actions aimed at eradicating, eliminating or minimizing the impact of disease and disability, or if none of these are feasible, retarding the progress of the disease and disability.
Levels of Prevention

- **Primordial prevention** (prevent the risk factors) was later added.
- **Primary** (prevent the disease)
- **Secondary** (early detection and treatment)
- **Tertiary prevention** (treat and minimize disability)
LEVELS OF PREVENTION

PRIMORDIAL PREVENTION
establish or maintain conditions to minimise hazards to health
Advocacy for social change to make physical activity easier

PRIMARY PREVENTION
prevent disease well before it develops
Primary care advice as part of routine consultation

SECONDARY PREVENTION
early detection of disease (e.g. Screening & Intervention for Pre diabetes)
e.g. primary care risk factor reduction for those at risk of chronic disease, falls, injury

TERTIARY PREVENTION
treat established disease to prevent deterioration
e.g. exercise advice as part of cardiac rehabilitation

Whole population through public health policy
Whole population selected groups and healthy individuals
Selected individuals with high risk patients
Patients
• PRIMORDIAL AND PRIMARY PREVENTION
Health promotion aimed at improving the general health and quality of life of individuals and the community. It involves a comprehensive approach towards changes in life-style and human behaviour Steps involved in health promotion are:

1. improving food distribution and nutrition
2. improving environmental sanitation
3. improving level of education
4. improving personal hygiene
5. health education
6. sex education
7. genetic counselling
8. marriage counselling
9. family planning
10. limiting the use of tobacco, alcohol and drugs
11. health legislation.
Specific protection

It refers to specific measures taken to prevent the occurrence of disease. These measures include:
1. Immunization
2. Chemoprophylaxis
3. Use of specific nutrients
4. Protection of occupational hazards by using gloves, goggles, shields etc.
5. Protection against accidents
6. Avoidance of allergy
7. Protection from cancer producing agents
Secondary prevention attempts to detect early disease, unrecognized disease and treating it before irreversible pathological changes take place.

This includes,

• Case finding and
• Screening
Screening is:

The application of a relatively simple, inexpensive test, examinations or other procedures to people who are asymptomatic for the purpose of classifying them with respect to their likelihood of having a particular disease.
Objectives of Screening

• **Immediate objective**: to classify people as being likely or unlikely of having the disease

• **Ultimate objective**: to reduce mortality and morbidity
Types of screening

- Mass
- Targeted
- Multiple or Multiphase
- Case-finding or opportunistic
Requirements for a Good screening Program

1. Suitable disease
2. Suitable test
3. Suitable program
4. Good use of resources

A screening test is not intended to be diagnostic
Suitable disease

1. Common
2. Important
3. Diagnosable
4. Treatable - better outcomes if treatment begins before clinical diagnosis
5. Detectable before symptoms appear, have a latent interval
When to screen?
Suitable test

1. Detect disease during pre-symptomatic phase
2. Safe
3. Easy to interpret
4. Accurate
5. Acceptable
6. Cost-effective
SCREENING TEST SHOULD BE:

• Reliable – get same result each time

• Valid – get the correct result
  1. Sensitive – correctly classify cases
  2. Specific – correctly classify non-cases
CONCLUSIONS

Sensitive test: \textbf{if Negative RULES OUT}

Specific test: \textbf{if Positive RULES IN}
Tertiary prevention

It is used when the disease process has advanced beyond its early stages.

It is defined as “all the measures available to reduce or limit impairments and disabilities, and to promote the patients’ adjustment to irremediable conditions.”
GOALS OF TERTIARY PREVENTION

Interventions that should be accomplished in the stage of tertiary prevention are disability limitation, and rehabilitation.
Prevention through periodic health examination

Children and adolescents

Women and pregnant

Adult male and female
Periodic Health Examination

Evaluation of apparently health individuals in certain time periods, of their life using a number of standard procedures such as counseling, physical examination, laboratory investigations or imaging with the purpose to find those probably diseased.

Periodicity is determined by the age and risk factors of each patient.
Goals of Periodic Health Examination

• To evaluate health status,
• To screen for risk factors and disease, and
• Provide preventive counseling interventions in an appropriate Age manner.
• To prevent the onset of disease or the worsening of an existing disease.

chemoprophylaxis
Further goals

• To prevent morbidity and mortality by identifying modifiable risk factors and early signs of treatable disease

• To educate patients about behavioral patterns or environmental exposures that pose risks for future disease
# U.S. Preventive Services Task Force Grade Definitions

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
<th>Suggestions for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>The USPSTF recommends the service. There is high certainty that the net benefit is substantial.</td>
<td>Offer or provide this service.</td>
</tr>
<tr>
<td>B</td>
<td>The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.</td>
<td>Offer or provide this service.</td>
</tr>
<tr>
<td>C</td>
<td>The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.</td>
<td>Offer or provide this service for selected patients</td>
</tr>
<tr>
<td>D</td>
<td>The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.</td>
<td>Discourage the use of this service</td>
</tr>
</tbody>
</table>
PREVENTIVE CARE IN CLINICAL PRACTICE

• The **RISE** mnemonic is one approach to help you remember to apply the principles of preventive medicine in daily clinical practice.

• **R** isks of this patient

• **I**mmunizations

• **S**creening with this patient; and address

• **E**ducation or counseling.
PRECONCEPTION CARE

Clinical Preventive Services
Before Pregnancy

- Risk Factors
- Immunizations
- Screening
- Education - Counseling
THE PRECONCEPTION VISIT

• A preconception visit can be used to maximize the expectant parents health, safety, and well-being before conception, and to maximize fetal health in the early months of pregnancy.

• Preconception care offers health services that allow women to maintain optimal health for themselves, to choose the number and spacing of their pregnancies and, when desired, to prepare for a healthy baby.
Among the issues that can be covered in a preconception visit are

- **Minimizing occupational risks.**
- **Prescribing folic acid.** Children of women who consume at least 400 mcg (0.4 mg) of folic acid
- **Maximizing chronic illness care.** Cardiovascular Diseases mellitus are at a four fold increased.
- **Improving health habits.** A review of tobacco, alcohol, and illicit substance use is important during the preconception visit.
- **Review current medications and assess safety.** Use of all prescription and over-the-counter drugs,
Components of Preconception Care

Risk assessment - Maternal Assessment
Immunizations
Screening
Education - Health promotion - Counseling
Risk assessment cont:

- Nutritional assessment
- Substance abuse
- Toxins and teratogenic agents
- Psychosocial concerns
- Physical exam
- Laboratory testing
Immunizations

• Women of childbearing age in Jordan should be immune to measles, mumps, rubella, varicella, tetanus, diphtheria, and poliomyelitis through childhood immunizations
• If immunity is determined to be lacking, proper immunization should be provided
• Need for immunizations according to age group of women and occupational or lifestyle risks
## Preconception Screening Recommendations for Specific Diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>Recommendation</th>
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<tbody>
<tr>
<td>Sickle cell Anemia</td>
<td>Routine preconception screening for those at risk</td>
</tr>
<tr>
<td>Thalassemia</td>
<td>JORDAN PREMARITALCBC</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>Preconception screening if family history of CF</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Fasting blood</td>
</tr>
</tbody>
</table>
Preconception Care
Interventions for identified risks

• Folic acid supplementation
• Rubella testing, vac. If necessary
• Control of pre-gestational DM, HTN
• Management of hypothyroidism
• Avoidance of teratogenic agents like accutane, coumadin, some anticonvulsants, alcohol, tobacco
Education - Health promotion

- Family Planning
- Healthy weight and nutrition
- Healthy behaviors
- Stress resilience, reassurance
- Healthy environments
- Inter-conception care
ANTENATAL CARE
Clinical Preventive Services During Pregnancy

Risk Factors
Immunizations
Screening
Education - Counseling
Antenatal Care
The care of a pregnant woman and her unborn baby throughout a pregnancy. Such care involves regular visits to a doctor or midwife, who performs abdominal examinations, blood and urine tests, and monitoring of blood pressure and fetal growth to detect disease or potential problems.
Antenatal Care-Screening

- Repeated weighing during pregnancy
- Breast examination
- Prediction, detection and initial management of mental disorders
- Screening for haematological conditions, Anaemia
- Blood grouping and red-cell alloantibodies
- Screening for fetal anomalies Ultrasound
- Screening for Down's syndrome
- Screening for infections, Asymptomatic bacteriuria, Asymptomatic bacterial vaginosis, Hepatitis B virus
- Screening for clinical conditions
- Gestational diabetes
- Pre-eclampsia
- Fetal growth and well-being
Antenatal Care 1st visit

- Confirm pregnancy and expected date of delivery.
- History and examination.
- Complete initial routine investigations
  1. Full blood picture
  2. Blood group and atypical antibody screen
  3. Syphilis serology
  4. Rubella titre
  5. Hepatitis B surface antigen
  6. Hepatitis C antibodies
  7. HIV antibodies
  8. Random blood glucose
  9. Midstream Urine
  10. Chlamydia screening
- First U/S
- Prediction, detection and initial management of mental disorder
Post natal Care

1. Post natal visit during first week:
   • Breast Care
   • Perineal care
   • Bonding
   • Establishment of Breast feeding

2. Post natal visit at 6 weeks:
   Physical Examination weight, BP, CBC or FBS if needed
   Family Planning

3. Periodic visits Family Planning
PARENTING ADVICE

PARENTING ADVICE
THAT SAYS
THE EXACT
OPPOSITE
“Hey, we’re just driving past your house. Can we pop in?”
Well baby clinic
Clinical Preventive Services for Normal Risk Children

- Risk Factors
- Immunizations
- Screening
- Education - Counseling

These are the clinics that are concerned with Well Being for all children under the age of 6 y. A well-baby exam involves measurements, vaccines and an evaluation of baby's development.
• Our children must be able to grow up nourished and supported in loving and caring environments. They must have time to be children with all the wonder, happiness and innocence that childhood should bring.
• Parents who bring infants for well-child care are often happy but also anxious, with first-time parents still adjusting to their new roles. An important goal of these visits therefore is to establish trust and allay anxiety.

• Clinicians can do this by spending a short time interacting with the infant at the beginning of the visit, taking time to elicit any concerns or questions from the parent early in the visit, and remaining aware of nonverbal cues.
Well-child visits

• Childhood is a time of rapid growth and change. Pediatric well-child visits most often when child is developing the fastest.
• Each visit includes a complete physical examination. At this exam, the health care provider will check the infant or young child's growth and development and try to find problems early.
• The health care provider will record your child's height, weight, and other important information. Hearing, vision, and other tests are part of some visits. Preventive care is important to keep children healthy.
PREVENTIVE HEALTH CARE SCHEDULE

• 2-3 days after birth
• By 1 month (although experienced parents can wait until 2 months)
• 2 months
• 4 months
• 6 months
• 9 months
• 1 year
• 15 months
• 18 months
• 2 years
• 3 years
• 4 years
• 5 years
• 6 years
Well-Baby 1st visit

- **Baby's measurements**  Head circumference  
  Height and weight
- **Physical exam**
- **Newborn screening for Hypothyroidism - PCU**
Subsequent visits

• **Baby's measurements** Head circumference
  Height and weight

• **Baby's development** baby's motor skills and development. Depending on baby's age,

• **Well-baby exam:**

• **Vaccinations** according to the National Vaccination Program
• At each well-child visit the doctor looks for growth and/or developmental delays.

• **Growth /developmental monitoring**

• Any problems noticed during Growth/developmental monitoring should be followed-up with **Growth /developmental screening**.

• Each visit follows the **RISE** mnemonic
  - R isk Factors
  - I mmunizations
  - S creening
  - E ducation - Counseling
### Jordan National Vaccination Program

<table>
<thead>
<tr>
<th>age</th>
<th>vaccination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 month</td>
<td>BCG</td>
</tr>
<tr>
<td>2 months</td>
<td>DTP, Hib, HBV, IPV , rota</td>
</tr>
<tr>
<td>3 months</td>
<td>DTP, Hib, HBV, IPV / OPV, rota</td>
</tr>
<tr>
<td>4 months</td>
<td>DTP, Hib, HBV, IPV , rota</td>
</tr>
<tr>
<td>9 months</td>
<td>Measles</td>
</tr>
<tr>
<td>12 months</td>
<td>MMR</td>
</tr>
<tr>
<td>18 months</td>
<td>Booster DTP, polio OPV.MMR</td>
</tr>
<tr>
<td>4-6yr - school entry</td>
<td>MMR, OPV.Td</td>
</tr>
<tr>
<td>15-16 yr - 10th grade</td>
<td>Td.chek MMR</td>
</tr>
</tbody>
</table>
Periodic health Care Services for baby

Periodic health Care (Screening) is done usually two monthly
• Complete Clinical examination
• Growth – weight-height head circumference
• Follow up of any diagnosed chronic disease
• Developmental-Milestones screening
• Screening for DDH
• Screening for Anemia
By understanding what to expect during each stage of development, parents can easily capture the teachable moments in everyday life to enhance their child's language development, intellectual growth, social development and motor skills.
Growth and Development

**Growth** refers to an increase in physical size of the whole body or any of its parts. It is a *quantitative* change in the child’s body. It can be measured.

**Development** refers to a progressive increase in skill and capacity of function. It is a *qualitative* change in the child’s functioning.
Importance of Growth and Development

• Knowing what to expect of a particular child at any given age.

• Gaining better understanding of the reasons behind illnesses.

• Helping in formulating the plan of care.

• Helping in parents’ education in order to achieve optimal growth & development at each stage.
Adolescence Preventive Services
Adolescence Preventive Services

Components of the prevention program

Risk Factors
Immunizations
Screening
Education - Counseling
Risk Assessment

- Risky sexual behavior
- Alcohol
- Tobacco
- Substance Abuse
- Depression-Suicide
- Eating Disorders
Immunizations

According to the National Immunizations Program
• Grade 1 - OPV and Td+MMR
• Grade 10 - Td and MMR
The human papilloma virus (HPV) vaccine prevents infection with certain species of human papilloma virus associated with the development of cervical cancer, genital warts and HPV induced oral cancers.

Widespread vaccination has the potential to reduce cervical cancer deaths around the world by as much as two-thirds.
Vaccine target populations

- Gardasil and Cervarix are preventative vaccines and do not treat HPV infection or cervical cancer.
- They are recommended for women who are 9 to 25 years old who have not been exposed to HPV.
- Quadrivalent HPV vaccine “Gardasil” may be given to 22- through 26-year-old males.
Each dose of HPV4 vaccine is 0.5 mL, administered intramuscularly. It should be administered in a three-dose schedule. The second dose should be administered 1-2 months after the first dose and the third dose should be administered 6 months (at least 24 weeks) after the first dose.
Screening

1. Physical Examination including
2. Weight and height
3. Vision Evaluation
4. Dental examination:
   Grade 1-Grade -Grade -Grade 10
• Alcohol
• Tobacco
• Substance Abuse
• Depression-Suicide
• Eating Disorders
Counseling parents

It is recommended that physicians provide guidance to parents on

• Normal physical, sexual, and emotional development,
• Signs of physical and emotional problems,
• Parenting behaviors to promote health,
• Methods to help their child avoid harmful behaviors.
Counseling adolescent

• The adolescent patient should receive counseling annually
• on their growth and development,
• injury prevention,
• healthy diet,
• exercise, and
• avoidance of harmful substances (alcohol, tobacco, drugs, anabolic steroids).
• responsible sexual behaviors, including abstinence and contraception,
Adolescent behavioral problems

- Anorexia
- Attention deficit
- Anger issues
- Suicide
WHEN IS THE WORLD GOING TO REALIZE THAT WE KNOW EVERYTHING?
GET READY, DEAR... SHE BECOMES A TEENAGER IN SEVEN, SIX, FIVE...
Clinical Preventive Services for Normal-Risk Women
Clinical Preventive Services for Normal-Risk Women

Components of the prevention program

Risk Factors
Immunizations
Screening
Education - Counseling
Risk Factors

• As part of risk assessment in adult patients, one must be aware of the leading causes of morbidity and mortality in the target population.

• Prevention of premature death is not our only goal. Preventing unnecessary morbidity and disability is important as well.

• The USPSTF has developed Preventive Services Guidelines Preventive health services recommendations for an individual patient based on age, gender, and selective behavioral risk factors.
## Well Adult—Recommended Preventive Services WOMEN

<table>
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<th>Begin/ When</th>
<th>Interval</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure</td>
<td>First visit</td>
<td>Every 1–2 years</td>
<td>A</td>
</tr>
<tr>
<td>Diabetes, type 2</td>
<td>Adults with BMI 25, ALL ADULTS&gt;45</td>
<td>1–3 years</td>
<td>B</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>Men 35 and older 25 and older if risk factors</td>
<td>Every 5 years</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>FEMALE 35 RISK FACTORS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>45 NO RISK FACTORS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colon cancer screening</td>
<td>50 average risk</td>
<td>Depends on test;</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>A 40 increased risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>End when age 75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td>First visit</td>
<td>Periodically</td>
<td>A</td>
</tr>
<tr>
<td>Tobacco use and counseling</td>
<td>All adults</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>VISSION/HEARING</td>
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<td>Breast cancer screening</td>
<td>Age 50–74 years</td>
<td>Every 2 years</td>
<td>B</td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>Beginning at age 21,</td>
<td>Every 3-5 years</td>
<td>A</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>Age 65 Age 60 high risk</td>
<td>Minimum 2 years to</td>
<td>B</td>
</tr>
</tbody>
</table>
Counseling during the periodic health examination is also very important, for this is where physicians recommend changes in lifestyle that can affect future morbidity and mortality.

• Calcium intake
• Folic acid
• Hormone replacement therapy
• Breast, Cervical, Colon Cancer
• Screening tobacco, drugs, alcohol,
• Sexually transmitted diseases & safety
Clinical Preventive Services for Normal-Risk MEN
Clinical Preventive Services for Normal-Risk MEN

Components of the prevention program

R isk Factors
I mmunizations
S creening
E ducation - Counseling
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Risk Factors

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• Prevention of premature death is not our only goal. Preventing unnecessary morbidity and disability is important as well.

• The USPSTF has developed Preventive Services Guidelines Preventive health services recommendations for an individual patient based on age, gender, and selective behavioral risk factors.
• LUNG CANCER SCREENING:

• ANNUAL SCREENING (INCLUDING CT) FOR ADULTS AGES 55 TO 80YRS WHO HAVE A 30 PACK A YEAR SMOKING HISTORY WHO CURRENTLY SMOKE OR QUIT SMOKING IN THE PAST 15 YEARS
Counseling during the periodic health examination is also very important, for this is where physicians recommend changes in lifestyle that can affect future morbidity and mortality.

- Calcium intake
- Folic acid
- Prostate, Colon Cancer
- Screening tobacco, drugs, alcohol,
- Sexually transmitted diseases & safety
Summary

All things are considered, health is too important to neglect any measure to stay and become healthy. We can only overcome diseases with a bundle of measures:

- prevention,
- testing,
- immunization,
- treatment
- research.

Prevention is a useful weapon in this battle but not the only one.
THANKS
References


