Lecture 15

Editing file

Prevention & Screening In Family Practice

Objectives:

- ★ Definition of screening / prevention and its uses in family practice
- ★ To identify prevention types and targeted people for each type with examples.
- ★ To identify appropriate approaches for prevention and screening of common problems in primary care .
- ★ To explain pros and cons of screening .
- ★ To justify the rational for selection of a screening test with practical examples .
- ★ To explain the benefits of a good screening program .

Color index:

Original text Important Doctor's notes Golden notes Extra

Prevention

What is Prevention?

- Prevention includes a wide range of activities known as “interventions” aimed at reducing risks or threats to health.
- Researchers and health experts talk about **three categories of prevention and what do they mean by these terms?**

Prevention Types	
Primary	
Aims	• Primary prevention aims to **prevent disease or injury before it ever occurs.** • This is done by preventing exposures to hazards that cause disease or injury. • Altering unhealthy or unsafe behaviors that can lead to disease or injury. • Increasing resistance to disease or injury WHENEVER exposure occur.
Examples	▪ Legislation and enforcement to **ban or control** the use of hazardous products (e.g. asbestos) or to mandate safe and healthy practices (e.g. use of seatbelts and bike helmets). ▪ **Education** about healthy and safe habits (e.g. eating well, exercising regularly, not smoking). ▪ **Immunization against infectious diseases.** ▪ **Removing the causal agents;** like sanitation measures of nineteenth century.
Secondary	
Aims	• To reduce the impact of a disease or injury that has **already occurred**. • This is done by **detecting and treating disease** or injury as soon as possible to halt or slow its progress. • Encouraging personal strategies to prevent re-injury or recurrence. • Implementing programs to return people to their original health and function to prevent long-term problems.
Examples	▪ **Regular exams and screening tests** to detect disease in its earliest stages (e.g. mammograms to detect breast cancer). ▪ **Daily, low-dose aspirins** and/or diet and exercise programs to prevent further heart attacks or strokes. ▪ **Suitably modified work** so injured or ill workers can return safely to their jobs. ▪ **Identifying the pre-symptomatic diseases (or risk factors)** before significant damage is done e.g screening for hypertension.

Prevention

What is Prevention?

PREVENTION TYPES	
Tertiary	
Aims	• To **soften the impact of an ongoing illness or injury** that has lasting effects. • This is done by helping people manage long-term, often complex health problems and injuries (e.g. chronic diseases, permanent impairments). • This helps to improve as much as possible their ability to function, their quality of life and their life expectancy.
Examples	■ Cardiac or stroke **rehabilitation** programs. ■ **Chronic disease** management programs (e.g. for diabetes, arthritis, depression, etc.). ■ **Limiting complications** /disability in patients with established disease by regular surveillance , e.g : trying to prevent Diabetic problems by good control , regular funduscopic , foot care . ■ Finding **support groups** that allow members to share strategies for living well. ■ Vocational **rehabilitation programs** to retrain workers for new jobs when they have recovered as much as possible.

Screening

- Screening is an early disease detection OR secondary prevention.
- The presumptive **identification of unrecognized disease or defect** by the application of tests, examinations, or other procedures which can be applied rapidly.
- Screening is **applied to well persons** who probably have a disease from those who probably do not.
- **A screening is not intended to be diagnostic**
- Persons with **positive or suspicious findings** must be referred to their physicians for diagnosis and necessary treatment.

Screening

Purpose Of Screening

- Identifying unrecognized disease (early stage).
- Identifying persons at increased risk for the presence of disease, who warrant further evaluation.
- Classifying people with respect to their likelihood of having a particular disease.
- Reducing morbidity and mortality from disease among persons being screened.

Screening Is An Early Detection Of:

1. **Disease**
2. **Risk factors**
3. **Susceptibility to disease** in individuals who do not show any signs of disease

What Is Screening – Recap

- Application of certain procedures to populations by doctor initiative , with the aim of identifying asymptomatic disease or people at risk from it.
- **Screening is a form of secondary prevention** i.e ; identifying pre-symptomatic disease (or risk factors) before significant damage is been done.

Requirements Of A Good Screening Program

A good screening program should follow Wilsons criteria:

1. **The condition must be :**
   - Common. (HTN , DM , Dyslipidemia)
   - Important.
   - Diagnosable by acceptable methods.
2. **There must be a latent interval in which effective interventional treatment is possible .**
3. **Screening must be:**
   - Simple & cheap , case cost- effective.
   - Continuous.
   - On a group agreed by policy to be high risk.

Screening Programs

Good Screening Program In A Nutshell:

Knowledge of disease	Knowledge of test	Treatment for disease	Cost considerations
• The condition should be important • There must be a recognizable latent or early symptomatic stage • The natural course of the condition should be adequately understood	• Suitable test or examination • Test acceptable to population. • Case finding should be continuous	• Accepted treatment for patients • Facilities for diagnosis and treatment available • Agreed policy concerning whom to treat	• Costs of case finding economically balanced in relation to possible expenditures on medical care

Setting a Local Screening Program:

- Identify a problem that meets the **Wilson Criteria.**
- Auditing the records to see the baseline problems.
- How big is the problem – you know high risk group?
- Clearly define objectives.

Define the Methods:

1. Opportunistic?
2. By Patient Invitation?
3. By Patient Visiting?

What is opportunistic Screening?

- Taking the opportunity when the patient attends on another matter to screen him or her for desired characteristics .
- Simple and cheap to administer. (BP measurement)
- No dependence on patients compliance .
- Targets those persons who will not usually attend for preventive advice services.

Common Interventions

Benefits of a good Screening Program:

- Screening tests often unearth diseases at an earlier stage.
- Improvement in Mortality & Morbidity rates.
- The possible economic saving on future treatment .

What is Family Physicians Role in Screening:

- A family physicians is the one who provides an **anticipatory care approach** for precluding problems.
- This specialty puts all efforts to offer all appropriate forms of prevention **within the consultation** and the organizational **framework of primary care.**
- Examples of common Interventions & screening conditions:

Common Preventive Interventions
■ Immunization /Vaccinations. ■ Postmenopausal hormonal Replacement . ■ Lifestyle Counselling. ■ Advice on Smoking. ■ Weight –watching. ■ Keeping fit and aerobic programs.
Common Screening Conditions
■ Hypertension Screening , detection and follow-up. ■ Cervical Cytology. ■ Developmental surveillance. ■ Well woman & well man clinic. ■ Visiting elderly people at home. ■ Mammography . ■ Serum lipid estimation. ■ Screening psychiatric illness. ■ Prostate Cancer screening
Common Cancers screening tests in Family Practice Clinic
■ Cervical cytology . ■ Mammography. ■ Fecal occult blood (FOB). (Colon cancer) ■ Prostate Specific Antigen.

Prevention & Screening in Elderly people
1. Falls Prevention like:
• Asses gait & balance training. • Home hazard intervention and follow-up. • Medication review /withdrawal (Especially hypnotics , antidepressants). • Osteoporosis risks assessment. • Assessing auditory & visual impairments.
2. Mental health screening in older people:
• Assessing for depression. • Assessing living conditions and Social isolation. • Assessing Medications causing depression like Beta–Blockers , statins , calcium channel blockers.
3. Lifestyle advice
4. Stroke prevention

What applied to Elderly?

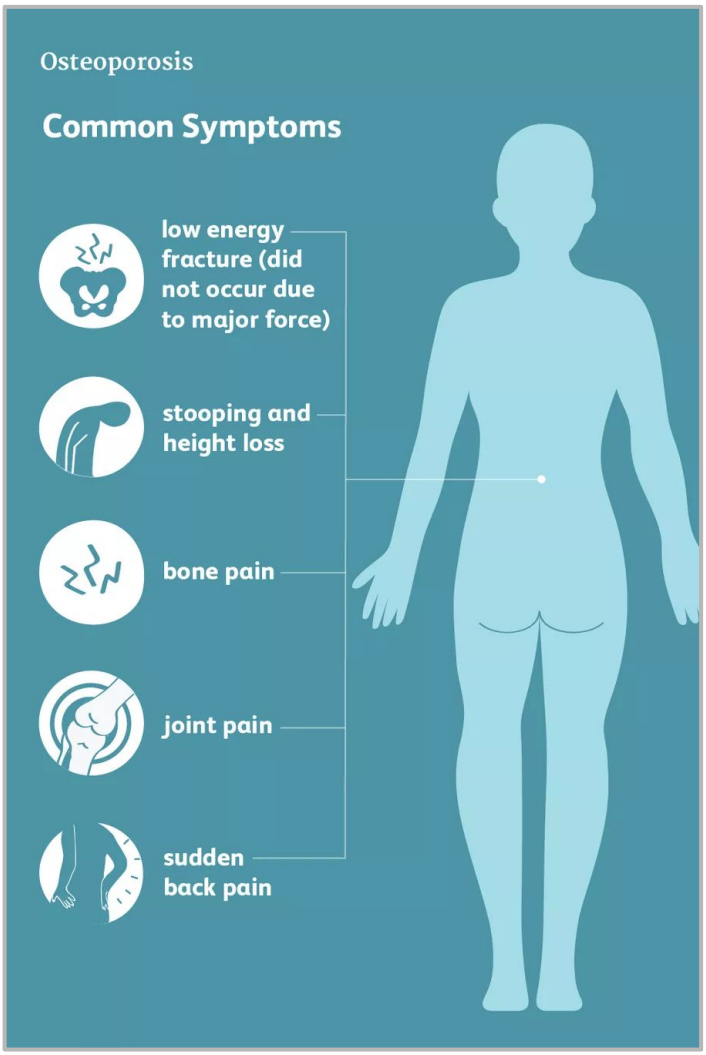
- Elderly is a condition / state / age group which is:
  - A. Common.
  - B. Important.
  - C. Diagnosable by acceptable methods.
  - D. Simple & cheap , case cost- effective.
  - E. Continuous.
  - F. On a group agreed by policy to be high risk.
- **Follow Wilsons –Jungner criteria.**

Why to Screen For Osteoporosis?

- The **BMD** (Bone mass density) remains constant in women **until menopause** when it falls sharply for 5-10 years (estrogen withdrawal bone loss), and more slowly there after (age –related bone loss).

Osteoporosis – Prevention Strategies

- Encouraging new bone formation.
- Discouraging Bone Resorption.
- Achieving a high BMD.
- How can we do all of that By:
  - Regular weight bearing exercises.
  - Avoidance of Smoking.
  - A calcium rich diet.
  - Calcium & Vit D supplementation (those find deficient).
  - Measures at home to prevent falls.



Cervical Screening

What to Screen for In the Cervix?

- Screening the Cervix for early detection of Cervical Cancer .
- Regular pap smear screening can decrease cervical cancer mortality risk up to **80%.**

Why to Screen & What is The Evidence?

- The natural History of Cervical Cancer involves several pre malignant stages (e.g grades of dysplasia & carcinoma in situ), Then progressing to high grade carcinoma.
- Evidence says, this can be detected by **Regular Cervical Screening**, several years in advance of frank Carcinoma.

What is Screening Tool for Cervix?

- **Pap Smear**
  - A microscopic technique to examine vaginal debris first.
  - The Pap smear has been the model for cancer screening.
  - Pap tests aims to identify abnormal cells sampled from the **transformation zone**, the **junction of ecto and endocervix** ,where cervical dysplasia and cancers arise.

Pap Test Dilemmas & Limitations:

- It is a screening test to be administered to asymptomatic patients.
- Not a diagnostic test to confirm or refute the suspicion of disease.
- More than 50% of women who has cervical cancer had never been Pap smeared.

Effectiveness of Pap Smear Test:

- More sensitive of detecting **Cervical Squamous cell malignancy**.
- Squamous cell carcinoma of cervix **is more prevalent** than adenocarcinoma of cervix.
- Cure rates were higher for women with cervical cancer detected by screening as compared to those diagnosed by symptoms.
- This screening tool can detect very early changes, if untreated, could lead to invasive cervical cancers over the course of years.

Cervical Screening

Who Are The High Risk group?

- Low socioeconomic class.
- Early age of first sexual intercourse.
- Early age of first pregnancy.
- Multiple sexual partners.
- Frequent pregnancies.
- **HPV type 16,18 and 33.**
- Smoking doubles the risk of cervical cancer.

Why Cervical Cancer Screening?

Cervical Cancer is a disease which is: Common, important, diagnosable by acceptable methods, test are simple & cheap, case cost- effective, continuous & on a group agreed by policy to be high risk. (Wilsons –Jungner criteria)

Potential Errors in Sampling & Evaluating Pap Smear:

- Clinician may not sample the area of cervical abnormality.
- Abnormal cells may not be plated on the slide.
- Cells may not be adequately preserved with fixative.
- Cytopathologist may not identify the abnormal cells .
- The cytologist may inaccurately report the findings.

Cervical Screening Intervals:

- All women should receive their first invitation for routine screening at age of **25.**
- In younger age range cervical screening interval have been reduced from **5 to 3 years.**

Age group (years)	Frequency of Screening
25	First invitation
25-49	3 yearly
50-64	5 yearly
65+	Only those who are not screened till age of 50 or had recent abnormal test

Cervical Screening

Role of Family Physician in Cervical Screening:

- Should have an effective call and recall system for inviting women registered with them for screening.
- Patient should ensure to keep their correct contact details with Family physician.
- During family planning clinics, any women with overdue smears and had no recent cervical smears done, should be offered smears.

Limitation of Cervical Screening Tests:

- A **false negative** rate of about **10%** for carcinoma in situ. (even necrotic tumors can give a negative results)
- A **false positive** rate of about **5%** (smears showing mild dysplasia)
- Sampling problems: the **squamocolumnar** junction not always accessible
- **Possible causes which may upset interpretation like;**
  1. Menstruation 2. Pregnancy 3. Contraceptive pills
  4. Intrauterine device 5. Polyps

Human Papillomavirus Immunization & Future of Cervical Screening:

- HPV Type 16 and 18 the most carcinogenic of the papilloma viruses.
- They causes 70% of cervical cancers worldwide.
- Two vaccines types has been licensed for protection.
- **Advantages of Vaccines:**
  - Offer high level of protection .
  - 98% seropositivity at 4.5 years follow-up.
  - A significant reduction in the number of pre-cancerous changes in immunized individuals.
  - Vaccine also protects genital warts.
- **Issues of HPV-Vaccines:**
  - In spite of the Vaccine the Cervical Screening program will continue b/c clinical trial data has shown that it will not protect all HPV types that cause cervical cancer.
  - Parental concerns over sexual implications of HPV immunization may also reduce uptake of this vaccine , thereby reducing the efficacy of the HPV-immunization program.

Screening For Breast Cancer

The size of the Problem

- **The major form of Cancer among women.**
- Among 20% of female cancer deaths, it is the most common cause of death in women aged **35-54.**
- Women should start breast cancer screening at the age of **40 years.**
- In UK, highest breast cancer mortality rate.

Risk Factors

- Family History
- Age (peak incidence after age 45)
- Female sex
- Previous breast cancer
- Previous endometrial or ovarian cancer
- Social class: one of the few cancers to have higher risk in more affluent classes
- Prolonged Estrogen exposure and increased risk:
  - Early menarche & late menopause.
  - Estrogen used in HRT and OCP.
  - Obesity – increase endogenous estrogen.

What will decrease the Risk?

- Breaks in estrogen exposure due to childbirth.
- Breastfeeding reduces breast cancer risk.

Prognosis

- On average , 2/3 of all women are alive 5-years after diagnosis.
- Females diagnosed with early local disease do far better than metastatic spread.

Why Breast Cancer Screening?

Breast Cancer is a disease which is: Common, important, diagnosable by acceptable methods, test are simple & cheap, case cost- effective, continuous & on a group agreed by policy to be high risk. (Wilsons –Jungner criteria)

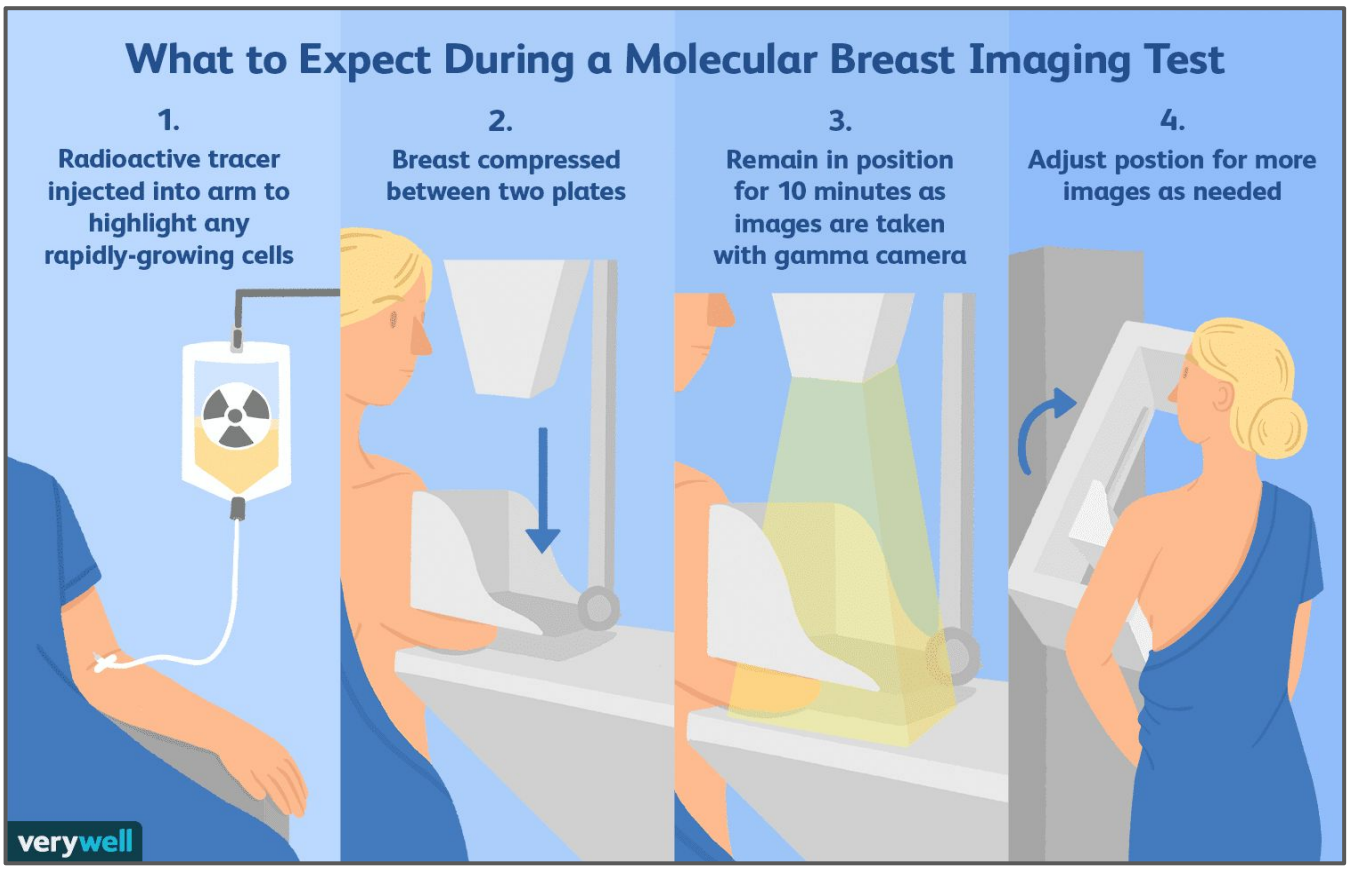
Screening For Breast Cancer

Some Psychological Facts About Mammography:

- All women undergoing screening experience ;anxiety about undergoing tests, awaiting results, experiencing indignity.
- Some may become even phobic.

Benefits of Mammography:

- It detects breast lumps too small to be palpated, and 5- years survival is better for early disease.
- The sensitivity of modern mammography is about 80% and specificity of 95%.
- UK-Breast Cancer Screening Program screening decreases deaths by 48%.
- Women chose to attend Screening v/s not to chose, there found 35% reduction in Breast cancer cases.



Screening For Prostate Cancer

Prevalence

- Common in ages > 65-years.
- 2nd most common cause of Cancer and Cancer deaths, in men both in UK & USA.
- About 10,000 men die annually of prostate cancer.

Screening

- Prostate –Specific Antigen (PSA) – the common name for all.
- Early localized cancer can be detected & treated.

Dilemmas in Measuring PSA

- Digital Rectal Examination(DRE) has minimal effects on PSA levels – causes transient elevation of only 0.26-0.4d ng/ml ,PSA can be measured immediately after DRE.
- Ejaculation can increase PSA levels by up to 0.8 ng/ml, levels returns to normal within 48 hrs.
- After treating Bacterial Prostatitis , PSA returns to normal six to eight weeks after symptoms resolve.
- Acute Urinary retention may elevate PSA levels, levels decrease by 50% within one to two days following resolution.

Some FACTS about PSA

- **75% of men with raised PSA had No prostate Cancer on Biopsy.**
- More than 50% of patients with raised PSA will become Normal when repeated 6 weeks later.
- PSA is raised by UTI, BPH, recent ejaculation, vigorous exercise, prostatitis.
- PSA cannot differentiate aggressive from Indolent cancer.
- **PSA raises with age & Age Related Reference Values should be used.**
- A borderline PSA in an asymptomatic man should be repeated in 1-3 months. Any rising trend should be referred urgently.
- Screening is not recommended in men 75 –years of age with less than 10-years life expectancy, as treating at this age group is unlikely to improve the survival.

Screening For Prostate Cancer

Digital Rectal Examination (DRE)

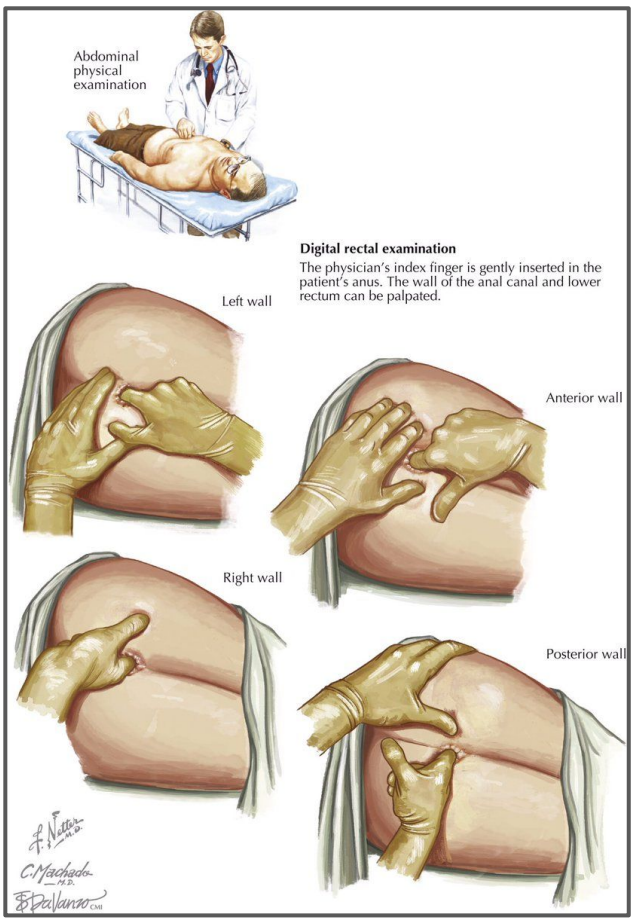
- Can detect Cancers only in the Posterior & lateral aspects of prostate gland.
- Only 85% of the prostate cancers arise peripherally which can be detected by DRE.
- DRE has a sensitivity of 59% & specificity of 94%.
- Majority of cancers detected by DRE has already been clinically and pathologically advanced.

DRE vs PSA

- Studies have reported, more than 45% cancers are detected only by PSA; while only 18% are detected solely by DRE.
- Both PSA & DRE are somewhat complementary, and their combined use can increase the overall rate of detection.

Biopsy Risks:

- Prostate Biopsies may also miss findings cancers and can rarely cause serious infections.
- Biopsy can lead to serious anxiety & physical discomfort.



Screening For Colorectal Cancer

Introduction

- Colorectal Cancer(CRC) is a common & lethal disease.
- 2nd leading cause of Cancer deaths.
- Worldwide, it is 2nd most commonly diagnosed cancer in women & third most common in Men.
- Approximately 1 in 3 people who develop CRC die of this disease.

Screening Rationale

- Removal of premalignant adenomas can prevent the cancer and removal of localized cancer can prevent CRC-related deaths.
- Progression from adenoma to carcinoma take at least 10-years on average.

Risk Factors affecting Screening Recommendations

- Family History .
  - 1 or more first degree relative with CRC.
  - 2 or more second degree relative with CRC.
- Gender (Male > females)
- Race (Blacks)
- Strong genetic risk:
  - Hereditary non-polposis colorectal cancer
  - Familial adenomatous polyp.
- h/o of Prior colorectal cancer or polyps.
- Inflammatory Bowel disease.
- Abdominal Radiation.

Key Facts:

Twice a year screening for colorectal cancer using Fecal Occult Blood (FOB) tests reduces mortality by 16%.

Advantages of FOB-Tests Screening:

- Non-invasive.
- More cost effective with few colonoscopies needed for follow-up.
- Simple to administer.
- Best screening test in family practice setting.

Screening For Colorectal Cancer

Disadvantages of FOB-Tests Screening:

- Inconvenience.
- Relative insensitivity – occult blood is not uniformly distributed in feces and some lesions bleed intermittently.
- Relative non-specificity-lesions other than cancer can generate positive tests.
- Compliance (Wide variation).

How good is the TEST in practice

1. 2% of those screened will have a positive FOB and should be offered colonoscopy.
2. Of those undergoing Colonoscopy:
    - 10 % will have bowel Cancer.
    - 30% will have polyps.
    - 40% will have no abnormality.
3. Bleeding tends to occurs relatively late in the tumors natural history.
4. if the test is negative there is still a 1 in 200 chance of a cancer and 1 in 50 chance of an adenoma in the next 4 years.

Who is eligible?

- In Patient with family history of colon cancer, at the age of 35 we should screen for colon cancer.
- All men and women aged 60-69 should be checked every 2 yearly with FOB.
- Any one Over-70s can also be included (optional).

Risks?

- Perforation after colonoscopy (1 in 1500 cases).
- Death (1 in 10000 cases)
- Psychological Risks – immeasurable .

Other Screening Tools

A. Colon Imaging:
    1. Double-contrast barium enema. -- every 5 –years
    2. Computed Tomographic Colonography. -- every 5 years

B. Endoscopies:
    1. Flexible Sigmoidoscopy -- every 5-years.
    2. Colonoscopy -- every 10- years.

Well Person Assessment Clinic:

- Also called Screening & Prevention Clinics.
- Advertised as **well persons check-ups clinics.**
- By family physician only.
- **Why to have these Clinics?**
    - This will attract patients who might not attend any consultation.
    - Who don't want to visit any hospital unless they are sick.
    - People who attend these clinics are Health conscious and in receptive frame of mind.
- These Clinics Offer more time and more informal atmosphere.
- Also avoids the real pitfalls of opportunistic screening, which is sometimes inconvenient. (Busy clinic, patient is already sick)
- Much potential for Health Promotion and Educating self help for common minor problems.
- Income may be boosted .
- Greater satisfaction for patient and Doctors.

Why Most Screening & Prevention Program Fails?

Obstacles Or Approaches To Prevention & Screening Programs:

- **Patient Related:**
    - It won't happen to me – **The Ostrich Approach.**
    - You go when its your turn and you can't change that –**The fatalistic approach.**
    - I don't believe they know the true facts – **The sceptic approach.**
    - May have to sacrifice the physical pleasures of life (smoking /shisha addictions)
    - Is it something about human behaviors or every body has his/ her own approach to life?
- **Costs to Patients / Doctors / Healthcare:**
    - Unnecessary anxiety or even psychological harm.
    - False reassurance. (Some time)
    - Economic costs.
    - Doctors time & resource costs.
    - Tests / follow up /further investigations and treatment.

Prevention & Screening Programs

Psychological Costs of screening

- Always a concern that communication of negative results may be harmful - may lead to unhealthy lifestyle (less chances to return for follow up tests).
- Telling patient they have HTN may lead to low self esteem or poor marital relationship.
- Women with abnormal mammogram (grey area screening) will be more anxious than those with normal mammograms (follow up visits).
- How to convince the patient to do a screening? We weight benefit and risk.

How to Overcome these Patient – Related Obstacles?

- Point out the disadvantages -the seriousness and the magnitude of the Risk.
- Point out the benefits - physical ,social ,financial.
- Anticipate and be prepared to discuss difficulties.
- Suggest coping strategies.
- Give simple advice and supplement with written information.

Final Comments

- Screening Is Applied To Conditions Which Are:
  - Common, important, diagnosable by acceptable methods, test are simple & cheap, case cost- effective, continuous & on a group agreed by policy to be high risk. (Wilsons –Jungner criteria)
- You are screening not diagnosing..

Screening Test	Diagnostic Test
Done to those who are apparently healthy or asymptomatic	Done to those with suggestive signs and symptoms
Applied to a group of individuals	Applied to a single person
Results are based on one criterion	Results are based on the evaluation of a number of symptoms , signs & Investigations
Results are not conclusive	Results are conclusive & Final
Less accurate Less expensive Not a basis of treatment	More accurate More expensive Basis of treatment

Lecture Quiz

Q1: Patient her father die from colon cancer at age 62. When she should start screening?

A.40
B.50
C.60
D.She doesn't need to

Q2: A 49-year-old male presents to your clinic for annual health checkup. His examination is found to be normal. His BP: 125/80, Pulse: 80/min. All his routine investigations are normal. You also wanted to screen him for Bowel Cancer. What is the most likely investigation you will do?

A. Double contrast barium enema
B. Fecal Occult blood test
C. Refer him for Colonoscopy
D. Serum Carcinoembryonic Antigen

Q3: A 45-year-old female visits your primary care clinics for routine preventive care. She is a healthy woman living with her husband and 3 children. She is worried because she has read some article about cervical cancers in women. Her pap smears done during her previous pregnancies were normal. She wants to know when she should be screened again. Which of the following is the most appropriate answer to her timing of screening?

A. Every 6 months
B. Every year
C. Every 2 years
D. Every 3 years
E. Every 5 years

Q4: A 57-year–old male visits his Family Physician for an annual health check-up. He seems to be in perfect health except he has increased urinary frequency only during night time since 6 months. On examination his BP:129/80 mm Hg and Heart rate:72/min. He is worried because one of his friends had recently been diagnosed with prostate cancer.
What would be the most recommended screening test?

A. Digital rectal examination and prostate specific antigen.
B. Referral to urologist for Cystoscopy.
C. Transrectal needle biopsy under ultrasound guidance.
D. Urine Microscopy And Cytology For Malignant Cells

Answers: Q1:A | Q2:B | Q3:D | Q4:A

THANKS!!

Special thanks to..
437 team

Team Leader:
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Send us your feedback:
We are all ears!