General Principles of Cancer Screening

Cancer is more readily curable when it is detected at early stages. Cancer screening and early detection finds cancer at its earliest stage and first symptoms before it starts to complicate, thus it saves the patient from aggressive treatment.

The goals of cancer screening are to detect it at an early stage when it is treatable and potentially curable. It is evident that earlier diagnosis results in an improved outcome, decreased morbidity, and reduced mortality from disease. The screening tests should be safe, convenient, and inexpensive. It should be sensitive, i.e., positive when disease is present, and specific, i.e., negative if there is no disease.35

In this section we will limit ourselves to a few examples of cancer screening that detect cancer early and improve outcome and cure rates.

Colo-Rectal Cancer

Colo-Rectal Cancer (CRC) is the third most common in men, after prostate, lung cancers and the 3rd most common in women, after breast and lung cancers. It is the third leading cause of death from cancer in both men and women. The risks are the same for both sexes. Men have more colon cancers and women have more rectal cancers. In the western world it usually affects people over 40 with a median age of 57 in the USA. In some Arab countries that reported their data, including Egypt, Kuwait, Lebanon, Saudi Arabia, CRC is seen in younger aged people, and it is more common in industrialized/westernized nations. Risk factors include environment and diet as clearly shown from studies of migrated populations. Screening for Colo-Rectal Cancer relies on fecal occult blood testing (FOBT) and endoscopic evaluation. It allows for detection of polyps and earlier stage colorectal cancer and reduces mortality. In addition, a recent trial from Minnesota showed a reduced incidence of CRC which resulted from the removal of precancerous colorectal polyps.36

Recommendations for CRC Screening starting Age 50 for general population and average risk individuals are as follows: Occult blood test with flexible sigmoidoscopy. FOBT should be done three days in a row every year. Sigmoidoscopy every 3-5 years, after 2 initial negative ones first two years. A full screening colonoscopy is recommended once every 10 years.36

Special risk groups: Predisposing factors include adenomatosis, various polyposis syndromes, inflammatory bowel disease and prior cancer history. These individuals are considered high risk and should be screened more frequently than the general population.
Breast Cancer

Breast Cancer is the most common malignancy in women all over the world. Data from Arab countries shows that it represents about one third of all female cancers and that it presents at a younger age than in Western Europe and the United States.

Breast Cancer Screening recommendations were recently updated for women aged 40-49, as follows: BSE (Breast Self Exam): monthly, starting the age of 20. Women can be taught to perform a correct BSE through their physician or through many awareness programs and lectures.

CBE: (Clinical Breast Examination, by a physician) : it should be performed on a yearly basis in women. 14-21% of breast cancers are detected by routine physical examination.

Screening Mammography: Screening women over 50 years of age decreases mortality by 30%. Benefits start showing after 7-8 years. Screening Women 40-49 reduces mortality by 17% and the benefit overlaps with screening after the age of 50 years. In Lebanon, we noted that 49% of our patients are below the age of 50, which leads us to recommend screening starting the age of 40. However, the upper age limit of screening was raised from 69 to 75 during the 2nd European Breast Cancer Conference in Brussels 2000, in view of the increased life span and expectancy in modern days.

Mammography for women age 35 is not recommended because of denser breast tissue at younger ages and limited usefulness for comparison later on.31

Higher risk women, screening mammography should start 5-10 years prior to youngest age of cancer development in first degree relative in families with familial breast cancer. These women should have bi-annual clinical breast exam. As for families with genetic breast cancer, one may start screening at age 25.

Strict guidelines for high quality mammography are essential to make sure that women benefit from screening and are not harmed. The Ministry of Health should issue strict instructions and certify centers that are allowed to screen women with mammography to ensure non-harmful radiation doses, well-trained technicians, good mammography films and proper interpretation. This will reduce unnecessary tests and biopsies and allow good care.37-38

Prostate Cancer

Prostate Cancer is the most common cancer in men in the US. It is the second cause of male cancer deaths. In 1999, there were 179,000 new cases and 37,000 deaths. There are no consensus recommendations for prostate cancer screening which is on the rise and that is largely due to the detection of latent, asymptomatic cases of uncertain clinical relevance by screening tests. This was observed lately in Lebanon after a PSA campaign.39

Screening tests for prostate cancer include Digital Rectal Examination (DRE) and serum
Prostate Specific Antigen (PSA). PSA may be elevated in men with prostate cancer and non-cancerous conditions such as benign prostatic hypertrophy, prostatitis. Limitations of prostate cancer screening are caused by the long natural history of this disease, no consensus has yet been reached about prostate cancer screening. The American Cancer Society recommends offering DRE and PSA for men aged 50 years and above. Screening should start at age 45 for men at higher risk who are of African descent or have a young relative with prostate cancer. Physicians have to inform the patients of the benefits and limitations of early detection.

Serum prostatic antigen rises in metastatic prostate cancer and is useful for follow-up of therapy and was introduced to detect early prostate cancer. PSA may rise in adenocarcinoma of the prostate, benign prostatic hypertrophy, and prostatitis. Explanations should be given to any patient who needs to undergo PSA testing. In the presence of an abnormal DRE and or elevated PSA over 4, a biopsy should be performed; lower values of PSA may be used in younger patients. TRUS (Trans Rectal Ultra Sound) may be of additional value to DRE and PSA.40

Lung Cancer

Lung cancer is the leading cause of cancer deaths in men and women around the world. Cigarette smoking causes 87% of all cases. Passive smoking is responsible for 3,000 per 100,000 cases/year in the USA. Smoking 1 ppd increases the risk to 20 times the risk of non-smokers. More cigarettes and a longer duration of smoking increase risks. Living and or working with a smoker increases the risk to up to 30 times since cigarette carcinogens have been found in the urine of passive smokers. Asbestos and environmental city pollution increase smoking risks and lung cancer. Radioactive dust and radon, naturally occurring in underground and basement of residential homes, increase lung cancer as reported by a recent study from Sweden. Lung cancer screening of high risk people has yet not shown any benefit: Sputum cytology and Yearly Chest X ray in 3 Randomized Trials showed no decrease in mortality. Spiral CT scanning may detect lung cancer at earlier stages while delivering low dose radiation, but it gives high rates of false positive results. More experiments and studies are awaited, but now the best weapon against lung cancer remains the cessation of smoking. Smokers with symptoms should be thoroughly investigated.41

Uterine Cervix Cancer

In the US, there are US: 12,000 cases /year and 4,400 deaths /yr of uterine cervix cancer. In Lebanon, there are around 90 cases a year. Peak age at diagnosis is 47 yrs. 47% of cases with invasive ca are <35 and 10% >65. It is more prevalent in lower socio-economic classes with poor access to health care.42

In developing countries, cancer of the cervix is one of most common and leading causes of death mostly because of lower socio-economic status and absence of screening. Cervical cancer risk factors are early sexual activity, multiple partners, history of genital warts, human papilloma virus (90-100% of invasive cervix cancer are related to HPV infection) tobacco, oral contraception, and immunosuppressive.
Recommendations for screening for Cervix Cancer are as follows:

All women aged 18 and older, sexually active: Pap smear once a year. If negative for 3 times, it is then safe to do it every 2-3 yrs. Women who have a history of cervical dysplasia: once every year. Screening test: The Pap Smear. It is cheap, easy-to-use and reliable.43

Skin Cancer

The incidence of skin cancer has increased worldwide. In the US, incidence rate of melanoma has an annual increase of approximately 4% since the early 1970s. There is an overall 162% increase in male melanoma cases and 95% in women. In 1999, there were 54,000 new cases of skin cancer. As for melanoma in the US, there were 44,200 new cases, and 7300 deaths, it is the 6th cancer in males and 7th in females. The number of cases of non-melanoma skin cancers is 800,000 each year.44

Skin cancer risks: More common in people with fair skin, whose skin is burnt easier. It is more common in Sun-exposed areas of the body. It increases with earlier exposures in life to UV sunlight. It is less common in dark colored and blacks where cases are seen in non-pigmented palms and soles.

Routine examination for skin-cancer: Full routine exams and inspection by physicians are often overlooked but they are very important.

Screening & Prevention of skin cancer:

Routine screening for individuals at high risk (e.g. those having a family or personal history of skin cancer, clinical evidence of precursor lesions, and increased exposure to sunlight)

Skin cancer screening may lower mortality from skin cancer, especially melanoma: by improving rates of early detection.

Prevention is best, the use of protective sunscreens is very important nowadays especially that the ozone layer is less protective due to man made pollution. Prevention can be achieved through avoiding midday exposure (between 11am and 3pm), limiting time of exposure, and be careful of hazy days because of increased sunray reflections and more slow damage.