Some Controversial Ideas about Cancer Screening

The Hong Kong College of Family Physicians

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Presentation Plan

1. Introduction
2. Colon Cancer screening
3. Breast Cancer screening
4. Cervical Cancer screening
5. Prostate Cancer screening
6. Discussion and conclusion

Introduction

- The idea of the annual health examination is based on a car maintenance concept by checking every body part by scans, scopes and blood tests regularly - you can live forever.
- We all know that this does not apply practically to cars and certainly not to humans.
- We have also learned that to answer the question “What is effective preventive screening?” is very complex.

Introduction

- Increased popular demand in Canada for an annual check up in our publically funded health care system in the late 1970's fuelled by the car maintenance concept promoted by our neighbours to the south, facilitated the development of the Canadian Task Force on the Periodic Health Examination. (1)
- The Task Force became a world authority on recommending appropriate screening and examinations to be done for prevention.

  http://www.ctfphc.org/

Introduction

- In classical Canadian fashion, the Government stopped funding the Task Force in 2003, presently leaving many recommendations 10 or more years out of date.
- Fortunately, the Task Force is being reassembled under the Public Health Agency in the Federal Government.
- So we are dependant on other such information (the U.S. Task force) that was once inspired by Canada. (2)

http://www.ahrq.gov/clinic/USpstfix.htm

Colon Cancer Screening Question

Case description:

A 55 year old man who smokes 1 package per day as he has for 40 years and has a BMI of 32 asks for a colonoscopy since his 85 year old uncle died of colon cancer a few weeks ago. There is no other family history of cancer.

What do you recommend?

Colon Cancer

- Colorectal Cancer is the second most common cause of cancer mortality in men and women with 17 000 new cases and 6500 deaths from colorectal cancer in Canada in 2000
- In the 1990's, the Canadian Task force did not recommend any colon cancer screening and gave fecal occult blood testing a "D" recommendation.
- Since then, three large randomized controlled trials have shown an 18 to 32% reduction in colon cancer mortality with bi-annual fecal occult blood screening.
- Hardcastle JD, Thomas WM, Chamberlain J, Pye G, Sheffield J, James PD et al. Randomised, controlled trial of faecal occult blood screening for colorectal cancer. Results for first 107,349 subjects. *Lancet* 1989;1(8648):1160-4.
- Kronborg O, Fenger C, Olsen J, Jorgensen OD, Sondergaard O. Randomised study of screening for colorectal cancer with faecal-occult-blood test. *Lancet* 1996;348(9040):1467-71
- Mandel JS, Bond JH, Church TR, Snover DC, Bradley GM, Schuman LM, et al. Reducing mortality from colorectal cancer by screening for fecal occult blood. Minnesota Colon Cancer Control Study. *N Engl J*

Colon Cancer

- **People at normal risk**: There is good evidence to include annual or biennial fecal occult blood testing (grade A recommendation) and fair evidence to include flexible sigmoidoscopy (grade B recommendation) in the periodic health examination of asymptomatic people over 50 years of age.
- **Individuals fall into Category 1** ***(at or slightly above average risk)*** if they have: no personal history of bowel cancer, advanced adenoma, or chronic ulcerative colitis, AND either no close relatives with bowel cancer or one first-degree or second-degree relative with bowel cancer diagnosed at age 55 years or older

Colon Cancer

- **Individuals fall into Category 2** ***(moderately increased risk)*** if they have: One first-degree relative with bowel cancer diagnosed before the age of 55 years **They are screened with colonoscopy once every 5 years.**
- **Individuals fall into Category 3** ***(at potentially high risk)*** if they have: three or more first-degree or a combination of first-degree and second-degree relatives on the same side of the family diagnosed with bowel cancer. **They should have colonoscopy every 3 years**

www.gacguidelines.ca and *The Cancer Council Australia/Australian Cancer Network. (2005). Clinical practice guidelines for the prevention, early detection and management of colorectal cancer, p. 61.*

Colon Cancer

- Concerns remain about the high rate of false-positive results using fecal occult blood testing, the feasibility of mass screening and the small clinical benefit of such screening.
- The number needed to screen for 10 years to avert 1 death from colorectal cancer is 1173.

Canadian Task Force on Preventive Health Care. Colorectal cancer screening. *CMAJ* 2001; 165:206-8.

Colon Cancer Clinical Question

Based on this evidence you would recommend to the 55 year old smoker fecal occult blood testing every two years as he is classed as a category 1 risk.

Breast Cancer Clinical Question

- A forty five year old woman asks at the end of a periodic health exam to be taught how to properly self examine her breasts as well as having a mammogram. Her grandmother died at age 85 with breast cancer. There is no other family history of cancer.
- What would you recommend?

Breast Cancer

- ***Breast Self Examination*** A systematic review by the Canadian Task Force on Prevention found that there was no benefit from self examination and that women who regularly practiced self examination underwent unnecessary biopsies. This results in a “D” recommendation.

Philip J, Harris WG, Flaherty C, et al. Breast self-examination: Clinical results from a population based prospective study. Br J Cancer 1984; 50: 7-12.

Bart JH, Miller AB, et al. Effect of breast self-examination techniques on the risk of death from breast cancer. Can Med Assoc J 1997; 157: 1205-1212.

Breast Cancer

- **Mammography screening for breast cancer**
- The Cochrane review in 2007 estimate a 15% relative risk reduction from screening for breast cancer
- This means that for every 2000 women invited for screening biannually throughout 10 years, one will have her life prolonged.
- The false positive rate is reported to be 50% for 10 screens.
- Through this process, 10 healthy women will be diagnosed and treated for breast cancer unnecessarily.
- The benefit of mammography is somewhat unclear.

Peter C Gøtzsche, *director*[1], **Ole J Hartling**, *consultant*[2], **Margrethe Nielsen**, *PhD student*[1], **John Brodersen**, *lecturer*[3], **Karsten Juhl Jørgensen**, *researcher*[1] **Breast screening: the facts—or maybe not** BMJ 2009;338:b86

Breast Cancer

- Screening 40 to 50 year old women has been shown to probably cause more harm than good.
- The BMJ cover article March 3, 2009 demonstrates that women are not being properly informed of the risks and benefits of mammography.
- http://www.cochrane.org/reviews/en/ab001877.html
- Miller AB, To T, Baines C, Wall C. The Canadian National Breast Screening Study. Breast Cancer mortality after 11-16 years follow-up. A randomized screening trial of mammography in women aged 40-49 years. Ann Intern Med 2002 ;137:305-312.

Breast Cancer Clinical Question

- You might demonstrate proper breast self examination but advise against carrying the procedure out regularly, providing an explaining for the reason.
- You could advise her that mammography is only of benefit starting at age 50, with this benefit presently being debated. You should give her the pamphlet on the subject. (see handout)

Cervical Cancer Clinical Question

- A 22 year old woman who you know has had at least 6 different sexual partners asks how often she should have a pap smear after her first one. She has no history of vaginal infections. She also asks for the vaccine to prevent cancer.
- What would you tell her?

Cervical Cancer

- Even though there is no randomized trial of the pap smear which means no “A” recommendation (nor will there ever be), this is one cancer for which death and serious effects could be completely prevented.
- The 20 to 25 year natural history of Ca of the cervix make the frequency of pap smears less important than making sure that all women have the procedure at least once every 5-7 years.

Cervical Cancer

- Frequency recommendations range from biannual to annual in some areas of the U.S. to every two years in Ontario to every 3 years in the Canadian Task Force to every 5 years in the UK, to every 7 years in Finland.
- In Canada, the majority of women at low risk are receiving annual pap smears while 30- 40% of women often at high risk are not undergoing the procedure at all.

Forbes C, Jepson R, Martin-Hirsch P. Interventions targeted at women to encourage the uptake of cervical screening. *Cochrane Database of Systematic Reviews* 2002, Issue 3

Cervical Cancer

- In Canada, we need to screen a higher percentage of women as our mortality rate has been steady over the past decade.
- The lowest death rate from cervical cancer in the world is found in Finland where pap smears are done every 5 to 7 years on almost the entire female population.
- There may be a benefit of screening high risk women more frequently than 3-5 years.

Canadian Cancer Society/National Cancer Institute of Canada: Canadian Cancer Statistics2008, Toronto, Canada, 2008.

Cervical Cancer

- In several Provinces, girls aged 10-12 have been offered the HPV vaccine effective against 4 strains of the HPV virus that cause both cervical cancer and condylomas.
- The vaccine can be used in women up to age 26 who have not suffered an HPV infection. The vaccine is considered safe and effective.

Noni MacDonald, MD MSc and Paul C. Hébert, MD MHSc **Human papillomavirus vaccine: waiting for a miracle** Can. Med. Assoc. J., Aug 2007; 177: 433 ; doi:10.1503/cmaj.071057

Arbyn M Effects of quadrivalent human papillomavirus vaccination.Lancet. 2007 Sep 22;370(9592):1031-2;

Cervical Cancer

- The number of women who need to be immunized to prevent one case of condylomas is 8.
- The number needed to treat with vaccine to prevent 1 case of cancer of the cervix is 324.
- There has been controversy from religious, political and epidemiologic viewpoints yet we are dealing with the first vaccine that prevents cancer.

Kumanan Wilson **Protecting vaccine programs and the public** Can. Med. Assoc. J., Jun 2007; 176: 1681 ; doi:10.1503/cmaj.070610

Cervical Cancer

- Some screening experts are suggesting that Pap smears should not start until women reach the age of 30 because of the risk of doing more harm than good.
- The natural history of cervical cancer and the fact that more than half of all dysplasia found on pap smears in young women disappear and the fact that dysplasia in young women may result in cone biopsies predisposing them to miscarriages justify this suggestion.

Cervical Cancer Clinical Question

- If this woman has 2 normal annual pap smears, one every 3 years should be appropriate. Since she is at higher than average risk, suggesting no tests until 30 would be debatable.
- She is eligible for the HPV vaccine and her above average risk would increase the value of the immunization against HPV.

Prostate Cancer Clinical Question

- A 55 year old lawyer was sent by his wife for a check up with a specific request for a prostate test. His healthy 85 year old father was found to have prostate cancer at age 65.
- What would you tell him and what would you do?

Prostate Cancer

Prostate cancer is one of the most prevalent forms of cancer in men worldwide The digital rectal examination is not recommended as a screening test as it will miss more than 50% of prostate cancer.

Other tests include the prostate specific antigen (PSA) blood test and the trans-rectal ultrasound-guided biopsy (TRUS). There is inadequate evidence for or against use of these screening tests according to the Cochrane review.

Ilic, D., O'Connor D, Green S, Wilt T. Screening for prostate cancer. *Cochrane Database of Systematic Reviews* 2006, Issue 3. Art. No.: CD004720. DOI:

Prostate Cancer

- The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of prostate cancer screening in men younger than age 75 years.
  Grade: I Statement "C"
- The USPSTF recommends against screening for prostate cancer in men age 75 years or older.
  Grade: D Recommendation

Prostate Cancer

The PSA screening test detects most men with prostate cancer with some accuracy, however 80% of them will die with the disease but from another cause and only 15-20% of men with prostate cancer will die from the disease.

Although more than 30% of Canadian men are screened with PSA each year, the mortality rate has declined by only 5% in the past decade. (See handout)

Canadian Cancer Society/National Cancer Institute of Canada: Canadian Cancer Statistics2008, Toronto, Canada, 2008.

Miller AB. Commentary: Implications of the frequent occurrence of occult carcinoma of the prostate. Int J Epidemiol 2007; 36: 282-284.

Prostate Cancer

- Frankel estimated if 1 million men over 50 were screened with a PSA test cut off at 4ng/ml, 110,000 would have elevated PSA on the first test.
- 90,000 would have a biopsy
- 20,000 will be found to have cancer
- 10,000 will have a prostatectomy

Prostate Cancer

- 3000 will be left with chronic incontinence
- 4000 will be impotent
- More than 100 will die from the surgery

It remains unclear how many men will benefit from early detection and treatment.

The PSA test may cause more harm than good.

Frankel S, Smith GD, Donovan J, Neal D. Screening for prostate cancer. Lancet 2003; 361:1122-8. Review 6.

Prostate Cancer

- The European Randomized study of Screening for Prostate Cancer followed 162,000 men aged 55-69 years for an average of 9 years being screened once or twice.
- They found the NNS was 1410 with 48 additional cases receiving treatment to prevent 1 death.
- They found some lowering of mortality in those screened. RR 0.73

  Schroder FH, Hugosson J, Robol MJ et al. Screening and Prostate Cancer Mortality in a randomized European Study, EJM. 2009;360:1320-1328

Prostate Cancer

- The PLCO screening trial saw 76,693 men randomly allocated to be screened annually or in a control group followed for an average of 7-10 years.
- There were 2 deaths per 10,000 person years with no difference in mortality rates between the screened and control groups.

Andriole GL, Grubb RL, Buys SS, et al. Mortality Results from a Randomized Prostate Screening Trial NEJM 2009.360:1310-1319

Prostate Cancer Clinical Question

- You could present these facts about the test and state that at best the DRE and PSA test provide little benefit and may result in harmful outcomes.
- The decision about having the test is his after providing appropriate information. (see handout)
- Since he is a lawyer, you may wish to record the decision using a tool call the PPPP found on web site www.capre.ca

Discussion

- In David Sackett's article "The Arrogance of Preventive Medicine", he argues that preventive medicine displays all three elements of arrogance.
- *aggressively assertive*, pursuing symptomless individuals and telling them what they must do to remain healthy.
- *presumptuous*, confident that the interventions it espouses will, on average, do more good than harm to those who accept and adhere to them.
- *overbearing*, attacking those who question the value of its recommendations.

Discussion

- “the *presumption* that justifies the *aggressive assertiveness* with which we go after the unsuspecting healthy must be based on the highest level of randomized evidence that our preventive manoeuvre will, in fact, do more good than harm”
- He speaks of several examples of failures, the most current being HRT preventing heart and bone disease but causing increased rates of breast cancer.

Sackett, D. The Arrogance of Preventive Medicine CMAJ 2002 167(4) 363

Discussion

“I place the blame directly on the medical "experts" who, to gain private profit (from their industry affiliations) to satisfy a narcissistic need for public acclaim or in a misguided attempt to do good, advocate "preventive" manoeuvres that have never been validated in rigorous randomized trials.”

Conclusion

Controversies include:

- The NNS for FOBT is 1730 for 10 years of screening
- The NNS for mammography is 2000 over 10 years with few women informed of risks.
- Should Pap smears be carried out every 2,3,5,or 7 years and should they be done on women under 30?

Should DRE or PSA be used at all for screening?

Conclusion

- It is most important in managing these controversies is that we inform our patients of the benefits and risks of screening procedures and let them decide what is best for them.
- We must include their fears, beliefs and values as part of informed decision making.

And above all do no harm