

The Dangers of Inappropriate Screening: Private Director Screening Programs

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ABSTRACT **Background:** Traditionally, the task of health promotion and early detection screening has been the purview of health maintenance organizations through the family physician. For some years, it has become popular for private health organizations to offer a concentrated day of comprehensive medical testing, which is promoted as a perk by many organizations to their employees. What do these programs offer? Are the tests that are offered evidence based?

Objectives: To describe a concentrated day of comprehensive medical testing program in view of current evidence base medicine (EBM) recommendations.

Methods: We reviewed official internet sites of the most popular concentrated days of comprehensive medical testing and compared the tests offered to the recommendation of several Israeli and international guidelines.

Results: Many tests performed at director screening days do not follow EBM recommendations. Tests like mammography, colonoscopy, bone density, and prostate-specific antigen tests are often offered outside of the recommended age and risk groups and without pretest consultation.

Conclusions: We recommend against routine general health examinations for healthy adults. The most important treatment is not screening and early detection but real prevention. We recommend turning these director screening days into real investments in future health by changing the focus from diagnosis to treatment through prevention. One-on-one conversations, explanations, and most importantly tools to encourage lifestyle changes, will really make a difference.

IMAJ 2022; 24: 388–392

KEY WORDS: annual-examination, over-diagnosis, periodic-checkup, prevention, screening

Physicians are taught in medical school that prevention is better than treatment. Early detection allows physicians to start treatment sooner, which prevents complications and death. With this in mind, physicians should encourage the public to cooperate with national screening programs. Some people mistake early detection and screening programs with prevention. But is this always the case?

Every medication, treatment, and test we offer to our patients has both benefits and disadvantages, which may be known, suspected, or potentiated. Both the advantages and the disadvantages need to be considered for every medical intervention.

Unlike diagnostic tests, which are intended to find the cause of a patient's symptoms, screening tests are deliberately conducted on a healthy and asymptomatic population with the intention of finding a disease at such an early stage before causing any discomfort in order to treat the disease at an earlier stage, thus preventing its progress. We need to test thousands of people to detect one abnormality. That situation makes the decision to use screenings even more delicate. The potential harm needs to be taken very seriously. These tests are justified only if early detection and thus early treatment has been shown to have a better health outcome than if the disease was found and treated at its symptomatic stage.

With this dilemma in mind, many countries have a national task force to assess the pros and cons of screening interventions and to offer a researched and informed recommendation, based on the evidence based medicine (EBM), hopefully not influenced by financial interests and popular opinion, like the United States Preventive Services Task Force (USPSTF) [1] and the Israeli Task Force for Health Promotion and Preventive Medicine [2]. In Israel the task force's recommendations are normally incorporated into the national health system that is paid by the government and offered through the different health funds.

This situation was also the purpose behind the founding of the organization *Choosing Wisely* [3] in the United States in 2012. The organization was created to address and promote a national dialogue to avoid unnecessary medical tests and treatments as well as to create an understanding that the risks and disadvantages of certain interventions outweigh their success. National organizations representing medical specialties were

asked to identify tests or procedures commonly used in their field that are necessary and that should be discussed [4].

The organization, Choosing Wisely, soon gained international recognition and more national branches were formed in many other countries, including Israel. In Israel, the organization was founded by the Israeli Medical Association [5].

Traditionally, the task of health promotion and prevention through screening and early detection (among other things) was within the purview of the health maintenance organizations and through the family physician. But in the last 20 years or so, it became very popular for hospitals [6,7], health centers [8,9], and more recently the health maintenance organizations themselves [10] to offer a single day of comprehensive medical testing, when clients come in the morning and in a few hours complete all of the periodic examinations that are considered to be necessary. At the end of the day, the patients would receive a comprehensive look at their health status.

In Israel, these days of comprehensive testing were dubbed *Seker Menahalim* or *Director Screening*, to give them a prestigious feel. They were promoted as a perk to employees by many organizations and were performed during the work day.

However, if we actually take a closer look at these programs we find their need to be special and advanced in their marketing to also ignore the best available medical advice, thus being possibly counterproductive from the patient's point of view.

PATIENTS AND METHODS

WHAT IS OFFERED TO CUSTOMERS DURING THE TESTING DAYS?

EBM supporting or disproving the tests recommended

One of the recommendations of Choosing Wisely by the Israeli Association of Family Physicians [11], as well as the Society of General Internal Medicine in the United States [3], is to perform routine annual general health examinations in healthy adults that are tailored to each patient's personal history and complaints. So, the approach of annual testing days is already not aligned with the recommendations. Even more concerning is that many of the special tests offered by these institutions have been found to have a greater potential for harm than their proposed benefit.

RESULTS

TESTS NOT RECOMMENDED BY THE CURRENT EBM

Chest X-rays for smokers seem like the most counterproductive tests on offer. A Cochrane review as far back as 1999 already concluded there was no benefit to yearly chest X-rays for the early detection of lung cancer in smokers, and in its latest version (2013) [12], researchers concluded that frequent screening with chest X-rays was associated with an 11% relative increase

in mortality from lung cancer compared with less frequent screening (relative risk [RR] 1.11, 95% confidence interval [95%CI] 1.00–1.23).

Yet, these scans were still offered in 2022 for this purpose. Since lung cancer is the third most common cancer in Israel [2] and is overwhelmingly associated with smoking, it is reasonable to try for early detection in smokers, but the only screening method currently proven to have a positive effect on mortality is yearly low dose computed tomography (LDCT) [13], which not currently offered by the health funds for this purpose. Only one private program currently offers LDCT as part of their screening, but it includes an extra cost.

Both resting and stress electrocardiograms are promoted by all of the institutions offering these screening tests as part of their cardiac assessment. However, in the Choosing Wisely campaign [3], the American Academy of Family physicians (AAFP), the American College of Physicians (ACP), and even the American College of Cardiology (ACC) recommend against the use of these tests as screening in low-risk, asymptomatic patients. The USPSTF [1] also recommends against routine screening with resting electrocardiogram, exercise treadmill test, or electron-beam CTs for coronary artery calcification (CAC) in adults at low risk for coronary heart disease (CHD) events. The reason is because false-positive findings are likely to lead to harm through unnecessary invasive procedures, over-treatment, and misdiagnosis.

TESTS RECOMMENDED BY THE CURRENT EBM ARE ONLY FOR SPECIFIC SUBGROUPS

Mammography tests for breast cancer screening in these screening programs are usually offered (and promoted) yearly to women as early as age 40 years. The official recommendation by the Israeli task force [2], as well as by the USPSTF [1], is to start screening at age 50 years, and then every other year. The committee to assess the Israeli national program for breast cancer detection [14] spent many hours discussing this decision, and the recommendation was not made with the goal to save resources. Due to the inherent difficulties of the test in younger (and thus denser tissue) breasts, screening the healthy population between the ages 40–49 yearly means each woman has a cumulative 61% chance of having a false positive test that requires further examination (or 42% if done bi-yearly). False negative tests in this age group are also more common than in the older population. Moreover, the over diagnosis of small tumors that would have spontaneously regressed or remained clinically insignificant is currently estimated at about 30% of all new diagnoses. Taking all that (and much more) into consideration, the committee recommended against screening between ages 40–44 years, but allowed women aged 45–49 to actively ask for a mammography, and receive it, hoping it is done after a discussion with her primary care physician about her personal risk.

Due to the higher rate of genetic breast cancer in Ashkenazi Jews [15], the genetic test to screen for the known BRCA genes

Table 1. Various screening programs offered in Israel

Hospital A	Hospital B	HMO (for ages > 45 years)	Health center A	Medical center B
Meeting a doctor	Meeting a doctor	Meeting a doctor	Meeting a doctor	Meeting a doctor
General blood tests – CBC, lipid panel, basic chem panel, TSH, CRP, Vitamin B12+D, HbA1C	General blood tests – CBC, lipid panel, basic chem panel, TSH, CRP, HbA1C	General blood and urine tests	Comprehensive lab work (not specified) Homocysteine	General blood tests: CBC, lipid panel, basic chem panel Homocysteine
PSA (for men)	PSA (for men)			PSA (for men)
Occult blood and colonoscopy (every 5 years) for age > 50 years	Occult blood (age > 50 years)	Occult blood	Occult blood and physical rectal examination for colon and prostate cancer detection	Occult blood with an offer to continue to colonoscopy if positive
	Spirometry	Spirometry	Spirometry	<i>H. Pylori</i> breath test
ECG and stress ECG	ECG and stress ECG	ECG and stress ECG	ECG and stress ECG	ECG and stress ECG
CAC	Low Dose CT for heavy smokers	Chest X-ray (for smokers)	Chest X-ray	
Eye examination	Eye examination	Eye examination	Eye examination	Eye examination
Skin examination by a dermatologist	Hearing test	Hearing test	Hearing test	Hearing test
Bone density (for women and men)	Bone density (for women age > 50 years)	Bone density	Bone density	
Carotid AA US			Ultrasound (general)	
Mammography and CBE by surgeon	Mammography and CBE by surgeon (women over 40)	Mammography	Mammography and CBE	Mammography

AA US = abdominal aorta ultrasound, CAC = coronary artery calcification score (cardiac CT), CBE = clinical breast examination, CBC = complete blood count, CRP = C-reactive protein, CT = computed tomography, ECG = electrocardiogram, HbA1C = hemoglobin A1c, HMO = health maintenance organization, PSA = prostate-specific antigen, TSH = thyroid stimulating hormone

was made readily available as part of the national health fund to identify women at a higher risk for developing breast cancer. The women with a higher risk due to genetics or family history are screened under a different set of considerations and recommendations and should be approached by their primary health provider, not through these screening programs.

We are then faced with a dilemma. A woman in her 40s who has an informed discussion with her primary physician may decide that she should not undergo this test; however, the way such issues are promoted and marketed by these private screening programs, the information needed to make such a decision is simply not available.

Colonoscopy is offered by some programs as a screening test irrespective of an occult blood test, every 5–10 years starting at age 50 years. The Israeli task force recommends [2] annual testing for occult blood starting at age 50 years and performing a colonoscopy every 5 years only in patients with a family history of colon cancer. The recommendation for a colonoscopy in the general population, who did not test for occult blood, is once every 10 years or at least once between the ages of 55–65 years. This decision was influenced by financial and logistic considerations (such as the availability of the necessary trained personnel, which is seriously lacking in Israel). Colonoscopy has an approximated 1:2500 risk of perforation, and 1:1250 risk

of severe bleeding [16] and it quite time consuming for the patient as it requires 2 days of preparation often leave them mildly incapacitated for several hours after the test and thus unable to work. A decision that considers the patient's interests is ignored for what only seems like the popular and innovative approach.

Bone density tests are recommended by the Israeli task force [2] for women over the age of 65 years, and in those with high risk due to either preexisting conditions or medication use at an earlier age. It is important to note that bone density tests are not meant as a screening tool for a younger, healthy population, but more as a diagnostic tool to help determine who would most likely benefit from pharmacologic intervention aimed at decreasing osteoporotic fractures. Some of the assessment tools for such a decision do not even require a bone density result. Furthermore, we know that healthy young women can sometimes have low bone density for genetic reasons but are not at much higher risk for OP fractures and would not normally benefit from medical treatment.

Yet, these tests are sometimes offered for women as young as 50 years of age, and for men even though there is no recommendation for screening (USPSTF recommendation I: insufficient data) [1].

PSA testing, usually offered by these private screening programs for men over the age of 40 years, has been originally lauded as an early marker that allows the detection of prostate

cancer in its early stages, thus this early treatment would decrease mortality. However, cancerous changes in the prostate are a common finding in men over the age of 50. In the vast majority of cases it is self-contained, does not metastasize and has no effect on life expectancy. Over diagnosis and over treatment of such findings are fraught with complications, including pain, bleeding, sexual dysfunction, and urinary incontinence. Meta-analyses of studies both in the United States and in Europe [17] found that even when early detection does decrease prostate cancer (specific) mortality, there is no effect on all-cause mortality. So many men go through complicated and potentially dangerous procedures and treatments for a disease that likely would have had no effect on the normal course of their lives.

Based on this information, the USPSTF [1], as well as the Israeli task force [2] and many other organizations, recommends that if this test is offered between the ages of 55–64 (69 in the United States), it should be offered on an individual basis after an informed discussion with the patient about their personal risk assessment. The PSA test was given a C rating by the USPSTF. Over the age of 65 (70 in the United States) the recommendation is to not perform the test at all (D rating). No one even considers doing it before the age of 50 years.

However, when the PSA test is offered under the (aggressive) marketing of early detection of cancer in these private screening programs, do you imagine any of these facts are discussed and considered?

Tests with no good EBM data to make recommendations

The use of clinical breast examination (CBE) for the detection of breast cancer (along with mammography) and the use of a visual inspection of the skin by a doctor (clinical skin examination) for the detection of melanoma have not been found to have enough data to compare their potential risks vs. benefits (recommendation I) [1,2].

And the use of a digital rectal exam for the detection of prostate cancer or rectal cancer has no evidence of benefit, and so is not even mentioned as a possibility in screening recommendations. Nevertheless, they are readily offered in these programs as valid screening tests.

DISCUSSION

As far back as 2014, the National Council for Community Health has recommended that the Israeli Ministry of Health monitor the situation of these health days more closely, both to ensure the quality of tests performed and to prevent the misuse of unnecessary test on a healthy population under the guise of health promotion.

In an article in the *New England Journal of Medicine*, Rourke [4] reminds readers that the initial explanation for the Choosing Wisely project was to decrease the use of low value medical tests and procedures. Rourke aimed to promote discussion both within the medical profession as well as between doctors and their patients. But we seem to have had little effect on the actual

practice of medicine. She reminds us of a study that found that patients favored “replacing excessive tests with time for clinicians to talk, listen, and personalize”.

One of the resources most needed in the medical field in general and in family practice in particular is time. Physicians and patients know that real preventive medicine requires time: time to listen to the patients to understand their reservations, time to explain and convince patients to make the necessary of life style changes, and time to manage busy clinics.

We recommend making screening days real investments in future health and prevention by:

- Encouraging one-on-one conversations about appropriate physical exercise for bone health and strengthening instead of conducting a bone density test
- Promoting and actively support smoking cessation instead of chest X-rays for the prevention of lung cancer
- Discussing and explaining appropriate diets to avoid colorectal cancer instead of promoting colonoscopies

CONCLUSIONS

Instead of promoting early detection, physicians should actually promote prevention.

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Capsule

Estimating excess mortality due to the COVID-19 pandemic

Although reported COVID-19 deaths between 1 January 2020, and 31 December 2021, totaled 5.94 million worldwide, the authors estimated that 18.2 million (95% uncertainty interval 17.1–19.6) people died worldwide because of the COVID-19 pandemic (as measured by excess mortality) over that period. The global all-age rate of excess mortality due to the COVID-19 pandemic was 120.3 deaths (113.1–129.3) per 100,000 of the population, and excess mortality rate exceeded 300 deaths per 100,000 of the population in 21 countries. The number of excess deaths due to COVID-19 was largest in the regions of south Asia, north Africa and the Middle East, and eastern Europe. At the country level, the highest numbers of cumulative excess deaths due to COVID-19 were estimated in India (4.07 million [3.71–4.36]), the United States (1.13 million [1.08–1.18]), Russia

(1.07 million [1.06–1.08]), Mexico (798,000 [741,000–867,000]), Brazil (792,000 [730,000–847,000]), Indonesia (736,000 [594,000–955,000]), and Pakistan (664,000 [498,000–847,000]). Among these countries, the excess mortality rate was highest in Russia (374.6 deaths [369.7–378.4] per 100,000) and Mexico (325.1 [301.6–353.3] per 100,000), and was similar in Brazil (186.9 [172.2–199.8] per 100,000) and the United States (179.3 [170.7–187.5] per 100,000). The full impact of the pandemic has been much greater than what is indicated by reported deaths due to COVID-19 alone. Strengthening death registration systems around the world, long understood to be crucial to global public health strategy, is necessary for improved monitoring of this pandemic and future pandemics.

Lancet 2022; 399: 1513
Eitan Israeli

Capsule

Efficacy and safety of a recombinant plant-based adjuvanted COVID-19 vaccine

Coronavirus-like particles (CoVLP) that are produced in plants and display the prefusion spike glycoprotein of the original strain of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are combined with an adjuvant (Adjuvant System 03 [AS03]) to form the candidate vaccine. A total of 24,141 volunteers participated in a trial conducted by Hager et al. The median age of the participants was 29 years. COVID-19 was confirmed by polymerase chain reaction assay in 165 participants in the intention-to-treat population; all viral samples that could be sequenced contained variants of the original strain. Vaccine efficacy was 69.5% (95% confidence interval [95%CI] 56.7–78.8) against any symptomatic COVID-19 caused by five variants that were identified by sequencing. In a post hoc analysis, vaccine efficacy was 78.8% (95%CI, 55.8–90.8) against moderate-to-

severe disease and 74.0% (95%CI 62.1–82.5) among the participants who were seronegative at baseline. No severe cases of COVID-19 occurred in the vaccine group, in which the median viral load for breakthrough cases was lower than that in the placebo group by a factor of more than 100. Solicited adverse events were mostly mild or moderate and transient and were more frequent in the vaccine group than in the placebo group. Local adverse events occurred in 92.3% and 45.5% of participants, respectively, and systemic adverse events in 87.3% and 65.0%. The incidence of unsolicited adverse events was similar in the two groups up to 21 days after each dose (22.7% and 20.4%) and from day 43 through day 201 (4.2% and 4.0%).

N Engl J Med 2022; 386: 2084
Eitan Israeli