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Should you screen nursing home residents for cancer?

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ABSTRACT

When considering screening for early cancer detection physicians should anticipate how they plan to follow up a screen detected cancer. Geriatric oncology research has developed validated functional assessments to estimate the balance of risk and benefit for treating cancers in the elderly. Robust elderly can benefit from treatment and therefore might benefit from screening. However the majority of elderly in long term residential care (LTC, or “the nursing home”) would not benefit from cancer screening. The 1.4 million elderly people who reside in U.S. nursing homes represent the oldest and frailest segment of the aged population. On average, LTC residents have less than 5 years estimated remaining life expectancy (RLE.) E.U. figures are similar. The majority have multiple functional deficits that would result in geriatric oncology screening scores in the frail range, at very high risk for severe toxicity from standard chemotherapy or extensive surgery. Therefore screening for asymptomatic cancer is not likely to benefit and has the potential to harm elderly nursing home residents.

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1. Introduction

As the population ages oncologists will see very old and frail patients who have had malignancies diagnosed incidentally when they are being worked up for other causes. The following two cases demonstrate common scenarios in which an early stage malignancy, the kind usually discovered by screening, is instead discovered incidentally. The question becomes balancing the benefit against the risk of treatment.

Case 1. A 79 year old woman is admitted to your hospital for fever, cough and dyspnea. She lives at a nearby long term care facility. She continues to smoke 2 or 3 cigarettes a day if the staff will take her in her wheelchair to the smoking area outside. In addition to the infiltrate attributed to health care associated pneumonia, a right middle lobe

solitary 1.5 cm spiculated nodule suspicious for malignancy is confirmed by CT scan. A bronchoscopic biopsy confirms non-small cell adenocarcinoma. A PET scan identifies no definite sites of metastasis. As the consulting oncologist you are asked to recommend further treatment. What additional information would you need to decide on whether she would benefit from lobectomy or local radiation.

Case 2. An 84 year old man is transferred from a nearby nursing home and admitted to your hospital for rectal bleeding. He does not remember, but his daughter thinks he had a colonoscopy several years ago when he was still living at home before his wife died. At colonoscopy 2 days later diverticulosis is diagnosed as well as a 4 cm non-bleeding mass distal to the cecum. The biopsy reveals adenocarcinoma invading the muscularis. A PET CT identifies a subcentimeter area of increased uptake in the right hepatic lobe suspicious for metastasis. What else would you need to know as the consulting oncologist to decide on treatment?

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Reading these cases, would you consider them failures of screening? Since these are the kinds of lesions found on screening, thinking about how you approach an asymptomatic early stage malignancy in a frail elder would probably shape your view on screening. The next case demonstrates systemic issues in U. S medical care that may force decisions about screening frail elderly for cancer.

Case 3. Although she now resides in a nursing home because of progressive Alzheimer's disease, your 72 year old primary care patient still comes for periodic outpatient check-ups accompanied by her daughter. While updating the history in the electronic record, a pop-up reminds you that she is due for her mammogram. The pop-up requires a response before you can continue the documentation.

Cancer screening guidelines are based on the best available evidence on the performance of available technology. The clinical trials on which these recommendations were based are now to some extent obsolete in terms of technology and unrepresentative in terms of the aging population. Extrapolating from the healthy mainly <70 year olds in the trials to the extremely frail elderly in nursing homes is fraught with assumptions for which there are no data. For this reason alone several of the screening guidelines are hedged. The clinician is charged with deciding if the patient in the exam room will be likely to live long enough to benefit from early detection. As will be shown, very few nursing home residents can benefit from cancer screening less because of age than because of life expectancy and competing risk.

Breast cancer screening guidelines were most recently updated in response to expert assessments of the appropriate age for starting [1] and less about stopping mammography based on age [2]. Whether to screen at all for prostate cancer has also been controversial [3,4]. Age alone has been given as an exclusion from further screening with colonoscopy for colon cancer [5,6,7]. Thus far there is limited experience with low dose CT lung cancer screening outside of the PLCO trial [8]. There is little disagreement about the recommendation against ovarian cancer screening [9] and against "routine" cervical cancer screening in older women with a history of previous normal screening [10]. All of these are shown in Table 1, which includes the guidelines from the US Preventive Health Task Force [11] and the American Cancer Society [10,12]. There are few substantial differences between these guidelines and those accepted internationally [7].

Breast cancer, prostate and lung cancer screening and guidelines make explicit reference to age and life expectancy. Since we are not fortune-tellers, life expectancy needs to be parsed for patient counseling as based on observations of "people like you." [13] The American Geriatrics Society partnered with the American College of Physicians in the Choosing Wisely campaign which suggests that cancer screening be offered only if a malignancy is likely to become symptomatic during the patients' estimated remaining life expectancy [4,6,14,15,16]. To implement these recommendations, primary care providers require general knowledge of both cancer epidemiology and age-associated factors in cancer biology. First, what is the incidence of cancer in the elderly? For the common solid tumors that carry screening recommendations, incidence is higher in the elderly than in middle-aged adults. Second, what is the likelihood of indolent vs aggressive but treatable disease? This refers to lag time and is variable by site and the frequency of tumor biology. Hormonally sensitive histology is more common in elderly but some will have triple negative or mixed breast cancer histology or Gleason high grade prostate cancer. Third, what is this older patient's estimated life expectancy, i.e. "time to benefit?" Prostate and colon cancer screening should be considered for adequately informed elderly who have an estimated 10 year remaining life expectancy (RLE.) Mammography should be considered for elderly women with at least a 5 year RLE who would choose to be treated if a malignancy were found [10,11,12].

2. Who Lives in Nursing Homes?

Let us compare the elderly who would benefit from cancer screening to those who live in nursing homes. At the end of 2015 there were about 15,600 Medicare qualified nursing facilities in the United States that housed about 1.4 million Medicare beneficiaries under their Medicare Part A coverage (Med A) [17]. Over 80% of them were age 65 and over, the traditional Medicare population. Only 440,000 were under age 65 and receiving Medicare benefits for qualifying disabilities [17]. Disabled younger adults might benefit from screening depending upon their ability to consent. However, Med A is post-acute and sub-acute care so it is time limited. From admission, Med A pays for 20 days in whole and then in part for up to an additional 80 days of skilled nursing care (SN) or rehabilitation per year following a qualifying hospital stay. A qualifying hospital stay must be for acute illness of such severity that returning straight home is not possible or advisable. SN is defined as procedural skills that are complex enough that a registered nurse (RN)

Table 1
Current ACS [10,11] and USPSTF [12] screening guidelines for breast, cervical, uterine/ovarian; colorectal, prostate and lung cancer.

Site	Source and date	Population	Test	Age range (yrs)	Frequency (yrs)	Other considerations
Breast	ACS 2015	Women age GTE 20 yrs	Mammography	40–no upper limit	Annually	No other recommendation for BSE, annual CBE
Cervical	USPSTF 2002	Women age 21–65	Pap smear	40–no upper limit	1–2 years	No other recommendations
	ACS 2015		HPV DNA test	21–29 30–65 30–65	Q 3 yrs Q 5 yrs. if done with HPV or q 3 yrs if Pap only and no HPV Q 5 yrs	Over age 65 if 3 or more consecutive negative Pap tests or 2 or more negative Pap + HPV in the last 10 and most recent <5 yrs. may cease screening. Total hysterectomy for nonmalignant condition, no further screening
Endometrial/ovarian	USPSTF 2012	Men and women aged 50 yrs. and older. No upper age limit	Colonoscopy	No upper age limit	Q 10 yrs	High risk known genetic carriers ACS also endorses stool chemical (FIT), DNA;flexsig, barium Xray or CT colonography every 5 years
Colorectal	ACS 2008 with 2016 Pending at publication					
Prostate	USPSTF 2008	Men and women ages aged 50 yrs. and older. No upper age limit	DRE and PSA	50–no upper age limit	None stated	Men with at least a 10 yr life expectancy should be provided individualized counseling and shared decision-making
	ACS 2001	Men ages GTE 50				
Lung	USPSTF (2016)	No recommendation				
	ACS 2013	Current and former smokers	Low dose spiral CT	55–74	30 or more pack-yrs.; less than 15 yrs. abstention from smoking	In good health not otherwise defined.
	USPSTF 2013			55–80		No medical contraindication or personal objection to lung surgery

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