**Objectives**

1. Appreciate why there are screening recommendations for specific cancers and the limitations of screening.
2. Establish a framework for approaching disease prevention and screening in the primary care setting.
3. Identify appropriate cancer screening recommendations using current guidelines and propose recommendations based on unique patient circumstances.
4. Identify appropriate immunizations and infectious disease screening using current guidelines

**Teaching Instructions**

Learners should receive a copy of the Adult Disease Prevention handout to use as a guide for Parts 1 and 2. Please print this prior to the lecture. Use the interactive boards as an outline to present the talk while adding information from the facilitator guide and your own knowledge. This content is important but can be dry. Do your best to prompt the learners to fill in the guidelines prior to clicking to make it more interactive.

**CANCER SCREENING**

Plan to spend about 60 minutes preparing for this talk. It should take about 45 minutes to present. This content is designed as a review for resident learners with cases to challenge learners at all levels. Use the interactive board to navigate the talk via presentation mode. Click the buttons with the cursors to unveil the content. Click the home button on the top right of a slide to return to the main framework.

***Objective 1: Appreciate why there are screening recommendations for specific cancers and the limitations of screening.***

Prior to delving into a discussion of each of the cancer screening recommendations, take a few minutes to discuss the principles of cancer screening (this can be extrapolated to the screening covered in the next lecture). We consider screening for a disease if it meets the following criteria:

1. The disease is common in the general population
2. There is a screening test available with acceptable sensitivity and specificity and is low-cost, easy to complete and has minimal patient harm
3. There is a time period when the condition is asymptomatic that can be detected
4. Early treatment is more effective than treatment later in the disease

The bottom line is that screening should provide value, and the benefits of screening (preventing death/suffering from cancer) should outweigh potential harms (overdiagnosis/false positives) and cost. The decision to screen should consider comorbidities and life expectancy, as well as if diagnosis and treatment would be pursued if screening is positive.

***Objective 2: Establish a framework for approaching disease prevention and screening in the primary care setting.***

Briefly introduce the framework that includes 5 key areas for disease prevention and screening we need to consider when seeing patients: Cancer, Infectious Disease, Psychosocial, Cardiovascular and Family/Safety. It might be helpful to add that many organizations have best practice advisories for cancer screening and immunizations, but the clinician should be aware of the guidelines in all five of these areas and address them as indicated. There are situations when patients should not be screened (limited life expectancy, comorbidities), elect not to be screened or would not pursue treatment if a screen was positive.

Emphasize that the handout and this lecture cover the current recommendations for adults at average risk. You can add knowledge about those at higher risk as you see fit and be sure to remind the learners that guidelines are always changing. In general, they can access updated screening guidelines via the USPSTF website (<https://www.uspreventiveservicestaskforce.org/uspstf/>) with the caveat that there are often discrepancies between the USPSTF guidelines and those of other societies. Updates on changes are typically published in major medical journals or shared by your organization.

***Objective 3: Identify appropriate cancer screening recommendations using current guidelines and propose recommendations based on unique patient circumstances.***

There are only 5 types of cancer in which screening is indicated, and each has limitations. We will look at each in more depth and then practice with some patient cases.

Remind the learners that in addition to screening for these 5 cancer types, lifestyle modifications can reduce the risk of additional cancers and should also be addressed with patients. These include:

* avoiding tobacco use and limiting alcohol use
* maintaining a healthy weight and balanced diet
* engaging in physical activity
* avoiding excess sun exposure
* preventing sexually transmitted diseases

Use the interactive board to unveil the population, screening modalities/frequency and discontinuation guidelines for the 5 cancer types. Use this guide to add information about the nuances of each screening type.

**Breast Cancer**

Screening mammography has been recommended for all women aged 50-74 (with shared decision-making for 40-49). In 2023 a *DRAFT* USPSTF recommendation was released recommending biennial screening for all women ages 40 to 74 (grade B evidence). We are still awaiting the final recommendation. The absolute benefits for screening are lower for younger patients compared with older patients due to decreased incidence and sensitivity of mammography, but the 2023 USPSTF draft cites evidence that the incidence of invasive breast cancer is increasing in women aged 40-49. In addition, the new recommendation is based upon modeling data estimating that biennial screening starting at age 40 (rather than age 50) would avert an additional 1.3 breast cancer deaths per 1000 women screened over a lifetime of screening.

Regardless of age of initiation, all patients should receive counseling on the risk of false-positive results leading to additional testing. The interval for screening differs among societal guidelines but is recommended every 1-2 years and frequency should be determined by shared decision making with the patient. Discontinuation should be a discussion with the patient. The USPSTF does not recommend ongoing screening after age 74, but many clinicians consider a life expectancy less than 10 years to be a helpful guide for discontinuation.

Breast exams by a clinician or self-exams by the patient are no longer routinely performed for screening due to lack of evidence that they detect more cancer and sometimes lead to unnecessary testing.

You can add to this discussion by bringing up factors that make patients high-risk such as personal or family (parent, sibling or child) history of breast, ovarian, tubal or peritoneal cancer; ancestry or known carrier of a genetic mutation; known dense breast tissue. For these patients, a risk prediction model can be used to help determine appropriate testing. High risk patients will often need to undergo breast MRI and mammogram annually.

**Colon Cancer**

Colon cancer screening is recommended in average risk adults aged 45-79 with discontinuation recommended after age 85 or earlier depending on patient factors such as comorbidities and life expectancy. There are several appropriate testing modalities with different intervals depending on the test. These are listed on the interactive board and learner handout. The Gold Standard is still a colonoscopy as all other screening tests would require a colonoscopy for diagnosis if positive. You can ask learners to comment on the pros and cons of the different testing modalities. One of the cases addresses selecting a test while using a table with data on sensitivity/specificity and considering social determinants of health. You can add information specific to your institution about how to talk with patients about their testing (such as colonoscopy prep/scheduling or how to return a FIT card).

**Cervical Cancer**

Cervical cancer screening guidelines differ the most among different societies due to recent updates. The age to initiate screening is 21 (USPSTF) or 25 (ACS). The recent ACS guidelines propose a higher age for initiation due to increasing rates of HPV vaccination and decreased incidence of cervical cancer. However, ACOG, ASCCP and SGO continue to endorse the USPSTF recommendation to initiate at 21 at this time due to concerns about racial, ethnic, socioeconomic, and geographic disparities in HPV vaccination rates. **Please comment on your institution’s current practice.**

Types of screening tests are consistent among the guidelines and consist of primary high-risk HPV testing, cytology alone or hrHPV + cytology co-testing. The uptake of primary high-risk HPV testing has been slow due to limited availability of tests and the laboratory infrastructure changes required to switch to primary hrHPV testing. It is likely that over the next several years this will become the preferred method. One of the cases will ask the learners to determine what next steps should be taken for a patient with abnormal cytology and introduces the ASCCP tool.

**Lung Cancer**

Lung cancer screening is indicated in all adults ages 50-80 with at least a 20 pack-year history of smoking and is not indicated if they have quit for >15 years. Remind learners how to calculate the pack-years (number of packs of cigarettes multiplied by the number of years the patient has been smoking). This can be challenging if a patient’s smoking habits have changed over time so encourage them to be as accurate as possible and document it.

An annual low-dose CT scan is indicated for lung cancer screening. More importantly, if the patient still smokes, tobacco cessation should be addressed. For Medicare to cover lung cancer screening, a shared decision-making conversation must be documented in the patient’s chart prior to the first screening. This is the only cancer screening that requires this type of visit. The mandate was a result of a lot of direct-to-consumer advertising for CT scans and concern that patients were not notified of the potential risks (radiation exposure, overdiagnosis, additional testing). Learners should get comfortable having this discussion with patients whether they have Medicare or another payor source. We will revisit this in one of our cases.

**Prostate Cancer**

Screening for prostate cancer in men using a prostate specific antigen (PSA) level is controversial. It was recommended until the 2012 USPSTF statement that recommended against screening. At that time, it was thought that the benefits did not outweigh the expected harms enough to recommend routine screening due to significant overdiagnosis and modest mortality benefits. In 2018, the recommendation was updated to individualize screening in males aged 55-69 (Grade C). Long-term data from the European Randomized Study of Screening for Prostate Cancer (ERSPC) showed a decline in late-stage disease with an absolute risk reduction of metastatic disease of 3.1 per 1000 men. We know that PSA testing increases detection, but mortality benefit has not been shown. In addition, there are ongoing concerns about risks of screening. These include false-positive results, complications from biopsies, overdiagnosis, and harms of treatment.

It is important to share with the learners that the message is not that we “don’t check the PSA anymore” and to emphasize that we consider the patient’s risks and have a discussion with the patient prior to proceeding. If the decision is made to screen, an appropriate interval to retest is every 1-2 years and should be discontinued after age 70. Use of the digital rectal exam is not recommended for prostate cancer screening due to low sensitivity and specificity.

***Objective 4: Identify appropriate immunizations and infectious disease screening using current guidelines***

**IMMUNIZATION AND INFECTIOUS DISEASE SCREENING**

This section should be covered quickly as a refresher and should be self-explanatory. To make this section interactive, ask your learners "which immunizations should all patients receive?", "which immunizations should you consider in younger patients?" and "which immunizations should you consider in older patients?" Using the interactive board, click each demographic to reveal which screenings are recommended for those patients. Click on each immunization to reveal more specific information.

Some specifics that are important to convey:

* HPV vaccine – generally is offered to those ages 19-26, but can be given up to age 45 with shared decision making
* As of 2022, universal Hepatitis B vaccination is recommended for adults aged 19-59 years old. Those over age 60 should be vaccinated if they have certain risk factors for hepatitis B.
* Pneumonia immunizations
  + In 2021, two new pneumonia vaccines were introduced: PCV20 and PCV15. PCV20 alone can be used for all adults >65 and adults 19-64 with certain underlying conditions. If PCV15 is used, it should be followed by a dose of PPSV23, typically 1 year later.
  + For those patients who have already received one or more doses of the “old” vaccine formulations, the recommendations get complicated; trainees can look these up on the ACIP website.
* In 2023, the first RSV vaccines were approved by the FDA as a one-time vaccine for patients aged 60 and up. The CDC recommends adults >= 60 may receive one dose of the RSV vaccine based on “shared decision making.” This wording likely reflects that, though the relative efficacy in trial data is high (eg >80% protective against RSV lower respiratory tract infection), the number needed to treat to prevent one lower respiratory infection appears to be over 700.

Screening for certain infections is recommended in all patients and others only for patients with risk factors. Ask your learners to identify which infections are recommended in all patients and click to reveal these infections. Click on each infection to reveal more specific information.

**CASE BASED LEARNING**

The cases are best taught by breaking the learners into groups of two to answer each of the questions.

***Case 1***

This patient should have a repeat mammogram either this year or next year for breast cancer screening. Her colon cancer screening is up to date. She needs cervical cancer screening via either a primary hrHPV test (remind them that availability of this test is limited) or cytology + hrHPV co-testing.

She also meets criteria for lung cancer screening due to age, 35 pack-years of smoking and she has not quit. Encourage them to practice having a shared decision-making conversation with the patient using a decision aid such as the AHRQ aid (<https://effectivehealthcare.ahrq.gov/decision-aids/lung-cancer-screening/decisionmaking-tool.html>) – this is linked in the case. Remember this conversation needs to include:

1. Documentation of eligibility for screening
2. Use of a decision aid
3. Counseling on adherence to annual LDCT, impact of comorbidities, and ability or willingness to undergo diagnosis and treatment
4. Counseling on smoking cessation

***Case 2***

This patient should have colon cancer screening and a discussion about the risks/benefits of prostate cancer screening. Have the learners break into pairs to discuss the type of test they would order for colon cancer screening. Link to the graph showing the relative sensitivities/specificities for each of the tests to guide your discussion. Use this case as an opportunity to discuss some of the patient characteristics that play into the decision about which tests to order. Given that this patient is homeless and likely does not have the ability to do a colonoscopy prep or transportation, a FIT, gFOBT or FIT-DNA would likely best. The best test depends on the institution and what is available.

This patient would probably not be a great candidate for prostate cancer screening with a PSA level as he does not have any stated risks, and it would entail routine follow-up for repeat screening with no significant benefit. A DRE is not indicated.

***Case 3***

This patient should be screened for cervical cancer as she has not had prior hrHPV testing and her last cytology was 3 years ago. She has a low-grade squamous epithelial lesion on her cytology with negative HPV. Teams should break out to figure out what the next step is for this patient. Discuss that with most cancer screening, the next steps are recommended for you, but for cervical cancer it often falls on the PCP. Show them the ASCCP app (linked on the interactive PowerPoint), which tells you next steps based on the results. It is free via the web browser (<https://app.asccp.org/>) but costs $9.99 to download on a phone.

**Take Home Points**

* Cancer screening is designed to detect cancers that are common in an asymptomatic phase to allow for early treatment
* Consider unique patient characteristics that may impact the decision to pursue screening and which testing is ordered
* Be aware of the guidelines and resources for where to find updates and how to address positive screening

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