Ways to Screen for Cancer

Many cancer screening tests are medical procedures and can carry potential harms. The U.S. Preventive Services Task Force (USPSTF), which is an independent, volunteer panel of national experts in disease prevention and evidence-based medicine, reviews the accuracy and efficiency with which different tests can detect cancer, as well as any potential harms of those tests, as part of the process to develop evidence-based cancer screening guidelines.

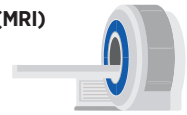
Described below are some cancer screening tests used in the clinic for the five most common cancer types for which there are evidence-based USPSTF screening guidelines for the general population. Not discussed are screening tests for cancer types for which there are no USPSTF-issued guidelines, such as the screening test for esophageal cancer that uses a capsule coated with a special protein and attached to a string for collection of cancer cells.

Unless indicated otherwise, many of the procedures listed here can detect cancer at any stage of development, but the aim of using them for screening purposes is to find the cancer at the earliest possible stage.

BREAST CANCER

Mammogram
Uses X-rays to generate two-dimensional images of the breast that can be stored on film (a conventional mammogram) or electronically (a digital mammogram) for further analysis. Some machines can generate three-dimensional images in a process called breast tomosynthesis.

Breast Magnetic Resonance Imaging (MRI)
Uses radio waves and a powerful magnet linked to a computer to create a detailed image of the breast.



Whole Breast Ultrasound
Uses ultrasonography to scan the entire breast, looking for lumps or nodules.

CERVICAL CANCER

Pap Test
Samples cervical cells, which are analyzed under a microscope to look for abnormalities.

HPV Test
Detects the presence of certain cervical cancer-causing types of human papillomavirus (HPV) and identifies people for whom further testing is recommended. Does not directly detect precancerous or cancerous cervical lesions.

LUNG CANCER

Low-dose Spiral CT Scan
Uses low doses of X-rays to rapidly image the lungs and detect any structural abnormalities suggestive of lung cancer. Suspicious lesions are then biopsied for diagnosis.

COLORECTAL CANCER

Stool Tests
Some test for the presence of red blood cells in stool samples because colorectal cancer can cause rectal bleeding. Others test for both red blood cells and certain genetic mutations linked to colorectal cancer. These tests do not directly detect colorectal precancerous lesions or cancers but identify people for whom further testing is recommended.

Flexible Sigmoidoscopy and Colonoscopy
Use a thin, flexible, lighted tube with a small video camera on the end to allow physicians to look at the lining of the full length of the colon and rectum (as is the case with colonoscopy), or only certain parts (as is the case with flexible sigmoidoscopy).

Computed Tomography (CT) Colonography (virtual colonoscopy), and Double-contrast Barium Enema
Use X-rays to image the colon and rectum.

Blood Test
Detects genetic or epigenetic abnormalities linked to colorectal cancer in blood. This test does not directly detect colorectal precancerous lesions or cancers but identifies people for whom further testing is recommended.

PROSTATE CANCER

PSA Test
Measures the level of a protein called prostate-specific antigen (PSA) in blood, which is often elevated in men with prostate cancer. This test does not directly detect prostate cancer but identifies men for whom further testing is recommended.