Early Detection: Screening Guidelines
National Cancer Statistics

2015 National Cancer Statistics

• 1.6 Million Cases Expected
• 589,430 Cancer Deaths expected

2015 Virginia Cancer Statistics:

• Projected cases: 41,170
• Projected deaths: 14,830

Over 13.7 million people are living with and surviving cancer today.
These 6 cancer sites account for 56% of all newly diagnosed cancers in Virginia.
Breast cancer is a malignant (cancerous) tumor that develops from cells in the breast.

The most common cancer among women in Virginia, and the second deadliest

### 2015 Breast Cancer in Virginia (Estimations)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosed (new)</td>
<td>6,090</td>
</tr>
<tr>
<td>Deaths</td>
<td>1,820</td>
</tr>
</tbody>
</table>
5-Yr Survival Rate by Stage of Diagnosis

Breast Cancer 5-Year Survival Rate by Stage at Diagnosis (2002-2008)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Stages</td>
<td>89.0</td>
</tr>
<tr>
<td>Localized</td>
<td>98.4</td>
</tr>
<tr>
<td>Regional</td>
<td>83.9</td>
</tr>
<tr>
<td>Distant</td>
<td>23.8</td>
</tr>
<tr>
<td>Unstaged</td>
<td>50.7</td>
</tr>
</tbody>
</table>

% Found at each stage:
- All Stages: 60%
- Localized: 33%
- Regional: 5%
- Distant: 2%
- Unstaged: 2%

ACS screening recommendations

1. Mammography
2. Clinical Breast Exam
3. Breast Self-Awareness
1. **Mammogram**

**Recommendation:**

- Yearly Mammogram Starting at Age 40
- Women at High Risk Should Talk With Their Doctor

**Concerns:**

1. Overdiagnosis and resulting treatment of insignificant cancers
2. False-positives with additional testing and anxiety
3. Radiation-induced breast cancer
2. Clinical Breast Exam

A healthcare provider examines a woman’s breasts

**Recommendation:**

- Age 20’s & 30’s – Clinical breast exam every three years
- Age 40+ - Clinical breast Exam every year

**Concerns:**

1. False-positives with additional testing and anxiety
2. False-negatives with potential false reassurance and delay in cancer diagnosis
3. Breast Self-Awareness

Women need to know how their breasts normally look and feel and report changes to their doctor right away.

**Recommendation:** Breast Self-Exam Is An Option Starting in the 20’s
Other screening options

**Screening Modalities:**

- Digital Mammography
- MRI
- Ultrasound
Digital Mammography

- Overall, similar accuracy as film mammography
- Somewhat better sensitivity for women under 50, pre- and peri-menopausal women, and women with dense breasts
- Trend toward lower sensitivity for women over 65
- Practical and logistical advantages, e.g. storage and transfer of images
- Available in ~20% of US facilities
- Higher cost
MRI

**Pros**
- Ability of MRI to detect cancers is much higher (double) than mammography
- MRI plus mammography detects more cancers than MRI alone
- Strong evidence for MRI screening of women at increased risk based on family history/genetics

**Cons**
- High false positive rate of MRI makes it inappropriate for screening women at average risk
- Insufficient evidence to recommend for or against MRI screening of women at moderately increased risk based on clinical factors such as density
- Insufficient evidence for other technologies
Ultrasound

- Useful for diagnostic imaging
- Not recommended for screening
- Less sensitive than MRI
- May be more sensitive than mammography, especially for dense breasts, but high false-positive rate

Breast Biopsy

- Fine needle aspiration (FNA) biopsy
- Core needle biopsy
- Surgical (open) biopsy
- Biopsy accuracy
BRCA testing

- Rare genetic variations, known as mutations, found in less than 1% of the general population.
  - The most common of these mutations are located in two genes named breast cancer gene 1 and breast cancer gene 2 (BRCA1 and BRCA2).
- ACS encourages women to speak to a doctor about gene testing if...
  - Two or more first-degree relatives (mother, sister, daughter) who have had breast cancer
  - First-degree relative had her cancer before age 50, or in both breasts
  - Family history of other cancers, such as ovarian cancer, might also lead to an increased risk of breast cancer
Colorectal Cancer

Most cases of colon cancer start from a non-cancerous growth in the colon (a polyp)

Different types of polyps:

Hyperplastic

- minimal cancer potential

Adenomatous

- approximately 90% of colon and rectal cancers arise from adenomas
Human colon carcinogenesis progresses by the dysplasia/adenoma to carcinoma pathway.
Anatomy and CRC Distribution

- Transverse 15%
- Ascending 25%
- Cecum
- Descending 5%
- Sigmoid 25%
- Rectosigmoid 10%
- Rectum 20%
5-Yr Relative Survival Rate

Survival Rates by Disease Stage*

<table>
<thead>
<tr>
<th>Stage of Detection</th>
<th>5-yr Survival (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>89.9</td>
</tr>
<tr>
<td>Regional</td>
<td>69.6</td>
</tr>
<tr>
<td>Distant</td>
<td>11.9</td>
</tr>
<tr>
<td>Unknown</td>
<td>33.9</td>
</tr>
</tbody>
</table>

*2002-2008

% Found at each Stage

- Local: 39%
- Regional: 36%
- Distant: 20%
- Unknown: 5%
Two categories of screening

1. Tests that detect cancer and precancerous polyps

   It is the strong opinion of the consensus guidelines group that *colon cancer prevention* should be the primary goal of CRC screening.

   - Exams that are designed to detect both early cancer and precancerous polyps should be encouraged if resources are available and patients are willing to undergo an invasive test.
   
   - If the full range of screening tests are not available, physicians should make every effort to offer at least one test from each category.

2. Tests that primarily detect cancer
Colon Cancer Screening Tests

When to start?

Regular colon testing should begin at age 50. Individuals with a family history should begin screening earlier.

<table>
<thead>
<tr>
<th>Tests That Detect Adenomatous Polyps and Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible sigmoidoscopy (FSIG) every 5 years, or</td>
</tr>
<tr>
<td>Colonoscopy every 10 years, or</td>
</tr>
<tr>
<td>Double contrast barium enema (DCBE) every 5 years, or</td>
</tr>
<tr>
<td>CT colonography (virtual colonoscopy) every 5 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests That Primarily Detect Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual fecal occult blood test (FOBT) every year or</td>
</tr>
<tr>
<td>Annual fecal immunochemical test (FIT) or</td>
</tr>
<tr>
<td>Stool DNA test (sDNA), - this test is no longer available.</td>
</tr>
</tbody>
</table>
Fecal occult blood test (FOBT)
This test checks for hidden blood in fecal material (stool). Currently, two types of FOBT are available.

**Sigmoidoscopy**—In this test, the rectum and *lower* colon are examined using a lighted instrument called *sigmoidoscope*. During sigmoidoscopy, precancerous and cancerous growths in the rectum and lower colon can be found and either removed or biopsied.

**Colonoscopy**—In this test, the rectum and *entire* colon are examined using a lighted instrument called a *colonscope*. Unlike sigmoidoscopy, growths in the upper part of the colon can be removed.
Double contrast barium enema (DCBE)—In this test, a series of x-rays of the entire colon and rectum are taken after the patient is given an enema with a barium solution and air is introduced into the colon. The barium and air help to outline the colon and rectum on the x-rays.

Virtual colonoscopy (also called computerized tomographic colonography)—In this test, special x-ray equipment is used to produce pictures of the colon and rectum. A computer then assembles these pictures into detailed images that can show polyps and other abnormalities.
Options are emphasized because...

1. Evidence does not yet support any single test as “best”
2. Uptake of screening remains disappointingly low
3. Individuals differ in their preferences for one test or another
4. Primary care physicians differ in their ability to offer, explain, or refer patients to all options equally
5. Access is uneven geographically, and in terms of test charges and insurance coverage
6. Uncertainty exists about performance of different screening methods with regard to benefits, harms, and costs (especially on programmatic basis)
If tests that can prevent CRC are preferred, why not recommend them alone?

Greater patient requirements for successful completion

- Endoscopic and radiologic exams require a bowel prep and an office or facility visit

No true “gold standard”

- Colonoscopy misses 5 – 10% of significant lesions in expert settings

Higher potential for patient injury than fecal testing

- Risk levels vary between tests, facilities, practitioners

Patient preference

- Many individuals don’t want an invasive test or a test that requires a bowel prep
- Some prefer to have screening in the privacy of their home
- Some may not have access to the invasive tests due to lack of coverage or local resources
Lung Cancer

• **Lung cancer is the leading cause of cancer–related deaths for men and women.**

• *In 2015*
  
  • 5,470 people will be diagnosed with lung cancer in Virginia
  
  • 4,070 will die of this disease
Lung Cancer 5-Year Survival Rate by Stage at Diagnosis (2002-2008)

Who should having screening...

ACS recommends that doctors speak to patients at high risk for developing lung cancer

Patients should meet specific criteria:

• Ages 55-74 years
• Fairly good health
• Heavy smoking history (approx. a pack per day for 30 years)
• Currently smoke or quit within the past 15 years
Screening

• For patients at high risk...

Low-dose CT scan (LDCT)

**Benefit:**

• On average, for every 5 people at high risk for lung cancer, getting this test every year can prevent one person from dying of lung cancer

**Concerns:**

• LDCT will not find all lung cancers or all lung cancers early, and not all patients who have a lung cancer diagnosed by LDCT will avoid death from lung cancer

• There is a chance of a false-positive result and may require more testing, and an invasive procedure (like removing a sample of lung tissue) might need to be done

Prostate cancer is the most frequently diagnosed cancer in men other than skin cancer.
Survival Rates

Prostate Cancer 5-Year Survival Rate
by Stage at Diagnosis (2002-2008)

Early Detection of Prostate Cancer

There are two main screening tests for prostate cancer.

Test #1: PSA blood test (Prostate Specific Antigen)

- Measures protein made by prostate cells
- Newer PSA tests:
  - Percent-free PSA (fPSA)
  - Complexed PSA

Note: High PSA levels in blood do not always mean there is cancer.
Factors other than prostate cancer that may affect PSA levels...

**Overall levels:** Age, Race, Family History

**Elevate levels**
- Enlarged Prostate
- Old age
- Prostatitis
- Ejaculation
- Riding a bike
- Certain urologic procedures & medicines

**Lower levels**
- Certain medicines
- Herbal mixtures
- Obesity
- Aspirin
Digital Rectal Exam (DRE)

Test #2: DRE

• Doctor inserts a gloved, lubricated finger into the rectum to feel for any bumps or hard areas on the prostate that might be cancer.

• DRE is less effective than the PSA blood, but it can sometimes find cancers in men with normal PSA levels.

• The DRE is also used once a man is known to have prostate cancer. It can help tell whether the cancer has spread beyond his prostate gland. It can also be used to find cancer that has come back after treatment.
Benefits & Concerns about Screening

Benefits:

• The evidence is insufficient to determine whether screening reduces mortality
• Detection at an early stage, but it is not clear whether earlier detection and consequent earlier treatment leads to any change in the natural history and outcome of the disease

Concerns:

• **Overtreatment** - screening with PSA and/or DRE detects some prostate cancers that would never have caused important clinical problems
• **Side effects** - May result in permanent side effects in many men such as erectile dysfunction and urinary incontinence.
• **Prostatic biopsies** - associated with complications, including fever, pain, hematospermia/hematuria, positive urine cultures, and rarely sepsis.
ACS Screening Recommendations

• Men 50 years and older should discuss the potential benefits and limitations of screening tests and treatments with their doctors, and make an informed decision.

• Men at increased risk (such as African American men and men with a first degree relative diagnosed before age 65) should begin talking with their doctor at age 45 or earlier.
Cervical Cancer

- Primary cause is HPV infection
- When detected early, one of the easiest cancers to treat successfully
- Death rates have declined steadily due to screenings with Papanicolaou (Pap) Test
## Survival Rates

### Stage Distribution and 5-year Relative Survival by Stage at Diagnosis (2003-2009)

<table>
<thead>
<tr>
<th>Stage at Diagnosis</th>
<th>Stage Distribution (%)</th>
<th>5-year Relative Survival (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>47</td>
<td>90.9</td>
</tr>
<tr>
<td>Regional</td>
<td>36</td>
<td>57.1</td>
</tr>
<tr>
<td>Distant</td>
<td>12</td>
<td>16.1</td>
</tr>
<tr>
<td>Unstaged</td>
<td>4</td>
<td>54.3</td>
</tr>
</tbody>
</table>

Screening for Cervical Cancer

30% of cervical cancers and pre-cancers are not prevented by the HPV vaccine, regular Pap tests remain a vital part of women’s healthcare.

Screening test:

- The Pap test identifies abnormal changes in the cells of the cervix that may lead to cervical cancer

When to start?

- Age 21
**Screening Guidelines**

**Women in their 20’s**

- All women should have first **Pap test** at age 21.
- Test should be done every 3 years.

**Women in their 30’s to mid - 60’s**

- Women 30-65 should have an **HPV and Pap** test every 5 years or if only having the **Pap test**, screening should occur every 3 years.
- Women with certain risk factors may need more frequent testing.
Women 65+

• Most women 65+ years of age who have had 3 or more normal Pap tests or 2 or more normal HPV and Pap test in a row within 10 years can choose to stop having Pap tests.

Women who have had a total hysterectomy may also choose to stop having Pap tests.
HPV Vaccination – ACS Recommendations

- There is no cure for HPV and the only sure way to prevent HPV is to abstain from all sexual activity.

- To reduce your risk of acquiring a HPV infection:
  - Limit number of sexual partners
  - Practice safe sex
  - Condoms provide some, but not total, protection against HPV
  - Get the HPV vaccine before exposure

ACS recommends girls ages 11-12 receive the HPV vaccine at time of regular exam.
Melanomas

• The most serious form of skin cancer is melanoma.
• Can occur anywhere on the body
• Almost always curable when detected early
• More likely to spread to other parts of body
• Lifetime risk of being diagnosed --
  • Men: \textbf{1 in 35}
  • Women: \textbf{1 in 54}

2015—U.S.
• \textbf{73,870} expected diagnoses
• \textbf{9,940} deaths
## Survival Rates

Stage Distribution and 5-year Relative Survival by Stage at Diagnosis (2003-2009)

<table>
<thead>
<tr>
<th>Stage at Diagnosis</th>
<th>Stage Distribution (%)</th>
<th>5-year Relative Survival (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>84</td>
<td>98.3</td>
</tr>
<tr>
<td>Regional</td>
<td>9</td>
<td>62.4</td>
</tr>
<tr>
<td>Distant</td>
<td>4</td>
<td>16.0</td>
</tr>
<tr>
<td>Unstaged</td>
<td>4</td>
<td>76.5</td>
</tr>
</tbody>
</table>

Melanoma warning signs

**ABCD’s**
- Asymmetry
- Borders (irregular)
- Color (variegated)
- Diameter (> 6 mm)

Itching, bleeding, scaling, changes or new growths.
Early Detection by a Physician

**Medical History** (check...)
- When the mark on the skin first appeared,
- Changes in size or appearance,
- Any symptoms (pain, itching, bleeding, etc.).
- Exposures

**Physical Exam** *(may include...)*
- Noting the size, shape, color, and texture of the area(s) in question,
- Checking for bleeding or scaling.
- Checking the rest of the body for spots and moles that could be related to skin cancer.
- Feeling of the lymph nodes (small, bean shaped collections of immune cells) under the skin in the groin, underarm, or neck near the abnormal area.

**Note:** Many dermatologists use a technique called dermatoscopy to see spots on the skin more clearly.

**Skin Biopsies**
- Shave
- Punch
- Incisional & Excisional

There are other types of biopsies for melanomas that have metastasized
Summary of ACS Screening Guidelines

WOMEN

Breast
☐ Yearly Mammogram starting age 40–earlier if significant family history.

☐ Clinical Breast Exam every 3 years for those 20-39; Yearly exams for age 40+.

☐ Breast Self-Awareness – Be aware of how your breasts normally feel and report changes to your doctor.

Colon
☐ Regular colon testing beginning at age 50. Earlier if family history.

Cervical
☐ Pap Test every 3 years starting at age 21-29.
☐ HPV & Pap every 5 years or every 3 years if Pap only starting at age 30-65.

MEN

Colon
☐ Regular colon testing beginning at age 50. Earlier if family history.

Prostate
☐ Discuss with your doctor the benefits and limitations of prostate cancer testing starting at age 50, and high risk individuals should start discussion at age 45.
What about other cancers?

At a periodic health examination, a cancer-related checkup should include:

- Health counseling, **AND depending on a person’s age or gender,**
- It should also include examinations for the following cancers:
  - Thyroid
  - Oral cavity
  - Lymph nodes
  - Testes
  - Some non-malignant diseases
Having Cancer is Hard. 
Finding help isn’t.


All American Cancer Society services are free.

Call: 1.800.ACS.2345 
Visit: www.cancer.org
How to get involved in the fight against cancer!

More than two million volunteers nationwide are currently making a difference in the fight against cancer.

We invite you to join them.

How?

• Volunteer in local cancer centers
• Provide rides to cancer treatment
• Join a community event such as Relay For Life
• Join ACS Cancer Action Network and contact legislators on cancer issues

Visit [www.cancer.org](http://www.cancer.org) to learn more!