

Cancer Prevention

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Introduction

- Efficacious cancer prevention behaviors, if fully implemented in 3 areas, for example, could save up to 318,500 lives per year [BRP Report, 2016]
- Why are these gains not being realized today?
- We fail to translate what we know in practice into everyday life:
 - The population in general
 - Health care practice

Introduction

- Why?
 - Main reason patients stop or start doing positive health behaviors – “My doctor told me to...”
 - Have we given health care professionals the tools to help them implement cancer prevention behaviors?

Cancer Prevention

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OSU Comprehensive Cancer Center
The Ohio State University Wexner Medical Center

Overview

- **Prevention Strategies**
 - Overview of topic
 - What we know
 - Message in-practice



Overview

- **Early Detection**
 - Review the recommendations for approved screening tests
 - Breast, cervical, colorectal and lung cancer
 - No consensus in screening the average risk patient
 - Prostate, ovarian, pancreas
 - Skin, testicular
 - How to facilitate uptake in practice



Prevention

- **Tobacco Use**
 - Smoking causes over 480,000 deaths from all causes in the US each year.
 - One out of every 3 cancer deaths are due to smoking.
- **Cancers linked to smoking:**
 - Bladder, blood (AML), cervix, colorectal, esophagus, kidney and ureter, larynx, liver, oropharynx, pancreas, stomach, trachea, bronchus, and lung
 - Survivors who continue to smoke have worse outcomes.

U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. 2014.
U.S. Department of Health and Human Services. How Tobacco Smoke Causes Disease: What It Means to You. 2010.

Prevention

- **Benefits of quitting:**
 - Risks for cancers of the mouth, throat, esophagus, and bladder drop by half within 5 years.
 - Ten years after quit smoking, risk for lung cancer drops by half.

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Prevention

- Types of Tobacco Use
 - Cigarettes
 - Design changes over the years
 - Smokeless
 - Chew and snuff
 - Hookah
 - Used in a water pipe to smoke flavored tobacco



Prevention

- Types of Tobacco Use
 - Cigars
 - Risk for lip cancer
 - Electronic cigarettes
 - Safety not established
 - May be pathway to cigarettes or way to stop



Prevention

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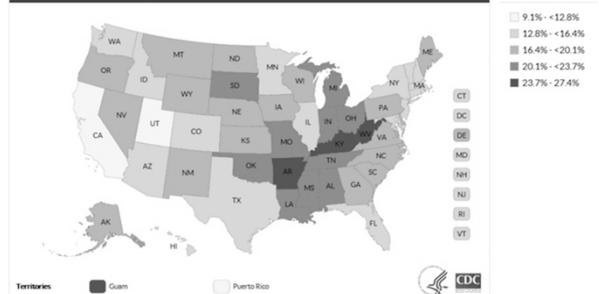
There is no risk-free level of exposure to tobacco smoke, and there is no safe tobacco product. USDHHS, 2010



Smoking Prevalence in the US, by State

Current Cigarette Use Among Adults (Behavior Risk Factor Surveillance System) 2015

About This Map



CDC, BRFSS, 2015

Who Smokes?

CIGARETTE **SMOKING** OVERALL AMONG
ADULTS IN THE U.S. IS **DOWN**.

**YET CIGARETTE SMOKING REMAINS
HIGH AMONG CERTAIN POPULATIONS.**



WE CAN PUT AN END TO TOBACCO USE.



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WE CAN PUT AN END TO TOBACCO USE.



What can you do in
practice to assist patients
to quit smoking?



Prevention

- **Assisting with Tobacco Cessation**
- **Health care providers can:**
 - Ask their patients if they use tobacco; if they do - Advise them to stop; Assess willingness to make quit attempt; Assist them to quit; Arrange for follow-up.
 - Refer patients interested in quitting to 1-800-QUIT-NOW, www.smokefree.gov, or other resources.
 - Advise all patients to make their homes and vehicles 100% smoke-free.
 - Advise nonsmokers to avoid secondhand smoke exposure and not to start smoking.

50% of adults who continue to smoke will die from smoking-related causes.

AHRQ, 2008; CDC, Vital signs, April 2011

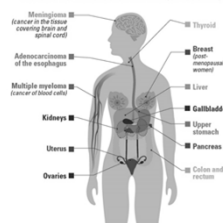
Prevention

- **Obesity/Diet/Exercise**
 - Two in 3 US adults weigh more than recommended
 - Concern for children (stable at 17%)
 - Over 630,000 people in the US are diagnosed with a cancer associated with obesity:

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13 cancers are associated with overweight and obesity

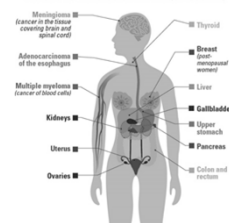


CDC Vital signs, October, 2017

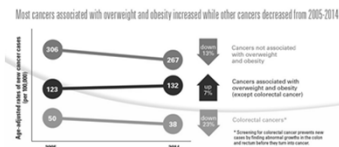
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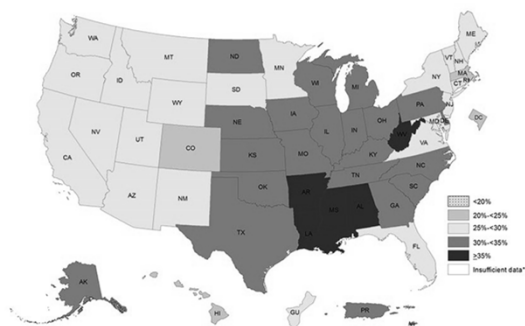
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CDC Vital signs, October, 2017



Prevalence of Self-Reported Obesity among U.S. Adults by State and Territory, BRFSS, 2016



CDC, BRFSS, 2016


Prevention – Obesity

- **Healthcare providers can:**
 - Measure patients' weight, height; counsel them on keeping a healthy weight and its role in cancer prevention.
 - Refer patients with obesity to intensive programs that include a variety of activities to help people manage their weight.
 - Connect patients and families with community services to help them have easier access to healthy food and ways to be active.

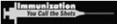


Prevention – Obesity


- **Message to Patients:**
 - **Eat a healthy diet by following the 2015-2020 Dietary Guidelines for Americans.**
 - **Do at least 150 minutes of moderate intensity physical activity, such as brisk walking, every week.**




Prevention – Vaccines




- **HBV**
 - Not only reduces infection but prevents liver cancer
 - At-risk for non-vaccination in infancy:
 - Immigrants: Asia, Pacific Islands and Africa
 - CDC recommends anyone born in areas where hepatitis B is common, or whose parents were born in these regions, get tested for hepatitis B



Prevention – Vaccines



- HPV
 - HPV – most common STD; nearly all sexually active people will have HPV infection at least once
 - Persistent infection with high risk strains can cause 6 types of cancers: cervix, vulva, vagina, penis, anus, and oropharyngeal.
 - HPV vaccine is safe and effective in preventing genital warts and cervical cancer.



Vaccination



EFFECTIVE: HPV Vaccine

Within 6 Years of Vaccine Introduction:
Prevalence of HPV Declined 64% among
Females

14-19 year olds
(HPV4 vaccine, types 6, 11, 16, 18)

A bar chart with a white background and a black border. The y-axis is represented by horizontal grid lines. The x-axis has two categories: '2003-06' and '2009-12'. The bar for '2003-06' is light blue and reaches the 11.5% mark. The bar for '2009-12' is light blue and reaches the 4.3% mark.

Year	Prevalence (%)
2003-06	11.5%
2009-12	4.3%

Reduction in Human Papillomavirus (HPV) Prevalence Among Young Women Following HPV Vaccine Introduction in the United States, National Health and Nutrition Examination Surveys, 2003–2010
<http://jfd.oxfordjournals.org/content/early/2013/06/18/infdis.jfr192.short>

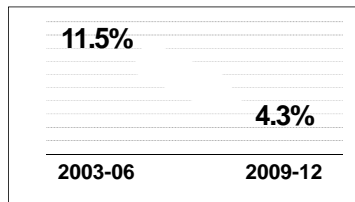
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82%
Vaccine
effectiveness
of at least 1 dose
of HPV4.

Reduction in Human Papillomavirus (HPV) Prevalence Among Young Women Following HPV Vaccine
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HPV Vaccination Schedule

CDC Recommendation October 2016:

A 2-dose schedule is now approved for children aged 9-14

<http://www.cdc.gov/media/releases/2016/p1020-hpv-shots.html>

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HPV Vaccination Schedule



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Bundle vaccine with other age-appropriate vaccines
at age 11-12 well-child visit

- Return for 6 month booster
- Complete series by age 13

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Facilitate "Late" vaccination for 13-26 year olds;

- Teens and young adults age 15 and older need 3 doses

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Facilitate "Late" vaccination for 13-26 year olds;

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Use 9-valent vaccine

<http://www.cdc.gov/media/releases/2016/p1020-hpv-shots.html>

HPV VACCINATION IS THE BEST WAY TO PREVENT MANY TYPES OF CANCER

NATIONWIDE 6 OUT OF 10 GIRLS HAVE STARTED THE HPV VACCINE SERIES

Percentage of adolescent girls who have received one or more doses of HPV vaccine

NATIONWIDE 5 OUT OF 10 BOYS HAVE STARTED THE HPV VACCINE SERIES

Percentage of adolescent boys who have received one or more doses of HPV vaccine

IMPROVING HPV VACCINATION RATES WILL HELP SAVE LIVES. A high national HPV vaccination rate of 80% shows that it is possible to achieve high HPV vaccination coverage.

www.cdc.gov/hpv

HPV Vaccine Uptake: US

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www.cdc.gov/hpv

HPV Vaccine Uptake: US

However:

3 shots Girls: 42%
3 shots Boys: 39%

National Tdap rates: 86%



2015 - NIS Teen

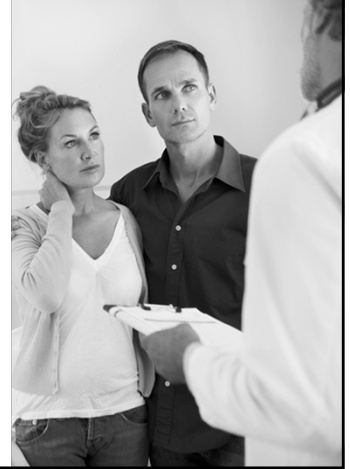
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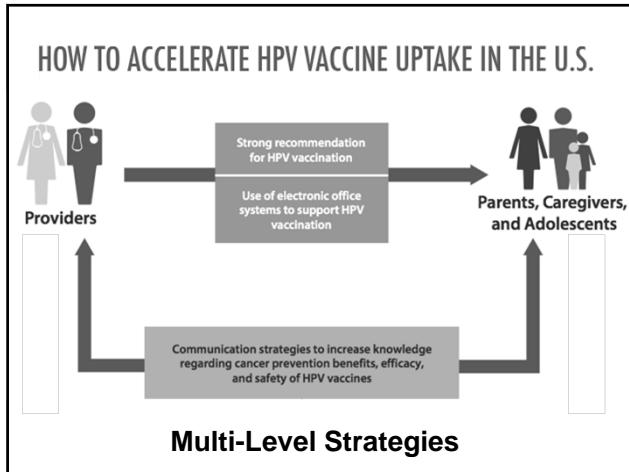


**Lack of strong
recommendation
from health care
providers**



**Fear of side
effects, overall
safety**





HBV/HCV

- In addition to vaccination providers can:
 - Screen at-risk patients:
 - HBV
 - immigrants from at-risk countries
 - Those with alcohol use issues
 - History of liver diseases, e.g. cirrhosis
 - HCV
 - People born from 1945 to 1965 are five times more likely to have hepatitis C than other age groups
 - Those who share needles for drug use
 - Once diagnosed, most persons with hepatitis C can be cured in just 8 to 12 weeks, reducing liver cancer risk by 75%

FACT
Hepatitis C is a leading cause of liver cancer.
[Click here to learn more.](#)

1 IN 5 PEOPLE WITH HEPATITIS C DON'T KNOW THEY HAVE IT

START/US! GET TESTED

THERE IS NO MEDICINE FOR HEPATITIS C BUT THERE IS TREATMENT

START/US! GET TESTED

VIRAL HEPATITIS CAN LEAD TO LIVER DAMAGE AND LIVER CANCER

START/US! GET TESTED

HEPATITIS C VIRUS IS 100 TIMES MORE INFECTIOUS THAN HIV

START/US! GET TESTED

CDC, 2017

Prevention

- Sun Safe Behaviors**
 - Skin cancer is the most common cancer in the US
 - Skin cancer rates, including melanoma, are increasing
 - Risk factors, such as inadequate sun protection and intentional tanning behaviors are still problematic
 - Surgeon General's Report, 2014
 - Policy and community actions
 - Indoor tanning legislation
 - Sun safety programs:
 - shade, clothing, hat, glasses, sunscreen
 - Sunburn
 - Vitamin D

#SGSunSafe

Prevention

What can clinicians do?



- Counsel patients on using sun protection and avoiding intentional tanning in accordance with U.S. Preventive Services Task Force recommendations.
- Increase awareness of and adherence to melanoma reporting requirements among providers, especially those in private practice.
- Remain alert to suspicious skin lesions when examining patients.

Surgeon General's Report, 2014

Prevention

- Alcohol
 - Excessive alcohol use leads to about 88,000 deaths in the US annually.
 - Excessive alcohol use is not equal to dependence
 - Binge drinking (women: at least 4 drinks on one occasion; men: at least 5 drinks on one occasion)
 - Heavy drinking: (women: 8 or more drinks/week; men: 15 or more drinks/week)
 - Any alcohol use by pregnant women
 - Any alcohol use under age 21

How Much is Too Much?

 Men More than 2 drinks a day.	 Women More than 1 drink a day.
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www.niaaa.nih.gov/publications/8000factsheets/8000factsheet04.htm

CDC, 2016




CDC, 2016

Prevention

- Alcohol
 - Related to cancer:
 - breast, mouth and throat, liver, colon
 - Moderation:
 - Women: up to 1 drink/day
 - Men: up to 2 drinks/day

How Much is Too Much?



The infographic features two stylized human figures. On the left is a grey silhouette of a man, and on the right is a grey silhouette of a woman. Below the man's figure, the text reads 'Men' followed by 'More than 2 drinks a day.' Below the woman's figure, the text reads 'Women' followed by 'More than 1 drink a day.' At the bottom of the infographic, there is a small URL: www.cdc.gov/diseases/prevention/2010-2014-recommendations-alcohol-use/

Men
More than 2
drinks a day.

Women
More than 1
drink a day.

www.cdc.gov/diseases/prevention/2010-2014-recommendations-alcohol-use/

CDC, 2016



CDC, 2016

Prevention – Alcohol

- For those 18 and older:
 - The USPSTF recommends that clinicians screen adults aged 18 years or older for alcohol misuse and provide persons engaged in risky or hazardous drinking with brief behavioral counseling interventions to reduce alcohol misuse [USPSTF, 2013]


For these guidelines, **“a drink”** means:

- Beer (12 oz of 5% alc/vol)
- 100% Grape Juice (12 oz of 12% alc/vol)
- Wine (5 oz of 12% alc/vol)
- Distilled Spirits (1.5 oz of 40% alc/vol)



Prevention – Alcohol

- **Other Resources:**
 - **ASSIST** - Brief interview about alcohol, tobacco products and other drugs
 - **AUDIT** - Alcohol Use Disorders Identification Test for Adolescents
 - **CAGE** - Alcohol Screening Instrument
 - **T-ACE** - 4-item Alcohol Screener for Pregnant Women



For these guidelines, "a drink" means:

- Beer (12 oz 5% alc/vol)
- Clear Spirits (1.5 oz 40% alc/vol)
- Wine (5 oz 12% alc/vol)
- Distilled Alcohol (1.5 oz 50% alc/vol)



Screening

45

Screening

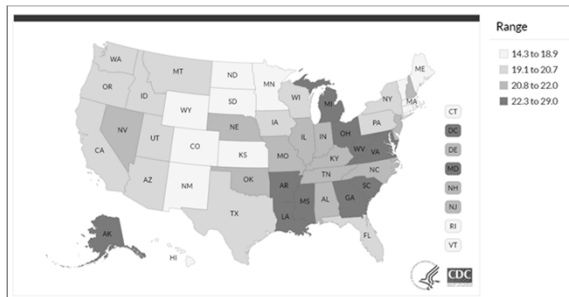
- **Breast Cancer**
 - Most common cancer diagnosed in women in the US
 - Risk factors: genetic; family history; reproductive factors; obesity; alcohol; HRT; previous RT to chest
 - Screening guidelines: *USPSTF, 2016*

Women aged 50 to 74 years

The USPSTF recommends biennial screening mammography for women aged 50 to 74 years.



Female Breast Cancer Mortality Rates in US, by State, BRFSS 2014



*Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population.
†Source: U.S. Cancer Statistics Working Group. *United States Cancer Statistics: 1999–2014 Incidence and Mortality Web-based Report*. Atlanta (GA): Department of Health and Human Services, Centers for Disease Control and Prevention, and National Cancer Institute; 2017. Available at: <http://www.cdc.gov/uscs>.

Screening

- **Providers should:**
 - Take a history of women to determine risk
 - Family and personal history; alcohol use; HRT use
- **High risk women:**
 - Referred for genetic counseling and testing
 - Prevention strategies: chemoprevention, MRI, etc
 - Start screening earlier



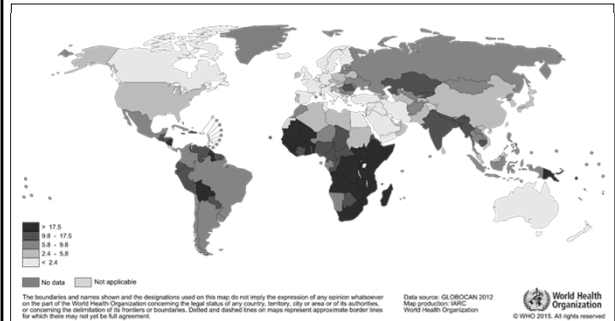
Screening

- Providers should:
 - Average risk women:
 - Discuss mammography between ages 40-49
 - Biannual screening (conventional digital mammography) starting at age 50 to age 75
 - Assure prompt and quality follow-up for abnormalities
 - Ensure regular screening and assess and address barriers

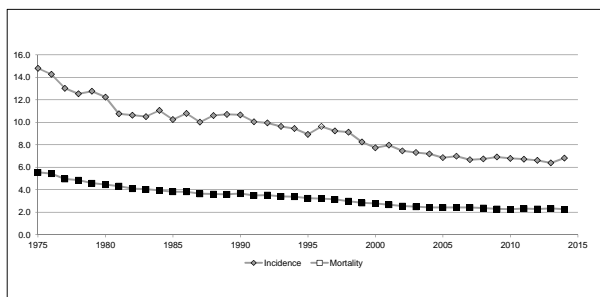


Screening

- Cervical Cancer
 - Worldwide cervical cancer is the most common cancer



US Age-Adjusted Trends in Incidence and Mortality Rates in the United States, 1975-2014



Cervical Cancer: Screening Process

- Cervical cytology (1940's) followed by link to HPV infection (1983)
- Cervical cytology and HPV testing
 - Recommendations – March 2012
 - Women 21 to 65 (Pap smear) or 30-65 (in combo with HPV testing)
 - The USPSTF recommends screening for cervical cancer in women age 21 to 65 years with cytology (Pap smear) every 3 years or, for women age 30 to 65 years who want to lengthen the screening interval, screening with a combination of cytology and human papillomavirus (HPV) testing every 5 years.

Cervical Cancer: Screening Process

- Cervical cytology and HPV testing
 - Updated Recommendations: Under Review
- Process: Includes follow-up of abnormalities
 - Low in many settings and disparities seen by race, income, and residence

Cervical Cancer Cytology Testing

- US Target: 93% (Healthy People 2020)
- Overall: 83%
 - 10-year trends have seen a 3.3% decline
- Disparities:
 - Age, race/ethnicity, non-English-speaking, low income/education, rural women
 - LGBTQ populations



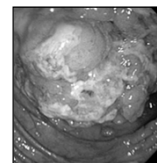
Cervical Cancer Cytology Testing

- What can providers do to increase uptake?
 - Recall and reminder systems
 - Schedule and perform screening
 - Share results and ensure follow-up
 - Resolve barriers



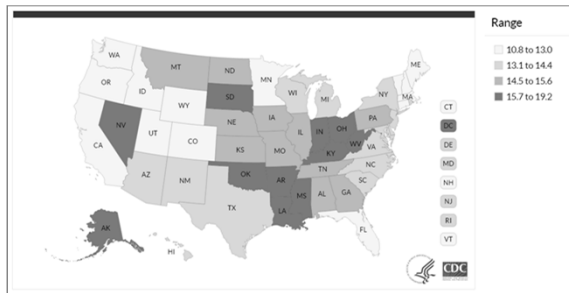
Screening

- Colorectal Cancer (CRC)
 - Third most commonly diagnosed cancer among men and women in the US
 - Leading GI cause of death; several counties in southern Ohio are part of 3 "hotspots" for high CRC deaths
 - Risk factors: family history, hereditary syndrome, DM, obesity, diet, smoking, physical inactivity, IBD, alcohol



Dr. Gray patient image

Colorectal Cancer Mortality Rates in US, by State, BRFSS 2014

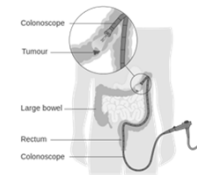


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Screening

- Colorectal Cancer (CRC)
 - Screening guidelines, *USPSTF, 2016*
 - Start at age 50 and continue until age 75 among average-risk individuals*
 - The decision to screen between age 76 and 85 should be an individual one factoring in health and prior screening history

*USMSTF recommends starting screening at age 45 in African Americans



Cancer Research UK / Wikimedia Commons

Screening

- USPSTF 2016, Guideline Recommendations**
 - Stool-based tests
 - High-sensitivity gFOBT, annually *OR*
 - FIT, annually, *OR*
 - FIT-DNA, every 3 years
 - Direct visualization tests
 - Flexible sigmoidoscopy, every 5 years *OR*
 - CT Colonography, every 5 years *OR*
 - Colonoscopy, every 10 years

*Patient choice matters in uptake and adherence to screening!

Screening

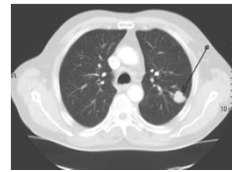
- Providers should:
 - Take a thorough family and personal history
 - Assess and address barriers to screening
 - Offer options when discussing screening strategies
 - High risk men and women:
 - Start screening earlier
 - Refer for genetic counseling and testing

Screening

- Providers should:
 - Average risk men and women:
 - Initiate screening at age 50 (45 among African Americans)
 - Assure follow-up for abnormalities on stool-based testing
 - Ensure regular screening

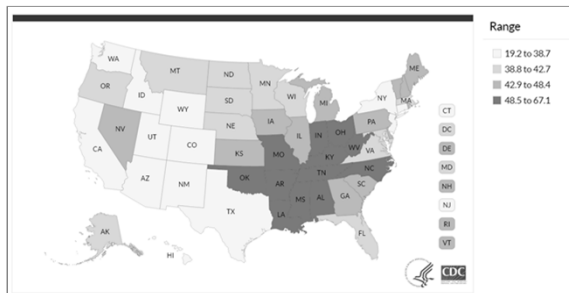
Screening

- Lung Cancer
 - Leading cause of cancer death; more people die than from colon, breast and prostate cancer combined
 - Risk factors: tobacco smoke, radon, asbestos, family history, previous radiation to chest; air pollution



Wikipedia.org

Lung and Bronchus Cancer Mortality Rates in US, by State, BRFSS 2014



*Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population.
 †Source: U.S. Cancer Statistics Working Group. *United States Cancer Statistics: 1999–2014 Incidence and Mortality Web-based Report*. Atlanta (GA): Department of Health and Human Services, Centers for Disease Control and Prevention, and National Cancer Institute; 2017. Available at: <http://www.cdc.gov/uscs>.

Screening

- USPSTF 2013, Guideline Recommendations
 - Annual screening with low-dose CT scan (LDCT) in adults who meet all of the following criteria:
 - 55-80 years of age
 - 30 pack year smoking history
 - Currently smoke or have smoked within the past 15 years



Wikipedia.org

Screening

- Providers should:
 - Take a personal smoking and family history
 - Schedule annual LDCT in at-risk adults
 - Assess and address barriers to screening
 - Discontinue screening once an individual is smoke-free for 15 years OR develops health problem that limits life expectancy or ability to have curative surgery



Conclusions

- Cancer prevention is a team-effort: patient & provider(s)
- One of the most significant predictors for screening test uptake and adherence is provider recommendation
- Vaccinations are an integral part of cancer prevention strategies
- Behavior change and cancer screening saves lives



Thank You

To learn more about Ohio State's cancer program, please visit cancer.osu.edu or follow us in social media:

