CFM Grand Rounds Continuing Education

In order to receive credit for participating today, please text the code ROSZAM to 919.213.8033. Must be entered into system within 12 hours of session. This session is 1 hour of CE.
A short evaluation will be emailed to you within 48 hours. Please take a moment to give us your feedback.

Our next Grand Rounds will be February 14, 2017 in Hanes 131
In 1996, the American Cancer Society issued a challenge to the nation to reduce age-adjusted cancer mortality by 50% by 2015.
When the final data are in, we will have made it over half way there – achieving a 26% reduction in age-adjusted mortality.
Total Number Of Cancer Deaths Averted From 1991-2014
Trends In Cancer Death Rates Among Men, US, 1930-2014
Trends In Cancer Death Rates Among Women, US, 1930-2014

- Uterus (corpus and cervix combined)
- Lung & bronchus
- Breast
- Stomach
- Colon & rectum
- Pancreas
- Liver & intrahepatic bile duct
### Mortality Reductions By Cancer, 1990 to 2015

#### Men

32% overall decline

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung cancer</td>
<td>45% ↓</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td>47% ↓</td>
</tr>
<tr>
<td>Prostate cancer</td>
<td>53% ↓</td>
</tr>
<tr>
<td>All other cancers</td>
<td>13% ↓</td>
</tr>
</tbody>
</table>

#### Women

22% overall decline

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung cancer</td>
<td>8% ↓</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td>44% ↓</td>
</tr>
<tr>
<td>Breast cancer</td>
<td>39% ↓</td>
</tr>
<tr>
<td>All other cancers</td>
<td>17% ↓</td>
</tr>
</tbody>
</table>
Much of the decline in mortality relates to prevention and early detection …
... and improvements in treatment have extended survival for almost all cancers.
# Five-Year Survival Rates, All Races

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>13%</td>
<td>18%</td>
</tr>
<tr>
<td>Colon</td>
<td>60%</td>
<td>66%</td>
</tr>
<tr>
<td>Pancreas</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>Breast</td>
<td>84%</td>
<td>91%</td>
</tr>
<tr>
<td>Liver</td>
<td>5%</td>
<td>18%</td>
</tr>
<tr>
<td>Prostate</td>
<td>83%</td>
<td>99%</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>51%</td>
<td>72%</td>
</tr>
<tr>
<td>Leukemia</td>
<td>43%</td>
<td>62%</td>
</tr>
<tr>
<td>Melanoma</td>
<td>88%</td>
<td>93%</td>
</tr>
</tbody>
</table>
But for most common adult cancers, cures for cancers diagnosed at advanced stages remain elusive.
The American Cancer Society is completing a strategic planning process that aims to define the future of cancer control in the US.
A True Cancer Moonshot

Finding new methods to treat advanced cancer is a worthy and exciting strategy, but a true moonshot must address the historical drivers of cancer mortality reduction:

• Tobacco use
• Cancer screening
• Vaccination
• Healthier places to live
The ACS Cancer Control Blueprint

1. We are identifying and prioritizing prevention, early detection, treatment, and research strategies for every cancer.

2. Some cancers have strategies proven to work in every category, as well as key research questions demanding answers.

3. For others, research must be our highest priority.
Our Cancer Control blueprint is predicated on a simple concept – implement what’s proven to work and make sure everyone has an equal opportunity to benefit.
We also need to **develop new tools for fighting cancer.**

This demands investment in research.

The ACS has made a commitment to double our investment in research over the next 5 years.
Our plan complements the cancer moonshot and provides a roadmap to implementation.
The Blueprint Points To Two Critical Needs

• Embrace **Big Opportunities** – Time to launch bold, visionary campaigns to transform the face of cancer.

• Respond to the **Changing Epidemiology of Cancer**
  • Accelerate discovery
  • Develop capacity to deliver proven interventions
Campaigns On The Launchpad

• Achieve 80% by 18 – Prevent a million colon cancer deaths by the turn of the century.

• Reduce lung cancer age-adjusted mortality by 50% within a decade.

• Ensure no one dies of cancer because they can't get the care they need.

• Eliminate HPV-related cancers around the world

• Realize equal outcomes in breast cancer

• Ensure all cancer survivors can access recommended care.

• Enable communities to fight cancer by addressing the true determinants of health.
The Changing Epidemiology of Cancer in the US

- Urgent need to accelerate discovery
  - Pancreas cancer
- Develop capacity to implement proven prevention
  - Liver cancer
BIG OPPORTUNITY #1

Increase colorectal cancer screening rates to 80% by 2018.
The 80% By 2018 Campaign Is Already Soaring!

• The world loves a good goal.

• Organizations are eager to pull together to get something important done.
More Organizations Are Taking The Pledge

1250 and counting!
Pledges in all 50 states, Washington, D.C., Guam, and Puerto Rico!
The 80% by 2018 campaign has been included in the Cancer Moonshot initiative.
Strategic Goal 4 – Strengthen Prevention and Diagnosis

“Cancer prevention and early detection improves life expectancy and reduces the need for costly treatments. Increasing colorectal cancer screening rates to 80 percent would prevent more than 200,000 deaths in this age group by 2030.”

- Cancer Moonshot Task Force Report
Our Nation’s Cancer Centers Have An Extraordinary Opportunity To Spearhead The 80 By 18 Campaign

• Too many cancer centers have not yet embraced their obligation to provide care at the level of the population.

• Duke can help the nation reach 80% colon cancer screening rates.
Getting This Work Done In North Carolina Will Be Tough

• 2016 Estimates
  • 4,280 new cases
  • 1,480 deaths

• Colon Cancer Screening Rates
  • North Carolina – 71.8%
  • Ranks 10th in screening rates
  • U.S. average – 67.6%
If we can achieve 80% by 2018, **277,000 cases** and **203,000 deaths** would be **prevented** ... 

... by **2030**.
That means we can prevent over 1 million deaths from colon cancer by the turn of the century.

That is a true moonshot.
Reduce lung cancer age-adjusted mortality by 50% within a decade.
Unique Moment in Lung Cancer

In the past, we’ve only had one effective strategy – prevention through tobacco control.
Today, there are four strategies converging to create a prime opportunity to accelerate our progress against lung cancer.
1. More knowledge about how to **prevent** lung cancer – and which populations are lagging

2. A screening test to **detect** lung cancer early and cure it

3. **Therapies** that work but that must be made available to all who may benefit

4. Extraordinary **research** promise available to deliver more answers
The Lung Cancer Full-Court Press

Cutting the lung cancer death rate in half in 10 years.
Lung Cancer Full-Court Press
A Four-Pronged Approach

1. Target Groups That Are Lagging Behind in Lung Cancer Prevention

- Not all groups of people are benefiting equally from existing anti-tobacco efforts.

- Smoking rates are highest in individuals with less income and lower levels of educational achievement.

- Smoking rates in individuals with chronic mental illness exceed 40%

- We must invest in prevention efforts tailored to reach these communities.
What will it take to get smoking under 10%?
Disruptive Strategies in Tobacco Control

• Tobacco tax increases remain foundational
  - Congratulations to California; passed largest tax ever
• Tobacco 21 – raising the legal purchase age to 21
  - Congratulations to California and Hawaii and 175 municipalities in multiple states
• Limiting public use and negative role modeling
  - Getting tobacco out of baseball
• Prevention campaigns
  - Truth
• Cessation campaigns
  - Tips
• Harm reduction
  - E-Cigarettes??
Teen E-Cigarette Use Tripled from 2013-2014

Estimated percentage of high school students who used tobacco in the preceding 30 days

THE WASHINGTON POST
Is Vaping Replacing Combustible Cigarettes in High School Students?

Student use of e-cigarettes and hookah offset the decrease in use of traditional products such as cigarettes and cigars.

http://www.fda.gov/TobaccoProducts/ProtectingKidsfromTobacco/ucm405173.htm
Until or unless we have a strategy to substantially reduce use, we must be careful not to drive people away from vaping too quickly.

Otherwise, we could have the unintended consequence of driving combustible consumption back to what it used to be.
Lung Cancer Full-Court Press
A Four-Pronged Approach

2. Ensure the Right People Have Access to New Lung Cancer Early Detection Testing

- Low dose C-T: affordable and covered by new commercial plans and by Medicare.
- It’s not available everywhere yet, but our capacity to deliver the test is growing.
- We must make it accessible to those who could benefit and support provision of high quality screening.
The National Lung Cancer Roundtable

• The ACS has received a $1.5 million industry grant to create and lead the National Lung Cancer Roundtable

• **Major Goal of the Roundtable**: Increase the number of facilities able to provide high quality lung cancer screening as measured by ability to receive Medicare payment.
3. Help All People Access the Best Lung Cancer Treatments.

- We must continue to invest in helping cancer patients access treatment.
- Affordability and transportation are leading barriers to care.
- 20 to 30% of patients with advanced non-small cell lung cancer are not being referred to an oncologist today.
Before Nivolumab

2 years on Nivolumab

2 years off Nivolumab
Lung Cancer Full-Court Press
A Four-Pronged Approach

4. Invest in High-Potential Lung Cancer Research
   - Researchers are pursuing new treatments both for non-small cell lung cancer and for other lung cancer subtypes.
   - **Example:** Trastuzumab, (Herceptin) for HER2/neu positive lung cancer
   - We must do more to speed up the most promising lung cancer research.
Ensure no one dies of cancer because they can't get the care they need.
Lack of Equal Access

Lack of equal access to high quality treatment accounts for substantial variable in cancer outcomes.
BIG OPPORTUNITY #4

Eliminate HPV-related cancers.
Cervix Cancer Worldwide – 2010 report

- **529,409** cases per year – 452,902 in the developing world
- **274,883** deaths - 241,724 in the developing world
Cervical Cancer – the United States

• 2016
  - Estimated cases: 12,990
  - Estimated deaths: 4,120
26 million

Number of girls under 13 years of age in the United States

168,400

Number who will develop cervical cancer if none vaccinated

54,100

Number who will die from cervical cancer if none are vaccinated
HPV Infection & Disease: Understanding the Burden
HPV Infection

• Most females and males will be infected with at least one type of HPV at some point in their lives.
  - Estimated 79 million Americans currently infected.
  - 14 million new infections/year in the US.
  - HPV infection is most common in people in their teens and early 20s.

• Most people will never know that they have been infected.

Average Number of New Cancers Probably Caused by HPV Each Year, by Sex, United States 2006-2010

**Women (n = 17,600)**
- Cervix: 10,400 (59%)
- Anus: 2,600 (15%)
- Vulva: 2,200 (13%)
- Oropharynx: 1,800 (10%)
- Vagina: 600 (3%)

**Men (n = 9,300)**
- Oropharynx: 7,200 (77%)
- Anus: 1,400 (15%)
- Penis: 700 (8%)

www.cdc.gov/cancer/npcr
Without Vaccination, Annual Burden of Genital HPV-related Disease in U.S. Females

- 4,000 cervical cancer deaths
- 10,846 new cases of cervical cancer
- 330,000 new cases of HSIL: CIN2/3 (high grade cervical dysplasia)
- 1 million new cases of genital warts
- 1.4 million new cases of LSIL: CIN1 (low grade cervical dysplasia)
- 3 million cases and $7 billion

Sources: American Cancer Society. 2008; Schiffman Arch Pathol Lab Med. 2003; Koshiol Sex Transm Dis. 2004; Insinga, Pharmacoeconomics, 2005
Annual Report to the Nation on the Status of Cancer: HPV-Associated Cancers

• From 2000 to 2009, oral cancer rates increased:
  - 4.9% for Native American men
  - 3.9% for white men
  - 1.7% for white women
  - 1% for Asian men
• Anal cancer rates doubled from 1975 to 2009.
• Vulvar cancer rates rose for white and African-American women.
• Penile cancer rates increased among Asian men.
HPV Vaccine Is Safe, Effective, and Provides Lasting Protection

• HPV Vaccine is **SAFE**
  - Benefits of HPV vaccination far outweigh any potential risks.
  - Safety studies findings for HPV vaccine similar to safety reviews of MCV4 and Tdap vaccines

• HPV Vaccine **WORKS**
  - High grade cervical lesions decline in Australia (80% of school aged girls vaccinated)

• HPV Vaccine **LASTS**
  - Studies suggest that vaccine protection is long-lasting; no evidence of waning immunity
HPV Vaccination: Increasing Rates
Adolescent Vaccination Coverage U.S., 2006-2013

Survey Year

Percent Vaccinated

2006 2007 2008 2009 2010 2011 2012 2013

0 10 20 30 40 50 60 70 80 90 100

Tdap
MCV4
1 HPV girls
3 HPV girls
1HPV boys
3 HPV boys

86
77.8
57.3
37.6
34.6
13.9

MMWR 2014; 63(29):625-633.
Impact Of Eliminating Missed Opportunities By Age 13 Years In Girls Born In 2000

Missed opportunity: Healthcare encounter when some, but not all ACIP-recommended vaccines are given. HPV-1: Receipt of at least one dose of HPV. MMWR. 63(29);620-624.
Strength of HPV Vaccine Recommendation for Female Patients, Pediatricians, and Family Physicians (N=609)

- **11-12 y.o. females**
  - Strongly recommend: 51%
  - Recommend, but not strongly: 36%
  - Recommend against: 8%

- **13-15 y.o. females**
  - Strongly recommend: 79%
  - Recommend, but not strongly: 15%

- **16-18 y.o. females**
  - Strongly recommend: 85%
  - Recommend, but not strongly: 10%

Allison et al.  [https://cdc.confex.com/cdc/nic2011/webprogram/Paper25181.html](https://cdc.confex.com/cdc/nic2011/webprogram/Paper25181.html)
Equalize outcomes for all facing breast cancer.
Trends in Female Breast Cancer Death Rates by Race and Ethnicity, 1975-2012

ACS 2015 Breast Cancer Screening Guideline For Women At Average Risk

• Validates that mammography is effective at reducing mortality rates by at least 20%.

• New studies show the benefit is even greater – up to 50% in all age groups.

• We’ve identified a basic pathway that can be used as a quality measure and guide population health interventions.
ACS 2015 Breast Cancer Guideline

- Ages 40 to 44: Annual screening using shared decision-making
- Ages 45 to 54: Annual screening for all
- Age 55 and older: As long as life expectancy is 10 years, transition to every other year; women may choose to continue annual screening
ACS BREAST CANCER GUIDELINE

• We’ve also identified a pathway that achieves the greatest mortality reduction in exchange for having more mammograms and a higher risk of false positives:

  Annual mammography beginning at age 40 and continuing as long as a woman has a 10 year life expectancy
Reducing Our Nation’s Breast Cancer Death Rate Through Screening

• One-third of women ages 50 and over are not up to date with every other year mammography or have never been screened.

• Helping all women have access to screening along our basic pathway will substantially reduce breast cancer mortality.
Screening In Older Women

• One-third of all cancer deaths occur in women diagnosed older than age 70.

• Increasing screening rates in older women, when they are at highest risk for breast cancer, is an important goal of our new guideline.
Promoting Timely High Quality Treatment For All

• Too many breast cancer patients, including many African American women, are not receiving timely, high quality treatment.

• We have put together an interdisciplinary team to tackle this persistent health disparity.
Slower Progress In African American Women

• Eliminating this frustrating, persistent health disparity will demand engagement of all sectors in society.

• This disparity relates to poverty, availability of healthy foods and places to exercise, availability of health insurance, and is a test of how we provide care.

• Solutions will be accomplished one community at a time.
BIG OPPORTUNITY #6

Ensure all cancer survivors can access recommended care.
We Have Guidelines

• NCCN
• ACS-ASCO
• Children’s Oncology Group
• Others
We Have Accreditation Standards

- NCI designation
- Commission on Cancer - ACS
Survivorship Care Guidelines For Primary Care Clinicians
ACS Cancer Survivorship Care Guidelines

- Survivorship care guidelines now available for:
  - Prostate cancer
  - Colorectal cancer
  - Breast cancer
  - Head and neck cancer
Clinician Smartphone App

- Smartphone mobile application supports guideline implementation.
- Available now in the Apple Store.
- Android app will be available in Google Play in July.
- To learn more, visit cancer.org/survivorcareapp
Cancer Survivorship Care Guidelines: ACS website

- Cancer.org/professionals offers access to
  - Cancer survivorship care guidelines,
  - Cancer screening guidelines, and the
  - Nutrition and physical activity guidelines for cancer survivors that were leveraged in the cancer survivorship care guidelines.
Cancer Survivorship

• Approximately 14 million cancer survivors in the US:
  - 64% have survived 5 years or more.
  - 40% have survived 10 years or more.
  - 15% have survived 20 years or more after diagnosis.

• The number of cancer survivors is projected to increase by 31%, to almost 18 million, by 2022 – an increase of more than 4 million survivors in 10 years.

Survivorship and Lifestyle
Why Healthy Eating and Active Living are Critical for Survivors

• Cancer survivors are at greater risk for recurrence and for developing secondary cancers due to:
  - The effects of treatment
  - Unhealthy lifestyle behaviors
  - Underlying genetics
  - Risk factors that contributed to the first cancer
## Prognostic Effects of Weight Gain Among Individuals with Breast and Prostate Cancer: Results of 2 Meta-Analyses

<table>
<thead>
<tr>
<th>Group (year)</th>
<th># of studies</th>
<th>Sample</th>
<th>RR (95% CI) for every 5 kg/m² increase in BMI from pre- to post-dx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chan et al. (2014)</td>
<td>82</td>
<td>213,075 women with breast cancer</td>
<td>Breast CA Specific Mortality 1.29 (0.97-1.72)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total Mortality 1.08 (1.01-1.15)</td>
</tr>
<tr>
<td>Cao &amp; Ma (2011)</td>
<td>6 cohort</td>
<td>18,203 men with prostate cancer</td>
<td>Biochemical Recurrence 1.21 (1.11-1.31)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Prostate CA Specific Mortality 1.20 (0.99-1.46)</td>
</tr>
</tbody>
</table>
The National Cancer Survivorship Roundtable

• ACS and ASCO will be launching the National Cancer Survivorship Roundtable. **It’s time.**
BIG OPPORTUNITY #7

Enable communities to fight cancer by addressing the true determinants of health.
What does it mean to help create healthy communities?
The health of an individual – and thus the health care costs generated in managing illness, including loss of productivity – are chiefly determined by where people live and the degree to which their community supports healthy living.
Zip code is more important than genetic code.
The True Determinants Of Health

Where we live, work, eat, play, and pray builds the foundation of good health …

… or contributes to poor health.
To achieve health equity, we must focus on the social, economic, and environmental factors that affect health. This includes:

- Resources to meet daily needs
- Quality education and jobs
- Health care
- Transportation
- Public safety
- Social support
- Technology
Robert Wood Johnson Foundation: Creating A Culture Of Health
Health Outcomes: North Carolina

#1 – Wake County

#15 – Durham County

#100 – Robeson County
We have an urgent need to tackle pancreas cancer.
Pancreas Cancer

2017

- Estimated new cases: 53,670
- Estimated deaths: 43,090
Pancreas Cancer – Men

2017

- Estimated new cases: 27,970
- Estimated deaths: 25,700
Pancreas Cancer – Women

2017

- Estimated new cases: 22,300
- Estimated deaths: 20,790
Pancreas Cancer: Research Priorities

• For the common adult solid cancers, mortality rates are only coming down for the cancers amenable to prevention or early detection.

• Research focusing on developing a screening strategy must be a priority.
Developing a Pancreas Screening Test: Numerous Challenges

• Almost all cancer screening tests require an initial test to define individuals at high risk, followed by a diagnostic continuum.

• Developing a blood test/liquid biopsy may be a logical strategy to pursue, but localizing a small tumor and safely conducting a pancreatic biopsy poses an equal challenge.

• Finally, we must be able to safely and effectively treat small pancreatic cancers.
We must develop the capacity to implement prevention that works for liver cancer.
Liver Cancer – Worldwide

• 5th most common cancer and 3rd most common cause of cancer death in the world.

• A major cause of death in patients with chronic hepatitis B and C virus infections.

• Responsible for approximately 1 million deaths each year.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2840947/
Number of cases of acute hepatitis C infections reported in the US in 2014: 30,500

Number of people with chronic hepatitis C infection in the US: 2.7 to 3.9 million

Likelihood that acute hepatitis C infection will become chronic: 75-85%

http://www.cdc.gov/hepatitis/hcv/cfaq.htm
Trends in Incidence Rates, 1975-2012

by sex, for liver and intrahepatic bile duct
per 100,000, age adjusted to the 2000 US standard population
PROJECTING CANCER DEATHS

- Bladder
- Breast
- Colon and rectum
- Lung and bronchus
- Leukemia
- Liver and intrahepatic bile duct
- Pancreas
- Prostate

PROJECTED CANCER DEATHS (Thousands)

YEAR

2010

2020

2030

158

161

156

52

49

63

51

14.7

20.3

47

19.3

33

47

36.8

28.5

22

28

22

39

20

24

20

18

22

22

18

160

140

120

100

80

60

40

20

0

Persistent Infection With HCV Is A Risk Factor

• The incidence of HCC is expected to increase in the next two decades, largely due to hepatitis C infection and secondary cirrhosis.

• Detection of HCC at an early stage leads to a favorable clinical outcome.

• More importantly, we can cure hepatitis C in many individuals.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2840947/
Hepatitis C

• Patients born between 1945 and 1965 need a one-time screen for hepatitis C.

• So why this age group?
Because we were party animals!
Treatment Of Chronic Hepatitis C Infection Is Cost Effective

• For most sub-types of chronic hepatitis C, treatment with new therapies is cost-effective, particularly for individuals with evidence of liver damage.

• But screening rates are low and treatment is not equally available.
The fight against cancer demands we pursue all paths with equal vigor.
Where you live should not determine if you live.
Together, we can put our Cancer Control Blueprint into action.
THANK YOU
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