

# Natural History and Epidemiology of Colorectal Cancer

Alan G. Thorson, MD, FACS  
Colon and Rectal Surgery, Inc.  
Creighton University



# Natural History and Epidemiology of Colorectal Cancer

---

2015 Dialogue for Action: Expanding Access Through Innovation  
*Prevent Cancer Foundation*  
*Baltimore, Maryland*  
*April 22-24, 2015*

---

Alan G. Thorson, M.D., F.A.C.S.  
Clinical Professor of Surgery  
Creighton University School of Medicine  
University of Nebraska College of Medicine  
Omaha, Nebraska

**There are no financial  
arrangements or conflicts of  
interest to disclose related to  
this presentation**

# **Natural History and Epidemiology of Colorectal Cancer**

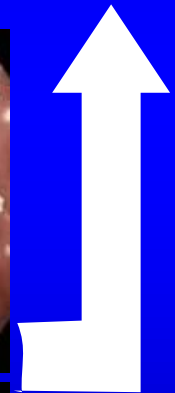
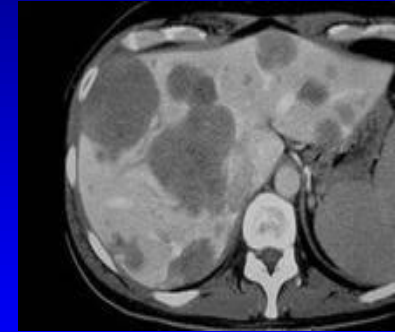
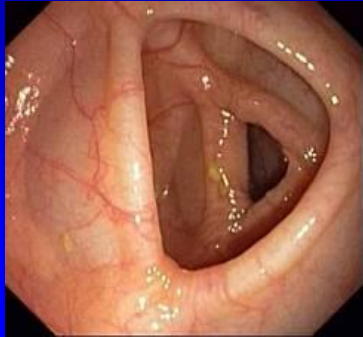
---

- **Sequence of development from polyp to cancer**
- **Colorectal cancer screening as a part of preventive care**
- **Genetics and colorectal cancer**
- **Screening options**
- **Epidemiology of colorectal cancer**
- **Risk factors associated with colorectal cancer**

**ALL IN 23 MINUTES OR LESS!!**

# Natural History and Epidemiology of Colorectal Cancer

Sequence of development from polyp to cancer



SCIENCEPHOTO LIBRARY



*"I'll have an ounce of prevention."*

# **Natural History and Epidemiology of Colorectal Cancer**

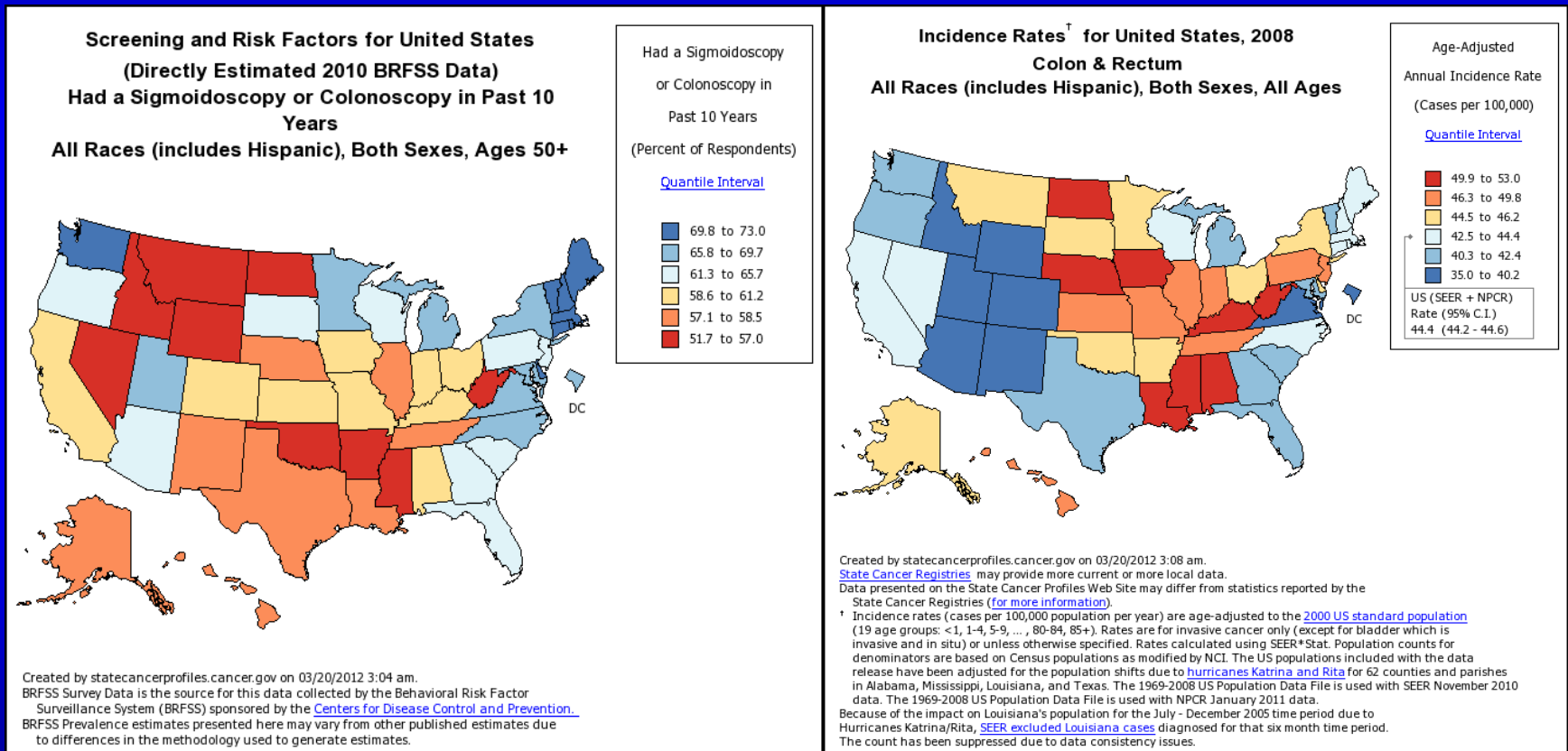
---

## **Stages of Prevention . . .**

- **Primordial**
  - Minimization of future hazards to health
- **Primary**
  - Disease prevention through risk reduction
- **Secondary**
  - Detection and treatment of preclinical conditions
- **Tertiary**
  - Softening the impact caused by the presence of disease

# Natural History and Epidemiology of Colorectal Cancer

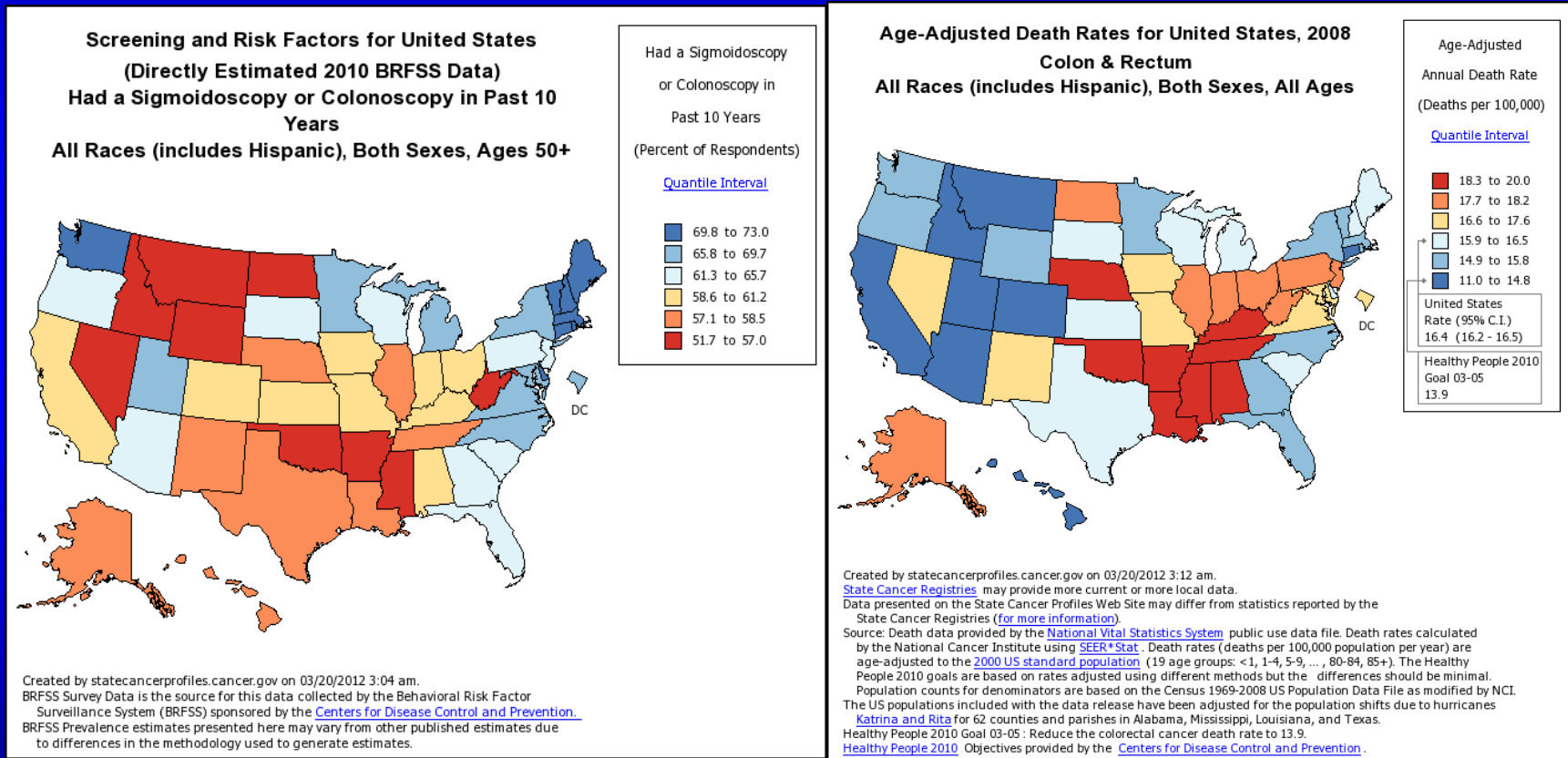
## Colorectal cancer screening as a part of preventive care





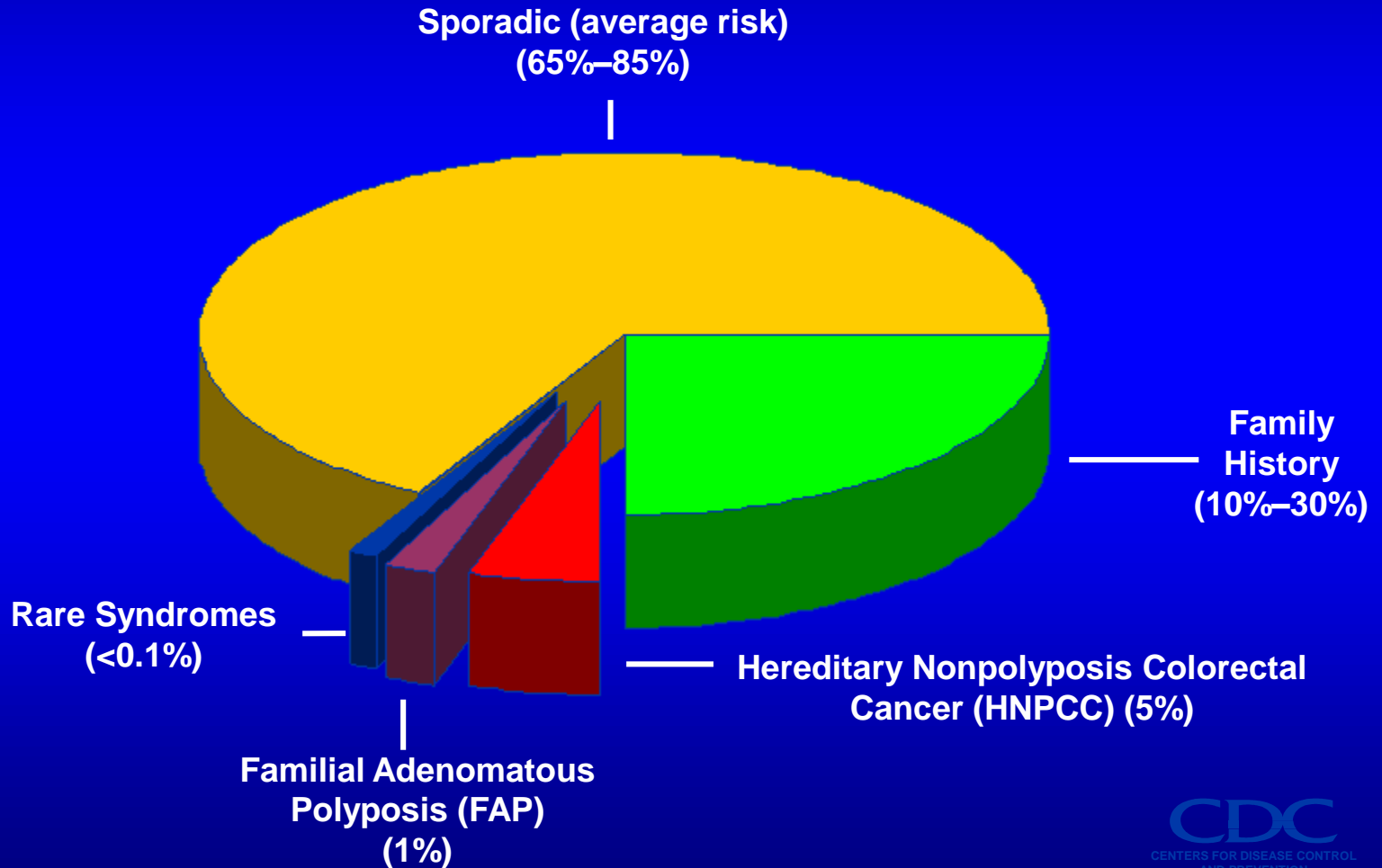
# Natural History and Epidemiology of Colorectal Cancer

## Colorectal cancer screening as a part of preventive care



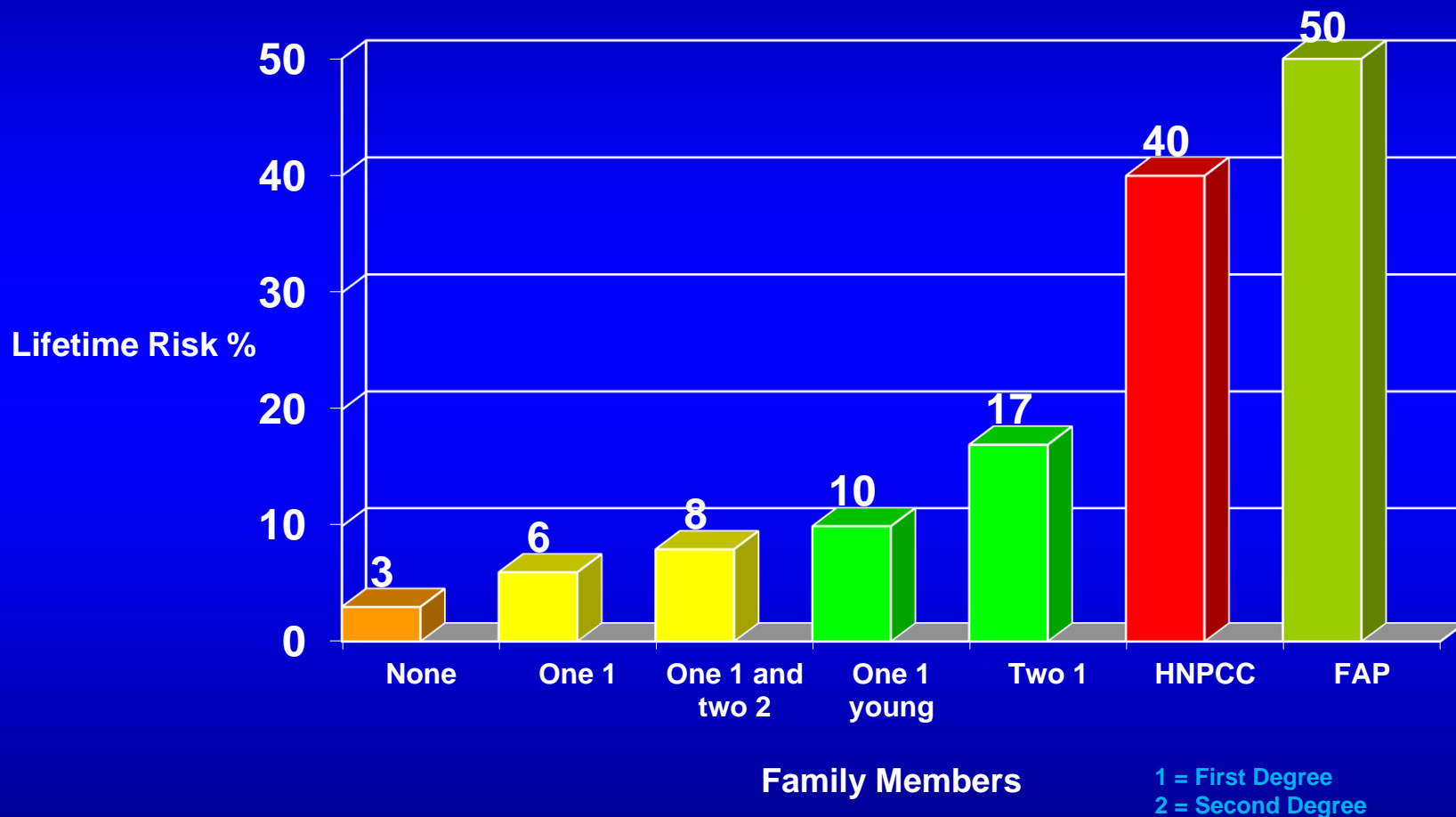
# Natural History and Epidemiology of Colorectal Cancer

## Genetics and colorectal cancer



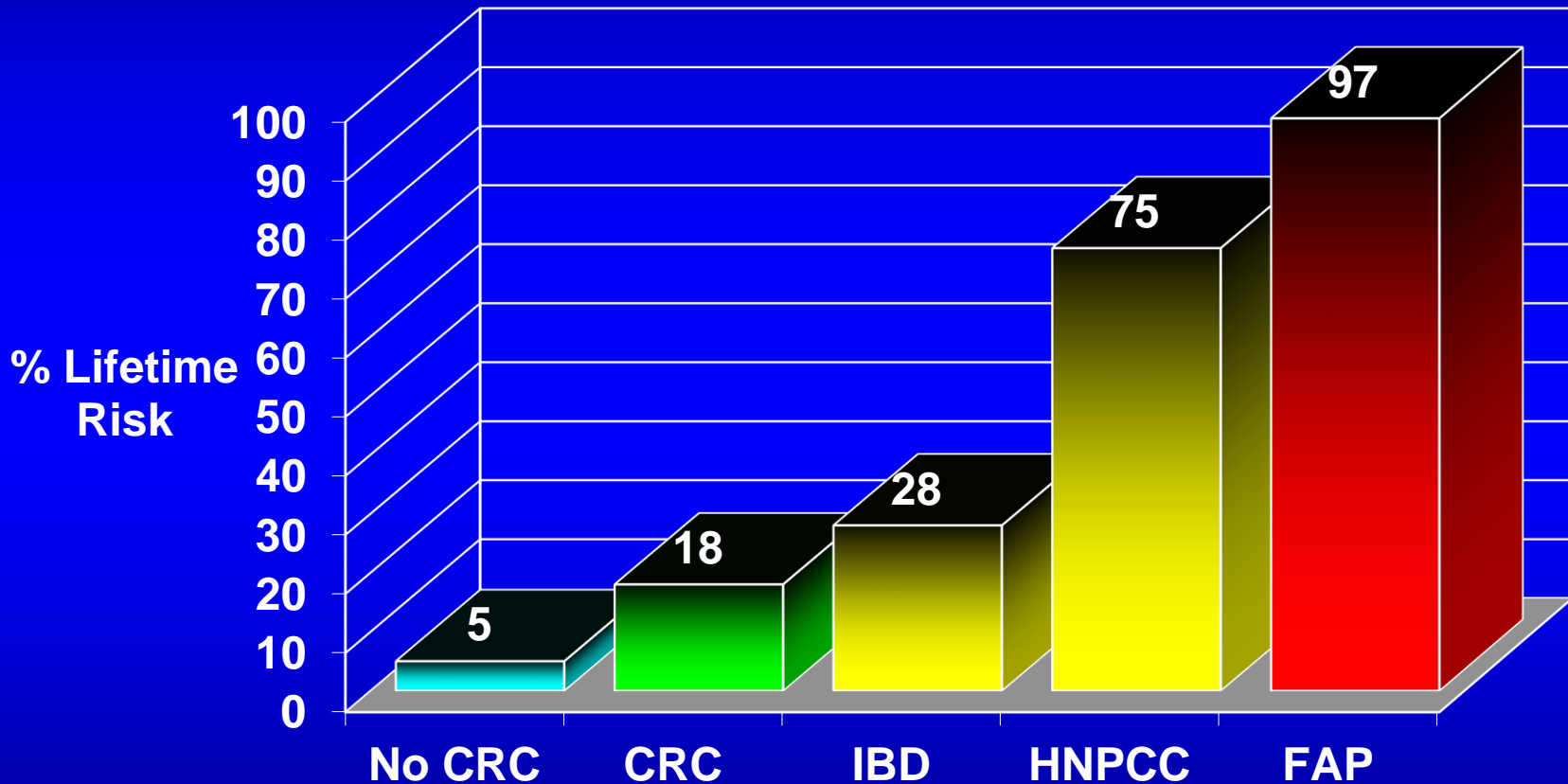
# Natural History and Epidemiology of Colorectal Cancer

## Personal Risk Based on Family History of CRC



# Natural History and Epidemiology of Colorectal Cancer

Personal Risk Based on Personal History of:



# Natural History and Epidemiology of Colorectal Cancer

---

## Screening options

- **Tests that primarily detect cancer early**
  - FOBT
  - FIT
  - Stool DNA
- **Tests that detect adenomatous polyps and cancer**
  - Flexible sigmoidoscopy
  - Colonoscopy
  - Double contrast barium enema
  - CT colonography
- **Tests for the future?**
  - Blood tests
  - Pillcam

# Natural History and Epidemiology of Colorectal Cancer

---

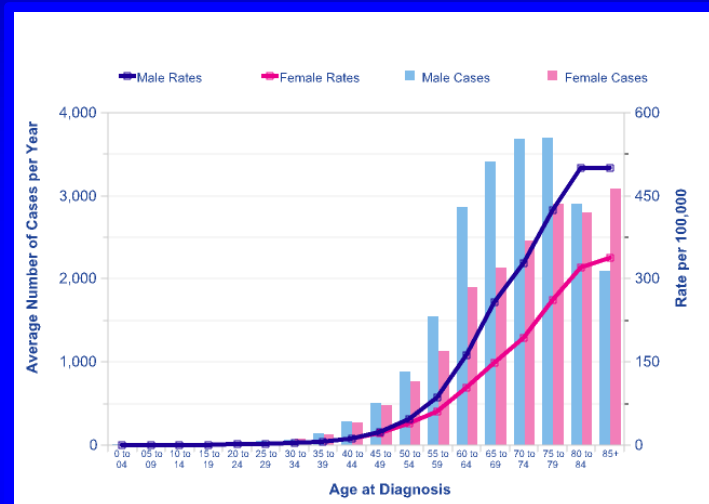
Epidemiology of colorectal cancer

**Statistics are merely the aggregation of numbers with the tears wiped away.**

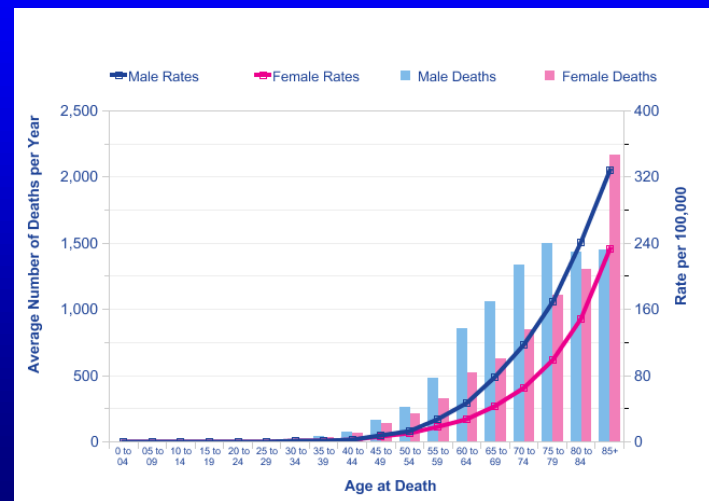
Irving Sellikoff, MD (asbestos)

# Natural History and Epidemiology of Colorectal Cancer

## Epidemiology of colorectal cancer



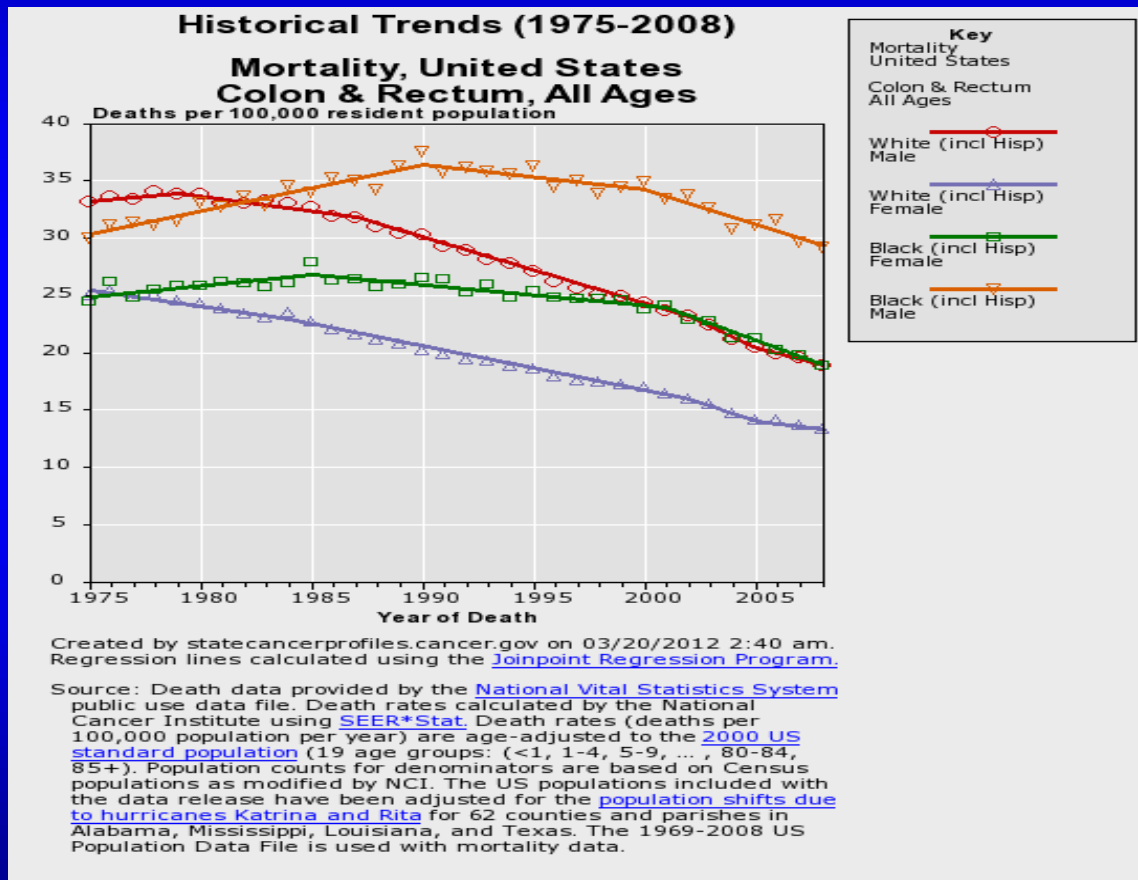
The risk of CRC begins to increase after the age of 40 years and rises sharply at ages 50 to 55 years; the risk doubles with each succeeding decade, and continues to rise exponentially.



Age at death parallels diagnosis.

# Natural History and Epidemiology of Colorectal Cancer

## Epidemiology of colorectal cancer



Mortality for CRC has declined over the last 20 years.

Between 1985 and 2002 the decline was 1.8% per year.

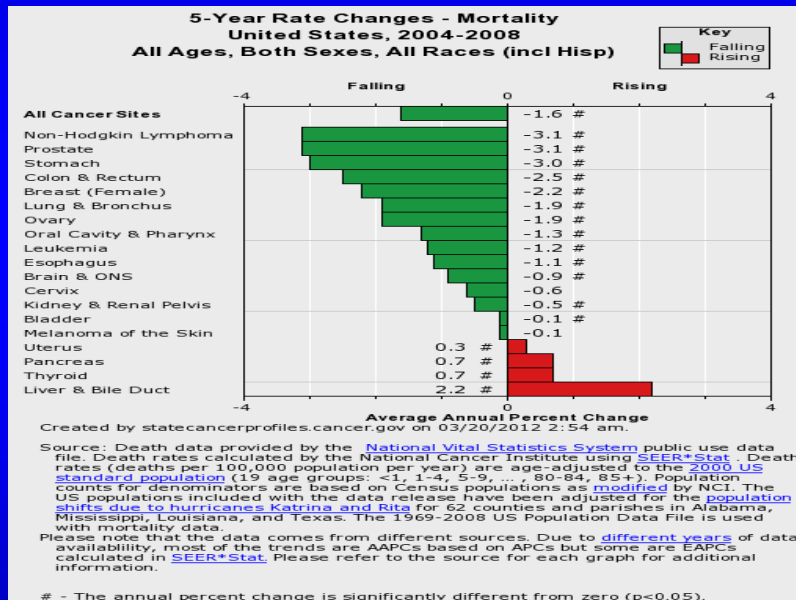
The overall 5 year survival rate is about 64% ranging from over 90% for cancers diagnosed early in Stage I and less than 5% for those diagnosed at Stage IV.



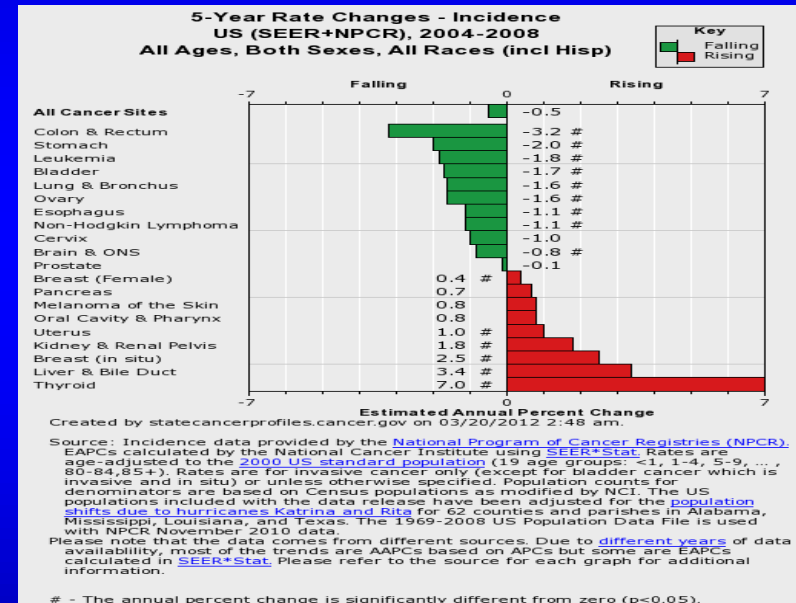
# Natural History and Epidemiology of Colorectal Cancer

## Epidemiology of colorectal cancer

In raw numbers, there will be an estimated **136,830** new cases of CRC diagnosed in the United States this year and an estimated **50,310** deaths.\*



Between 2002 and 2005, mortality declined 4.3% per year however in young adults less than 50 years of age there has been a 1.7% annual increase in CRC mortality since 1992.



Between 2004 and 2008, CRC incidence rates in the United States declined by 2.5% per year in women, and by 2.7% per year in men. About 5% of Americans are expected to develop the disease within their lifetimes

\*American Cancer Society, Cancer Facts and Figures, 2014

# Natural History and Epidemiology of Colorectal Cancer

---

Risk factors associated with colorectal cancer

- **Risk factors**
  - **Modifiable risk factors**
    - Factors that increase risk
    - Factors that decrease risk
  - **Non-modifiable risk factors**
    - Who our parents are
    - Who we are

# Natural History and Epidemiology of Colorectal Cancer

---

Risk factors associated with colorectal cancer

- **Factors associated with increased risk**
  - Excess alcohol use
  - Smoking
  - Obesity/lack of physical activity (Levi, 2011)
  - Diabetes
- **Factors associated with decreased risk**
  - Physical activity
  - Interventions
    - NSAIDs
    - ASA
    - Polyp removal
    - Diet

# Natural History and Epidemiology of Colorectal Cancer

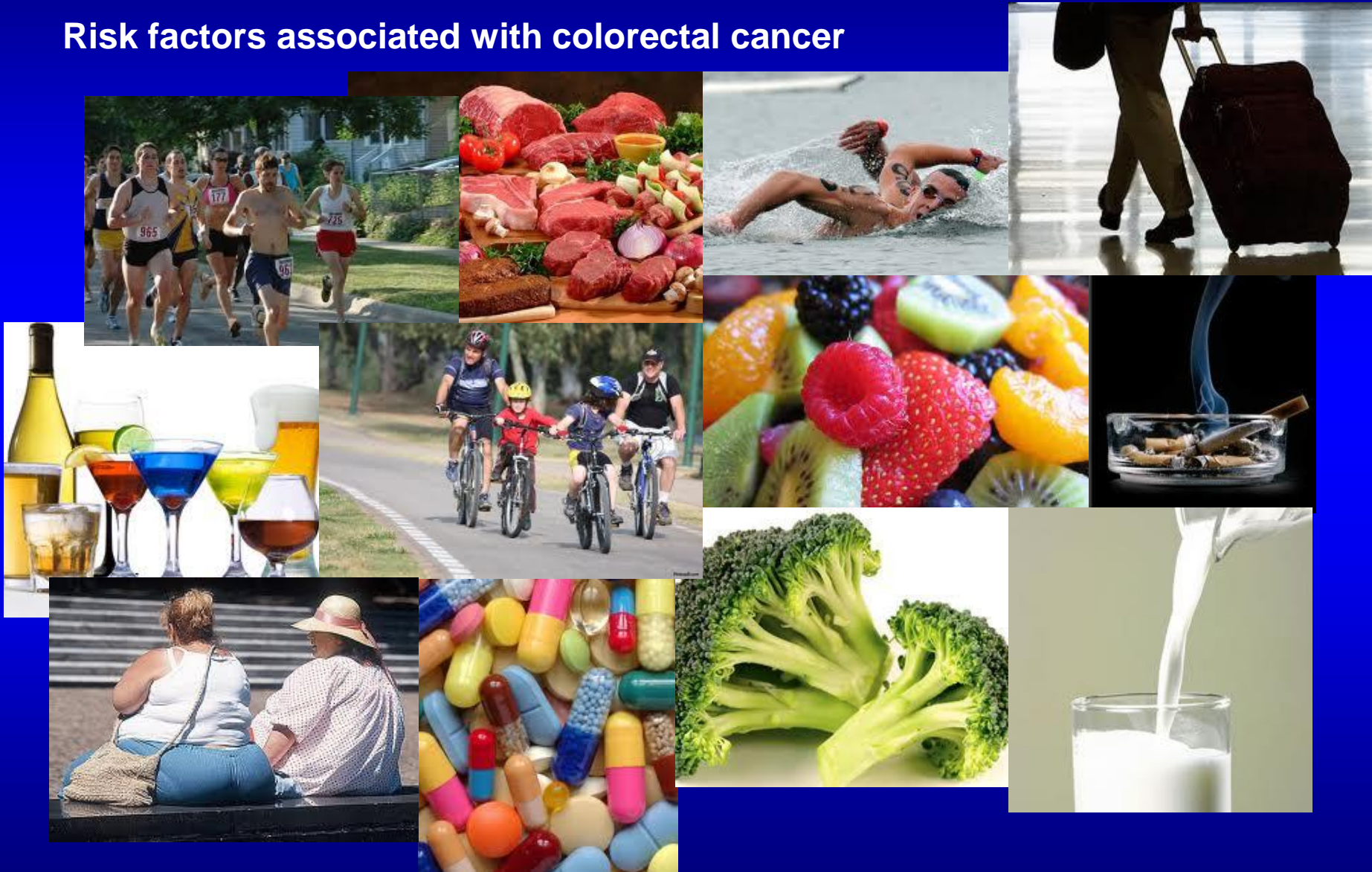
---

Risk factors associated with colorectal cancer

- **Dietary considerations**
  - **Dietary fat**
  - **Meat**
  - **Bile acids**
  - **Fiber, fruits and vegetables**
  - **Vitamins**
  - **Calcium**

# Natural History and Epidemiology of Colorectal Cancer

## Risk factors associated with colorectal cancer



# Natural History and Epidemiology of Colorectal Cancer

---

Risk factors associated with colorectal cancer

- **Physical activity**
  - **Athlete . . .**
    - a person who is trained or skilled in exercises, sports, or games requiring physical strength, agility, or stamina
  - **Athletic**
    - of or relating to athletes or athletics

# Natural History and Epidemiology of Colorectal Cancer

---

## Conclusions

- **Colon cancer is a leading cause of cancer death**
- **Colon cancer is highly preventable with opportunities for both primary and secondary intervention**
- **Primary prevention represents a complex juxtaposition of many variables**
- **Polyp removal may be the most important secondary prevention**

## **Special Considerations . . .**

- **CRC presents many unique opportunities for intervention that can reduce morbidity and prevent disease**
- **We are not currently taking full advantage of our knowledge to maximize the benefit thereof**
- **Because of multifactorial causation, the best opportunities for improved outcome in CRC are harbored in lifestyle and system changes**



**When you are born, you cry  
and the world rejoices.  
Live your life so that when you  
die, the world will cry and you  
will rejoice.**

**Native American saying**

**Thank You!**