

# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 17, DDW San Diego, 2008

Presenter: T. Byers

## Defining endpoints for colorectal screening in an imperfect World

Tim Byers MD MPH  
University of Colorado School of Medicine  
[Tim.byers@uchsc.edu](mailto:Tim.byers@uchsc.edu)

OMED  
San Diego  
17 May, 2008

---

---

---

---

---

---

---

---

## In a perfect World:

- ✓ RCT evidence for each method
- ✓ Disease as endpoint
- ✓ Risks, costs, and benefits measured in all dimensions
- ✓ Single recommended method as “king of the hill”

---

---

---

---

---

---

---

---

## In our World:

- ✓ RCT evidence only for FOBT
- ✓ Observational data for most methods
  - ✓ PLCO still underway
- ✓ Several methods are used
- ✓ Risks, costs, and benefits must be estimated

---

---

---

---

---

---

---

---

# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING


Saturday, May 17, DDW San Diego, 2008

Presenter: T. Byers

### CRC screening methods endorsed by recent guidelines\*

- Fecal Occult Blood Testing (SENSA, FIT)
- Flexible Sigmoidoscopy
- Double Contrast Barium Enema
- Colonoscopy
- CT colography
- Stool DNA

ACS, US Multi-society Task Force on CRC, American College Radiology  
CA Cancer J Clin May / June 2008



---

---

---

---

---

---

---

---

### Endpoints in cancer screening

- ✓Death
- ✓Disease
- ✓Cancer
- ✓Pre-malignant lesions
- ✓Blood
- ✓Molecular changes
- ✓Risk factors
  
- ✓Human costs
- ✓Financial costs

---

---

---

---

---

---

---

---

### Sequence of cancer development

Risk factors → Tissue changes → Neoplasia → Cancer → Disease

---

---

---

---

---

---

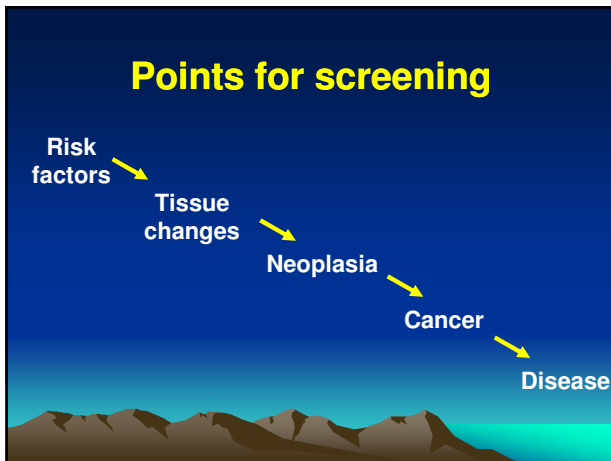
---

---

# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 17, DDW San Diego, 2008

Presenter: T. Byers



---

---

---

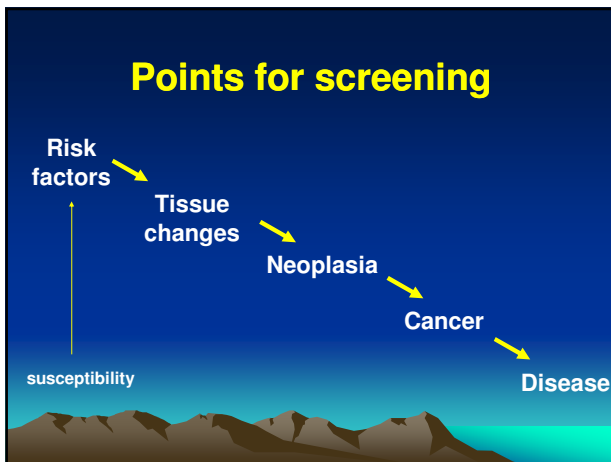
---

---

---

---

---



---

---

---

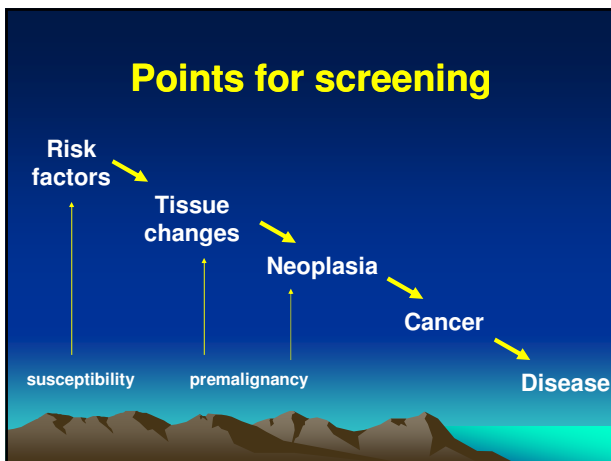
---

---

---

---

---



---

---

---

---

---

---

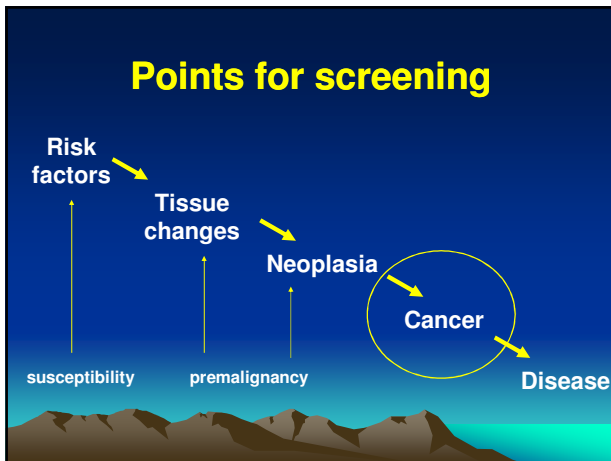
---

---

# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 17, DDW San Diego, 2008

Presenter: T. Byers



---

---

---

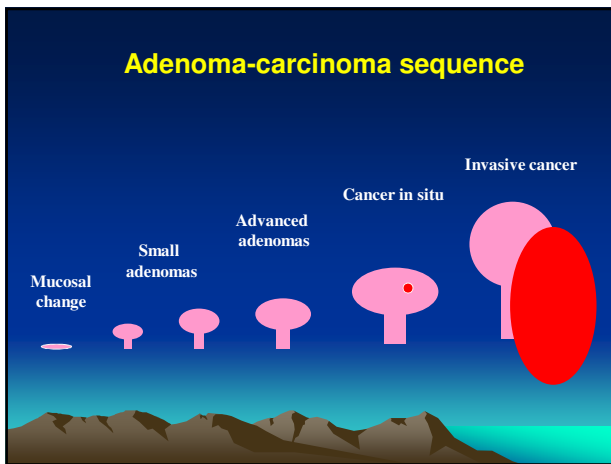
---

---

---

---

---



---

---

---

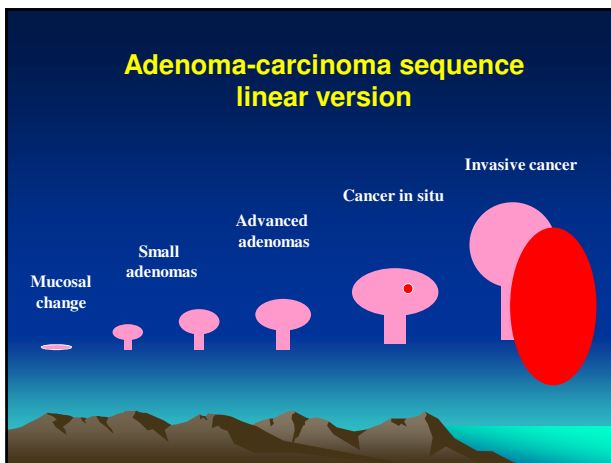
---

---

---

---

---



---

---

---

---

---

---

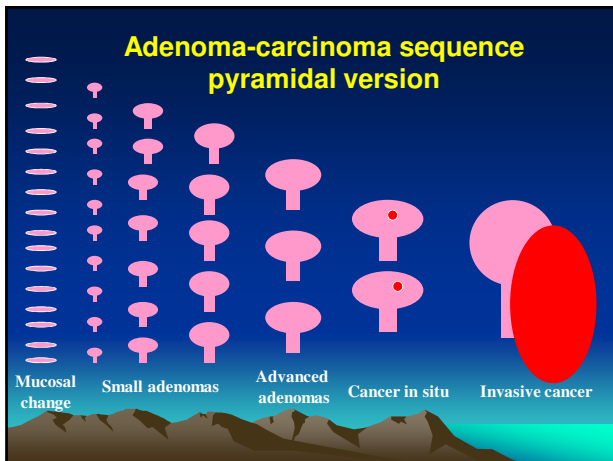
---

---

# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 17, DDW San Diego, 2008

Presenter: T. Byers



---

---

---

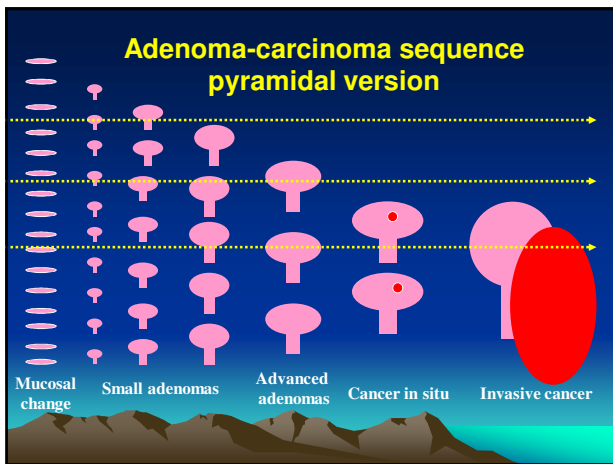
---

---

---

---

---



---

---

---

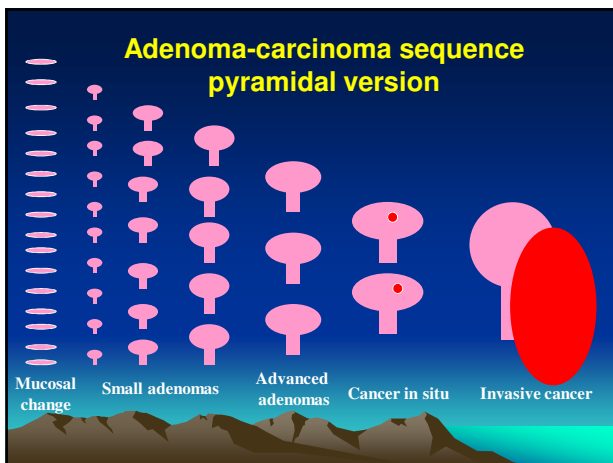
---

---

---

---

---



---

---

---

---

---

---

---

---

## Benefits and costs of swimming upstream for screening

### Benefits

- Prevention potential
- Lower morbidity

### Costs

- Over-diagnosis
- Less certain impact

---

---

---

---

---

---

---

---

## “Upstream” lessons from screening for other cancers

- ✓ Cervical cancer: pre-malignant lesion detection produces benefits
- ✓ Mammography: early detection benefit + some over-diagnosis
- ✓ Prostate cancer: early detection + lots of over-diagnosis
- ✓ Neuroblastoma: mostly over-diagnosis
- ✓ Lung cancer (CT): balance of benefit and over-diagnosis unclear

---

---

---

---

---

---

---

---

## Adenomas vs cancer as screening targets

- ✓ New consensus guidelines\*
  - ✓ emphasize 50% test sensitivity for cancer
  - ✓ Distinguish between adenoma finding and cancer finding
- ✓ Targets can be personalized
  - ✓ Age
  - ✓ Risk

ACS, US Multi-society Task Force on CRC, American College Radiology  
CA Cancer J Clin May /June 2008

---

---

---

---

---

---

---

---

# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 17, DDW San Diego, 2008

Presenter: T. Byers

## Screening parameters

- ✓ Sensitivity
- ✓ Specificity
- ✓ Positive predictive value
- ✓ Negative predictive value

---

---

---

---

---

---

---

---

## Screening parameters

	Diseased	not Diseased
Screen positive		
Screen negative		

---

---

---

---

---

---

---

---

## Screening parameters

	Diseased	not Diseased
Screen positive		
Screen negative		

Sensitivity

---

---

---

---

---

---

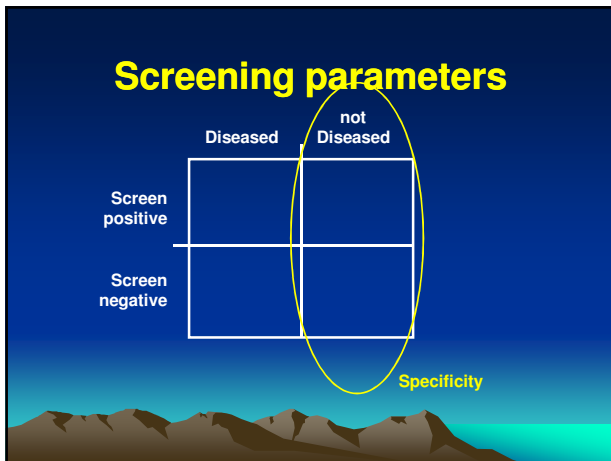
---

---

# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 17, DDW San Diego, 2008

Presenter: T. Byers



---

---

---

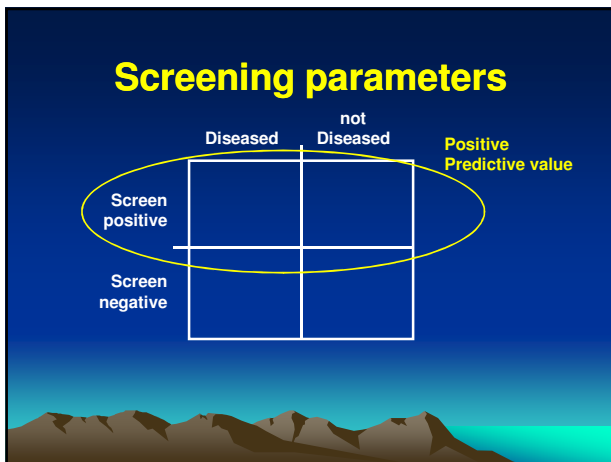
---

---

---

---

---



---

---

---

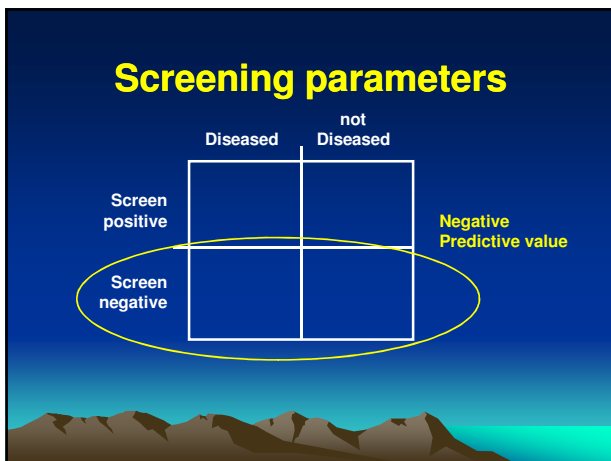
---

---

---

---

---



---

---

---

---

---

---

---

---


# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 17, DDW San Diego, 2008

Presenter: T. Byers

## Screening parameters

- ✓ Sensitivity
- ✓ Specificity
- ✓ Positive predictive value
- ✓ Negative predictive value



---

---

---

---

---

---


---

---

## Screening parameters

- ✓ Sensitivity
- ✓ Specificity
- ✓ Positive predictive value
- ✓ Negative predictive value

Inherent characteristics of the test



---

---

---

---

---

---

---


---

## Screening parameters

- ✓ Sensitivity
- ✓ Specificity
- ✓ Positive predictive value
- ✓ Negative predictive value

Inherent characteristics of the test

Affected also by disease prevalence in the population



---

---

---

---

---

---

---

---

# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 17, DDW San Diego, 2008

Presenter: T. Byers

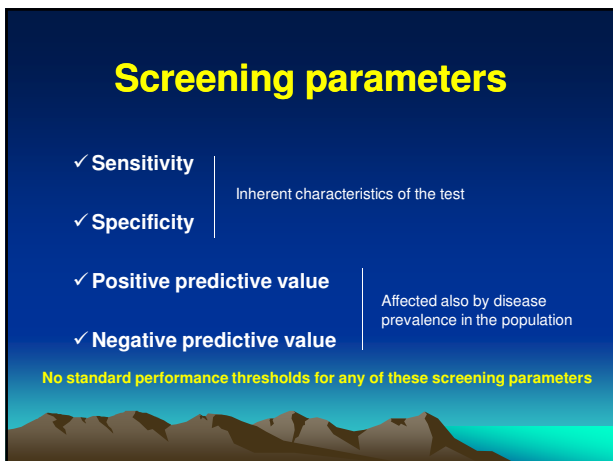
## Screening parameters

- ✓ Sensitivity
- ✓ Specificity
- ✓ Positive predictive value
- ✓ Negative predictive value

Inherent characteristics of the test

Affected also by disease prevalence in the population

No standard performance thresholds for any of these screening parameters



---

---

---

---

---

---

---

---

## The bottom line ?



---

---

---

---

---

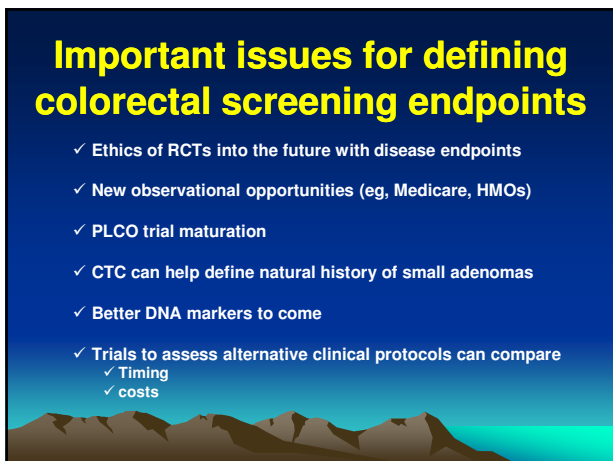
---

---

---

## Important issues for defining colorectal screening endpoints

- ✓ Ethics of RCTs into the future with disease endpoints
- ✓ New observational opportunities (eg, Medicare, HMOs)
- ✓ PLCO trial maturation
- ✓ CTC can help define natural history of small adenomas
- ✓ Better DNA markers to come
- ✓ Trials to assess alternative clinical protocols can compare
  - ✓ Timing
  - ✓ costs



---

---

---

---

---

---

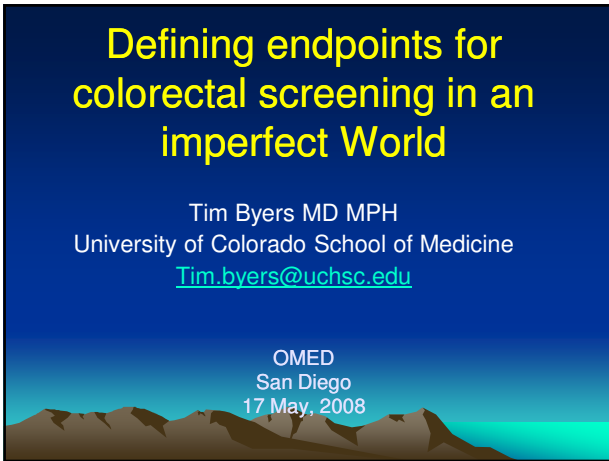
---

---

**OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING**

**Saturday, May 17, DDW San Diego, 2008**

**Presenter: T. Byers**



**Defining endpoints for  
colorectal screening in an  
imperfect World**

Tim Byers MD MPH  
University of Colorado School of Medicine  
[Tim.byers@uchsc.edu](mailto:Tim.byers@uchsc.edu)

OMED  
San Diego  
17 May, 2008

---

---

---

---

---

---

---

---