

THE IMPORTANCE OF COMORBIDITY TO CANCER CARE AND STATISTICS – AMERICAN CANCER SOCIETY PRESENTATION COPYRIGHT NOTICE

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The Importance of Comorbidity to Cancer Care and Statistics

Presentation to the
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Prostate Cancer Example

- Desch et al studied treatment recommendations for local or regional prostate cancer
- As comorbidity increased, the proportion of men receiving no treatment rose correspondingly
- Fewer than 30% of men with the most significant level of comorbidity received surgery, radiation therapy, or combinations of aggressive therapy as compared with almost 55% of men who had no comorbid ailments

Med Care 1996;34:152-622

Advanced Head and Neck Cancer

Severe Comorbidity	Initial Treatment Radiation Therapy Only	Risk Ratio (95% CI)
Absent	100/534 (19%)	1.0
Present	38/74 (51%)	3.60 (2.38-5.44)
Total	138/608 (22%)	

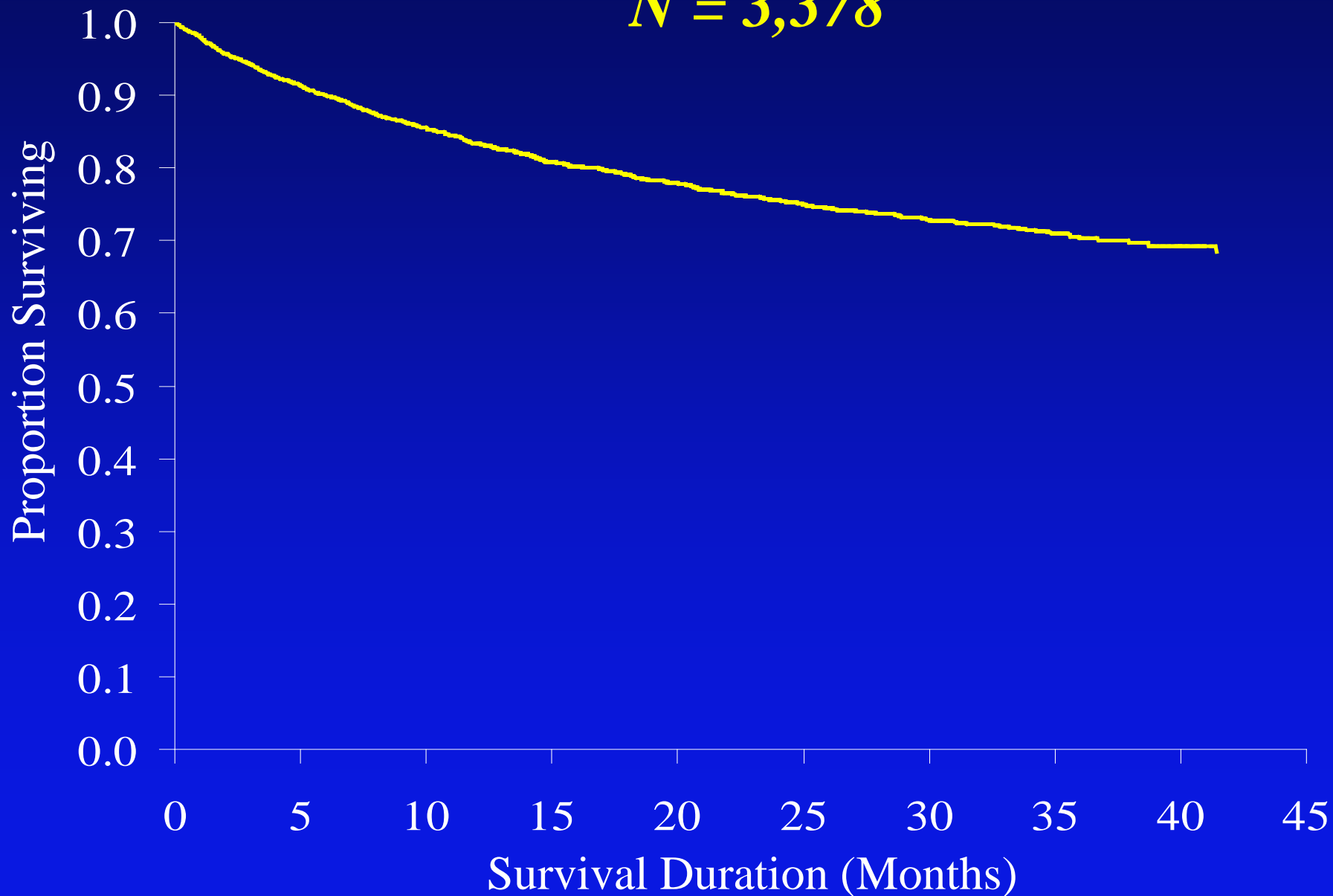
Colon Carcinoma

- Yancik studied impact of comorbidity on mortality for 1610 elderly patients
- One-year mortality rate was 28% (454/1610)
- After adjusting for age, gender, and cancer stage,
 - 5-6 comorbid ailments RR (95% CI) = 1.4 (1.1,1.9)
 - > 6 comorbid ailments RR (95% CI) = 1.8 (1.4,2.5)

Cancer 1998; 82:2123-2134

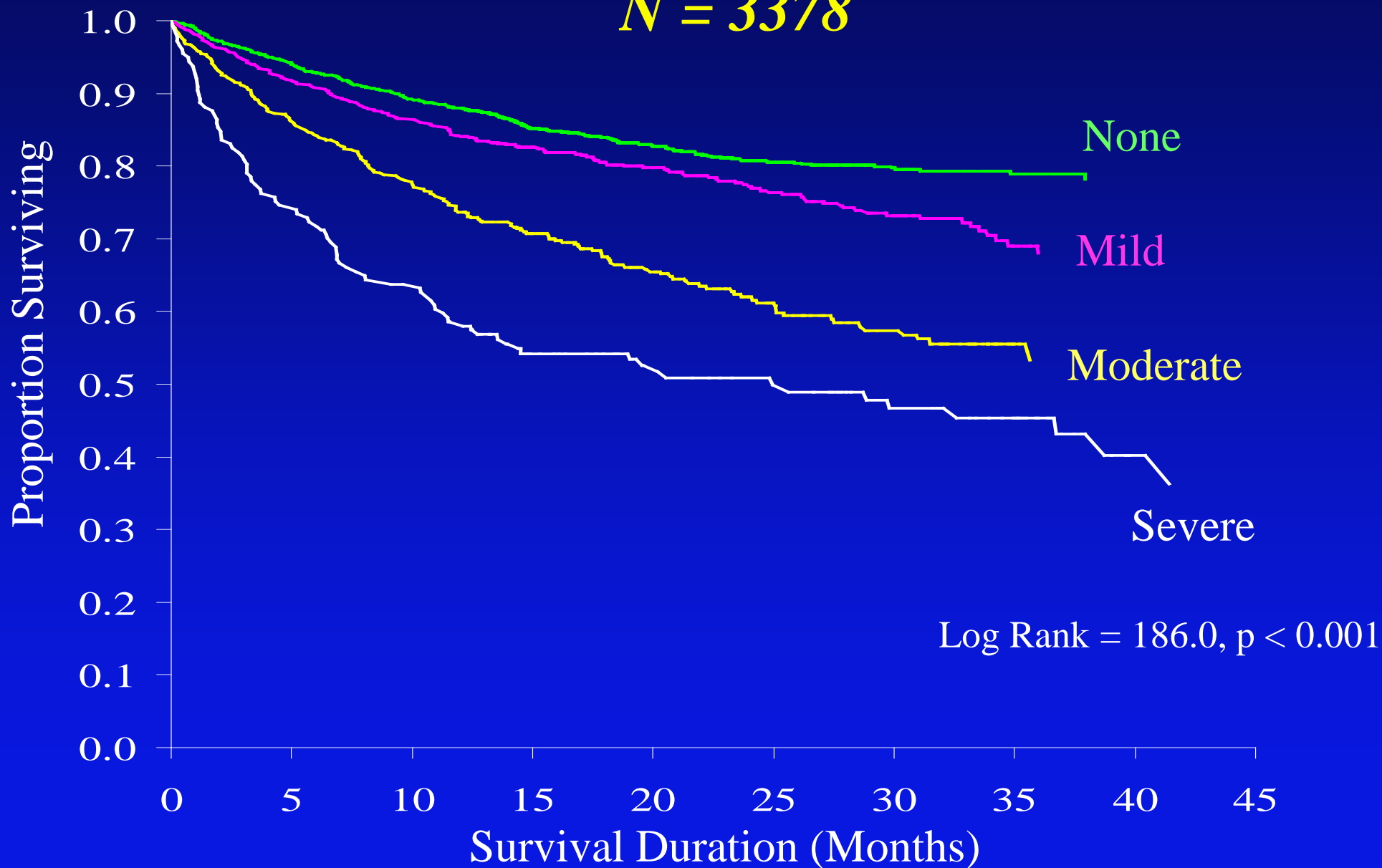
Overall Survival

N = 3,378



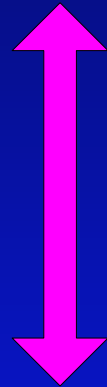
Impact of Comorbidity on Survival

N = 3378

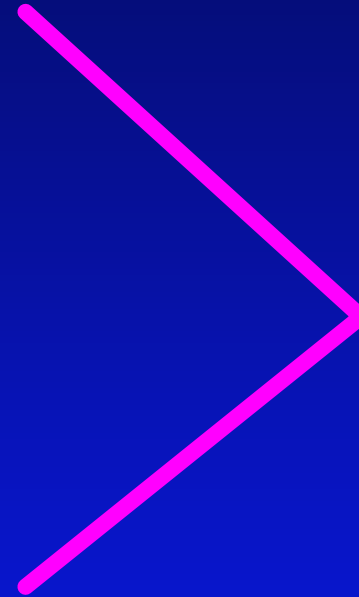


Interaction Between Comorbidity, Treatment, and Outcome

Comorbid Conditions



Less Treatment Selected
(? Suboptimal)



Poor
Outcomes

Stratification for comorbidity can control bias.

Yates, JW. Comorbidity Considerations in Geriatric Oncology Research.

CA Cancer J Clin 2001;51:329-326

Breast Cancer

- Satariano and Ragland determined the effect of comorbidity and tumor stage on survival
- Overall 3-year survival 85% (145/936)
- 3 or more comorbid ailments 20-fold higher rate of mortality when compared with patients without comorbidity
- Comorbid effects independent of age, race, tumor stage, histologic type, type of treatment, and social/behavioral factors

Ann Intern Med. 1994; 120:104-110

Head and Neck Cancer

Cox Proportional Hazards Model

Variable	Category	Adjusted Risk Ratio*	95% CI	p Value
Severe Comorbidity	Absent	1	--	--
	Present	1.462	1.176-1.818	0.0006

* Adjusted for Anatomic Sub-Site, Tumor Stage, and Initial Treatment

Quality of Care Example

- Greenfield et al conducted a retrospective review to assess the degree of appropriate treatment for elderly women with breast cancer
- Sample included women who received cancer management at one of seven hospitals in Southern California
- Appropriate treatment defined according to *Criteria Map* that incorporated widely accepted practice standards
- Level of comorbidity (None/Mild or Severe) defined by *Comorbidity Index*

JAMA 1987;257:2766-2770

Relationship of Comorbidity to Management of Breast Cancer

Comorbidity Index	Treatment		Total
	Inappropriate	Appropriate	
None, Mild	53 (19%)	231 (81%)	284 (76%)
Severe	37 (41%)	53 (59%)	90 (24%)
Total	90 (24%)	284 (76%)	374

$P < 0.001$ $\chi^2 = 17.640$ Yates corrected

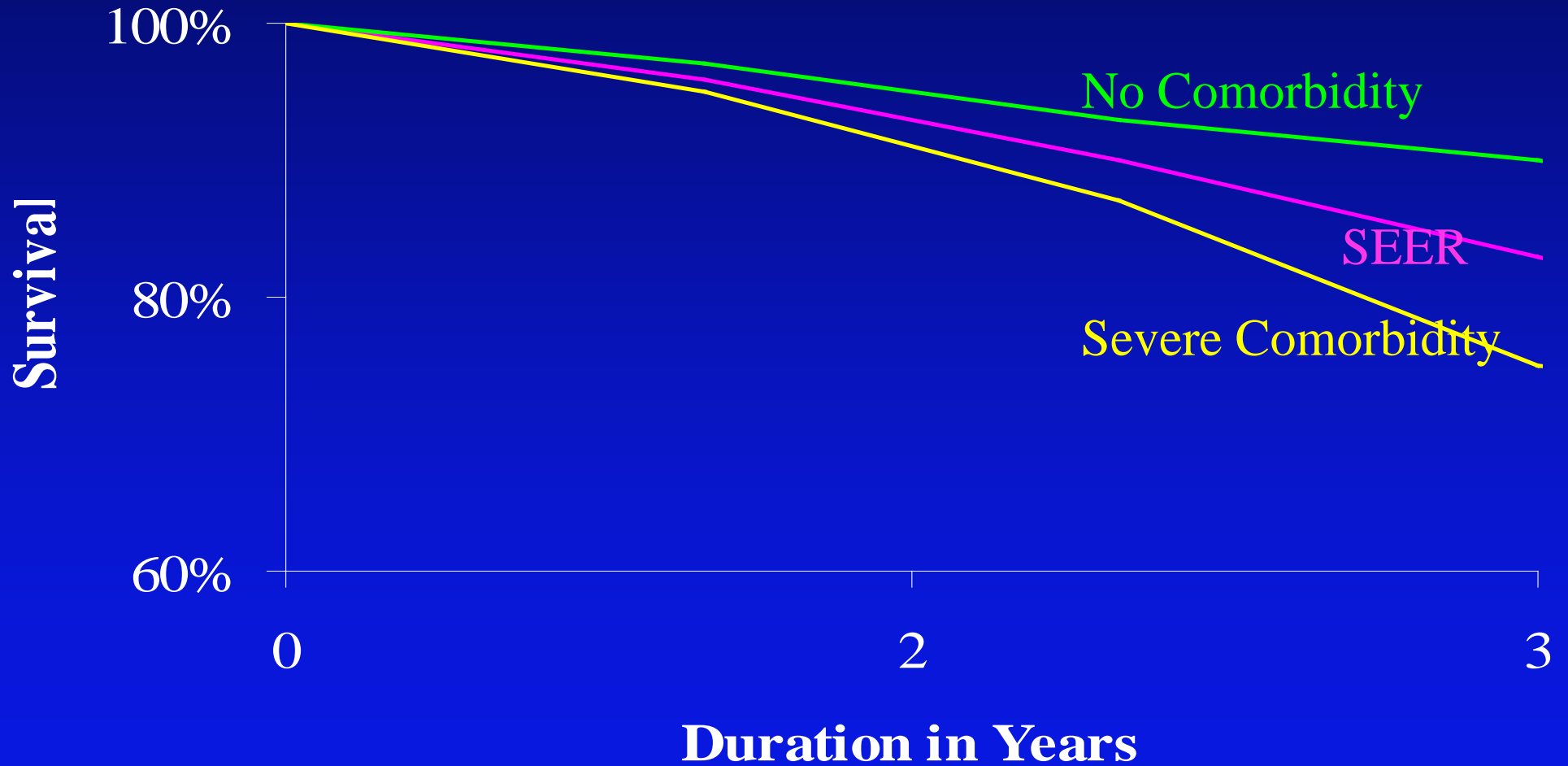
Poor Quality of Care?

Sound Clinical Judgment?

Inclusion of Comorbidity Improves Cancer Statistics, Research, and Patient Care

- Population-based epidemiological studies
- Cancer clinical trials
- Observational research, including quality of care
- Patient-physician communication

Breast Cancer Example



Comorbidity Instruments

- Several instruments have been developed to classify different comorbid diseases and to quantify the severity of the overall comorbid condition
- None of the instruments were specifically designed to study comorbidity in cancer patients
- Nevertheless, these instruments have been used to classify comorbidity in several types of cancers and have performed well



Chart-Based Record Review

- Kaplan-Feinstein Index

J Chron Dis. 1974;27:387-404

- Charlson Comorbidity Index

J Chron Dis 1987;40(5):373-383

- The Index of Co-Existent Disease

Med Care 1993;31(2):141-154.

Claims-Based Assessment

- Modifications of Charlson
 - Dartmouth-Manitoba ICD-9 conversion algorithm
J Clin Epidemiol 1993;46:1075-1090
 - Deyo et al
J.Clin.Epidemiol 1992;45:613-619
- Elixhauser Model
Med Care 1998;36:8-27
- Klabunde et al -- in and out-patient claims
J Clin Epidemiol 2000;53:1258-1267
- Von Korff et al chronic disease score from automated pharmacy records
J.Clin Epidemiol. 1992;45:197-203

Comparison of Comorbidity Collection Methods

Chart-Based Approach

■ Advantages

- Score can be assigned to the majority of patients
- Very accurate assessment of comorbidity

■ Disadvantages

- Additional work effort

Claims-Based Approach

■ Advantages

- Available in many states for many people
- Less expensive alternative

■ Disadvantages

- Information may not be available for all patients in a tumor registry
- Less complete and accurate assessment

Overview of Comorbidity Research

Comorbidity
Education

Data
Collection

Statistical
Analysis

Cancer
Prognostics

Comorbidity Education Program

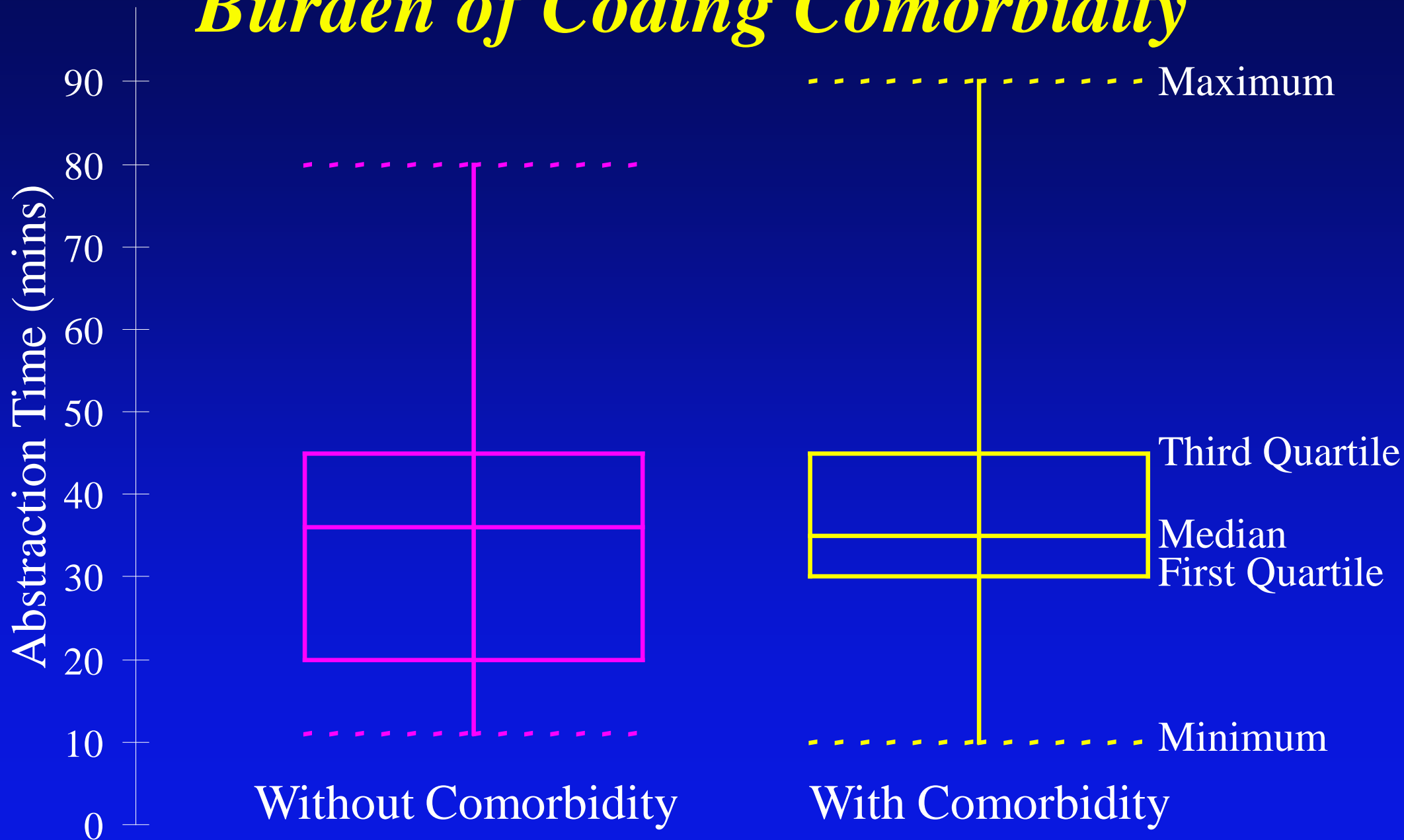
- As part of a NCI-sponsored cancer education grant, certified tumor registrars at five hospitals taught to code comorbidity
- Entire education program lasted 10 hours
- Training video: *“The Whole Picture: Coding Comorbidity”*
- Training manual, documentation book, and 55 clinical examples

- Standardized comorbidity data collection form was used
- Modification of Kaplan-Feinstein Index was used to quantify the severity of the overall comorbid condition
- Comments and observations were incorporated into the education program

Burden of Coding Comorbidity

- Before training program, cancer registrar estimated time required to abstract medical record
- After training program, cancer registrar estimated time required to abstract medical record, including comorbidity

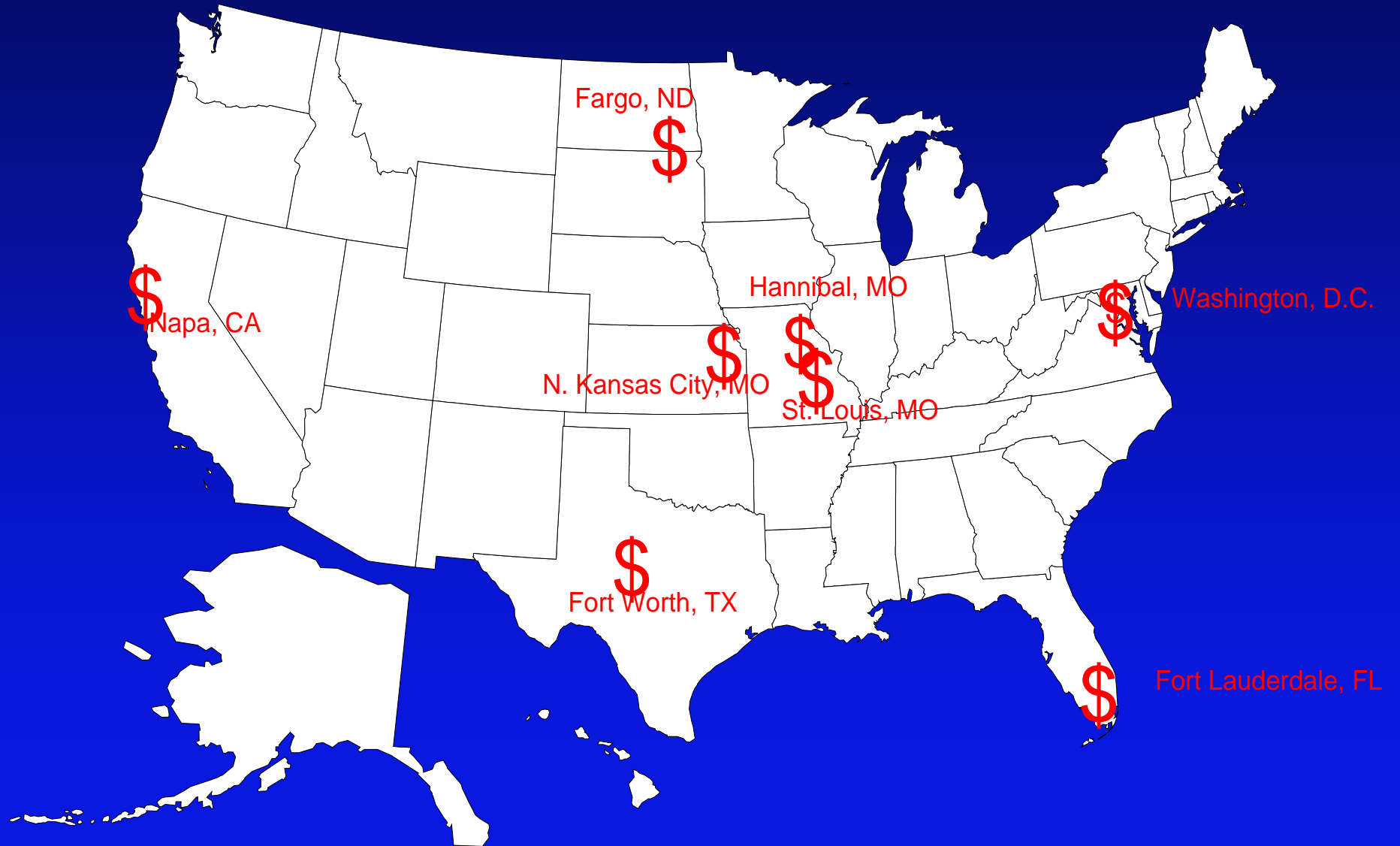
Burden of Coding Comorbidity



Data Collection

- Established *Nationwide Comorbidity Network*
- To date, 11,457 newly diagnosed patients with cancer have been enrolled (600-800/month)
- Comorbid health has been linked to tumor registry (*ROADS*) information for first 3,326

Nationwide Comorbidity Network



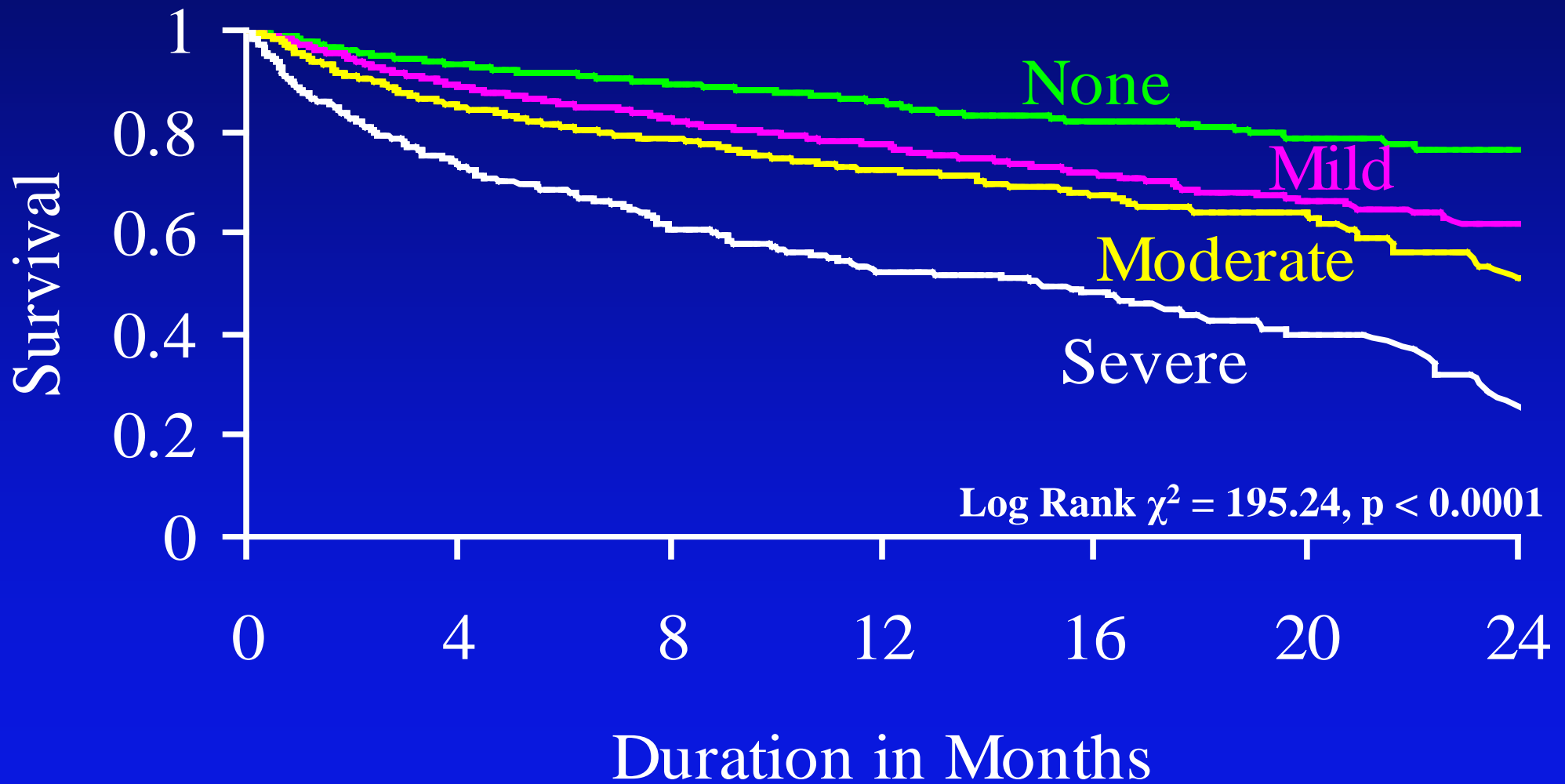
Development/Validation of Cancer-Specific Models

- Lung
- Breast
- Head and Neck
- Colorectal
- Prostate
- Gynecological sites

- These models will be unique:
 - developed especially for cancer patients
 - contain a wide range of comorbid ailments
 - grade the severity of the individual ailments
 - generate an overall severity score
 - predict overall survival
 - developed specifically to be used in conjunction with the standard *ROADS*-defined tumor registry data elements

Impact of Comorbidity on Survival

N= 3,326



Independent Prognostic Impact Multivariable Analysis of Comorbidity

Category	Adjusted RR*	95% CI
None	Reference	
Mild	1.2	0.9 – 1.4
Moderate	1.4	1.1 – 1.8
Severe	2.0	1.6 – 2.5

* Adjusted for Age, Gender, Race, Site, and Tumor Stage

Cancer Prognostics

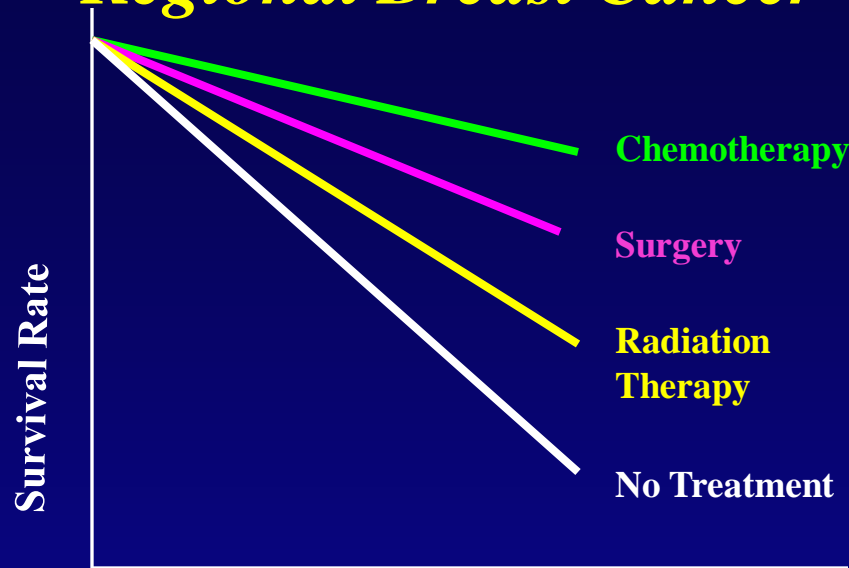
- The goal of this project is to make improvements to *Prognostigram* program and assess utility in patient care
- The *Prognostigram* program creates individualized survival curves based on multiple prognostic factors, including comorbidity
- Improve patient communication and medical decision making

Survival According to Mode of Therapy

Regional Breast Cancer

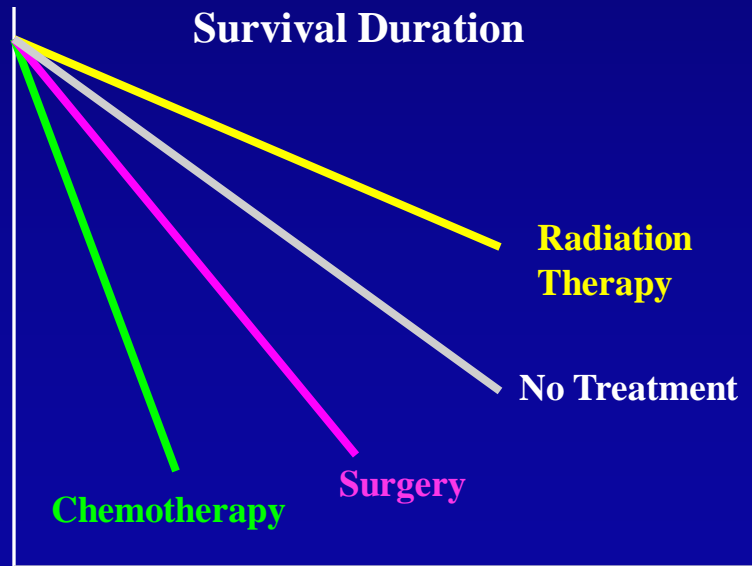
CURRENT SITUATION

Recommendations based on composite results



FUTURE REALITY

Tailored individual therapy



Mary Smith
Age 72
DM
HTN
s/p CABG

Conclusions

- Important in the selection of treatment, prognosis, and evaluation of quality of care
- *Comorbidity Education Program* trains registrars to collect comorbid health information from medical record
- Comorbidity should be added as a required data element
- New prognostic models will improve patient care, clinical research, and cancer statistics

*Clinical Outcomes Research
Web Site*

<http://oto.wustl.edu/clinepi/>



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