
Burden of Illness



Patient Burden of Cancer

- Cancer treatment is associated with long-term health effects
 - Cardiotoxicity
 - Lymphedema
 - Sexual dysfunction
 - Incontinence
 - Pain and fatigue
 - Cognitive dysfunction
 - Psychological distress

Cancer survivors also have an increased risk of secondary cancers

Burden in Cancer Survivors*

Burden measure*	Cancer survivors (N = 1817)	Noncancer control subjects (N = 5465)	P†
Utility			
HALEX utility value, mean (95% CI)	0.74 (0.72 to 0.75)	0.80 (0.80 to 0.81)	<.001
Lost productivity			
Job in past 12 months, % (95% CI)	41.0 (38.5 to 43.4)	45.9 (44.3 to 47.5)	.001
Unable to work due to health problems, % (95% CI)	18.0 (16.1 to 19.9)	10.3 (9.3 to 11.3)	<.001
Limited in amount/kind of work because of health problems, % (95% CI)	27.4 (25.1 to 29.8)	17.6 (16.3 to 18.8)	<.001
Days lost from work, past 12 mo (as reported), mean (95% CI)	13.2 (9.9 to 16.5)	5.7 (4.5 to 7.0)	<.001
Days lost from work, past 12 mo (modified variable with assigned data), mean (95% CI)	50.6 (43.6 to 57.6)	23.6 (20.3 to 26.8)	<.001
General health			
Health status, % (95% CI)			<.001
Excellent	13.5 (11.8 to 15.1)	21.9 (20.5 to 23.3)	
Very good	22.7 (20.3 to 25.1)	31.2 (29.8 to 32.7)	
Good	32.8 (30.4 to 35.3)	29.0 (27.5 to 30.5)	
Fair	20.6 (18.4 to 22.7)	13.4 (12.4 to 14.5)	
Poor	10.4 (8.8 to 12.1)	4.5 (3.8 to 5.2)	
Needs help with activities of daily living, % (95% CI)	4.9 (3.8 to 5.9)	3.0 (2.5 to 3.6)	.003
Needs help with instrumental activities of daily living, % (95% CI)	11.4 (9.9 to 13.0)	6.5 (5.7 to 7.2)	<.001
Any limitation in any way, % (95% CI)	36.2 (33.6 to 38.8)	23.8 (22.5 to 25.2)	<.001
No. of bed days in past 12 mo, % (95% CI)			<.001
0	57.1 (54.6 to 59.6)	66.2 (64.7 to 67.6)	
1-10	28.9 (26.6 to 31.2)	26.1 (24.7 to 27.5)	
>10	14.0 (12.2 to 15.7)	7.7 (6.9 to 8.6)	

*CI = confidence interval. Activities of daily living include eating, bathing, dressing, getting in or out of bed or chairs, using the toilet, and getting around inside the home. Instrumental activities of daily living are routine needs such as everyday household chores, doing necessary business or shopping, or getting around for other purposes.

†Categoric variables were compared with chi-square statistics, and continuous variables were compared with linear regression. *P* values are two-sided.

Common Causes of Pain in Cancer Patients

Malignancy-Related	Antineoplastic Therapies	Other Comorbidities
<ul style="list-style-type: none">• Bone metastases• Soft tissue metastases• Visceral metastases• Leptomeningeal metastases• Epidural spinal cord compression• Malignant bowel obstruction• Pathologic fracture• Hemorrhage into a tumor• Tumor-related neuropathic pain	<ul style="list-style-type: none">• Side effects from<ul style="list-style-type: none">• Chemotherapy• Immunotherapy• Hormonal therapy• Radiation therapy• Post-procedural pain• Post-surgical pain	<ul style="list-style-type: none">• Immobility• Constipation• Thrombophlebitis• Unaddressed psychosocial and psychiatric issues

Burden in Cancer Survivors*

- Compared with matched controls, cancer survivors have significantly poorer outcomes across multiple burden measures
- Productivity costs due to morbidity and intangible burden of illness associated with cancer are substantial, even among patients 5 years after diagnosis
- Long-term cancer survivors (≥ 11 years post-diagnosis) have a significantly higher burden than matched controls across multiple measures

Economic Burden of Cancer Survivorship

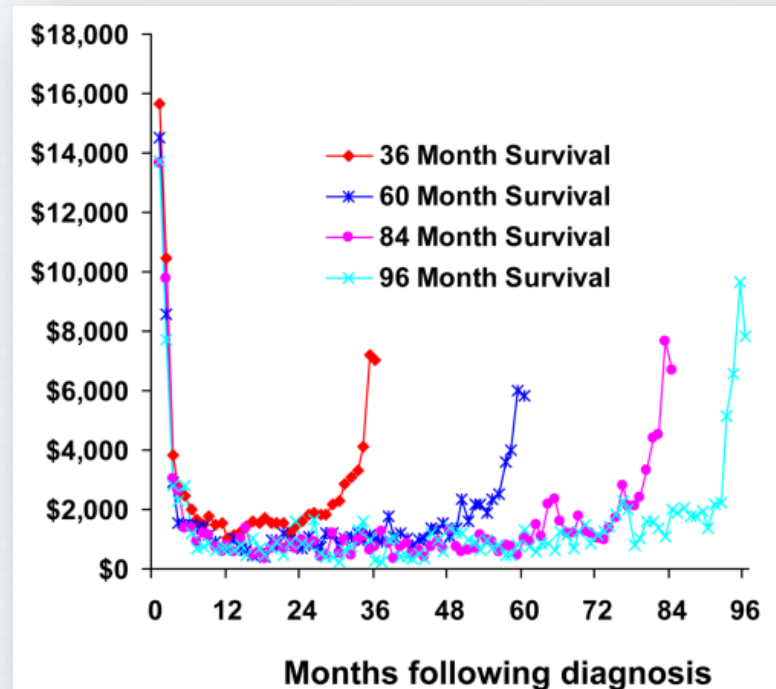
- Economic impact is considerable
- Costs continue to be high in the years after a cancer diagnosis
- Cancer survivorship has increased substantially and is expected to increase further with treatment advances, increased life expectancy, and aging population
- Survivorship is associated with substantial medical expenditures and lost productivity
 - Employment disability
 - Fewer hours worked
 - More missed work days

Economic Burden of Cancer – Direct Medical Costs

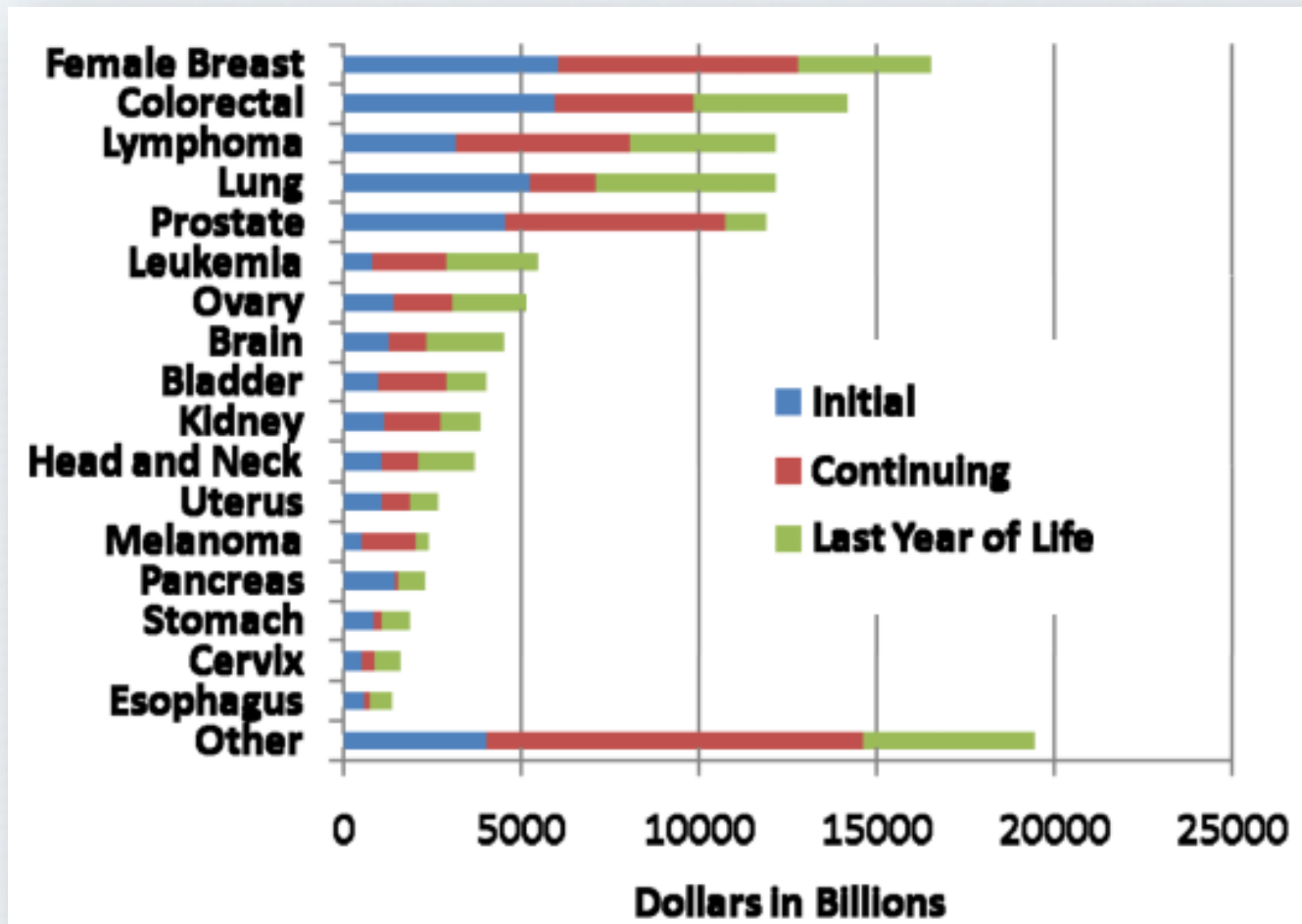
- Contributors:
 - Hospitalizations
 - Surgery
 - Physician visits
 - Radiation therapy
 - Chemotherapy
 - Immunotherapy
- Costs vary with each phase of care
- Costs vary significantly by cancer site

Economic Burden of Cancer

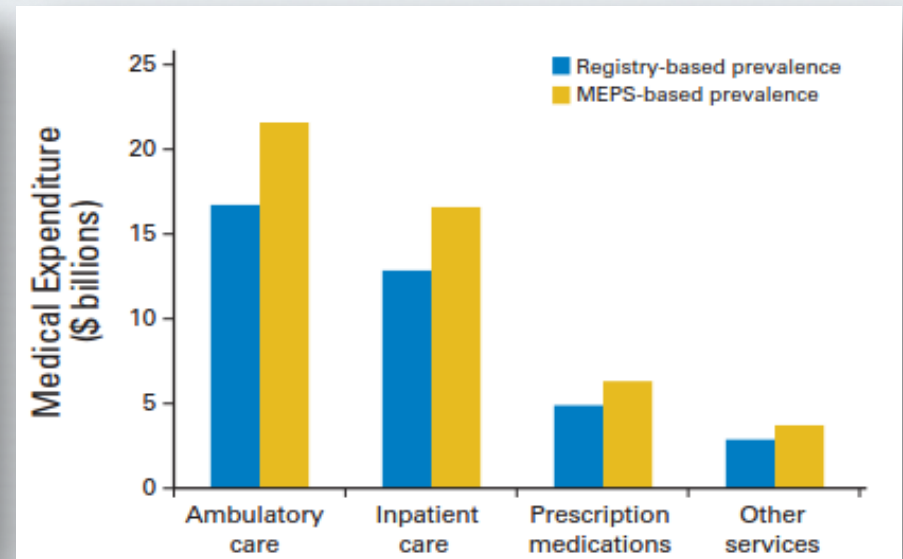
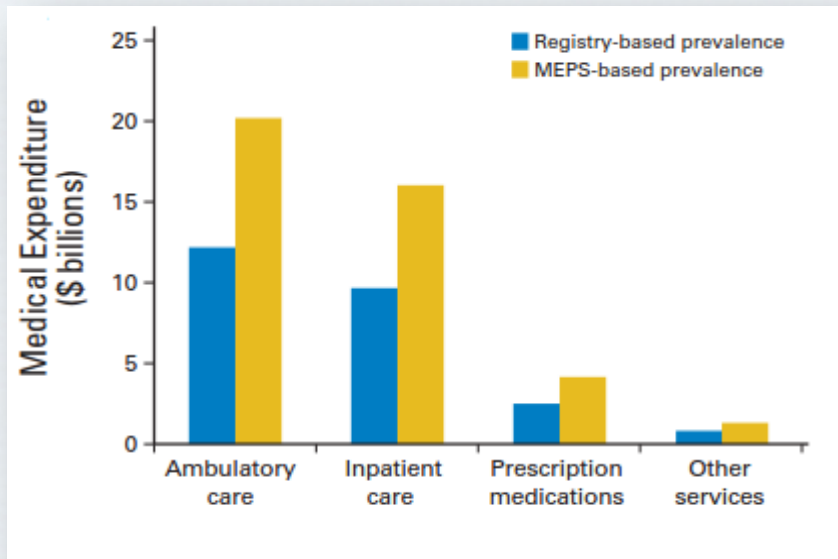
- Must consider direct and indirect costs
- Costs are highest in initial period following diagnosis and at end of life
- Width and height of U-shaped cost curve varies by cancer site, stage at diagnosis, and patient age



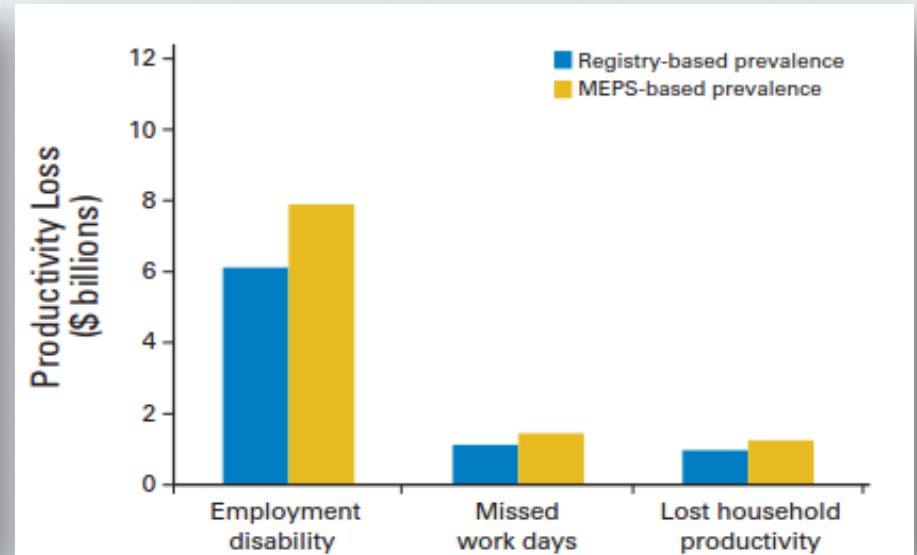
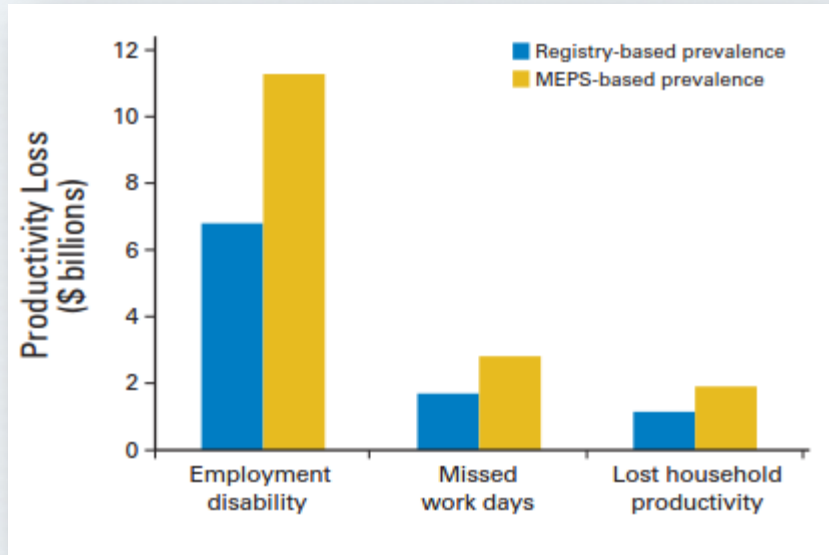
Economic Burden of Cancer – Direct Medical Costs



Economic Burden of Cancer – Direct Medical Costs



Economic Burden of Cancer – Indirect Costs

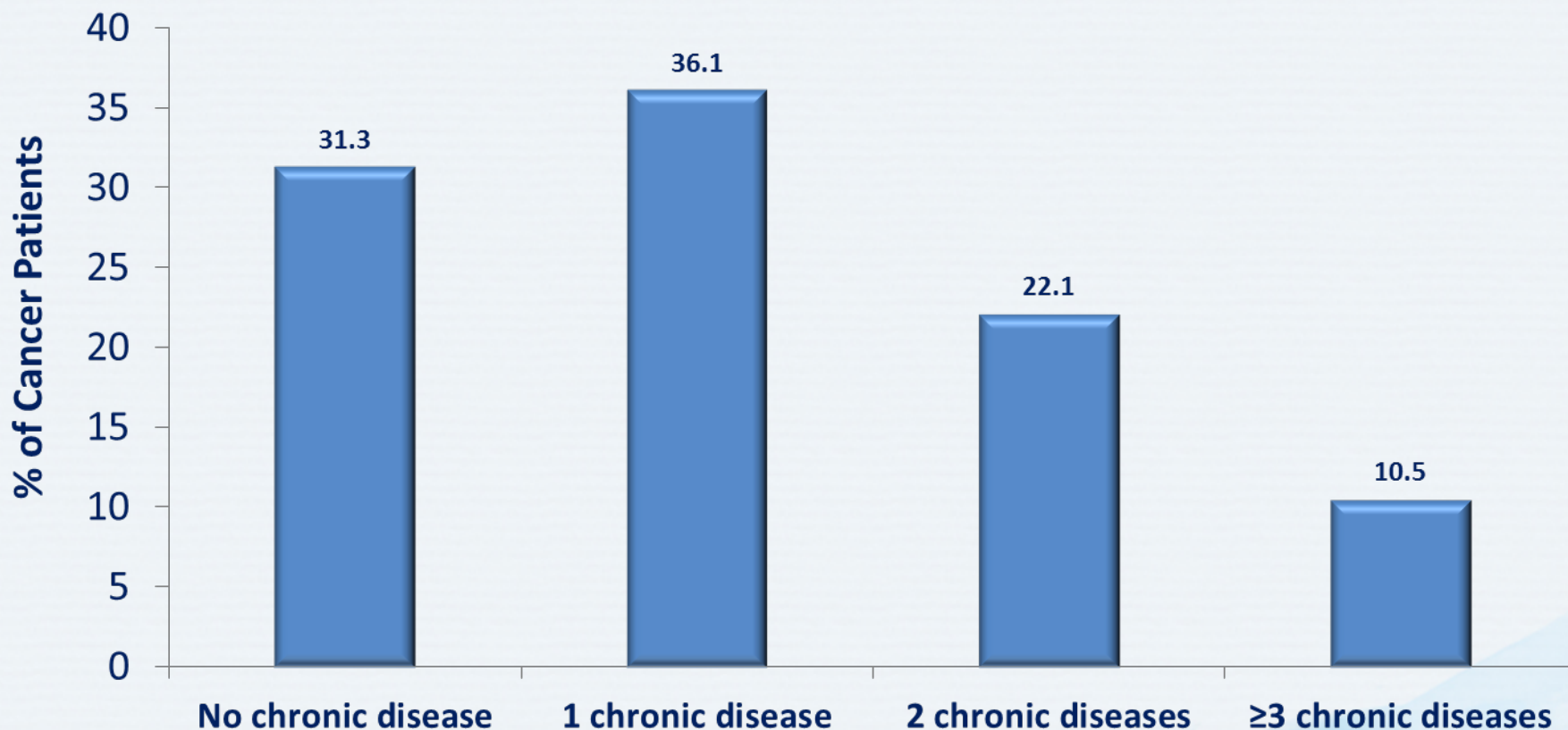


Cancer Comorbidities

- Natural history of cancer may affect the severity and outcomes of other chronic illnesses
- Comorbidity, when compared with functional status, has an independent effect on survival
- Measurement of comorbidities has a profound effect on their correlation with prognosis
- Comorbidities can profoundly impact cancer care:
 - Prevention
 - Screening
 - Diagnosis
 - Prognosis
 - Cancer treatment
 - Health service needs

Prevalence of Comorbidities in Cancer Patients

Overall Prevalence of Pre-existing Chronic Diseases



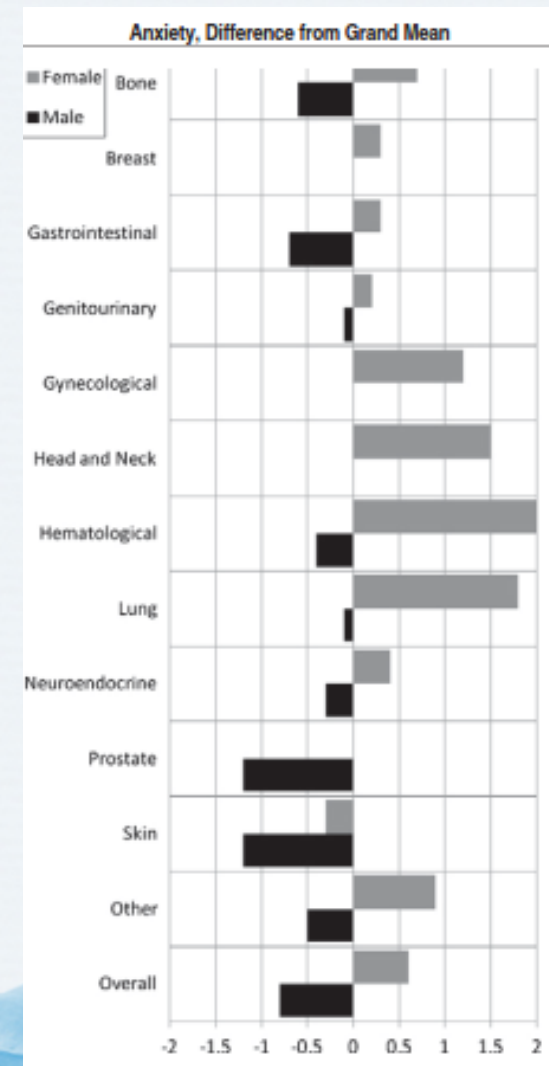
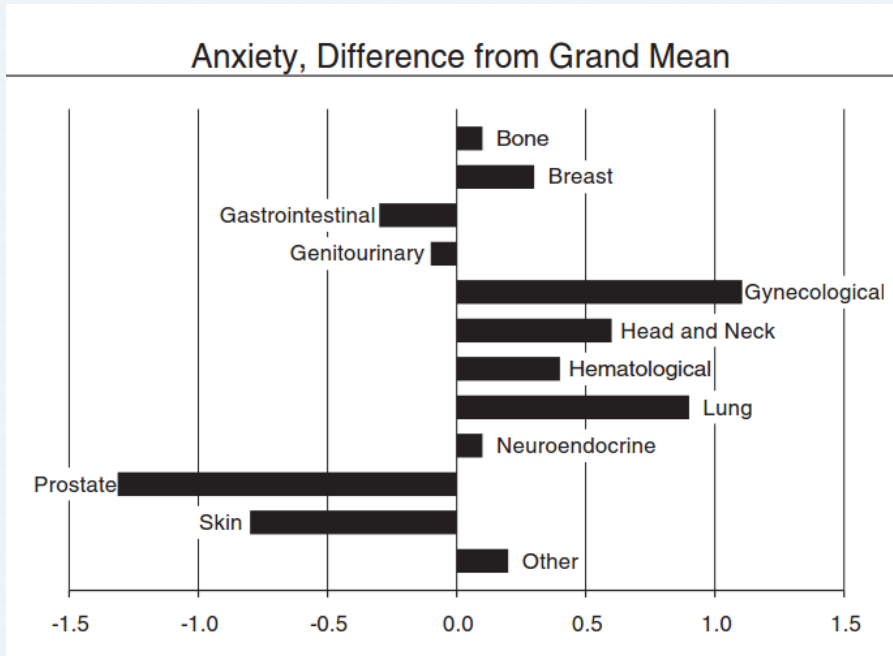
Common Comorbidities in Cancer Patients

- Hypertension
- Diabetes
- Cardiovascular diseases
- Respiratory diseases
- Cerebrovascular diseases
- Arthritis

Cancer, Anxiety, and Depression

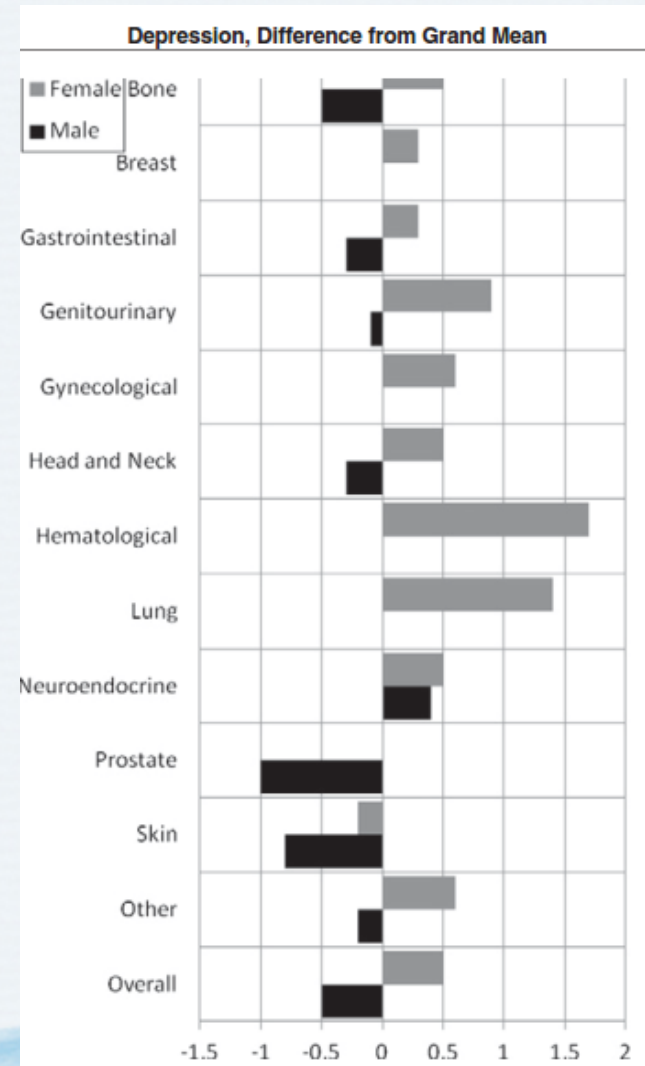
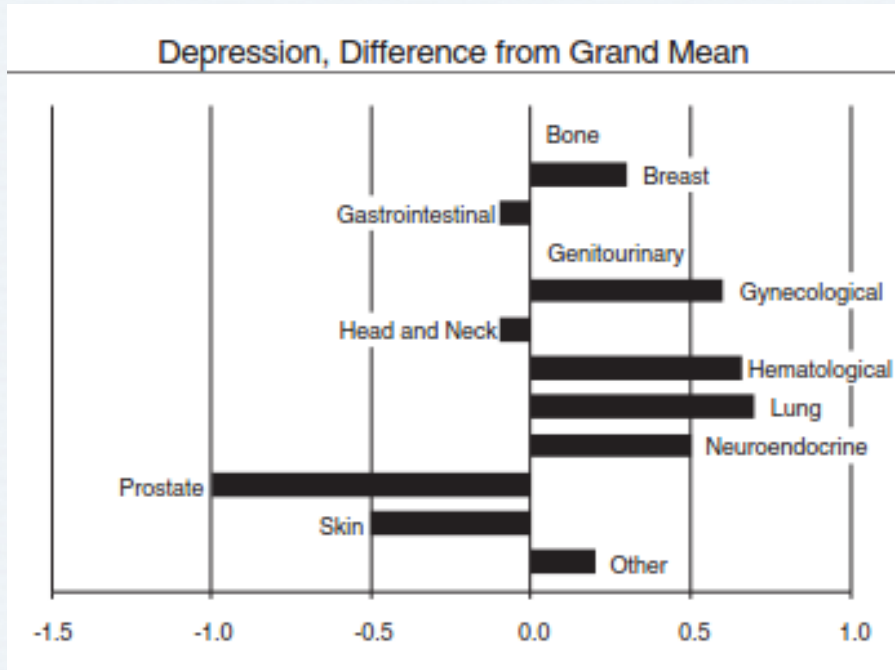
- Anxiety and depression are common among cancer patients
- Anxiety and depression in cancer patients:
 - Reduces patient quality of life
 - Negatively impacts compliance with medical treatment
 - Increases risk of mortality
- Levels of anxiety and depression vary with cancer type, gender, and age

Cancer and Anxiety



Prevalence of anxiety differs by cancer site and gender

Cancer and Depression



Prevalence of depression differs by cancer site and gender

Cancer and Sleep/Fatigue

- Fatigue is one of the most common and debilitating symptoms of cancer
 - Up to 90% of patients treated with radiation and 80% of those treated with chemotherapy experience fatigue
- CRF is characterized by tiredness, weakness, and lack of energy
 - Not the same as normal drowsiness experienced by healthy individuals because it is not relieved by rest or sleep
 - Occurs due to cancer and as a side effect of cancer treatment
 - May be an early cancer symptom; reported by 40% of patients at diagnosis
 - Significant negative impact on patient's quality of life
 - Can also negatively impact patient's caregivers and family members, who may have to reduce their own work capacity to help the patient



Cancer and Sleep/Fatigue

- Sleep disorders:
 - Difficulty falling asleep
 - Problems maintaining sleep
 - Poor sleep efficiency
 - Early awakening
 - Excessive daytime sleepiness
- Problem becomes chronic in some patients
 - Cancer-related fatigue continues for months or years following completion of treatment in about one-third of patients
- Negative impact on emotional health
- Associated with depression, pain, and anxiety



Cancer-Related Fatigue Negatively Impacts Emotional Health

Aspect reported in $\geq 50\%$ of patients*	Patients (%)
Having to push yourself to do things	77
Decreased motivation or interest in usual activities	62
Sadness, frustration, or irritability because of fatigue	53
Diminished interest in normal activities	51
Mental exhaustion	51

Cancer and the Family

- Diagnosis of cancer is a “family affair”
- Family members experience similar, if not greater, negative psychologic responses to a cancer diagnosis
- Patients, partners and other family members can suffer from depression, anxiety, and stress
- Affects the functioning of the entire family unit
- Diagnosis of cancer in the family means changes in and disruptions to normal daily life for the family as well as the patient
- Relatives/caregivers need to make role adjustments and lifestyle adaptations to meet demands created by the illness
- Burden has increased with more outpatient treatment of cancer and more home care



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