

# Consequences of Cancer Treatment

Nancy Houlihan, RN, MA, AOCN®

Clinical Program Manager

Cancer Survivorship

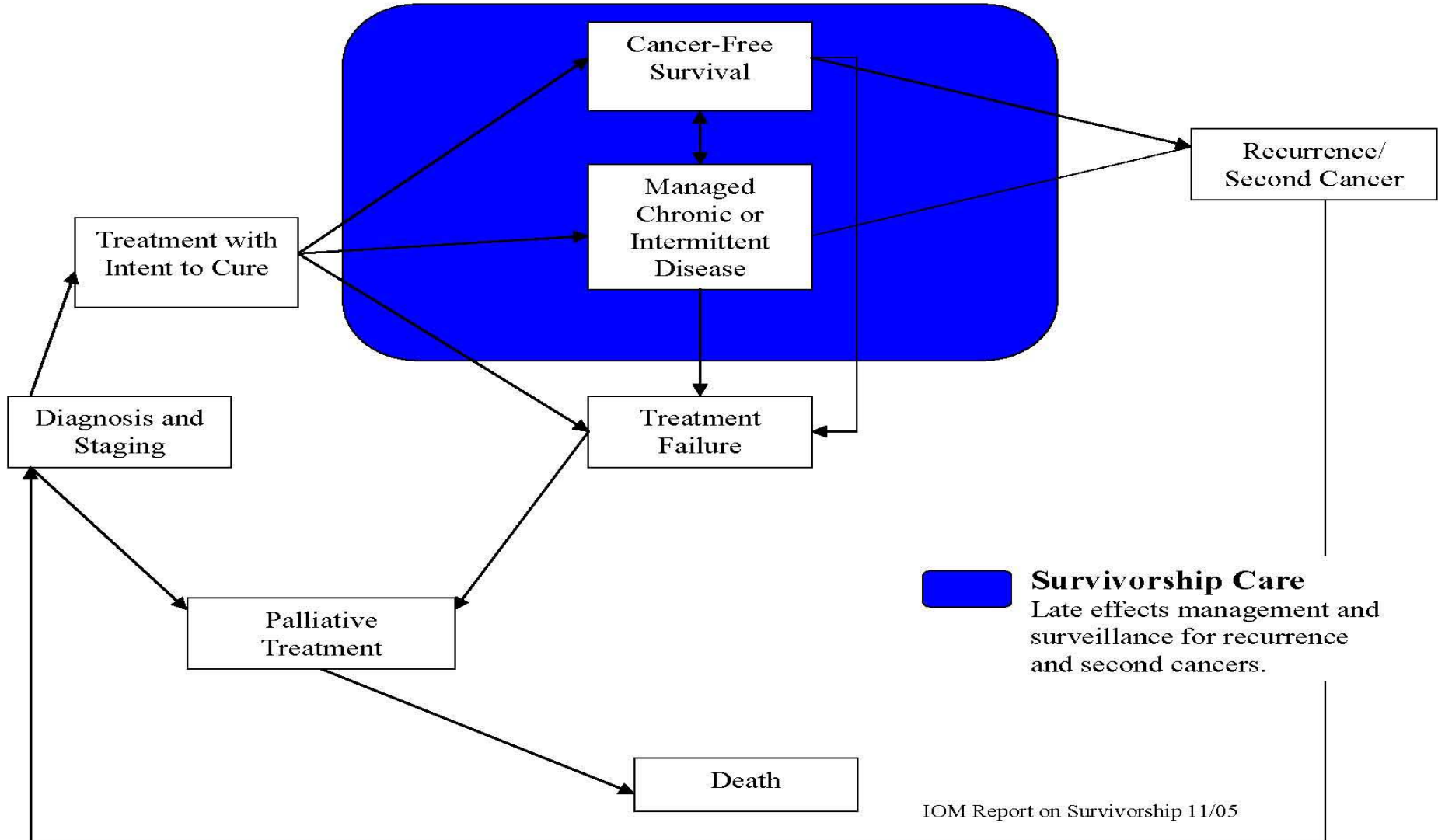
# Program Goal

- To increase knowledge of nurses caring for patients completing cancer therapies and cancer survivors about managing consequences of a cancer diagnosis and treatment

# Overview and Objectives

- Describe the potential long term impact of cancer treatment
- Discuss management strategies to address long term and late physical, psychological and spiritual effects of cancer and treatment

**Cancer Care Trajectory**



**Survivorship Care**  
Late effects management and surveillance for recurrence and second cancers.

# What we know about treatment consequences

- Potential wide range of effects
- Described largely in convenience samples
- Limited information about incidence and prevalence
- Few research-based guidelines for assessment, prevention and management

# Survivors' Needs

## LIVESTRONG™ Poll

- Secondary Health Problems
  - 53% - secondary health problems
    - 54% - deal with chronic pain
    - 33% - infertility
- Non-Medical Support
  - 49% - non-medical cancer needs were unmet
  - 53% - practical and emotional consequences of cancer are often harder than medical issues
- Emotional Support
  - 70%- dealt with depression
  - 78% - did not seek professional services
- Relationships
  - 58%- dealt with loss of sexual desire and/or sexual function

# Survivors' Needs

LIVESTRONG™ Poll

- Financial Problems
  - 43% - decreased income as a result of cancer
  - 25% - in debt as a result of treatment
  - 12% - turned down a treatment option because of cost
- Job Issues
  - 32% - lack of advancement, demotion or job loss
  - 34% - trapped in job to preserve insurance coverage

# Survivorship

## Domains of Concern

- Physical/medical
- Psychological
- Social
- Existential and spiritual



# Quality of Life Model Applied to Cancer Survivors

## Physical Well Being

Functional Activities  
Strength/Fatigue  
Sleep and Rest  
Overall Physical Health  
Fertility  
Pain

## Psychological Well Being

Control  
Anxiety  
Depression  
Enjoyment/Leisure  
Fear of Recurrence  
Cognition/Attention  
Distress of Diagnosis and  
Control of Treatment

## Social Well Being

Family Distress  
Roles and Relationships  
Affection/Sexual Function  
Appearance  
Enjoyment  
Isolation  
Finances  
Work

## Spiritual Well Being

Meaning of Illness  
Religiosity  
Transcendence  
Hope  
Uncertainty  
Inner Strength

**Cancer**

**Survivorship**

Ferrell, BR and Grant, M.  
City of Hope Beckman  
Research Institute (2004)

# Possible Consequences of Cancer and Treatment

- Related to the disease
- Dependent on treatment modalities
  - Surgery
  - Chemotherapy
  - Radiation Therapy
  - Immunotherapy/biotherapy
- Physiological or medical
  - Long-term effects
  - Late effects
- Psychosocial and Spiritual

# Clinical Assessment of Effects

- Clinically Obvious Effects
  - Visible, and/or have direct effects on function
  - Functional disturbances that interfere with activities of daily living
- Clinically Subtle Effects
  - Apparent only to the trained observer
- Subclinical effects
  - detectable only by laboratory screening or radiographic imaging techniques

# Long-term Effects

- Any side effects or complications of treatment for which a patient must compensate
- Also known as persistent effects
- Begin during treatment and continue beyond the end of treatment
- Fatigue, pain, weight gain, early menopause, anxiety

# Late Effects

## Unrecognized toxicities:

- Absent or subclinical at the end of therapy
- Manifest months to years after treatment related to any of the following:
  - Developmental processes
  - Failure of compensatory mechanisms
  - Organ senescence
- Influencing factors

# Cause of Late Effects

- Lack of nourishment to healthy cells
- Chronic cell injury
- Death of cells
  - Subsequent loss of normal tissue
- Scar tissue formation

# Factors Influencing Late Effects

- Age
- Pre-existing co-morbidities
  - Physiological
  - Psychological
- Developmental stages
  - Survivor
  - Family

# Expression of Late Effects

- Children

- Rapidly dividing cells
  - - Cell turnover
- Interference with normal growth and development

- Adults

- Loss of normal cells
  - - Loss of homeostatic reserve
- Pre-existing diseases
- Environmental exposures
- Modifiable risk factors



# Expression of Late Effects

- Premature development of a normal age-related change
- Atypical presentation of a common problem
- Increased risk of developing certain common diseases
- Increased risk of developing rare diseases
- Poor response to treatment that is usually effective

# Medical Late Effects

- Cardiovascular
- Pulmonary
- Endocrine
- Central Nervous System (CNS)
- Neurocognitive
- Neurological
- Renal
- Genitourinary
- Gastrointestinal
- Musculoskeletal
- Integumentary
- Lymphatic

## Review the Evidence: Prominent Issues by Cancer and Domain

Cancer	Physical Sequelae	Psychosocial Sequelae
Breast	Menopausal symptoms Osteoporosis Lymphedema, Weight gain Cognitive loss	Anxiety Sexuality Body image
Colon and rectal	Colostomy, Anal incontinence Radiation proctitis Sexual dysfunction	2 <sup>nd</sup> to physical sequelae
Prostate	Sexual dysfunction Urinary incontinence Radiation proctitis	Anxiety, Depression Others 2 <sup>nd</sup> to physiologic alterations
Lung	Reduced lung function Renal impairment Neuropathy, Pain, Cognitive loss	Dependence on others due to dyspnea and cognitive loss Anxiety, fear of recurrence

## Review the Evidence: Prominent Issues by Cancer and Domain

Cancer	Physical Sequelae	Psychosocial Sequelae
Hodgkin's Disease	Fatigue, Hypothyroidism Heart failure Reduced lung function Infertility, Weight gain Sexual dysfunction	Marital difficulties Sexual problems
Leukemias, NHL	Fatigue Heart failure Hepatitis Infertility, Sexual dysfunction	Marital difficulties Sexual and Vocational problems
GYN cancers	Menopausal symptoms Sexual dysfunction Urinary frequency Vaginal stenosis Neuropathy	Fear of recurrence Others 2 <sup>nd</sup> to physiologic alterations

# Physical Late Effects of Cancer Treatment: Chemotherapy

Organ/System	Drug	Late Effect
Bone	Steroids	Avascular necrosis
Cardiopulmonary	Anthracyclines HD Cyclophosphamide Bleomycin Methotrexate BCNU Actinomycin/doxorub	Cardiomyopathy, CHF CHF Pulmonary fibrosis Interstitial pneumonitis Pulmonary fibrosis Radiation recall
Ophthalmology	Steroids	Cataracts

# Physical Late Effects of Cancer Treatment: Chemotherapy

Organ/System	Drug	Late Effect
Neurologic	Methotrexate	Structural/ neuropsych changes
	Cisplatin	Peripheral neuropathy, hearing
	Vinca alkaloids	Peripheral neuropathy
Hematologic	Alkylating agents	MDS

# Physical Late Effects of Cancer Treatment: Chemotherapy

Organ/System	Drug	Late Effect
GI	Methotrexate BCNU	↓ liver fx, hepatic fibrosis, ↓ liver fx; hepatic failure cirrhosis
Gonadal	Alkylating agents Procarbazine	Men: sterility Women: sterility; premature menopause
GU/ Renal	Cyclophosphamide Cisplatin Methotrexate Nitrosureas	Hemorrhagic cystitis; fibrosis ↓ Creatinine clearance; Mg waste ↑ Creatinine; renal failure Delayed onset fibrosis

# Physical Late Effects of Treatment: Radiation Therapy

- All tissue: Second cancers
- Bone and soft tissue: Atrophy, deformity, fibrosis
- Cardiovascular: Scarring or inflammation of the heart, coronary artery disease; scarring of the pericardium
- Dental/oral health: Dental caries, dry mouth
- Endocrine-pituitary: Various hormone deficiencies



# Physical Late Effects of Treatment: Radiation Therapy

- Endocrine-thyroid: Low thyroid function, thyroid nodule
- Gastrointestinal: Malabsorption, intestinal stricture
- Genitourinary: Bladder scarring, small bladder
- Hematology: Low blood counts, preleukemic syndromes
- Hepatic - Abnormal liver function, liver failure
- Immune system: Impaired immune function, immune suppression
- Lymphatic: Lymphedema

# Physical Late Effects of Treatment: Surgery

Amputation	Functional changes, deformity, psychosocial impact
Abdominal surgery	Risk of intestinal obstruction, adhesions
Lymphadenectomy	Lymphedema
Splenectomy	Impaired immune function, ↑ risk of sepsis
Pelvic surgery	Impotence, incontinence

# Second Malignancies

## Predisposing Factors

- Genetic Conditions
  - Genetic retinoblastoma, neurofibromatosis, Li-Fraumeni Syndrome
  - BRCA-1, BRCA-2
- Treatment
  - Radiation
    - Site-specific cancers
      - Sarcoma
      - Rectal CA with prostate radiation
      - Breast cancer with chest radiation age <30yo (15 year latency)
  - Chemotherapy
    - Alkylating agents
    - Epipodophyllotoxins (etoposide ®, teniposide ®)

Grady & Russell (2005). *Gastroenterology* 128(4):1114-1117.

Hancock et al. (1993). *JNCI* 85(1), 25-31.

# Psychosocial Sequelae

- Psychological
  - Transition from “Sick Role” to “Well Role”
  - Uncertainty about future; fear of recurrence
  - Diminished Sense of Control and Predictability
  - Social Isolation/Loneliness
  - Coping with Stigma
  - Anxiety/depression/PTSD
- Social
  - Changes in relationships
  - Economics
  - Career
  - Insurability
- Spiritual

# Personal Growth/Positive Change



“The truth is that cancer was the best thing that ever happened to me. I don’t know why I got the illness, but it did wonders for me and I wouldn’t walk away from it. Why would I want to change, even for a day, the most important and shaping event in my life?”

Lance Armstrong (2000)

*It’s Not About the Bike*

# Guidelines for Follow up Care

- American Society of Clinical Oncology (ASCO)
  - <http://www.asco.org/ASCO/Quality+Care+%26+Guidelines/Practice+Guidelines/Clinical+Practice+Guidelines>
- National Comprehensive Cancer Network (NCCN)
  - <http://www.nccn.org/>
- Children's Oncology Group (COG)
  - <http://www.survivorshipguidelines.org/>

# Caring for Cancer Survivors: Managing Late Effects of Cancer Treatment

- Cardiac Effects Richard Steingart, MD
- Pulmonary Effects Marc Feinstein, MD
- Cognitive changes Timothy Ahles, PhD
- Osteoporosis Azeez Farooki, MD
- Thyroid insufficiency, hormonal changes Monica Girotra, MD
- Psychosocial and Spiritual Effects Penny Damaskos, MSW
- Reducing Health Risks in Cancer Kathleen Wesa, MD
- Sexuality Jeanne Carter PhD & Joe Narus NP
- Fertility Joanne Kelvin CNS
- Second Malignancies Matthew Matasar, MD