CLINICAL PRACTICE IN PEDIATRICS 2019
"IMPROVE YOUR PRACTICE: KEEP IT SIMPLE"
16-18 OCTOBER, 2019

Cancer Survivor:

What pediatricians should know?

Chalinee Monsereenusorn, MD

Assistant Professor
Division of Hematology-Oncology, Department of Pediatrics,
Phramongkutklao Hospital and College of Medicine

PED PMK

CANCER SURVIVOR CLINIC

Pediatric Cancer & Hematologic Disor
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Outlines

- Introduction
- Transition off therapy
- Multidisciplinary care team
- Late /long term side effects
  - Risk factors
  - Recognition of late effects
- Follow-up care

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Cancer Control Continuum

Prevention
- Diet/Exercise
- Sun Exposure
- Alcohol
- Tobacco Control
- Chemo-prevention

Early Detection
- Cancer screening
  - ✓Pap test
  - ✓Mammogram
  - ✓PSA/DRE
  - ✓Fecal occult blood test
  - ✓Colonoscopy
- Awareness of cancer risk, signs, symptoms

Diagnosis
- Oncology/ surgery consultation
- Tumor staging
- Patient counseling & decision making
- Clinical trials
- Informed Decision Making

Treatment
- Chemotherapy
- Surgery
- Radiation
- Symptom management
- Psychosocial
- Maintenance therapy

Survivorship
- Long-term follow-up/ surveillance
- Manage late-effects
- Rehabilitation
- Coping
- Health promotion
- Prevention
- Palliative Care

End of Life
- Support *patient & family*
- Hospice
- Informed decision making

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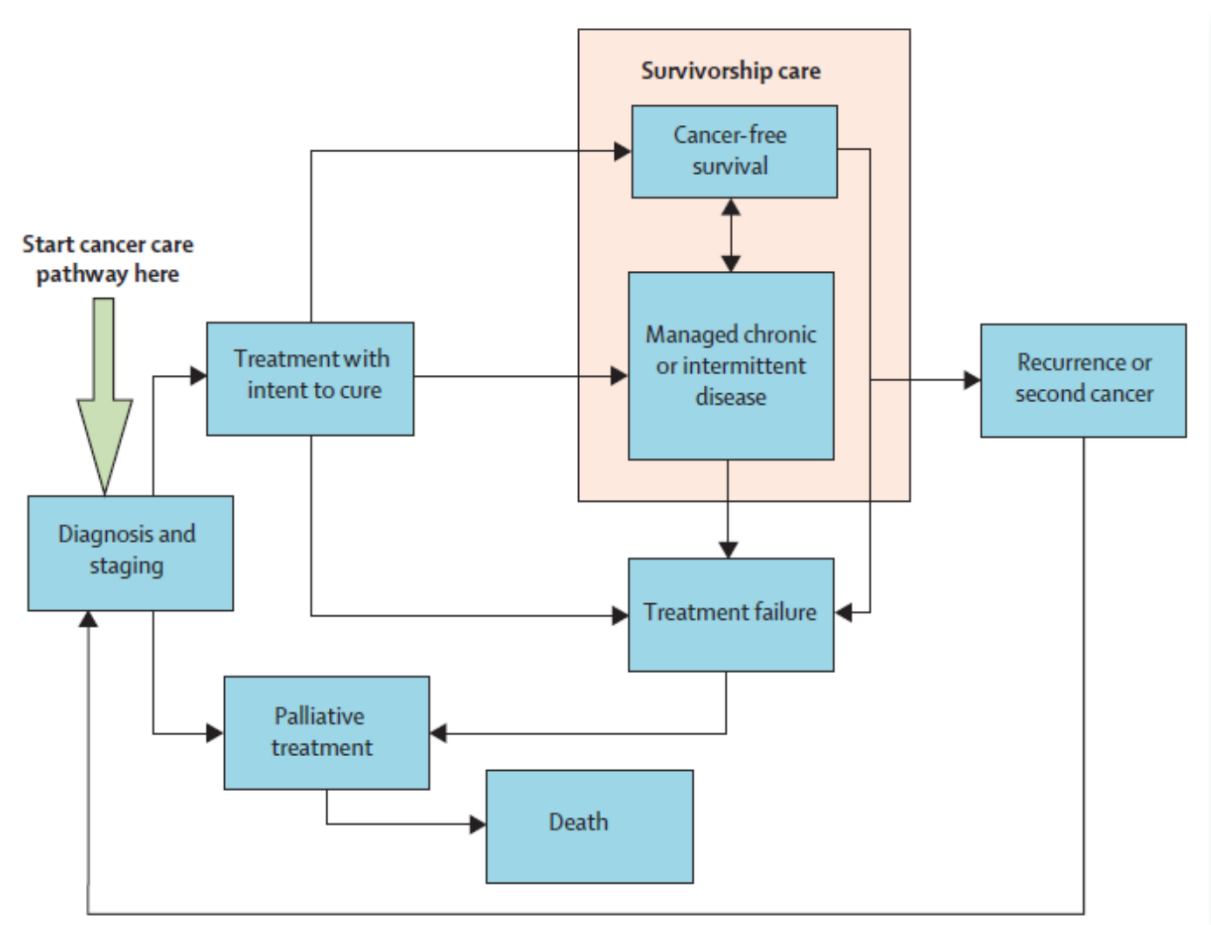
Cancer Care Trajectory



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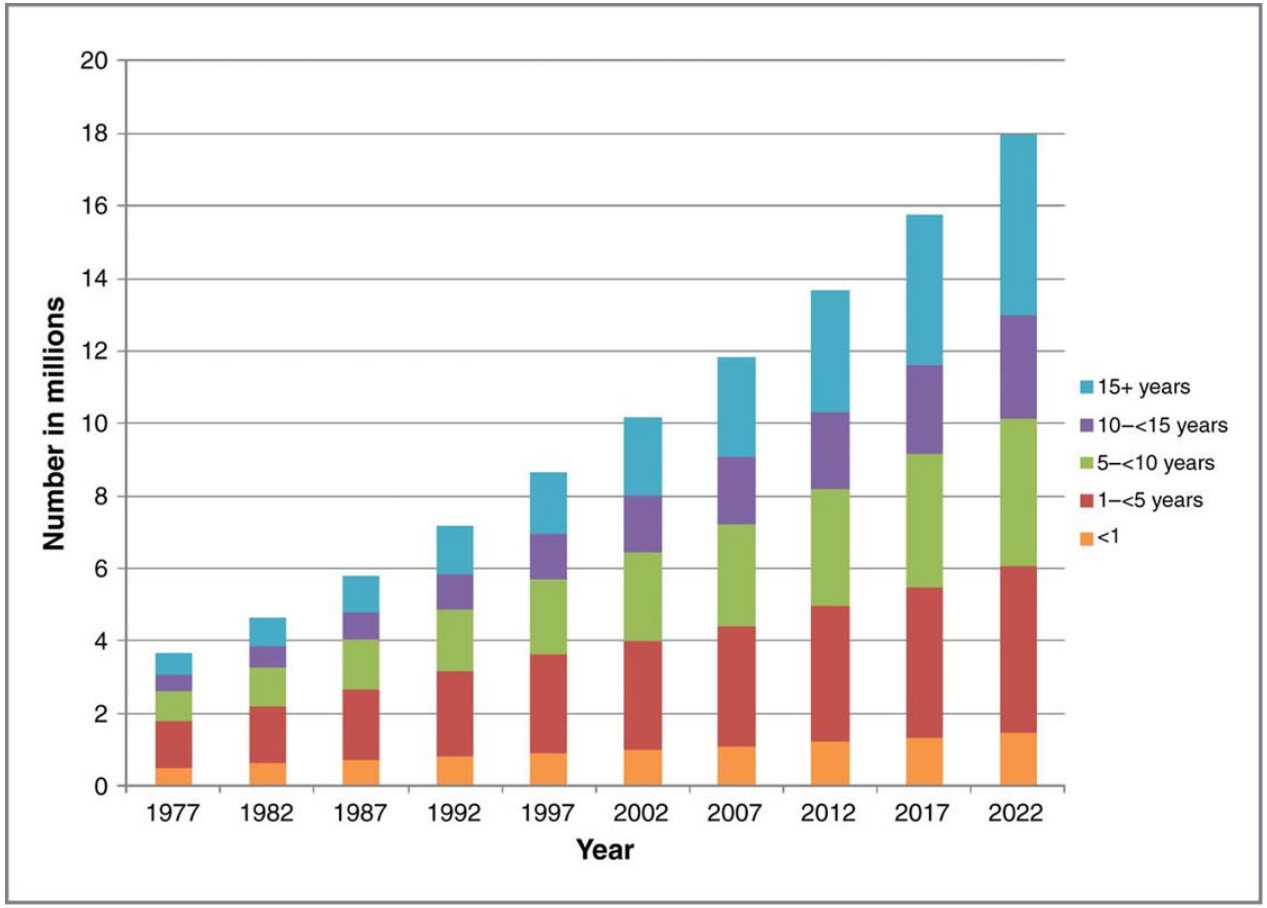
Baird R, et al. ecancermedicalscience. 2016;10.

Estimated and projected number of cancer survivors in the United States from 1977 to 2022 by years since diagnosis.



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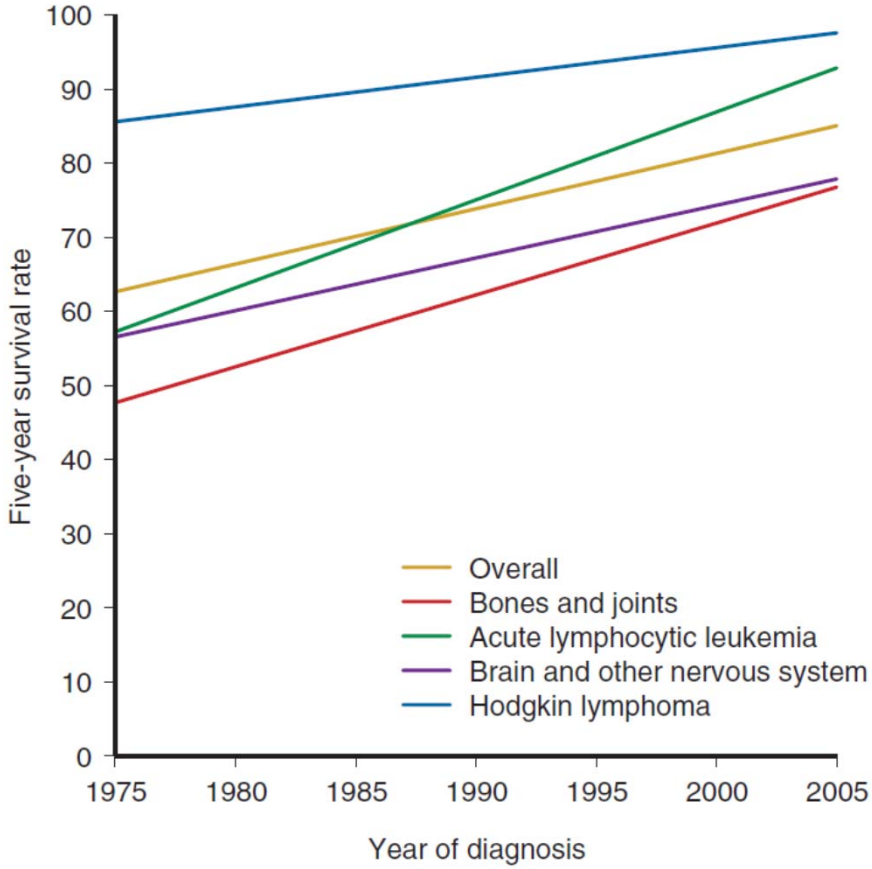
Janet S. de Moor et al. Cancer Epidemiol Biomarkers Prev 2013;22:561-570

5-year Cancer Survival, Age < 20 years



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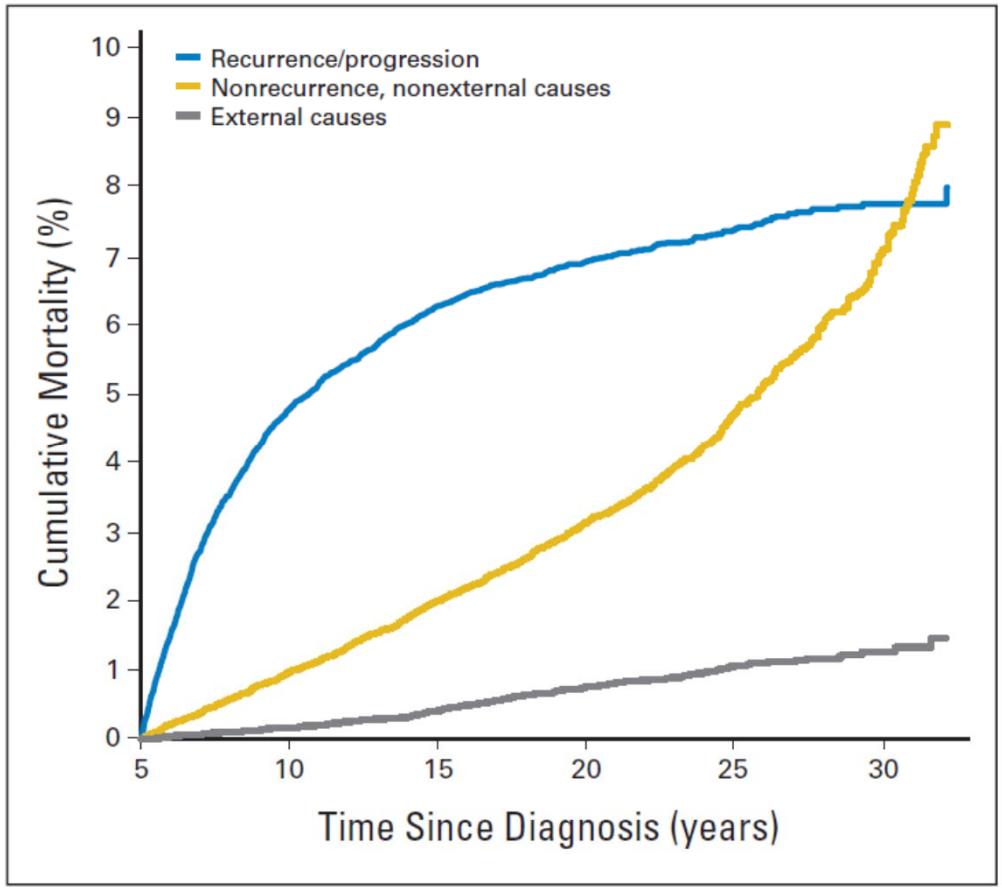
Modified from: Howlader N, Noone AM, Krapcho M, et al, editors: SEER cancer statistics review, 1975-2010. Bethesda, Maryland, National Cancer Institute.

Cumulative Cause-Specific Mortality



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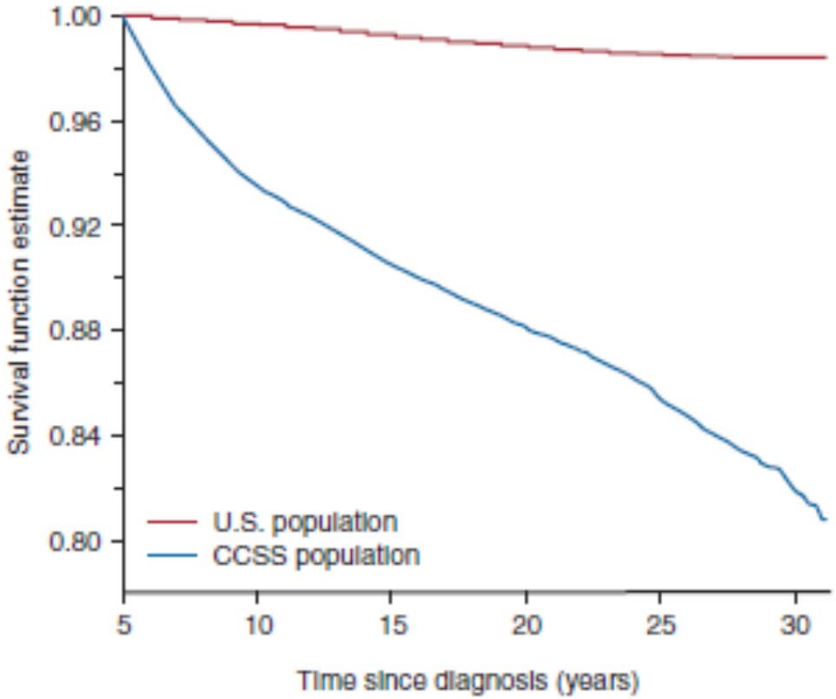
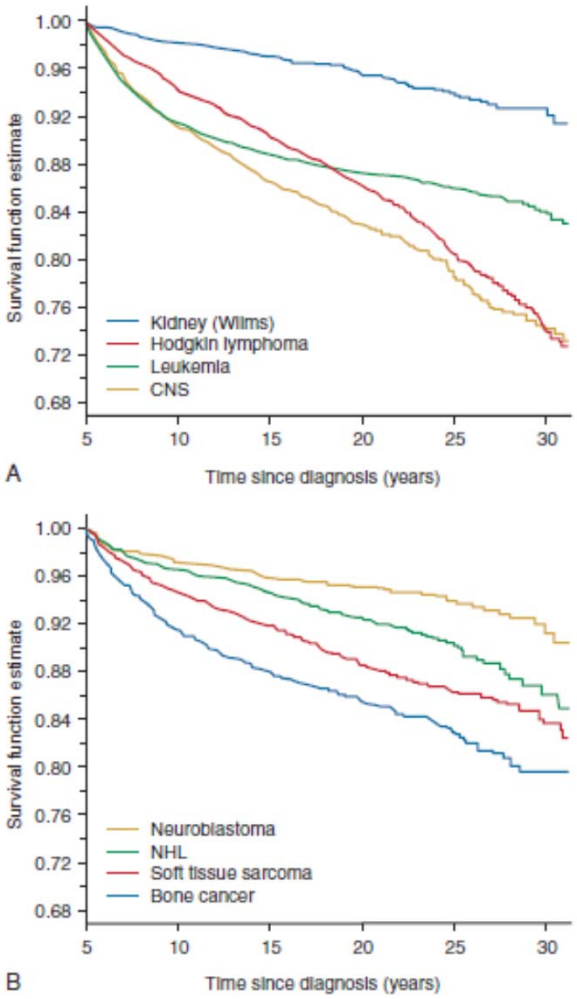
Armstrong GT, et al. Journal of Clinical Oncology. 2009 May 10;27(14):2328.

5-year Survivors of Childhood Cancer Diagnosed from 1970 to 1986, Age <21 years





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Advances in cancer therapy

↓

Increased survival

↓

Long-term sequelae

“Who” is a Cancer Survivor?

- A cancer survivor is anyone who has been diagnosed with cancer – from the time of diagnosis and for the balance of his or her life.
- Mostly 2 years off therapy

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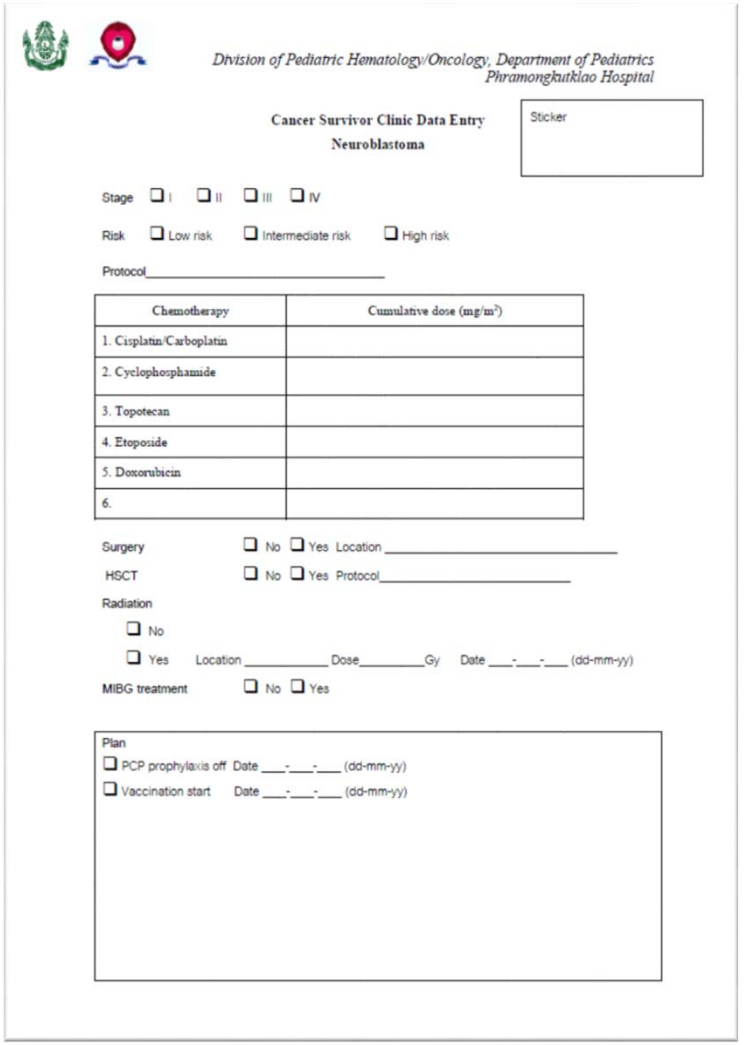
NCCN: National Coalition for Cancer Survivorship
http://www.canceradvocacy.org/

Transition to Survival Care

Summary cancer treatment

- Demographic data
- Cancer diagnosis
- Treatment
  - Chemotherapy
  - Radiation
  - HSCT
  - Surgery



Division of Pediatric Hematology/Oncology, Department of Pediatrics
Phramongkutklao Hospital

Cancer Survivor Clinic Data Entry
Neuroblastoma

Sticker

Stage ❑ I ❑ II ❑ III ❑ IV

Risk ❑ Low risk ❑ Intermediate risk ❑ High risk

Protocol_____

Chemotherapy	Cumulative dose (mg/m²)
1. Cisplatin/Carboplatin	
2. Cyclophosphamide	
3. Topotecan	
4. Etoposide	
5. Doxorubicin	
6.	

Surgery ❑ No ❑ Yes Location _____

HSCT ❑ No ❑ Yes Protocol_____

Radiation

❑ No

❑ Yes Location _____ Dose_____Gy Date ___-___-___ (dd-mm-yy)

MIBG treatment ❑ No ❑ Yes

Plan

❑ PCP prophylaxis off Date ___-___-___ (dd-mm-yy)

❑ Vaccination start Date ___-___-___ (dd-mm-yy)

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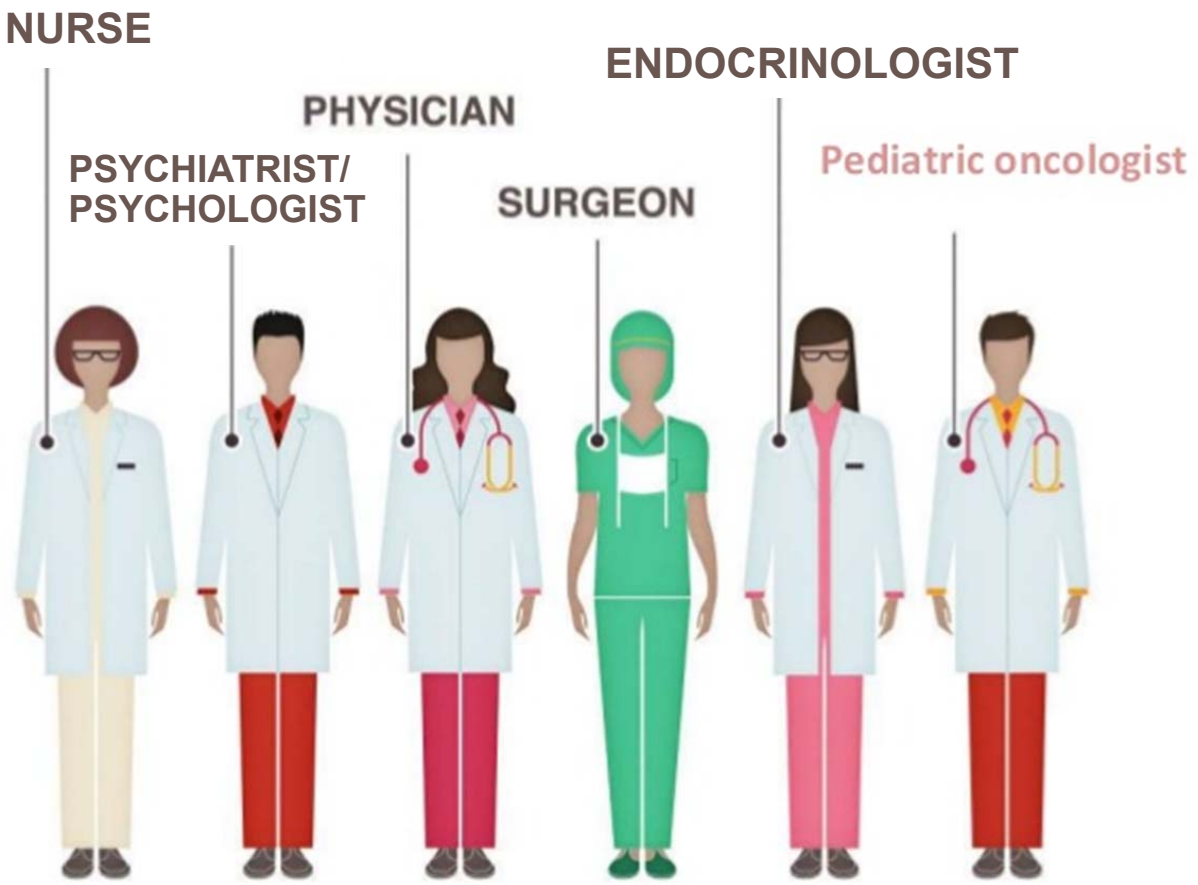
Survivorship Care Team



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Risk Factors for Late Effects in Childhood Cancer Survivors

TREATMENT FACTORS

- Time since treatment
- Dose and intensity of treatment
- Types of diagnosis
- Types of therapy
  - Surgery
  - Radiation
  - chemotherapy
- Prior treatment toxicities

INDIVIDUAL FACTORS

- Age
- Developmental stage
- Gender
- Genetic predisposition
- Health behaviors
- Comorbidities

Late Effects of Childhood Cancers

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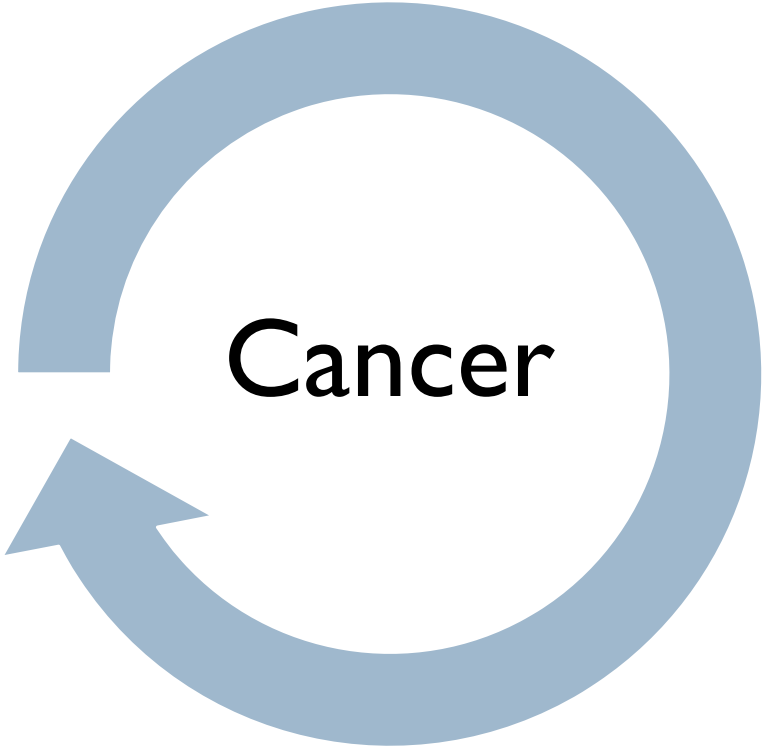
Late Effects of Childhood Cancers



- Secondary neoplasm
- Relapse

Secondary Cancers

- Radiation associated

Malignancies	Risk factors	Surveillances
Breast cancer	• Female • Any chest radiation (≥ 20Gy highest risk) • Spinal radiation • Total body radiation (TBI)	• Breast exam • Mammogram • Breast MRI
Thyroid cancer	• Neck radiation • Chest radiation • Total body radiation (TBI) • MIBG treatment	Ultrasound thyroid
CNS tumor • Meningioma • Glioma	CNS radiation	MRI brain

Secondary Cancers

- Radiation associated

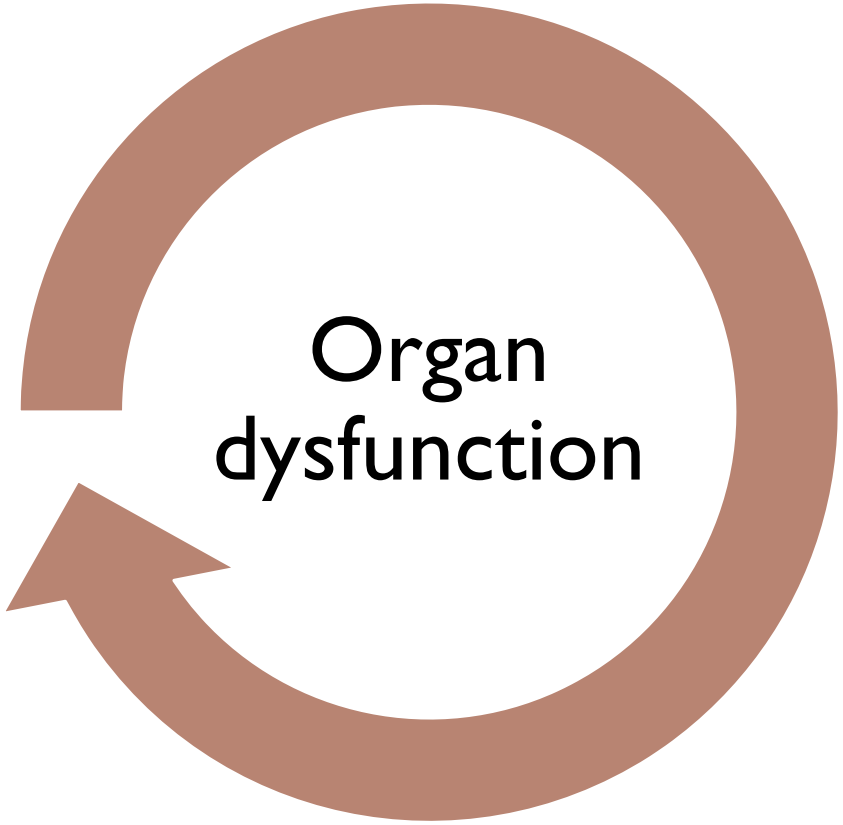
Malignancies	Risk factors	Surveillances
Colorectal cancer	• Abdomen radiation • Pelvic radiation • Spinal radiation • ≥ 30 Gy • Total body irradiation (TBI)	• Colonoscope
Skin cancer	• Any sites	Exam and consult dermatologist
Cardiovascular disease • Moyamoya disease • Aneurysm • Stroke • Seizure	• Head and neck radiation • ≥ 40 Gy	Ultrasound Doppler of carotid vessels at 10 years after radiation

Secondary Cancers

- Chemotherapy associated: secondary AML

Group of chemotherapy	Chemotherapy	Timing	Developed MDS	Genetic alteration
Topoisomerase II inhibitor	Etoposide Doxorubicin	2-3 years	No	MLL (11q23) rearrangement t(15;17)
Alkylating agents	Cyclophosphamide Ifosfamide	3-10 years	Yes	Monosomy 5, 7

Late Effects of Childhood Cancers



- Cardiac
- Gastrointestinal and liver
- Renal
- Pulmonary
- Neuro
  - Neuropathy
  - Cognitive problem
  - Memory loss

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Cardiomyopathy Associated with Antracyclin

- Early: within 24 hours
- Late effect: ≥ 5 years
- Risk factors
  - Female
  - Age of starting antracyclin
  - How long for exposure
  - Dose
  - Genetic predisposition

Late Effects of Childhood Cancers

- IQ
- Emotional and social maturation

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Late Effects of Childhood Cancers

- Mentality
- Emotional
- Financial
- Physical/body image: obesity
- Fatigue
- Depression
- Anxiety

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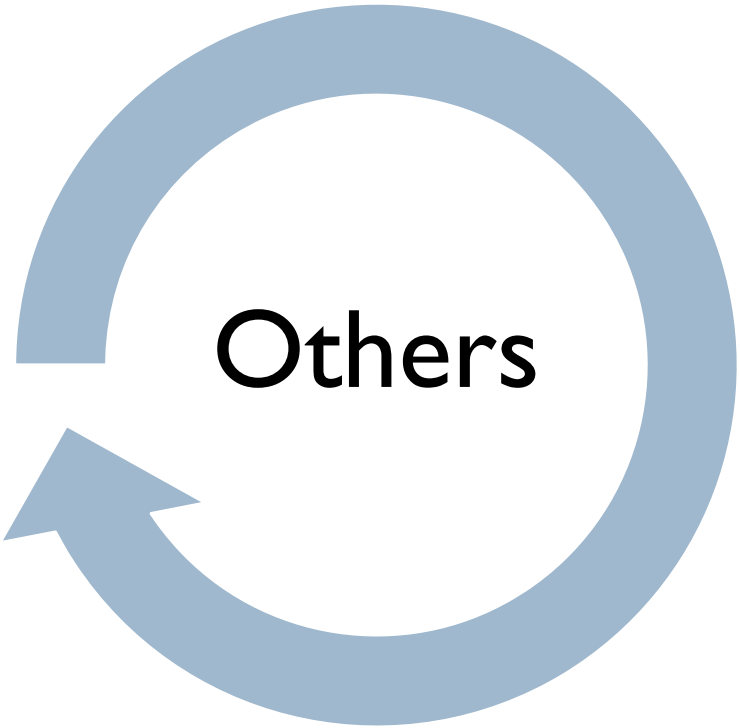
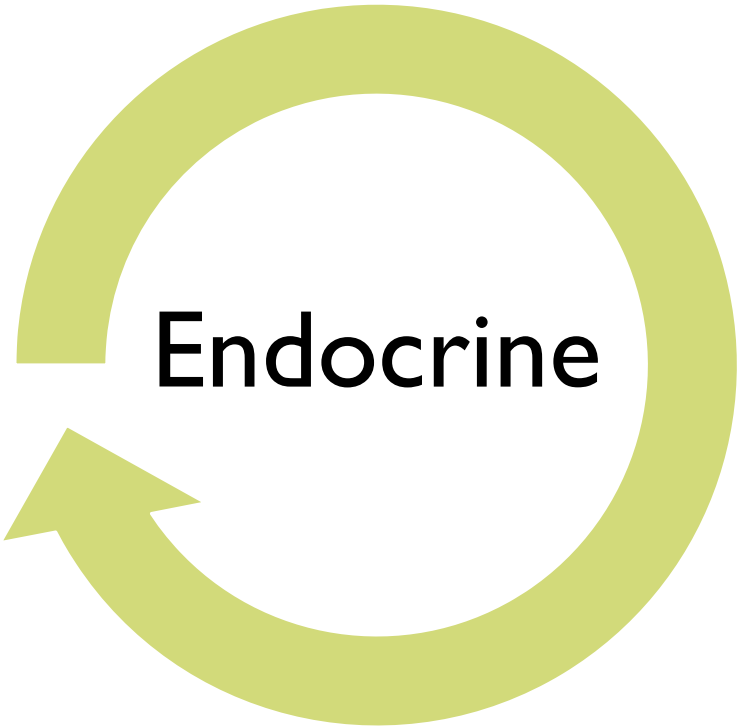
Late Effects of Childhood Cancers



- Scar
- Chronic pain
- Skin sensitivity
- Dental

Late Effects of Childhood Cancers



- Growth
- Infertility
- Bone problem: osteoporosis
- Delayed puberty
- Hypothyroidism
- Adrenal insufficiency

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"What": Manage the Physical Consequences of Cancer Treatment

Long-term Side Effects

- **Chemotherapy**
  Fatigue, endocrine symptoms, infertility, neuropathy, cognitive function, heart, kidney, and liver problems
- **Surgery**
  Scars, chronic pain
- **Radiation Therapy**
  Fatigue, skin sensitivity

Late Side Effects

- **Chemotherapy**
  - 2nd primary cancers, cataracts, infertility, liver problems, lung disease, osteoporosis/endocrine issues, cognitive function, weight gain
- **Surgery**
  - Lymphedema, scar tissue
- **Radiation Therapy**
  - Cataracts, heart, lung, intestinal and thyroid problems, second primary cancers, memory problems, cavities and tooth decay

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"What": Manage the Psychosocial Late and Long-Term Effects of Cancer Treatment

- Psychological
  - Depression, anxiety (fear of recurrence), uncertainty, isolation, altered body image
- Social
  - Changes in interpersonal relationships, concerns regarding health or life insurance, job loss, return to school, financial burden
- Existential and spiritual issues
  - Sense of purpose or meaning, appreciation of life

Follow-up Care

- Tailored on
  - Patient Characteristics: age, gender
  - Disease
  - Disease severity
  - Therapy received
  - Family history

Take Home Messages

- Increased survival, increased late effect, need closely monitor
- Cancer survivors have chance of late effects
- Holistic approach is mandatory

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HOPE
for
children with cancer
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