Creating a Culture of Mobility with Pediatric Oncology Patients

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• No relevant financial relationship exists

Learning Objectives
Upon completion of this course, you will be able to:
• Summarize common pediatric oncology diagnoses, care plans and prognoses
• Describe multi-dimensional side effects of treatment interventions which limit physical performance and independent mobility
• Discuss the use of an interdisciplinary team and principles of patient and family centered care to increase participation and mobility
• Identify processes involved with program development, allocation of resources, and challenges with implementation of a hospital based mobility program

What is Cancer?
• A collection of related diseases
• Abnormal cells, found anywhere in the body, start to have unregulated growth and interfere with normal function
• Spread through blood and lymph
• More than 100 different types of cancer

Pediatric Cancer
• Predominant Types
  – Leukemia (26%)
  – Cancers of the brain and CNS (18%)
  – Lymphoma (14%)

Number of Childhood Cancer Diagnoses Per Year

Source: American Cancer Society, Inc.
Pediatric Cancer

- Most common cancers in children ages 0-14 years
  - Acute lymphoblastic leukemia (26%)
  - Brain and CNS (21%)
  - Neuroblastoma (7%)
  - Non-Hodgkin lymphoma (6%)
- Most common cancers among adolescents ages 15-19 years
  - Hodgkin lymphoma (15%)
  - Thyroid carcinoma (11%)
  - Brain and CNS (10%)
  - Testicular germ cell tumors (8%)

Statistics: Incidence and Survival Rates

- About 10,380 children in the United States under the age of 15 will be diagnosed with cancer in 2015.
- Because of major treatment advances in recent decades, more than 80% of children with cancer now survive 5 years or more.

Leukemia

- A cancer of blood-forming cells arising in the bone marrow
- Two main types
  - Acute lymphoblastic leukemia (ALL)
  - Acute myelogenous leukemia (AML)
- Most common cancer in children
- Initial presentation of bone/joint pain and fatigue
- Improved treatment in ALL in childhood has increased the 5-year survival rate from 57% in 1975-1979 to 90% in 2003-2009.

Leukemia

- Long-term effects of ALL
  - Bone damage or osteoporosis
  - Heart disease
  - Growth deficiency
  - Increased risk of second cancers, including AML and CNS tumors.
- ALL survivors also have increased risk of
  - Excess weight gain/Obesity - steroids, physical inactivity, cranial radiation, environmental influences/family habits
  - Endocrine and metabolic disorders
  - Muscle weakness
  - Neurosensory impairments
  - Neurocognitive deficits

Brain Tumors

- 20% of cancers in children ages 0-19 years old
- Most brain cancers of children involve the cerebellum or brain stem
- Acute signs/symptoms
  - Headaches
  - Nausea/vomiting
  - Blurred or double vision
  - Dizziness
  - Unsteady gait
- Multimodal treatments (surgery, chemotherapy, radiation) are successful, resulting in a cure for nearly 70% of children with a brain tumor.
- Significant long-term deficits including physical, sensory, cognitive, neurologic and endocrine.
Brain Tumors

The three common categories of CNS tumors in children and adolescents are:

Astrocytoma
- The most common type of CNS tumor, accounts for 35% of CNS tumors in ages 0-19.
- More than 50% are located in the cerebellum and are low grade

Medulloblastoma
- Most common CNS malignancy in childhood
- High grade tumor
- PNET found in the cerebellum

Ependymoma
- About 20% of pediatric ependymomas are diagnosed in children younger than 3 years of age
- High-grade tumor
- 7% occur in the posterior fossa

Posterior Fossa Syndrome

- 8-25% children operated with a cerebellar tumor
- Occurs 1-2 days (up to 4 days) after surgery
- Comprised of:
  - Mutism
  - Emotional lability
  - Neurobehavioral abnormalities
  - Severe ataxia
  - Dyphagia/Dysarthria
  - Axial hypotonia

Causes:
- Unknown
- Injury to the brainstem (dentatothalamocortical pathway)
- Transient ischemia and edema to dentate nuclei
- Surgical trauma and vasospasm to cerebellar vermis

Family Impact of PFS & MB
- Family Impact of PFS & MB

Cancer Treatment

- Surgery
- Radiation
- Chemotherapy
- Hematopoietic Stem Cell Transplant (HSCT)

Surgical Interventions

DiRocco et al.
Radiation Side Effects

Late Effects
- Growth abnormalities
- Osteonecrosis- AVN
- Osteoporosis- pathologic fractures
- Cardiac & Pulmonary Complications
- Increased risk for obesity
- Cognitive changes
  - <3 yo discuss risk/benefits to radiation with family, attempt to delay/reduce

Chemotherapy

ALL Treatment is generally in 3 phases
- Induction: 4-6 weeks of chemotherapy to induce remission, may require prolonged hospital stays for treatment.
- Consolidation (Intensification): 1-2 months of intense chemotherapy that focuses on reducing the number of leukemia cells still in the body and preventing them from developing resistance.
- Maintenance: 2-3 years of chemotherapy to prevent recurrence
Chemotherapy Side Effects
- GI: nausea, vomiting, diarrhea, constipation, mucositis, nutrition complication
- Hematologic: anemia, neutropenia, thrombocytopenia
- Immunosuppression
- Cardiotoxicity
- Ototoxicity
- Neurotoxicity

Chemotherapy

APTAs Guidelines

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Neurotoxicity

Chemotherapy Induced Peripheral Neuropathy
- CIPN 1

Neurotoxicity

Central Toxicity
- Acute encephalopathy generally develops within 5-14 days after IT MTX or HD MTX and may include
  - Headache
  - Nausea/vomiting
  - Lethargy
  - Altered mental status
  - Blurred vision
  - Apathy
  - Hemiparesis- sometimes alternating
  - Seizure
- Chronic encephalopathy develops slowly may progress, and can permanently impair neurologic function.
- Transient acute encephalopathy has been clinically observed in 3%-15% of cancer patients after HD MTX

\[Image\]
Methotrexate Toxicity

- Methotrexate Toxicity - Inpt

Chemotherapy

- Vincristine, Cisplatin, Etoposide-Neurotoxicity
- Methotrexate- CNS toxicity
- Anthracyclines (Daunorubicin/Doxorubicin)- Cardiac effects
- Steroids- Steroid induced myopathy-proximal weakness, osteonecrosis

Barriers to Mobility

- Hospitalizations/Isolation
- Medical needs/Lines
- Drug side effects
  - Nausea
  - Anemia/Thrombocytopenia
  - Neuropathy
- Physical Impairments
- Fatigue
- Decreased motivation/maintaining motivation
- Attitude toward physical activity
- Increased cautiousness/overprotection/fear
- Comfort level of nursing staff to mobilize patients

Environmental Factors

Hematopoietic Stem Cell Transplant

- Isolation
- Engraftment (Day +14- Day+28) and count recovery
- Limited activity options

Physical Impairments in Pediatric Oncology Patients

- ROM Limitations-gastrocnemius, soleus, hamstring
- Muscle weakness
  - Peripheral neuropathy (distal)
  - Steroid induced myopathy (proximal)
  - Hemiparesis
  - Generalized deconditioning
- Balance impairment- vestibular, visual, somatosensory
- Motor skill impairments
- Decreased endurance-cancer related fatigue
- Pain-tumor location, neuropathic
Late Effects of Cancer Treatment

- High risk of early mortality from second cancers
- Cardiac complications
- Pulmonary conditions
- Over a third of survivors who are normal weight prior to diagnosis are considered overweight by the end of treatment
- Research indicates that two-thirds of survivors experience at least one physical or psychological late effect following treatment for childhood cancer.
- A need to develop and foster healthy lifelong behavior habits including physical activity

Nesset et al

Late Effects of Cancer Treatment

- Physical Performance Limitations of Brain Tumor Survivors
  - Muscle strength and fitness values were similar to those among individuals aged greater than or equal to 60 years and were associated with physical performance limitations.
  - Significant muscle weakness and poor exercise tolerance which impacts overall physical performance and participation in life roles.

Nesset et al

Survivors

- Childhood cancer survivors are at increased risk for physical performance limitations when compared with sibling cohorts or the general population. This increased risk begins during or early after the treatment period and is likely to increase with age.
- Those at increased risk:
  - Surgery, radiation or chemotherapy that has damaged a body structure or interferes with organ function
  - Survivors of a brain or bone tumor or Hodgkin’s disease
  - Female
  - Low socioeconomic status

The consequence of a physical disability is that it can restrict participation in expected adult societal roles. Therefore, these pts would benefit from interventions to help prevent further loss of physical function.

Survivors

- In this study, Ness et al, looking at physical performance of brain tumor survivors, with a median age of 22 years and approximately 14.5 years from diagnosis, muscle strength and fitness values were similar to that of a 60+ year old.
- These studies support the opportunity for program development and interventions that aim at improving long-term physical function in this survivor population.

Nesset et al

ICF Model

- Childhood Cancer Survivor Study
  - Survivors were found to be 20-40% more likely not to meet the CDC guidelines and 60-70% more likely to be physically inactive, when compared to sibling controls or healthy controls.
  - Less than 50% of childhood cancer survivors meet the CDC recommendations of at least 60 min of moderate to vigorous activity per day at least 5 days per week.

Nesset et al
Differential Diagnosis

- Body System/Structure
  - Physical Impairments
  - Pain
  - Cognitive Impairments
- Environmental Factors
  - Hospitalization
  - Isolation
  - Medical team
  - Nursing
  - Family dynamics and support
- Personal Factors
  - Prior level of function/activity
  - Motivation

Impact of the Diagnosis and Treatment

- Impaired physical function
  - Peripheral neuropathy
  - Weakness
  - Pain
  - Fatigue
  - Impaired cardiopulmonary function
- Social isolation
- Loss of independence
- Anxiety
- Depression
- Decreased quality of life

Impact of the Diagnosis and Treatment

- The diagnosis of a malignant disease, the required hospitalizations and intensive multimodal therapy
  - Interrupts daily life
  - Dramatically changes the capacity for normal physical activity and sports
- Negative experience with cancer including
  - Isolation and loneliness in the hospital
  - Feeling restricted in where to go and what to do
- Overall, patients wished to implement activities of normal life on the cancer ward.
- Structures in hospital care, organizational obstacles, and prohibitions contribute to limited physical activity levels.
- There is sufficient evidence to conclude that physical activity overall will have positive impacts on the course of disease in children and adolescents with cancer.

Hospitalized Patients Undergoing Active Treatment

- Markedly reduced level of physical activity in amount and intensity compared to a control group
- Study found that children with cancer are interested in play and activity during their hospital stay
- Whether reported by children or parents, HRQoL, was higher among hospitalized children with cancer who practiced adaptive physical activity than among those who did not.
  - Improvement in physical functioning dimensions
  - Improvement in self-esteem and mental health dimensions
- Participation in physical activity during hospitalization allows children to behave like peers and as they did prior to diagnosis.
- Increase socialization and support

Hospitalized Patients Undergoing Active Treatment

- Children hospitalized on a general pediatric unit lose 20%–25% of their usual sleep time
- Pediatric oncology patients had similar results
- Sleep-disruptive factors reported
  - Decreased daytime activity
  - Interrupted sleep
- Altered sleep patterns, treatment factors such as medications and disrupted sleep contribute to sleep-related fatigue
- Fatigue or poor sleep report of being “too tired” resulted in a 23% refusal rate in participation of a coping intervention
- Structured activity programs have been shown to improve concentration, sleep, fatigue and overall quality of life of adult oncology patients

Hospitalized Patients Undergoing Active Treatment

- A prospective, two site, randomized, controlled pilot study by Hinds et al, assessed the feasibility of an enhanced physical activity intervention in hospitalized children and adolescents receiving treatment for a solid tumor or for acute myeloid leukemia.
- 29 pediatric oncology patients ages 7-18 years old that were being admitted for a 2 to 4 day inpatient chemotherapy stay at two pediatric cancer centers.
**Hospitalized Patients Undergoing Active Treatment**
- Intervention - pedaling a stationary bicycle-style exerciser for 30 min, twice daily for 2-4 days of hospitalization.

**Benefits of Physical Activity & Exercise**
- Physical activity plays a vital role in the physiological and psychosocial development of children
- It is safe and feasible
- It can improve deficits caused by cancer treatment
- Benefits
  - Reduced cancer recurrence
  - Improved overall mortality
  - Improved health-related fitness outcomes (cardiopulmonary fitness, muscle strength, body composition)
  - Various patient-oriented outcomes (QOL, self-esteem, fatigue, psychosocial distress, depression)

**Hospitalized Patients Undergoing Active Treatment**
- Results
  - Intervention successfully implemented 85.4% of the scheduled times.
  - No harm from the intervention was reported
  - Patient’s sleep efficiency appeared to be improved
  - Self-reported fatigue scores of adolescents in both study arms were consistently higher than those of younger children

**Benefits of Physical Activity & Exercise**
- Positive effect of physical activity on disease and treatment related side effects.
  - Fatigue
  - Quality of life
  - Clinical exercise interventions are feasible and safe, especially with ALL pts and during medical treatment.
  - No adverse effects have been reported.
  - Single studies present positive effects on the
    - Immune system
    - Body composition
    - Sleep
  - Various aspects of physical functioning
  - More research is needed to establish evidence-based exercise recommendations and future research needs to focus on child-specific aspects.

**Hospitalized Patients Undergoing Active Treatment**
- Interventions during intense phase of cancer treatment
- Reported positive short term effects of enhanced physical activity during hospitalization
- Patients randomly assigned to the intervention group experienced improved sleep efficiency compared to the control group
- Adherence to the intervention of 85.4% indicated that in-patient treatment phases offer a good opportunity for implementing activity programs

**Benefits of Physical Activity & Exercise**
- Adaptive physical activity during hospitalization for children with cancer was associated with better HRQoL for most of the psychological and physical dimensions
- Improved testing results, enhanced physical performance and better laboratory results
Benefits of Physical Activity & Exercise

- Cancer-related fatigue can be described as a subjective feeling of physical, emotional, and/or cognitive tiredness.
- Three studies conducted in children 6-18 years of age found lack of energy was the most common symptom, occurring in 50% to 76% of participants.
- Fatigue is frequently identified as the most troublesome symptom in pediatric cancer patients with an important impact on quality of life.
- Inpatient status and recent chemotherapy are significant predictors of worse fatigue in children.
- Based on severity of illness, anemia, concurrent medications, inactivity and prolonged inpatient status, children with cancer receiving intensive chemotherapy are expected to be at high risk for severe fatigue.
- A systematic review of 72 randomized controlled trials which included participants of all ages, exercise reduced fatigue by a moderate amount. (Baron et al)

Children's Oncology Group (COG) 2008 and American Cancer Society 2012 Guidelines

- Children and adolescents should engage in at least 1 hour/day of moderate to vigorous physical activity for 5 or more days per week (COG).
- Children and teens should get at least 1 hour of moderate to vigorous intensity activity each day with vigorous activity on at least 3 days each week (ACS).

Physical Activity Opportunities While Hospitalized

- In room/Isolation options
  - Xbox kinect or Wii fit
  - Recumbent or foot bike
  - Individualized Exercise program for those that receive PT orders
Turtle Talk

Adolescent and Young Adult Oncology Patient

- Programs and services specific to this population due to their unique needs
  - Teen Room
  - AYA Activities/Events
  - Psychosocial services
    - Identity
    - School
    - Employment
  - AYA cancer survivors when compared to peers with no cancer had a significantly higher prevalence of obesity, cardiovascular disease, hypertension, asthma, and poor general physical health.
  - Barnes M et al

AYA Oncology Activity Specialist

- Historically, the AYA program at CHOC has included medical oncology, pediatric oncology, nursing, social work, research and recently PT
- AYA activity specialist was added to the program in Fall 2014
  - Expand psychosocial support
  - Aid in program development
- Increased patient involvement
- Increased patient satisfaction with the AYA program
Rock (or walk) The Halls

- Inpatient exercise program to increase physical activity and decrease social isolation experienced by AYA in cancer treatment
- Includes a pre-defined walking course and intermittent exercise stations
- Document number of laps with a prize awarded to the pt with the most laps completed
- Since initiation, 125 patients have walked 5277 laps equaling about 459 miles (1 mile=11.5 laps)
- Increased nursing collaboration regarding physical activity
- Future projects looking into the effect of the program on pt’s QOL, length of stay, decreased use of pain meds etc.

Rock (or walk) The Halls

- Case Example
  AP is a 14 year old male with a h/o ALL who has had multiple admissions for treatment-related toxicities and pain management issues. Prior to Rock the Halls, AP’s average length of stay was approximately 12 days and required the use of a PCA. He spent most of his stay in his room, and minimally interactive with staff and his peers. As a result of his participation in Rock the Halls, his average length of stay is now 6 days and on the most recent admission he did not require the use of a PCA. He now socializes consistently with staff and peers.

Rock (or walk) The Halls

- Case Example
  CF is a 16 year old female with relapsed ALL who has a h/o narcotic medication seeking behavior. Despite attempts with distraction techniques offered by the psychosocial team, she still exhibited many signs of narcotic medication seeking behaviors. With participation in Rock the Halls, CF has established many new friendships with AYA peers, and has been more open to learning new coping skills for pain and headaches caused by her cancer treatment.
Turkey Trot

Find The Elf

Rock (or walk) The Halls
- Considerations and Impact
  - Physical activity and socialization
  - PT Overutilization
  - Promote Team Collaboration
  - Nursing/medical staff accountability for physical activity
  - Results of increased mobility evident to staff

Rock (or walk) The Halls

Rock (or walk) The Halls
- Knowledge by itself has little effect on practice
- Future interventions should focus on how to increase nurses' sense of responsibility for practice and how they can impact patient outcomes.
- Several educational inservices were provided and made available to nurses/nurse assistants, including lecture/lab, article review, and web-based courses, focusing on:
  - the importance and benefits of physical activity for the older adult population
  - use of foot bike and where to get them in the unit
  - assisting pts with sarcoma diagnosis out of bed and to the restroom

White Board Project
Increasing Mobility Through Yoga
• Individualized yoga is feasible for inpatient children receiving intensive chemotherapy and undergoing HSCT
• No adverse events
• Qualitative feedback from both children and parents indicated physical and psychological benefits of yoga.
• Physical benefits-increased energy levels, decreased nausea, and a reduced need for pain medication
• Psychological benefits-reduced anxiety and agitation, better sleep and improved mood

Increasing Mobility Through Yoga
• 11 children aged 6-12 years old, 5 adolescents aged 13-18 years old and 33 parents participated in a single yoga session in the inpatient oncology unit.
• Adolescents and parents experienced significant decreases in anxiety scores and all cohorts gave positive feedback about the experience.
• Yoga improves posture, muscle tone, circulation, pulmonary function, coordination and flexibility
• Yoga promotes relaxation, reduces anxiety and improves sleep patterns.

Increasing Mobility Through Yoga
• Reports of lower cortisol levels following yoga and increased nighttime plasma melatonin which may result in improved sleep quality.
• Therapeutic yoga positively affected child perception of gross motor function measured on the Peds QL 4.0
• Yoga is low impact exercise that can be adapted to meet the needs of various patients.

Yoga classes coming to CHOC Inpatient Feb 2016

Increasing Mobility Through Use of An Adaptive Bike
Physical, Social, and Emotional Benefits
• Increased
  – Coordination
  – Muscle strength
  – ROM
  – Endurance
  – Balance and postural control
  – Self-esteem
  – Social interaction
  – Age appropriate play
  – Independence

Increasing Mobility Through Use of An Adaptive Bike

Increasing Mobility Through Use of An Adaptive Bike
• Associate Giving Special Projects Grant
  – To provide funding up to $10,000 for a one time unbudgeted special project and/or program with priority given to new innovative programs that benefit the children and families served by CHOC Children’s.
  – Goal is to enhance patient/family care and satisfaction.
  – Promoting a Culture of Active Mobility and Functional Independence with Pediatric Oncology Patients.
ALL Case Example

- March 25 - Stable, transferred back down to Onc
- April 8 - Now able to sit with supervision at edge of bed
- April 20 - Increase to 60 treatments
- April 24-26th - PICU for pnuemonia
- May 1 - Mod assist to stand pivot, max assist to sit to stand, and maintain static standing
- May 4 - Initiated adaptive bike - min to supervised for 180 min
- May 12 - Mother now able to perform transfers
- May 26 - Ambulate 3-10 ft with max assist with significant gait deviations
- June 16 - 300 m with adaptive bike with 10 lb weight in basket
- June 19 - Walk home with OP PT follow up 3x/wk

ALL Case Example

- 8 yo male with a h/o CP DD, Autism and high risk B cell ALL, diagnosed July 2013, presenting in Jan 2015 with CNS relapse after routine LP in maintenance phase. Admitted 1/21/15 for chemotherapy due to relapse.
- Feb 7-8 Febrile, increased abdominal pain, change in mental status, hypotension sent to PICU
- Feb 9 - PT consult
- Feb 13 - HSV, MRI-returned to PICU intubated
- March 1 - Placed on oscillator
- March 7 - PT consult
- March 16 - Extubated to BiPAP
- March 17 - PT consult, initiated 5x/wk

ALL Case Example

- Highlights
  - Increased out of room mobility for a complex pt
  - Increased age appropriate physical activity
  - Increased socialization
  - Increased visibility of physical activity during hospitalization
  - Improvements seen by mother and staff
  - Increased mother’s involvement and responsibility for mobility
  - Increased mother’s comfort level with assisting the pt
  - Pt requesting bike during later hospitalizations despite continued medical complications
Early Mobility

- Early physical therapy and ICU mobilization is feasible and safe
- The impact of ICU with use of sedatives, mechanical ventilation and bed rest results in severe muscle weakness, functional impairments and loss of quality of life.

Hildebrandt et al

Early Mobility

- Physical inactivity rapidly induces the development of insulin resistance, microvascular dysfunction, dyslipidemia, and increased blood pressure.
- Occurred after only 5 days of bed rest in healthy subjects.

Handberg et al

Early Mobility

- Educated PICU nurse supervisors on
  - PROM
  - PRAFO
  - Cardiac chair
- Increase nurse and PT collaboration in the ICU
- Increase nursing responsibility for mobility even with the medically complex pt
- Increase consistency of addressing/encouraging mobility regardless of where you are in the hospital

Early Mobility

- Limited research in pediatrics but there is sufficient supporting evidence regarding adults and early mobility
- wEECycle study- 2 pilot studies completed that suggested that in-bed cycling in critically ill children is a safe and feasible method to enhancing mobility
Anaplastic Ependymoma Case Example

- 3 year old male previously healthy, presenting to the ED with a h/o intermittent vomiting x 2 mo that has now increased in frequency, decreased appetite and unsteady gait x 1 day. CT and MRI reveal a large posterior fossa mass that extends into the brainstem with obstructive hydrocephalus.

Anaplastic Ependymoma Case Example

- 6/25/15- ED, admitted to PICU
- 6/26/15- Surgery- right occipital EVD, right posterior fossa craniotomy with gross total resection of tumor
- 6/30/15- Surgery- removal of residual tumor

Diagnosed with anaplastic ependymoma with posterior fossa syndrome

Anaplastic Ependymoma Case Example

- 7/16/15- Surgery- EVD removed, VP shunt placed, tube
- 7/20/15- 1st OT consult
- 7/23/15- 1st Speech consult
- 7/27/15- Started Radiation (daily M-F x 6 weeks)

Family Involvement and Follow Through

- 7/7/15- 1st PT consult-intubated with EVD — sensory stimulation, massage, PROM, positioning and PRAFOs
Challenges to Implementation

- Blood counts
- Multiple lines (e.g. port, broviac, IV, GTT)
- Environment - isolation, IV pole
- Procedures - General vs sedation
- Multiple/frequent hospitalizations
- Family coping/understanding
- Patient coping/understanding
- Sleep/wake cycles

Collaboration with Music Therapy

Age Appropriate Mobility Options

Challenges to Implementation

- Hospital Risk Management/Legality
- Liability
- Fiscal
- Time/Productivity

Barriers to Group Exercise Classes

- Diverse diagnoses
- Range of physical impairments and needs
- Various treatment protocols and schedules
- Large range in developmental age-groups
How to Address Barriers?

- Interdisciplinary team approach
- Collaboration
  - Rounds
  - Team centered work groups/meetings/committees
- Patient and family centered care principles
- Education
  - Pt/family-set expectations
  - Staff
  - Community
    - More than 70% of school physical education teachers reported lack of knowledge about appropriate activities for childhood cancer survivors

Robertson AR et al

Family Centered Care

- No single definition exists
- List of elements that constitute family centered care
- Involve the parents in care planning for a child in health services
- This review confirms that parents want to participate in their hospitalized child’s care. However, the nature and extent of this involvement has to be negotiated on an individual family basis.

Stokes et al

Family Centered Care

- Opportunities for the family to participate as a unit in age appropriate activities that promote mobility while in the hospital
- Provide a sense of normalcy despite cancer diagnosis
- Parent participation in daily rounds and goal setting

Intervention Considerations

Key elements to consider
- Individual limitations
- Risk factors and restrictions
- Adolescent development
- Engaging the pt in developing his/her own program
- Their daily lifestyle and current situation
- Timing of the intervention: prior to deficits or decline in health behaviors

- Incorporate peers and family to increase long term commitment
- Research indicates that both family and peer support are important predictors of adolescent cancer survivorship/physical activity levels

Narayan AI et al

Intervention Considerations

Key elements to consider
- Group versus individual setting
  - Group settings enhance adherence by adding a supportive social factor of exercising with peers.
- Combine education with exercise
  - Study combined exercise with educational sessions in a group setting for adolescents. Adherence was high (81.5%) and significant improvements could be observed on fatigue, physical fitness, and QOL.
  - Educational instructions may assist with overcoming barriers that involve the patients and parents hesitations regarding exercise

Kwon HS et al

What’s Next

- Incorporating research into practice
- Conducting research to have objective evidence to support further programs
- Community based programs
Summary: Research and Importance

- Approximately 80% of children diagnosed with cancer will survive for 5 or more years.
- With cure rates rising, emphasis in pediatric oncology is being placed not only on cure, but also on improving quality of life.
- Multisystem impairments and physical activity limitations are documented effects of cancer treatment. These deficits can occur during and after treatment.
- Creating a culture of mobility at diagnosis, throughout treatment, and during survivorship is crucial to addressing the needs of the patient.
- Utilizing an interdisciplinary team and principles of patient and family centered care are important in developing and successfully implementing programs to address mobility and physical activity among pediatric oncology patients.

References

- Gilchrist J, Jukes D, & Trenor, T. The Role of Physical Therapy in Pediatric Oncology: CIM 2014, Orthopaedic Section Pres-Nursing Course, Las Vegas, NV.