Muscle Strength Impairment

Setting: **Inpatient** Population: **Pediatric** Keywords: **movement, weakness**

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Clinical Description

Care of the hospitalized child experiencing muscle weakness that limits performance of daily activities or ability to maintain functional positions.

Key Information

- Strengthening programs should be individualized. Medical condition, age, developmental level, ability to follow directions, activity level and patient goals will influence the planning and implementation of a strengthening program.
- Muscle-strength testing and interventions may be contraindicated with conditions, such as joint instability or inflammation, unhealed fractures or postoperative restrictions.
- Strengthening programs have been shown to not increase spasticity and should be part of the treatment plan for children with muscle strength impairment.

Clinical Goals

By transition of care

A. The patient will demonstrate achievement of the following goals:

- Improved Muscle Strength

B. Patient, family or significant other will teach back or demonstrate education topics and points:

- Education: Overview
- Education: Self Management
- Education: When to Seek Medical Attention

Correlate Health Status

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Correlate health status to:

- history, comorbidity, congenital anomaly
- age, developmental level
- sex, gender identity
- baseline assessment data
- physiologic status
- response to medication and interventions
- psychosocial status, social determinants of health
- barriers to accessing care and services
- child and family/caregiver:
  - health literacy
  - cultural and spiritual preferences
- safety risks
- family interaction
- plan for transition of care

Muscle Strength Impairment

Signs/Symptoms/Presentation

- active movement limitation
- balance limitation
- gait impairment
- limitations in daily activity performance
- low muscle tone
- mobility impairment
- muscle atrophy
- unmet motor-related developmental milestones

Problem Intervention(s)

Optimize Muscle Strength

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- Assess muscle strength using a standardized procedure (e.g., manual muscle testing, dynamometry) or functional screen to determine individual limitations or risk for impairment.
- Consider any contraindications or precautions to individualize treatment plan, such as fracture, recent nerve or tendon repair and poor nutrition status; address contraindications and refer for further evaluation, if needed.
- Consider factors that will influence reliability, such as time of day and the child's interest and enthusiasm for testing, as well as rapport with tester.
- Assess for changes or abnormalities in muscles or movement patterns, such as atrophy, abnormal reflexes, muscle tone impairment, substitution patterns or weakness in myotome patterns.
- Design and implement interventions to address strength impairments with type, time, frequency, intensity and resistance that are individualized to the child, such as play or therapeutic activity and exercise.
- Ensure proper body alignment and exercise technique. Modify as needed, such as seated exercise or reducing range of motion.
- Monitor and address signs and symptoms of intolerance, such as unexpected pain or shortness of breath.
- Utilize appropriate modalities, devices or techniques to facilitate muscle strength (e.g., biofeedback, electrical stimulation, virtual reality games).
- Encourage early mobilization and performance of play and self-care activities, as able, while providing level of assistance needed for safety.
- Recommend and train in use of adaptive or assistive devices or environmental modification to compensate for strength impairment, while facilitating independence and safety (e.g., adapted tricycle, bathroom grab bars, lightweight eating utensils).
- If oral intake is poor, perform a nutrition assessment that includes a nutrition-focused physical exam to identify malnutrition risk.

Associated Documentation

- Adaptive Equipment Use
- Self-Care Promotion

General Education

- admission, transition of care
- orientation to care setting, routine
- advance care planning

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- diagnostic tests/procedures
- opioid medication management
- oral health
- medication management
- pain assessment process
- safe medication disposal
- tobacco use, smoke exposure
- treatment plan

Safety Education

- call light use
- equipment/home supplies
- fall prevention
- harm prevention
- infection prevention
- MDRO (multidrug-resistant organism) care
- personal health information
- resources for support

Education: Overview

- description
- signs/symptoms

Education: Self Management

- activity
- assistive/adaptive devices
- home safety
- prevent skin breakdown
- provider follow-up

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- rehabilitation therapy

Education: When to Seek Medical Attention

- unresolved/worsening symptoms

Population-Specific Considerations

Special Needs

- Avoid eccentric muscle contraction in children with Duchenne muscular dystrophy; immobilization may be harmful as well.
- Incorporate challenge and fun into strengthening programs, whenever possible, to maintain interest and motivation.

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