JOHNS HOPKINS ALL CHILDREN’S HOSPITAL

NICU Stroller Time
Clinical Pathway
Johns Hopkins All Children's Hospital

NICU Stroller Time

Clinical Pathway

Rationale

Mobilization and sensory experiences are essential for the neurodevelopment of infants. Stroller time provides a sensory experience to reduce social isolation and provide a dose of multisensory exposure while improving mobility. Early mobilization can decrease the duration of respiratory support and length of stay. Within the first three years of life, neuronal connections rapidly form for brain development and are strongly influenced by emotional and sensory experiences. Providing opportunities to improve mobility and sensory experiences in the NICU can promote better outcomes, reduce stress levels, and encourage parental engagement, confidence, and integration into the care team.

Background / Published Data and Levels of Evidence

1. Early Mobilization

Early mobilization program was associated with statistically significant improvements in hospital and PICU length of stay, activity and therapy orders, and early mobilization (1). However, mobilization is defined differently depending on the healthcare setting. In this quality improvement initiative, mobilization was defined as sitting on the edge of the bed, standing, sitting out of bed, and ambulation.

In the NICU setting, mobilization is defined as holding, assisted sitting, highchair, swing, tummy time, and stroller time. In addition, NICU infants have OT and PT that assist with specific positioning needs and assess for mobility equipment to optimize infant mobility development.

Multidisciplinary team collaboration is essential for early mobility. Prolonged bed rest should not be an acceptable standard of practice for critically ill children (2). Functional recovery and a decrease in loss of mobility function are essential for optimal outcomes (2). Incorporating early mobility as a crucial component of mobility function.
2. Safety of Mobilization

Mobilization in US PICUs rarely leads to safety events when implemented within a safety profile (3). Safety event increases were not associated with mobilization interventions (3). Mobilization integration requires collaboration and communication with an interdisciplinary team.

3. Parental Engagement

Despite challenges and adverse events in the NICU course, families cherish their child’s strengths and progress (4). Unfortunately, parental concerns regarding goals and progress are not always adequately considered during clinical follow-up and outcome assessments (4). The NICU care plan should incorporate parental perspectives on goals, clinical progression, and infant success. Parental engagement is essential to long-term outcomes.

Family attachment is disrupted with the NICU admission. A program was established to provide families with opportunities to have average experiences with their infants to increase confidence in parental skills (5). The normalized parental experience opportunities included stroller walks around the unit, hospital, and outside the hospital on hospital grounds (3). The ten family samples reported increased connectedness to their infant and self-value as a parent with the stroller time activities (5). The ten staff samples reported an overall positive experience but required trust transfer to the family and established guidelines (5).

4. Sensory Experiences and NICU Outcomes

The strong relationship between brain maturation, positive and negative neurosensory exposures, and experiential learning encompasses the foundation of neuroplasticity and can potentially alter the developmental outcomes of high-risk hospitalized infants (6). NICU infants who are required to stay in the NICU for medical care for weeks to months have an alerted sensory environment compared to normal healthy impacting their neurodevelopment (6). While developmental outcomes have multiple complexities and are multifactorial, positive experiences impact developmental outcomes (6). NICU hospitalization is a conceivably traumatic and disruptive experience for the NICU infant and the infant’s family (6). The quality of the parent-infant relationship developed in the NICU depends on multi-factors including infant factors, parental factors, and external factors (6). Optimized outcomes require partnership with parents and enhanced mental health support in the NICU to strengthen the family and infant relationship (6).
Clinical Management

Stroller Time Definition
Stroller Time is defined as the mobility of a NICU infant in a stroller around the NICU or outside, providing a typical sensory experience outside of the hospital room. The infant must remain monitored with EKG and Pulse Oximetry. The infant must remain on hospital grounds. Infants should not be taken to the cafeteria.

Inclusion Criteria
a. Infants ≥ 38 weeks CGA
b. Hemodynamically stable
c. Thermoregulatory stable
d. Inpatient ≥ 30 days
e. Stroller time order
f. Unassisted room air
g. < 2 LPM respiratory flow unless planned home support is < 2 LPM respiratory flow
h. Stable on home ventilator
i. Contact precautions cleared by the medical team or the infection prevention team

Mode of transportation
a. Strollers
  a. Hospital strollers
     i. Stored and cleaned by EVS
  b. Patient strollers
     i. TRIaled in the patient room before using for stroller time to ensure fit and feasibility of stroller for stroller time
b. Strollers will be stored in the patient’s room when being used regularly

Equipment Required
a. Portable monitor
b. Code sheet
c. Self-inflating bag and mask
d. Bulb syringe
e. Emergency tracheostomy supplies if necessary
f. Portable suction, if necessary

Who can accompany the infant?
a. At least one staff required
  a. Registered Nurse
  b. Physician
  c. Advanced Practice Provider
d. Respiratory Therapist
e. Neonatal Developmental Care Specialist
f. Patients with a tracheostomy and ventilator must have an RN and an RT with them
b. Other disciplines involved with stroller time may include Child Life, Occupational Therapist, Physical Therapist, and Speech Language Pathologist
c. Families should be encouraged to join

**Time Periods of Stroller Time**

a. Stroller Time Around the NICU
   a. Each shift
   b. As determined by the interdisciplinary team
a. Stroller Time Outside to Floor 2 Patio
   a. Dayshift Only
   b. As determined by the interdisciplinary team
b. Stroller Time should be \( \leq 30 \) minutes

**Location**

a. Not to Visit other hospital units or floors
b. Not to visit other NICU patients
c. Around the NICU floor
d. Outside to the Floor 2 Patio
   a. Infant must meet inclusion criteria and be inpatient for \( \geq 90 \) days

**Emergency Planning**

a. Return as quickly as possible to the patient's room
b. If necessary, activate Staff Assist or Emergency Response
c. Alert the team, including Charge Nurse, APP, MD, and Attending Physician
d. RN will complete the safety event document

**Patient/Family Education**

a. Benefits of Stroller Time
b. Location of Stroller Time
c. Time periods of Stroller Time
d. Emergency Planning
e. Encourage their participation
f. The practice of Stroller Time is non-invasive and considered part of care for eligible infants

**Stroller Time Order**

a. An APP or MD must place an order prior to Stroller time
b. APP or MD will notify the attending provider of new stroller time orders
c. Medical Team be notified when stroller time occurs off the unit
Summary

Infants benefit from a more normal sensory experience. However, infants that experience a NICU stay tend to have a limited sensory experience during their hospitalization.

By utilizing Stroller Time for stable, term infants in the NICU, we can promote neurodevelopment and provide better overall developmental care.

NICU Stroller Time Algorithm / Pathway

- **Unassisted Room Air**
  - **Nasal Cannula ≤ 2 LPM**
    - **Stable Tracheostomy on HME with or without oxygen**
      - **Yes**
        - ≥ 38 wks CGA and 30 days of age
          - Active stroller time order placed by APP or MD
            - Stroller time around the NICU
        - ≥ 38 wks CGA and 90 days of age
          - Active stroller time order placed by APP or MD
            - Stroller time around the NICU and May go outside to floor 2 patio
    - **No**
      - Optimize developmentally appropriate and clinically appropriate care activities in patient room
- **Stable Tracheostomy on home ventilator with RN, RT or trained caregiver**
- **Hemodynamically Stable**
- **Thermoregulation Stable**
Glossary

APP – Advanced Practice Provider
CGA – Corrected Gestational Age
EVS – Environmental Services
LPM – Liters Per Minute
MD – Doctor of Medicine
OT – Occupational Therapist
PT - Physical Therapist
RN – Registered Nurse
RT – Respiratory Therapist

References


Clinical Pathway Team

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Johns Hopkins All Children’s Hospital

Primary author: Danielle Campbell, BSN, RN, RNC-NIC

Guideline Review Panel:

Sandra Brooks, MD, MPH,
Julia Krzyzewski MAS, RPT-NPS
Mary Ann Gouveia, APRN
Gina Csontos, RN
Denise Vaughn, RN
Anna Jara, PT
Heather Piccariello, OT
Claire Jennings, Child Life Specialist
Courtney Ward, RN
Lacy Chavis, MD, Psychologist

Also Reviewed by:

Infectious Prevention: Chris Mize, RN
Risk Management: Sondra Boatman, RN

Clinical Pathway Management Team: Joseph Perno, MD; Courtney Titus, PA-C

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