

Effects of Long-Term Hospitalization on Developmental Milestones in Pediatric Oncology Patients

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Objectives

- Background
- Aim
- Literature Reviews
- Case Studies
- Recommendations for the future



Background

- **Long-term hospitalization:**

- Defined as a single hospital stay that is 30 days or longer

- **Developmental milestones:**

- Behaviors and skills seen in infants and children as they grow and develop
- There are normal ranges in which these behaviors and skills should be at to be considered appropriate

Why it is important:

- Delayed milestones may indicate that a more detailed check up is needed
- Providers are noticing delayed social and cognitive capabilities during long-term follow ups
- Can have effects on mental health, success in school, with social skills, relationships, future work, etc.

Aim:

To examine the literature on why developmental milestones are important, how oncology protocols and long-term hospitalization impact these milestones, and make recommendations that can help our patients meet them



<https://www.healthcareers.com/article/career/a-day-in-the-life-of-a-pediatric-nurse>

Literature Review

- **Method:** Pubmed, Google Scholar, CINAHL, ClinicalKey
- **Search terms:** Pediatric oncology; pediatric cancer; cognitive development; social development; structure; development; long-term hospitalization, evidence-based practice, randomized control trial
- **Articles used:** 9
- **Inclusion Criteria:** Hospitalization stays 30 days or longer, patients ages under 18, pediatric oncology patients
- **Exclusion Criteria:** Hospitalization stays less than 30 days, patients over the age of 18

“The Effectiveness of Psychosocial Interventions for Psychological Outcomes in Pediatric Oncology: A Systematic Review”

By Anna Coughtrey, et. al. (2017)

- **Method:** A search of the literature resulted in a total of 12 randomized clinical trials and these have evaluated psychosocial interventions in children younger than 18 years with current and previous diagnoses of cancer
- **Databases:** ClinicalKey
- **Search Criteria:** cancer AND psychosocial development AND pediatric oncology patients AND hospitalization AND infant, toddler, school-aged, adolescent
- **Findings:** These findings suggest that psychosocial interventions (non-pharmacological intervention that is intended to alleviate psychological distress and improve functioning) are effective at reducing anxiety and depressive symptoms as well as improving quality of life. Additionally, six studies found psychosocial interventions to have a positive impact on physical symptoms and well-being, including a reduction in procedural pain and symptom distress.

“Toddler Developmental Delays after Extensive Hospitalization: Primary Care Practice Guidelines”

By Dana C. Lehner & Lois S. Sadler (2015)

- **Method:** A literature review search limited to pediatric patients ages 1-3 years who were hospitalized for at least 30 days
- **Databases:** PubMed, SCOPUS, & CINAHL
- **Search Criteria:** developmental delay, developmental screening, developmental surveillance, pediatric hospitalization, NICU, PICU, pediatrician, pediatric nurse practitioner, premature infant, toddler, and primary care
- **Major Findings:** Suggest the relationship between extensive hospitalization causing developmental delays in Toddlers ages 1-3 years such as lack of language skills, expressive language, & problem solving. Developmental delays appeared to be less prevalent in toddlers that had more parental involvement and routine throughout their stay.

“Adverse Effects of Isolation in Hospitalised Patients: a Systematic Review”

By C. Abad, A Fearday, & N. Safdar (2010)

- **Method:** A search of the literature resulted in 16 articles meeting criteria for English articles from 1966 onward involving hospitalised children or adults who were on precautions and had adverse effects. Two studies were only pediatrics.
- **Database:** CINAHL
- **Search Criteria:** isolation, adverse effect, psychological impact, safety
- **Major Findings:** This systematic review found that nurses spent less time in the rooms of patients on isolation due to the time it took to don PPE. This in turn led to poorer patient outcomes. It also found that in children, the lack of interaction with visitors and nursing staff due to lack of time or inclination to don PPE left lasting effects on mood, anxiety, depression, fear, and anger.

Our Unit

- 32 beds serving hematology and oncology patients
- Unit environmental factors influencing development:
 - Isolation and care
 - Limited interaction and structure
 - Use of technology



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Social Development

Erikson's stages of psychosocial development

		<u>Needs Met</u>	<u>Needs Unmet</u>
Infant (0-12 mos)	Trust vs. Mistrust	Optimism, trust, confidence, and security	Insecurity, worthlessness, anxiety, and general mistrust to the world
Toddler (12 - 36 mos)	Autonomy vs. Shame & Doubt	Sense of pride and independence, sure of self	Shame, dependence, low self-esteem, stubborn, defiance
Preschool (3-6 years)	Initiative vs. Guilt	Sense of ambition, responsibility, decisive	Guilt, unsuccessful,
School Age (6-12 years)	Industry vs. Inferiority	Competence, pride, accomplishment, self-confidence	Inadequacy
Adolescent (12-18 years)	Identity vs. Role Confusion	Strong sense of self, fidelity	Unsure of self, confused about future

- Long-term hospital stays limit interaction with parents, family members, and same-age peers, inhibit identity formation and sense of self, and contribute to developmental delay.

Cognitive Development

Piaget's Theory of Cognitive Development

Birth-Two Years	Sensorimotor Stage	Learns through senses and actions (hearing, seeing, touching) object permanence is learned
2-6 Years	Preoperational Stage	Learns symbolic thinking, partakes in pretend play, egocentric thinking
7-11 Years	Concrete Operational Stage	Can think logically about items (thus can add and subtract), understands the concept of conservation
12 -18 years	Formal Operational Stage	Can reason abstractly and think hypothetically

- Long-term hospital stays promote missing school, provide a lack of routine, provide limited opportunities for cognitive growth

Case Studies

- **Patient:** 22-month-old male with relapsed B-cell Acute Lymphoblastic Leukemia (ALL) with MLL reconfiguration
 - **Current length of stay:** 5 months
 - **Involvement:**
 - Parent visits once every few weeks
 - Music therapy
 - Unlimited screen time
 - No schedule
 - **Expectations:** play pretend, point to things, have temper tantrums, say several words, points to a body part, can follow two word commands, walks alone, eats with utensil
 - **Findings:** little object permanence, has temper tantrums, is upset when mom leaves (1 yr), has favorite toys (9 mos), pulls to stand (9 mos), no verbalization besides grunts when upset. Shows development far below appropriate.
- **Patient:** 6-year-old female with relapsed B cell Acute Lymphoblastic Leukemia (ALL)
 - **Current length of stay:** 7 weeks
 - **Involvement:**
 - Parent or family present at all times
 - Music/Art therapy, child life participation
 - Limited screen time
 - Daily schedule
 - Active involvement of pt in own care encouraged with competition, reward, and imagination
 - **Expectations:** demonstrates more independence from parents, wants to be liked, can set goals, understands how to follow rules, may start to read
 - **Findings:** all milestones met

Recommendations

- Promoting a structured environment for the patient
- Providing routine
- Allowing age-appropriate patient autonomy
- Multidisciplinary- Child Life Specialist
- Unit specific - schedule



It is our role as nurses to **advocate** for the best possible care for our patients. Therefore, it is our job to advocate for the involvement and structure they need to allow them to continue to meet developmental milestones and go on to have a healthy life long after the cancer is in remission.

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