Developmental intervention patterns in a level IV neonatal intensive care unit (NICU)

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Background/Rationale

- Premature infants are at risk for neurodevelopmental disorders, developmental delays, and behavioral difficulties.
- There are no evidence-based standards regarding NICU-based developmental intervention practices or benefits.
- A thorough descriptive investigation of current developmental intervention practices is necessary to:
  - Support future prospective studies evaluating the neurodevelopmental benefits of NICU-based services.
  - Standardize protocols for developmental interventions in the NICU.

Objective

- To provide information in the identified knowledge gap that exists regarding rates and patterns of developmental interventions (physical therapy [PT], occupational therapy [OT], speech/language therapy [SLP], music therapy [MT], and child life [CL]) in high-risk infants in the NICU by retrospectively examining the variables associated with these interventions.

Methods

- Electronic records for known high-risk infants (extreme and very preterm; 23 0/7 to 31 6/7 weeks gestation) discharged from our institution’s NICU over a 3 year period (January 2014 to June 2017) were manually reviewed to extract demographic and medical variables and therapy patterns.

Results

- Infants with a tracheostomy or G-tube were more likely to receive any of the interventions (p < 0.05).
- Infants with tracheostomy receiving SLP:
  - Higher birth weights and longer hospital stays (p< 0.05), irrespective of gestational age.
  - For each intervention, infants receiving the therapy had:
    - Longer hospital stays (p< 0.0001).
    - Longer duration on ventilators (p< 0.0001).
- The average PMA of initiation varied: 35.5 weeks (CL) to 53.1 weeks (SLP).
- Intervention pattern was not significantly influenced by IVH, PVL, gestational age, gender, race, or language.

Conclusions

- This study reveals varying rates and PMA of initiation of developmental interventions in < 32 week gestation infants.
- Longer hospital stays and longer ventilator duration were associated with higher rates of interventions.
- SLP was the least utilized modality and initiated on average at the oldest postmenstrual age, possibly reflecting low provider familiarity with potential SLP benefits.
- Standardizing timing of intervention may benefit individual patients by:
  - Providing therapies during crucial periods of development.
  - Providing opportunities for caregiver education.
- Limitations: retrospective analysis conducted at a single academic institution; unmeasured variables related to the infant’s care and/or medical complexity that impacted trends in intervention use.
- Further research on NICU-based service trends is needed to demonstrate the benefits of standardized therapy timing.