Improving the Accuracy of Linear Growth Assessment in Children

Making Sure Growth Disorders are Promptly Identified

Background & Goal

Growth is the single most important indication of a child's health. Benefits of growth monitoring include identification of chronic disorders and reassurance to parents that the child's growth is within normal range. However, pediatric endocrinology nurses have determined that linear growth is often inaccurately assessed — resulting in the lack of follow up and referral of a child with growth failure, or the inappropriate referral for treatment of a normally growing child.

The goal of this training is to assure greater accuracy of linear growth measurement, so that correct decisions are made about whether a child needs further evaluation for a growth disorder.

Training Description

This is a two-hour training session that includes a written pre-test of knowledge of age-appropriate growth velocity and accurate linear growth measurement, along with a PowerPoint presentation and handouts reviewing the physiology and pathophysiology of growth disorders and linear growth monitoring techniques. It also includes how to correctly plot measurements on growth charts, the use and accurate installation of measurement equipment, a demonstration/return demonstration of proper length and height measurement technique, and a written post-test assessment. The demonstration session includes practice on performing recumbent length measurements on infants (<2 years of age) and standing height measurements on children (>2 years of age). Accuracy of a measurer's length and height measurements are assured through inter-observer reliability between the nurse trainer and the measurer and also the measurer's repeated measurements on the same child. Measurements are considered acceptable if the difference between the trainer and the measurer did not exceed 0.5 cm.

Evidence of Success

- In evaluating the linear growth assessment of 878 children measured by 127 measures in 55 primary care/family practices in a randomized controlled trial in eight U.S. cities, a baseline assessment showed only 30% of the children were measured accurately.
  - At a six-month reevaluation visit, 74% of children in the intervention group and 26% of children in the control group were measured with correct technique.
  - Accuracy of measurements was also greatly improved. At six months after the intervention, 70% of the children measured in the intervention group practices and 34% of the children measured in the control group practices were measured accurately.
  - Accurate screening of linear growth is cost effective — The cost of measuring equipment (approximately $200) plus the small cost to train measurers is not expensive. A 2007 study in the British Medical Journal looked at 12 height screening programs. The study used economic modeling to demonstrate how accurate height screening, by facilitating a variety of actions that eliminate or mitigate long-term health problems, enhances a child's quality of life and saves up to £30,000 ($58,500) per Quality Adjusted Life Year (QALY).
  - This is the first program providing demonstration/re-demonstration component with outcome data related to the accuracy of the measurers' measurement technique and accuracy.
  - The program was adapted for a study by Roche Products Ltd, a UK company, to evaluate whether a medication to treat juvenile idiopathic arthritis improves growth velocity in their study “Evaluation of the efficacy and safety of long term use of tocilizumab in patients with active systemic juvenile idiopathic arthritis (sJIA)”.
  - The program is being used internationally in 65 locations including the United States, Canada, throughout Europe, Latin America and Australia.
  - The program was utilized in the development of the Linear Growth Assessment Guideline by Jan Foote, DNP, ARNP, CPNP to be published on the website of the National Guideline Clearinghouse, an initiative of the Agency for Healthcare Research and Quality (AHRQ), U.S. Department of Health and Human Services.
  - Nurses in specialty clinics at Children's Mercy Hospital were trained in linear growth assessment using this program.
  - The program is being utilized to certify all registered nurses on linear growth assessment at Children's Hospital of Philadelphia, PA.

About the Voice

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