Body composition in children with cystic fibrosis: The impact of a behavioral and nutrition intervention

Ryan Aschenbrener[1], Shannon Looney[2], John Kroner[2],
Stephanie Sullivan[2], Leigh Ann Chamberlin[2], Scott Powers[1,2]
[1]University of Cincinnati College of Medicine [2]Cincinnati Children's Hospital Medical Center

Background/Objective
Children with cystic fibrosis (CF) suffer from nutritional malabsorption and co-morbidities associated with failure to thrive. Little is known about the effects of a behavioral and nutrition intervention (BEH), designed to promote growth, on body composition.

Methods
From an intent-to-treat group of 78 CF patients aged 2-6 years, 67 had acceptable dual-energy X-ray absorptiometry (DXA) scan data, and 46 had skinfold measurements at baseline and/or 18 months. Families randomized to BEH received eight sessions focused on increasing energy intake, while attention-control (ATTN-CTL) families were taught CF management techniques and nutrition education. This secondary data analysis compared body composition between subjects in BEH and ATTN-CTL conditions, specifically fat-free mass (FFM), fat mass (FM), and percent body fat (%BF).

Results
Baseline characteristics of subjects were not significantly different between the BEH and ATTN-CTL conditions. Based on DXA or skinfolds, BEH treatment did not significantly ($p>0.05$) impact body composition compared to ATTN-CTL over time. As expected, FFM and FM significantly ($p<0.001$) increased over time, but %BF did not.

Conclusions
While there was not a significant difference between conditions, perhaps a greater, sustained increase in energy intake is needed to significantly impact body composition. Although difficulty in obtaining DXA and skinfold data from subjects decreased the usable sample size, these measurements are not commonly performed on children aged 2-6 years. Success in collecting this data may empower further attempts to measure body composition in young children. Future studies could examine the difference in body composition between CF children and healthy cohorts.

Acknowledgement
This study was supported in part by NIH grant T35 DK 60444.