



# Cystic Fibrosis Research News

## **Title:**

BMI Fails to Identify Poor Nutritional Status in Stunted Children with CF

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## **What was your research question?**

For people with cystic fibrosis (CF), routine monitoring of nutritional status by body mass index (BMI) is recommended by the US CF Foundation (CFF) and the European CF Society (ECFS). We asked if children with CF can have 'good' BMI values but still have poor nutritional status.

## **Why is this important?**

For people with CF, good nutritional status is associated with good lung health. Optimizing growth and nutritional status as measured by weight, height, and BMI (the relationship between weight and height which is calculated by dividing a person's weight (in kilograms) by the value of their height x height (in centimeters), particularly when the lungs are growing during childhood, is important. Current CFF and ECFS guidelines recommend maintaining a BMI on the 50<sup>th</sup> percentile or above for children 2 to 18 years of age. A percentile is determined by comparing a person's measurements to others of the same age. A BMI over the 50<sup>th</sup> percentile means that a child at a given age (say, 6 years) must have a BMI value higher than half of the population of 6 year olds. Monitoring weight and height are also recommended, but not as much emphasis is placed on these as is BMI. Weight and height percentiles are calculated in the same way as for BMI.

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## What did you do?

We looked at weight, height and BMI in 11,769 children with CF who were 2-18 years old between 2003 and 2005.

## What did you find?

We found that a large number of children with CF who have a BMI at or above the 50<sup>th</sup> percentile have poor growth or nutritional status based on weight and/or height. In particular, children who were short for their age had relatively raised BMI values. Children with a BMI between the 25<sup>th</sup> and 50<sup>th</sup> percentile, who are not considered to be nutritionally “at risk” according to the guidelines, were often found to have poor nutritional status as measured by weight and/or height. More than 1 in 6 had weight-for-age below the 10<sup>th</sup> percentile and 1 in 4 had height-for-age below the 10<sup>th</sup> percentile.

## What does this mean and reasons for caution?

Although the CFF and ECFS target of achieving 50<sup>th</sup> percentile BMI is a desirable one, some children with CF who are at or above the 50<sup>th</sup> percentile for BMI demonstrate poor nutritional status when evaluated by weight and height for their age. More problematic is the guidance that only children with a BMI below the 25<sup>th</sup> percentile are potentially “at risk”. Relying solely on BMI fails to identify a substantial proportion of children with CF who are short and underweight for their age.

## What’s next?

If our findings can be repeated in a more contemporary group of children with CF (for example, using measures from 2015), some consideration should be given to altering guidelines to emphasize the importance of monitoring weight and height for age in addition to BMI.

## Original manuscript citation in PubMed

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