



# Cystic Fibrosis Research News

**Title:**

Abnormal glucose tolerance and the 50 g glucose challenge test in Cystic Fibrosis

**Authors:**

Saba Sheikh<sup>1</sup>, A Russell Localio<sup>2</sup>, Andrea Kelly<sup>3</sup>, Ronald C Rubenstein<sup>1</sup>

**Affiliations:**

<sup>1</sup> Division of Pulmonary Medicine and The Cystic Fibrosis Center, The Children's Hospital of Philadelphia, Philadelphia, PA;

<sup>2</sup> Division of Biostatistics, Department of Biostatistics and Epidemiology University of Pennsylvania School of Medicine, Philadelphia, PA;

<sup>3</sup> Division of Endocrinology and Diabetes, The Children's Hospital of Philadelphia, Philadelphia, PA

**What was your research question?**

This study was performed to test whether the 50 g glucose challenge test (GCT) can be used to detect abnormalities in glucose tolerance among patients with cystic fibrosis (CF).

**Why is this important?**

Oral glucose tolerance test (OGTT) is recommended yearly for screening for CF related diabetes (CFRD) but the majority of patients do not get tested. This may be because OGTT involves fasting and requires multiple blood draws. CFRD can lead to worsening lung function, poor nutrition and increased risk of early death but treatment can reverse some of these adverse effects. Therefore, it is important to identify a test that is easier to use, and more acceptance for patients so that diagnosis of CFRD and subsequent treatment are not delayed. The GCT may be preferable to patients as it is non-fasting and blood is only taken once.

**What did you do?**

We asked 27 study subjects to undertake both the GCT and OGTT to see whether GCT could detect abnormal glucose levels, which we defined as a two-hour OGTT glucose level of 7.8 mmol/L. This included people who have CFRD and pre-diabetes to account for differences in glucose tolerance. We calculated how many people's glucose tolerance was correctly identified using GCT and if the GCT missed or incorrectly diagnosed abnormal glucose tolerance.

Cystic Fibrosis Research News

[cfresearchnews@gmail.com](mailto:cfresearchnews@gmail.com)



# Cystic Fibrosis Research News

## **What did you find?**

Using a GCT cut-off of 8.1 mmol/L, the test will correctly identify glucose levels in 67% of individuals with CF, those that have abnormal glucose tolerance and those who have normal glucose tolerance. The test misses 11% of people with abnormal glucose tolerance. It incorrectly labels 22% as having glucose abnormalities when they do not.

## **What does this mean and reasons for caution?**

The GCT was able to correctly label glucose tolerance in two-thirds of CF patients tested but, in a few patients, it either missed or incorrectly diagnosed abnormalities. We suggest using a two-step process in diagnosing CFRD—patients may first undertake the GCT and those that have abnormal results should get an OGTT for confirmation. This will save some patients from having to do the OGTT, thereby making it more likely that patients will choose to undergo CFRD screening. However, a small number of people with glucose abnormalities may be missed and diagnosis will be delayed.

## **What's next?**

In order to adopt a two-step screening process, a much larger study is needed to make sure that the GCT cut-off of 8.1 mmol/L captures the majority of individuals with abnormal glucose and misses a negligible number. It is also necessary to ask patients if they prefer a two-step process to getting an OGTT alone.

## **Original manuscript citation in PubMed**

<https://pubmed.ncbi.nlm.nih.gov/31974039/>