

# Questions and Answers

## Glutathione and Other Antioxidants: Information for Patients and Families

In light of the recently convened workshop on antioxidant therapy in cystic fibrosis (CF), the Cystic Fibrosis Foundation has created this updated document to answer questions on glutathione and its potential as a treatment for CF. The CF Foundation is hopeful that glutathione may one day become an approved and beneficial therapy. Before that can happen, however, **much more work needs to be done to determine the dosage, safety, and effectiveness of glutathione. That information is essential before it can be recommended as a treatment for people with CF. Soon, European researchers are expected to submit a grant proposal to the CF Foundation for a glutathione clinical trial to be conducted in people with CF.**

### What is glutathione?

Glutathione is a naturally occurring antioxidant found in the human body. It is needed to maintain normal function of the immune system. It also plays a role in protecting the lungs against damage from germs and pollutants. Scientific evidence suggests that people with CF may have low levels of glutathione in their lungs. **Therefore, increasing glutathione levels through oral supplements or via inhalation *could become a potential therapy for CF.***

### Can glutathione benefit me or my child?

**It is not yet known if glutathione is beneficial for people with CF nor is it known if it is safe when inhaled.** Until the safety, dosage, and possible benefits have been addressed in a large clinical trial, **it is not recommended that people with CF use glutathione** as a therapy. The CF Foundation recommends that people with CF continue with their current therapies as prescribed by their CF physician. **Any therapy that has not been thoroughly studied in patients could have unknown and dangerous side effects.** Any changes in a therapeutic regimen, such as adding or stopping treatments, should be discussed with the CF care center physician responsible for the patient's care.

### What is the CF Foundation doing to support the development of glutathione and other antioxidants?

Over the past three years, the CF Foundation has funded both laboratory and pre-clinical research studies on glutathione and other antioxidants. This has added to the understanding of the potential role of glutathione as a therapy for CF.

Although the CF Foundation was asked to fund clinical trials of glutathione in CF, the proposed trials were not adequately designed to answer the question: is glutathione safe and effective? To address this and the broader issues related to antioxidants, the CF Foundation hosted a workshop to discuss potential antioxidant therapies, including glutathione, in CF. The workshop included experts in CF and others who have studied antioxidant therapy as treatment for disease.

**Together, the workshop participants concluded that there was enough promising evidence to do a large, appropriately designed clinical trial of glutathione in people with CF.** Currently, the CF Foundation is working with researchers in Europe to design and fund a trial. In addition, the workshop members decided that the current recommendations to supplement Vitamins A and E (which also are antioxidants) should continue to be emphasized to patients and caregivers going forward.

### **What is the next step for the CF Foundation with regards to glutathione?**

The CF Foundation continues to work with physicians and scientists to design and start a double-blind, placebo-controlled clinical trial of glutathione in people with CF. As plans for this trial move forward, details will be made available via the CF Foundation's Web site at [www.cff.org](http://www.cff.org).

### **Who manufactures glutathione?**

Glutathione is available in pill form from a variety of nutritional supplement manufacturers. **It comes in varying concentrations, strengths and formulations and is not subject to the Food and Drug Administration's drug approval process. Glutathione, in an inhaled form, is not available for purchase.**

### ***What are some examples of other antioxidant therapies for CF?***

Doctors have long been recommending the antioxidants vitamins A and E for people with CF. Other antioxidants include beta-carotene, zinc, selenium, and vitamin C, among others. These other antioxidants have not been thoroughly studied in people with CF and there is no definitive evidence that any would provide significant health benefits. The CF Foundation will continue to look at other potential antioxidant therapies in CF going forward.

### **What other potential therapies does the CF Foundation have in the pipeline to treat or cure CF?**

The CF Foundation has nearly two dozen potential therapies in various stages of pre-clinical development and clinical trials — more therapies than at any other time in CF history. Any of these potential treatments, if successful, could make a difference in the lives of people with CF. **Some therapies treat the symptoms of CF, while others treat the basic defect in CF cells. A list of CF Foundation-supported clinical trials and their descriptions is available on the CF Foundation's Web site at [www.cff.org](http://www.cff.org).** The CF Foundation will continue to work on these potential therapies forward while also adding new therapies to the development pipeline.

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The mission of the Cystic Fibrosis Foundation is to assure the development of the means to cure and control cystic fibrosis (CF) and to improve the quality of life for those with the disease.