Clinical Study Results

Research Sponsor: AstraZeneca

Drug Studied: BGF MDI and GFF MDI

Study Title: A study to find out how BGF MDI and GFF MDI affect the lungs of participants with COPD

Thank you!

Thank you for taking part in the clinical study for the study treatments BGF MDI and GFF MDI. These treatments are also called budesonide glycopyrronium formoterol fumarate metered dose inhaler and glycopyrronium formoterol fumarate metered dose inhaler.

You and all of the participants helped researchers learn more about BGF MDI and GFF MDI to help people who have chronic obstructive pulmonary disease, also called COPD.

AstraZeneca sponsored this study and believes it is important to share the results of the study with you and the public. An independent non-profit organization called CISCRP helped prepare this summary of the study results for you. We hope it helps you understand and feel proud of your important role in medical research.

If you participated in the study and have questions about the results, please speak with the study doctor or staff at your study site.

Overview

Why was the research needed?

Researchers are looking for a better way to treat COPD. Before a drug can be approved for participants to take, researchers do clinical studies to find out how it works and how safe it is.

What treatments did the participants take?

The participants in this study took BGF MDI and GFF MDI.

What were the results of the study?

The main questions the researchers wanted to answer in this study were:

- **Did BGF MDI and GFF MDI affect the participants' lung airways?**
  The researchers found that the participants had more airway volume in their lungs after taking BGF MDI and after taking GFF MDI than at the start of the study. They also had less airway resistance after taking each of the 2 treatments. When there is more airway volume and less airway resistance in the lungs, breathing becomes easier.
- **What medical problems did the participants have during the study?**
  There were 17.4% of participants who had medical problems that the study doctors thought might be related to the study drug during the study. These medical problems were loss of voice, shortness of breath, itchiness, and infection of the small airways.

More details about the results of this study are included later in this summary.

Where can I learn more about this study?

You can find out more information about this study on the websites listed on the last page. When a full report of the study results is available, it can also be found on those websites.

Who took part in the study?

The researchers asked for the help of men and women with moderate to severe COPD. The participants in this study were 46 to 76 years old when they joined. All of the participants in the study had smoked for at least 10 “pack-years”. This is about the same as smoking an average of at least 1 pack of cigarettes a day for 10 years.

The study included 23 participants in Belgium and the Netherlands.

Why was the research needed?

Researchers are looking for a better way to treat COPD. Before a treatment can be approved for people to take, researchers do clinical studies to find out how it works and how safe it is.

COPD is a lung disease that blocks the airways and makes it hard for air to flow in and out of the lungs. It also causes shortness of breath. COPD gets worse over time. Most people who develop COPD are current or former smokers.

BGF MDI and GFF MDI are inhalers that work by expanding the airways and reducing inflammation in the lungs. This can help people with COPD breathe better.

In this study, the researchers wanted to find out if BGF MDI and GFF MDI work in participants with COPD. They also wanted to find out if the participants had any medical problems during the study.

What was the purpose of this study?

The main questions the researchers wanted to answer in this study were:

- Did BGF MDI and GFF MDI affect the participants’ lung airways?
- What medical problems did the participants have during the study?

The answers to these questions are important to know before other studies can be done to find out if BGF MDI and GFF MDI help people with COPD.

What treatments did the participants take?

This was a “double-blind” study. This means none of the participants, researchers, study doctors, or other study staff knew what treatment each participant was taking.

It was planned that all of the participants would take both BGF MDI and GFF MDI at separate times during the study. Some participants would take BGF MDI first and some participants would take GFF MDI first. They would then take the other study treatment 3 to 4 weeks later.

A computer program was used to randomly choose the order of the treatments each participant took. This helps make sure the groups are chosen fairly. Researchers do this so that comparing the results of each treatment is as accurate as possible.

The participants took both treatments through a metered dose inhaler. A metered dose inhaler is a device that delivers a specific amount of medicine for the participant to inhale. The doses of the study treatments were measured in micrograms, also called µg.

The participants also took a standard COPD medicine called Atrovent HFA for 7 to 14 days before taking the study treatments. This was done so that the participants would still get a COPD medicine when they stopped taking their usual COPD medicine. They also took Atrovent HFA between study treatments.

If the participants had COPD symptoms that needed attention right away, they took Ventolin HFA to relieve their COPD symptoms. This is another standard COPD medicine. In this study, it was used as a “rescue medicine” to treat sudden symptoms of COPD.

The chart below shows the treatments the participants took:

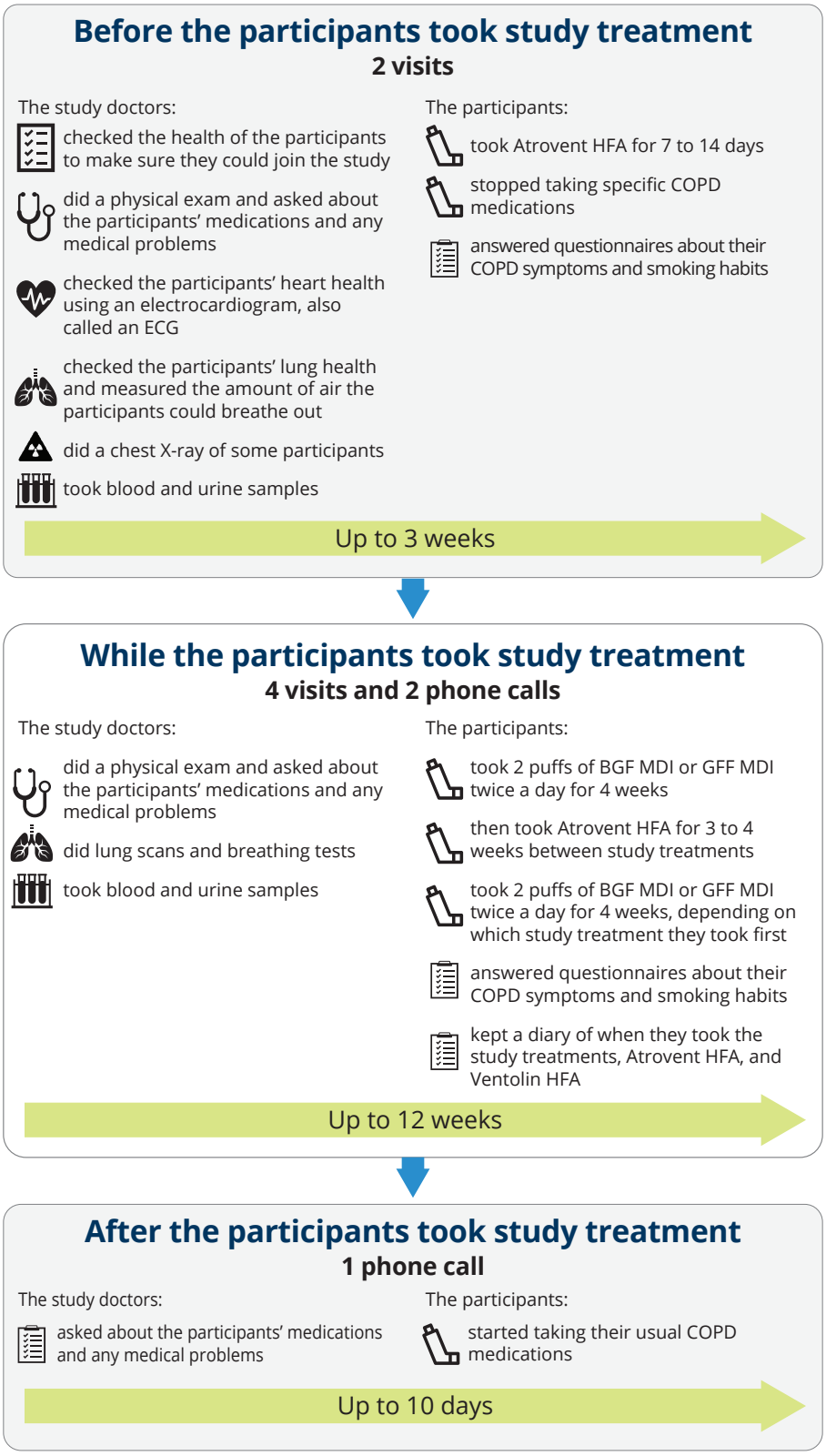
	
BGF MDI, containing: • 320 µg of budesonide • 14.4 µg of glycopyrronium • 9.6 µg of formoterol fumarate	2 puffs, twice a day
GFF MDI, containing: • 14.4 µg of glycopyrronium • 9.6 µg of formoterol fumarate	2 puffs, twice a day
Atrovent HFA	2 puffs, 4 times a day: • 7 to 14 days before the start of the study • in between taking the two study treatments
Ventolin HFA	As needed

What happened during the study?

The participants were in the study for nearly 4 months. But the entire study took 10 months to finish.

The study started in February 2019 and ended in November 2019.

The chart below shows what happened during the study.



What were the results of the study?

This is a summary of the main results from this study overall. The results each participant had might be different and are not in this summary. A full list of the questions researchers wanted to answer can be found on the websites listed at the end of this summary. When a full report of the study results is available, it can also be found on these websites.

Researchers look at the results of many studies to decide which treatments work best and are safest. Other studies may provide new information or different results. Always talk to a doctor before making any treatment changes.

Did BGF MDI and GFF MDI affect the participants' lung airways?

Yes. Compared to the start of the study, the participants had more airway volume in their lungs after taking BGF MDI and also after taking GFF MDI. They also had less airway resistance after taking the 2 treatments. When there is more airway volume and less airway resistance in the lungs, breathing becomes easier.

To answer this question, the researchers used a new type of measurement called "functional respiratory imaging", also called FRI. The researchers did these measurements after the study staff took very detailed pictures of the lungs. They took the pictures using a scan called "high-resolution computed tomography", also called HRCT.

These scans help researchers look at the inside of the airways and the lungs. The researchers calculated 2 FRI measurements:

- airway volume
- airway resistance

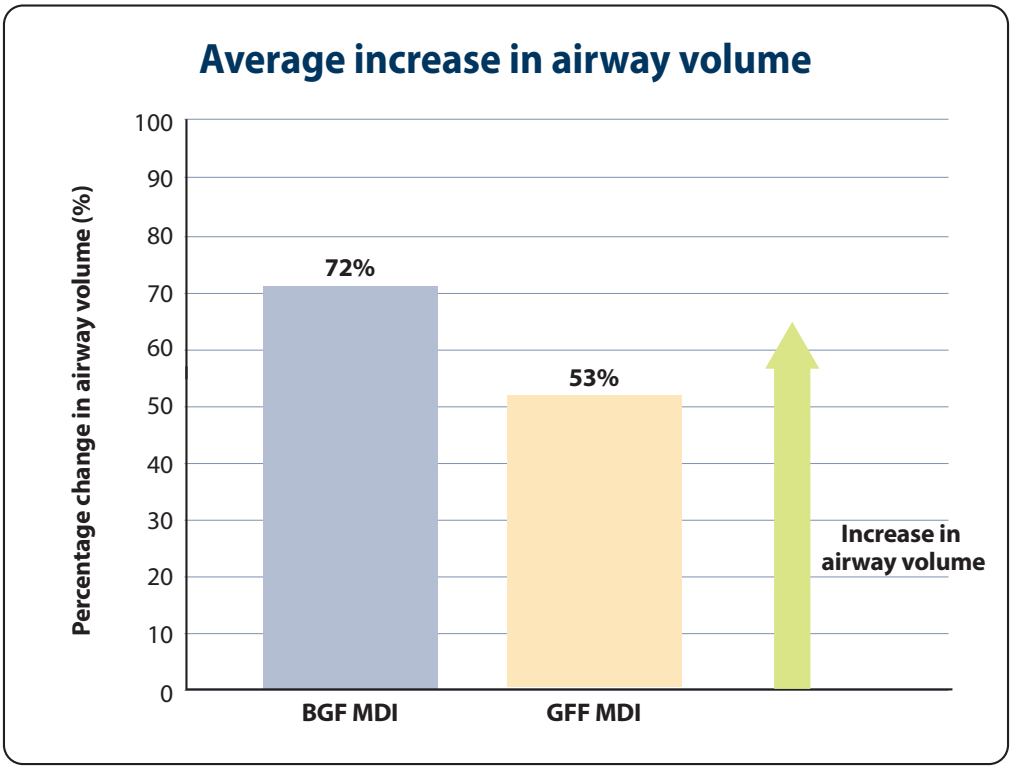
The researchers looked at the FRI measurements before the participants took either study treatment and compared them to the measurements after the participants took the last dose of each study treatment. They calculated the difference in the results before and after the participants took each treatment as a percentage change.

There were 2 participants who left the study after taking GFF MDI. One of these participants had taken BGF MDI before taking GFF MDI. There were also 2 participants who did not have a scan after taking BGF MDI. So, the results on airway volume and resistance below are for 20 participants who took BGF MDI and 21 participants who took GFF MDI.

Airway volume

When there is more airway volume in the lungs, breathing becomes easier. Compared to the start of the study, the researchers found that:

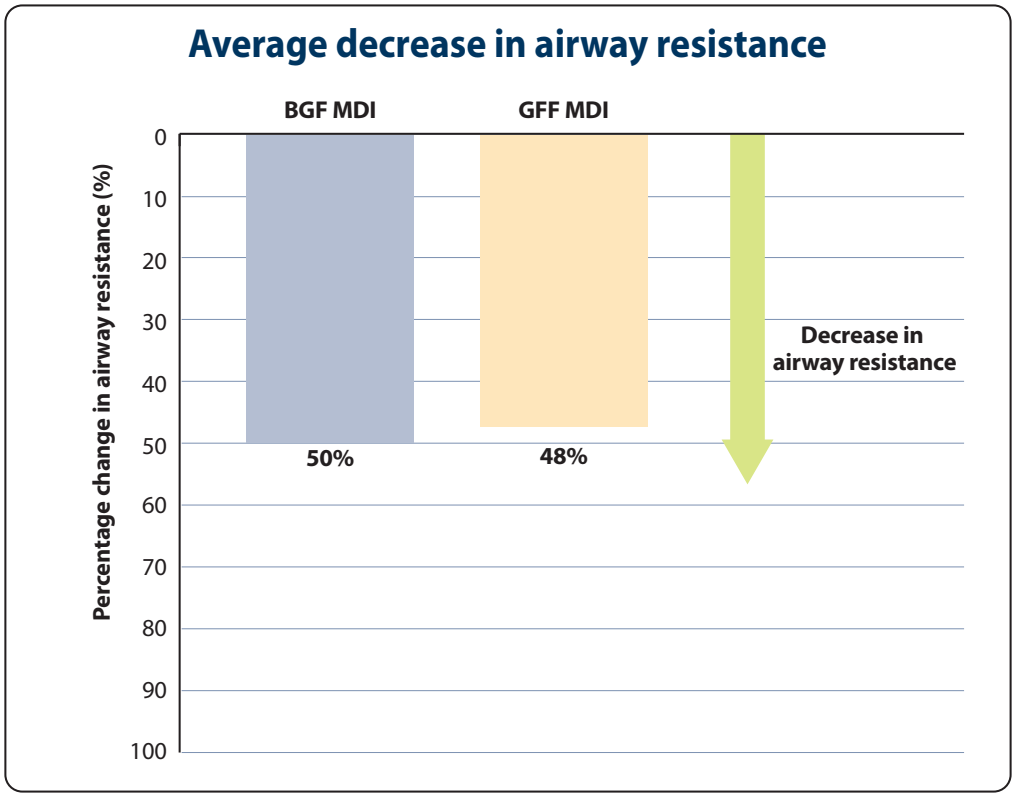
- When the participants took BGF MDI, the airway volume in their lungs increased by an average of 72%.
- When the participants took GFF MDI, the airway volume in their lungs increased by an average of 53%.



Airway resistance

When there is less airway resistance in the lungs, breathing becomes easier. Compared to the start of the study, the researchers found that:

- When the participants took BGF MDI, the airway resistance in their lungs decreased by an average of 50%.
- When the participants took GFF MDI, the airway resistance in their lungs decreased by an average of 48%.



What medical problems did participants have during the study?

This section is a summary of the medical problems the participants had during the study that the study doctors thought might be related to the study drug. These medical problems are called “adverse reactions”. An adverse reaction is considered “serious” when it is life-threatening, causes lasting problems, or requires hospital care.

These adverse reactions may or may not be caused by the study drug. A lot of research is needed to know whether a drug causes an adverse reaction. These adverse reactions have been, and will continue to be, reviewed together with all of the available data for the study drug.

The websites listed at the end of this summary may have other information about adverse reactions or other medical problems that happened during this study.

Did any adverse reactions happen during this study?

	BGF MDI (out of 22 participants)	GFF MDI (out of 23 participants)
How many participants had adverse reactions?	4.5% (1)	13.0% (3)
How many participants had serious adverse reactions?	0.0% (0)	0.0% (0)
How many participants stopped taking study treatment because of adverse reactions?	0.0% (0)	4.3% (1)

What adverse reactions happened during this study?

The table below shows the adverse reactions that happened during this study.

Adverse reaction	BGF MDI (out of 22 participants)	GFF MDI (out of 23 participants)
Loss of voice	4.5% (1)	0.0% (0)
Shortness of breath	0.0% (0)	4.3% (1)
Itchiness	0.0% (0)	4.3% (1)
Infection of the small airways	0.0% (0)	4.3% (1)

How has this study helped patients and researchers?

This study helped researchers learn more about BGF MDI and GFF MDI in participants with COPD.

Researchers look at the results of many studies to decide which treatments work best and are safest. This summary shows only the main results from this one study. Other studies may provide new information or different results.

Further clinical studies with BGF MDI are planned.

Where can I learn more about this study?

You can find more information about this study on the websites listed below. If a full report of the study results is available, it can also be found here.

- www.clinicaltrials.gov. Once you are on the website, type **"NCT03836677"** into the search box, and click **"Search"**.
- www.clinicaltrialsregister.eu Once you are on the website, click **"Home and Search"**, then type **"2018-001704-10"** in the search box and click **"Search"**.
- www.AstraZenecaClinicalTrials.com. Once you are on the website, type **"D5980C00019"** into the search box, and click **"Find a Study"**.

Full Trial Title: A Randomized, Double-blind, Two Treatment, Two Period, Chronic Dosing (4 weeks), Cross-Over, Multi-Center Pilot Study to Evaluate the Effects of Budesonide/Glycopyrronium/Formoterol Fumarate and Glycopyrronium/Formoterol Fumarate on Specific Image-Based Airway Volumes and Resistance in Subjects With Moderate to Severe Chronic Obstructive Pulmonary Disease.

AstraZeneca Protocol Number: D5980C00019

National Clinical Trials Number: NCT03836677

EudraCT Number: 2018-001704-10

AstraZeneca sponsored this study and has its headquarters in Cambridge, UK.

The phone number for the AstraZeneca Information Center is +1 877 240 9479.

Thank you!

Clinical study participants belong to a large community of people who take part in clinical research around the world. They help researchers answer important health questions and find medical treatments for patients.

CISCRP

The Center for Information & Study on Clinical Research Participation (CISCRP) is a non-profit organization focused on educating and informing the public about clinical research participation. CISCRP is not involved in recruiting participants for clinical studies, nor is it involved in conducting clinical studies.

CISCRP
One Liberty Square, Suite 1100 • Boston, MA 02109
1-877-MED-HERO • www.ciscrp.org