This document provides a short summary of this study for a general audience. You can find more information in the scientific summaries of the study. Links to those summaries are provided at the end of this document.

Study names

Short Title: A study to compare a combination of fluticasone furoate and vilanterol with vilanterol alone on bone mineral density in patients with chronic obstructive pulmonary disease.

Full Scientific Title: Multi-centre, randomised, double-blind, parallel-group study evaluating the effect of fluticasone furoate/vilanterol inhalation powder once daily compared with vilanterol inhalation powder once daily on bone mineral density in subjects with chronic obstructive pulmonary disease.

Study Number: 102972

Who sponsored this study?

GlaxoSmithKline (GSK)
GSK Clinical Support Help Desk
Website: clinicalsupporthd.gsk.com/contact.html
Email: GSKClinicalSupportHD@gsk.com

General information about the clinical study

When was this study done?

The study started in January 2014 and ended in March 2018.

What was the main reason for this study?

Chronic obstructive pulmonary disease (COPD) is a long-term disease of the lungs that makes it hard to breathe and gets worse over time.

Patients who need daily treatment for COPD often take an inhaled long-acting bronchodilator (a medicine that relaxes and opens the airways in the lungs). If patients experience sudden worsening of COPD symptoms (exacerbation) despite daily treatment, doctors may prescribe a combination of an inhaled long-acting beta agonist

(LABA, a type of bronchodilator) with an inhaled corticosteroid (ICS, an inhaled medicine that reduces swelling and inflammation in the lungs).

Research has shown that taking oral corticosteroids (an oral medicine that reduces inflammation) for a long time can reduce the bone strength. Bone strength is measured by bone mineral density. In this study, researchers wanted to learn if inhaled corticosteroids affect hip bone mineral density in patients with COPD.

Which medicines were studied?

This study compared a combination of an ICS (fluticasone furoate) and LABA (vilanterol) with LABA (vilanterol) alone.

During the study, patients were put into one of the two treatment groups by chance (randomisation). Neither patients nor study doctors knew who was receiving which treatment. This is called a double-blind study.

Medicines used in the study	
Vilanterol	Vilanterol 25 micrograms (mcg)
Fluticasone furoate and vilanterol	A combination of fluticasone furoate 100 mcg and vilanterol 25 mcg

Patients took one puff of the study medicine(s) through an inhaler each morning for three years. An inhaler is a handheld device that is designed to deliver medicine(s) to the lungs.

Which patients were included in this study?

Studies have a list of requirements for patients who can enrol (inclusion criteria) and those who can't (exclusion criteria). For this study, the main inclusion and exclusion criteria are listed below.

Men and women were included in the study if they:

- Were at least 40 years old.
- Had COPD with symptoms.
- Were current or former smokers.
- Had at least one hip bone that could be scanned to measure bone mineral density.

Men and women were excluded from the study if they had:

- Asthma or any other lung disease.
- A specific genetic condition that led to COPD.
- Bone disease(s) that could affect their bone mineral density.
- Poorly controlled COPD shown by:
  - Sudden worsening of COPD that was managed by corticosteroids or antibiotics (medicines that fight bacteria), or required hospitalisation in the three months before starting the study.

    OR
  - Two or more cases of moderate or severe COPD exacerbations and/or infection of the lower respiratory tract, within the year before starting the study.

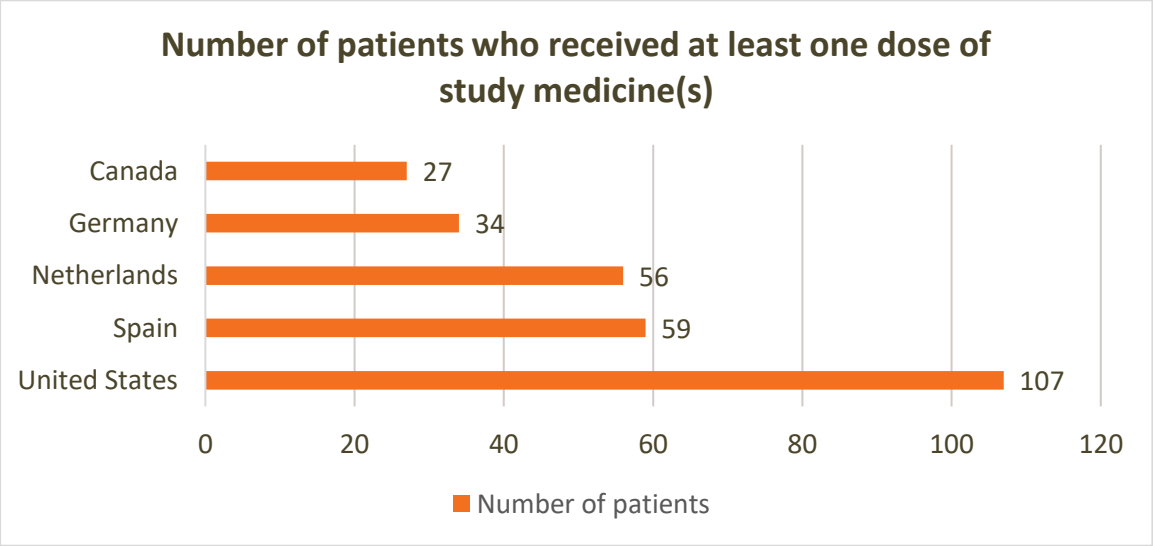
A total of 283 patients were randomised and received at least one dose of study medicine(s). The table below shows the gender and age of these patients.

Patients who received at least one dose of study medicine(s)		
	Vilanterol **142 patients**	**Fluticasone furoate and vilanterol** **141 patients**
Gender		
Female	70 (49%)	71 (50%)
Male	72 (51%)	70 (50%)
Age - in years		
Range	48 to 90	42 to 85
Average	66	64

For more detailed information about the patients included in this study, see the scientific results summaries (links to those summaries are provided at the end of this document).

Where was this study done?

Study sites were in five countries.



What were the overall results of the study?

Study doctors measured patients' hip bone mineral density using dual energy X-ray absorptiometry (DEXA) scans. A DEXA scan is a special type of X-ray that measures bone mineral density.

Hip bone mineral density of each patient was measured at the beginning of the study (baseline) and at each six month visit for three years. The difference between the hip bone mineral density values at each visit and at baseline is called change from baseline.

The change from baseline values of patients in each treatment group were combined, averaged by visit, and converted into yearly percentages. The overall average for the three-year treatment period was used to calculate the percent change from baseline per year. The results for 262 patients for whom the change from baseline value could be calculated are shown in the table below.

Percent change from baseline per year in average hip bone mineral density		
	Vilanterol **132 patients**	**Fluticasone furoate and vilanterol** **130 patients**
Percent change from baseline per year in average bone mineral density	0.18% higher	0.27% lower
Difference in percent change from baseline between the two treatment groups	0.46%	

Since the difference in the percent change values between the two treatment groups was small, researchers concluded that both treatments had a similar effect on hip bone mineral density.

More information about the study results is available in the scientific results summaries (links to those summaries are provided at the end of this document).

What were the side effects?

Unwanted medical events (adverse events) can happen to people when they receive a medicine. Study doctors record these events. A summary of all these events can be

found in the scientific results summaries (links to those summaries are provided at the end of this document).

If the study doctor thinks that the event was caused by the study medicine(s), they record this as a possible side effect (adverse reaction).

In this summary, “side effects” refer to those events that the study doctor thinks may have been caused by the study medicine(s). The side effects in this summary may be different to those in the Informed Consent or other documents related to the study medicine(s).

The table below shows all the serious side effects reported in the two treatment groups.

All serious side effects		
	Vilanterol **142 patients**	**Fluticasone furoate and vilanterol** **141 patients**
Spinal fracture in the lower back	0	1 (less than 1%)
Heart attack	1 (less than 1%)	0
Pneumonia	1 (less than 1%)	0

The table below shows the non-serious side effects reported in one percent or more of patients in either treatment group.

Non-serious side effects reported in one percent or more of patients in either treatment group		
	Vilanterol 142 patients	Fluticasone furoate and vilanterol 141 patients
Yeast Infection in the mouth	3 (2%)	6 (4%)
Fungal infection	1 (less than 1%)	4 (3%)
Muscle spasms	0	3 (2%)
Yeast Infection in the mouth and throat	0	2 (1%)
Headache	4 (3%)	1 (less than 1%)
Nose and throat infection (common cold)	3 (2%)	0
Dryness of the mouth	2 (1%)	0
Brittle bones	2 (1%)	0

How has this study helped patients and researchers?

Results of this study showed that in COPD patients the ICS part of the fluticasone furoate and vilanterol combination medicine had a similar effect on hip bone mineral density compared with vilanterol alone. The side effects reported in this study were similar between the treatment groups.

Are there plans for further studies?

Other studies on combination of fluticasone furoate and vilanterol in patients with COPD have been conducted. No further studies are planned at this time.

Where can I find more information about this study?

Clinical studies have unique study numbers that are included in publications and other information about the study. The unique study numbers associated with this study are shown below with internet links to scientific summaries and other information.

The scientific summaries include more details about the requirements for study enrolment, the study visit schedule, results from other endpoints and more detailed information about adverse events.

Organisation	Website	Study Number
European Medicines Agency	www.clinicaltrialsregister.eu	2012-004801-28[1]
United States National Institutes of Health (NIH)	www.clinicaltrials.gov	NCT01957150[2]

Your doctor can help you understand more about this study and the results. Speak to your doctor about the treatment options available in your country. You should not make changes to your care based on the results of this or any single study. Keep taking your current treatment unless instructed by your doctor.

We would like to thank the patients who contributed to this study. The results of this study will help answer scientific questions about treating patients with COPD.

The content for this document was finalised by GSK on the 4th of September 2019. The information in this summary does not include additional information available after this date.

[1] https://www.clinicaltrialsregister.eu/ctr-search/search?query=2012-004801-28

[2] https://clinicaltrials.gov/ct2/show/NCT01957150