Who Sponsored this study ?
GlaxoSmithKline

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A STUDY THAT TESTED A FLU (INFLUENZA) VACCINE MADE BY A SIMPLIFIED MANUFACTURING PROCESS

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

Overview

Why was this study conducted?

This study compared 2 ways of making a flu (*Influenza*) vaccine:

- The current way
- A simplified way

What was studied?

Researchers compared flu vaccines made in the current and a simplified way: The main aim was to look at:

- Body's defence against infection, called antibodies, in children (aged from 6 months to 17 years)
- Safety in both children and adults

Who was in this study?

1886 healthy people from 7 countries aged from 6 months to 49 years.

What kind of study was it?

This was a clinical study that compared how well a vaccine worked when made in a simplified way compared with the current way in a large number of people. This is called a phase 3 study.

Main results

Results suggest that the vaccine made in a simplified way is as safe as the current way. Overall the amounts of antibodies made by children who got the new vaccine were not meaningfully different from the amounts made by children who got the current vaccine.

Study number : NCT02207413
EudraCT 2014-000955-10

General information about the research study

When was this study done?

The study started in August 2014 and ended in April 2015.

Why was this study done?

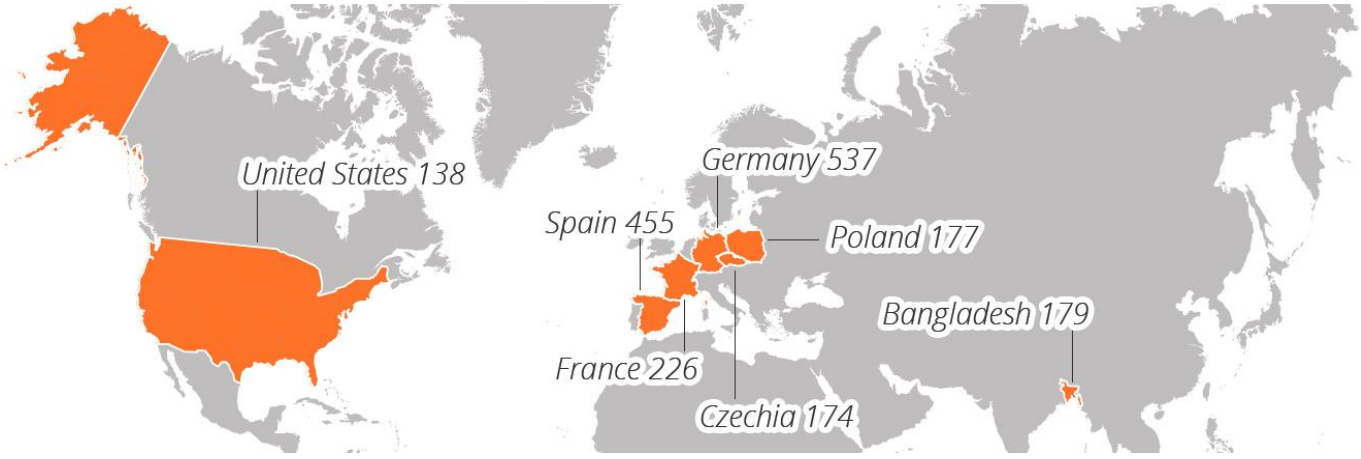
The flu (*Influenza*) is a viral infection. It is a major cause of illness in most parts of the world. Flu infection can be serious and may lead to death. Today, vaccination is widely used to prevent flu by helping the body make defences (called antibodies) against the flu virus. It takes 2 to 3 weeks to make enough antibodies after getting a flu vaccine.

GSK has been making flu vaccines for many years. Health authorities have approved the current way of making flu vaccines. GSK has now simplified the manufacturing process of the vaccine with the aim of increasing the amount of vaccine available. The goal of this study was to demonstrate that flu vaccines made in the simplified way compared with the current approved way:

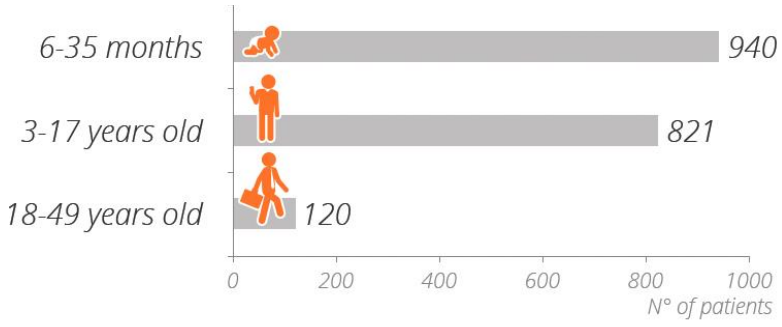
- Produce a defence response that is not meaningfully different
- Are similarly safe

Who took part in this study?

The **1886 people** of the study were from **7 countries**,



from **3 age groups**, and:



- *were in good health,*
- *had not received a flu vaccine in the 6 months before study start,*
- *had not received any other vaccine in the 30 days before study start,*
- *were not pregnant or breast feeding.*

Which vaccines were studied?

Vaccines used in this study were made to protect against 4 types of flu viruses that were likely to cause the flu during the winter of 2014-2015.

The names of these 4 flu viruses are:

- A/H1N1
- A/H3N2
- B/Yamagata
- B/Victoria

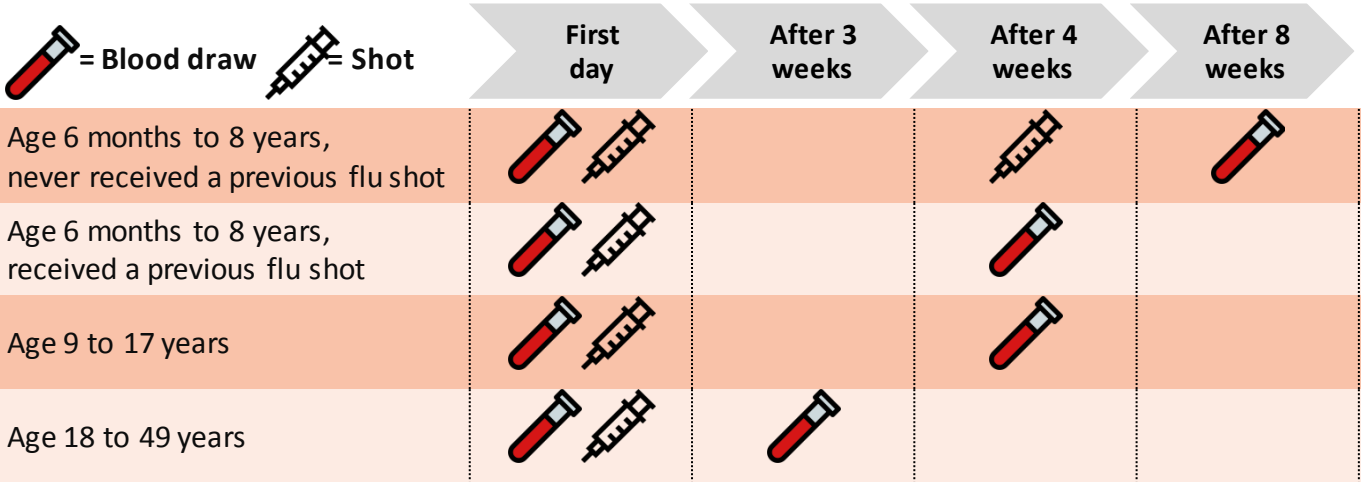
How was the study done?

Half the participants got the vaccine made in a simplified way. The other half got the vaccine made in the current way. Neither the participants nor the study staff knew which vaccine was given to which participant (this is called a 'double blind' study).

Both vaccines were given by injection (shot). Individuals 6 months to 8 years old got 2 shots if this was their first flu vaccination ever. All other participants got 1 shot.

Two blood samples were taken to measure the antibodies against flu virus. The first blood sample was taken before the first shot. The second blood sample was taken 3 or 4 weeks after the last shot (see Overview of time and events below).

Overview of time and events



What were the main results of the study?

This report focuses on the results of the main goals of the study. All results may be found in the clinical results summary.

Safety in all age groups

Unwanted medical events can happen to people while they are in the study. Study doctors collect all these events. The cause of these events is not always known.

In all age groups there was no meaningful difference between the number of unwanted medical events experienced by people who received the vaccine made in the simplified and in the current way.

A complete overview of results for medical events reported in this study may be found in the clinical results summary (please note that unwanted medical events are referred to as "adverse events" in that document).

Antibodies against the 4 flu virus types

Measuring the antibodies in the blood samples from children was one of the main goals of the study. These results are presented here. Although not one of the main aims of the study, antibodies were also measured in adults. The

results for adults may be found in the **clinical results summary**.

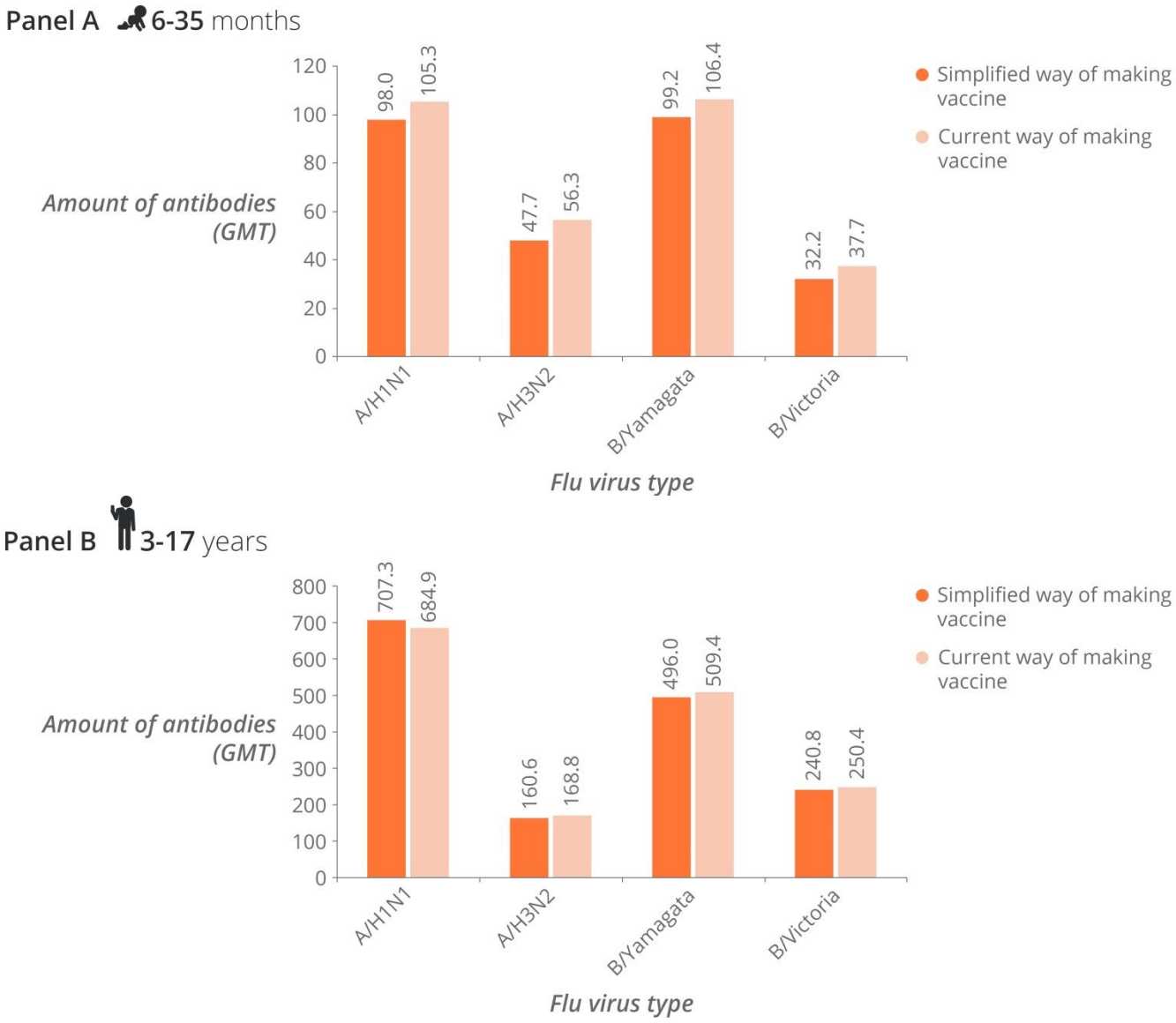
Figure 2, panel A, shows the amounts of antibodies against each of the 4 flu virus types made by children aged 6 to 35 months after getting the vaccine shot(s). Figure 2, panel B shows the same for children aged 3 to 17 years.

GMT stands for Geometric Mean Titer. This is a measurement that indicates the amount of antibodies in people.

Overall the amounts of antibodies made by children who got the new vaccine were not meaningfully different from the amounts made by children who got the current vaccine.

Of note, flu vaccines are known to induce less antibodies in younger infants (6-35 months; Figure 2, panel A) who have had limited previous exposure to vaccines and viruses than older children (3-17 years; Figure 2, panel B).

Figure 2 Antibodies against the 4 virus subtypes



What were the side effects?

A side effect is an unwanted medical event that the study doctor thinks may have been caused by the study vaccine.

The side effect is called 'serious' if it is:

- a threat to life,
- leads to permanent damage,
- requires a stay in hospital, or
- is fatal

There were no serious side effects reported for any of the people in this study.

The figures below show the side effects reported in at least 2 individuals in each of the 3 age groups. Overall, side effects were not meaningfully different between people receiving the vaccine made in the current and a simplified way.

Figure 3 shows side effects at the site of injection (in the upper arm, or in very young infants, the thigh). The most common side effect in children under 3 years old was redness. The most common in people between 3 to 49 years old was pain.

The other most common side effects reported for children younger than 5 years old were drowsiness and irritability (Figure 4, panels A & B).

For people from 5 years and older, the other most common side effects reported were tiredness, muscle ache, and (for people at least 18 years old) headache (Figure 4, panels C & D).

Figure 3 Side effects at the site of injection

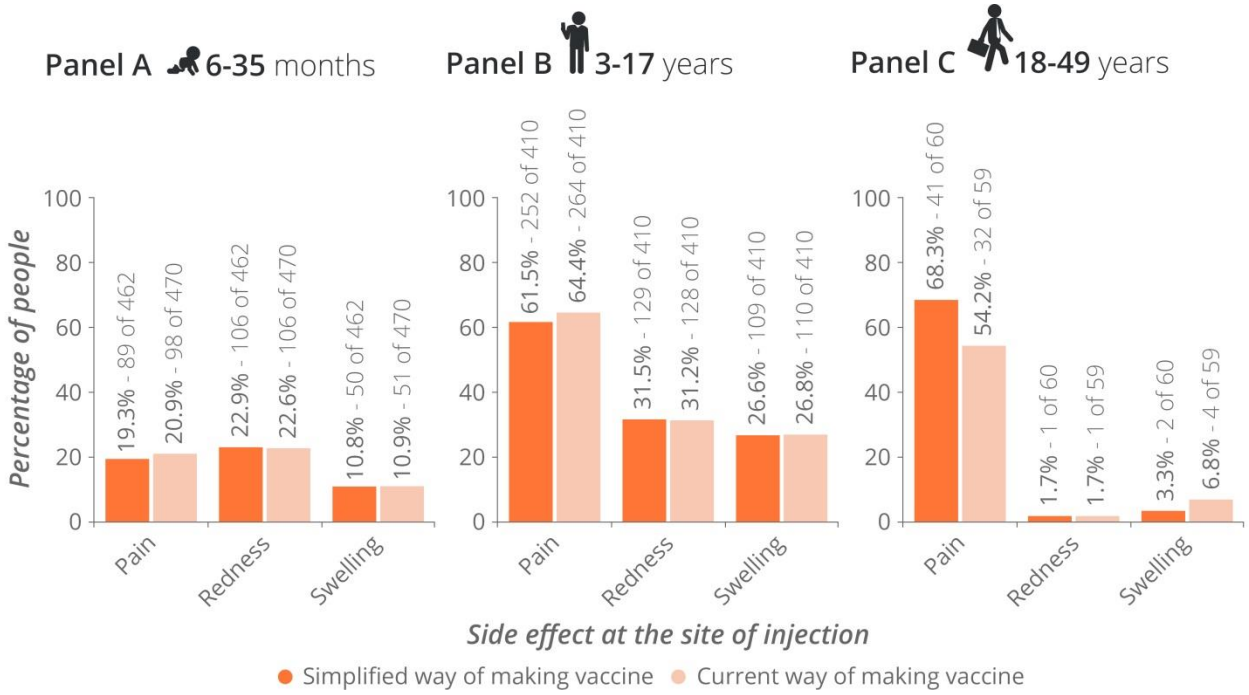
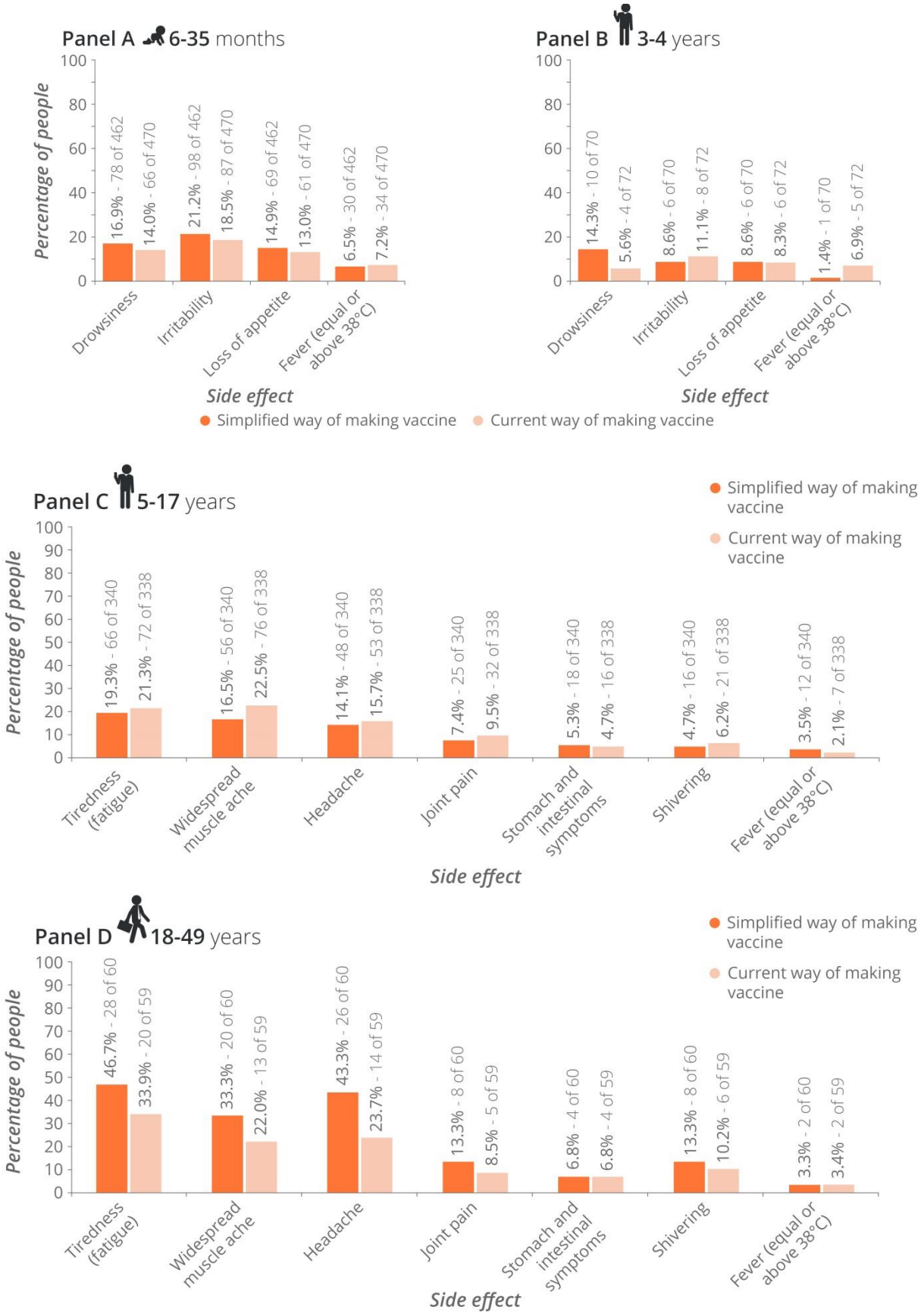


Figure 4 Other side effects (not at the site of injection)



How has this study helped people and researchers?

The results from this study showed that the amounts of antibodies made in children who received the flu vaccine made in a simplified way was not meaningfully different to children who received the vaccine made in the current way.

In all age groups, there was no meaningful difference between the number of medical events in people that received the vaccine made in a simplified and in the current way. No serious side effects were observed in this study.

This summary only shows results from one study. Other studies may find different results. These results suggest the new, less complicated, manufacturing process is suitable to replace the current process with the aim of increasing the amount of vaccine available.

Are there plans for further studies?

The results of this and other studies will be assessed and considered by researchers to help in future decisions on the use of the new vaccine manufacturing process.

Where can I find more information about this study?

The detailed title for this research study is:
A phase III, double-blind, randomized, multicenter study to assess safety and immunogenicity of GlaxoSmithKline Biologicals' Quadrivalent Split Virion Influenza vaccine (GSK2321138A) manufactured with a new process, in adults aged 18 to 49 years and in children aged 6 months to 17 years.

Organization	Website	Study Number
European Medicines Agency	www.clinicaltrialsregister.eu	2014-000955-10
United States National Institutes of Health (NIH)	www.clinicaltrials.gov	NCT02207413
GlaxoSmithKline (GSK)	www.gsk.clinicalstudyregister.com	201251

Your doctor can help you understand more about this study and the results. 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.

This document was developed and completed by GSK on 4 April 2018. The information in this summary does not include additional information available after this date.

For readers of this document in text form, the websites associated with the hyperlinks above are:

EudraCT summary:
https://www.clinicaltrialsregister.eu/ctr-search/search?query=2014-000955-10
US NIH/clinicaltrials.gov:
https://clinicaltrials.gov/ct2/show/NCT02207413
GSK Clinical Study Register:
https://www.gsk-clinicalstudyregister.com/search/all/1/?study_ids=201251&search=Search