NOVARTIS

Clinical Trial Results Summary

A clinical trial to learn more about the effects of AMG334 in adults with chronic migraine headaches

Thank you!

Thank you to the participants who took part in the clinical trial for **chronic migraine headaches**. Every participant helped the researchers learn more about the trial drug **AMG334**, also called erenumab.

Novartis sponsored this trial and believes it is important to share what was learned from the results of this trial with the participants and the public. We hope this helps the participants understand their important role in medical research.

Trial information

Trial number: CAMG334A2304

Novartis drug studied: AMG334, also called erenumab

Sponsor: Novartis

If you were a participant and have any questions about the results, please talk to the doctor or staff at the trial site.

This summary only shows the results of a single clinical trial. Other clinical trials may have different results.

What was the main purpose of this trial?

The purpose of this trial was to learn about the effects of **AMG334** for people with **chronic migraine**. To find this out, researchers compared the effects of **AMG334** to a **placebo**.

Migraine occurs usually, but not always, on one side of the head. A migraine generally lasts from 4 to 72 hours and is often accompanied by other symptoms, such as nausea, vomiting, and increased sensitivity to light and sound. **Chronic migraine** is when a person has 15 or more migraine days per month.

AMG334, also called **erenumab**, is a drug approved in several countries (except for many East Asian countries) for the prevention of migraine. This trial was done to seek approval of **AMG334** in China and other Asian countries. **AMG334** is often given to people for whom other treatments have not worked. It acts by blocking a protein called Calcitonin Gene-Related Peptide, or CGRP. It is thought that too much CGRP is produced during a migraine, making the pain worse and last longer. By blocking the receptor for CGRP, **AMG334** may help to prevent migraine and their frequency.

A **placebo** looks like the trial drug but does not have any drug in it. Using a **placebo** helps researchers better understand the effect of a trial drug.

Trial drug
AMG334 also called erenumab
Pronounced as
e-REN-ue-mab

The trial's purpose was to answer these main questions:

- Was there any change in the number of migraine days per month after 3 months of treatment with **AMG334** compared with **placebo**?
- What medical problems, also called adverse events, happened during this trial?
  - ↳ An **adverse event** is any sign or symptom that participants have during a trial. Adverse events **may** or **may not** be caused by treatments in the trial.

How long was this trial?

The trial began in August 2019 and ended in April 2024.

This trial was done in 2 parts:

- **Part 1:** Participants received **AMG334** or **placebo**.
- **Part 2:** Participants received **AMG334**. All participants completing Part 1 were eligible to participate in Part 2, until **AMG334** was launched in the country. This was done to ensure continuous access to **AMG334**.

Participants were in Part 1 of the trial for about 3 months and in Part 2 for an average of 1 year and 8 months.

Who was in this trial?

557 participants with **chronic migraine** received treatment in this trial – 103 men and 454 women. Participants' ages ranged from 18 to 65 years. Their average age was 42 years.

The number of participants by race is shown below.

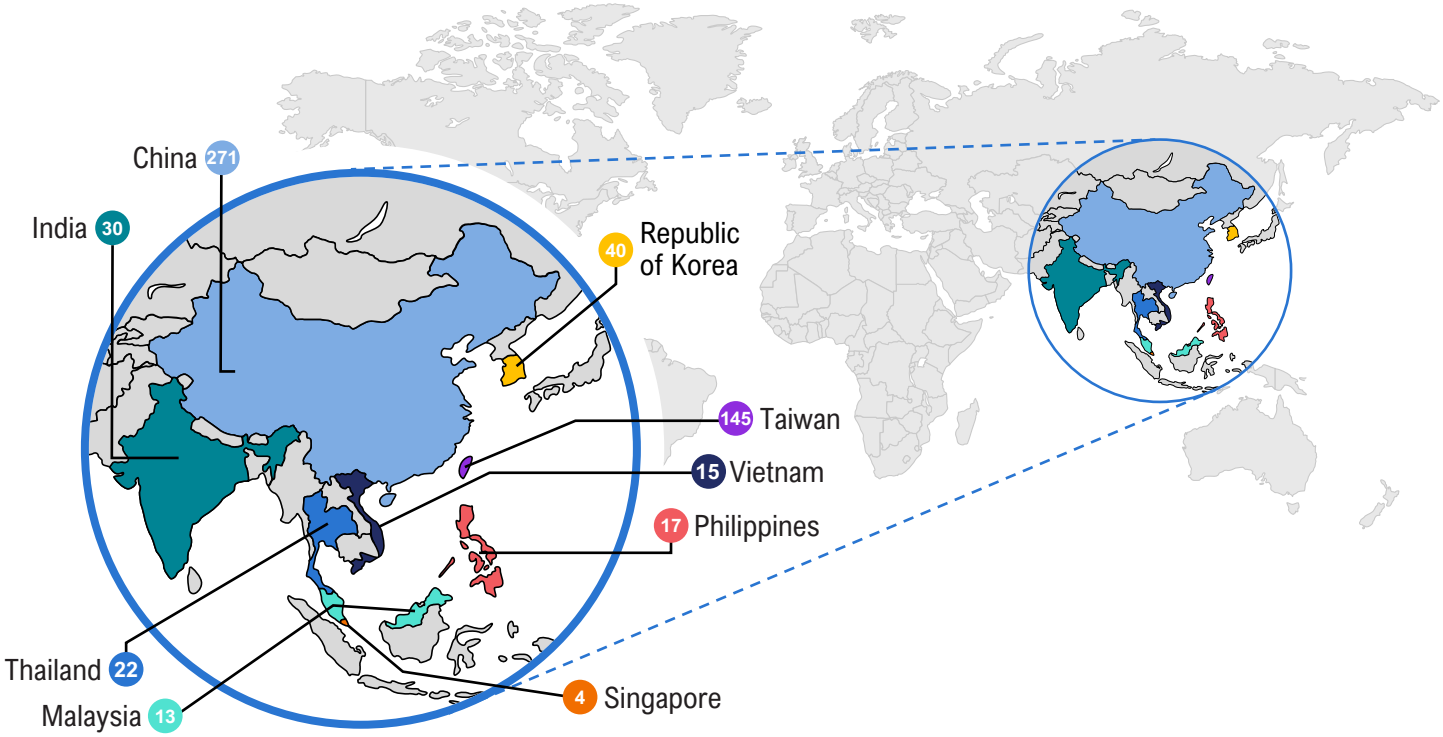
Race

552 Asian	5 More than one race

The participants could take part in this trial if they:

- were aged 18 to 65 years,
- had a history of at least 5 episodes of migraine, or migraine (with or without warning sign of migraine attack) for at least 1 year before participating in this trial, and
- had at least 15 headache days per month on average across 3 months, before participating in this trial.

557 participants from 9 countries received treatment. The map below shows the number of participants who took part in each country.



What treatments did the participants receive?

The treatments in this trial were:

AMG334, also called **erenumab**, was given as an injection under the skin at a dose of 70 mg on Day 1 and then monthly.

Placebo looks like the trial drug but does not have any drug in it. Using a placebo helps researchers better understand the effect of a trial drug. **Placebo** was also given as a monthly injection under the skin.

Participants were allowed to continue their regular migraine medications throughout the trial, as long as it was approved by their trial doctor.

In Part 1, researchers used a computer to randomly assign participants to receive either **AMG334** or **placebo**. The participants, researchers, and trial staff did not know what treatment the participants were receiving. Some trials are done this way because knowing what treatment the participants receive can affect the results of the trial. Doing a trial this way helps to make sure that the results are looked at with fairness across all treatments.

In Part 2, the participants, researchers, and trial staff knew what treatment the participants were receiving. All participants took **AMG334**. The participants could continue trial treatment as long as they were benefiting from it. This was done to ensure continuous access to **AMG334** until it was launched in the country.

What happened during this trial?

Before treatment — 6 weeks

The trial staff checked to make sure the participants could be in this trial. This took up to 2 weeks.

If participants met the requirements, they were given an electronic diary to answer questionnaires and record the number of headache days for 4 weeks. At the end of the 4 weeks, researchers reviewed the information and confirmed if participants were eligible to start treatment.

During treatment

A total of 557 participants received treatment. The trial had 2 parts:

Part 1: 3 months

- 279 participants received a monthly injection of **AMG334 70 mg**
- 278 participants received a monthly injection of **placebo**

Participants received a total of 3 injections under the skin on Day 1, Month 1 and Month 2.

At the end of Part 1, all participants who completed treatment during Part 1 were eligible to enter Part 2 of this trial. Out of 557 participants who entered Part 1, 456 participants entered Part 2.

Part 2: Until the launch of AMG334 in the country

- All 456 participants received a monthly injection of **AMG334 70 mg**.

After treatment — Up to 3 months

For participants not entering Part 2, a visit to check participants' general health or any medical problems occurred 3 months after the last dose of treatment. Participants entering Part 2 had site visits to check on their medical problems.

Trial staff checked the participants' general health throughout the trial.

What were the main results of this trial?

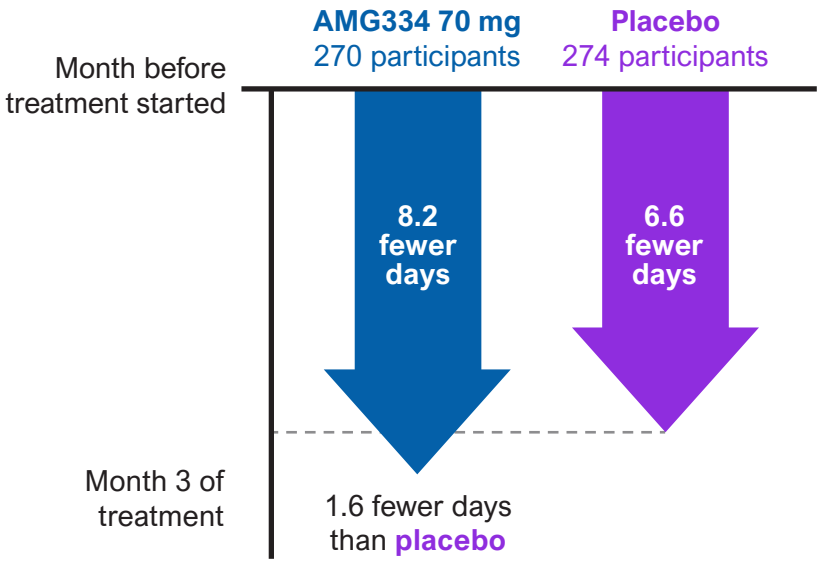
Was there any change in the number of migraine days per month after 3 months of treatment with AMG334 compared with placebo?

Yes, participants who took **AMG334 70 mg** had a reduction of 8.2 migraine days per month after 3 months of treatment, compared with a reduction of 6.6 days for those who took **placebo**.

To answer this question, researchers compared the number of migraine days participants had during the month before treatment with the number of migraine days they had during the last (third) month of treatment in Part 1.

The results presented here are for 544 participants, since 13 participants did not have results for Month 3.

Change in migraine days per month



What were the other results of this trial?

How many participants treated with AMG334 had at least a 50% decrease in the number of migraine days per month compared with placebo after 3 months of treatment?

After 3 months of treatment, 131 out of 279 (47%) of the participants treated with **AMG334** had at least a 50% decrease in the number of migraine days per month compared with 102 out of 278 (37%) of the participants treated with **placebo**.

Was there any change in the number of days per month participants had to use medication for migraine in participants taking AMG334 compared with placebo after 3 months of treatment?

Yes, after 3 months of treatment, participants taking **AMG334** had a reduction of 5.3 days in use of medication for **migraine** compared with reduction of 4.6 days in participants taking **placebo**.

Was there a change in the number of days per month that participants had a decrease in daily life activities due to migraine in those treated with AMG334 compared with placebo after 3 months of treatment?

To answer this, researchers counted the number of days participants had to miss work and other daily activities due to migraine. Participants treated with **AMG334** had an improvement of 15 days in the migraine-related daily life activities compared with **placebo**, who had improvement in 13 days.

What medical problems, also called adverse events, happened during this trial?

Trial doctors keep track of all medical problems, also called **adverse events**, that happen in trials. They track adverse events even if they think the adverse events are not related to the trial treatments.

Many trials are needed to know if a drug or treatment causes an adverse event.

This section is a summary of the adverse events that happened from the start of treatment until 3 months after the last treatment.

An **adverse event** is:

- Any **sign or symptom** that the participants have during a trial
- Considered **serious** when it is life-threatening, causes lasting problems, the participant needs hospital care, or results in death

Adverse events **may** or **may not** be caused by treatments in the trial.

In part 1:

- 259 out of 557 participants (47%) had adverse events.
- 14 participants had adverse events that were considered serious.
- 3 participants left the trial due to an adverse event.

In part 2:

- 328 out of 456 participants (72%) had adverse events.
- 45 participants had adverse events that were considered serious.
- 16 participants left the trial due to an adverse event.

No participants died in either part.

The researchers concluded there were no new safety concerns for **AMG334** in this trial.

How many participants had adverse events?

	Part 1		Part 2
	AMG334 70 mg 279 participants	**Placebo** 278 participants	**AMG334 70 mg** 456 participants
Had at least 1 **adverse event**, which includes serious and non-serious events	**127 of 279** 46%	**132 of 278** 47%	**328 of 456** 72%
Had at least 1 **serious adverse event**	**7 of 279** 3%	**7 of 278** 3%	**45 of 456** 10%
Left the trial due to an adverse event	**2 of 279** <1%	**1 of 278** <1%	**16 of 456** 4%

What serious adverse events did the participants have?

14 participants in Part 1 and 45 participants in Part 2 had serious adverse events. No participants died in either part.

The table below shows the most common serious adverse events that happened.

	Part 1		Part 2
	AMG334 70 mg 279 participants	**Placebo** 278 participants	**AMG334 70 mg** 456 participants
Abortion	**1 of 279** <1%	**1 of 278** <1%	**3 of 456** <1%
A hole in the wall of the heart since birth Atrial septal defect	**0 of 279**	**1 of 278** <1%	**4 of 456** 1%
Bulging of spinal disc Intervertebral disc protrusion	**0 of 279**	**0 of 278**	**3 of 456** <1%
Breast cancer	**0 of 279**	**0 of 278**	**3 of 456** <1%

What other non-serious adverse events did the participants have?

The table below shows the most common other non-serious adverse events that happened.

	Part 1		Part 2
	AMG334 70 mg 279 participants	**Placebo** 278 participants	**AMG334 70 mg** 456 participants
Constipation	**24 of 279** 9%	**11 of 278** 4%	**43 of 456** 9%
COVID-19	**0 of 279**	**1 of 278** <1%	**86 of 456** 19%
Common cold Upper respiratory tract infection	**16 of 279** 6%	**19 of 278** 7%	**62 of 456** 14%
Dizziness	**5 of 279** 2%	**12 of 278** 4%	**27 of 456** 6%
Headache	**1 of 279** <1%	**6 of 278** 2%	**25 of 456** 5%

What was learned from this trial?

Researchers learned about the effects of **AMG334 70 mg** in adult participants with **chronic migraine**.

The researchers concluded that:

- there was a reduction of 8.2 migraine days per month with **AMG334 70 mg** as compared with a reduction of 6.6 days for **placebo**.
- there was a higher number of participants on **AMG334 70 mg** with a 50% decrease in the number of migraine days per month than **placebo**.
- **AMG334 70 mg** reduced the effect of migraines on participant's daily activities as compared with **placebo**.
- there was a reduction in the number of days of use of acute headache medication in the **AMG334 70 mg** group as compared with the **placebo** group after 3 months of treatment.
- no new safety concerns were found with **AMG334 70 mg**.

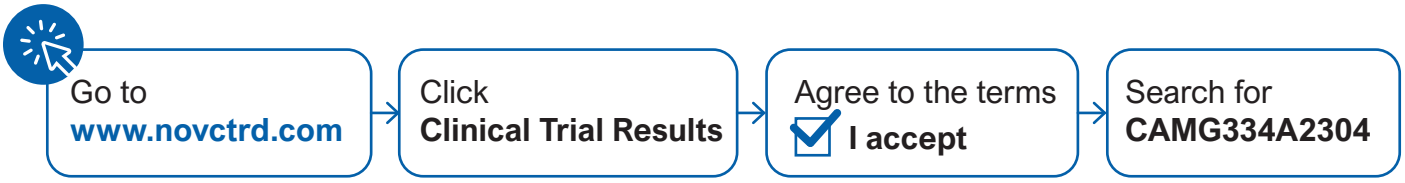
Based on data from this trial, approval for **AMG334** was obtained in 7 East Asian countries.

When this summary was written, the sponsor had no plans for future trials of **AMG334** in people with **chronic migraine**.

Where can I learn more about this trial?

More information about the results and adverse events in this trial can be found in the scientific summary of the results available on the Novartis Clinical Trial Results website **www.novctrd.com**

Follow these steps to find the scientific summary:



For more information about this trial, go to this website:

- **clinicaltrials.gov** – search using the number **NCT03867201**

Other trials of **AMG334** may appear on the public website above. When there, search for **AMG334** or **erenumab**.

Full clinical trial title: A 12-week phase 3, randomized, double-blind, placebo-controlled study to evaluate the efficacy and safety of once monthly subcutaneous erenumab 70 mg in adult chronic migraine patients

NOVARTIS

Novartis is a global healthcare company based in Switzerland that provides solutions to address the evolving needs of patients worldwide.

1-888-669-6682 (US) | +41-61-324 1111 (EU)

www.novartis.com/clinicaltrials