

# A non-interventional post-authorisation safety study to investigate the risk of mortality in multiple sclerosis patients treated with alemtuzumab (LEMTRADA®) relative to comparable multiple sclerosis patients using other disease modifying therapies: a cohort study

**First published:** 26/08/2021

**Last updated:** 06/05/2025

Study

Finalised

## Administrative details

### EU PAS number

EUPAS42543

---

### Study ID

50544

---

### DARWIN EU® study

No

---

## Study countries

- ☐ Belgium
  - ☐ Czechia
  - ☐ Denmark
  - ☐ Germany
  - ☐ Sweden
  - ☐ United Kingdom
- 

## Study status

Finalised

# Research institutions and networks

## Institutions

### Parexel International

☐ United States

**First published:** 19/10/2010

**Last updated:** 10/12/2024

**Institution**

**Non-Pharmaceutical company**

**ENCePP partner**

### Leibniz Institute for Prevention Research and Epidemiology - BIPS

☐ Germany

**First published:** 29/03/2010

**Last updated:** 26/02/2024

**Institution**

**Not-for-profit**

**ENCePP partner**

The Danish Multiple Sclerosis Registry Denmark,  
AIM-IMA (L'Agence Intermutualiste - Het  
InterMutualistisch Agentschap) Belgium, The  
Swedish Multiple Sclerosis Registry Sweden, The  
Czech Multiple Sclerosis Registry (ReMuS) Czechia,  
University Hospital of Wales Wales, Cambridge  
University Hospitals England, Derriford Hospital/  
Plymouth University England

## Contact details

### **Study institution contact**

Patient Safety and Pharmacovigilance -  
Pharmacoepidemiology lead [Contact-US@sanofi.com](mailto:Contact-US@sanofi.com)

**Study contact**

[Contact-US@sanofi.com](mailto:Contact-US@sanofi.com)

### **Primary lead investigator**

Katja M Hakkarainen

## Study timelines

### **Date when funding contract was signed**

Planned: 19/10/2020

Actual: 19/10/2020

---

### **Study start date**

Planned: 01/05/2021

Actual: 07/09/2021

---

### **Date of interim report, if expected**

Planned: 31/12/2023

Actual: 19/12/2023

---

### **Date of final study report**

Planned: 30/09/2024

Actual: 20/09/2024

## Sources of funding

- Pharmaceutical company and other private sector

## More details on funding

Sanofi-Genzyme

## Study protocol

[alemumuzumab-lemtrada-pass-mort-protocol-may-2021\\_Redacted.pdf](#)(2.09 MB)

[Redacted\\_ lem-mortality\[csa002\]-protocol-amendment-v4.0.pdf](#)(2.02 MB)

## Regulatory

### **Was the study required by a regulatory body?**

Yes

---

### **Is the study required by a Risk Management Plan (RMP)?**

EU RMP category 1 (imposed as condition of marketing authorisation)

---

### **Regulatory procedure number**

EMA/H/C/003718

## Methodological aspects

### Study type

### Study type list

#### **Study topic:**

Human medicinal product

---

#### **Study type:**

Non-interventional study

---

#### **Scope of the study:**

Assessment of risk minimisation measure implementation or effectiveness

**Data collection methods:**

Combined primary data collection and secondary use of data

---

**Main study objective:**

The primary objective is to ascertain whether multiple sclerosis (MS) patients treated with LEMTRADA have a higher risk of all-cause mortality than comparable MS patients treated with other HE-DMT.

## Study Design

**Non-interventional study design**

Cohort

## Study drug and medical condition

**Name of medicine**

LEMTRADA

---

**Study drug International non-proprietary name (INN) or common name**

ALEMTUZUMAB

---

**Anatomical Therapeutic Chemical (ATC) code**

(L04AG06) alemtuzumab

alemtuzumab

---

**Medical condition to be studied**

Multiple sclerosis

## Population studied

## **Age groups**

Adults (18 to < 46 years)

Adults (46 to < 65 years)

Adults (65 to < 75 years)

Adults (75 to < 85 years)

Adults (85 years and over)

---

## **Estimated number of subjects**

9000

# **Study design details**

## **Outcomes**

The primary outcome is the all-cause mortality.

The secondary outcome is the cause-specific mortality.

This secondary outcome will be exploratory as it is anticipated that availability and quality of cause-specific mortality data will be variable across data sources.

---

## **Data analysis plan**

The following statistical analyses will be conducted separately in each data source:

- Descriptive statistics
- Crude and age-standardised mortality rates will be computed by exposure group (LEMTRADA vs other HE-DMT), for all MS patients and by gender.
- Propensity score (PS) model will be constructed in order to create two comparable groups of patients with similar distributions of risk factors (LEMTRADA vs other HE-DMT). PS weight will be computed using the standardised mortality ratio method.
- Risk of death among the LEMTRADA group compared to the other HE-DMT

group will be expressed as hazard ratio (HR) and computed from a PS weighted time-dependent Cox proportional hazards model that will include a time-dependent exposure. A meta-analysis will be performed by iPRI to combine all HR from each data source in order to obtain a global estimate of the risk of death in the LEMTRADA group compared to the other HE-DMT group.

## Documents

### Study results

[alem\\_tuzumab\\_mort\\_csa0002\\_abstract\\_upload\\_emahma\\_22april2025.pdf](#)(198.38 KB)

---

### Study, other information

[lem\\_pass\\_mort\\_protocol\\_may192021.pdf](#)(1.37 MB)

## Data management

### Data sources

#### Data source(s)

German Pharmacoepidemiological Research Database

---

#### Data sources (types)

[Administrative healthcare records \(e.g., claims\)](#)

[Disease registry](#)

[Electronic healthcare records \(EHR\)](#)

### Use of a Common Data Model (CDM)



**CDM mapping**

No

Data quality specifications

**Check conformance**

Unknown

---

**Check completeness**

Unknown

---

**Check stability**

Unknown

---

**Check logical consistency**

Unknown

Data characterisation

**Data characterisation conducted**

No