

# Burden of type 1 diabetes in adult and paediatric populations in France

## An ESND study

### OBJECTIVE

In France, 10% of people with diabetes have type 1 diabetes (T1D), which is associated with a heavy clinical, humanistic and economic burden. It requires lifelong insulin treatment and can lead to major complications 10 to 20 years after disease onset<sup>1</sup>.

The primary objective of the HEROES-1 study is to estimate incidence and prevalence of patients with type 1 diabetes (T1D) in France from 2018 to 2022.

Secondary objectives include a description of patients' characteristics, in total and by subgroups of interest.

### METHODOLOGY

An observational retrospective study was conducted using the French Health Data System ESND, a 2% sample of the SNDS (Système National des Données de Santé). The SNDS contains individual-level data for outpatient and private healthcare facilities health expenditure billing and reimbursement purposes. Therefore, it encompasses anonymous, individual-level data for all healthcare claims for more than 99% of the population residing in France, regardless of the insurance scheme, i.e. close to 65 million people.

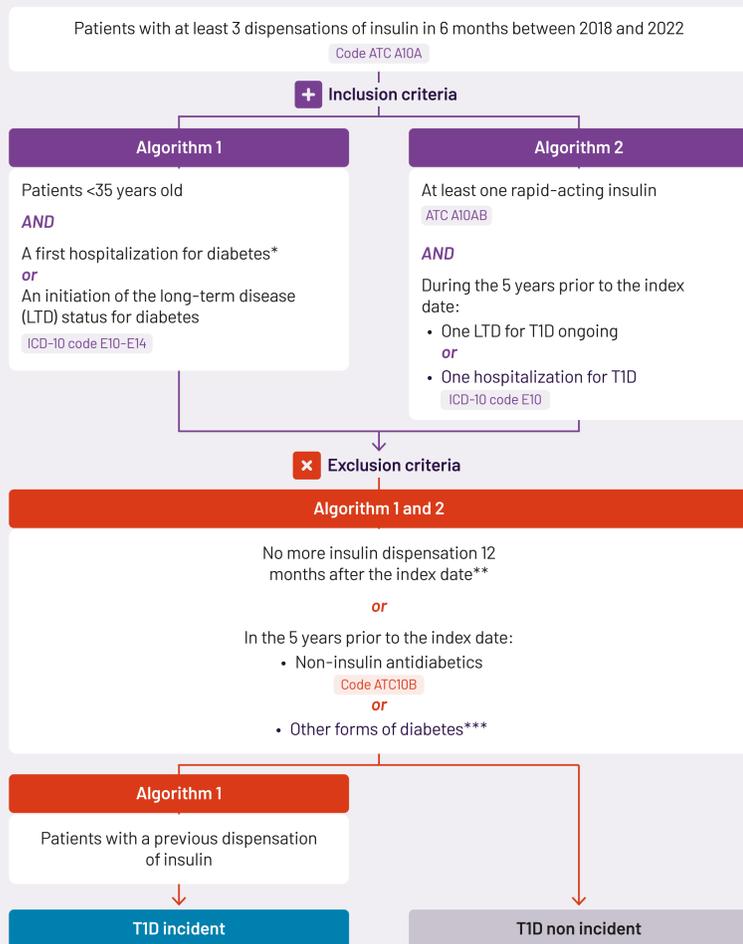
### Study period

With 5 years of follow-back and follow-up until end of 2022, clinical outcomes and patients' characteristics were collected in the database.



### Study population

All patients with T1D were identified through 2 algorithms of identification, of both incident and prevalent patients in order to differentiate T1D from T2D.



\* A first hospitalization for diabetes will be defined as the first hospitalization for diabetes occurring in the 12 months prior to the dispensation of insulin, without any hospitalization for diabetes 4 years prior to this hospitalization.  
\*\* Exclusion of temporary insulin therapy, e.g. gestational diabetes, insulin relay during surgery/therapy.  
\*\*\* Iatrogenic diabetes: based on corticosteroids, immunosuppressive drugs or immune-checkpoint inhibitors dispensation / Diabetes secondary to pancreatic disease: cystic fibrosis, sickle cell disease, chronic pancreatitis or pancreatotomy based on hospitalization/LTD or dispensation of CREON / Neonatal diabetes: age at first diabetes diagnosis < 6 months

### References

- <https://www.santepubliquefrance.fr/import/epidemiologie-du-diabete-de-type-1-et-de-ses-complications>
- <https://www.federationdesdiabetiques.org/information/diabete/chiffres-france>
- Mallone R, et al. Dépistage et prise en charge du diabète de type 1 préclinique, stade 1-2. Prise de position d'experts français. Med Mal Metab (2024), 10.1016/j.mmm.2024.06.003

### Disclosure

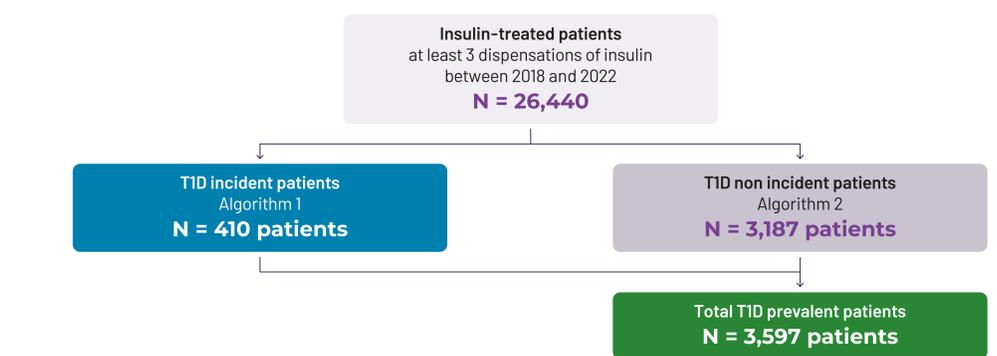
Presenting author is a Sanofi employee and may hold shares and/or stock options. This work was funded by Sanofi.

### Data source

SNIRAM study registered with the HDH on 27/02/2024 - CNAM agreement signed on 21/03/2024.

## RESULTS

### Flow chart

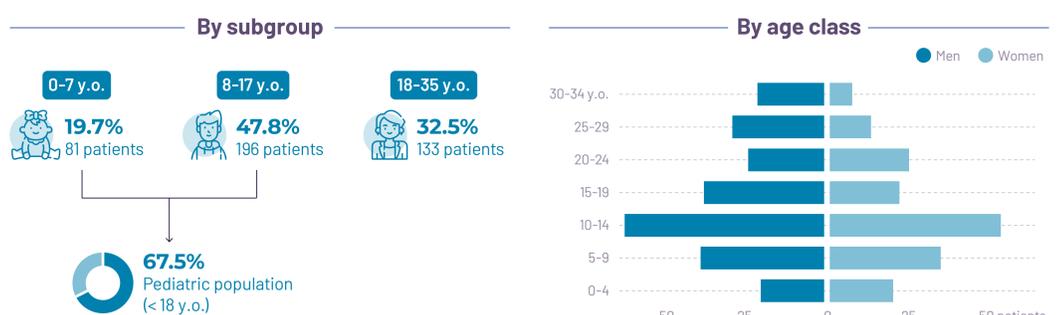


### T1D incident and prevalent patients in France

Based on our sample and after extrapolation of the 2% sample of the ESND, we have estimated in France between 2018 and 2022:



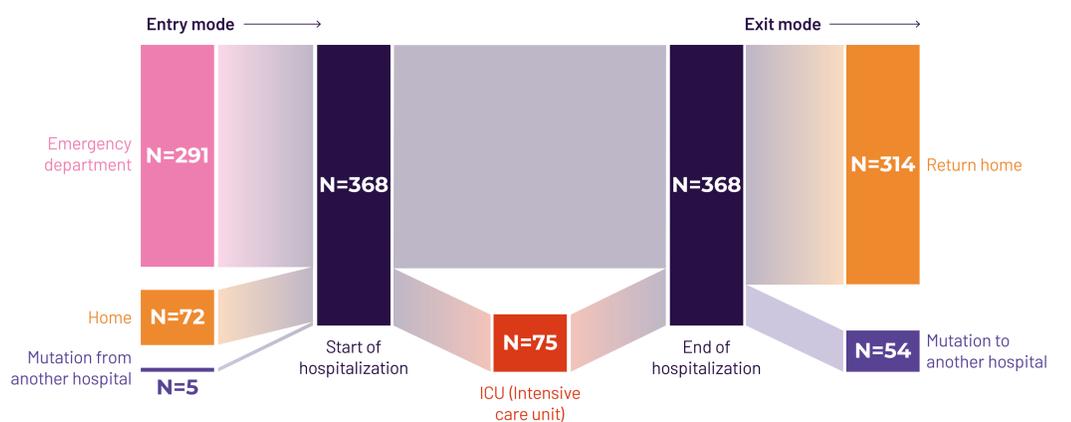
### Age of incident patients



When comparing with the age pyramid in France in 2022 (INSEE data), we observe a peak in the incidence of T1D among children aged 10 to 14.

### 1<sup>st</sup> hospitalization for T1D

Among all T1D incident patients (N=410), 90% (N=368) had a first T1D related hospitalization before the initiation of insulin. 79% of them (N=291) came from the emergency room and 20% (N=75) went to intensive care unit (ICU).



## DISCUSSION

This study provided valuable insights into the population with type 1 diabetes (T1D) in France. Annually, approximately 4,000 new cases of T1D < 35 years are diagnosed, with an estimated total of nearly 180,000 prevalent patients between 2018 and 2022. These estimates align with existing literature<sup>2</sup>.

Our algorithms for identifying incident and prevalent T1D patients demonstrate strong reliability while maintaining a high degree of specificity, the estimated results align well with established data, supporting the validity of our approach. However, T1D patients dying during the initial hospitalization or within the first year after the start of insulin were not captured with this algorithm.

To further investigate those analyses, a cut-off at 45 y.o. for incident patients could be explored to align with the recommendations from SFD on the early detection of T1D<sup>3</sup>. According to the exploration on the ESND, this extended cut-off would add 1000 additional incident T1D patients.

Majority of T1D patients are diagnosed in emergency situations, highlighting a clear need for improved early detection and a better management at disease onset in order to enhance patient care and reduce the overall burden of the pathology. This aligns with the latest recommendation of SFD<sup>3</sup>.

Finally, a study on the SNDS will provide further results on care pathway and related costs for both pediatric and adult patients.