National Programme for Diabetes

Challenges and Strategies Report

2024

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National Programme for Diabetes

Challenges and Strategies 2024 Report

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Lisbon, November 2024

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Abbreviations and Acronyms

ACeS - Agrupamentos de Centros de Saúde (Healthcare Centre Group)

ACSS – Administração Central do Sistema de Saúde (Central Health System Administration)

AMI – Acute Myocardial Infarction

ANAFRE – Associação Nacional de Freguesias (National Parish Association)

APDP – Associação Protetora dos Diabéticos de Portugal (Association for the Protection of Diabetics in Portugal)

ARS – Administração Regional de Saúde (Regional Health Administration)

BDMH – Base de Dados da Morbilidade Hospitalar (Hospital Morbidity Database)

BMI – Body Mass Index

BP – Blood Pressure

CCF – Centro de Conferência de Faturas (Invoice Control Centre)

CKD –Chronic kidney disease

CSII – Continuous Subcutaneous Insulin Infusion

CSP – Cuidados de Saúde Primários (Primary Health Care)

CVA – Cerebrovascular Accident/Stroke

DDD – Defined Daily Dose

DGS – Direção-Geral da Saúde (National Directorate of Health)

DM – Diabetes Mellitus

DQS – Departamento da Qualidade na Saúde da Direção-Geral da Saúde (Department of Health Quality of the General Directorate of Health)

DSIA – Direção de Serviços de Informação e Análise (Information and Analysis Services Directorate)

ECL – Equipas Coordenadoras Locais (Local Coordinating Teams)

EU – European Union

FRAD – Frente Rotária Anti-Diabetes (Rotary Anti-Diabetes Front)

GD – Gestational Diabetes

ICD – International Classification of Diseases

ICPC – Classificação Internacional de Cuidados Primários (International Classification of Primary Care)

IDF – International Diabetes Federation

IFG – Impaired Fasting Glucose

INE – Instituto Nacional de Estatística (National Statistics Institute)

INFARMED – Autoridade Nacional do Medicamento e Produtos de Saúde (National Authority for Medicines and Health Products)

ISBE – Instituto de Saúde Baseada na Evidência (Institute of Evidence-Based Health)

IGT – Impaired Glucose Tolerance

LVT – Lisboa e Vale do Tejo (Lisbon and Tagus Valley region)

M€ – Millions of euros

NA – Not Applicable

No. – Number

OECD – Organization for Economic Cooperation and Development

OND – Observatório Nacional da Diabetes (National Diabetes Observatory)

PND – Programa Nacional para a Diabetes (National Program for Diabetes)

PTOG – Prova de Tolerância Oral à Glicose (oral glucose tolerance test)

RRD – Rastreio da Retinopatia Diabética (Screening for Diabetic Retinopathy)

RTP – Rádio e Televisão de Portugal (Portuguese Radio and Television)

SAAI – Sistemas de Administração Automática de Insulina (Systems for Automatic Insulin Administration)

SIM@SNS – Sistema de Informação e Monitorização do Serviço Nacional de Saúde (Information and Monitoring System National Health Service)

SNS – Serviço Nacional de Saúde (National Health Service)

SNS 24 – SNS Contact Center

SPD – Sociedade Portuguesa de Diabetologia (Portuguese Society of Diabetology)

SPMS – Serviços Partilhados do Ministério da Saúde (Shared Services of the Ministry of Health)

SPN – Sociedade Portuguesa de Nefrologia (Portuguese Society of Nephrology)

T1DM – Type 1 Diabetes

T2DM – Type 2 Diabetes

UCFD – Unidade Coordenadora Funcional da Diabetes (Diabetes Functional Coordinating Units)

ULS – Unidade Local de Saúde (Local Health Unit)

WHO – World Health Organization

Summary in Plain Language

This document presents updated national epidemiological data on diabetes for 2022-2023, a summary of key activities of the National Diabetes Program (PND) for 2023-2024, and the action plan for upcoming years (2025-2027).

Monitoring and Epidemiological Surveillance

A. Portugal maintains a high diabetes prevalence, with over 900,000 people registered with diabetes in Primary Healthcare Services (CSP) by December 2023, representing 8.6% of patients registered in the National Health Service (SNS).

B. A total of 75 661 new diabetes cases were recorded in 2023, with broad healthcare access, including medical and nursing surveillance, with a growing focus on therapeutic regimen management, including diet, physical activity, and medication.

C. It is estimated that 35 000 to 40 000 people in Portugal have Type 1 Diabetes.

D. Gestational Diabetes was present in 8.1% of pregnancies within the SNS in 2022.

E. By the end of the 2021-2023 period, 3.41 million patients had a Type 2 Diabetes risk assessment (2021-2023), representing 55% of the target population, a 9% increase compared to the previous three-year period.

F. Metabolic control and other cardiovascular risk factors improved in 2023 compared to previous years, though blood pressure values have yet to return to pre-pandemic levels: 64% of people with diabetes have HbA1c ≤8%, 51% have LDL ≤100 mg/dl, and 73% have blood pressure ≤140/90 mmHg.

G. In 2023, 4,452 people with Type 1 Diabetes were on Continuous Subcutaneous Insulin Infusion (CSII) therapy, with an increasing trend in the use of these systems over the years, although still below expected levels.

H. Screening rates for diabetes complications returned to pre-pandemic levels; however, in 2023, the population coverage rate for diabetic retinopathy was only 51%, with a screening rate of 32% and 4% positive cases identified.

I. In 2023, at least one diabetic foot ulcer risk assessment was conducted for 78% of patients with diabetes registered in CSP, exceeding pre-pandemic levels. There was a slight increase in the overall amputation rate in 2022 due to an increase in minor amputations.

J. There were over 250,000 hospital admissions of people with diabetes in the SNS, with a significant increase in outpatient cases for diabetes as the primary diagnosis, while hospitalizations lasting more than 24 hours remained stable compared to previous years.

K. The number of diabetic ketoacidosis cases has risen over the past five years; however, associated mortality has remained stable. Hospitalizations for hypoglycemia remained stable.

L. Total expenditure on antidiabetic medications stabilized in 2023 (€494 million in 2022 vs. €493 million in 2023) following significant increases in previous years, with a growing use of interstitial glucose monitoring devices.

M. Although diabetes accounted for 3% of all deaths in 2022, the mortality rate before age 70 has significantly decreased since 2018.

Health Promotion and Disease Prevention

A. "Falar Abertamente da Diabetes" (Talking Openly About Diabetes): Partnership with RTP on the program "Praça da Alegria," ending its first season and beginning the second season in 2024, with educational videos shared on RTP and DGS social media channels.

B. National Contest "Diabetes e as Escolas" (Diabetes and Schools): Development of the 4th edition in the 2023/24 school year, encouraging students in Portuguese public and private schools to learn about diabetes by creating a video.

C. "Correr e Andar pela Diabetes" (Running and Walking for Diabetes): Annual events to promote physical activity, held in Setúbal (2023) and Covilhã (2024).

D. "Mais Saúde, Menos Diabetes" (More Health, Less Diabetes) Program: A diabetes prevention program with pilot groups among high-risk individuals and development of the exercise component of the project.

Promotion of Best Practices, Quality, and Safety

A. Presentation and publication of the PND Annual Report and publication of the diabetic retinopathy screening monitoring report.

B. National meeting of the Diabetes Functional Coordinating Units (UCFD).

C. Drafting a regulation update proposal on the PND Governance Structure and diabetes consultations.

D. Coordination of the Working Group that developed and published a proposal for updating access strategy for CSII treatment devices.

E. Publication of guidelines on healthcare organization for people with Type 1 Diabetes. Review of proposed guidelines for diabetic foot and diabetic kidney disease in adults.

F. Joint Action "Care4Diabetes": Participation in the European project promoting healthy lifestyles for control and/or remission of Type 2 Diabetes.

G. Projects within the Financial Support Program: 1) for the development of an interactive digital platform for empowering individuals with Type 2 Diabetes and formal and informal caregivers (eDiabetes); 2) for promoting access and improving healthcare for adults with diabetes who are users of and/or residents in Social Support Services or Facilities.

H. Drafting proposals for a "Diabetes Prevalence Study in Portugal" and a study to implement "Population-based screening for Type 1 Diabetes in children."

Action Plan | 2025 – 2027

Objectives:

A. Reduce diabetes development among at-risk individuals.

B. Increase diabetes diagnoses through early detection.

C. Reduce diabetes-related morbidity and mortality.

Key Activities:

A. Monitoring and Epidemiological Surveillance:

- Conduct a population-based diabetes prevalence study in Portugal.
- Propose the creation of indicators to monitor the World Health Organization (WHO) Europe goals for diabetes, which Portugal has committed to achieving by 2030.

B. Health Promotion and Disease Prevention:

- Launch a multiplatform diabetes awareness campaign to enhance public health literacy.
- Implement the "More Health, Less Diabetes" program for Type 2 Diabetes diagnosis and prevention.
- Propose dedicated time for therapeutic education, with an indicator and corresponding monitoring, to promote therapeutic education for people with and at risk of diabetes.
- Hold the annual "Diabetes and Schools" National Contest.
- Organize the annual "Running and Walking for Diabetes" event.

C. Promotion of Best Practices, Quality, and Safety:

- Collaborate with the Directorate-General of Health's Quality Department (DQS) to develop an Integrated Care Pathway for diabetes, including pathways for individuals at increased risk of developing diabetes.
- Implement the PND governance model adapted to the current SNS organization.
- Conduct an implementation study for Type 1 Diabetes screening at the Local Health Unit level.

Introductory Note

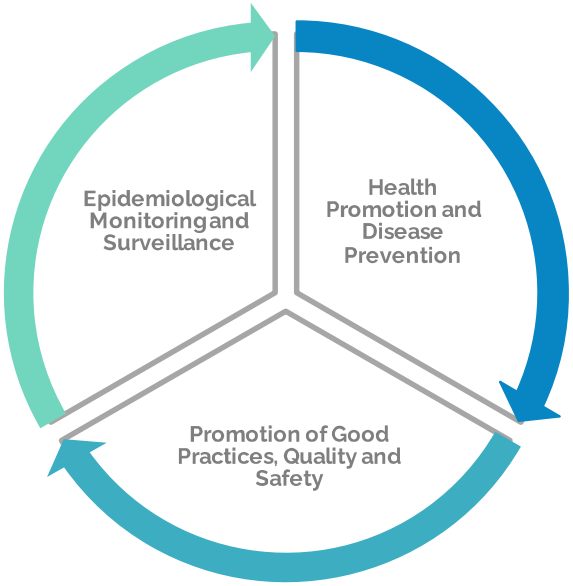
The National Diabetes Program is one of the oldest national public health programs. A program to fight Diabetes was created in 1974, emanating from the 1973 Promotion Plan. In 1992, it was updated by the Directorate-General for Primary Health Care and from 2012 it was considered one of the Priority Health Programs of the Directorate-General for Health.

The growth of Diabetes is a challenge for societies and health systems, which must be addressed, as highlighted in the Resolution of 14 March 2012 of the European Parliament. In Portugal, in December 2023, more than 900,000 people diagnosed with Diabetes were registered in Primary Health Care (CSP), corresponding to about 8.6% of the total number of users registered with the National Health Service (SNS), the highest figure ever.

Considering that it is estimated that there are a high number of people with Diabetes who are unaware of their diagnosis, there must be more than one million Portuguese with Diabetes, being one of the most prevalent non-communicable diseases in Portugal, with one of the highest prevalence rates in the European Union. Diabetes is, in cumulative terms, a determinant for the main causes of death in Portugal, namely cardiovascular diseases, chronic renal failure or cancer, and directly responsible for disease situations with a high degree of disability and a marked decrease in functionality, such as blindness and amputation, resulting in high personal, societal and health system costs.

More than 90% of diabetes cases are type 2 diabetes, many of which can be prevented by adopting a healthy lifestyle. Thus, it is important to promote literacy and the adoption of a healthy lifestyle, as well as to promote screening and early diagnosis of Diabetes, substantially reducing the risk of complications. Adequate control of diabetes and cardiovascular risk factors is crucial for the prevention and control of complications with gains in quality of life for the person with diabetes. The effectiveness of interventions in relation to people with diabetes requires an integrated approach, through multidisciplinary teams, requiring a collaborative attitude, in order to avoid non-interconnected activities, with duplication of interventions and waste of resources.

In this context, the National Diabetes Program of the Directorate-General for Health develops its activities around three areas of action:



Chapter I - Epidemiological Monitoring and Surveillance 2022/2023

1. Prevalence and incidence of Diabetes

For 59 countries and territories in the European region, the International Diabetes Federation (IDF) estimated a prevalence of diabetes of 9.2 per cent, corresponding to 61 million people in that region. This figure is expected to rise to 13 per cent by 2045. It is estimated that this region has the highest number of children and adolescents with type 1 diabetes (295,000), as well as the highest annual incidence, with 31,000 new cases per year (1).

Type 1 Diabetes

When analysing the records of Type 1 Diabetes (T1DM) in the SClinico, at Primary Health Care and Hospital Care level, we found 3,678 people diagnosed with T1DM up to the age of 19 (prevalence 166/100,000 inhabitants) and 13,015 people up to the age of 39 (prevalence 293/100,000 inhabitants).

The total number of people with T1DM registered in SClinico may be overestimated in younger age groups. The coding system (old classification in which users were categorised as insulin-dependent and non-insulin-dependent) may contain insulin-treated people with Type 2 Diabetes (T2DM), especially over the age of 40.

Table 1. Cases of Type 1 Diabetes registered at the level of Primary Health Care in the SNS, Mainland Portugal | 2019 – 2023

	2019	2020	2021	2022	2023
No. of total cases registered ≤ 14 years	**1 407**	**1 405**	**1 457**	**1 497**	**1 499**
Females (n)	661	653	675	699	705
Males (n)	746	752	782	798	794
No. of total cases registered ≤ 19 years	**2 875**	**2 867**	**2 963**	**2 982**	**2 980**
Females (n)	1 314	1 332	1 371	1 377	1 375
Males (n)	1 561	1 535	1 592	1 605	1 605
No. of total cases registered ≤ 29 years	**6 225**	**6 365**	**6 660**	**6 758**	**6 887**
Females (n)	2 813	2 909	3 025	3 076	3 126
Males (n)	3 412	3 456	3 635	3 682	3 761
No. of total cases registered ≤ 39 years	**10 462**	**10 620**	**10 922**	**11 104**	**11 323**
Females (n)	4 747	4 816	4932	4 994	5 069
Males (n)	5 715	5 804	5 990	6 110	6 254

Source: SIM@SNS (Hierarchy of Places 2015 / My reports); data extracted on 19/10/2023; Note: Number of Distinct Patients, T89 - Insulin Dependent Diabetes.

Table 2. Type 1 Diabetes cases registered in Portugal (Primary Health Care e Hospital Care)

Age Groups	No. of Registered Cases	Age Groups	No. of Registered Cases	Prevalence rate (/100 000)
0 – 4 years	121			
5 – 9 years	587			
10 – 14 years	1 178	**≤ 14 years**	1 886	110
15 – 19 years	1 792	**≤ 19 years**	3 678	´166
20 – 29 years	4 413	**≤ 29 years**	8 091	246
30 – 39 years	4 924	**≤ 39 years**	13 015	293
40 – 49 years	7 041	**≤ 49 years**	20 056	339
50 – 59 years	9 831	**≤ 59 years**	29 887	406
60 – 69 years	16 149	**≤ 69 years**	46 036	529
≥ 70 years	34 211	**≥ 70 years**	34 211	1 906
Total all ages	**80 247**	**Total all ages**	**80 247**	**764**

Source: SIM@SNS, November 2024.

Gestational Diabetes and Pregestational Diabetes

In 2022, Gestational Diabetes (GD) was present in 8.1% of pregnancies delivered on the SNS, ranging from a prevalence of 3.0% in women under 20 years old to 14.8% in women over 40 years old. The majority of women were treated with non-pharmacological therapy (55%) and in percentage terms, deliveries by caesarean section were higher in women with GD (39%) compared to women without GD (32%).

At the end of 2022, there were also 244 births in women with Pregestational Diabetes.

Table 3. Proportion of women with Gestational Diabetes in Portugal in the SNS | 2018 – 2022

	2018	2019	2020	2021	2022
No. of deliveries in women with Gestational Diabetes	4 385	4 065	4 725	5 457	5 436
Total no. of deliveries	68 070	68 088	65 260	62 322	67 147
No. of caesarean sections in women with Gestational Diabetes	1 549	1 461	1 743	2 044	2 105
No. (%) of of caesarean sections in women with Gestational Diabetes	35	36	37	37	39
No. of caesarean sections in total deliveries on the SNS Hospitals	19 247	20 133	19 542	19 041	21 341
No. (%) of caesarean sections in total deliveries in the SNS Hospitals	28	30	30	31	32
Prevalence of Gestational Diabetes (GD)	6,4%	6,0%	7,2%	8,8%	8,1%
No. of deliveries in women with GD aged < 20 years	35	37	28	34	47
No. of deliveries in women with GD aged 20 - 29 years	1 060	1 006	1 170	1 378	1 424
No. of deliveries in women with GD aged 30 - 39 years	2 717	2 470	2 929	3 298	3 229
No. of deliveries in women with GD aged ≥40 years	573	552	598	747	736
Prevalence of GD in women aged < 20 years	1,9	1,9	1,7	2,3	3,0
Prevalence of GD in women aged 20 - 29 years	4,4	4,2	5	6,3	5,9
Prevalence of GD in women aged 30 - 39 years	7,2	6,6	8,2	9,6	8,8
Prevalence of GD in women aged ≥40 years	12,9	11,7	13	16	14,8

Note: Primary Diagnosis (PD) and Additional Diagnoses (AD) codes consulted: AD: V27.- (ICD 9 MC) and Z37.0- (ICD 10 MC); DP: 648.- (ICD 9 MC) and O24.42- (ICD 10 MC). Source: Business Intelligence for Hospital Morbidity -BIMH, consulted on 13/09/2024. Please note: Inpatient and outpatient episodes coded in ICD9CM or ICD10CM/PCS, with valid codes) by SNS hospitals, from 1 January 2013 to 13 September 2024 (data import date from the Database for Hospital Morbidity (BDMH).

Table 4. Prevalence of Pregestational Diabetes in women giving birth in hospitals, Portugal | 2018 – 2022

	2018	2019	2020	2021	2022
Cases of T1DM Pregestational Diabetes (n)	75	100	104	119	121
Cases of T2DM Pregestational Diabetes (n)	56	60	80	101	104
Other cases of Pregestational Diabetes (n)	14	16	11	11	19
Total cases of Pregestational Diabetes (n)	145	176	195	231	244

T1DM: Type 1 Diabetes; T2DM: Type 2 Diabetes. Source: Business Intelligence for Hospital Morbidity -BIMH, accessed on 13/09/2024. Note: (ICD9CM or ICD10CM/PCS coded hospital admission episodes (with valid codes) by SNS hospitals from 1 January 2013 to the last date of data import from BDMH)

Table 5. Gestational Diabetes Therapy in Portugal | 2018 – 2022

	2018	2019	2020	2021	2022
Non-pharmacological measures (%)	58	59	58	60	55
Oral antidiabetic drugs (%)	15	20	22	20	23
Insulin (%)	15	14	13	13	15
Not specified (%)	13	9	9	7	8

Source: Business Intelligence for Hospital Morbidity - BIMH, accessed on 13/09/2024. Please note: Each user may correspond to more than one therapeutic option. (Inpatient and outpatient episodes coded in ICD9CM or ICD10CM/PCS, with valid codes) by SNS hospitals, from 1 January 2013 to 13 September 2024 (data import date from the Database for Hospital Morbidity (BDMH).

Diabetes Registry at Primary Health Care

At the end of 2023, 911,873 people were registered with Diabetes, corresponding to 8.6% of registered users, at the CSP level, in Mainland Portugal. The growing trend seen in recent years continues, both in absolute numbers and in percentage terms. In relation to the health regions, at the end of 2023, the proportion of people with a registered diagnosis of Diabetes varied between 7.4% in the Algarve Regional Health Administration (ARS) and 10.2% in the Alentejo ARS.

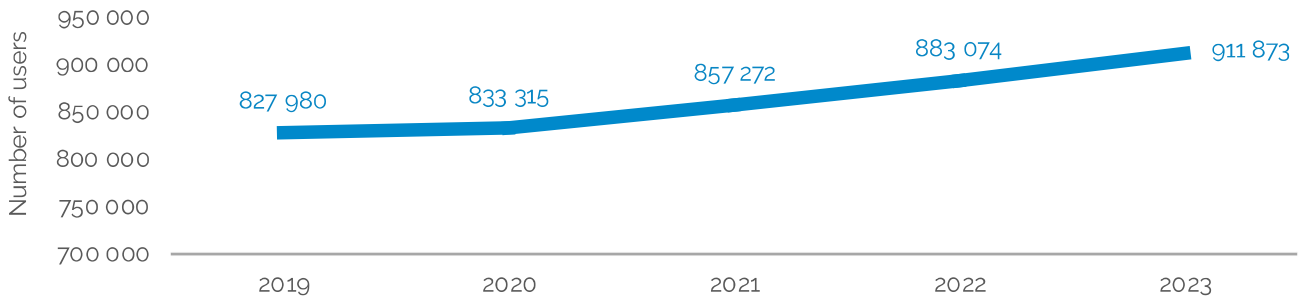
Table 6. Number of users diagnosed with Diabetes registered in Primary Health Care | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	**N**	311 778	314 845	326 666	340 139	353 860
	% of subscribers	8,3	8,4	8,7	9,0	9,3
Central Region	**N**	157 758	159 585	163 409	166 944	171 212
	% of subscribers	8,8	8,9	9,0	9,1	9,4
LVT Region	**N**	275 116	275 386	281 086	287 097	296 028
	% of subscribers	7,3	7,3	7,3	7,3	7,5
Alentejo Region	**N**	48 757	48 612	49 442	50 727	51 842
	% of subscribers	9,7	9,6	9,7	9,9	10,2
Algarve Region	**N**	34 571	34 887	36 669	38 167	38 931
	% of subscribers	7,1	7,0	7,0	7,2	7,4
Mainland Portugal	**Number of subscribers**	827 980	833 315	857 272	883 074	911 873

	% of subscribers	8,0	8,1	8,2	8,4	8,6

Source: SIM@SNS 2024 extracted on February 8th. Research method: SIARS Code MORB.198.01.

Figure 1. Evolution of the number of patients diagnosed with Diabetes registered in Primary Health Care | 2019 - 2023



Source: SIM@SNS 2024, extracted on February 8th. Research method: SIARS Code MORB.198.01.

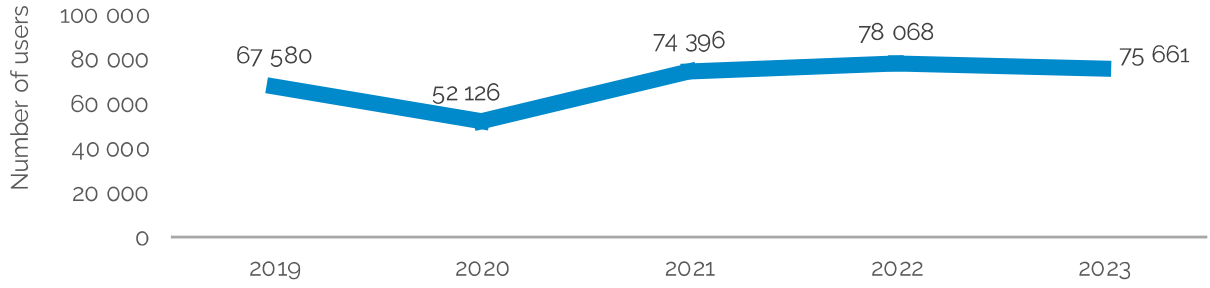
In 2023, 75,661 new diagnoses of Diabetes were registered, corresponding to a rate of 7.2 per 1,000 registered users, in mainland Portugal. This rate was slightly below that seen in the previous year, demonstrating a stabilization in the number of new cases.

Table 7. Rate of new Diabetes registrations per 1,000 users and number of new cases registered at Primary Health Care level, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	‰	6.4	5.0	7.5	8.1	7.9
Central Region	‰	7.0	5.8	7.5	7.5	7.6
LVT Region	‰	6.3	4.7	6.4	6.6	6.3
Alentejo Region	‰	7.5	5.5	7.9	8.3	7.8
Algarve Region	‰	7.1	5.4	6.8	7.1	6.5
Mainland Portugal	‰	6.6	5.1	7.1	7.4	7.2

Source: SPMS – SIM@SNS 2024, extracted on February 8. Research method: SIARS Code BI MORB.236.01.FL Incidence of Diabetes.

Figure 2. Evolution of the number of new users with Diabetes registration in the CSP | 2019 – 2023



Source: SPMS – SIM@SNS 2024, extracted on February 8. Research method: SIARS Code BI MORB.236.01.FL Incidence of Diabetes

In 2023, 911,873 users diagnosed with Diabetes were registered, of which 92.5% (844,277) were diagnosed with T2DM. The proportion of clients diagnosed with T2DM was similar (90-93%) in all health regions.

2. Risk of Diabetes

Intermediate Hiperglycemia

Regarding intermediate hyperglycemia (fasting glucose abnormality, impaired glucose tolerance, or both), the IDF estimated that in the Portuguese population between 20 and 79 years old, in 2021, 2.8 % (270 800 Portuguese) had Impaired Fasting Glucose (IFG) and 10.5 % (1 064 900 Portuguese) had impaired glucose tolerance (TDG) (1).

Figure 3. Estimated prevalence of diabetes, abnormal fasting glucose levels and impaired glucose tolerance in Portugal | 2021

Source: *IDF Diabetes Atlas 10th Ed* (1).

According to data published by the Portuguese Society of Diabetology (SPD) for the year 2021 (based on the PREVADIAB study (2)), intermediate hyperglycemia in Portugal affected 28.6% of the Portuguese population between 20 and 79 years old, corresponding to 10.8% of people with IFG, 14.9% with TDG and 2.9% with both (0.2 million individuals (3).

Type 2 Diabetes Risk Assessment

In 2021 and 2023, in CSPs in mainland Portugal, 3.41 million users were identified with at least one risk assessment for Type 2 Diabetes, corresponding globally to 55% of the target population. This figure reflects an increase of 9% compared to the previous three-year period, between 2020 and 2022, as well as a significant increase in all regions.

These assessments are carried out in consultation at the CSP using the Finnish Diabetes Risk Score (FINDRISC) questionnaire, allowing the identification and stratification of the risk of developing Type 2 Diabetes, over a period of 10 years. They are carried out on the adult population aged 18 years or over and without a diagnosis of Diabetes and should be repeated at least every 3 years.

These assessments can also be carried out on the initiative of users themselves via the SNS Health Portal. 170,231 assessments were carried out in this way in 2023.

This makes it possible to identify the target population for type 2 DM prevention measures, as well as to carry out early diagnosis at high and very high levels by carrying out an analytical assessment.

Table 8. Proportion of users with Type 2 Diabetes risk assessment recorded in Primary Health Care | 2017 – 2023

		2017/2019	2018/2020	2019/2021	2020/2022	2021/2023
Northern Region	**No.**	1 290 736	1 239 197	1 210 347	1 365 322	1 639 269
	% of the target population	57	54	52	58	68
Central Region	**No.**	408 389	416 464	407 336	459 345	580 079
	% of the target population	39	39	38	42	52
LVT Region	**No.**	616 683	629 413	619 821	731 488	949 655
	% of the target population	32	32	31	36	45
Alentejo Region	**No.**	79 081	82 223	85 182	97 756	123 374
	% of the target population	32	33	32	36	45
Mainland Portugal	**No.**	2 517 905	2 487 884	2 431 050	2 756 452	3 211 780
	% of the target population	44	42	41	46	55

Source: SIM@SNS 2024, 2013.262.01 FL, extracted on February 8th.

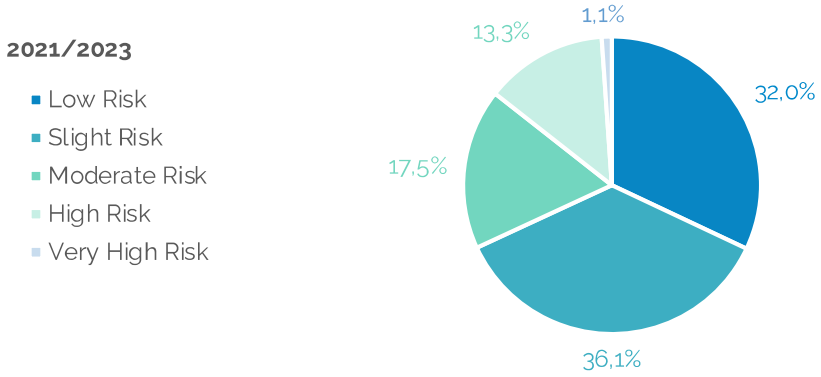
Table 9. Proportion of users with Type 2 Diabetes risk assessment recorded in Primary Health Care, by risk level and Region | 2017 – 2023

			2017/2019	2018/2020	2019/2021	2020/2022	2021/2023
Northern Region	**Low Risk**	**% of subscribers**	32,4	32,9	32,4	31,8	32,1
	Sligh Risk	**% of subscribers**	37,4	37,4	37,3	36,1	36,4
	Medium Risk	**% of subscribers**	17,6	17,4	17,6	17,7	17,4
	High Risk	**% of subscribers**	11,9	11,7	12,0	13,4	13,1
	Very High Risk	**% of subscribers**	0,7	0,7	0,7	1,1	1,0
Central Region	**Low Risk**	**% of subscribers**	28,0	28,3	28,4	28,1	28,8
	Sligh Risk	**% of subscribers**	38,0	38,0	38,0	36,5	37,4
	Medium Risk	**% of subscribers**	19,2	19,1	18,9	18,5	17,9
	High Risk	**% of subscribers**	13,9	13,7	13,8	15,3	14,6
	Very High Risk	**% of subscribers**	1,0	0,9	0,9	1,6	1,4
LVT Region	**Low Risk**	**% of subscribers**	29,5	30,2	30,5	32,9	34,3
	Sligh Risk	**% of subscribers**	36,9	36,8	36,6	34,6	34,7
	Medium Risk	**% of subscribers**	19,1	18,8	18,7	17,7	17,2
	High Risk	**% of subscribers**	13,5	13,2	13,2	13,5	12,8
	Very High Risk	**% of subscribers**	1,0	0,9	0,9	1,2	1,1
Alentejo Region	**Low Risk**	**% of subscribers**	28,5	28,8	29,0	27,9	28,1
	Sligh Risk	**% of subscribers**	36,3	36,7	36,4	35,4	35,8
	Medium Risk	**% of subscribers**	20,3	19,8	19,8	19,9	19,8
	High Risk	**% of subscribers**	14,1	13,8	14,0	15,7	15,2
	Very High Risk	**% of subscribers**	0,9	0,8	0,9	1,1	1,1
Algarve Region	**Low Risk**	**% of subscribers**	32,6	33,7	34,2	34,2	34,0
	Sligh Risk	**% of subscribers**	36,9	36,7	36,9	35,6	35,9
	Medium Risk	**% of subscribers**	17,9	17,4	16,9	16,8	16,9
	High Risk	**% of subscribers**	11,8	11,4	11,2	12,2	12,2
	Very High Risk	**% of subscribers**	0,6	0,6	0,6	1,2	1,3
Mainland Portugal	**Low Risk**	**% of subscribers**	30,8	31,3	31,1	31,4	32,0
	Sligh Risk	**% of subscribers**	37,3	37,3	37,2	35,8	36,1
	Medium Risk	**% of subscribers**	18,4	18,2	18,2	17,8	17,5
	High Risk	**% of subscribers**	12,7	12,5	12,7	13,8	13,3
	Very High Risk	**% of subscribers**	0,8	0,8	0,8	1,2	1,1

Source: SIARS 2024, extracted on May 14. Note: Type 2 Diabetes Risk Levels at 10 years, Low Risk (1 in 100 people), Sligh Risk (1 in 25 people), Medium Risk (1 in 6 people), High Risk (1 in 3 people) and Very High Risk (1 in 2 people)

It is worth noting that of the 3.41 million users with a risk level of Type 2 Diabetes identified in mainland Portugal between 2021 and 2023, in CSPs, more than 1 million (31.9%) have a moderate, high or very high risk. These risk levels require an approach in terms of lifestyles, through health education in order to correct some risk factors.

Figure 4. Proportion of users with Type 2 Diabetes risk assessment registered in Primary Health Care, by level of risk in the 2021/2023 triennium



Source: SIARS 2024, extracted on May 14th.

3. Access to health care

Medical and Nursing Surveillance

Regarding the medical surveillance of users registered with Type 2 Diabetes (T2DM), in terms of CSP, a proportion of 89% of users with a surveillance commitment (registered users with Type 2 Diabetes monitored at the health unit) was maintained in 2023.

Table 10. Proportion of patients with T2DM with surveillance commitment in the SNS in terms of Primary Health Care, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	90	91	92	93	93
Central Region	%	86	87	87	89	89
LVT Region	%	82	82	81	83	83
Alentejo Region	%	92	92	92	92	91
Algarve Region	%	81	81	81	84	86
Mainland Portugal	%	87	87	87	89	89
	N	656 265	662 394	685 884	721 935	747 983

Source: SIM@SNS 2024, extracted on February 8th. BI 2013.075.01FL. Proportion of T2DM with surveillance commitment.

Regarding nursing surveillance, the proportion of monitored users increased again in 2023, with 79% of users with Diabetes undergoing nursing surveillance consultation. These values are above those recorded in recent years, with only the Alentejo health region below pre-pandemic values.

Table 11. Proportion of patients with Diabetes receiving nursing surveillance consultation in the SNS at Primary Health Care level, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	87	76	80	89	91
Central Region	%	78	72	69	77	80
LVT Region	%	64	51	44	60	66
Alentejo Region	%	77	63	54	66	73
Algarve Region	%	70	63	61	68	72
Mainland Portugal	%	76	66	64	75	79
	N	632 248	549 489	546 037	663 828	721 738

Source: SIM@SNS 2024, extracted on February 8th. BI 2013.037.01FL Proportion of DM with DM surveillance nursing consultation in the last year

Seasonal Vaccination against COVID-19 and Flu

People with diabetes are an eligible risk group for seasonal immunization against COVID-19 and influenza. In this context, between September 2023 and April 2024, 486,438 people with diabetes were vaccinated with the seasonal booster against COVID-19 and 580,309 people with diabetes against influenza. Of these, 455,451 received both vaccines.

Continuous subcutaneous insulin infusion (CSII) Treatment

Continuous Subcutaneous Insulin Infusion (CSII) systems are the therapy of choice for all people with T1DM who have an indication and motivation for it. In this sense, under the PND, since 2020, all eligible people with T1DM can have access to treatment with CSII devices and, since 2022, the acquisition of automatic insulin administration systems (AAS) began, which should be considered as the first line of treatment for all people with type 1 DM.

Between 2022 and 2023, there was a 6% growth in the number of users undergoing CSII treatment under the PND, a growth below that seen in previous years and that foreseen in Order No. 6440/2023.

Estimated coverage rate of treatment with CSII, in people with type 1 Diabetes, shows a reduction, in 2023, when compared to 2022, in the Age Groups ≤14 years and ≤19 years. The estimated coverage rate in the age group ≤ 39 years remains the same.

Table 12. Type 1 Diabetes Patients Treated with Continuous Subcutaneous Insulin Infusion Systems (CSII) | 2019 – 2023

	2019	2020	2021	2022	2023
0-5 years	119	118	117	132	127
6-10 years	404	375	361	387	368
11-14 years	564	612	632	609	588
15-18 years	584	697	705	721	782
19-39 years	903	1 139	1 356	1 523	1808
40-64 years	475	574	654	754	727
≥65 years	21	25	34	44	52
Total	3 070	3 540	3 859	4 170	4452
Pediatric Age	1 671	1 802	1 815	1 849	1665
Adulthood	1 399	1 738	2 044	2 321	2787

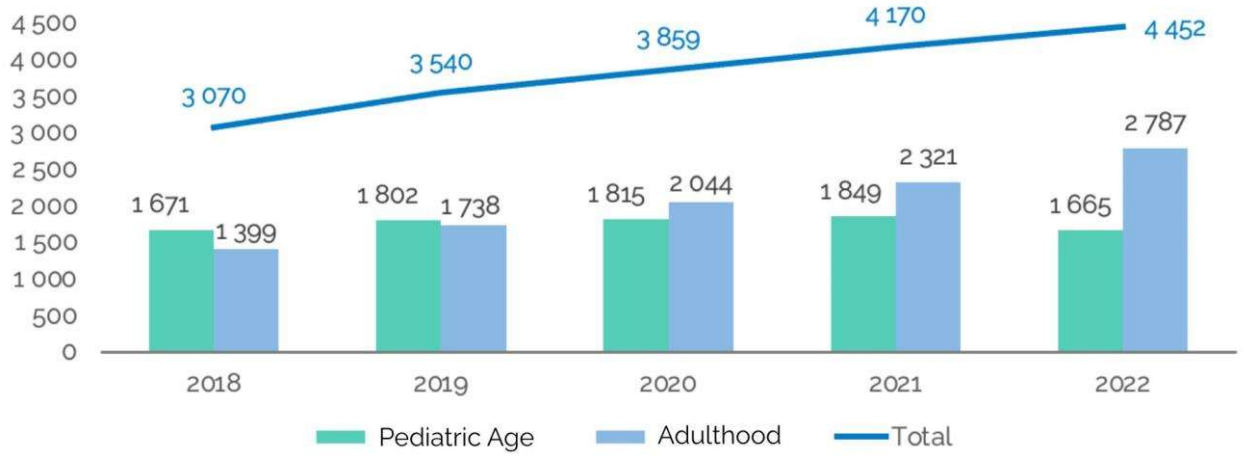
Source: Plataforma CSII/DGS, 2023.

Table 13. Type 1 Diabetes Patients Treated with Continuous Subcutaneous Insulin Infusion (CSII) Systems by Age Group and Proportion in Relation to Type 1 Diabetes (T1DM) Patients Registered in CSP | 2019 – 2023

	2019	2020	2021	2022	2023
Users undergoing CSII treatment, ≤14 years (n)	1 087	1 105	1 110	1 128	1083
Users undergoing CSII treatment/ Users registered with T1DM in CSP, ≤14 years (%)	77	79	76	75	58
Users undergoing CSII treatment, ≤19 years (n)	1 958	2 087	2 156	2 022	1 941
Users undergoing CSII treatment/ Users registered with T1DM in CSP, ≤19 years (%)	68	73	73	68	54
Users undergoing CSII treatment, ≤39 years (n)	2 574	2 941	3 171	3 372	3673
Users undergoing CSII treatment/ Users registered with T1DM in CSP, ≤39 years (%)	25	28	29	30	30

Source: Plataforma CSII/DGS, 2023; INE Population Data, 2023 - Resident population (No.) by Place of residence (NUTS - 2013), Sex and Age group; Annual - IBGE, Annual estimates of the resident population.

Figure 5. Evolution of the number of users with Type 1 Diabetes undergoing CSII treatment | 2018 – 2023



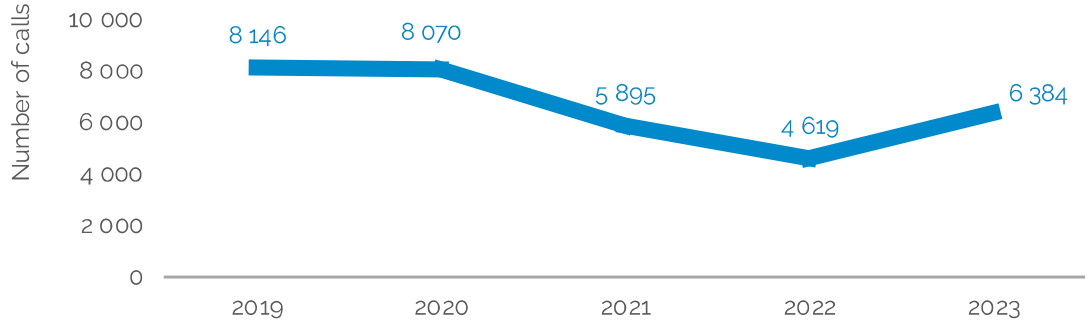
Source: CSII/DGS Platform, 2023.

The SNS 24 helpline

The SNS 24 helpline is a free telephone helpline, available 24 hours a day, which provides triage and advice according to the clinical situation and referral to the appropriate level of care, such as self-care, Primary Health Care, emergency services, INEM or Poison Information Centre.

During 2023, 6384 telephone contacts were received for problems related to Diabetes, an increase compared to 2022, the year in which there was the lowest use of this service since 2019.

Figure 6. Annual number of calls to the SNS 24 helpline for Diabetes-related problems in Portugal – 2019/2023



Source: SNS24, 2024

In 2023, it continues to be seen that women (58%) and people aged 60 or over (73%) are the ones who most use the SNS24 helpline for problems related to Diabetes, maintaining the trend seen in previous years.

Table 14. Distribution, by Sex and Age Group, of Calls to the SNS 24 Helpline for Diabetes-Related Problems | 2019 – 2023

	2019	2020	2021	2022	2023
Women	4 742 58%	4 705 58%	3 355 57%	2 734 59%	3682 58%
Men	3 404 42%	3 372 4175%	2 540 43%	1 885 41%	2702 42%
≤29 years	263 3%	269 3%	219 4%	197 4%	268 4%
30-59 years	1 579 19%	1 690 21%	1 294 22%	901 20%	1 425 22%
≥60 years	6 034 74%	6 111 76%	4 382 74%	3 521 76%	4 691 73%
Total	8 146	8 070	5 895	4 619	6 384

Source: SNS24, 2024

Regarding the distribution of connections during 2023, the months with the highest number of connections were November and December, identical to the year 2022.

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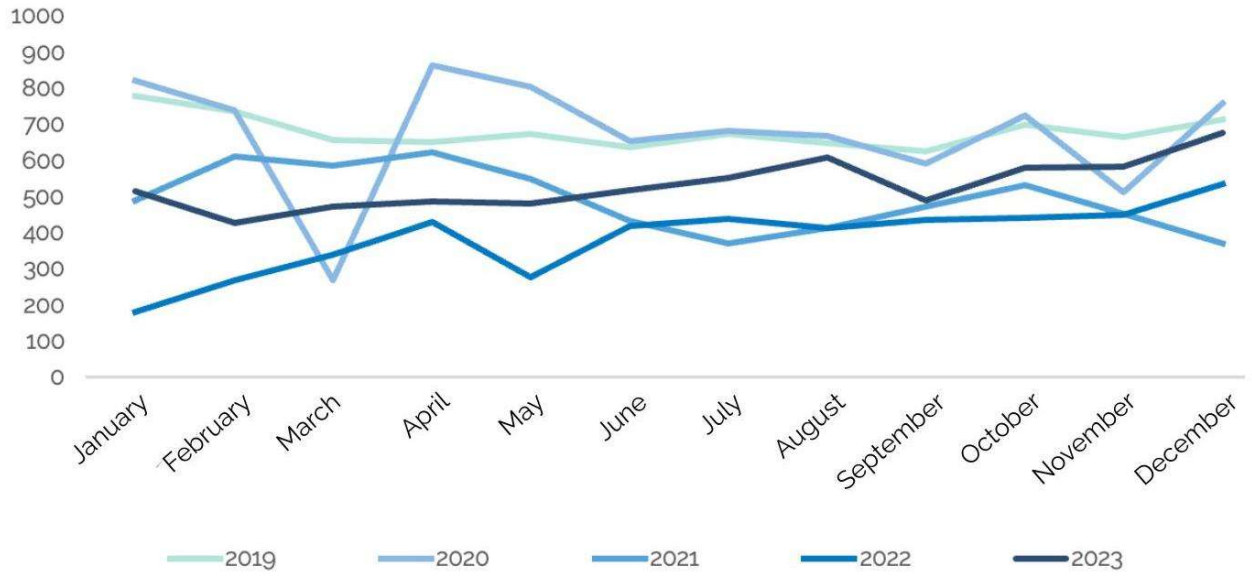
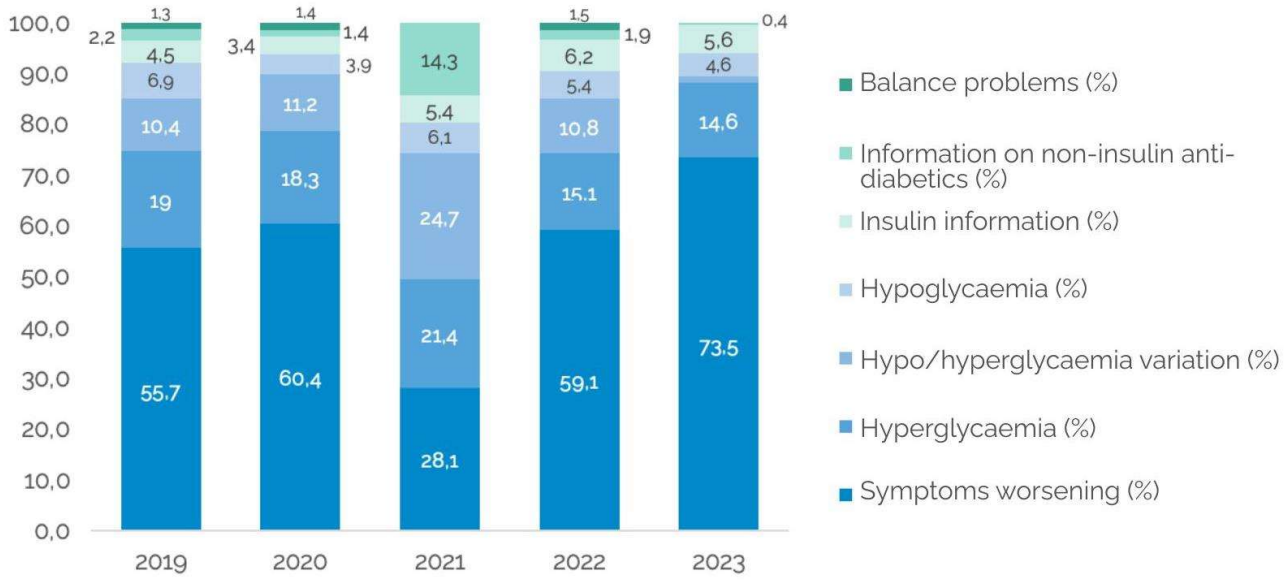
Figure 7. Monthly distribution of calls to the SNS 24 helpline for Diabetes related issues | 2018 – 2022



Source: SNS24, 2024

In 2023, 73.5% of telephone contacts were made due to worsening symptoms, followed by problems related to hyperglycemia (14.6%). Approximately 6% of these contacts, in 2023, were made to request information about insulin, and there were no contacts to request information about non-insulin antidiabetics, a lower value than in 2022 (8%).

Figure 8. Reasons for contacting the SNS 24 helpline for Diabetes-related issues | 2019 – 2023



Source: SNS24, 2024

Of all contacts, 46.6% of cases were referred to the emergency room, 22.3% for observation at CSPs, 20.4% of cases were advised on self-care and 8.4% were advised to go to INEM.

Table 15. Referral pathways from calls made to the SNS 24 helpline in 2023

Referrals		
Emergency Service	2976	46,60%
Self-care	1302	20,40%
Medical observation in CSP	1463	22,90%
INEM	536	8,40%
Others	107	1,70%

Source: SNS24, 2024

4. Control of risk factors

Glycemic Control and Other Cardiovascular Risk Factors

Regarding glycemic control, by the end of 2023, 63% of users with a record of a Diabetes diagnosis had at least 1 HbA1c result in the last six months. This value increased compared to the previous three years, however it is still below the year 2019.

Table 16. Proportion of users with Diabetes and HbA1c result record in the last 6 months in Primary Health Care, by health region, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	79	60	72	69	74
Central Region	%	72	61	65	61	65
LVT Region	%	62	46	51	46	53
Alentejo Region	%	68	52	55	46	52
Algarve Region	%	63	48	52	49	55
Mainland Portugal	%	71	55	62	58	63

Source: SIM@SNS 2024, extracted on February 8. BI 2013.038.01 FL DM proportion with/ HbA1c record 6 months

Among registered users under the age of 65, only 30% had HbA1c equal to or less than 6.5% at the end of 2023. Although this value suggests a positive evolution, it reveals insufficient glycemic control in this age group.

Table 17. Proportion of users with Diabetes and aged under 65 years, with the last record of HbA1c ≤6.5% in Primary Health Care, by health region, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	32	23	29	33	35
Central Region	%	30	24	26	30	33
LVT Region	%	20	14	17	21	24
Alentejo Region	%	23	16	18	20	24
Algarve Region	%	25	18	22	25	28
Mainland Portugal	%	27	20	23	28	30

Source: SIM@SNS 2024, extracted on February 8. BI 2013.091.01FL Proportion DM <65 A, with HbA1c ≤ 6.5 %

Regarding the proportion of people with HbA1c ≤8%, there was an increase from 61% in 2022 to 64% in 2023, indicating a possible improvement in glycemic control, surpassing the previous four years.

Table 18. Proportion of users with Diabetes and the last record of HbA1c ≤ 8%, in Primary Health Care, by health region, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	69	52	63	69	73
Central Region	%	63	54	57	62	66
LVT Region	%	53	39	44	49	56
Alentejo Region	%	57	44	45	50	55
Algarve Region	%	55	42	46	54	58
Mainland Portugal	%	61	47	54	61	64

Source: SIM@SNS 2024, extracted on February 8, Search Method SIARS Code BI 2013.039.01FL DM proportion, with HbA1c ≤ 8 %

For good management of Diabetes and prevention of complications, it is necessary to control other cardiovascular risk factors. Regarding LDL cholesterol control, 51% of users presented, in 2023, LDL <100mg/dl, an increase in relation to previous years. However, a relevant regional asymmetry remains. It is worth noting again that, although the available indicator is the proportion of users with LDL <100mg/dl, the therapeutic objective for people with Diabetes is generally below this value, so that the proportion of users who reach the therapeutic objective will be lower than that expressed in this indicator.

Table 19. Proportion of users with Diabetes and last LDL cholesterol result <100 mg/dl in the last 12 months, in Primary Health Care, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	48	42	51	56	60
Central Region	%	44	41	46	51	53
LVT Region	%	33	30	35	40	42
Alentejo Region	%	38	33	35	37	40
Algarve Region	%	26	26	31	36	37
Mainland Portugal	%	41	37	43	48	51

Source: SPMS – SIM@SNS 2024, extracted on February 8, BI 2015.315.01 FL DM proportion with C-LDL <100 mg/dl

High blood pressure is another important cardiovascular risk factor, and in 2023, 73% of users had blood pressure (BP) levels below 140/90mmHg, an improvement in the control of this cardiovascular risk factor compared to the previous three years, but still much lower than pre-pandemic values.

Table 20. Proportion of users with Diabetes and last recorded blood pressure (BP) <140/90mmHg in the last 12 months, in Primary Health Care, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	88	64	76	84	86
Central Region	%	85	58	64	70	72
LVT Region	%	81	42	50	58	61
Alentejo Region	%	82	52	56	64	64

Algarve Region	%	82	50	53	61	63
Mainland Portugal	%	85	54	63	70	73

Source: SPMS – SIM@SNS 2024, extracted on February 8. Research method: SIARS BI code 2015.314.02 FL Proportion of DM with BP ≥ 140/90 mmHg. The values in the Table refer to the indicator data, but in the positive, that is, the proportion of users with BP <140/90 mmHg (Ex: 100 – 30 = 70 in the case of Mainland Portugal).

In addition to the above risk factors, diet and physical activity/exercise are also essential in the management and control of Diabetes. At the end of 2023, 72% of people with Diabetes had records of their therapeutic regimen management, in terms of eating habits, physical exercise habits and medication regimen, a figure that varied between 55% in the Algarve region and 88% in the Northern Region. These figures represent an increase in relation to previous years.

Table 21. Proportion of users with Diabetes and record of therapeutic regimen management (diet, physical activity and medication) in the last 12 months, in Primary Health Care, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	73	61	71	84	88
Central Region	%	43	44	46	62	70
LVT Region	%	45	34	32	51	59
Alentejo Region	%	42	35	31	43	55
Algarve Region	%	24	27	37	46	55
Mainland Portugal	%	54	46	50	65	72

Source: SPMS – SIM@SNS 2024, extracted on February 8. Search method: SIARS BI Code 2013.036.01FL Proportion of DM users with GRT registration

When analyzing by health region, a trend is observed, already identified in previous years, where better results are seen in all indicators of glycemic control and risk factors, at the level of Primary Health Care, in the Northern Region, followed by the Central Region, with the regions of Lisbon and Vale do Tejo, Alentejo and Algarve successively presenting lower results in the same indicators and similar to each other. The nature of these results is multifactorial, but reducing inequalities in access to quality health care is an ongoing task for health systems, which is why we identify here the need for an effort to reduce these persistent asymmetries.

5. Outpatient consumption of medicines and devices

The innovation that has occurred in the treatment of diabetes is characterized by the prospect of including new clinical protocols and new drugs, as well as technologically advanced devices that use artificial intelligence.

Therapy

Analyzing the therapy used in the treatment of diabetes, it was found that of the users with a record of T2DM, 46% were medicated with metformin, maintaining the upward trend of the previous two years.

Table 22. Proportion of users with Type 2 Diabetes registered on metformin therapy in the Primary Health Care, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	52	49	45	53	54
Central Region	%	43	41	39	42	43
LVT Region	%	41	38	35	40	41
Alentejo Region	%	43	40	36	41	39
Algarve Region	%	28	26	24	28	29
Mainland Portugal	%	45	42	39	45	46

Source: SPMS – SIM@SNS 2023, extracted on February 8. Research method: SIARS code 2013.042.01 FL Proportion of T2DM on metformin therapy.

Users with T2DM used fewer DPP4 inhibitors, with a drop from 28 to 25% in the doses of non-insulin antidiabetics prescribed between 2019 and 2023. This drop has been observed since 2022, which may be related to the introduction of new pharmacological classes in the treatment of Diabetes.

Table 23. Ratio between the sum of Defined Daily Doses (DDD) prescribed in DPP4 inhibitors and the sum of DDD prescribed in non-insulin antidiabetics, in users with Type 2 Diabetes, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	32	31	29	25	23
Central Region	%	39	38	36	31	28
LVT Region	%	34	34	32	28	26
Alentejo Region	%	38	38	36	32	29
Algarve Region	%	41	39	36	31	28
Mainland Portugal	%	35	34	32	28	25

Source: SPMS – SIM@SNS 2023, extracted on February 8. Research method: SIARS BI code 2013.276.01 FL DDD reason prescribed DPP-4 and oral antidiabetics.

5.5% of users classified as having T2DM were under insulin treatment. However, the hypothesis remains that some of the users classified as having T1DM correspond to users with insulin-treated T2DM, but still to be reclassified.

Table 24. Proportion of users with Type 2 Diabetes registered on insulin therapy in Primary Health Care, Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	6.0	5.4	4.8	6.1	6.3
Central Region	%	6.3	5.9	5.4	6.0	6.0
LVT Region	%	4.8	4.3	3.9	4.7	4.7
Alentejo Region	%	5.0	4.4	3.9	4.6	4.4
Algarve Region	%	2.8	2.8	2.4	3.2	3.3
Mainland Portugal	%	5.5	5.0	4.5	5.4	5.5

Source: SPMS – SIM@SNS 2023, extracted on February 8. Research method: SIARS BI code 2013.041.01 FL Proportion of T2DM on insulin therapy.

Consumption and costs of outpatient medications and devices

In 2023, there was a global increase in the consumption of medicines for the treatment of Diabetes. However, unlike previous years, there was a stabilization of costs. Contrary to expectations, there was no increase in the acquisition of continuous subcutaneous insulin infusion devices.

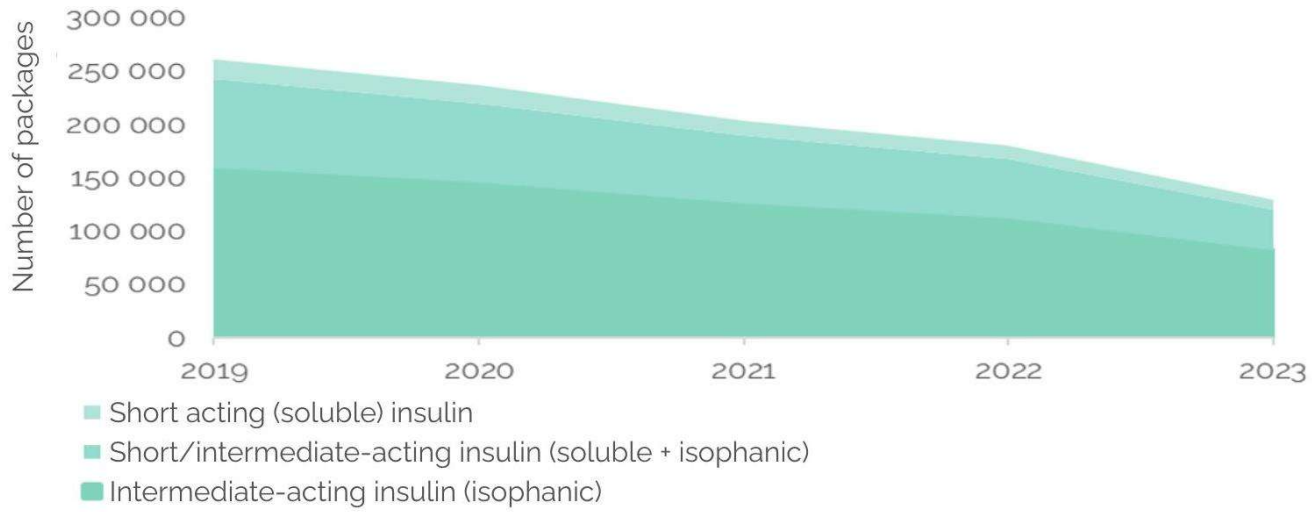
Table 25. Outpatient medication consumption in the SNS (non-insulin antidiabetics, insulin and glucagon, excluding drug combinations) in Mainland Portugal – Defined Daily Dose dispensed in a year | 2019 – 2023

	2019	2020	2021	2022	2023
DDD	253 982 552	259 099 741	263 563 433	286 087 748	299 280 382

Source: INFARMED Note: DDD: Defined Daily Dose dispensed in one year in outpatient settings, in Mainland Portugal, in the SNS.

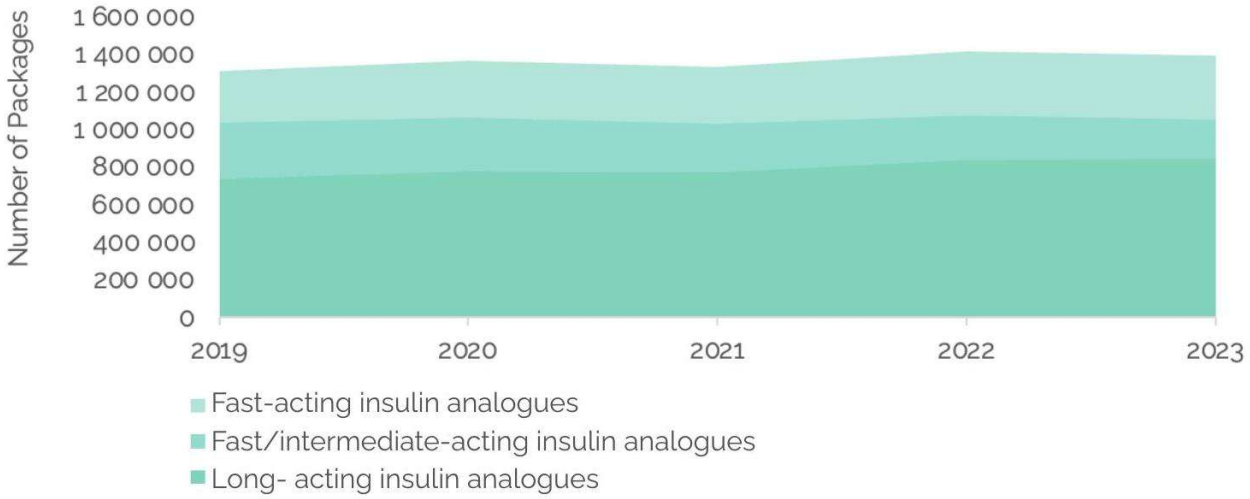
Insulin consumption fell by 4.6% in 2023, contrary to the trend of recent years and mainly due to the lower use of human insulins. As for insulin analogues, long-acting analogues were the most widely used and accounted for around 845,093 packs, i.e. more than half the number of insulin packs consumed and more than 63.5% of insulin spending. Between 2019 and 2023, total insulin consumption, measured by the number of packs consumed, fell by around 3% and costs fell by around 2.3%.

Figure 9. Consumption of human insulin packs on the SNS in mainland Portugal | 2019 – 2023



Source: INFARMED 2024, CCF (Invoice Control Centre).

Figure 10. Consumption of insulin analogue packages on the SNS in mainland Portugal | 2019 – 2023



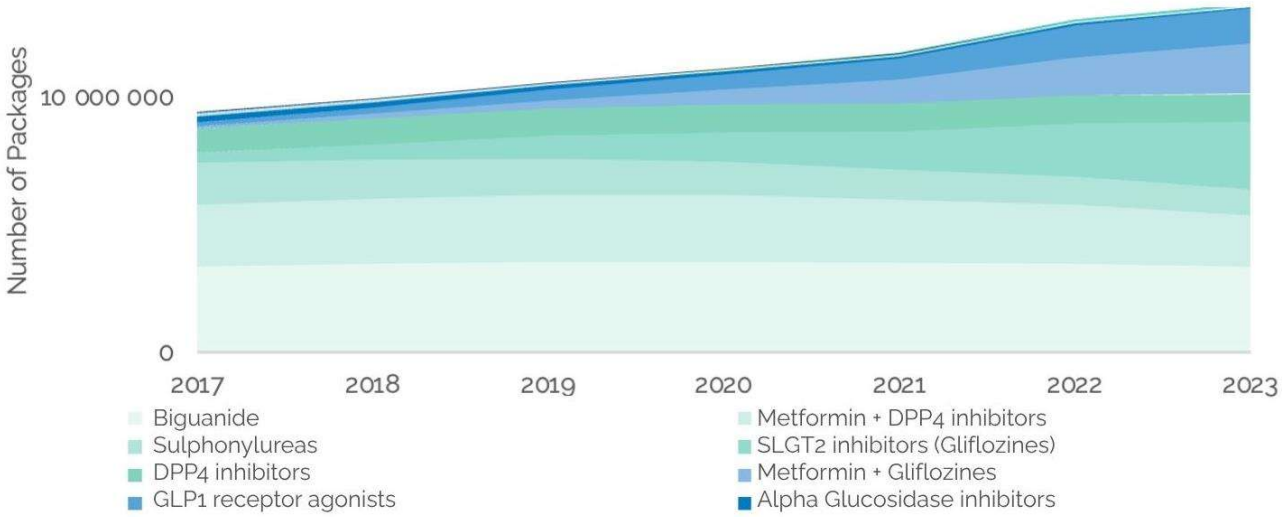
Source: INFARMED 2024, CCF (Invoice Control Centre).

Consumption of non-insulin antidiabetics increased by 29.2% and costs increased by 51.3% between 2019 and 2023.

In this group, in 2023, DPP4 inhibitors (alone or in combination) accounted for approximately 23.2% of the packages consumed and 20.4% of the expenditure on non-insulin antidiabetics. However, these values reflect a decrease of approximately 7% in the number of packages consumed and 39.4% in the amount spent on DPP4 inhibitors, compared to the year 2022 (or 13.3% and 47.1%, respectively, compared to the year 2019).

Conversely, both consumption and expenditure on SGLT2 inhibitors (alone or in combination) increased between 2019 and 2023. More precisely, for the period under analysis, packaging consumption increased from 1,228,838 to 4,735,504 packages, i.e. an increase of approximately 285.4%. Likewise, costs for SGLT2 inhibitors also increased by approximately 275.3%.

Figure 11. Consumption of non-insulin antidiabetic packs in the SNS in Mainland Portugal | 2019 – 2023



Source: INFARMED 2024, CCF (Invoice Control Centre).

Table 26. Spending on non-insulin antidiabetics: Retail price value and SNS charges, em Mainland Portugal | 2019 – 2023

	Retail price value (Millions of €)					SNS Charges (Millions of €)				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Non-insulin antidiabetics agents										
Biguanide	13,0	13,0	12,8	12,7	12,6	9,1	9,2	9,1	9,1	9,1
Sulphonylureas	8,1	7,3	6,5	6,0	5,6	6,2	5,6	5,2	4,9	4,5
Alpha-glucosidase inhibitors	1,0	0,7	0,6	0,5	0,4	0,8	0,6	0,5	0,4	0,3
Glinides	0,6	0,5	0,4	0,2	0,0	0,6	0,5	0,4	0,2	0,0
Glitazones	1,0	0,9	0,9	0,9	0,8	0,7	0,6	0,6	0,6	0,6
DPP-4 inhibitors	42,6	43,2	43,1	41,8	33,5	39,3	39,8	39,7	37,8	27,9
GLP-1 agonists	33,5	43,5	61,9	96,5	107,8	30,5	39,5	56,3	87,6	97,8
Gliflozine	41,3	51,9	66,4	92,3	118,8	37,7	47,4	60,7	84,5	108,8
Total non-insulin antidiabetic agents	**141,1**	**161,2**	**192,7**	**250,8**	**279,4**	**124,7**	**143,3**	**172,4**	**225,0**	**249,1**
Combinations of non-insulin antidiabetic agents										
Glimepiride + Pioglitazone	0,4	0,3	0,2	0,2	0,2	0,3	0,7	0,2	0,2	0,2
Metformin + Pioglitazone	0,9	0,8	0,6	0,3	0,3	0,8	0,3	0,6	0,3	0,3
Glibenclamide + Metformin	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Metformin + DPP-4 inhibitors	120,0	118,1	108,5	96,5	45,8	109,9	108,1	99,5	87,5	32,9
Metformin + Gliflozine	15,7	27,2	43,9	68,1	88,6	14,3	24,8	40,0	62,1	80,8
Pioglitazone + DPP-4 inhibitors	0,1	0,2	0,2	0,2	0,3	0,1	0,1	0,2	0,2	0,3
Gliflozine + DPP-4 inhibitors	-	0,2	0,1	3,6	6,5	-	0,2	0,1	3,3	5,9
Total combinations	**137,2**	**146,9**	**153,6**	**169,1**	**141,7**	**125,6**	**134,3**	**140,6**	**153,7**	**120,4**
Total	**278,3**	**308,0**	**346,3**	**420,0**	**421,1**	**250,3**	**277,6**	**313,0**	**378,7**	**369,5**

ADNsI: Antidiabéticos não insulínicos. Source: INFARMED, 2024, CCF (Invoice Control Centre).

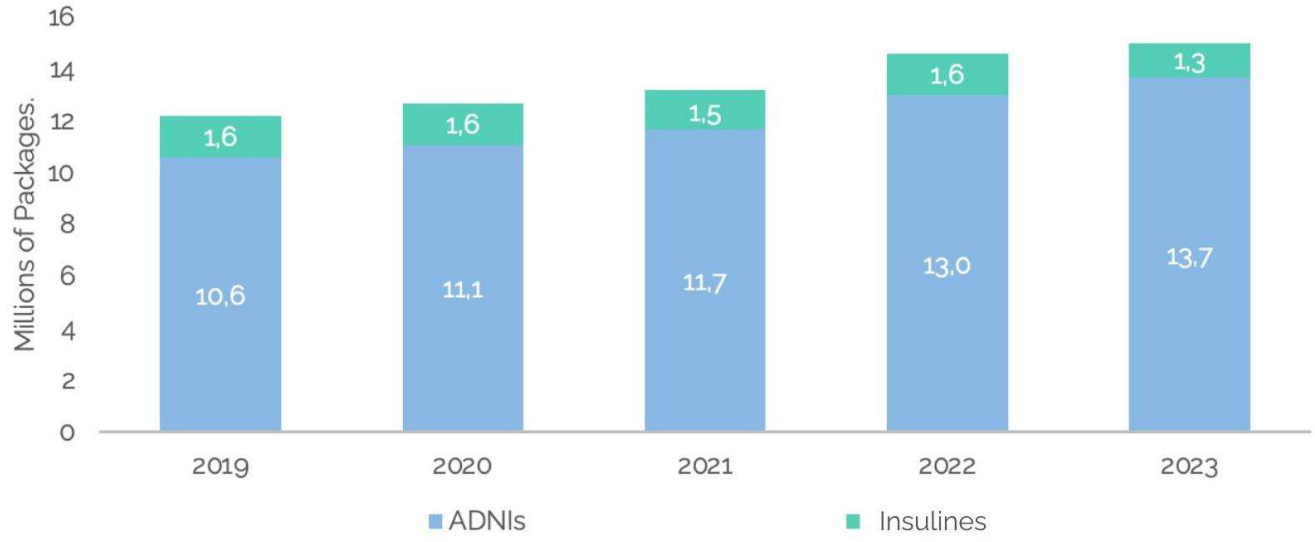
The SNS supported approximately 100% of the costs of insulin and 87.7% of the costs of non-insulin antidiabetics, with insulin costs amounting to €71.6M in 2023 and non-insulin antidiabetics costs €369.5M.

Table 27. Insulin expenses: Retail price value and SNS Charges, in Mainland Portugal | 2019 – 2023

	Retail price value (Millions of €)					SNS Charges (Millions of €)				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Human Insulins										
Fast-acting insulin (soluble)	0,6	0,6	0,4	0,4	0,3	0,6	0,6	0,4	0,4	0,3
Intermediate-acting insulin (isophane)	5,3	4,8	4,2	3,7	2,7	5,3	4,8	4,2	3,7	2,7
Fast-/Intermediate-acting insulin (soluble + isophane)	2,7	2,4	2,0	1,8	1,2	2,7	2,4	2,0	1,8	1,2
Total Human Insulins	8,5	7,8	6,6	5,9	4,2	8,5	7,7	6,6	5,9	4,2
Insuline Analogues										
Fast-acting insulin analogues	10,9	11,9	11,9	13,4	13,4	10,9	11,9	11,5	13,4	13,4
Long-acting insulin analogues	41,7	43,4	42,6	45,5	45,5	41,7	43,4	42,6	45,5	45,4
Fast-/Intermediate-acting insulin analogues	12,2	11,7	10,6	9,7	8,5	12,2	11,6	10,6	9,7	8,5
Total insulin analogues	64,8	67,0	65,1	68,6	67,4	64,8	66,9	64,7	68,6	67,3
Total Insulins	**73,3**	**74,8**	**71,7**	**74,5**	**71,6**	**73,3**	**74,7**	**71,3**	**74,4**	**71,6**

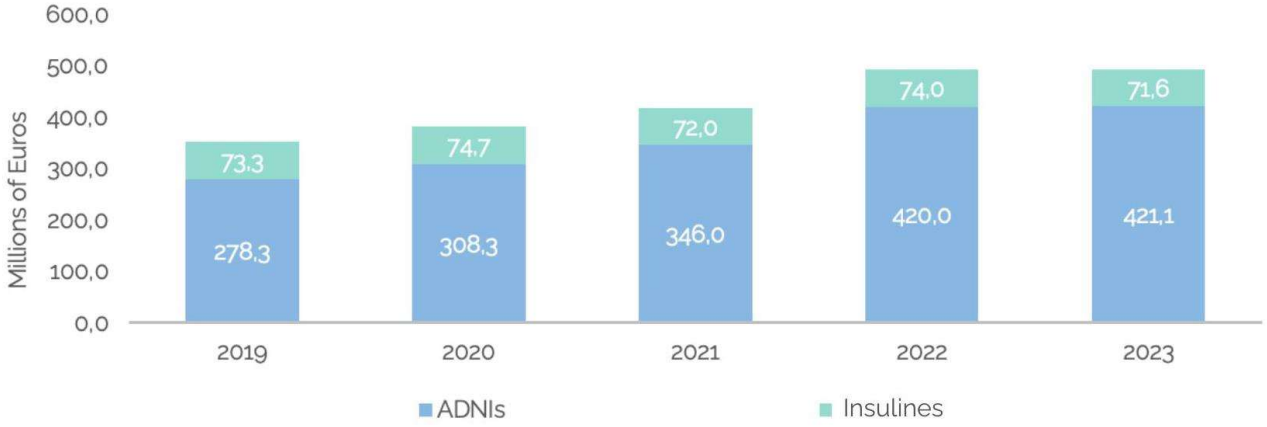
Source: INFARMED 2024, CCF (Invoice Control Centre).

Figure 12. Evolution of consumption of non-insulin antidiabetics and insulins in the SNS - Number of Packages - in Mainland Portugal | 2019 – 2023



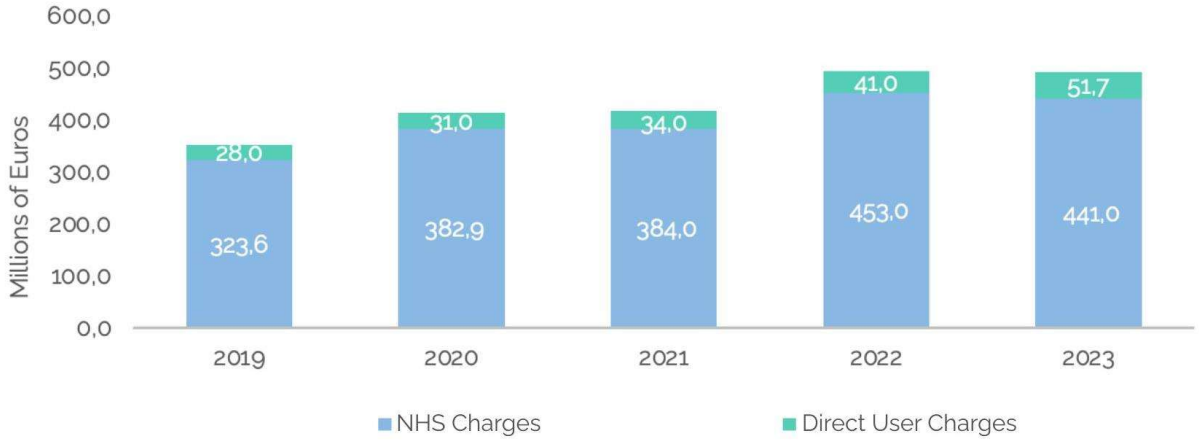
Source: INFARMED 2024, CCF (Invoice Control Centre).

Figure 13. Evolution of costs with non-insulin antidiabetics and insulins: Retail price value in Mainland Portugal | 2019 – 2022



Source: INFARMED 2024, CCF (Invoice Control Centre).

Figure 14. Evolution of SNS charges and direct user charges for non-insulin antidiabetics and insulins in Mainland Portugal | 2019 – 2023



Source: INFARMED 2024, CCF (Invoice Control Centre).

In 2023, consumption and expenditure on glucagon decreased by approximately 19.2% and 21.4% respectively, compared to 2019.

Table 28. Glucagon Consumption in the SNS in Mainland Portugal | 2019 – 2023

	Quantity of Packages				
	2019	**2020**	**2021**	**2022**	**2023**
Total Glucagon	6 876	5 971	5 752	6 187	5 553

Source: INFARMED 2024, CCF (Invoice Control Centre).

Table 29. Glucagon Costs - Retail price value and SNS Costs| 2019 – 2023

	Retail price value (Millions de €)					SNS Costs (Millions de €)				
	2019	**2020**	**2021**	**2022**	**2023**	**2019**	**2020**	**2021**	**2022**	**2023**
Total Glucagon	0,14	0,12	0,11	0,12	0,11	0,05	0,05	0,04	0,05	0,04

Source: INFARMED 2024, CCF (Invoice Control Centre).

Consumption and costs of test strips for determining capillary blood glucose levels continued to fall between 2019 and 2023, by around 20.9%, while consumption of test strips for determining ketonemia increased by 8.2%. Costs for ambulatory monitoring of glycemic control have increased since 2019 by around 26.7%, mainly due to the increase in the consumption of sensors for continuous monitoring of interstitial glucose (subsidized by the SNS since 2018).

Table 30. Use of test strips and sensors on the SNS | 2019 – 2023

	Number of Packages				
	2019	**2020**	**2021**	**2022**	**2023**
Blood glucose test strips	2 551 450	2 444 122	2 338 450	2 190 404	2 019 374
Interstitial glucose sensors	406 646	541 177	668 035	821 678	930 868
Glycosuria and ketonuria test strips	623	752	809	714	769
β-Ketonemia test strips	25 599	27 783	29 084	30 239	27 702
Total	2 984 318	3 013 834	3 036 378	3 043 035	2 978 713

Source: INFARMED 2024, CCF (Invoice Control Centre).

Table 31. Spending on test strips and sensors in mainland Portugal | 2019 – 2023

	Retail price value (Millions of €)					SNS Costs (Millions of €)				
	2019	**2020**	**2021**	**2022**	**2023**	**2019**	**2020**	**2021**	**2022**	**2023**
Blood glucose test strips	10,9	11,9	11,9	13,4	13,4	10,9	11,9	11,5	13,4	13,4
Interstitial glucose sensors	41,7	43,4	42,6	45,5	45,5	41,7	43,4	42,6	45,5	45,4
Glycosuria and ketonuria test strips	12,2	11,7	10,6	9,7	8,5	12,2	11,6	10,6	9,7	8,5
β-Ketonemia test strips	0,34	0,37	0,38	0,39	0,36	0,29	0,31	0,33	0,34	0,31
Total	67,6	72,3	77,1	82,8	85,6	57,4	61,3	65,5	70,3	72,7

Source: INFARMED 2024, CCF (Invoice Control Centre).

Continuous Subcutaneous Insulin Infusion Systems ("insulin pumps")

In 2023, a reduced number of continuous subcutaneous insulin infusion (CSII) devices were purchased. 368 hybrid automatic insulin delivery systems and 2 adhesive devices (accompanied by their respective consumables for the first year of treatment) were purchased, as well as 4,192 consumable kits for one year of treatment (for users in follow-up).

Table 32. Consumption and expenditure of continuous subcutaneous insulin infusion devices in the SNS in Mainland Portugal | 2019 – 2023

		Amount (n)					Cost (M€)				
		2019	**2020**	**2021**	**2022**	**2023**	**2019**	**2020**	**2021**	**2022**	**2023**
New devices	**Normal debit systems**	854	768	264	503	0	0,8	0,7	0,2	0,5	NA
	Adhesive systems	0	0	0	150	2	NA	NA	NA	0,5	0,01
	Hybrid systems	0	0	0	337	368	NA	NA	NA	2,4	2,6
	Total	854	768	264	990	370	0,8	0,7	0,2	3,4	2,6
	Normal debit systems	3 488	2 535	3 312	3 215	3 722	3,1	2,3	3,0	2,9	3,4

One-year consumable sets	**Adhesive systems**	0	0	0	0	147	NA	NA	NA	NA	0,4
	Hybrid systems	0	0	0	0	323	NA	NA	NA	NA	1,3
	Total	3 488	2 535	3 312	3 215	4 192	3,1	2,3	3,0	2,9	5,0
Total Costs (Millions of €)							3,9	3,0	3,2	6,3	7,7

Source: DGS/PND 2023.

In 2023, dispatch no. 6440 was published, which determines the creation of an integrated treatment program for people with type 1 Diabetes, through the placement of Automatic Insulin Administration Systems (SAAI) to all those who have an indication and motivation for this, with progressive development in the years 2023 to 2026. Despite this, in the year 2023 it was not possible to acquire the expected number of SAAI, which is why the costs related to the new devices decreased, although overall, the costs increased by 22% due to the greater number of acquisitions of consumables related to the CSII devices acquired.

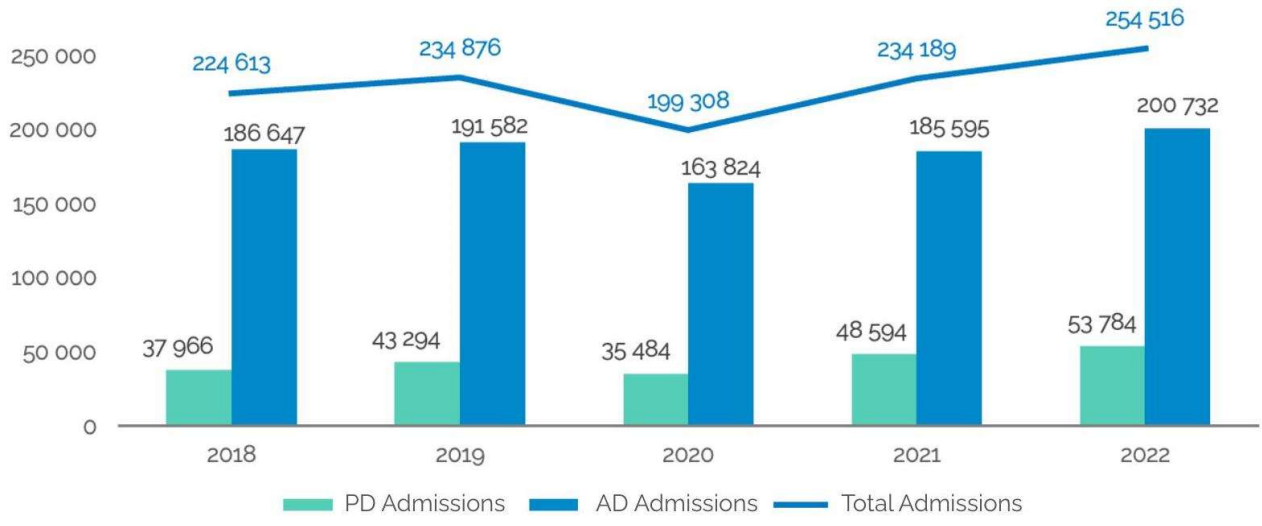
6. Hospital Admissions

The data presented in this chapter were taken from the Hospital Morbidity Databases provided by the Central Administration of the Health System (ACSS). The data presented use the ICD-10 (WHO International Classification of Diseases) hospital morbidity classification.

Admissions of users with Diabetes

In 2022, there were 254,516 hospital admissions of people diagnosed with Diabetes, of which 21.1% had Diabetes as the primary diagnosis.

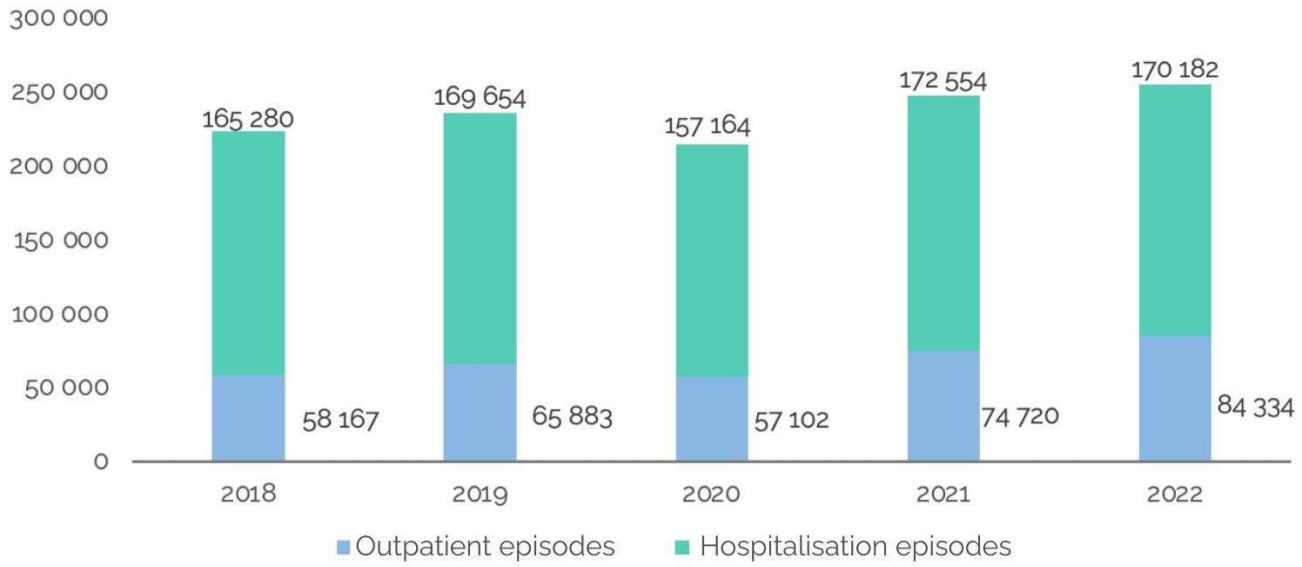
Figure 15. Total admissions to SNS hospitals with a diagnosis of Diabetes, either as a Primary Diagnosis (PD) or Associated Diagnosis (AD) | 2018 – 2022



Source: BDMH/ACSS, 2024. PD: Primary Diagnosis; AD: Associated Diagnosis.

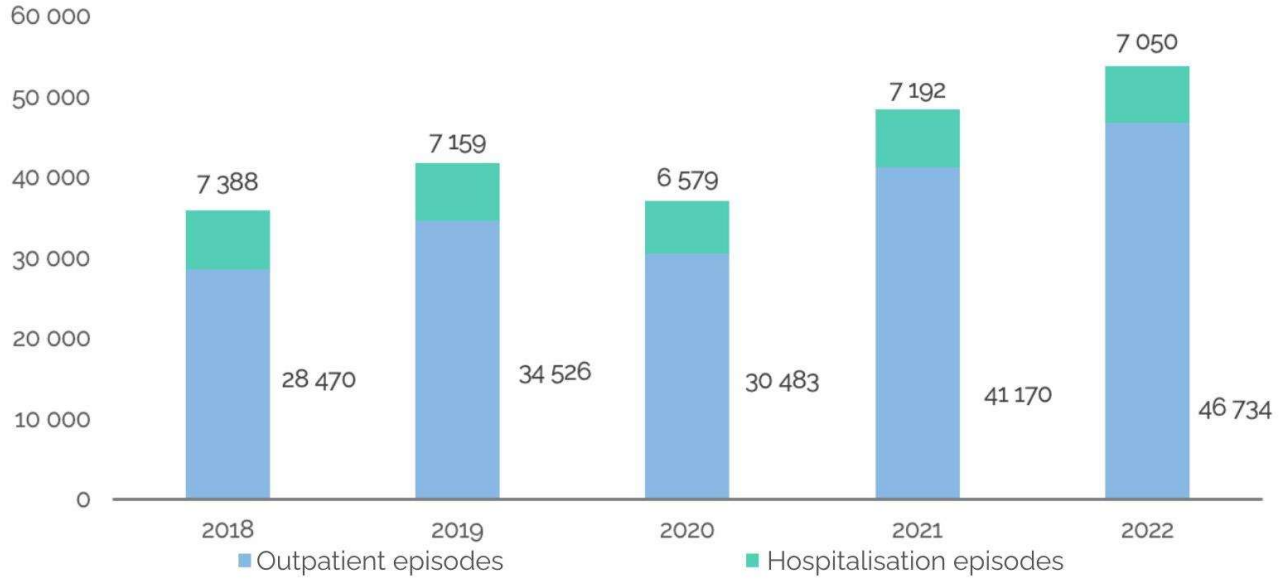
Regarding hospitalizations with a primary diagnosis of Diabetes, there was a significant increase in outpatient episodes, while the number of hospitalizations lasting more than 24 hours remained stable compared to previous years.

Figure 16. Total SNS hospital admissions with a primary diagnosis of diabetes | 2018 – 2022



Source: BDMH/ACSS, 2024.

Figure 17. Total Admissions to SNS Hospitals with a Principal or Associated Diagnosis of Diabetes | 2018 – 2022



Source: BDMH/ACSS, 2024.

In cases where hospitalization is not due to Diabetes as the primary diagnosis, there is an upward trend, interrupted in 2020, presumably in the context of the COVID-19 pandemic, and with a new upward trend from 2021 onwards. Among people with Diabetes, around 80% of hospitalizations were for another reason, with Diabetes being an associated diagnosis.

In 2022, 15% of hospitalizations in SNS hospitals corresponded to users with Diabetes and among the people admitted, around 20% had a diagnosis of Diabetes. Among people with Diabetes admitted to SNS hospitals, the average number of hospitalizations in 2022 was 1.7 per user..

Table 33. Proportion of SNS hospital admissions diagnosed with Diabetes | 2018- 2022

		2018	2019	2020	2021	2022
Total number of admissions diagnosed with Diabetes	**N**	224 613	234 876	199 308	234 189	254 516
	%	14,0%	14,4%	15,0%	15,8%	15,6%
Total number of hospitalizations diagnosed with Diabetes	**N**	165 280	169 654	157 164	172 554	170 182
	%	18,8%	19,3%	20,6%	21,5%	21,2%
Admissions (Total SNS)	**N**	1 564 507	1 604 286	1 399 915	1 560 511	
Hospitalizations (Total SNS)	**N**	856 524	858 075	743 659	795 290	774 869
Total number of users diagnosed with Diabetes	**N**	139 496	145 051	130 705	150 122	152 082
Average number of admissions	**N**	1,6	1,6	1,5	1,6	1,7

Source: *Business Intelligence for Hospital Morbidity -BIMH, accessed on 5/11/2024 (Data are uploaded weekly, and all episodes coded by hospitals (in ICD9CM or ICD10CM/PCS, with valid codes) from January 1, 2013 to September 20, 2023).*

Among patients admitted with acute complications of Diabetes (as the main or associated diagnosis), as in previous years, ketoacidosis was the most frequent diagnosis, maintaining the upward trend recorded in recent years. It is also worth highlighting the downward trend in hospitalizations due to DM with hyperosmolarity.

Table 34. Number of admissions due to acute complications of Diabetes (users with Diabetes as the main or associated diagnosis) | 2018 – 2022

		2018	2019	2020	2021	2022
DM com cetoacidose sem coma	**Hospitalizations (n)**	1 892	1 871	1 999	2 458	2 535
	Outpatient (n)	6	4	3	4	6
	%	0,85%	0,80%	0,93%	1,00%	1,00%
DM com cetoacidose com coma	**Hospitalizations (n)**	98	117	119	147	156
	Outpatient (n)	5	2	2	1	3
	%	0,05%	0,05%	0,06%	0,06%	0,06%
DM com hiperosmolaridade sem coma	**Hospitalizations (n)**	1 541	1 652	1 553	1 224	1 138
	Outpatient (n)	71	42	29	4	3
	%	0,72%	0,72%	0,74%	0,50%	0,45%
DM com hiperosmolaridade com coma	**Hospitalizations (n)**	162	120	166	143	141
	Outpatient (n)	0	0	0	0	2
	%	0,07%	0,05%	0,08%	0,06%	0,06%
DM com hipoglicemia sem coma	**Hospitalizations (n)**	1 633	1 645	1 653	1 729	1 845
	Outpatient (n)	13	8	2	8	3
	%	0,74%	0,70%	0,77%	0,70%	0,73%

DM com hipoglicemia com coma	**Hospitalizations (n)**	118	146	131	133	121
	Outpatient (n)	0	0	0	0	0
	%	0,05%	0,06%	0,06%	0,05%	0,05%
Total Admissões com DP e DA Diabetes		**223 447**	**235 537**	**214 266**	**247 274**	**254 516**

Source: BDMH/ACSS, 2024, extracted in October. Note: The total refers to the sum of all hospitalizations of people with Diabetes. Research method in BDMH: ICD9-CM DP: 249.1, 250.1, 249.2, 250.2, 249.3, 250, 249.8, 250.8; ICD 10-CM DP: E08.10, E09.10, E10.10, E11.10, E12.10, E1310, E08.11, E09.11, E10.11, E11.11, E12.11, E13.11, E08.00, E09.00, E10.00, E11.00, E12.00, E13.00, E08.01, E09.01, E10.01, E11.01, E12.01, E13.01, E08.641, E09.641, E10.641, E11.641, E12.641, E13.641, E08.649, E09.649, E10.649, E11.649, E12.649, E13.649.

Ophthalmic manifestations were the main cause of admission of users with Diabetes, similar to what was previously observed. Most of these hospitalizations for Diabetes with ophthalmic manifestations were outpatient episodes.

Table 35. Number of hospitalizations in users with Diabetes (as the primary or associated diagnosis), due to ophthalmic, kidney, peripheral circulatory, neurological, arthropathic and cutaneous manifestations | 2018 – 2022

		2018	2019	2020	2021	2022
DM with ophthalmic manifestations	**Hospitalizations (n)**	8 603	9 301	9 176	9 911	9 766
	Outpatient (n)	29 616	36 076	32 047	43 384	49 009
	%	17,1%	19,3%	19,2%	21,6%	23,1%
DM with kidney manifestations	**Hospitalizations (n)**	17 740	20 406	20 930	23 120	24 046
	Outpatient (n)	3 052	2 673	2 554	2 757	3 184
	%	9,3%	9,8%	11,0%	10,5%	10,7%
DM with peripheral circulatory disorders	**Hospitalizations (n)**	4 538	4 627	5 066	5 891	6 053
	Outpatient (n)	146	140	152	300	346
	%	2,1%	2,0%	2,4%	2,5%	2,5%
DM with neurological manifestations	**Hospitalizations (n)**	3 692	4 037	3 822	4 088	3 953
	Outpatient (n)	164	176	171	347	453
	%	1,7%	1,8%	1,9%	1,8%	1,7%
DM with diabetic arthropathy	**Hospitalizations (n)**	152	162	178	167	173
	Outpatient (n)	8	13	2	7	9
	%	0,1%	0,1%	0,1%	0,1%	0,1%
DM with skin disorders (dermatitis, ulceration)	**Hospitalizations (n)**	2 085	2 364	2 267	2 358	2 414
	Outpatient (n)	39	22	60	46	74
	%	1,0%	1,0%	1,1%	1,0%	1,0%
Total hospitalizations with a diagnosis of Diabetes (PD e AD)		**223 447**	**235 537**	**214 266**	**247 274**	**254 516**

Source: BDMH/ACSS, 2024, extracted in October. Note: The total refers to the sum of all hospitalizations of people with Diabetes. Note: Research method in BDMH: ICD9-CM DP: 249.4, 250.4, 249.5, 250.5, 249.6, 250.6, 249.7, 250.7; ICD 10-CM DP: E08.2, E09.2, E10.2, E11.2, E122, E13.2, E08.3, E09.3, E10.3, E11.3, E12.3, E13.3, E08.4, E09.4, E10.4, E11.4, E12.4, E13.4, E08.51, E08.52, E09.51, E09.52, E10.51, E10.52, E11.51, E1152, E12.51, E12.52, E13.51, E13.52.

Table 36. Number of hospitalizations due to acute complications of Diabetes, in users with Diabetes as the primary diagnosis (PD) | 2018 – 2022

		2018	2019	2020	2021	2022
Diabetes with ketoacidosis without coma	**Hospitalizations (n)**	1352	1351	1377	1573	1623
	Outpatient (n)	1	1	0	0	0
	%	3,8%	3,2%	3,7%	3,3%	3,0%

Diabetes with ketoacidosis with coma	**Hospitalizations (n)**	62	77	72	79	86
	Outpatient (n)	5	2	1	1	0
	%	0,19%	0,19%	0,20%	0,17%	0,16%
Diabetes with hyperosmolarity without coma	**Hospitalizations (n)**	558	533	611	647	551
	Outpatient (n)	24	19	6	1	0
	%	1,62%	1,32%	1,66%	1,34%	1,02%
Diabetes with hyperosmolarity with coma	**Hospitalizations (n)**	100	65	96	82	78
	Outpatient (n)	0	0	0	0	0
	%	0,28%	0,16%	0,26%	0,17%	0,15%
Diabetes with hypoglycaemia without coma	**Hospitalizations (n)**	480	424	331	312	297
	Outpatient (n)	0	0	0	0	0
	%	1,34%	1,02%	0,89%	0,65%	0,55%
Diabetes with hypoglycaemic coma	**Hospitalizations (n)**	73	76	72	70	44
	Outpatient (n)	0	0	0	0	0
	%	0,20%	0,18%	0,19%	0,14%	0,08%
Total Hospitalizations with a diagnosis of Diabetes (PD)		**35 858**	**41 685**	**37 062**	**48 362**	**53 784**

Source: BDMH/ACSS, 2024, extracted in October. Research method in BDMH: ICD9-CM DP: 249.1, 250.1, 249.2, 250.2, 249.3, 250, 249.8, 250.8; ICD 10-CM DP: E08.10, E09.10, E10.10, E11.10, E12.10, E13.10, E08.11, E09.11, E10.11, E11.11, E12.11, E13.11, E08.00, E09.00, E10.00, E11.00, E12.00, E13.00, E08.01, E09.01, E10.01, E11.01, E12.01, E13.01, E08.641, E09.641, E10.641, E11.641, E12.641, E13.641, E08.649, E09.649, E10.649, E11.649, E12.649, E13.649.

Table 37. Number of hospitalizations due to ophthalmic, kidney, peripheral circulatory, neurological, cutaneous and arthropathic manifestations in users with Diabetes as the primary diagnosis | 2018 – 2022

		2018	2019	2020	2021	2022
Ophthalmic Manifestations	**Hospitalizations (n)**	254	207	140	168	125
	Outpatient (n)	27 685	34 064	30 163	40 707	46 099
	%	77,9%	82,2%	81,8%	84,5%	85,9%
Kidney Manifestations	**Hospitalizations (n)**	499	546	478	483	506
	Outpatient (n)	726	397	286	415	581
	%	3,4%	2,3%	2,1%	1,9%	2,0%
Peripheral circulatory disorders	**Hospitalizations (n)**	1 215	1 231	1 365	1 638	1 690
	Outpatient (n)	14	29	11	32	33
	%	3,4%	3,0%	3,7%	3,5%	3,2%
Neurological Manifestations	**Hospitalizations (n)**	91	101	67	68	67
	Outpatient (n)	1	1	2	1	1
	%	0,3%	0,2%	0,2%	0,1%	0,1%
Skin Disorders (dermatitis, ulceration)	**Hospitalizations (n)**	942	838	741	800	821
	Outpatient (n)	9	6	7	11	12
	%	2,7%	2,0%	2,0%	1,7%	1,5%
Diabetic Arthropathy	**Hospitalizations (n)**	22	23	24	20	30
	Outpatient (n)	1	1	0	1	0
	%	0,1%	0,1%	0,1%	0,0%	0,1%
Total Hospitalizations with DP Diabetes		**35 858**	**41 685**	**37 062**	**48 362**	**53 784**

Source: BDMH/ACSS, 2024. Research method in BDMH: ICD9-CM DP: 249.4, 250.4, 249.5, 250.5, 249.6, 250.6, 249.7, 250.7; ICD 10-CM DP: E08.2, E09.2, E10.2, E11.2, E12.2, E13.2, E08.3, E09.3, E10.3, E11.3, E12.3, E13.3, E08.4, E09.4, E10.4, E11.4, E12.4, E13.4, E08.51, E08.52, E09.51, E09.52, E10.51, E10.52, E11.51, E11.52, E12.51, E12.52, E13.51, E13.52.

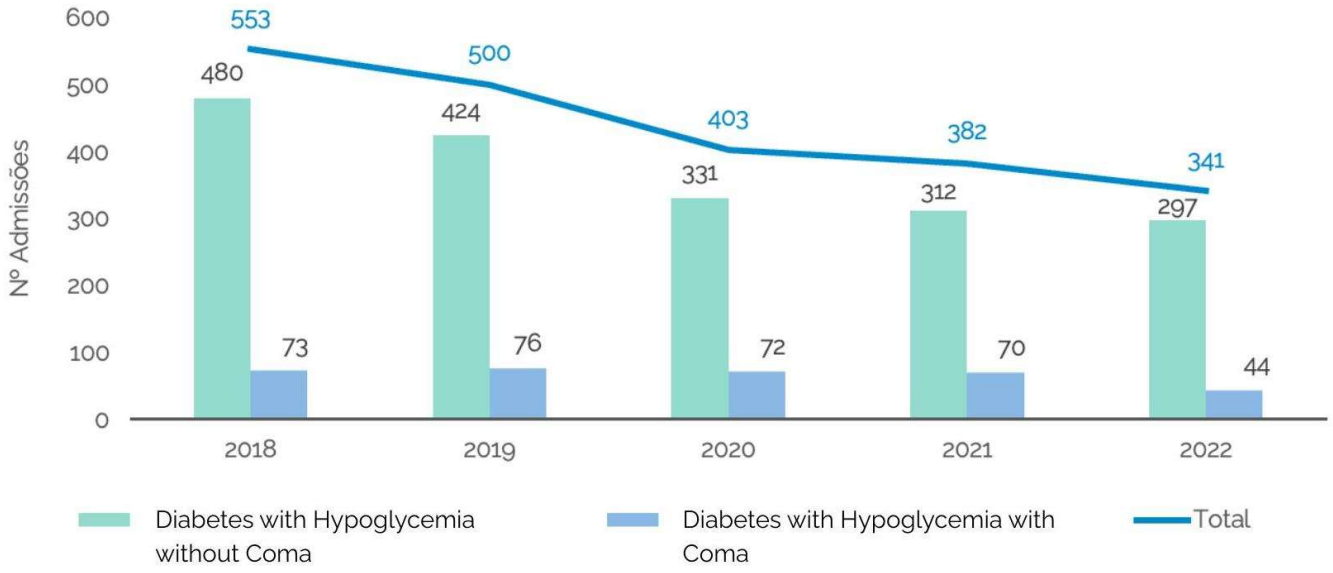
Among patients admitted with a primary diagnosis of diabetes, the downward trend in the number of hospitalizations due to hypoglycemia with and without coma continues. It should be emphasized that this reduction occurs mainly due to a reduction in the incidence in people with T2DM. However, in line with the higher prevalence of T2DM, a greater number of patients with T2DM and hypoglycemia were admitted than patients with T1DM and this complication.

Table 38. Admissions for Hypoglycemia in users with Type 1 Diabetes (T1DM) and Type 2 Diabetes (T2DM) (users admitted with a primary diagnosis of Diabetes) | 2018 - 2022

		2018	2019	2020	2021	2022
Diabetes with Hypoglycemia without Coma	**T1DM**	57 (12%)	50 (12%)	34 (10%)	38 (12%)	52 (18%)
	T2DM	410 (85%)	370 (87%)	287 (87%)	263 (84%)	242 (81%)
	Others	13 (3%)	4 (1%)	10 (3%)	11 (4%)	3 (1%)
	Total	**480**	**424**	**331**	**312**	**297**
Diabetes with Hypoglycemia with Coma	**T1DM**	5 (7%)	11 (14%)	9 (13%)	14 (20%)	11 (25%)
	T2DM	62 (85%)	65 (86%)	62 (86%)	55 (79%)	31 (70%)
	Others	6 (8%)	0 (0%)	1 (1%)	1 (1%)	2 (5%)
	Total	**73**	**76**	**72**	**70**	**44**

Source: BDMH/ACSS, 2024. Research method in BDMH: ICD 10-CM DP: E08.641, E09.641, E10.641, E11.641, E12.641, E13.641, E08.649, E09.649, E10.649, E11.649, E12.649, E13.649

Figure 18. Admissions due to Hypoglycemia (with or without coma) in patients admitted with a primary diagnosis of Diabetes | 2018 – 2022



Source: BDMH/ACSS, 2023. Research method in BDMH: ICD 10-CM DP: E08.641, E09.641, E10.641, E11.641, E12.641, E13.641, E08.649, E09.649, E10.649, E11.649, E12.649, E13.649

Length of hospital stays

Hospitalizations for people with diabetes as their primary diagnosis lasted an average of 10.1 days in 2022, which is higher than the average for hospitalizations in the SNS, which was 8.6 days. People with diabetes who were hospitalized for another reason in 2022 had a hospitalization length of 10.4 days, which is also higher than the average for hospitalizations in the SNS.

Table 39. Length of hospital stay (including day cases) for Diabetes, and total length of stay in hospitals | 2018 – 2022

	2018 Average (median)	2019 Average (median)	2020 Average (median)	2021 Average (median)	2022 Average (median)
Diabetes as primary diagnosis	10,1 (3,0)	10,6 (5,0)	11,6 (6,0)	10,0 (5,0)	10,1 (5,0)
Diabetes as secundary diagnosis	10,0 (7,0)	10,0 (6,0)	10,6 (6,0)	10,1 (6,0)	10,4 (6,0)
Diabetes (primary + secundary diagnosis)	9,9 (7,0)	9,9 (6,0)	10,5 (6,0)	10,0 (6,0)	10,3 (6,0)
Hospitalizations no SNS (with and without Diabetes)	8,2	8,2	8,6	8,4	8,6

Sources: Diabetes Dashboard, DGS, accessed on 11/05/2024 (hospital morbidity data presented in the Diabetes Dashboard on the date of access were obtained from the BDMH version made available by ACSS on 05/10/2024). Business Intelligence for Hospital Morbidity - BIMH, accessed on 11/05/2024 (data are uploaded weekly, and all episodes coded by hospitals (in ICD9CM or ICD10CM/PCS, with valid codes) from January 1, 2013 to October 30, 2024) are made available on the date of access).

In-hospital Lethality

The in-hospital fatality rate for people with Diabetes is higher than the total fatality rate for patients admitted to SNS units. The in-hospital fatality rate in 2022 was 7.6% for people admitted with a primary diagnosis of Diabetes and 14.9% for people with Diabetes as a primary or associated diagnosis. These figures are higher than the 7.1% seen in all users (with or without Diabetes) admitted to SNS hospitals.

Table 40. In-hospital lethality in hospitalizations of users with Diabetes (as primary diagnosis) | 2018 – 2022

	2018	2019	2020	2021	2022
No. of patients hospitalized (PD of diabetes and discharged as deceased)	456	427	466	486	534
N.o of patients hospitalized (PD of diabetes)	7 459	7 189	6 234	6 573	7050
In-hospital lethality of hospitalized patients (PD of diabetes)	6,1%	5,9%	7,5%	7,4%	7,6%

Source: Business Intelligence for Hospital Morbidity - BIMH, consulted on 11/5/2024 (The data are uploaded weekly, and all episodes coded by hospitals (in ICD9CM or ICD10CM/PCS, with valid codes) from January 1, 2013 to October 30, 2024) are available on the date of consultation.

Table 41. In-hospital lethality in hospitalizations (including day cases) of users with Diabetes as primary or associated diagnosis| 2018 – 2022

	2018	2019	2020	2021	2022
No. of hospitalized patients with diabetes and discharged as deceased	14 645	14 747	16 178	17 150	16 795
N.o of patients hospitalized with diabetes	113 358	115 098	106 406	117 551	112 733
In-hospital lethality of hospitalized patients with diabetes	12,9%	12,8%	15,2%	14,6%	14,9%

Source: Business Intelligence for Hospital Morbidity - BIMH, consulted on 11/5/2024 (The data are uploaded weekly, and all episodes coded by hospitals (in ICD9CM or ICD10CM/PCS, with valid codes) from January 1, 2013 to October 30, 2024) are available on the date of consultation.

Table 42. In-hospital lethality of all users admitted to SNS Hospitals (with any diagnosis) | 2018 – 2022

	2018	2019	2020	2021	2022
No. of hospitalized patients with discharged as deceased	53 732	52 958	55 336	57 954	55 341
N.o of patients hospitalized	856 524	858 075	743 659	795 290	774 869
In-hospital lethality of hospitalized patients	6,3%	6,2%	7,4%	7,3%	7,1%

Source: Business Intelligence for Hospital Morbidity - BIMH, consulted on 11/5/2024 (The data are uploaded weekly, and all episodes coded by hospitals (in ICD9CM or ICD10CM/PCS, with valid codes) from January 1, 2013 to October 30, 2024) are available on the date of consultation.

7. Diabetes Screening and Complications

Diabetic Retinopathy Screening

In 2023, of the users with a Diabetes record who meet eligibility criteria for population-based diabetic retinopathy (DR) screening, 425,103 users were invited and of these, 266,508 users were screened. These values correspond, respectively, to a population coverage rate of 51% and a population screening rate of 32%, with a geographic coverage by ACeS of 94%. The number of positive cases detected in the screening in 2023 was 9,771 people, maintaining a stable rate of 4% compared to the previous year.

Table 43. Diabetic retinopathy screening activity in Mainland Portugal | 2019 – 2023

	2019	2020	2021	2022	2023
No. of ACES/ULS with DR screening facilities	47	48	51	50	51
Total ACES/ULS	54	54	54	54	54
Geographic coverage / ACES/USI	87%	89%	94%	93%	94%
Eligible population	738 858	734 405	802 073	835 094	837 343
No. of patients summoned	365 358	192 362	282 124	372 484	425 103
No. of patients screened	225 743	102 487	185 404	237 487	266 508
Rate of adherence to DR screening	62%	53%	65%	64%	63%
Population coverage rate	49%	26%	35%	45%	51%
Population screening rate	31%	14%	23%	28%	32%
No. of Positive Cases	9 627	5 118	6 945	8 281	9 771
% Positive Cases	4%	5%	4%	4%	4%

Source: ARS´s – SiiMA Rastreios e APDP, 2024.

Regarding the evolution of the DRD, there has been a gradual recovery in coverage rates, population screening and screening adherence rates since 2021, with the highest values recorded in all of them since 2019, indicating a recovery in screening and greater installed capacity of the RRD in Mainland Portugal. However, this coverage is still far from what is desired, revealing constraints in access to screening for almost half of eligible people with diabetes.

Figure 19. Evolution of diabetic retinopathy screening coverage in Mainland Portugal | 2019 – 2023

Source: ARS-SiiMA Screenings, 2024. Note: Population coverage rate: No. of users diagnosed with Diabetes invited for screening / Eligible population in the region; Population screening rate: No. of users with Diabetes screened in the region / No. of users diagnosed with Diabetes eligible for screening in the region.

Kidney Disease in Diabetes

Kidney disease in Diabetes is a leading cause of morbidity and mortality and a leading cause of kidney failure leading to the need for renal replacement therapy (hemodialysis, peritoneal dialysis). To prevent progression to more severe forms of the disease, periodic screening and early treatment are essential. In 2023, there was an increase in the proportion of screened users with a record of microalbuminuria assessment in the CSP (69%), compared to 2022, reaching the highest value since 2019.

Table 44. Percentage of SNS users assessed for albuminuria, in Primary Health Care in Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	78	63	74	79	80
Central Region	%	66	60	63	67	69
LVT Region	%	57	47	51	56	60
Alentejo Region	%	57	48	50	54	58
Algarve Region	%	49	45	48	53	55
Mainland Portugal	%	66	56	62	67	69

Source: SIM@SNS 2024, extracted on February 8. BI 2013.097.01 FL Proportion of DM with/microalbuminuria in the last year

Regarding the prevalence of diabetes in people with chronic kidney disease (CKD), according to the Portuguese Society of Nephrology, in 2022, 27.3% of people with CKD were diagnosed with Diabetes, maintaining a stable prevalence rate between 27-28% since 2018 (4). It was also found that in 15.6% of people with kidney transplants, Diabetes was considered the etiology of kidney disease (5).

Table 45. Prevalence of Diabetes in people with CKD | 2018 – 2022

	2018	2019	2020	2021	2022
Prevalence of Diabetes in people with CKD – Global	27,8	28,0	27,7	28,0	27,3
Prevalence of Diabetes in people with CKD on Hemodialysis	28,1	28,6	28,6	29,0	28,1
Prevalence of Diabetes in people with CKD on Peritoneal Dialysis	15,5	16,9	15,8	14,6	16,2
Diabetes as the cause of CKD in kidney transplants	17,6	17,0	21,7	13,6	15,6

Source: Annual reports of the Portuguese Society of Nephrology 2018-2023. Note: CKD – Chronic Kidney Disease.

Diabetic Foot

During 2023, at least one assessment of the risk of diabetic foot ulcers was carried out on 78% of users registered with the CSP, with a record of Diabetes. This assessment and observation of the foot identifies the degree of risk of developing an ulcer and guides in defining the care plan based on the degree of risk determined. There has been a progressive increase in this assessment since 2020, surpassing pre-pandemic values in 2023, with all regions presenting assessment values higher than those of 2022. The Alentejo region still maintains values below those seen in 2019.

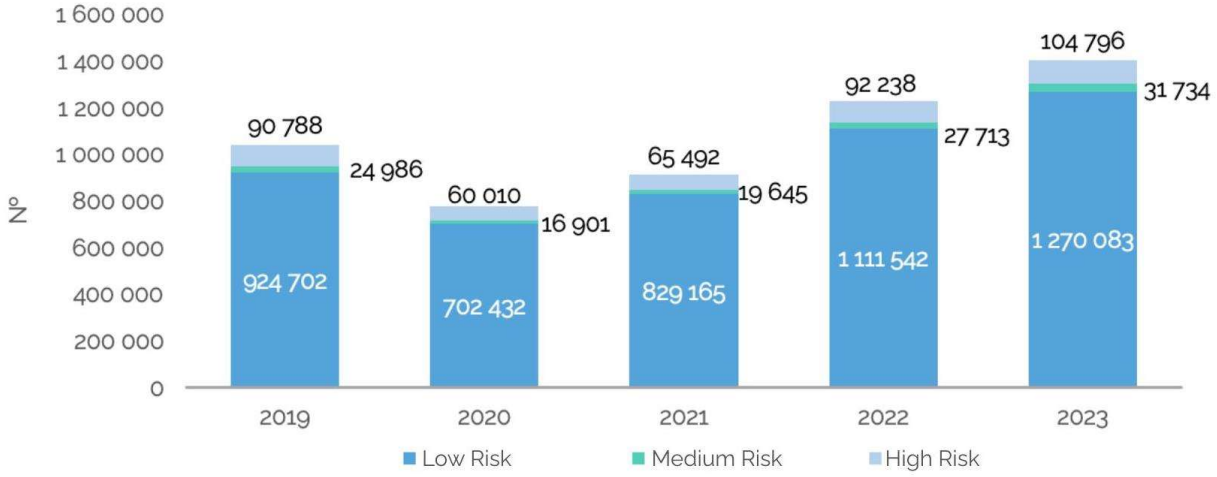
Table 46. Percentage of SNS users with Diabetes and who had a foot check in Mainland Portugal | 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	%	87	72	80	89	91
Central Region	%	72	62	62	72	77
LVT Region	%	62	45	44	59	65
Alentejo Region	%	72	56	51	62	69
Algarve Region	%	59	50	53	62	67
Mainland Portugal	%	**74**	**59**	**62**	**73**	**78**

Source: SPMS – SIM@SNS 2024, extracted on May 13. Research method: Código SIARS BI 2013.035.01 FL Proportion of DM with foot examinations in the last year

Of all diabetic foot ulcer risk assessments recorded, 1,270,083 (90.3%) were classified as Low Risk, 31,734 (2.3%) were classified as Medium Risk and 104,796 (7.4%) were classified as High Risk.

Figure 20. Total diabetic foot risk assessments, by risk level, carried out in Primary Health Care, Mainland Portugal| 2019 – 2023



Source: SPMS – SIM@SNS 2024, extracted on May 13.

Regarding the proportion of users with DM monitored in SNS CSPs in Mainland Portugal in 2023, there was a record of active foot ulcers in 1960 users, corresponding to 0.23% of monitored users, with a positive evolution in relation to the previous year, in all regions of Mainland Portugal. The Alentejo region has the highest value, while the Algarve region has the lowest value, however, at a national level, there is stability in the values between 0.25 and 0.23, despite regional variations.

Table 47. Percentage of users with diabetes with active foot ulcer recorded in Primary Health Care, Mainland Portugal| 2019 – 2023

		2019	2020	2021	2022	2023
Northern Region	**N**	734	679	750	840	770
	%	0,25	0,23	0,24	0,26	0,22
Central Region	**N**	293	341	348	377	381
	%	0,21	0,24	0,24	0,24	0,24
LVT Region	**N**	539	515	501	613	591
	%	0,23	0,22	0,21	0,24	0,23
Alentejo Region	**N**	155	147	133	130	158
	%	0,33	0,31	0,28	0,26	0,31
Algarve Region	**N**	37	32	46	60	60
	%	0,17	0,11	0,15	0,18	0,17
Mainland Portugal	**N**	1758	1714	1778	2020	1960
	%	0,25	0,23	0,23	0,25	0,23

Source: SPMS – SIM@SNS, 2024, extracted on February 8. Research method: Código SIARS 2011.005.02

Diabetic foot is one of the complications of Diabetes and the main cause of lower limb amputation performed for non-traumatic reasons.

In 2022, 3,640 hospitalizations were recorded in SNS hospitals due to diabetic foot, maintaining an upward trend with a higher value than in previous years. There was an in-hospital mortality rate of 6.7% and an average of 15.7 days of hospitalization due to diabetic foot.

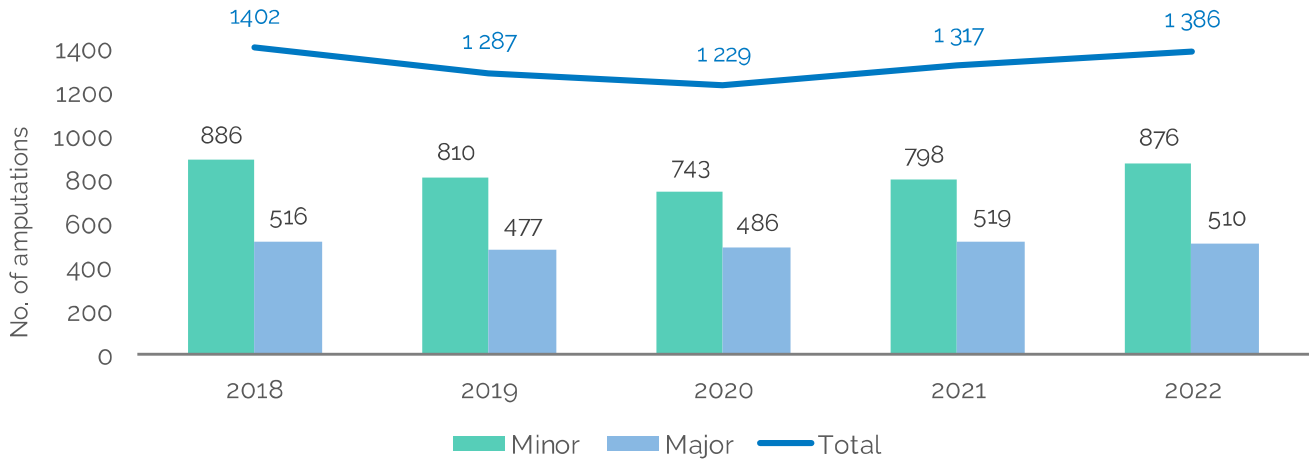
Table 48. SNS Hospitalizations for Diabetic Foot | 2018 – 2022

	2018	2019	2020	2021	2022
No. of hospitalizations	2 654	2 807	2 786	3 541	3 640
No. of users	2 423	2 543	2 509	3 173	3 158
No. of deaths	171	167	174	177	212
Lethality	7,1%	6,6%	6,9%	5,6%	6,7%
Average delay (days)	18,0	17,8	17,2	15,1	15,7

Source: Diabetes Dashboard, accessed on 10/22/2024 (The hospital morbidity data presented in the Diabetes Dashboard on the date of the access were obtained from the BDMH version made available by ACSS on 05/10/2024). Research method in BDMH: ICD9-CM DP: 44023, 440.24, 785.4, 707.1-; ICD9-CM DA: 249.-, 250.-; ICD 10-CM DP: E08.52, E09.52, E10.52, E11.52, E12.52, E13.52, I70.233, I70.234, I70.235, I70.243, I70.244, I70.245; ICD10-DA: E08.-, E09.-, E10.-, E11.-, E12.-, E13.

In 2022, the number of lower limb amputations in people admitted with Diabetes as the primary diagnosis showed an increase of 69 cases of amputation in total compared to the previous year, at the expense of the increase in *minor* amputations.

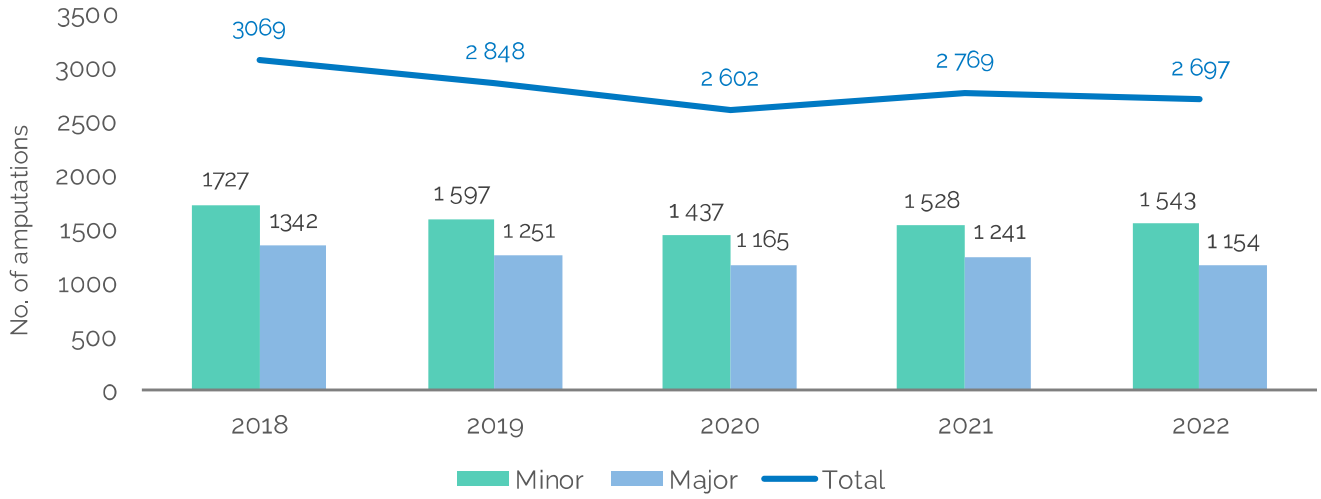
Figure 21. Trend in number of amputations for diabetic foot (with Diabetes as primary diagnosis)) | 2018 – 2022



Source: BDMH/ACSS, consulted on 10/22/2024 (The hospital morbidity data presented in the Diabetes Dashboard on the date of consultation were obtained from the BDMH version made available by ACSS on 05/10/2024). Research method in BDMH: ICD9-CM DP: 249.-, 250.-; ICD9-PCS: 84.1-84.19; ICD 10-CM DP: E08.-, E09.-, E10.-, E11.-, E12.-, E13.-; ICD10-PCS: 0Y6M0Z0, 0Y6M0Z4, 0Y6M0Z5, 0Y6M0Z6, 0Y6M0Z7, 0Y6M0Z8, 0Y6M0Z9, 0Y6M0ZB, 0Y6M0ZC, 0Y6M0ZD, 0Y6M0ZF, 0Y6N0Z0, 0Y6N0Z4, 0Y6N0Z5, 0Y6N0Z6, 0Y6N0Z7, 0Y6N0Z8, 0Y6N0Z9, 0Y6N0ZB, 0Y6N0ZC, 0Y6N0ZD, 0Y6N0ZF, 0Y6P0Z0, 0Y6P0Z1, 0Y6P0Z2, 0Y6P0Z3, 0Y6Q0Z0, 0Y6Q0Z1, 0Y6Q0Z2, 0Y6Q0Z3, 0Y6R0Z0, 0Y6R0Z1, 0Y6R0Z2, 0Y6R0Z3, 0Y6S0Z0, 0Y6S0Z1, 0Y6S0Z2, 0Y6S0Z3, 0Y6T0Z0, 0Y6T0Z1, 0Y6T0Z2, 0Y6T0Z3, 0Y6U0Z0, 0Y6U0Z1, 0Y6U0Z2, 0Y6U0Z3, 0Y6V0Z0, 0Y6V0Z1, 0Y6V0Z2, 0Y6V0Z3, 0Y6W0Z0, 0Y6W0Z1, 0Y6W0Z2, 0Y6W0Z3, 0Y6X0Z0, 0Y6X0Z1, 0Y6X0Z2, 0Y6X0Z3, 0Y6Y0Z0, 0Y6Y0Z1, 0Y6Y0Z2, 0Y6Y0Z3, 0Y620ZZ, 0Y630ZZ, 0Y640ZZ, 0Y670ZZ, 0Y680ZZ, 0Y6F0ZZ, 0Y6G0ZZ, 0Y6C0Z1, 0Y6C0Z2, 0Y6C0Z3, 0Y6D0Z1, 0Y6D0Z2, 0Y6D0Z3, 0Y6H0Z1, 0Y6H0Z2, 0Y6H0Z3, 0Y6J0Z1, 0Y6J0Z2, 0Y6J0Z3

Considering all users with Diabetes (primary and associated diagnosis), the total number of registered amputations remained relatively stable over the last five years, with only higher values in 2018 and 2019..

Figure 22. Trend in total number of amputations in people with Diabetes (as primary or associated diagnosis)| 2018 – 2022



Source: BDMH/ACSS, consulted on 10/22/2024 (The hospital morbidity data presented in the Diabetes Dashboard on the date of consultation were obtained from the BDMH version made available by ACSS on 05/10/2024). BDMH research method: ICD9-CM DP/DA: 249.-, 250.-; ICD9-PCS: 84.10-84.19; ICD 10-CM DP/DA: E08.-, E09.-, E10.-, E11.-, E12.-, E13.-; ICD10-PCS: 0Y6M0Z0, 0Y6M0Z4, 0Y6M0Z5, 0Y6M0Z6, 0Y6M0Z7, 0Y6M0Z8, 0Y6M0Z9, 0Y6M0ZB, 0Y6M0ZC, 0Y6M0ZD, 0Y6M0ZF, 0Y6N0Z0, 0Y6N0Z4, 0Y6N0Z5, 0Y6N0Z6, 0Y6N0Z7, 0Y6N0Z8, 0Y6N0Z9, 0Y6N0ZB, 0Y6N0ZC, 0Y6N0ZD, 0Y6N0ZF, 0Y6P0Z0, 0Y6P0Z1, 0Y6P0Z2, 0Y6P0Z3, 0Y6Q0Z0, 0Y6Q0Z1, 0Y6Q0Z2, 0Y6Q0Z3, 0Y6R0Z0, 0Y6R0Z1, 0Y6R0Z2, 0Y6R0Z3, 0Y6S0Z0, 0Y6S0Z1, 0Y6S0Z2, 0Y6S0Z3, 0Y6T0Z0, 0Y6T0Z1, 0Y6T0Z2, 0Y6T0Z3, 0Y6U0Z0, 0Y6U0Z1, 0Y6U0Z2, 0Y6U0Z3, 0Y6V0Z0, 0Y6V0Z1, 0Y6V0Z2, 0Y6V0Z3, 0Y6W0Z0, 0Y6W0Z1, 0Y6W0Z2, 0Y6W0Z3, 0Y6X0Z0, 0Y6X0Z1, 0Y6X0Z2, 0Y6X0Z3, 0Y6Y0Z0, 0Y6Y0Z1, 0Y6Y0Z2, 0Y6Y0Z3, 0Y620ZZ, 0Y630ZZ, 0Y640ZZ, 0Y670ZZ, 0Y680ZZ, 0Y6F0ZZ, 0Y6G0ZZ, 0Y6C0Z1, 0Y6C0Z2, 0Y6C0Z3, 0Y6D0Z1, 0Y6D0Z2, 0Y6D0Z3, 0Y6H0Z1, 0Y6H0Z2, 0Y6H0Z3, 0Y6J0Z1, 0Y6J0Z2, 0Y6J0Z3

Regarding the indicator of the rate of Hospitalizations due to major amputation of the lower limb registered at the CSP level, in 2022, an indicator that takes as reference the place of registration at the CSP, regardless of the place where the hospitalization for amputation occurs, allowing to verify the asymmetries between the regions of Mainland Portugal, in terms of amputation rates. All health regions, except for the Central Region, with 9.1 amputations per 100,000 registered with diabetes, have amputation rates higher than 12 amputations per 100,000 registered with diabetes. It is also worth highlighting the lack of continuity of this indicator, with 2020 having no data.

Table 49. Primary Health Care (adjusted) registration rate of hospitalizations for lower limb amputation in people with Diabetes, Mainland Portugal| 2018 – 2022

	2018	2019	2020	2021	2022
Northern Region	11,7	11,4	NA	12,7	12,7
Central Region	7,8	5,2	NA	9,8	9,1
LVT Region	12,8	12,7	NA	13,8	14,2
Alentejo Region	17,0	11,1	NA	15,9	12,4
Algarve Region	15,8	13,4	NA	12,8	12,6
Mainland Portugal	13,0	10,7	NA	12,7	12,6

Source: SPMS – SIM@SNS 2024, extracted on May 13 Research method: 2017.360.01 FL: Intern. rate for diabetic lower limb amp. (adjusted)
Note: Any amputation of the lower limb except fingers is considered a major amputation. Rate per 100,000 inhab.

Macrovascular Disease

Macrovascular disease is one of the causes of significant morbidity and mortality in people diagnosed with Diabetes. In 2022, in SNS hospitals, 28% of people admitted for acute myocardial infarction (AMI) and 29% of people admitted for cerebrovascular accident (CVA) had Diabetes as an associated diagnosis.

Table 50. Number of admissions and lethality from acute myocardial infarction (AMI) in people with Diabetes, and total numbers in hospitals | 2018– 2022

			2018	2019	2020	2021	2022
Users admitted with AMI (primary diagnosis)	**With DM as an associated diagnosis**	N	3 677	3 766	3 108	3 373	3 266
	With any associated diagnosis	N	13 321	13 247	11 781	12 581	11 523
	Percentage of DM in people with AMI	%	27,6%	28,4%	26,4%	26,8%	28,3%
In-hospital lethality in patients admitted with AMI (primary diagnosis)	**With DM as an associated diagnosis**	N	266	267	247	301	269
		%	7,2%	7,1%	7,9%	8,9%	8,2%
	With any associated diagnosis	N	853	795	746	771	698
		%	6,4%	6,0%	6,3%	6,1%	6,1%

Sources: Diabetes Dashboard, accessed on 09/26/2023 (The hospital morbidity data presented in the Diabetes Dashboard on the date of the access were obtained from the BDMH version made available by ACSS on 05/18/2023). Business Intelligence for Hospital Morbidity - BIMH, accessed on 09/26/2023 (The data are uploaded weekly, and all episodes coded by hospitals (in ICD9CM or ICD10CM/PCS, with valid codes) from January 1, 2013 to September 20, 2023) are made available on the date of the access). In-hospital lethality: number of deaths/number of users. Research method in BDMH: ICD9-CM DP: 410.01, 410.11, 410.21, 410,31, 410.41, 410,51, 410.61, 410.81, 410.91, 410,71; ICD9-CM DA: 249.-, 250.-; ICD 10-CM DP: I21.01, I21.02, I21.09, I21.11, I21.19, I21.21, I21.29, I21.4; ICD10-CM DA: E08.-, E09.-, E10.-, E11-, E12.-, E13-

Regarding in-hospital lethality, in relation to AMI, there continues to be a higher rate in people with an additional diagnosis of Diabetes compared to any associated diagnosis (8.2% vs. 7.0%). In-hospital lethality in hospitalizations of users admitted for stroke increased compared to that observed in 2022 in people with an additional diagnosis of Diabetes, and was also higher compared to hospitalizations of users with any associated diagnosis (15,6% versus 14,1%).

Table 51. Number of admissions and lethality from stroke (AMI) in people with Diabetes, and total numbers in hospitals | 2018 – 2022

			2018	2019	2020	2021	2022
Users admitted with Stroke (primary diagnosis)	**With DM as an associated diagnosis**	**N**	**7 067**	**7 150**	**6 566**	**7 092**	**6 891**
	With any associated diagnosis	**N**	**26 150**	**26 281**	**24 514**	**24 882**	**24 114**
	Percentage of DM in people with Stroke	**%**	**27,0%**	**27,2%**	**26,8%**	**28,5%**	**28,6%**
In-hospital lethality in patients admitted with Stroke (primary diagnosis)	**With DM as an associated diagnosis**	**N**	**1 007**	**1 002**	**1 085**	**1 055**	**1 074**
		%	**14,2%**	**14,0%**	**16,5%**	**14,9%**	**15,6%**
	With any associated diagnosis	**N**	**3 609**	**3 516**	**3 650**	**3 468**	**3 406**
		%	**13,8%**	**13,4%**	**14,9%**	**13,9%**	**14,1%**

Sources: Diabetes Dashboard, accessed on 09/26/2023 (The hospital morbidity data presented in the Diabetes Dashboard on the date of the access were obtained from the BDMH version made available by ACSS on 05/18/2023). Business Intelligence for Hospital Morbidity - BIMH, accessed on 09/26/2023 (The data are uploaded weekly, and all episodes coded by hospitals (in ICD9CM or ICD10CM/PCS, with valid codes) from January 1, 2013 to September 20, 2023) are made available on the date of the access). In-hospital lethality: number of deaths/number of users. Research method in BDMH: ICD9-CM DP: 430, 431, 432, 433, 434; ICD9-CM DA: 249.-, 250.-; ICD 10-CM DP: I60.-, I61.-, I62.-, I63.-; ICD10-CM DA: E08.-, E09.-, E10.-, E11.-, E12.-, E13.

8. Diabetes-related Mortality

In 2022, Diabetes was responsible for 3,727 deaths, corresponding to 3.0% of deaths in Portugal. Of these deaths, 9.4% occurred in people under 70 years of age.

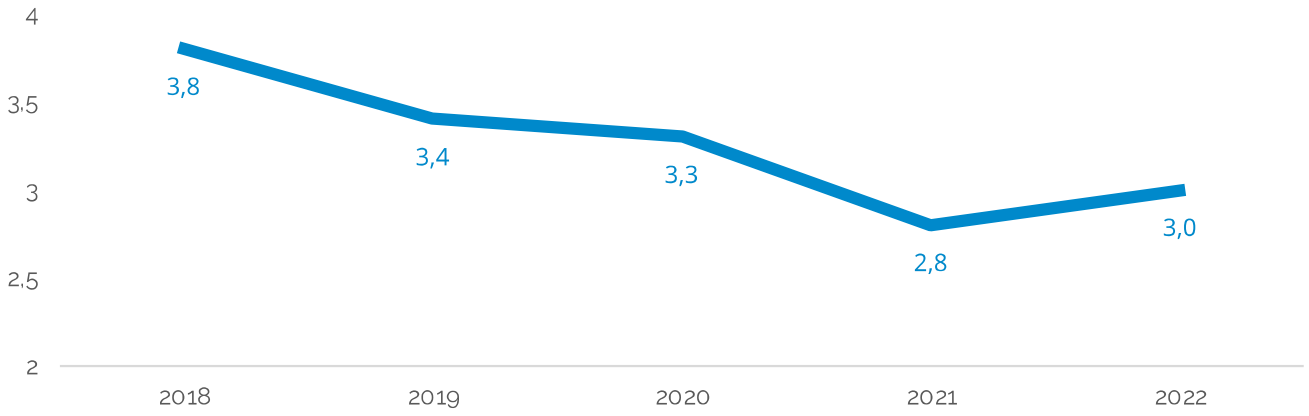
Table 52. Deaths due to Diabetes according to age group in Portugal | 2018 – 2022

	2018		2019		2020		2021		2022	
	N	%	N	%	N	%	N	%	N	%
<70 years	504	11,7	423	11,0	459	11,2	365	10,5	349	9,4
70-74 years	363	8,5	395	10,3	356	8,7	317	9,1	291	7,8
75-79 years	675	15,7	515	13,4	566	13,8	453	13,1	498	13,4
≥ 80 years	2750	64,1	2501	65,2	2729	66,4	2339	67,3	2589	69,5
Total	4 292	100,0	3 834	100,0	4 110	100,0	3 474	100,0	3 727	100,0

Source: Deaths by cause of death, INE and SICO/DGS (2024) Note: Data for the years 2021 and 2022 are sourced from SICO and refer to the Total number of deaths (includes deaths of residents abroad).

The mortality rate attributed to Diabetes, which has been gradually decreasing since 2018, with the exception of the last year under analysis.

Figure 23. Evolution of Diabetes as a cause of death (%) in Portugal | 2018 – 2022



Source: Deaths by cause of death, INE and SICO/DGS (2024)

In 2022, Diabetes was responsible for 2,838 potential years of life lost under the age of 70, with an average of 8.1 years of life lost for each death occurring under this age.

Although the number of total deaths is higher in women than in men, the premature mortality rate from Diabetes (<70 years) is much higher in men. However, there has been a significant reduction over the years in the premature mortality rate, also in men.

Table 53. Total and premature mortality from Diabetes in Portugal| 2018 – 2022

	2018	2019	2020	2021	2022
Both sexes					
Deaths at all ages	4 291	3 834	4 110	3 474	3 727
Deaths in < 70 years old	504	423	459	365	349
Potencial years of life lost in	4 200	3 303	3 488	2 770	2 838
Potential years of life lost due to death in <70 years old	8,3	7,8	7,6	7,6	8,1
Crude mortality rate at all ages	41,7	37,3	39,9	33,4	36
Crude mortality rate in < 70 years old	5,8	4,9	5,3	4,2	4,0
Standardized mortality rate at all ages	35,9	31,3	32,8	25,9	27
Standardized mortality rate in <70 years old	5,3	4,4	4,7	3,6	3,5
Males					
Deaths at all ages	1 828	1 655	1 796	1 526	1602
Deaths in < 70 years old	325	271	302	233	213
Potencial years of life lost in	2 738	2 313	2 255	1 783	1 853
Potential years of life lost due to death in <70 years old	8,4	8,5	7,5	7,7	8,7
Crude mortality rate at all ages	37,6	34,1	37,0	30,8	32
Crude mortality rate in < 70 years old	7,7	6,5	7,2	5,5	5,0
Standardized mortality rate at all ages	39,8	35,4	37,6	29,2	30
Standardized mortality rate in <70 years old	7,3	6,1	6,7	5	4,5
Females					
Deaths at all ages	2 463	2 179	2 314	1 948	2 125
Deaths in < 70 years old	179	152	157	132	136
Potencial years of life lost in	1 463	990	1 233	988	985
Potential years of life lost due to death in <70 years old	8,2	6,5	7,9	7,5	7,2
Crude mortality rate at all ages	45,4	40,1	42,6	35,7	39
Crude mortality rate in < 70 years old	4,0	3,4	3,5	3	3,1
Standardized mortality rate at all ages	32,6	28,2	29,2	23,3	25
Standardized mortality rate in <70 years old	3,5	2,9	3,0	2,5	2,5

Source: Deaths by cause of death, INE and SICO/DGS (2024). Note: Rates per 100,000 inhabitants. To calculate the standardized mortality rate, the European standard population (2013 version) defined by EUROSTAT was used. Data for the years 2021 and 2022 have Source SICO and refer to total deaths (includes deaths of residents abroad).

In 2022, renal complications continue to account for the majority of deaths attributed to Diabetes, followed, as in previous years, by peripheral circulatory complications. However, deaths with other specific complications and with multiple complications together represent more than 48.4% of all deaths attributed to Diabetes.

Table 54. Recorded causes of death from Diabetes in Portugal | 2018 – 2022

	2018		2019		2020		2021		2022	
	No.	%	No.	%	No.	%	No.	%	No.	%
DM without mention of complication	1 346	31,4	551	14,4	675	16,4	770	22,2	961	25,8
DM with renal complications	897	20,9	662	17,3	568	13,8	493	14,2	547	14,7
DM with other specified manifestations	845	19,7	1 450	37,8	1 465	35,6	1 226	35,3	1128	30,3
DM with peripheral circulatory disorders	367	8,6	247	6,4	253	6,2	193	5,6	211	5,7

DM with various complications	520	12,1	710	18,5	896	21,8	596	17,2	676	18,1
DM with ketoacidosis	144	3,4	98	2,6	124	3,0	128	3,7	118	3,2
Comatose DM	113	2,6	55	1,4	90	2,2	39	1,1	36	1,0
DM with unspecified complications	50	1,2	43	1,1	28	0,7	21	0,6	40	1,1
DM with ophthalmic manifestations	7	0,2	6	0,2	3	0,1	5	0,1	6,0	0,2
DM with neurological manifestations	3	0,1	12	0,3	8	0,2	3	0,1	4,0	0,1
Total	**4 292**	**100,0**	**3 834**	**100,0**	**4 110**	**100,0**	**3 474**	**100,0**	**3 727**	**100,0**

Source: Deaths by cause of death, SICO/DGS (2024). Research method: Diabetes E10-E14 (ICD 10 codes, Diabetes with coma E100, E110, E120, E130, E140; with ketoacidosis E101, E111, E121, E131, E141; with renal complications E102, E112, E122, E132, E142; with ophthalmological complications E103, E113, E123, E133, E143; with neurological complications E104, E114, E124, E134, E144; with peripheral circulatory complications E105, E115, E125, E135, E145; E107, E117, E127, E137, E147; with unspecified complications E108, E118, E128, E138, E148; no mention of complications E109, E119, E129, E139, E149). Note: Data for the years 2021 and 2022 are sourced from SICO and refer to Total deaths (includes deaths of residents abroad).

When it comes to deaths attributed to Diabetes in people under 70 years of age, a similar situation is observed, where 9.2% of deaths were due to renal complications, 5.2% due to peripheral circulatory complications and 63.3% due to other specific complications or multiple complications.

Although it is not evident from the records of causes of death due to Diabetes presented, Diabetes is an important cardiovascular risk factor. It is worth highlighting the 1,308 deaths of people with Diabetes who were previously hospitalized for AMI or stroke.

Table 55. Recorded causes of Premature Death (<70 years old) from Diabetes in Portugal | 2018 – 2022

	2018		2019		2020		2021		2022	
	N	%	N	%	N	%	N	%	N	%
DM without mention of complication	122	24,2	45	10,6	79	17,4	63	17,3	51	14,6
DM with renal complications	99	19,6	56	13,2	55	12,1	41	11,2	32	9,2
DM with other specified manifestations	85	16,8	134	31,6	133	29,2	130	35,6	105	30,1
DM with peripheral circulatory disorders	58	11,5	35	8,3	32	7,0	27	7,4	18	5,2
DM with various complications	105	20,8	118	27,8	122	26,8	81	22,2	116	33,2
DM with ketoacidosis	22	4,4	19	4,5	21	4,6	21	5,8	21	6
Comatose DM	10	2,0	7	1,7	7	1,5	0	0,0	1	0,3
DM with unspecified complications	4	0,8	5	1,2	5	1,1	2	0,5	3	0,9
DM with ophthalmic manifestations	0	0,0	1	0,2	0	0,0	0	0,0	1	0,3
DM with neurological manifestations	0	0,0	4	0,9	1	0,2	0	0,0	1	0,3
Total	**505**	**100,0**	**424**	**100,0**	**455**	**100,0**	**365**	**100,0**	**349**	**100**

Source: Deaths by cause, SICO/DGS (2024). Research method: Diabetes E10-E14 (ICD 10 codes, Diabetes with coma E100, E110, E120, E130, E140; with ketoacidosis E101, E111, E121, E131, E141; with renal complications E102, E112, E122, E132, E142; with ophthalmological complications E103, E113, E123, E133, E143; with neurological complications E104, E114, E124, E134, E144; with peripheral circulatory complications E105, E115, E125, E135, E145; E107, E117, E127, E137, E147; with unspecified complications E108, E118, E128, E138, E148; no mention of complications E109, E119, E129, E139, E149). Note: Data for the years 2021 and 2022 are Sourced from SICO and refer to total deaths (includes deaths of residents abroad).

In 2022, despite the increasing number of episodes of ketoacidosis, there was a reduction in deaths from this cause compared to the previous year.

Table 56. Distribution by type of Diabetes in diabetic ketoacidosis-related deaths | 2018 – 2022

	2018		2019		2020		2021		2022	
	Total Deaths n	Deaths in <70 years old n	Total Deaths n	Óbitos <70 years n	Total Deaths n	Óbitos <70 years n	Total Deaths n	Óbitos <70 years n	Total Deaths n	Óbitos <70 years n
Type 1 Diabetes	122	24,2	45	10,6	79	17,4	63	17,3	51	14,6
Type 2 Diabetes	99	19,6	56	13,2	55	12,1	41	11,2	32	9,2
Diabetes from an unspecified cause	85	16,8	134	31,6	133	29,2	130	35,6	105	30,1
Total	58	11,5	35	8,3	32	7,0	27	7,4	18	5,2

Source: Deaths by cause of death, SICO/DGS (2024). Research method: Diabetes E10-E14 (ICD10 codes; E101; E111; E121; E141). Note: Data for the years 2021 and 2022 have Source SICO and refer to Total deaths (includes deaths of residents abroad).

9. Cost of Diabetes in Portugal

The growth in identified costs for medicines and devices for the treatment and monitoring of Diabetes and the costs for hospital admissions will continue, totaling 614.2 million euros in 2022. Costs in which Diabetes is an associated diagnosis are not included here. Among the direct costs identified, medicines accounted for 80% of these costs, with test strips and glucose sensors representing around 13% of this expense in 2022. Hospital admissions with a primary diagnosis of Diabetes represented around 5% of the identified costs in 2022, and it is important to highlight that costs for Outpatient episodes are not included. Taking into account the foreseeable incorporation of innovative medicines and more sophisticated CSII devices into the SNS's healthcare activity, a significant increase in costs for medicines and devices is expected.

Table 57. Identified Costs of Diabetes, Mainland Portugal (M€). | 2018– 2022

	2018	2019	2020	2021	2022
Medication and devices					
Non-insulin antidiabetic agents and insulins dispensed to outpatients	316,3 M€	351,6 M€	413,9 M€	418,0 M€	494,4 M€
Glucagon	0,1 M€	0,1 M€	0,1 M€	0,1 M€	0,1 M€
Blood glucose and test strips– total utente + SNS	60,8 M€	67,6 M€	72,3 M€	77,2 M€	82,8 M€
Sistemas de Perfusão Subcutânea Contínua de Insulina	2,7 M€	3,0 M€	3,3 M€	3,2 M€	6,3 M€
Subtotal	379,9 M€	422,3 M€	489,6 M€	498,5 M€	583,7 M€
Hospitalizations					
Hospitalizations for Diabetes as primary diagnosis	29,5 M€	30,0 M€	31,5 M€	33,4 M€	30,6 M€
Hospitalizations for decompensated Diabetes without complications	3,6 M€	3,6 M€	3,5 M€	3,9 M€	3,5 M€
Hospitalizations acute Diabetes complications	4,8 M€	4,5 M€	4,9 M€	5,2 M€	4,6 M€
Hospitalizations for Chronic complications of Diabetes	12,0 M€	12,6 M€	13,5 M€	14,5 M€	13,5 M€
Lower limb amputation in patients with Diabetes	9,1 M€	9,4 M€	9,6 M€	9,9 M€	8,9 M€
Total	409,5 M€	452,3 M€	521,1 M€	531,9 M€	614,2 M€

Source: ACSS, DPS, BDMH, 2024. Note; CSII: Continuous Subcutaneous Insulin Infusion ("Insulin Pumps"); Drugs: insulins and non-insulin antidiabetics; Monitoring: test strips and glucose sensors. Indicator specifications according to doc. 2019.03.18_ICD-10-CM/PCS Diabetes

Indicator Specification and inclusion, in all indicators, users under 18 years of age and diagnoses E08xxx and E09xxxx (E12 does not exist in CD10CM/PC).

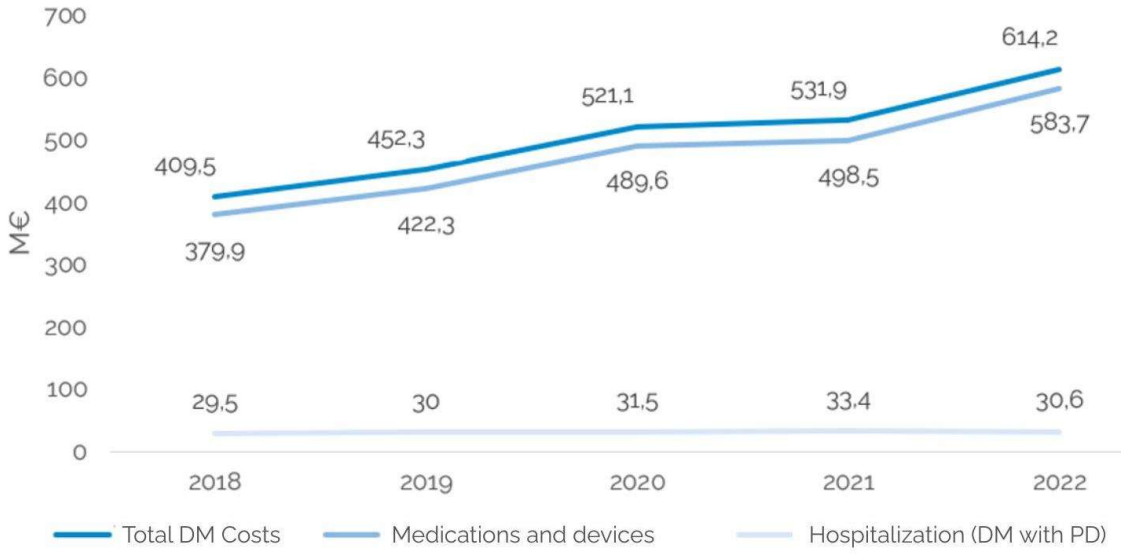
In 2022, the costs of hospitalizations in which diabetes was an associated diagnosis were around 416.8 million euros.

Table 58. Identified costs of hospitalizations with associated diagnosis of Diabetes | 2018 – 2022

	2018	2019	2020	2021	2022
Hospitalizations with associated diagnosis of Diabetes	382,2 M€	406,1 M€	417,2 M€	470,3 M€	416,8 M€

Source: ACSS, DPS, BDMH, 2024. Note: Costs of Hospitalizations in which Diabetes is an associated diagnosis; note that the total cost estimate for these Hospitalizations is presented; however, these costs are not entirely attributable to Diabetes. This indicator corresponds to all episodes with the registration of any of the Diabetes codes considered in the other indicators, as an additional diagnosis. Inclusion of users under 18 years old and the diagnoses E08xxx and E09xxxx (E12 does not exist in CD10CM/PC).

Figure 24. Trend of identified costs of Diabetes in Mainland Portugal (M€) | 2018 – 2022



Note: DM – Diabetes Mellitus; PD – Primary Diagnose. Source: ACSS, DPS, BDMH, and DGS 2024.

Chapter II- Health Promotion and Disease Prevention

As already mentioned in this document, Portugal has one of the highest prevalences of diabetes in Europe, with around 92% of cases corresponding to T2DM, and there are more than 1 million people in Portugal with a moderate, high or very high risk of developing T2DM. Many of these cases of diabetes can be prevented or their onset delayed by adopting a healthy lifestyle. In this context, it is essential to invest in promoting health literacy and adopting behaviours that correspond to a healthy lifestyle.

The PND has developed activities with this objective in mind:

- **"Falar Abertamente da Diabetes" Programme:** Aiming to increase diabetes literacy among the general public in relation to diabetes prevention and control, through dissemination actions via communication channels and social networks. The partnership with RTP was maintained, in the section of the programme "Praça da Alegria" entitled "Falar Abertamente da Diabetes" (Talking Openly about Diabetes), whose first season began in November 2022. A second season of the programme began in 2024, maintaining the same format. Within this framework, 17 videos were produced, which were presented in the programme's editions throughout 2023 and 2024, with the participation of members of the PND team and guests, who addressed different topics. The videos were shared on the social media accounts of the DGS and RTP and are available on the DGS/PND website.
- **National Competition – "Diabetes e as Escolas" 2023/2024:** The 4th edition of the National Competition - Diabetes and Schools 2023/2024, which seeks to encourage school students to make films with the aim of promoting knowledge about diabetes by stimulating the creativity of children and young people, promoting the prevention of Type 2 diabetes and the full integration and well-being of young students with Type 1 diabetes. This competition, organised by the National Diabetes Programme of the Directorate-General for Health, in conjunction with the Functional Coordination Units for Diabetes, the National School Health Programme and the Directorate-General for Education, had as its theme "Diabetes: Education to Protect Tomorrow". As in previous editions, the competition had three levels of participation (1st cycle; 2nd and 3rd cycle; and secondary), with a 1st prize and honourable mention awarded to each level. The award ceremony, at the end of the 2023/2024 school year, took place at each of the educational institutions, with at least one representative from the PND Team in attendance.
- **Correr e Caminhar pela Diabetes:** Holding, in 2023, of the PND's '2nd Walking for Diabetes Meeting' in partnership with the Setúbal City Council and the Setúbal Hospital Centre, held on 12 November, which was attended by over a hundred people. In 2024, the PND held the '3rd Running and Walking for Diabetes Meeting' in partnership with the Covilhã City Council on 10 November, which was attended by around 600 people. These meetings aim to raise awareness among the population of the importance of adopting an active lifestyle as a preventive measure against diabetes.
- **"Mais Saúde Menos Diabetes" Programme:** Implementation of pilot groups for the diabetes prevention programme "Mais Saúde, Menos Diabetes" (More Health, Less Diabetes) in both its face-to-face and online versions. This project, promoted by the National Diabetes Programme, has the collaboration of the National Programme for the Promotion of Healthy Eating, the National Programme for the Promotion of Physical Activity and the Literacy Division of the Directorate-General for Health. Development of a study protocol, in partnership with the Faculty of Human Kinetics, in order to prepare and analyse the impact on the programme of an incorporated physical exercise protocol, both in the face-to-face and

online versions, with greater effectiveness expected in this format. The programme begins by calculating the risk of Type 2 Diabetes, establishing its target population as people identified as being at increased risk (moderate, high and very high) of developing Diabetes in the next 10 years. The national management of the programme will be centralised in the PND/DGS, while local management will be the responsibility of the UCFDs at the ULS level.

- The PND is represented in the **Social Pact for Sustainable Health** within the scope of the National Health Plan 2030, with the inclusion of the "Mais Saúde, Menos Diabetes" Programme and the "Diabetes em movimento" Programme.
- Collaboration with the SNS 24 helpline Digital Unit Team of the National Telehealth Centre Directorate in reviewing information content related to diabetes for publication on the SNS Portal, as a way of increasing health literacy.
- Rotary Anti-Diabetes Front (FRAD), Collaboration on promotional materials, presentations, and virtual sessions promoted in collaboration with ANAFRE (National Parish Association) and with the participation of health professionals, namely from the UCFD.
- Collaboration with the Directorate of Disease Prevention and Health Promotion of the DGS with contributions in the area of diabetes for the development of the 'Health Explorers' games with the aim of promoting knowledge among children in the 3rd year of schooling. and the Health Literacy Promotion Game for the over-65 age group.
- VA-Prevention Diabetes Research: Participation of the Director of the National Diabetes Programme in the Advisory Panel of the VA-Prevention Diabetes Research project. The objectives of this project are: to develop an innovative digital intervention for the prevention of Type 2 Diabetes in high-risk adults, centred on the individual and based on evidence and theory; to evaluate this intervention in real contexts in terms of effectiveness, implementation and cost-effectiveness.

Chapter III- Promotion of Good Practices, Quality and Safety

Diabetes is a complex, chronic disease that requires ongoing medical care with multifactorial risk reduction strategies beyond glucose control. Continuous education and support for self-management of treatment are essential to empower people, prevent acute complications, and reduce the risk of long-term complications.

There is significant evidence supporting a range of interventions to improve the course of diabetes, and care for people with diabetes is changing rapidly, with new technologies and innovative therapies that can improve the health and well-being of people with diabetes and their families. It is also essential to promote the ongoing sharing of best clinical practices by healthcare teams, just as it is essential that all healthcare professionals and relevant civil society entities coordinate and network with a view to providing the best care, accessibility and equity in the care of people with diabetes. In this context, the PND, with the aim of promoting good practices, quality and safety in the care of people with diabetes, carried out the following activities in 2023-2024:

- Preparation of the **report on the National Diabetes Programme: Challenges and Strategies 2023 (**6). This document aimed to present an overview of diabetes in Portugal in the years 2021-2022, taking stock of the epidemiological data and monitoring diabetes-related care.
- Preparation of the **report "Monitoring and Evaluation of Diabetic Retinopathy Screening: Report 2022/2023 (7).** This included, in addition to screening activity data, opportunities for improvement and the roadmap for 2024.
- SPMS provides a **dashboard** with diabetes indicators for hospital outpatient teams, following a development proposal made by the PND.
- **Presentation** at a public event **of epidemiological monitoring data on diabetes up to 2023, report and activity plan of the PND.**
- Coordination with the **Functional Diabetes Coordination Units** (UCFD), which implement the PND at the local level, either directly or through the Regional Diabetes Coordinators. The following activities were carried out at this level:
    - ✓ 7th National Meeting of UCFDs in virtual format; this event, aimed at healthcare professionals who are members of UCFDs and healthcare professionals working in the field of diabetes, aims to encourage the sharing of activities developed in the field of diabetes among healthcare professionals from different UCFDs across the country.
    - ✓ Monitoring of the UCFD 2023 Activity Report.
    - ✓ With the publication of Decree-Law 102/2023, of 7 November, which determines the generalised creation of the model for the organisation and functioning of SNS health services in Local Health Units (ULS), it became necessary to create a new governance structure for the PND/DGS. Thus, the PND drafted a proposal for an order that 'Determines the updating of the governance structure of the National Diabetes Programme (PND) and the functioning of diabetes consultations,' which is currently under consideration.
- **Coordination of the Working Group that drafted and published the Proposal to update the strategy for access to treatment with Continuous Subcutaneous Insulin Infusion (CSII) devices (8)** prepared by the Working Group appointed in Order No. 13339/2022 of 17 November and amended by Order 3584/2023 of 21 March . This was followed by the publication of Order No. 6440/2023 - Diário da República No. 113/2023, 2nd Series of 13 June 2023, which establishes the creation of an integrated

treatment programme for people with type 1 diabetes mellitus, through the placement of Automatic Insulin Delivery Systems (AIDS) for all those who have an indication and motivation for it, with progressive development between 2023 and 2026.

- Scientific coordination of the drafting and publication of **DGS Standard No. 06/2024 of 13/08/2024 on the organisation of healthcare for people with type 1 diabetes mellitus**. This Standard revoked Regulatory Circular No. 15/2008 of 1 August 2008 and No. 17/DSCS/DGID of 4 August 2008 on "Integrated Diabetes Management – Application to Treatment Centres for Continuous Subcutaneous Insulin Infusion".
- Coordination of the Continuous Subcutaneous Insulin Infusion (CSII) Treatment Programme. Currently, automatic insulin delivery systems (AIDS) should be considered as the first line of treatment for CSP for all people with type 1 diabetes. Evidence suggests that AIDs are safe and effective in reducing HbA1c and increasing time in range, as well as reducing the risk of exercise-related hypoglycaemia. The use of AAI systems has also been associated with psychosocial benefits, such as improved quality of life for people with diabetes and their families. The PND, within the scope of this Programme, has developed the following actions:
  - ✓ Coordination with CSII Treatment Centres (CT-CSII) and Ministry of Health structures;
  - ✓ Management of the CSII Platform with preparation of quarterly reports monitoring the activity records of the CSII Platform;
  - ✓ Assessment of compliance with the technical requirements of the applications for two new CT-CSII in 2023 (CT-CSII Hospital de Cascais and CT-CSII ULS Cova da Beira), although their final approval only took place in 2024, bringing the total number of CT-CSII in mainland Portugal to 31, distributed throughout the country;
- Monitoring of **diabetic retinopathy screening**, which is essential for the early diagnosis and treatment of diabetic retinopathy and thus prevents severe vision loss.
- Review of the proposed **Standard on Prevention, Diagnosis and Treatment of People with Diabetic Foot**.
- Review of the proposed **Standard on Prevention, Diagnosis and Treatment of Diabetic Kidney Disease in Adults**..
- Co-coordination of the **"Diabetes em Movimento" Programme** in association with the National Programme for the Promotion of Physical Activity (PNPAF). This is a community physical exercise programme for people with Type 2 Diabetes. The local implementation of the programme for the 2023/2024 season took place between October 2023 and June 2024. In October 2024, the 2024/2025 season began, implemented in 54 municipalities. In May 2024, the 1st National Meeting of 'Diabetes Movement' was held in the municipality of Covilhã, attended by around 800 people, including people with Type 2 Diabetes, health professionals and representatives of the institutions that implement the programme locally.
- The Directorate-General for Health, through the National Diabetes Programme, continues to coordinate the national implementation of the **Joint Action "Care4Diabete"**. The PND coordinated several meetings with collaborating entities in the implementation of pilot groups for this project, namely: the Porto University Hospital Centre, in the Northern Health Region; the Tagus Estuary ACES, in the Lisbon and Tagus Valley Health Region; the Baixo Alentejo Local Health Unit, in the Alentejo Health Region; and the Sotavento ACES, in the Algarve Health Region. In addition to these, the Portuguese Association for the Protection of Diabetics is also participating as an affiliate of the project. This Joint Action aims to promote the adoption of healthy lifestyles by people with type 2 diabetes, making them central to the management of their own disease. This project involves a total of 30 partners from twelve countries - Belgium, Bulgaria, Spain, Slovakia, Slovenia, Finland, Greece, Hungary, Italy, Malta, Poland and Portugal. It will last three years and has its own budget, 80% of which is co-financed by the European Commission.

The Joint Action 'Care4Diabetes' seeks to implement 'Reverse Diabetes2Now' in the European Union, a good practice developed over a decade by the Dutch NGO Voeding Leef.

- Promotion of **competitions for the allocation of financial support to private non-profit legal entities**, under Decree-Law No. 186/2006 of 12 September and Ordinance No. 418/2007 of 13 April..
    - ✓ The eDiabetes project, which aims to create an interactive digital platform for people with diabetes and their formal and informal carers (2020 competition - notice no. 26/2020 from the Financial Support Programmes Management Centre), run by the Portuguese Association for the Protection of Diabetics (APDP), is currently in the process of analysing the results of the pilot study.
    - ✓ Pilot project created to promote the training of people with diabetes who attend social support services or facilities and their carers in disease management and prevention of complications (tender in 2022 - notice no. 28/2022 and notice no. 29/2022 from the Financial Support Programmes Management Centre), under the responsibility of the APDP. Links are being developed between social support responses and primary health care and hospital care.
- The PND has developed a proposal for a **Study on the Prevalence of Diabetes in Portugal**, which is currently undergoing final evaluation.
- The PND has drawn up a proposal for a **pilot study: Population-based screening for type 1 diabetes in children**, which is currently in the initial assessment phase.
- **Inter-institutional collaboration and collaboration with civil society**, through participation in the following initiatives promoted by other entities:
    - ✓ Central Administration of the Unified Health System. "Annual Report. Access to health care in SNS establishments and partner entities 2022." The PND contributed annually to the respective Chapter of the access report.
    - ✓ INFARMED - National Authority for Medicines and Health Products. The PND was part of the Working Group that prepared an opinion on SAAI.
    - ✓ Parliamentary Health Committee of the Legislative Assembly. Presence of the PND to answer questions from parliamentary benches about Treatment with CSII and the proposal to update the strategy for access to treatment with Continuous Subcutaneous Insulin Perfusion (CSII) devices.
    - ✓ Participation in the High-Level Technical Summit, organized by the World Health Organization, WHO/Europe together with the International Diabetes Federation, in Belgrade, Serbia, on 28 and 29 November 2023, entitled Accelerating implementation of commitments to improve diabetes detection and quality of care. At this Summit, the Declaration 'Accelerating action on commitments to improve diabetes detection and quality of care' was signed, which Portugal signed, renewing its commitment to developing actions to achieve these objectives.
    - ✓ Active participation in interviews, news and scientific meetings about Diabetes.

Chapter IV – Action plan for 2025-2027

1. Objectives for the triennium 2025-2027

The action plan for 2025-2027 continues the tasks described in the previous chapter and maintains the general objectives set by the program. For each general objective, some specific objectives are defined for this three-year period.

A. Reduce the development of diabetes in people at risk

a. Increase diabetes literacy

b. Perform Risk Assessment of Type 2 Diabetes in the Adult Population

c. Increasing access to therapeutic education in the population at risk of developing Type 2 Diabetes

d. To promote type 1 diabetes screening study(s) and proposal of a strategy for population screening and follow-up of people identified in preclinical stages of T1DM

B. Increase the number of diabetes diagnoses through early diagnosis and reduce the number of people who are unaware of having the disease

a. Promote early diagnosis of people identified at increased risk of developing Type 2 Diabetes

C. Reduce morbidity and mortality from Diabetes

a. Promoting efficiency in the organization of health care for people with diabetes

b. Promoting therapeutic education

c. Improve glycaemic control and other cardiovascular risk factors

d. Increasing access to treatment with Automatic Insulin Delivery Systems

e. Increase the coverage of screening for chronic complications of diabetes and their early treatment

f. Reduce the number of major amputations per diabetic foot

g. Reduce premature mortality from diabetes

2. Goals

For the aforementioned objectives, targets to be achieved by the end of 2027 are defined.

Goals	2027 Targets
A	**1.** Reach ≥2.900.000 users on average with annually updated Type 2 Diabetes risk calculation **2.** Reach ≥20% of Local Health Units with Type 2 Diabetes prevention programmes **3.** Reach ≥ 10.000 people screened for Type 1 Diabetes in Portugal **4.** Propose a plan for population screening for Type 1 Diabetes and follow-up, according to results
B	**1.** ≥150.000 new diagnostic records in 3 years **2.** Increase the total number of people registered with diabetes by ≥50.000
C	**1.** Increase the proportion of users with HbA1c≤8% to ≥70% **2.** Increase the proportion of users with BP <140/90 mmHg to ≥80% **3.** Increase the proportion of users with LDL-C <100 mg/dL to ≥60% **4.** Increase the number of users undergoing CSII treatment to ≥10.000 **5.** Increase the population coverage rate for diabetic retinopathy screening to ≥60% **6.** Increase the coverage rate of diabetic nephropathy screening to ≥72% **7.** Increase the rate of users with foot examination records to ≥80% **8.** Reduce the rate of major amputations due to diabetic foot by 10% **9.** Keep the rate of hospitalisations due to diabetes in adults below 60/100,000. **10.** Reduce premature mortality from diabetes <70/75 years in Portugal by 5%

3. Monitoring

Indicators for monitoring the 2027 targets

Goals	Indicator	Valor 2023	Valor 2024	Source / Obs (a)
	Ind.1. Adult users without diabetes with Type 2 diabetes risk assessment recorded in CSPs, on average, over the last three years	2.866.427	NA	SIARS (indicator numerator 2013.262.01 FL)
	Ind 2. ULS with Type 2 Diabetes prevention programmes (%)	NA	NA	ECL Information

	Ind. 3 Number of people screened for Type 1 diabetes in Portugal	NA	NA	EDENT1FY, ULS/Pilot study on the implementation of population-based screening
B	**Ind. 4.** Propose a plan for population screening for Type 1 diabetes and follow-up	-	-	Document to be sent to management
	Ind.5. Number of users with new diabetes diagnoses (in the last 3 years)	228.125	NA	SIARS / SIM@SNS (indicator numerator MORB.236.01 FL)
	Ind 6. Total number of users diagnosed with 'Diabetes Mellitus'	911.873	NA	SIM@SNS (indicator numerator MORB.198.01 FL)
C	**Ind 7.** Proportion (%) of users with diabetes with last HbA1c recording ≤8%	64	NA	SIM@SNS (2013.039.01 FL)
	Ind. 8. Proportion (%) of users with diabetes with PA <140/90 mmHg	73	NA	SIM@SNS (2015.314.02 FL)
	Ind. 9. Proportion (%) of users with diabetes with LDL-C <100 mg/dL	51	NA	SIM@SNS (2015.315.01 FL)
	Ind 10. No. of users undergoing treatment with Continuous Subcutaneous Insulin Infusion (CSII)	4.452	NA	Plataforma/Registo CSII
	Ind 11. Population coverage rate for diabetic retinopathy screening (%)	51	NA	SiiMA Reports/Plataforma de monitorização do RRD
	Ind 12. Proportion of users with diabetes with microalbuminuria assessment records (%)	69	NA	SIM@SNS (2013.097.01 FL)
	Ind 13. Proportion of users with diabetes who had a foot examination recorded in the last year (%)	78	NA	SIM@SNS (2013.035.01 FL)
	Ind 14. Hospitalisation rate for lower limb amputations in people with diabetes (adjusted)	NA (b)	NA	SIM@SNS (2017.360.01 FL)
	Ind 15. Hospitalisation rate for diabetes in adults	NA	NA	OCDE - Health at a Glance (c)
	Ind 16. Standardised premature mortality rate due to diabetes in people < 70 years	NA	NA	SICO/DGS/INE (d)

(per 100,000 inhabitants, using the standard population of 2013)			
Ind 17. Standardised premature mortality rate from diabetes in people < 75 years (per 100,000 inhabitants, standardised)	NA	NA	SICO/DGS/INE (e)

NA – not available; (a) consider other potential new indicators (e.g. for inclusion of data from Secondary Health Care and private institutions); (b) In 2022: 12.6/100,000; (c) In 2021: 53/100,000; (d) In 2022: 3.5/100,000. (e) in 2019: 8.1/100,000; 2030 target (PNS): 4.7/100,000.

4. Initiatives/Actions

To achieve the proposed objectives, activities are considered within the three strategic areas of the National Diabetes Programme: monitoring and epidemiological surveillance; health promotion and disease prevention; promotion of good practices, quality and safety, whose initiatives aim to achieve the aforementioned objectives.

4.1. Epidemiological Monitoring and Surveillance

Monitoring, surveying and analysing the epidemiological evolution of diabetes in Portugal is essential for adopting more appropriate health programmes and policies. Knowing and disseminating this data is crucial for decision-makers, professionals and users at various levels of healthcare. This relevance is not restricted to health, as there are many sectors with a direct or indirect impact on the diabetes epidemic and vice versa. The quality of records; the information systems used, their interoperability and ease of use, as well as the sharing and security of tertiary data use, are fundamental aspects of this surveillance. The expected evolution of clinical records, information systems and the progressive adoption of systems involving artificial intelligence and interoperability have the potential to revolutionise knowledge and care in the field of diabetes.

Activities to be developed:

- Publish annual reports with epidemiological surveillance data on diabetes in Portugal;
- Publish annual reports on population-based screening for Diabetic Retinopathy (DR);
- Conduct a population study on the prevalence of diabetes in Portugal, through a call for tenders for this purpose;
- Promote the registration of diabetes diagnoses and types of diabetes, through coordination with CSP and Hospital Care health professionals;
- Analyse data on type 1 diabetes screening in Portugal and its implications;
- Support the SPMS in implementing a new system for prescribing and registering treatment with CSII;
- Propose the creation of indicators to monitor the WHO Europe targets for diabetes to be achieved by 2030, to which Portugal has subscribed [achieve at least 1. 80% of people with diabetes diagnosed; 2. 80% of people with diabetes with good glycaemic control; 3. 80% of people with diabetes have good blood pressure control; 4. 60% of people aged 40 years or older are treated with statins; 5. 100% of people with type 1 diabetes have access to insulin and self-monitoring of glucose]. Liaise with the indicator management team to promote the use and monitoring of quality indicators and health gains in the area of diabetes;
- Liaise with healthcare professionals and SPMS to promote access to indicators for monitoring diabetes consultations through the Hospital Clinical System (dashboard);
- Work together with DSIA and SPMS to improve and automate access to epidemiological surveillance data, as well as other necessary entities, to find ways to move towards epidemiological monitoring that includes the entire health system (public and private sectors);

- Keep the information on the PND microsite up to date.

4.2. Health Promotion and Disease Prevention – Prevention and diagnosis

Portugal has one of the highest prevalence rates of diabetes in Europe, and IDF estimates point to an increase in this prevalence in the coming years (1). Preventing diabetes, identifying people at risk, diagnosing and treating it early, and promoting remission through the adoption of a healthy lifestyle will be the best way to prevent morbidity associated with the disease and increase healthy life years. This effort to promote healthy lifestyles necessarily involves the action of health structures and their professionals, but it goes far beyond this scope, involving the action of all citizens and all sectors of society. It should be noted that there are several sustainable development goals that have an impact on diabetes.

Activities to be developed:

- Implement a multi-platform awareness campaign on diabetes to increase public literacy, particularly regarding prevention, diagnosis and combating stigma, as well as controlling other cardiovascular risk factors;
- Promote the Type 2 Diabetes risk assessment tool among the adult population, both at the CSP level and in the community, through the personal area of the SNS 24 portal, to promote early diagnosis, identify the population at risk and raise awareness of the importance of prevention. The dissemination will be done through the PND website, collaboration with the Rotary Anti-Diabetes Front (FRAD), implementation of the "Mais Saúde, Menos Diabetes" programme, among others.
- Implement a programme for the diagnosis and prevention of Type 2 Diabetes. The programme "Mais Saúde, Menos Diabetes" is currently being prepared:
    - ✓ Evaluate the results of the pilot educational programme Mais Saúde, Menos Diabetes" carried out at the CSP level. Extend its implementation to interested entities, through agreement and training of the respective teams;
    - ✓ Conduct the pilot programme "Mais Saúde, Menos Diabetes", with educational and exercise components, in both online and face-to-face versions;
    - ✓ Evaluate the respective results and promote their decentralised implementation among the population, with the participation of local authorities, health units and other interested entities;
- Propose the inclusion of time dedicated to therapeutic education, the creation of indicators and their monitoring, in order to promote therapeutic education for people with diabetes and those at risk of developing diabetes;
- Hold an annual competition for the production of a film about diabetes, aimed at school students in Portugal, with the theme "Diabetes and Physical, Social and Mental Well-being";
- Establish partnerships with municipalities and civil society to promote healthy lifestyles;
- Create a working group to analyse developments in the area of type 1 diabetes prevention, potential implementation in Portugal and drafting of a proposal;
- Collaborate with the DQS in developing the Integrated Care Pathway in the area of diabetes, including the pathway for people at increased risk of developing diabetes.

4.3. Promotion of Good Practices, Quality and Safety – Reducing morbidity and mortality from diabetes

Chronic complications of diabetes are associated with high morbidity, high costs and, above all, reduced quality of life. Good control of diabetes and other cardiovascular risk factors reduces the incidence and progression of diabetes-related complications and mortality, particularly premature mortality from diabetes.

Activities to be developed:

- Provide programmes that promote healthy lifestyles and Type 2 Diabetes control, namely through therapeutic education, knowledge acquisition on disease management and control, and community programmes for people with Type 2 Diabetes:
  - ✓ Provide a digital platform for training people with Type 2 Diabetes and their formal and informal carers (eDiabetes);
  - ✓ Participation in Joint Action "Care4Diabetes", a project for remission/improvement of Type 2 Diabetes control and subsequent assessment of the feasibility of scaling up the use of the programme at national level;
  - ✓ Extend the coverage of the "Diabetes em Movimento" Programme;
- Facilitate access to technology and innovation to improve the management of type 1 diabetes and the quality of life of people living with the disease:
  - ✓ Promote a change in the acquisition strategy for automatic insulin administration systems (AIAS) and the achievement of equitable and widespread access to eligible people, through coordination with the various entities involved in access to treatment with CSII;
  - ✓ Publish a revised version of the Handbook for Health and Education Professionals on "Children and Young People with Type 1 Diabetes";
  - ✓ Continue to request the existence of an integrated and interoperational self-monitoring and clinical process platform, promoting the quality of health care provided and the quality of life of people with diabetes;
- Work with DQS, in the preparation of technical-regulatory
  - ✓ Integrated Care Path for people with diabetes;
  - ✓ Standard on "Prevention, Diagnosis, Treatment, Monitoring and Referral of Diabetic Foot in Adults and the Elderly";
  - ✓ Standard on "Prevention, Diagnosis and Treatment of Diabetic Kidney Disease in Adults";
- Revisit the plan for improving and consolidating diabetic retinopathy screening and treatment carried out, to improve access to population-based RRD and timely treatment of positive cases;
- Develop a plan to improve and consolidate diabetic foot screening and treatment;
- Collaborate in the implementation of a telemonitoring and clinical management program for Diabetes using artificial intelligence;
- Analyze the results of the Financial Support Project within the scope of the PND (2022 competition), with the aim of promoting the quality of care provided to people with Diabetes who use social assistance equipment and propose potential interventions based on the results.;
- Implement the new PND organisational model, adapted to the current SNS organisation, and support the respective Local Coordinating Teams (LCTs), involving the public, social and private sectors, to promote the quality of healthcare in the area of diabetes (including its prevention). Hold the National Meeting of the LTCs and monitor the activities developed by them;
- Conduct a study on the implementation of T1DM screening at the ULS level. Analyze the results and potential form of generalization.

Final Notes

Portugal continues to have a high prevalence of diabetes, with one of the highest rates among European Union countries, with more than 900,000 people diagnosed and registered in Primary Health Care (CSP) by December 2023. This figure represents around 8.6% of users registered with the National Health Service (SNS), with more than 75,000 new cases registered in the last year. Diabetes is a chronic condition associated with various acute and chronic complications that generate high personal, family and social costs.

Despite improvements in metabolic control and other risk factors, such as cholesterol (LDL) and blood pressure, there are still significant challenges, especially in relation to the screening and treatment of diabetic retinopathy and the use of devices such as the Continuous Subcutaneous Insulin Infusion System, whose use has increased but remains below what is necessary. Mortality before the age of 70 due to diabetes has been declining, but the disease still accounts for a significant proportion of deaths in Portugal.

The PND's strategic objectives are to reduce the incidence of diabetes, increase early diagnosis and reduce associated mortality. Future activities include conducting a national prevalence study, a study on the implementation of type 1 diabetes screening, a proposal to create indicators to monitor the WHO Europe targets for diabetes by 2030, aligning Portugal with international targets, and the implementation of a diabetes governance model in Portugal.

To ensure equitable access to the best care, the PND will continue to promote the use of new technologies, such as insulin delivery systems, and increase screening for complications. In addition, the programme will intensify awareness campaigns to increase health literacy and promote therapeutic education for people with diabetes or at risk of developing it.

The PND team renews its commitment to continue developing activities aimed at promoting health and preventing diabetes, improving the quality of care and minimising the complications of the disease. This effort requires the continuous and coordinated involvement of multidisciplinary teams, aiming at person-centred care for people with diabetes, with a permanent focus on the quality of care provided and the creation of value in health.

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