



DEEP
KNOWLEDGE
GROUP



Longevity
Industry
Analytics

Diabetes Global Challenge Ecosystem

Landscape Overview, 2024 Q1

Table of Contents

Introduction	2
Executive Summary	3
Types of Diabetes	4
Diabetes Industry Framework	5
Key Global Findings	6
Global Diabetes Market Analysis	8
Global Diabetes Diagnostics	11
Diagnostic and Treatments for Diabetes	14
Medical Facilities for Diabetes	18
R&D for Diabetes	21
PharmTech for Diabetes	24
Clinical Trials for Diabetes	27
Innovations for Diabetes	30
Conclusions	34
Disclaimer	39

Introduction

Longevity Industry Analytics has released a new report titled **“Global Diabetes Industry Overview 2024”** which includes Diabetes market analysis as well as the use of advanced technology to assist those who suffer from diabetes.

Diabetes technology is rapidly changing and improving and can be beneficial for all those living with diabetes. While many diabetes sufferers use self-monitoring of blood glucose and insulin injections or insulin pens, these tools are being replaced by more advanced technologies that provide more useful data and greater convenience. Advanced tools such as continuous glucose monitors (CGMs) provide real-time data to help people with diabetes to avoid experiencing low and high blood sugar levels.

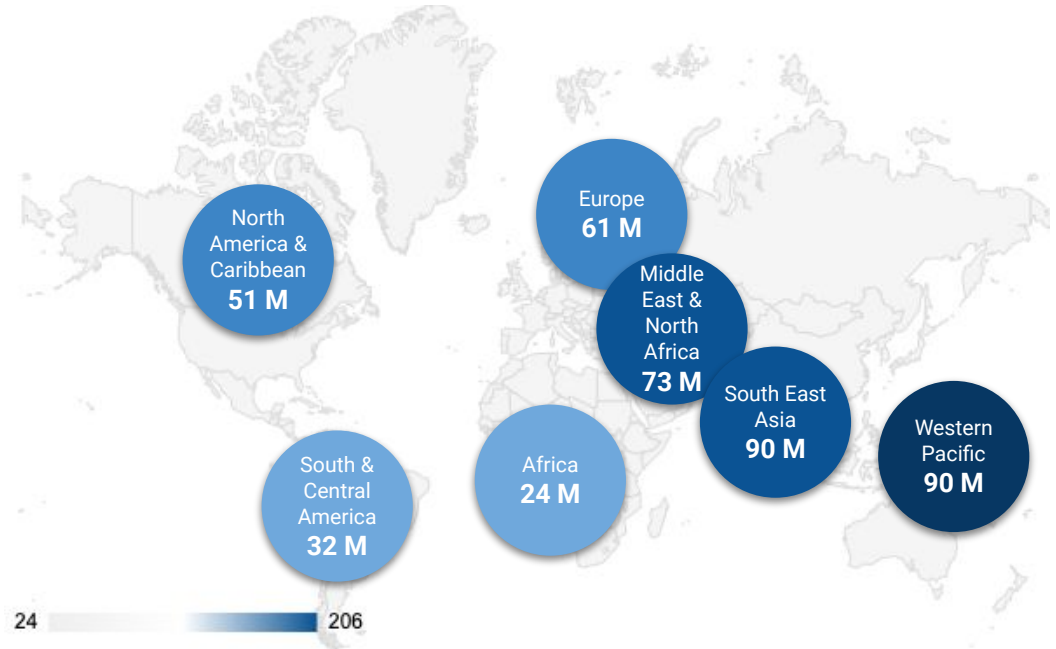
All data are based on scientific and clinical evidence and can be used by healthcare professionals, R&D professionals, and investors in the diabetes market.

Executive Summary

Diabetes mellitus, more simply called diabetes, is a serious, long-term (or “chronic”) condition that occurs when raised levels of blood glucose occur because the body cannot produce any or enough of the hormone insulin or cannot effectively use the insulin it produces.

Global food consumption and nutrient intake have altered during the past four decades due to increased income and urbanization. Although meal patterns may be minimally different between different parts of our planet, they tend to have many features in common. The traditional diets, high in fiber and low in fat, was recently replaced by a kind of “Western diet”, which is rich in fat, saturated fats, sodium, cholesterol, free sugars, and added sugars. An increase in snacking on junk foods particularly by school children is noticeable. As a result number of cases with diabetes is constantly growing.

Diabetes Around the World



Types of Diabetes

Four Main Types of Diabetes

Type 1 diabetes

historically known as juvenile diabetes

Type 2 diabetes

historically known as adult-onset diabetes

Gestational diabetes

where non-diabetic pregnant women develop high blood sugar levels

MODY*

relatively uncommon, dominantly inherited diabetes with at least 13 subtypes

* **MODY** – maturity-onset diabetes of the young

Diabetes is a chronic health condition that affects how body uses food for energy.

There are four main types of diabetes: Type 1 diabetes, Type 2 diabetes, gestational diabetes, and a maturity-onset diabetes of the young – a relatively uncommon, dominantly inherited form of diabetes with at least 13 subtypes. Dominant inheritance means an abnormal gene from one parent can cause disease. This happens even when the matching gene from the other parent is normal. The abnormal gene dominates.

With all four, prompt diagnosis is critical – and so is compliance with your diabetes treatment. Over time, high blood sugar levels can damage blood vessels and raise risk of developing certain health problems (some life-threatening), so it is important to begin treatment.

This report investigates to what degree genetic determinants influence the well-known regional differences in incidents. We also identify genetic risk factors that may initiate the autoimmune process or promote already ongoing β -cell damage in Gulf countries.

Diabetes Industry Framework

Treatment

Diabetes Treatment

Gene and Cell Therapy

Small Molecules

Drug Delivery Systems

Supplements

Formulations (Insulin)

Probiotics

Natural Products

Clinics

Diabetes Screening
and Management

Clinical Trials
Management

Nursing

Rehabilitation

Patient Monitoring
and Management

EHR

Residential, Home and
Elder Care

Assisted living

MedTech

Medical Supplies and
Equipment, Raw
Material

Devices (diagnostics,
therapy, glucose
monitoring)

Medical Suppliers

Diagnostics, Tests and
Labs

E-Pharmacy

Medical Devices
(Artificial Organs)

Imaging

Organ Engineering

Biologics (Insulin,
RNA, vaccines, AB)

Genomics and
Genetics

AI for Drug Discovery

CRO

AI for Diagnostics
(Omic, Imaging)

Physiological,
Systemic and Digital
Biomarkers

Scientific innovation

Insurance

Contract
Manufacturing

Clinical Data Storage
and Management

Education platforms

Media

Non-Profits

Civil services

Diabetes Prevention

Healthy Lifestyle

Fertility in diabetes

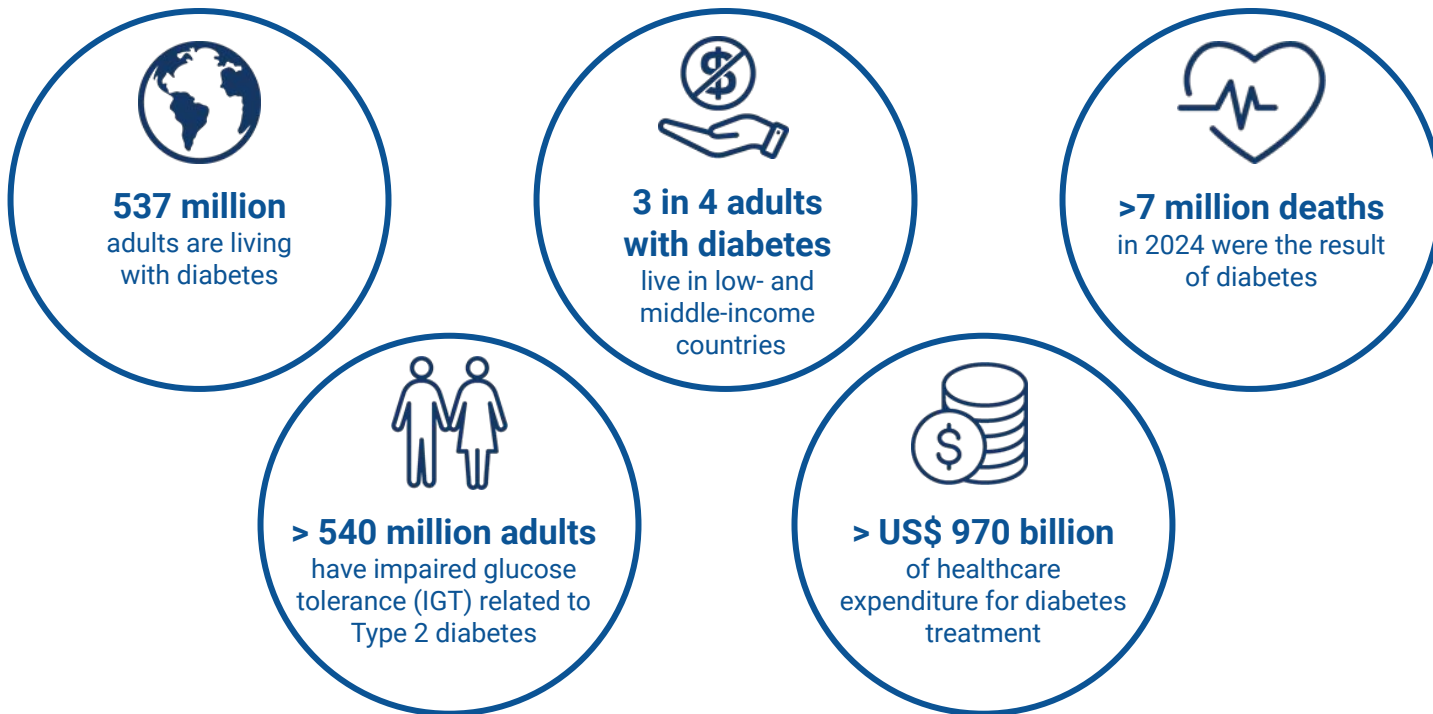
Aesthetics and Skin
Care

Mobile App

Healthy Nutrition

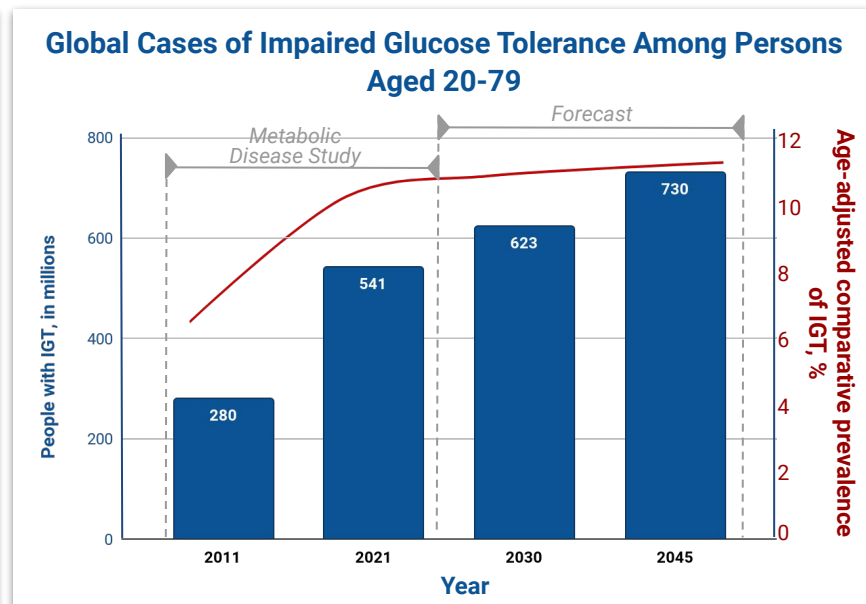
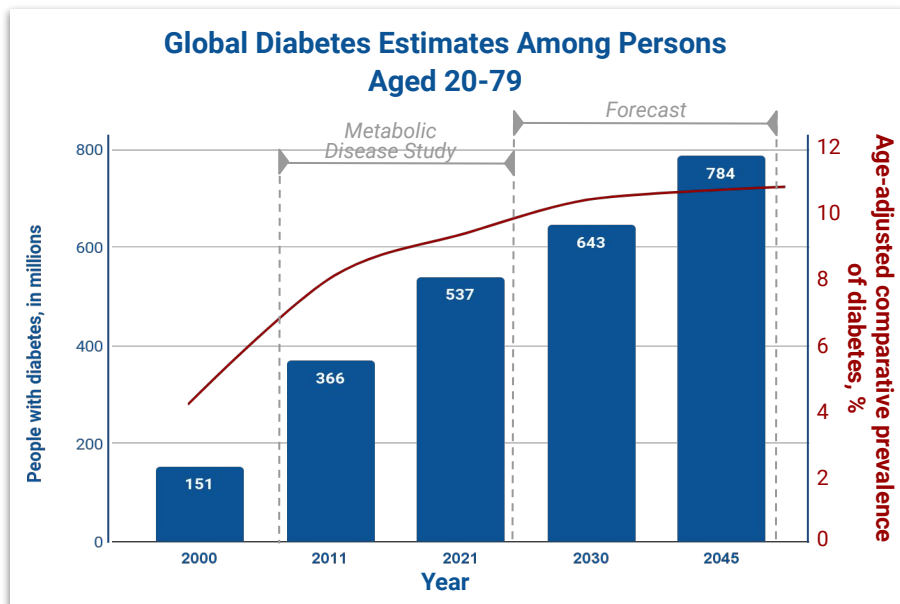
Prevention and Care

Key Global Findings



537 million adults globally are living with diabetes, and 3 in 4 of them live in low- and middle-income countries. More than 540 million adult people in the world have impaired glucose tolerance, related to Type 2 diabetes. Furthermore, in 2024, > 7 million deaths around the globe were the result of diabetes. All of these despite the fact, that there is more than \$970B of healthcare expenditure for diabetes treatment.

Global Diabetes Estimates in 20-79 Age Group

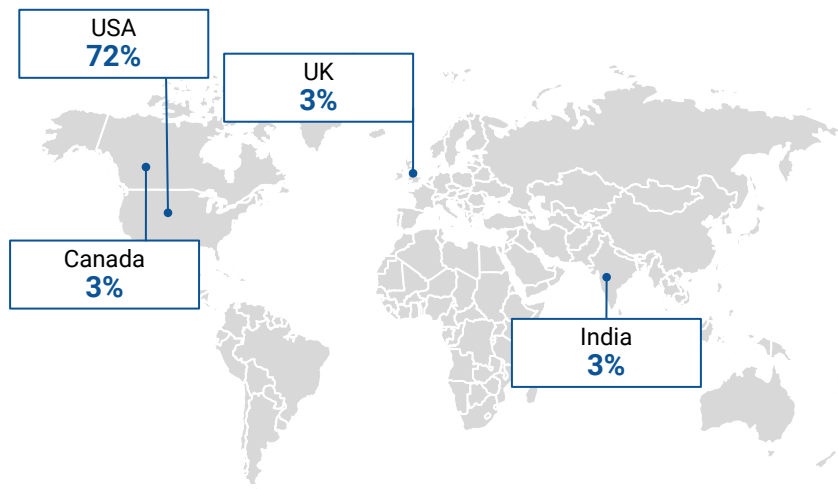


Impaired glucose tolerance (IGT) is a condition in which blood glucose levels are above the normal range but below the diabetes diagnostic threshold. The terms “prediabetes”, “non-diabetic hyperglycaemia”, and “intermediate hyperglycaemia” are in use as alternatives. The importance of IGT is three-fold: first, it signifies a higher risk of developing Type 2 diabetes in the future; second, IGT indicates an already heightened risk of cardiovascular disease (CVD); and third, its detection opens the door to interventions that can lead to the prevention of Type 2 diabetes. Progression from IGT to Type 2 diabetes is linked to glucose levels (measured by the extent of hyperglycaemia) along with risk factors such as age and weight.

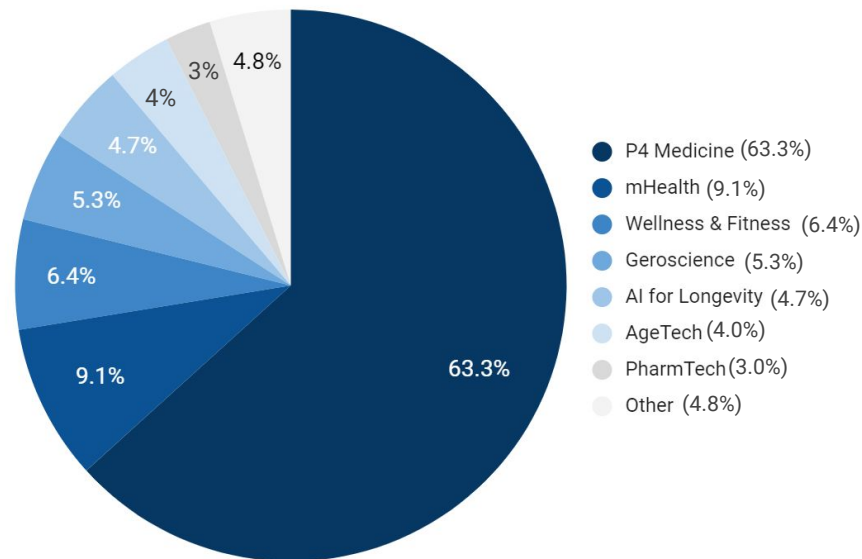
Global Diabetes Market Analysis

Market at a Glance: Diabetes Companies

Distribution of Companies by Country, %



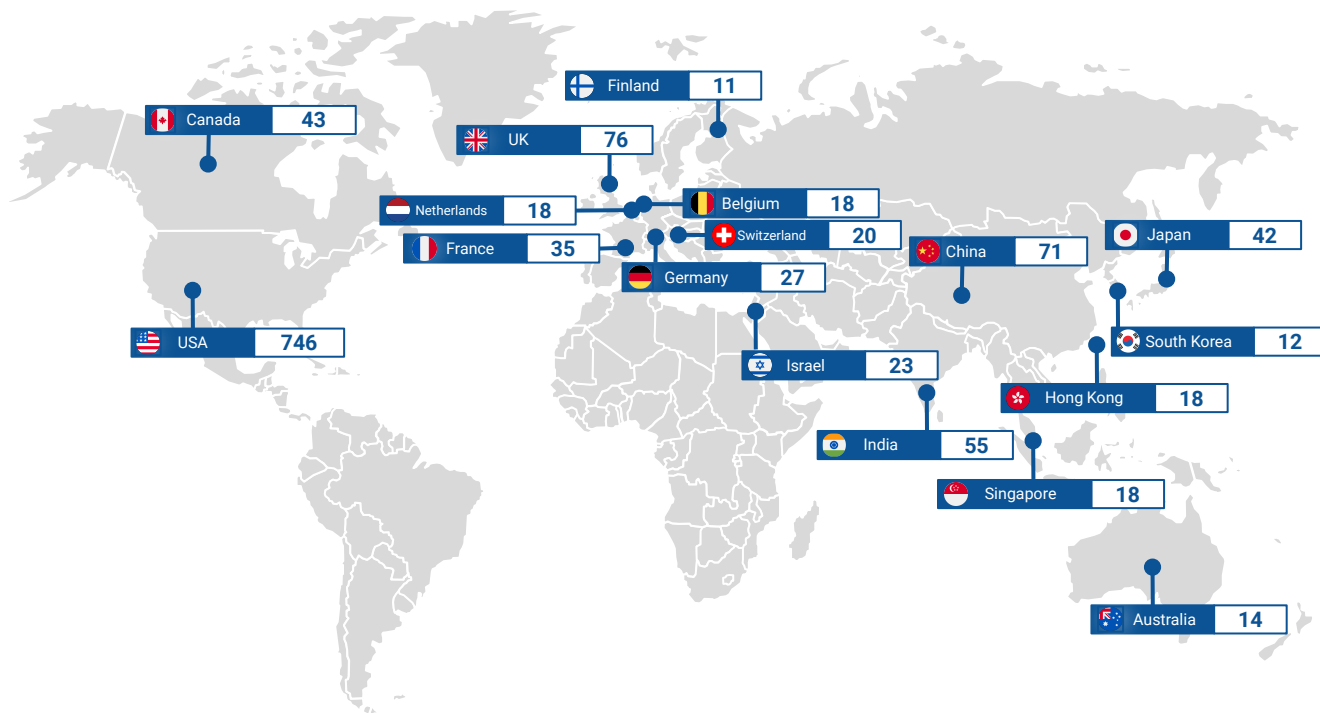
Distribution of Companies by Category, %



The **majority** of companies that offer diabetes services are located in the **USA**, the home of **72%** of the whole range of companies analysed in the report. The USA is distantly followed by the **United Kingdom**, **India**, and **Canada**, which together host **9%** of the world's diabetes companies.

The main domains in which these companies offer services are **P4 Medicine**, **mHealth**, and **Wellness & Fitness**, which account for **63.3%**, **9.1%**, and **6.4%** of all companies **respectively**.

Market at a Glance: Diabetes Investors

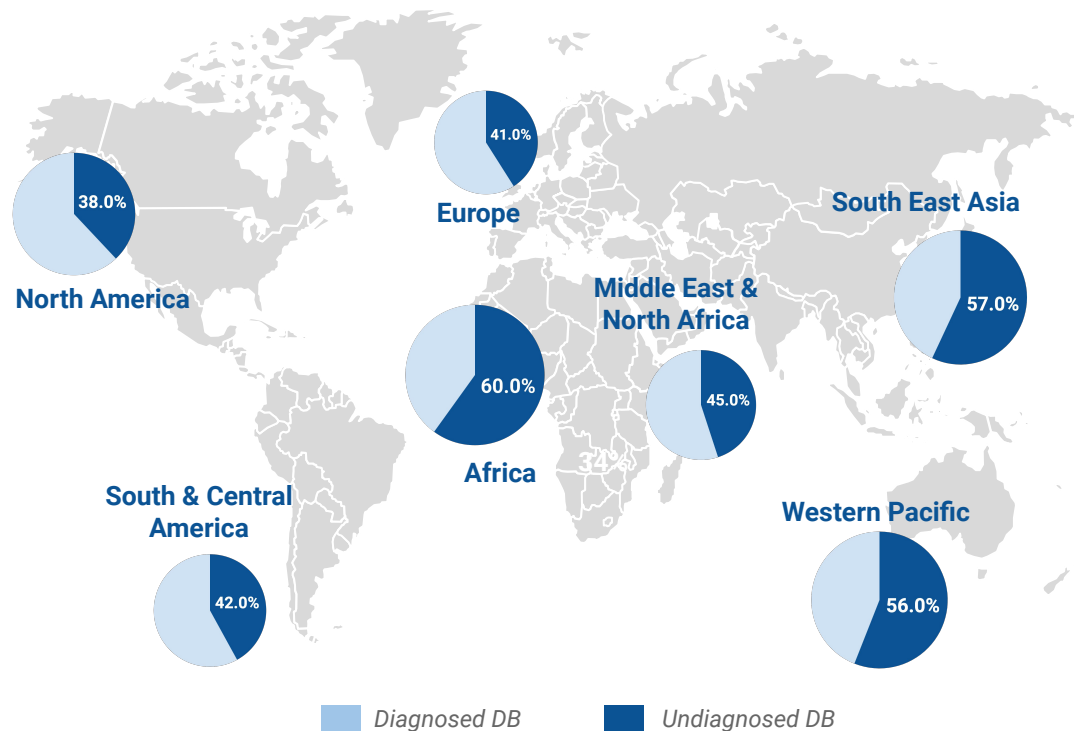


More than half of the investors in the **diabetes** industry are from the **USA** (**746 investors, ~52%**), while **~10%** are split between the **UK** (76 investors) and **China** (71 investors). **India, Canada, Japan, France, Germany, Israel, and Switzerland** each host **1.5-4% (20-55 investors)** of the global number of investors. Overall, **the top 10 countries** host **79%** of the world's diabetes industry investors.

Global Diabetes Diagnostics

Quality of Diabetes Diagnostics by World Region

Global Proportion of Undiagnosed Diabetes by Region, %



Diabetes can be easily detected during a **routine screening exam and blood test**. However, it **can frequently go undiagnosed for years** unless a physician draws a blood sample to check blood glucose levels.

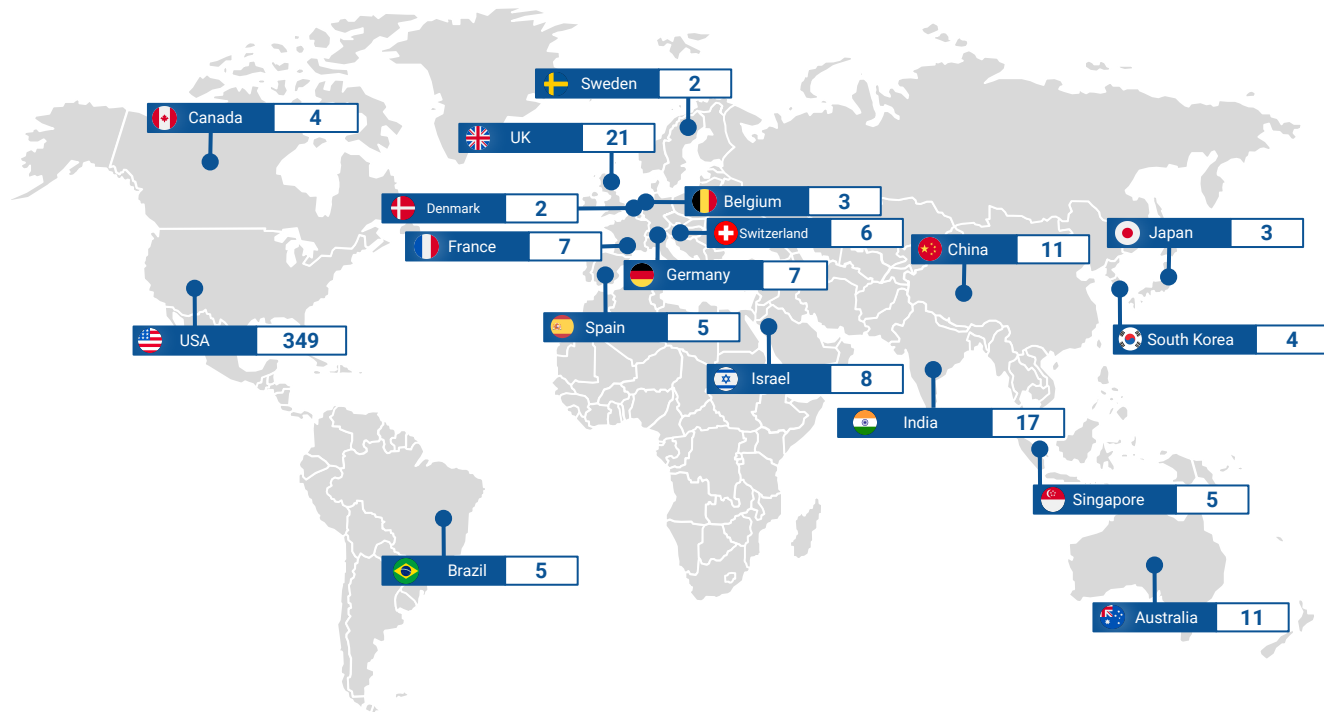
The diagnostic biomarkers for diabetes, as established by the WHO, include **2-hour glucose level** and **fasting glucose level**. The Revisions for the 2010 Clinical Practice Recommendations now include the use of **glycated haemoglobin (HbA1c)** as a diagnostic criterion for diabetes, with HbA1c values $\geq 6.5\%$ being diagnostic.

Children and adolescents with diabetes are more likely to present with **symptomatic hyperglycemia** (polyuria, polydipsia, and weight loss) than **adults**, who are often **asymptomatic** at the time of diagnosis.

Globally, the level of undiagnosed diabetes is around 40%, with most developed regions being at around this level. The highest levels of undiagnosed diabetes are in **Africa (60%)**, **South-East Asia (57%)**, and the **Western Pacific Region (56%)**.

Geography of Diabetes Diagnostics

Global Proportion of Undiagnosed Diabetes by Region, %



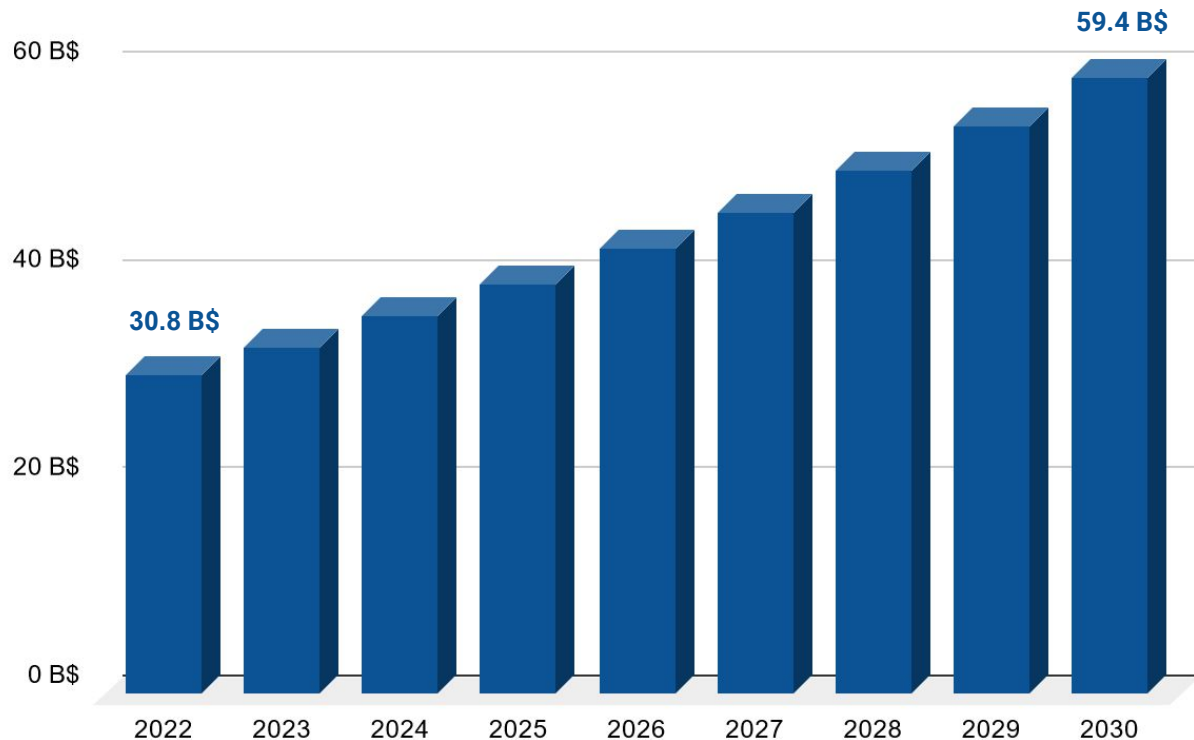
We found more than **530 companies** specialising in diabetes diagnostics.

The USA is the leader in this market, hosting more than 65% of diagnostic companies for diabetes (349 companies). The remaining 35% are distributed fairly evenly among other countries.

The country with the second highest number of companies is the UK (21), followed by India (17), China (11), and Australia (11), which together account for below 15% of the world total.

Diagnostic and Treatments for Diabetes

Diabetes Diagnostic Market Size



The Compound Annual Growth Rate (CAGR) for this period is **~8.6%**. The expansion of this sector is fueled by diverse factors, including heightened awareness and reporting of Diabetes cases, advancements in diagnostic technologies, and ongoing investments in research and development aimed at creating more accurate and efficient tools for detecting Diabetes.

The market is projected to expand steadily **from USD 30.8 Billion in 2022 to USD 59.4 Billion in 2030**, emphasizing the increasing demand for advanced diagnostic instruments for the early detection and enhanced management of Diabetes.

Advanced Treatments for Diabetes

IHH Treatment



Hyperbaric Chamber

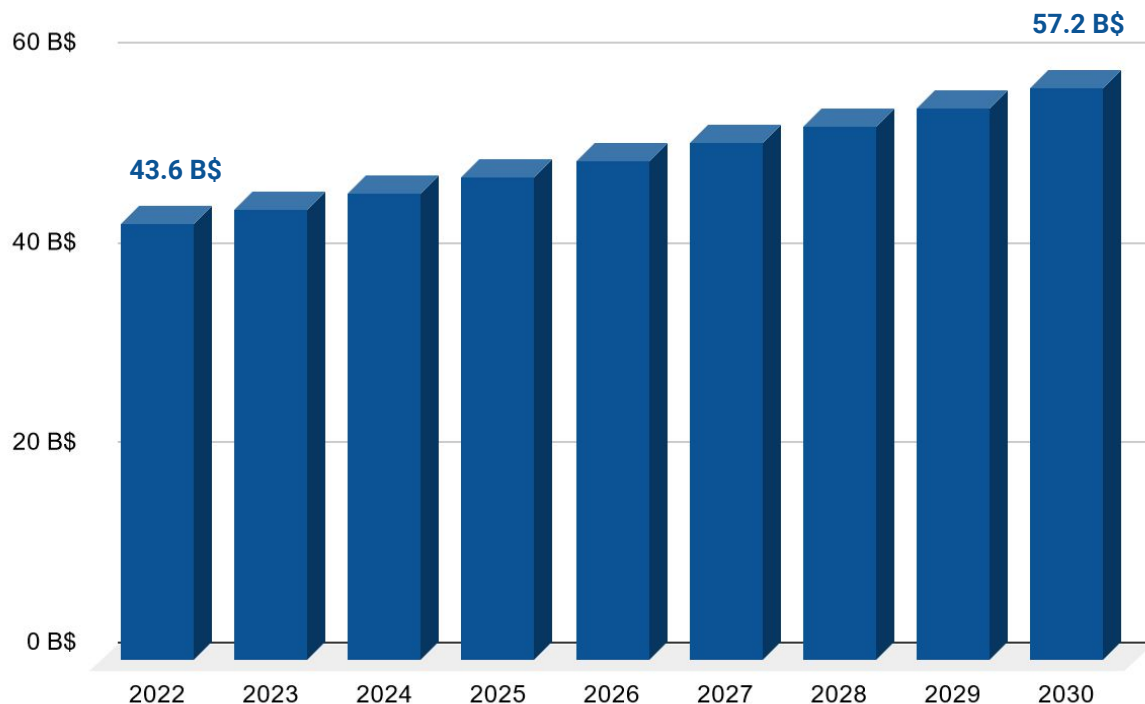


Currently, the prevailing strategy for managing **Diabetes** includes preventive measures such as adopting a **healthy lifestyle, regular physical activities, utilization of modern drugs, behavioral therapies, and early interventions**, particularly effective during the initial stages of the condition.

Mitochondrial dysfunction is a pivotal factor in diabetes, impacting energy production, cellular function, and insulin sensitivity. The resulting disruptions in energy metabolism and oxidative stress contribute significantly to diabetes pathology. Addressing mitochondrial dysfunction is crucial for developing effective strategies in diabetes management. **Intermittent hypoxic-hyperoxic treatment** and **hyperbaric chambers** emerge as efficient modern therapies. Recognized for their positive effects on chronic diseases and the aging process, these treatments show promise in boosting immunity and enhancing overall health.

Personalized treatment plans, informed by genetic and biomarker data, are becoming more common, allowing for tailored approaches that consider the unique characteristics of each patient's condition. As research advances, a multidisciplinary approach incorporating technology, genomics, and novel therapeutics holds the promise of revolutionizing Diabetes care.

Diabetes Treatment Market Size



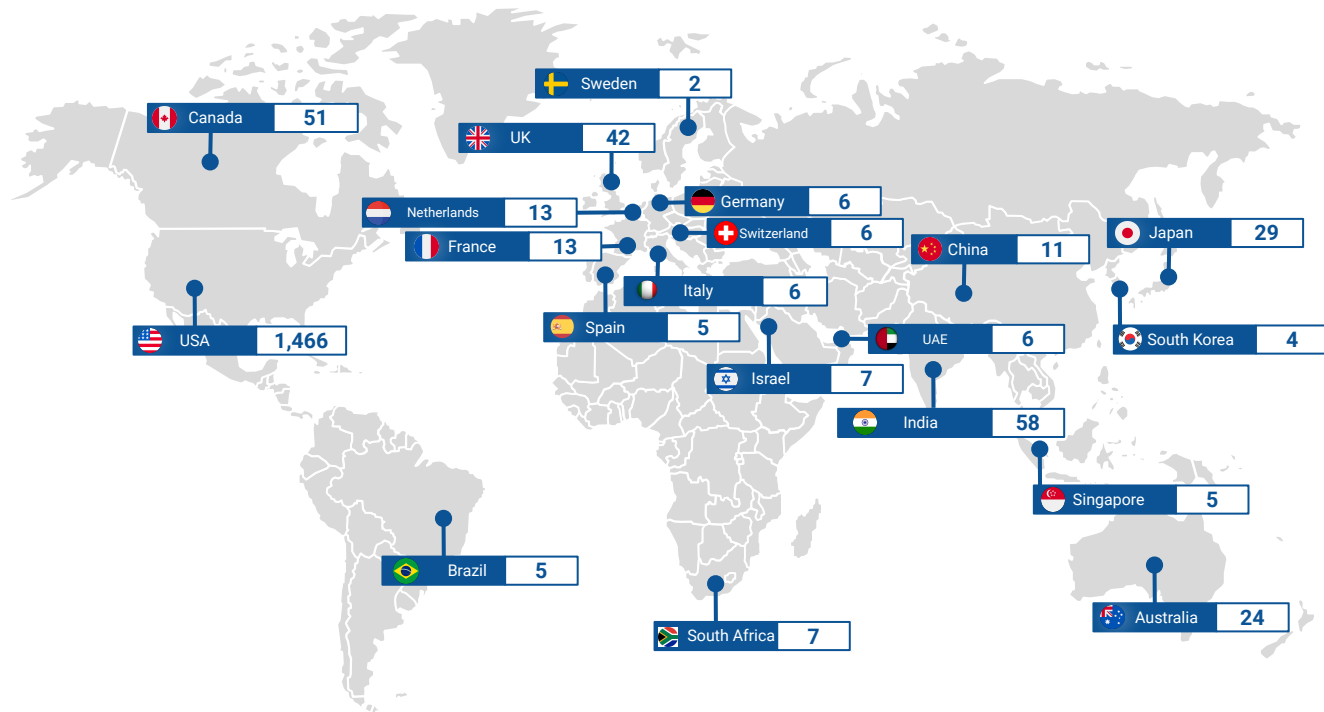
The global Diabetes treatment market is expected to witness a rapid growth, rising from **USD 43.6 Billion in 2022** to **USD 57.2 Billion in 2030**, representing a staggering Compound Annual Growth Rate (CAGR) of approximately **3.4%**.

Significant progress in healthcare, fueled by substantial investments from major corporations and governments, underscores the increasing importance of precise diagnostics and sophisticated treatment strategies in addressing the complexities of diabetes. The evolving landscape emphasizes the pivotal role of early intervention and comprehensive care, highlighting the need for refined tools and strategies to meet the rising challenges of this health condition.

Medical Facilities for Diabetes

Geographical Distribution of Medical Centres for Diabetes Treatment

Number of Medical Centres for Diabetes by Country



We found more than **1,840 medical centres** specialising in diabetes treatment.

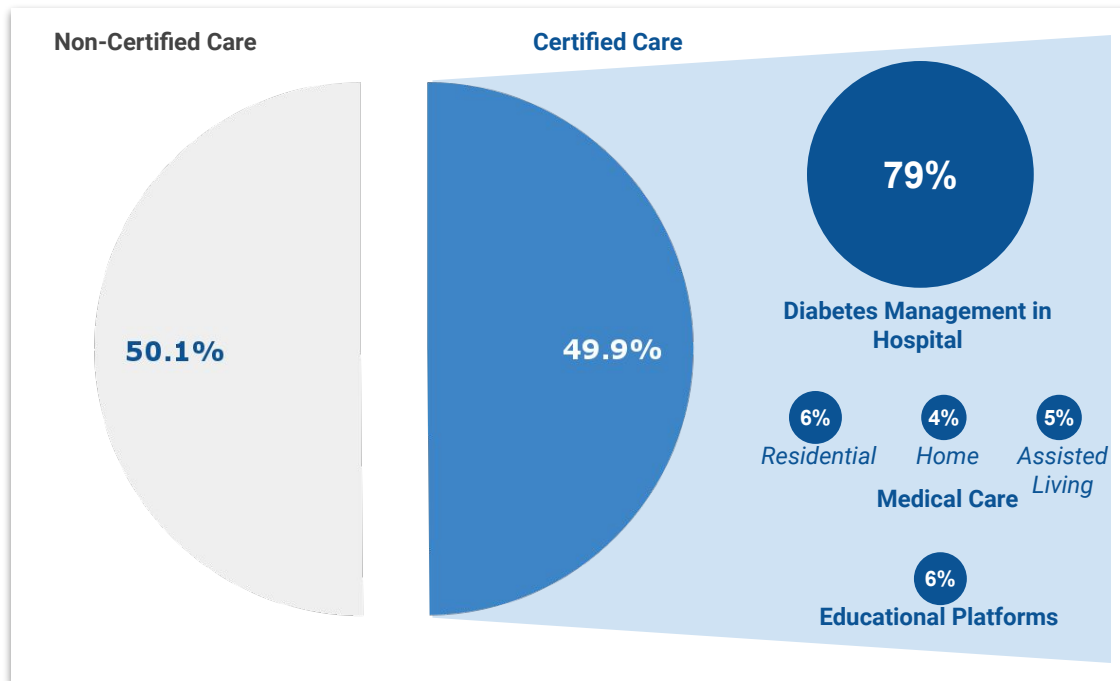
The USA is the world leader in this market, containing 1,466 medical centres, or around 78% of the world total.

After the USA, the highest numbers of medical centres for diabetes are located in India (58), Canada (51), the UK (42), Japan (29), and Australia (24).

In other countries, the number of medical centres varies from 1 to 4.

Better Support for People with Diabetes

Global Proportion of Diabetes Companies Offering Certified Care

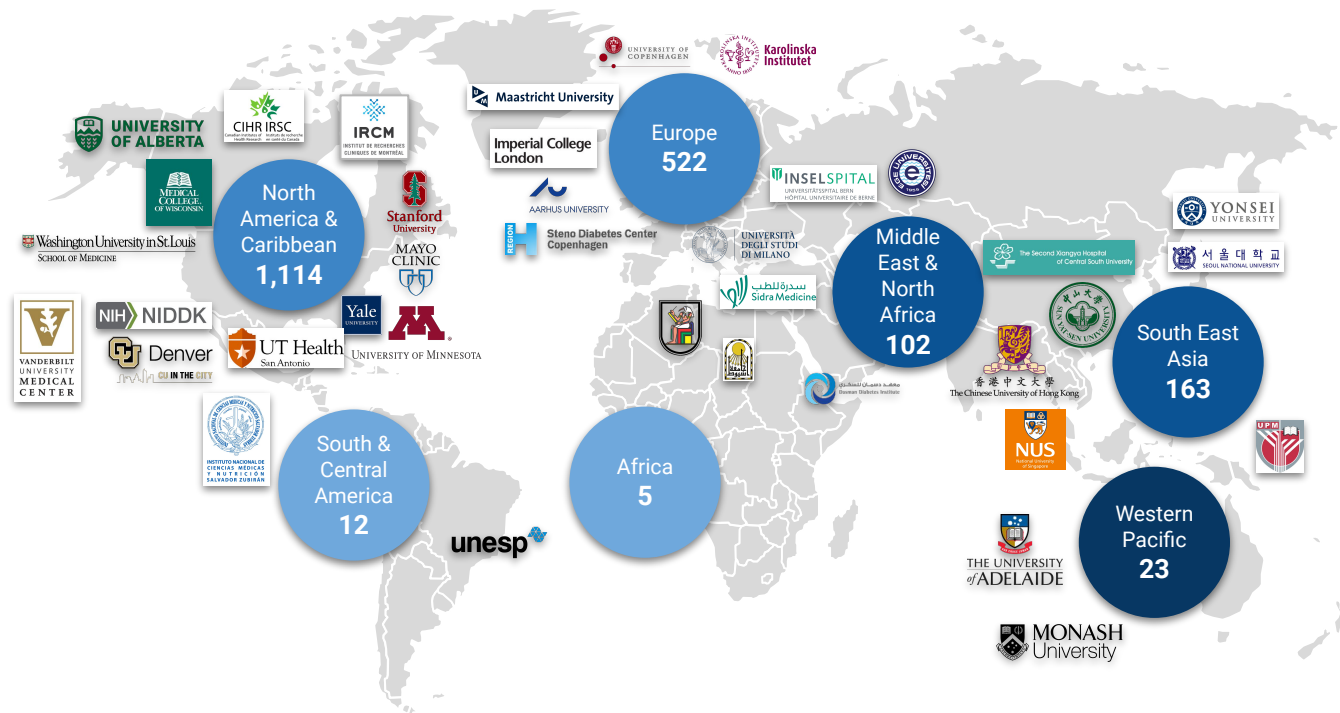


In the past, **many people with Type 2 diabetes were treated by their primary care physician** – rather than an endocrinologist, who is trained to treat diabetes – who may not have had any special training in the complexities of Type 2 diabetes management. Today, there are many specialists who can help. Since the 1980s, certified diabetes educators have transformed diabetes management, according to the ADA. These professionals, who are now called **certified diabetes care and education specialists (CDCES)**, take a comprehensive approach to teaching diabetes management and specialise in educating and supporting diabetes patients to optimise their health. Diabetes educators can also connect patients to dietitians, physical therapists, and mental health experts trained to help with the condition.

R&D for Diabetes

Geographical Distribution of R&D and Scientific Labs, 2024

Regions With the Highest Number of Pharmaceutical Companies for Diabetes

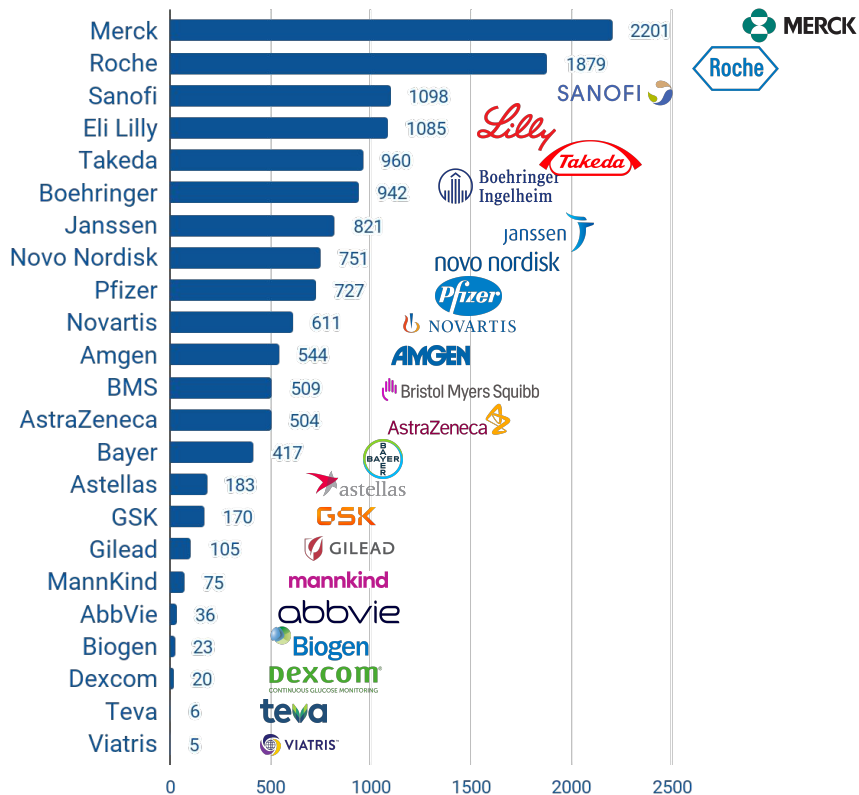


There are more than 2,100 R&D sites globally. The biggest scientific hub is the **USA**, where there are **>975 research centres** investigating diabetes. The most important are the **National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)**, the **University of Colorado (Denver)**, the **University of Minnesota**, **Yale University**, **Washington University MC**, **Mayo Clinic**, and the **University of Texas (San Antonio)**.

The second most significant hub is **Europe**, which has more than **520 research centres**.

Big Pharma's Intellectual Property for Diabetes

Big Pharma Companies by Number of Patented Inventions



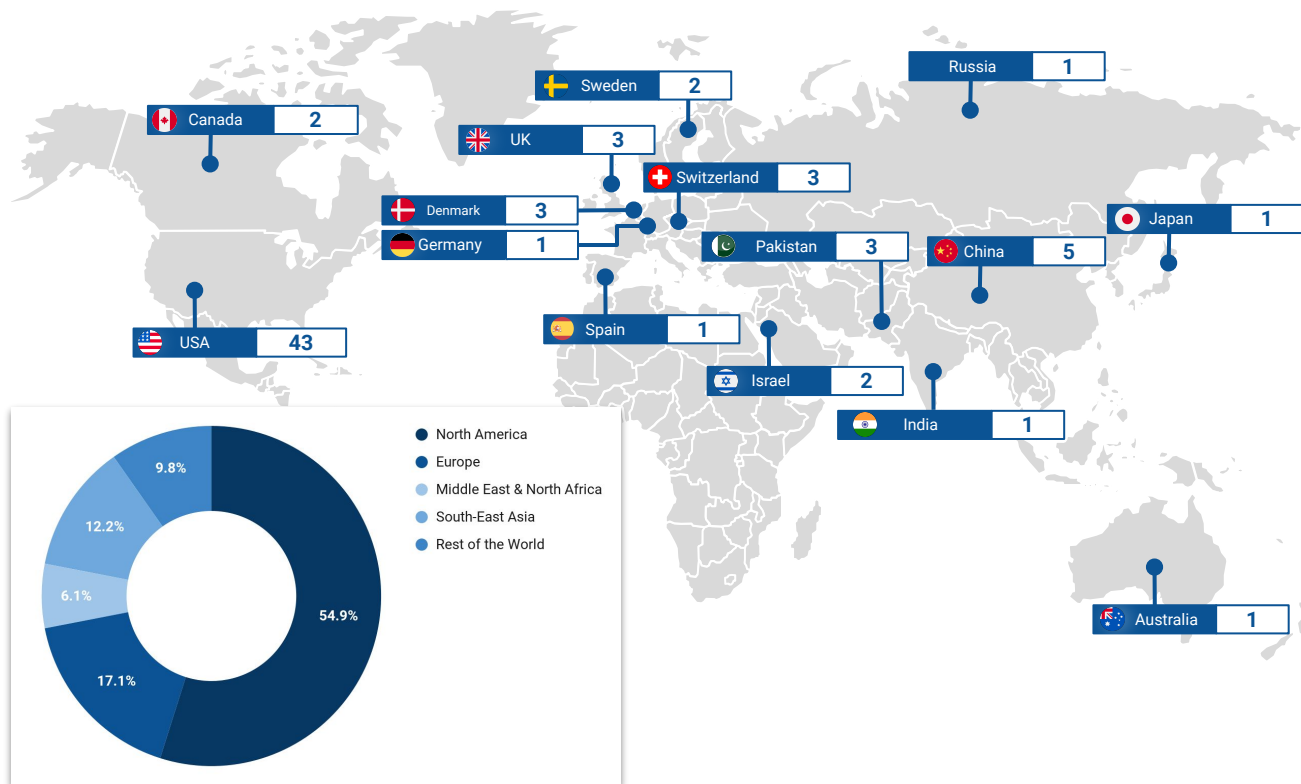
The big pharmaceutical companies are conducting a huge investigation into new antidiabetic approaches. The leaders in the number of patented technologies are Merck, Roche, Sanofi, and Eli Lilly (more than 1,000 patents), although there are no real breakthrough approaches. High-throughput screening allows big corporations to test a large number of new molecules, although most of these patented compounds never reach the practical application stage. This is the only strategy to protect intellectual property and maintain competitiveness in the market.

Another common risk management technique is to enter into a strategic partnership with other firms. Partnerships and joint ventures allow for corporations and even nonprofits to share in the upside of a potential finding while limiting their overall investment. Currently, Pfizer and Biogen are two of many companies involved in partnerships with the Juvenile Diabetes Research Fund (JDRF), a nonprofit charity. The JDRF is currently involved in more than 20 projects that have the potential to be big winners in treating and eventually curing Type 1 Diabetes.

PharmTech for Diabetes

Distribution of Pharmaceutical Companies Producing Antidiabetic Drugs

Countries by Number of Pharmaceutical Companies for Diabetes



We found more than **70 biopharmaceutical companies** that produced drugs against diabetes.

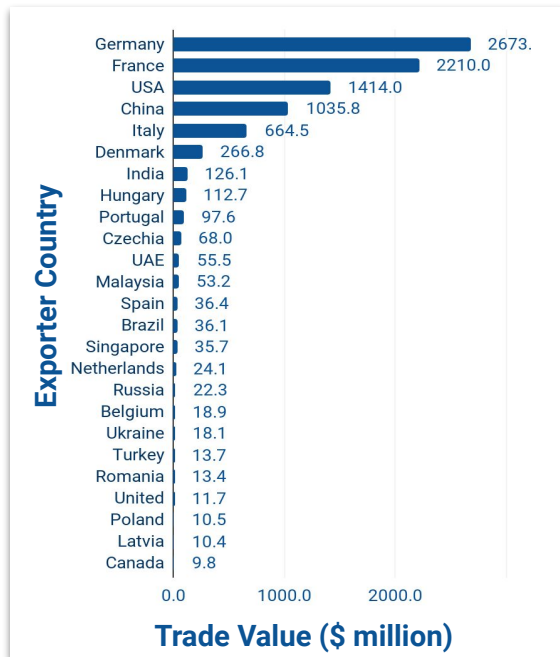
The USA is the leader in this market, containing more than 55% of companies (43 manufacturers).

Europe takes second place among world regions, taking up 17% of the market (14 manufacturers), followed by South-East Asia, which accounts for 12% of the market.

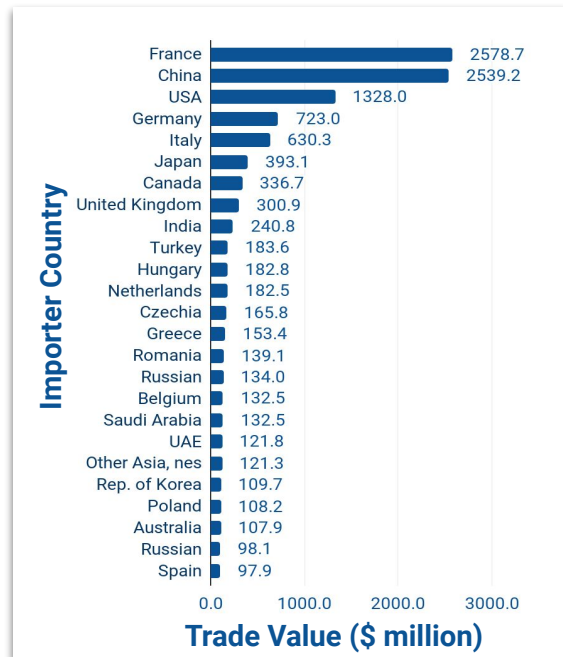
The rest of the world accounts for only 6% of manufacturers.

Top 25 Countries in Insulin Market, 2023

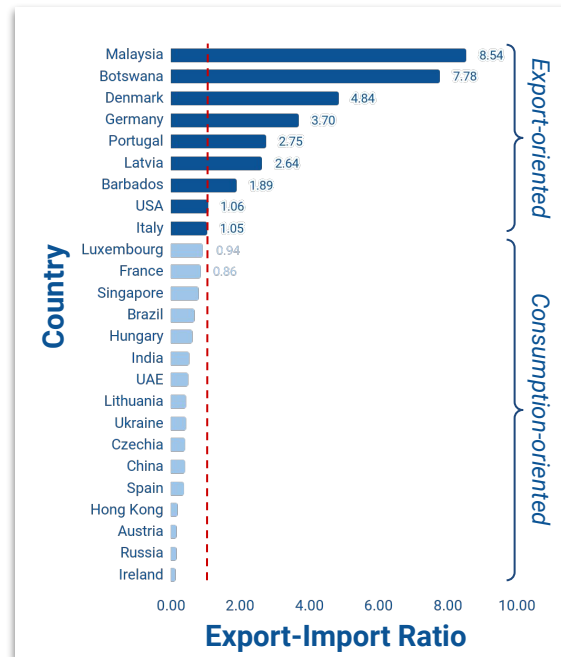
Absolute Value of Medical Insulin Exports



Absolute Value of Medical Insulin Imports



Export-Import Ratio of Medical Insulin



The first two charts describe the absolute value of medical insulin export and import in USD millions by the country. The biggest exporters are Germany, France, the USA, and China with the financial equivalent of exporting more than one billion dollars per year. On the other hand, these countries are the biggest importers of medical insulin. Analysis of the export-import ratio shows that Denmark, Germany, and the USA are export-oriented countries where insulin export dominates in the pharmaceutical industry. However, China and France are insulin consumers in the global market.

Clinical Trials for Diabetes

Diabetes Clinical Trials, 1993-2023

3545

*Ongoing Diabetes
clinical trials in the world*

20357

Clinical trials for Diabetes

1150

Clinical trials started in 2023

5860

*Clinical trials are sponsored
by Industry*

6190

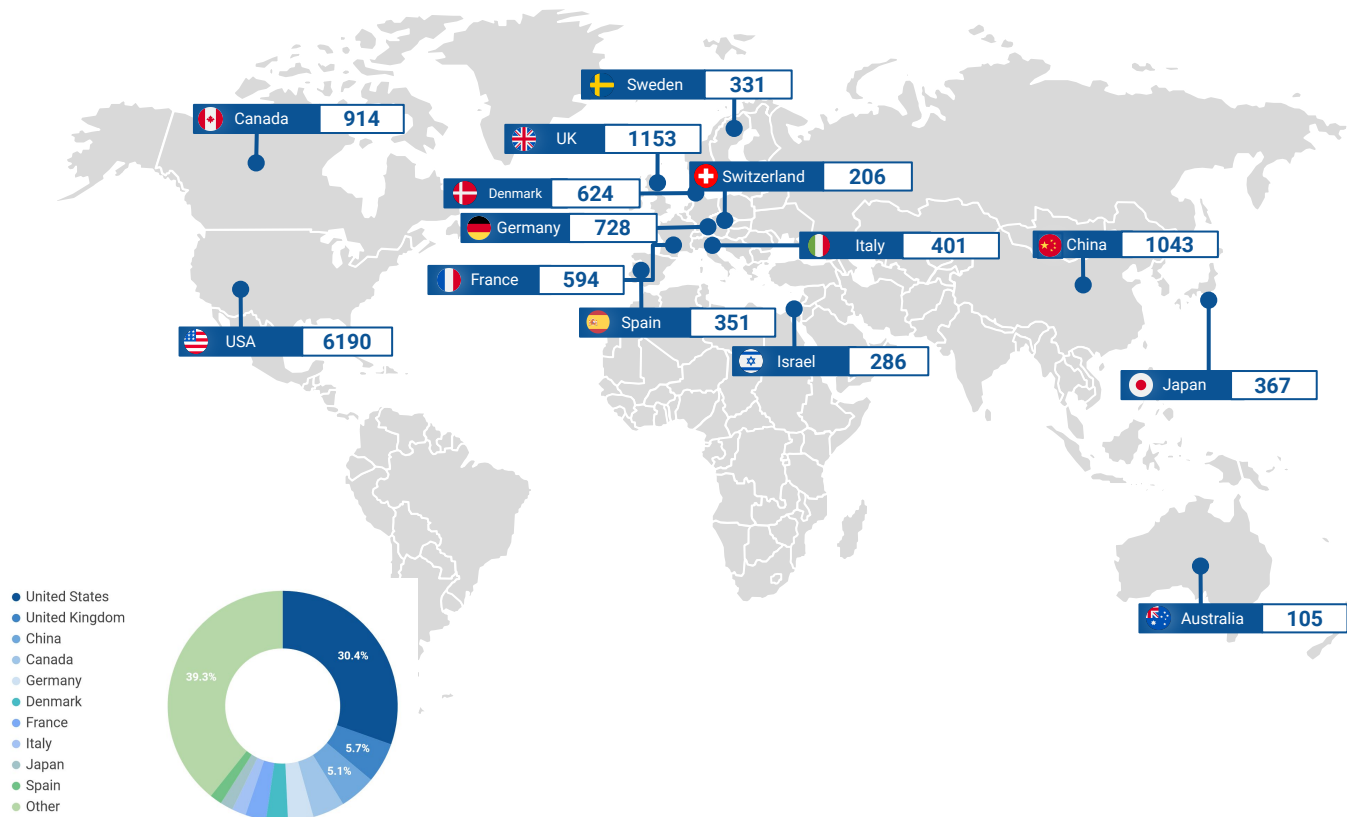
Clinical trials in United States

416

Ongoing clinical trials in Phases 3-4

Geography of Clinical Trials, 2023

Countries by Number of Clinical Trials for Diabetes



20300+ clinical trials were conducted on Diabetes in the world.

US is the biggest research hub for Diabetes research, having started **>30%** of clinical trials.

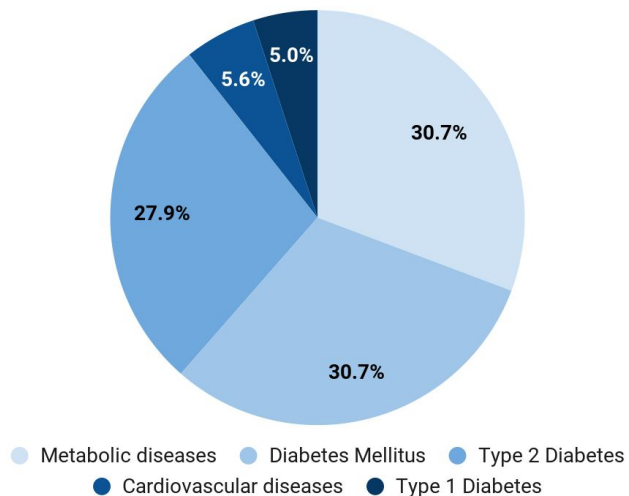
More than **5%** of clinical trials are launched in United Kingdom and China, **4.5%** in Canada, **3.6%** in Germany and **~3%** in Denmark and France. Together, European countries make more than **28%** of clinical trials.

In total, **more than 140 countries** have participated in Diabetes clinical trials.

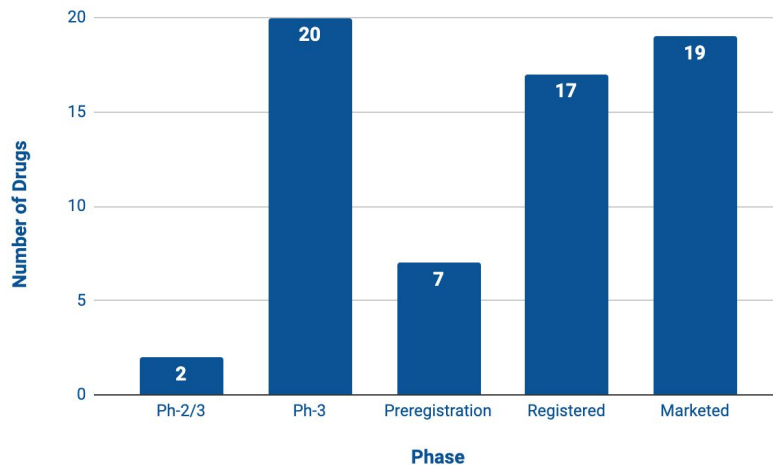
Innovations for Diabetes

SGLT2-protein Modulators for Diabetes

Proportion of SGLT2-protein Modulators by Indication

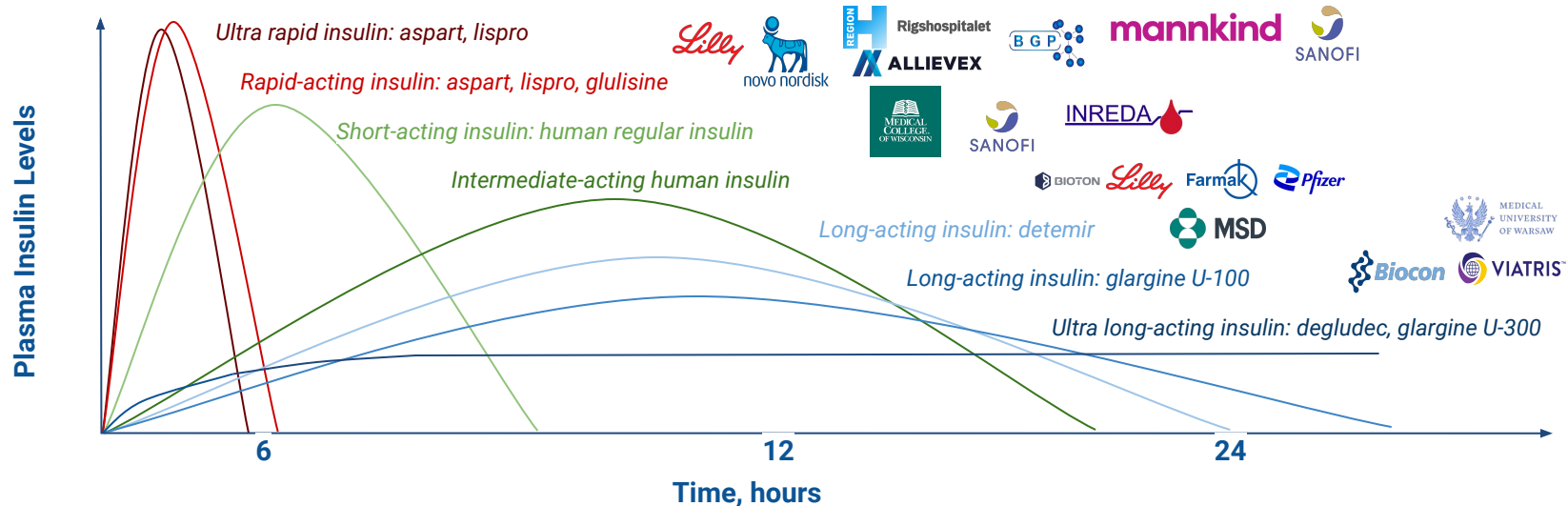


Proportion of SGLT2-protein Modulators by Phase



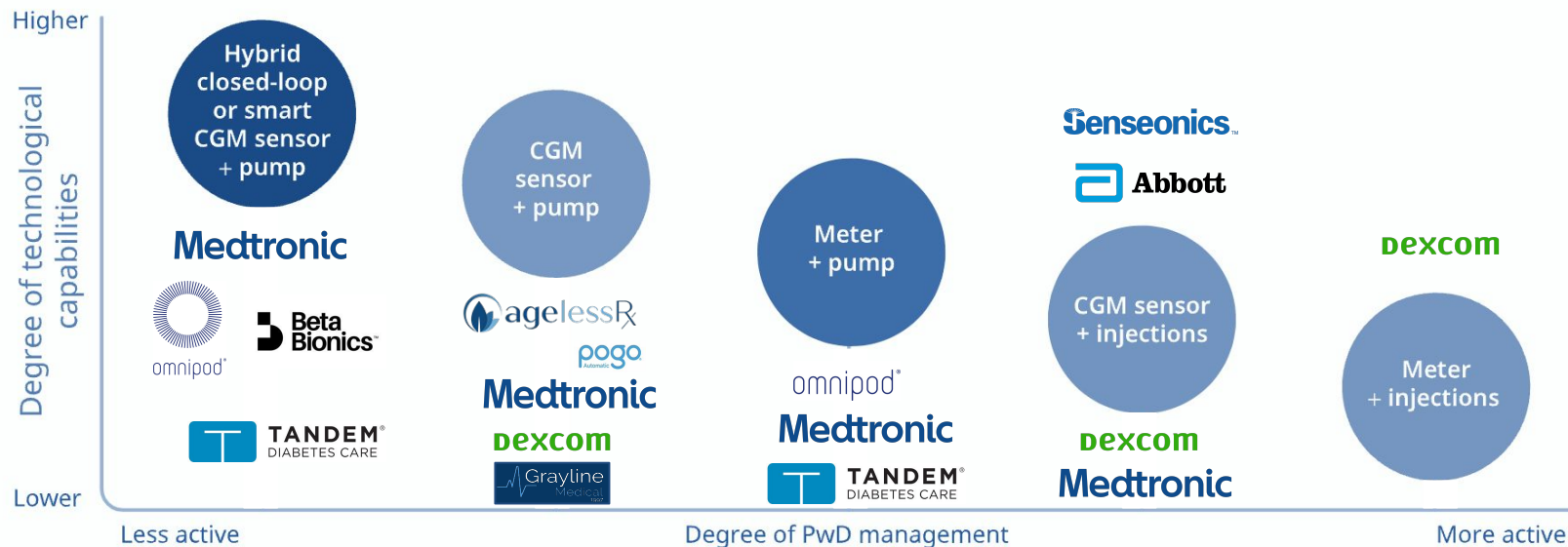
SGLT2 Inhibitors are used to treat Type 2 diabetes. They work by removing excess glucose by blocking reabsorption through the kidneys. Recent studies have shown these drugs to have a positive effect on the heart and kidneys, and Bayer's heart and kidney disease drug Kerendia is considered a rival to well-established SGLT2 diabetes medications. In 2021, according to data unveiled from the Figaro-DKD trial, Kerendia appeared to offer additional heart and kidney benefits when used in patients already taking an SGLT2 inhibitor.

Insulin: The Promising Future of Insulin Therapy in Diabetes



In terms of product category, most companies focus on human insulin and its long-acting formulation. However, some have already moved into the research and development of insulin lispro, insulin glargine, insulin aspart, and a variety of premixed dosage forms. Gradually, an increasing number of pharma companies are shouldering their way into the fierce diabetes contest. In the future, to maintain a sizable share in the global market, it will be not only be necessary to ensure product quality, but also very important to deeply understand the needs of the market. Developments in basal insulin formulations are aiming for longer and flatter time-action profiles. Insulin degludec is currently the longest-acting insulin analogue available on the market, exhibiting the lowest risk of hypoglycaemia. It is produced by Novo Nordisk, Sanofi, and Eli Lilly.

Diabetes Management Options Available on the Market



Recent advances in the diabetes care paradigm have brought us into a new era of care. Among these are digital medicine products, including continuous glucose monitors, connected insulin pens, and advanced hybrid closed-loop insulin pumps, as well as the monitoring of diabetes outcome metrics such as HbA1c and, increasingly, time-in-range (TIR, which can be defined as the percentage of time a PwD spends in their glucose target range). However, despite these advances, significant care gaps persist and demonstrate a need for improvement in blood glucose management.

Conclusions

Conclusions

- The majority of companies offering diagnostic and healthcare services are in the USA (over 72%). The main domains in which these companies offer services are **P4 Medicine**, **mHealth**, and **Wellness & Fitness**, which account for **63.3%**, **9.1%**, and **6.4%** of all companies **respectively**.
- **Most R&D centres** that conduct **diabetes** research are located in the **USA**, where **81%** of all analysed R&D centres are located. The USA is followed by **Australia** at **5%** and **the United Kingdom and India** at **2%** each, with the remaining **9%** distributed between **7 countries**: Canada, Cyprus, Iraq, Japan, South Africa, Switzerland, and the United Arab Emirates.
- **More than half** of investors in the **diabetes** Industry are from the **USA** (**746 investors, ~52%**), **~10%** of investors are located in the **UK** (76 investors) and **China** (71 investors). **India, Canada, Japan, France, Germany, Israel, and Switzerland** each host **1.5-4% (20-55 investors)** of the total number of investors. Overall, **the top 10 countries** by the number of investors host **79%** of total investors.
- **Artificial Intelligence (AI)** is becoming more popular, **but only 2%** of companies are developing **AI for Diagnostics** (analysis of biomarkers), while **3%** are investigating **innovative Digital Biomarkers** (new methods of remote self-diagnostics) and **4%** are discovering **new systemic, genomic, physiological, and other biomarkers**.
- Around **50% of patients have licensed healthcare**. Meanwhile, **~20%** of medical centres and clinics provide treatment of diabetes complications, and **35%** of clinics lack a narrow specialisation. Diabetes clinics provide a range of different types of services for diabetic patients: **diabetes treatment** (>50% of clinics), **prevention** (22%), **screening** (12%), management of patients with diabetes and **improving their quality of life** (6%), **residential and home care for patients** (~6%), and **rehabilitation** (3%).

Conclusions

- The biggest players on the market are **Novo Nordisk** (Denmark), **DexCom** (USA), **Eli Lilly** (USA), **AstraZeneca** (UK), **Sanofi** (France), and **Abbot** (USA). These companies provide their clinical research in Phases 3-4 – later stages of the drug development process in which safety and effectiveness are measured against existing standard treatments.
- The main strategy for diabetes management is still **glucose level control**. The most common drug for this purpose is human insulin. **Advanced insulin therapy** (rapid-acting, long-acting, and short-acting), as well as diabetes management by non-insulin medicine, is used the most in the USA and Canada. Among other countries, China, India, and Brazil have the highest amount of production of anti-diabetes drugs. They produced mostly generic drugs or drugs licensed by bigger companies during the period studied in the report.
- The modern pharmaceutical market for diabetes is divided mainly into three subsectors: **Therapeutics** (38.7%), **Drug Delivery** (32.3%), and **Devices** (24.7%). Since 2010, the number of antidiabetic regenerative medicines has been boosted after the approval of cell therapies (Regenerative Medicine) for wound healing, including cell therapy and gene therapy, but these drugs still represent only 4.3% of companies in the market. This 4.3% can be further divided into **Small Molecules** (56%) and **Biologics** (35%) – such as recombinant insulin, antibodies, and other proteins – as well as Cell Therapy (5.1%) and Gene Therapy (2.6%).
- At present, competition in the diabetes market is fierce. Traditional insulin is still the most popular drug category and accounts for about half of the market. The rest is shared among **GLP-1 receptor agonists** (17%), **DPP-4 inhibitors** (21%), and **SGLT2 inhibitors** (6%), which are regarded as the market's rising stars. The current global diabetes market is mainly divided into four giant monopolies: **Novo Nordisk**, **Sanofi**, **Eli Lilly**, and **Merck**. Together, they account for about **72% of the market**.

Global Health Challenges 2024

Visit Website



Step into a realm where innovation meets humanity – the **Global Health Challenges Concept by DKG**. In this transformative space, we are not just confronting health challenges; we are redefining the very approach to global well-being. **DKG Concept is a sintosis of strategic vision, cutting-edge research, and collaborative determination.**

As we delve into the intricacies of Lyme Pandemia, Autism, Alzheimer's, Diabetes, Bad Bugs, Forever Toxins, and others challenges our focus is clear. We seek not just advanced solutions, but a paradigm shift in how we perceive, approach, and overcome global health challenges.

Join us on this visionary journey, where each challenge is a canvas for innovation, and each breakthrough is a testament to our shared commitment to a healthier world. **This Concept transforms challenges into opportunities and envisions a global landscape of robust health for generations to come.** The Global Health Challenges Concept – where strategic innovation paves the way for a healthier and more resilient world.



Longevity Industry Analytics: Value Proposition

Visit Website



Longevity Industry Analytics is the only specialised analytics agency that focuses exclusively on the emerging Longevity Industry. We are recognised internationally as the premier analytics agency for advanced data analysis, industry reports, and next-generation infographics on ageing and Longevity.

Longevity Industry Analytics focuses on three key activities:

Providing Commercial Services

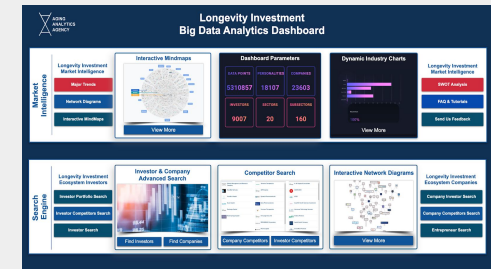
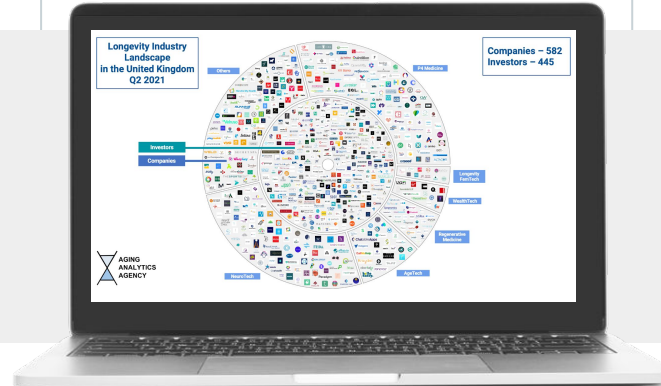
Conducting customised case studies, research, and analytics for internal (organisational) use, tailored to the precise needs of specific clients.

Preparing Open-Access Reports

Producing regular open-access and proprietary analytical case studies on the emerging topics and trends in the Longevity Industry.

Building Big Data Analytics Platforms

Offering customised analysis using specialised interactive industry and technology databases, IT-platforms, and Big Data Analytics Dashboards.



Website: www.aginganalytics.com



LONGEVITY INDUSTRY ANALYTICS

E-mail: info@aginganalytics.com

Website: www.aginganalytics.com

Longevity Industry Analytics Disclaimer.

The information and opinions in this report were prepared by Longevity Industry Analytics. The information herein is believed by LIA to be reliable but LIA makes no representation as to the accuracy or completeness of such information. There is no guarantee that the views and opinions expressed in this communication will come to pass. LIA may provide, may have provided, or may seek to provide advisory services to one or more companies mentioned herein. In addition, employees of LIA may have purchased or may purchase securities in one or more companies mentioned in this report. Opinions, estimates, and analyses in this report constitute the current judgment of the author as of the date of this report. They do not necessarily reflect the opinions of LIA and are subject to change without notice. LIA has no obligation to update, modify, or amend this report or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, estimate, forecast, or analysis set forth herein, changes or subsequently becomes inaccurate. This report is provided for informational purposes only. It is not to be construed as an offer to buy or sell or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy in any jurisdiction.