

changing
diabetes®
in children

Olivia Aka and her grandmother

Olivia has type 1 diabetes and lives in Côte d'Ivoire. She is one of the 28,296 children across 14 countries who have received diabetes care through the Changing Diabetes® in Children programme.

No child should die from diabetes

Changing Diabetes® in Children
2009–2020



Changing Diabetes® in Children was established in 2009 to improve access to care and life-saving medicine and supplies for children and adolescents with type 1 diabetes living in low- and middle-income countries.

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Bilkhissa Balde

Young leader, Guinea

Part of the first generation of young people living with type 1 diabetes in Africa

“I’ve lived with type 1 diabetes for 23 years, partly thanks to Changing Diabetes® in Children.

“I was lucky that there was a clinic attending to people with diabetes in Conakry in 2002, when my parents discovered that I had diabetes. At the time, there were only three clinics attending to people living with diabetes in Guinea. The programme has helped establish a network of clinics across the country with a specific focus on children. I’m happy that other children and adolescents across the country can have access to diagnosis and care.

“Diabetes doesn’t stop me from doing anything. On the contrary, it gives me the courage to do great things. And my dream is to be a model for children and adolescents with type 1 diabetes in Africa and in the world.”

Foreword

Novo Nordisk has launched a new social responsibility strategy – Defeat Diabetes. As part of this strategy, we have set ourselves the ambition of reaching 100,000 vulnerable children and adolescents living with type 1 diabetes through the Changing Diabetes® in Children programme by 2030. Our ambition is clear: no child should die from diabetes.

A century of progress following the discovery of insulin has made it possible for children diagnosed with type 1 diabetes to live full and healthy lives. However, in the case of type 1 diabetes, where you live often determines how long you live: for children born in countries with scarce resources, the prognosis for type 1 diabetes has barely changed since the discovery of insulin.

Since its inception in 2009, the Changing Diabetes® in Children programme has supported the establishment of type 1 diabetes care in national healthcare systems in 14 low- and middle-income countries and changed the lives of 28,296 vulnerable children and adolescents. Children who might otherwise have died now have access not only to insulin, but also to diabetes education, specialised healthcare services and monitoring equipment.

I had the pleasure of seeing first-hand how Changing Diabetes® in Children works in Ivory Coast. When you visit a family and see how a mother cannot afford insulin at the end of the month, you realise the impact we have on

improving people's lives. For the children and adolescents living with diabetes in low-resource settings, Changing Diabetes® in Children makes a world of difference.

This would not have been possible without a great deal of hard work and collaboration from all involved – Novo Nordisk, Roche, the International Society for Pediatric and Adolescent Diabetes (ISPAD) and the World Diabetes Foundation. More specifically, we are very grateful for the collaboration and commitment of ministries of health in the programme countries as well as the local partners implementing Changing Diabetes® in Children that work together to find sustainable solutions in addressing type 1 diabetes care.

It is a very meaningful partnership, and we want to continue helping to solve the problem and contributing to society. At Novo Nordisk, our purpose is to drive change to defeat diabetes, and by working together we can ensure that all children with type 1 diabetes get the opportunity of a full and healthy life.



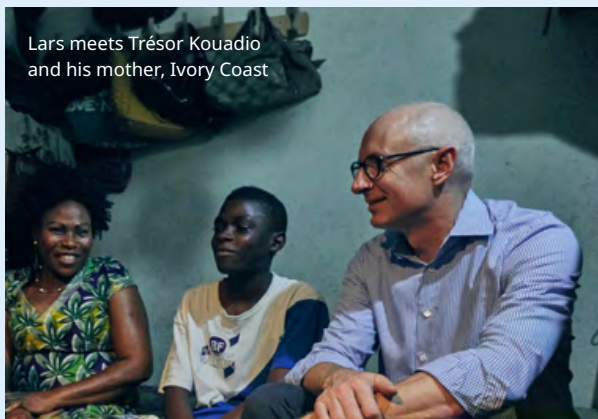
Lars Fruergaard Jørgensen

President and Chief Executive Officer, Novo Nordisk

Lars meets Olivia
Aka, Ivory Coast



Lars meets Trésor Kouadio
and his mother, Ivory Coast



Lars meets local programme
stakeholders, Ivory Coast



Type 1 diabetes prevalence remains underestimated in low- and middle-income countries

When Changing Diabetes® in Children was established a decade ago, data on type 1 diabetes in low- and middle-income countries were scarce, especially in sub-Saharan Africa¹. At the time, type 1 diabetes was recognised to be increasing in incidence. However, due to the limited capacity for diagnosis and care in low- and middle-income countries, children risked dying from lack of insulin.

Changing Diabetes® in Children started with a strong ambition to improve the capacity of healthcare systems and reach 10,000 children with type 1 diabetes in low- and middle-income countries in five years. Within the first five years, the programme had provided diabetes care to 13,199 children in nine countries, of which seven are in sub-Saharan Africa². Today, more than 5,000 children have been enrolled and received care in Ethiopia alone, with a total of 28,296 children and adolescents reached in 14 low- and middle-income countries.

Changing Diabetes® in Children will continue to address the challenges people with type 1 diabetes face in accessing quality diabetes care in low- and middle-income countries³.

International Diabetes Federation (IDF) prevalence estimates⁴ compared with children reached through Changing Diabetes® in Children

Type 1 diabetes prevalence	IDF estimates, 2019	Children reached, 2019	Children reached (%), 2019	Children reached, 2020
Total	209,900	25,695	12%	28,296
Africa	25,800	16,701	65%	18,948
Cameroon	743	728	98%	792
Côte d'Ivoire	359	332	92%	441
DRC	1,275	1,621	127%	1,886
Ethiopia	2,127	4,932	232%	5,349
Guinea	344	880	256%	969
Kenya	1,694	2,227	131%	2,669
Senegal	805	499	62%	679
Sudan	12,594	2,302	18%	2,702
Tanzania	1,984	1,570	79%	1,627
Uganda	2,253	1,610	71%	1,831
Southeast Asia	184,100	8,994	5%	9,361
Bangladesh	5,350	2,691	50%	2,783
Cambodia	546	232	42%	324
India	171,281	5,849	3%	5,951
Myanmar	1,549	222	14%	293

1. International Diabetes Federation. IDF Diabetes Atlas, 4th edn. Brussels, Belgium: International Diabetes Federation;2009.

2. Novo Nordisk. Changing Diabetes® in Children: 5-year report. 2014.

3. World Health Organization. Global report on diabetes. World Health Organization;2016.

4. International Diabetes Federation. IDF Diabetes Atlas, 9th edn. Brussels, Belgium: International Diabetes Federation;2019.

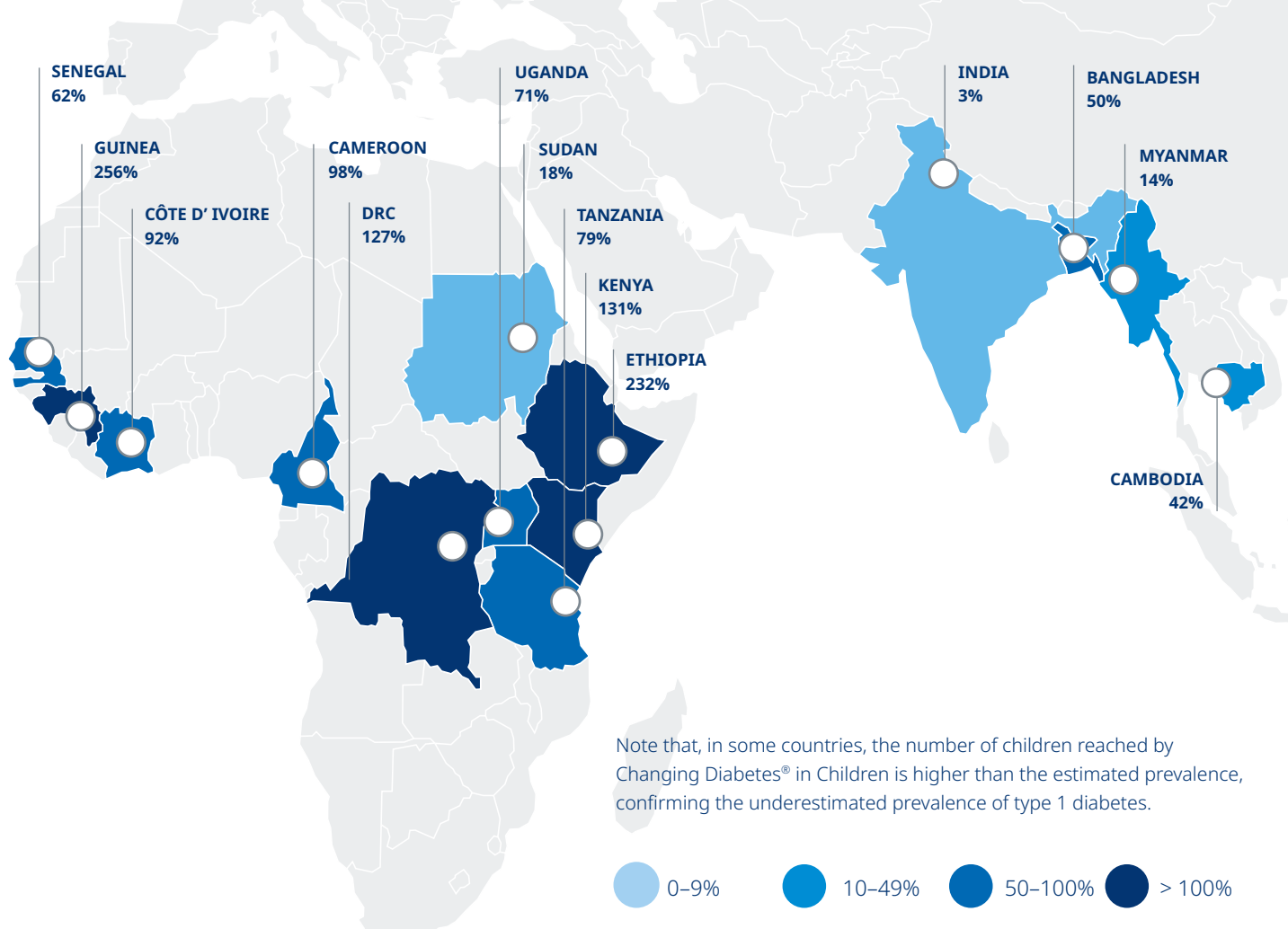
Percentage of children reached through Changing Diabetes® in Children compared with the IDF prevalence estimates, 2019

African countries

12% of the estimated children reached

Southeast Asian countries

5% of the estimated children reached



Professor Naby Balde

Guinea
Vice president,
International Diabetes
Federation (2020-2021)

“Changing Diabetes® in Children has helped shed light on the prevalence of type 1 diabetes in Africa.

“In low-income countries, it is still a challenge to determine the actual prevalence of type 1 diabetes, which is one of the most common chronic diseases in childhood.

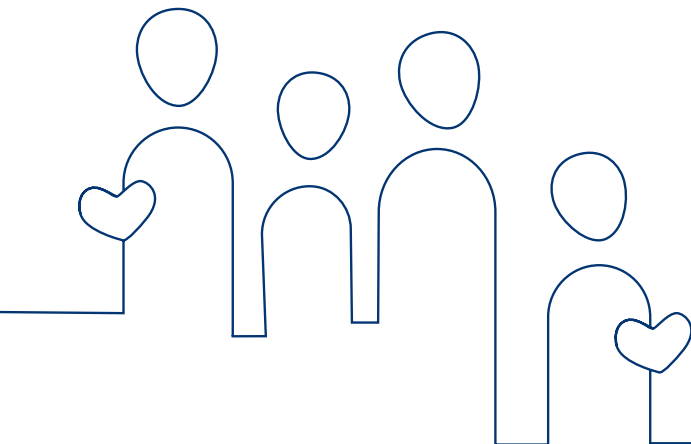
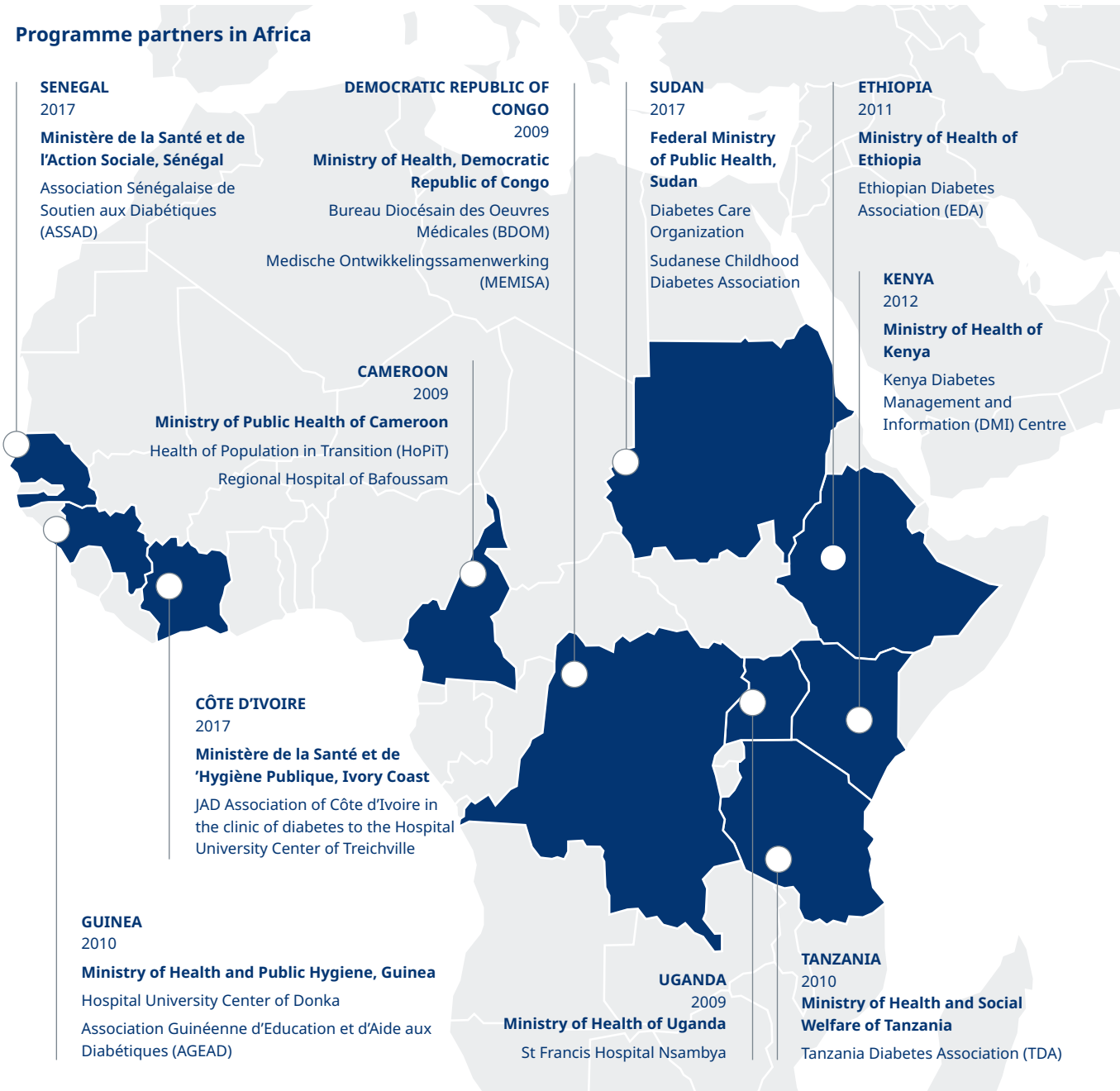
“Data from Changing Diabetes® in Children confirm that the numbers of children with diabetes are underestimated in Africa. For example, in Guinea the programme has 969 children enrolled while the official data as per the IDF Atlas estimates a total of 344 children with type 1 diabetes nationwide.

“We must continue to strengthen diagnosis and reporting, while we strongly encourage Changing Diabetes® in Children to continue strengthening national healthcare systems in providing access to care for children and adolescents with type 1 diabetes.”

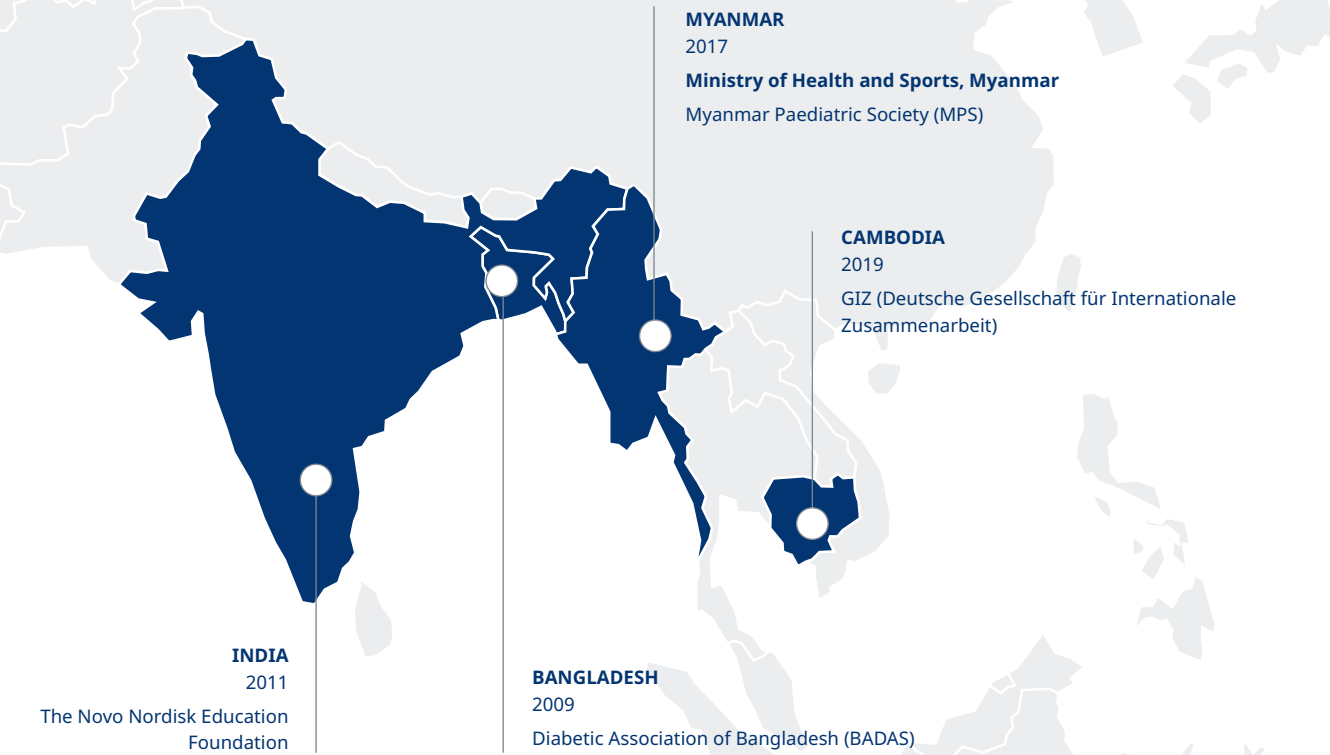
Partnerships to strengthen healthcare systems

Changing Diabetes® in Children consolidates national efforts to address local barriers to healthcare, supporting ministries of health in developing comprehensive diabetes care solutions together with national diabetes associations and other implementing partners.

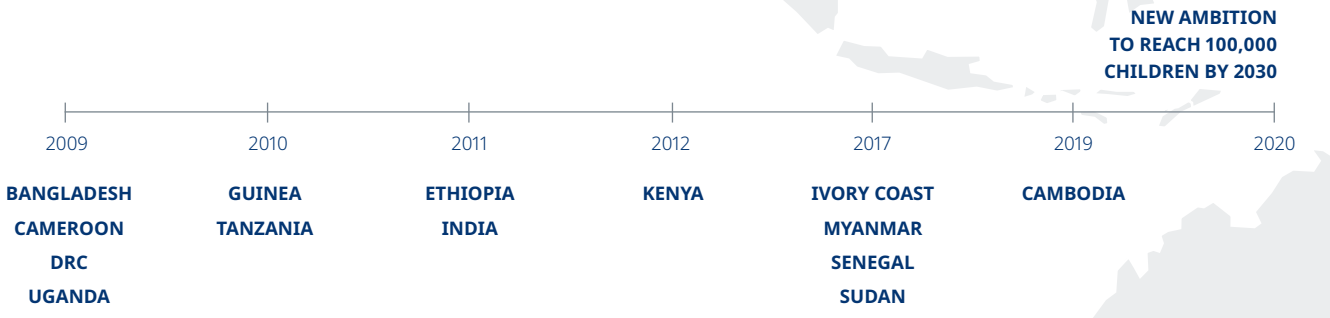
Memorandums of understanding have been developed with governments in programme countries in order to ensure coordination in the short term and sustainability in the long term.



Programme partners in Southeast Asia



Establishment of country programmes, year



NEW AMBITION TO REACH 100,000 CHILDREN BY 2030



Zahid Malik, MP
Bangladesh Minister for Health and Family Welfare

“Type 1 diabetes is a rising trend among children, as thousands of children are now diagnosed with type 1 diabetes in Bangladesh. Every child has to survive with insulin; but it’s not possible for children from many poor families to buy and take insulin.

“We want to thank Changing Diabetes® in Children and Novo Nordisk for having provided free insulin to poor children in Bangladesh since 2010 and creating awareness and education around type 1 diabetes.

“From the Mujib Year, 2020/21, the Bangladesh government is working to provide free insulin to the children living with type 1 diabetes in the country.”

A replicable model for holistic type 1 diabetes care – more than insulin

Treating type 1 diabetes is not simply a matter of access to insulin; it is a complex disease that requires careful management, as underlined in the Global Report on Diabetes¹.

Acknowledging this, the Changing Diabetes® in Children programme is structured around three main quality components aimed at building a holistic care system – from patient education and advocacy to training healthcare professionals and helping establish national clinics – along with the provision of insulin and medical supplies.



Hnin Eain has type 1 diabetes and lives in Myanmar. She is receiving care through the Changing Diabetes® in Children programme.



Patient education and advocacy

- **158,514 in-clinic patient education sessions**, adapted to children and adolescents, have been conducted.
- **Target audiences totalling more than 17 million people have been** reached through social media campaigns.
- **12,744 children have attended educational camps.**



Training of healthcare professionals

- **13,323 healthcare professionals have been trained** to diagnose and treat type 1 diabetes in low-resource settings.
- **2,267 healthcare professionals have received advanced training.**



Support the establishment of national clinics

- **222 clinics have been established or refurbished**, as an integrated part of national healthcare systems, ensuring coverage in rural and remote areas.



Medical supplies and cold chains

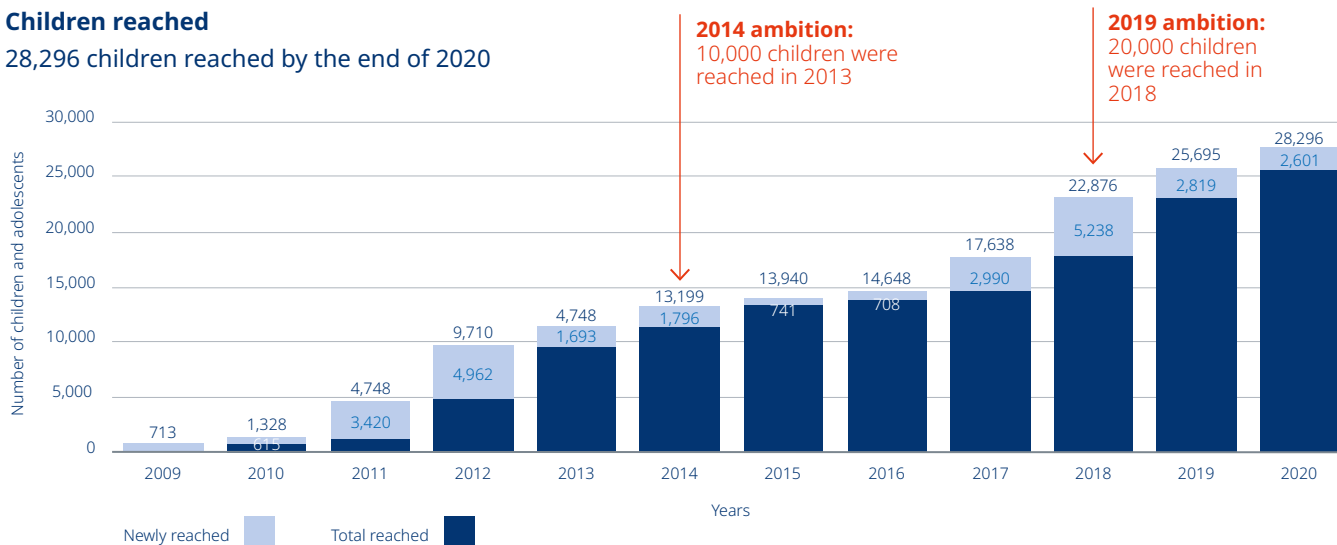
- **> 2,671,229 million vials of insulin have been donated** along with blood glucose monitoring equipment and medical supplies, while national supply chains have been strengthened through the establishment of cold chains.

1. World Health Organization. *Global Report on Diabetes*. World Health Organization;2016.

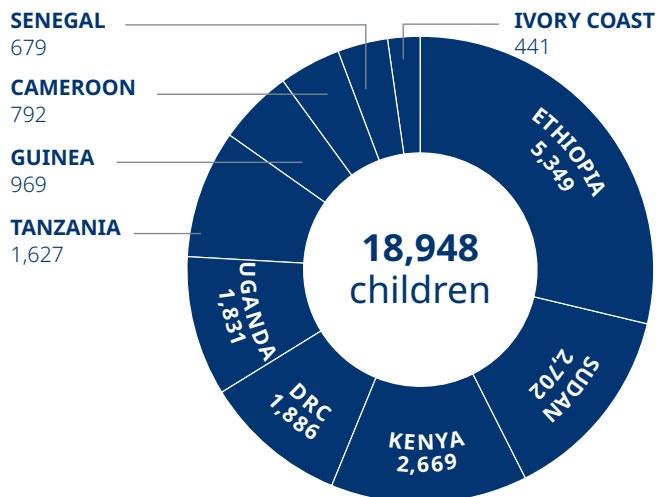
A decade of building sustainable solutions: 2020 programme status

Children reached

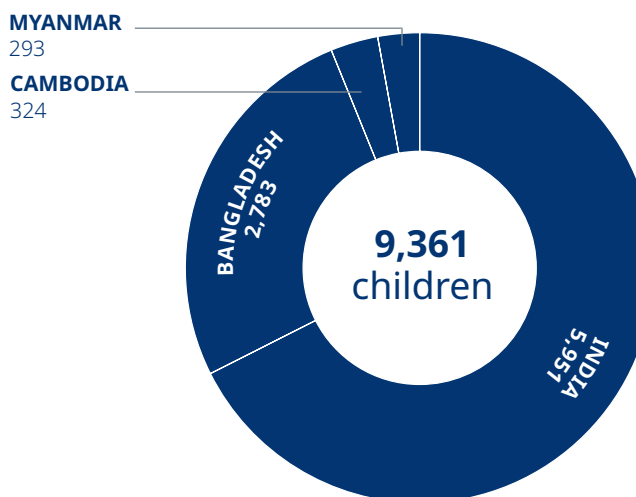
28,296 children reached by the end of 2020



Children reached in Africa



Children reached in Southeast Asia



Carine de Beaufort

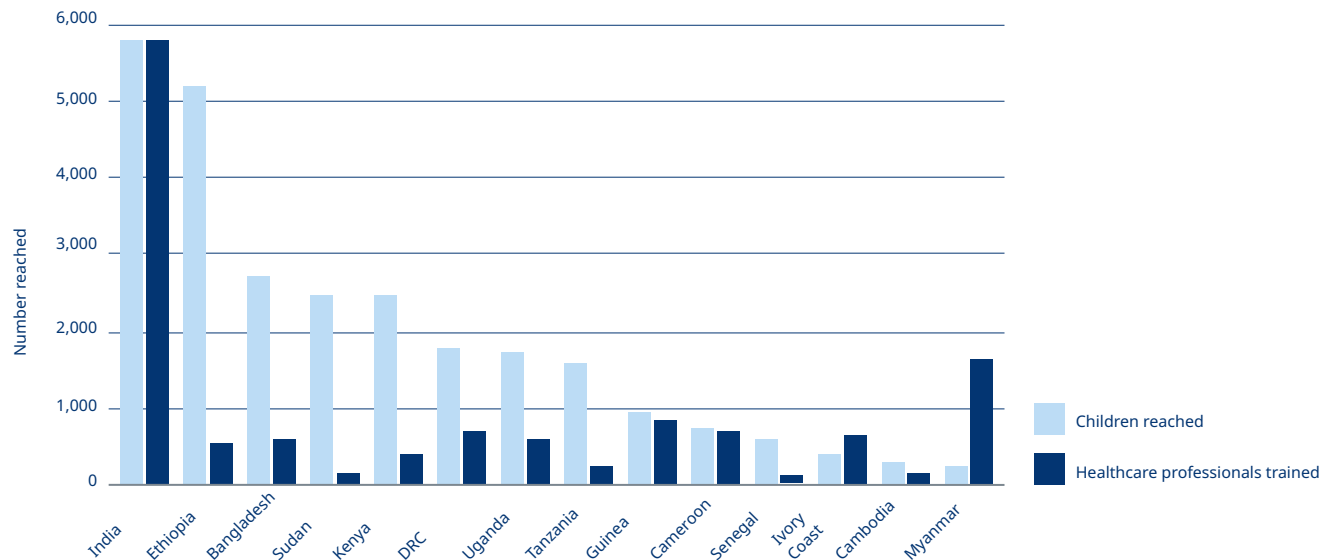
President,
International Society for
Pediatric and Adolescent
Diabetes

“Insulin is the life-saving drug for persons with type 1 diabetes. However, an intensive management with good understanding of optimal personalised use is essential as well. ISPAD, as a unique global society focusing on all forms of diabetes in children, adolescents and young adults, has been involved and continues to be involved in the training of healthcare professionals in many countries around the globe, in partnership with the Changing Diabetes® in Children programme.

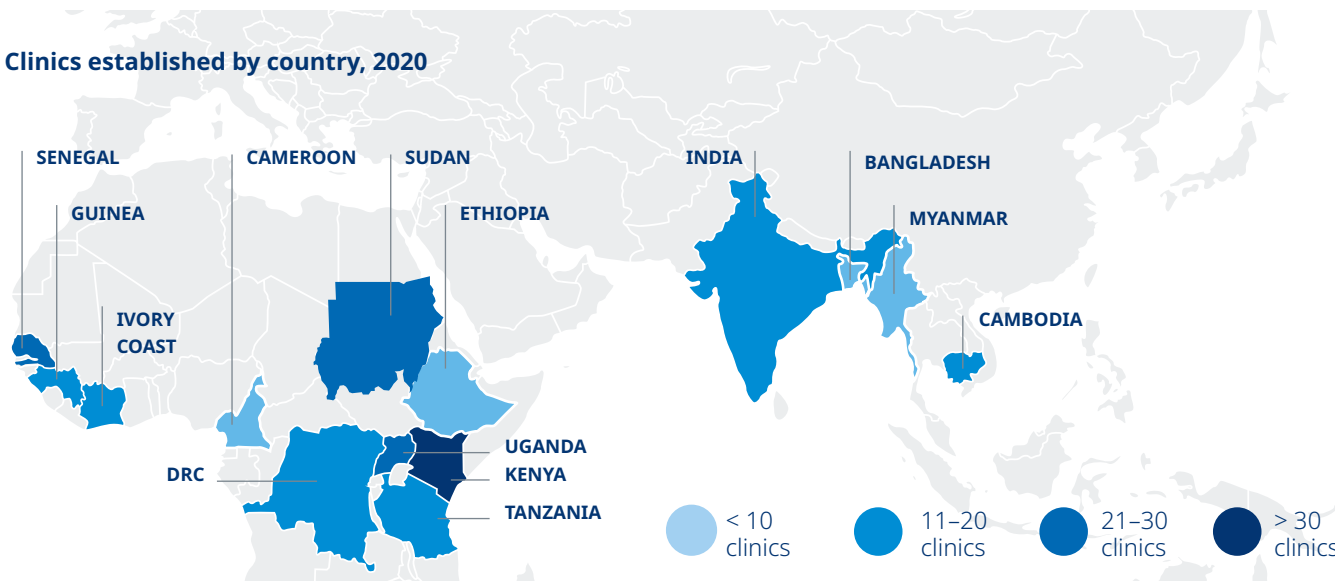
“Creating a better life for children, adolescents and young adults with diabetes will only be possible when we unite our forces!

“Thank you so much, Changing Diabetes® in Children, and please continue this great work!”

Children reached and healthcare professionals trained by country, 2020



Clinics established by country, 2020



Dr KM Prasanna Kumar

President,
Endocrine Society of India;
President, Research Society
for the Study of Diabetes in
India (RSSDI); Vice President,

Diabetes India; CEO of Bangalore Diabetes Hospital in
Vasanth Nagar

“I personally found working with the Changing Diabetes® in Children programme very satisfying. The comprehensive care, including insulin, monitoring, diabetes education, counselling and support, has resulted in the significant reduction of critical hospital admissions and mortality in the children under my care.

“There’s no doubt that this programme has impacted the lives of many children with type 1 diabetes and their families who hail from economically poor strata.”



Patient education and advocacy

There is no prevention or cure for type 1 diabetes and, as such, it is a lifelong condition that requires daily management and care, as well as a high level of patient knowledge.

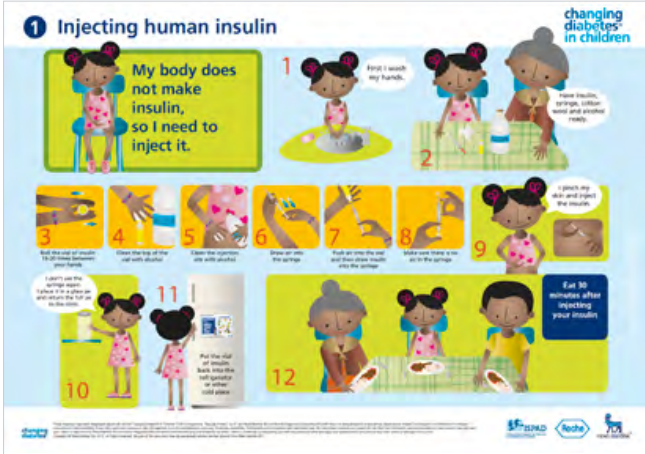
Changing® Diabetes in Children has developed patient education materials adapted to children and adolescents. The innovative and locally adapted materials for patient education feature step-by-step visual instructions. The booklet includes a comprehensive scripted Nurses' Guideline and covers questions including:

- Why do I need insulin?
- How much insulin should I take?
- Where do I inject it?
- How can I measure my blood glucose?



> 158,000 in-clinic patient education sessions

adapted to children and adolescents, have been conducted, target audiences totalling more than 5 million people have been reached through social media campaigns and 12,744 children have attended educational camps



A comprehensive set of patient education materials has been developed in English, French, Swahili and Amharic and is available for download from novonordisk.com/cdic



Leif Fenger Jensen
Managing Director,
World Diabetes Foundation
(WDF)

“WDF has been a proud Changing Diabetes® in Children partner from the programme’s start.

“Diabetes is a lifelong disease that requires active involvement of the patient and family members in its management. We believe that self-management education is crucial in generating lasting and sustainable solutions for children and families, especially in low-resource settings. Developing educational materials and organising camps for children and their families is an important part of what we do – together, these activities provide information and hope, and their effects can be life-changing.

“We’ll continue supporting Changing Diabetes® in Children as part of our mission to empower local communities to achieve sustainable solutions and yield replicable models.”



Training of healthcare professionals

Changing Diabetes® in Children has developed adapted training for healthcare professionals in low-resource settings and trained 13,126 healthcare professionals to diagnose and treat type 1 diabetes.

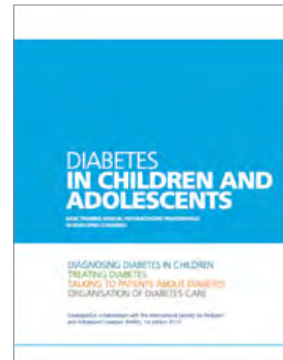
Access to physicians and nurses skilled in type 1 diabetes management and diabetes education is frequently limited in low-resource settings. This makes it difficult to adequately diagnose and report cases of type 1 diabetes.

The training manual supports education and training on important type 1 diabetes topics, including:

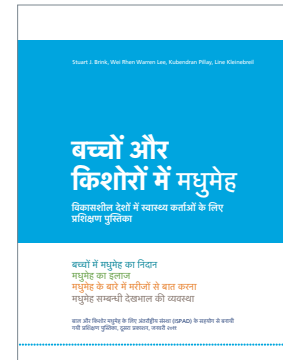
- Diagnosing type 1 diabetes in children
- Treating type 1 diabetes
- Talking to patients about type 1 diabetes
- The organisation of type 1 diabetes care.



13,323 healthcare professionals have been trained to diagnose and treat type 1 diabetes in low-resource settings, and 2,267 healthcare professionals have received advanced training

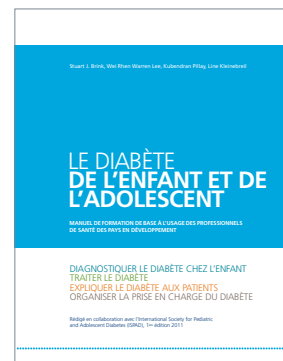


English



Hindi

A comprehensive set of training materials has been developed in English, French, Hindi and Spanish and is available for download from novonordisk.com/cdic



French



Spanish



Dr Kaushik Ramaiya
Vice President,
International Diabetes
Federation; Hon. General

Secretary, Tanzania Diabetes Association; member of the Board of the National Health Insurance Fund, Ministry of Health, Govt. of United Republic of Tanzania

"In Tanzania in 2009, we started developing a training manual targeted at healthcare professionals treating children and adolescents with type 1 diabetes in low-resource settings.

"It was developed by key stakeholders from the African countries involved in the Changing Diabetes® in Children programme along with experts from the International Society for Pediatric and Adolescent Diabetes, ISPAD. As of December 2020, more than 13,000 healthcare professionals had been trained using the materials developed.

"This is a great achievement and an important step towards long-term and sustainable change."



Supporting the establishment of national clinics

In low-resource settings, healthcare facilities that specialise in diabetes for children are scarce, particularly in rural areas. Limited access to care can cause prolonged and recurring episodes of high blood glucose, which can lead to serious complications, including blindness, renal failure and even death. Poor glucose control can also lead to recurring absenteeism from school due to illness.

In collaboration with national health authorities, Changing Diabetes® in Children ensures a rural reach, in order to reduce travel time and travel costs for children and families to access adequate care.



222 clinics

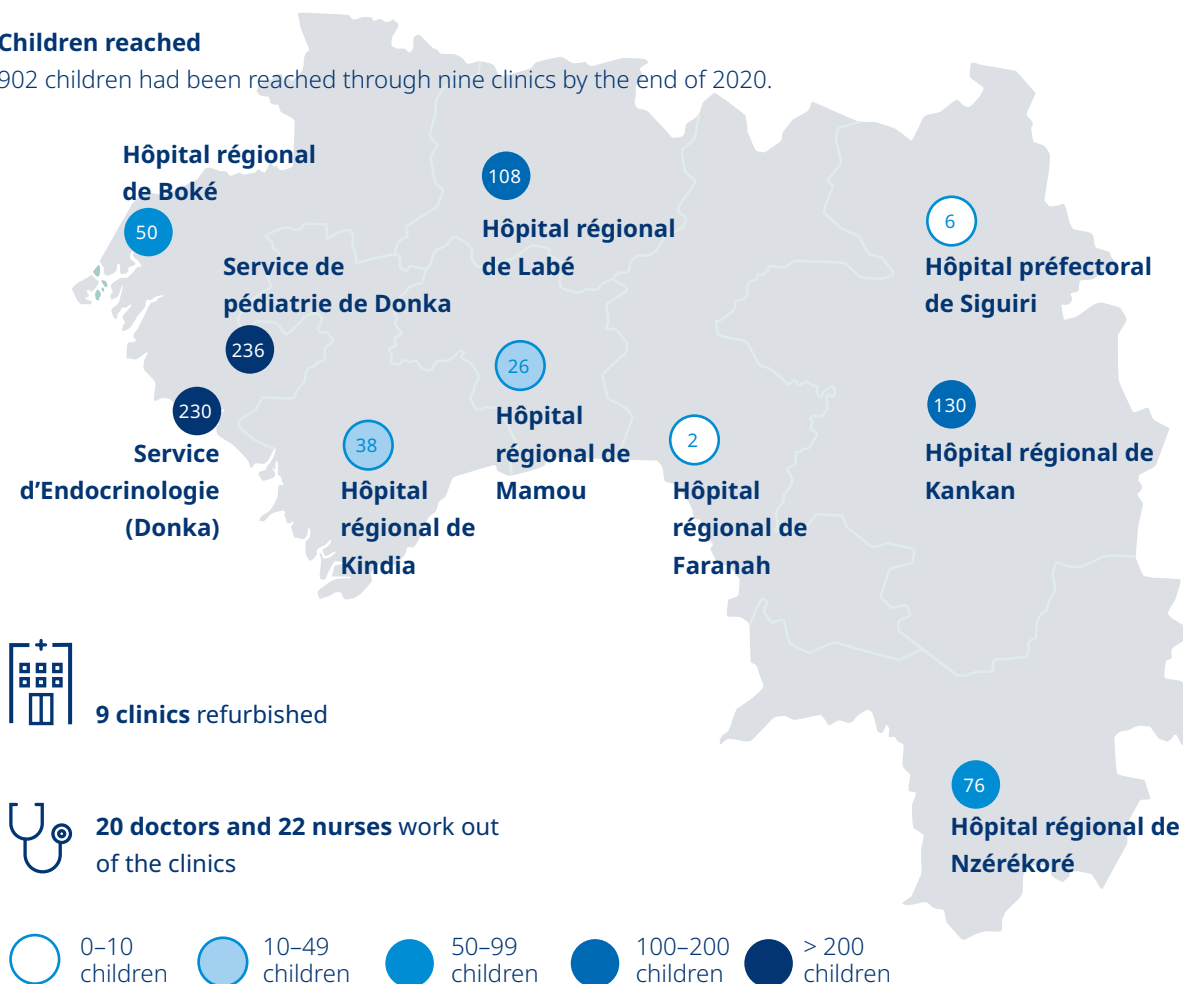
have been established or refurbished
as an integrated part of national healthcare systems,
ensuring coverage in rural and remote areas

Specialised diabetes care for children, Guinea

Changing Diabetes® in Children has supported the Ministry of Health in Guinea in establishing clinics with personnel dedicated to type 1 diabetes care for children and adolescents across the country.

Children reached

902 children had been reached through nine clinics by the end of 2020.





Medical supplies and cold chains

For children with a chronic condition such as type 1 diabetes, the best possible outcome is early diagnosis, a lifetime of daily medication and ongoing medical support and care. In many low-resource settings, access to and affordability of treatment and of appropriate medical equipment are a challenge for people living with type 1 diabetes.

Since its inception, Changing Diabetes® in Children has strengthened national systems for the storage and transport of insulin and other essential equipment. This has included setting up ordering procedures to ensure that individual clinics can forecast their needs and establish cold chains that work within the individual country settings.



2.67 million vials

of Novo Nordisk human insulin have been donated along with blood glucose monitoring equipment and medical supplies, while national supply chains have been strengthened through the establishment of cold chains



Dr Zowa Arthur, BDOM Medical Director, in front of the cold room built by Changing Diabetes® in Children in Kinshasa, DRC



Ma Yin May
Ma Yin has type 1 diabetes and has received care through the Changing Diabetes® in Children programme in Myanmar. She wants to be a maths teacher when she grows up.



Pedro Goncalves
Head of Roche Diabetes Care Region International

“We are very excited to be part of the Changing Diabetes in Children® programme since it started 10 years ago, and appreciate our trustful partnership with Novo Nordisk in advancing care provision around the world. We are dedicated to jointly helping young people with diabetes and their families to manage their diabetes every day.

“It is exceptionally satisfying to see how our shared vision contributes to successfully run and expand the program to an increasing number of countries and patients in need, and accelerate access to the right level of care for people with diabetes and their caregivers who rely on us.

“Confirming and fostering our continued commitment and collaboration in this excellent program will enable children and adolescents to benefit from our solutions while ensuring improved and sustainable therapy management.”

What's next for Changing Diabetes® in Children?

Changing Diabetes® in Children has been successful in providing a stable supply of free insulin to children and offers a comprehensive package of paediatric diabetes care in implementing facilities, according to an independent evaluation of the programme in Bangladesh and Kenya, led by University College London's Institute for Global Health.¹ Prior to Changing Diabetes® in Children, tailored paediatric care for diabetes was effectively non-existent in either context.

As the burden of non-communicable diseases such as diabetes continues to rise in low- and middle-income countries, health systems will be increasingly strained. The most vulnerable patients, including children and the poorest families, risk being excluded from care.

The evaluation conducted by University College London shows that public-private partnerships such as Changing Diabetes® in Children can significantly improve access to life-saving medication. However, any programme involving external capacity, delivered in a high-turnover staffing environment, will be vulnerable to questions about

sustainability. To maintain the positive benefits achieved to date, the evaluation underlines the importance of innovative reinforcement and transition techniques.

Changing Diabetes® in Children, with the support of global and local partners, will continue to ensure access to comprehensive quality diabetes care for children and adolescents living with type 1 diabetes in low- and middle-income settings. Changing Diabetes® in Children will also continue to raise awareness about type 1 diabetes and advocate for access to quality essential healthcare services as well as finding sustainable solutions to strengthen diabetes care.

As part of the Defeat Diabetes strategy, we aim to expand our reach to 100,000 vulnerable children and adolescents living with type 1 diabetes receiving diabetes care through the Changing Diabetes® in Children programme by 2030.

Our ambition is clear: no child should die from diabetes.



We are expanding our Changing Diabetes® in Children programme with the ambition to reach
100,000
children by 2030

28,296
children reached in
14 countries



222
clinics established

1. Palmer T. Evaluating Novo Nordisk's Changing Diabetes in Children project: case studies from Bangladesh and Kenya. International Diabetes Federation Congress 2019; 2019; Busan, Korea.



Trésor Kouadio

Trésor has type 1 diabetes and lives in Ivory Coast. He is receiving diabetes care through the Changing Diabetes® in Children programme.

Novo Nordisk

Novo Nordisk is a leading global healthcare company, founded in 1923 and headquartered in Denmark. Our purpose is to drive change to defeat diabetes and other serious chronic diseases such as obesity and rare blood and endocrine disorders. We do so by pioneering scientific breakthroughs, expanding access to our medicines and working to prevent and ultimately cure disease. Novo Nordisk employs about 45,000 people in 80 countries and markets its products in around 170 countries.

novonordisk.com

Roche

Headquartered in Basel, Switzerland, Roche is a leader in research-focused healthcare, with combined strengths in pharmaceuticals and diagnostics. Roche is the world's largest biotech company, with truly differentiated medicines in oncology, immunology, infectious diseases, ophthalmology and neuroscience. Roche is also the world leader in in vitro diagnostics and tissue-based cancer diagnostics, and a frontrunner in diabetes management.

roche.com

International Society for Pediatric and Adolescent Diabetes

The International Society for Pediatric and Adolescent Diabetes (ISPAD) is a professional organisation whose aims are to promote clinical and basic science, research, education and advocacy in childhood and adolescent diabetes. The strength of ISPAD lies in the scientific and clinical expertise in childhood and adolescent diabetes of its members. ISPAD is the only international society focusing specifically on all types of childhood diabetes.

ispad.org

World Diabetes Foundation

The World Diabetes Foundation (WDF) is an independent, non-profit foundation based in Bagsværd, Denmark. Founded by Novo Nordisk A/S in 2002, the WDF is still one of the few funding mechanisms dedicated to preventing and treating diabetes in developing countries. It is the WDF's mission to empower governments, civil society and other non-state actors who strive to deliver on global commitments through national and local action.

worlddiabetesfoundation.org

