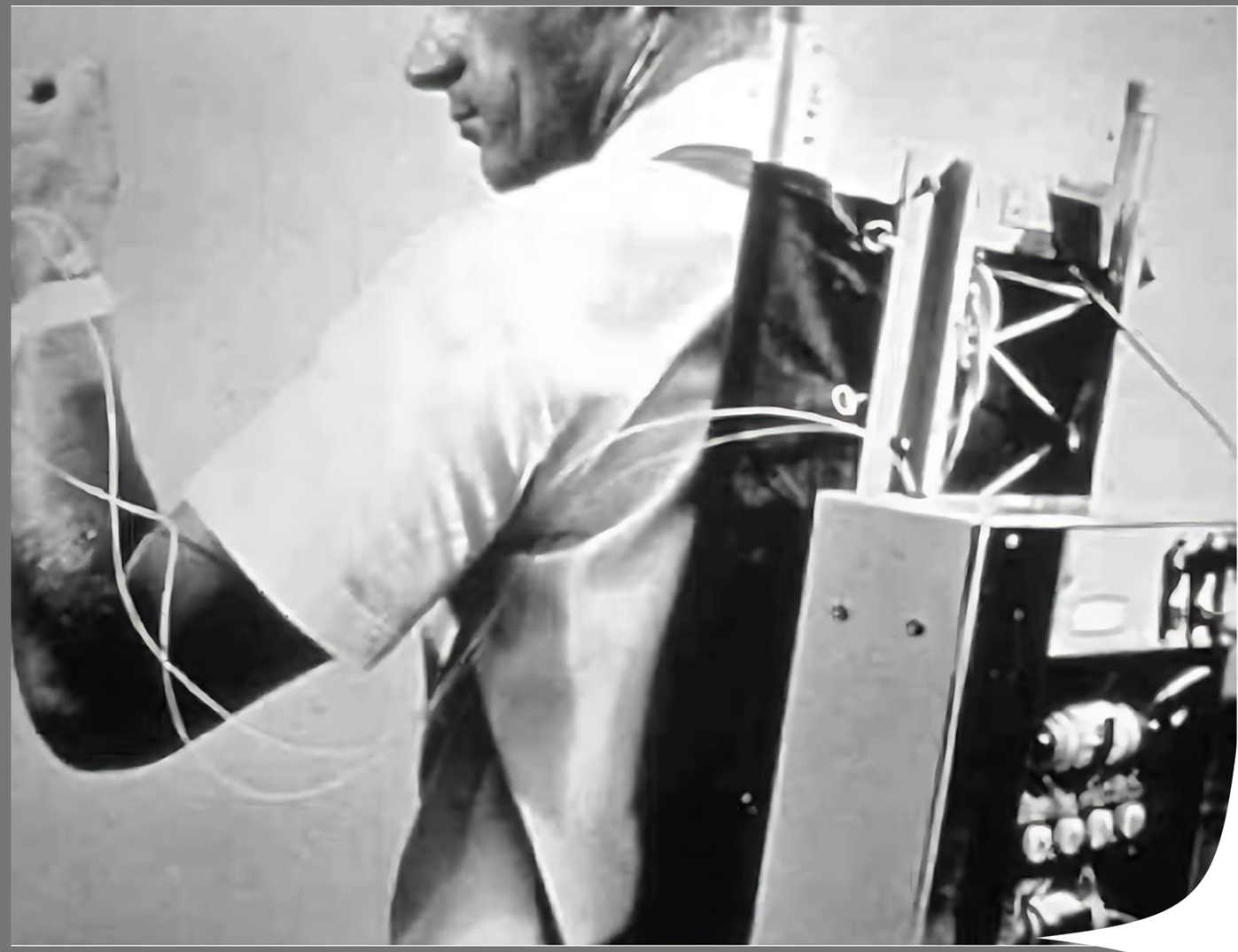
A Evolução das *Bombas de Insulina*

•Dra. Solange Travassos, MD, PhD
•Vice Presidente da Sociedade Brasileira de Diabetes

SBD
Sociedade Brasileira de Diabetes

Dispositivo de Kadish - 1963.

Os primeiros protótipos de bombas de insulina foram criados nos anos 60. O primeiro protótipo era pesado, tinha grandes dimensões, usava insulina intravenosa e era comercialmente inviável, por sua complexidade e falta de segurança.



Anos 80

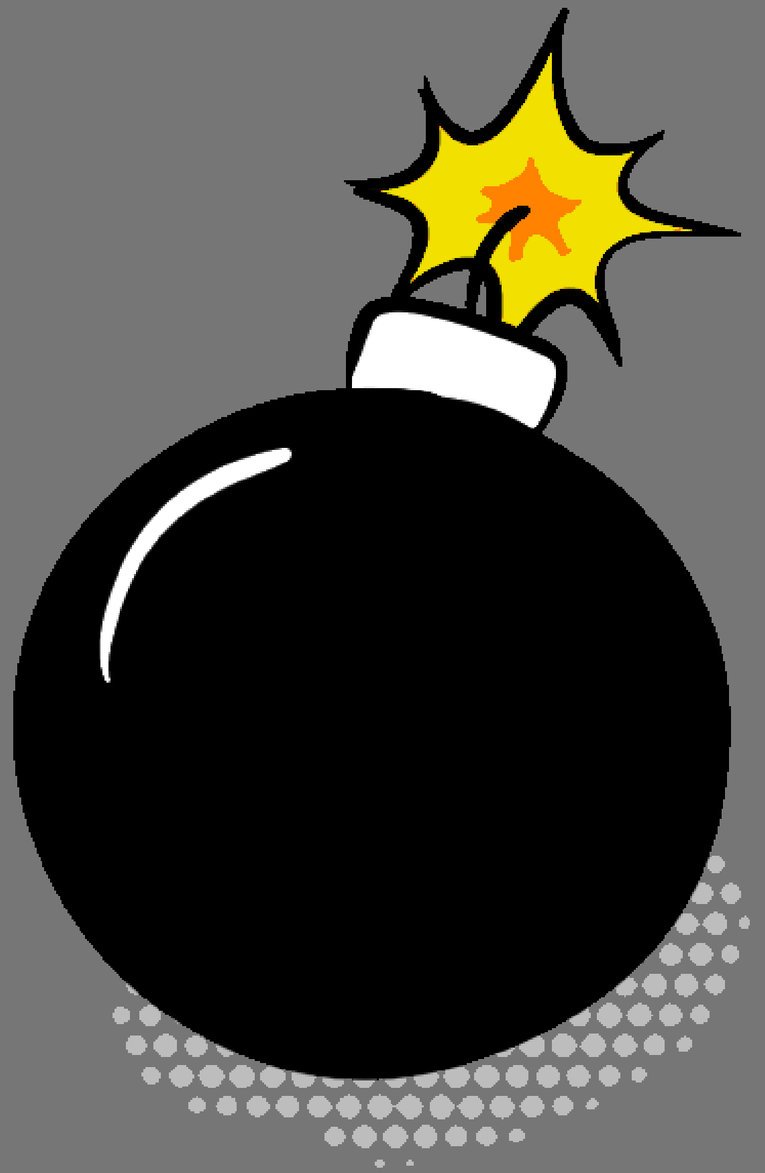
A evolução continuou e nos anos 80 houve uma corrida de empresas farmacêuticas que começaram a desenvolver bombas de insulinas.

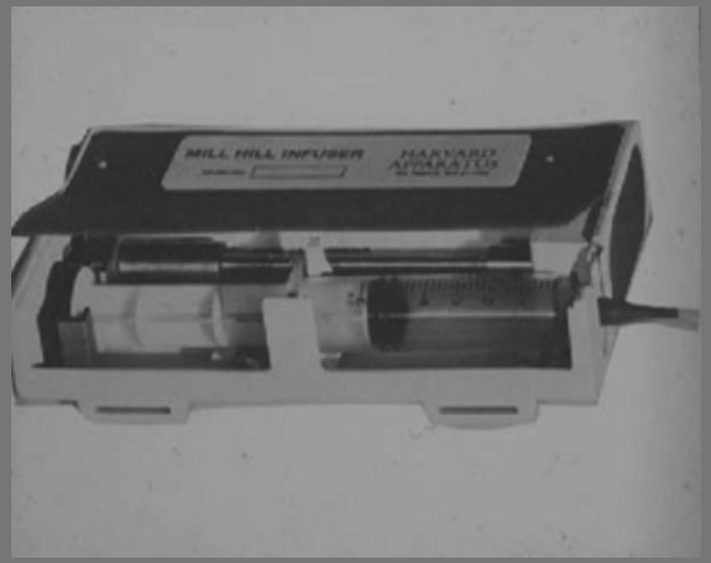
Placing insulin-pump needle under skin

Anos 80

Um dos primeiros produtos comerciais foi a 'Big Blue Brick', que alcançou vendas iniciais de 600 bombas por mês e era do tamanho das antigas fitas de VHS. Eram grandes, pesadas, com baterias de curta duração, usavam agulhas grossas de metal, tinham poucos alarmes e apresentavam defeitos frequentes.

Alguns modelos exigiam o uso de uma chave de fenda para ajuste de dosagem. Em consequência, complicações clínicas eram comuns e refletiam em insegurança da classe médica para indicar o seu uso, que ficou limitado a casos grave até a década de 90.





As bombas atuais usam os mesmos princípios básicos da bombas antigas, mas com materias descartáveis mais confortáveis e mais recursos tecnológicos.

Existem também bombas sem fio, que são controladas a distância, ficando o reservatório de insulina colado no corpo do paciente, que podem ter ou não conectividade com sensores.

SISTEMAS ANTIGOS E ATUAIS

bombas em geral

Infusão mais fisiológica e previsível, pelo uso de insulina de curta duração.

individualização da insulina basal, cálculo de bolus , insulina ativa e maior precisão nas doses (0,1u ou 0,025u)

Principais Vantagens

Sistemas automatizados

Melhor controle metabólico, proteção para hipoglicemia e hiperglicemia

Ajuste automático da dose de insulina com melhor qualidade de vida

RESULTADOS DO TRATAMENTO DO DIABETES TYPE 1 DIABETES - T1D EXCHANGE IN 2016–2018

22.697 participantes (idade 1–93 years)

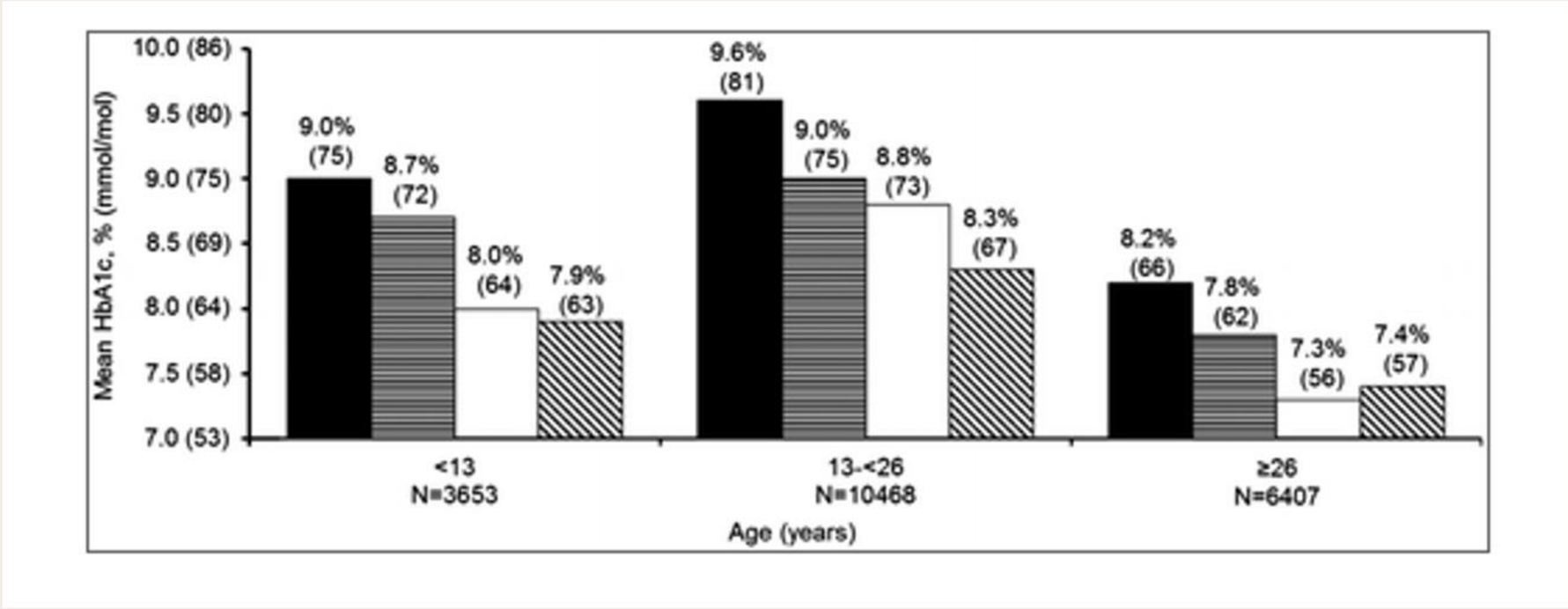


FIG. HbA1c por tecnologia em uso 2016–2018. Barra preta sólida, só MDI. Linhas horizontais só Bomba. Barra Branca sólida MDI+CGM. Barras diagonaiis bomba +CGM sem ajuste automático.

Diabetes Technology & Therapeutics VOL. 21, NO. 2 |

T1D EXCHANGE REGISTRY 2016–2018

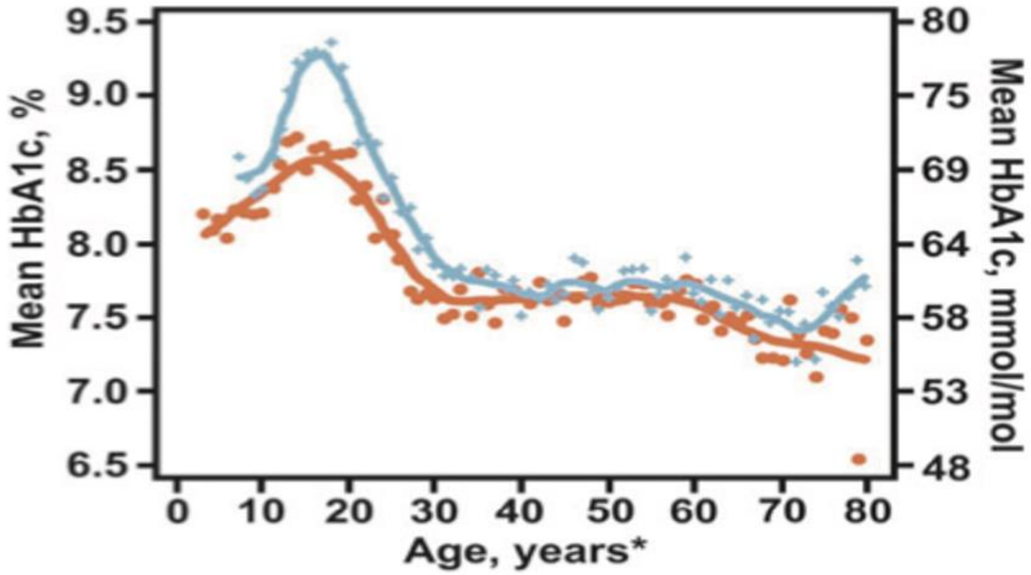
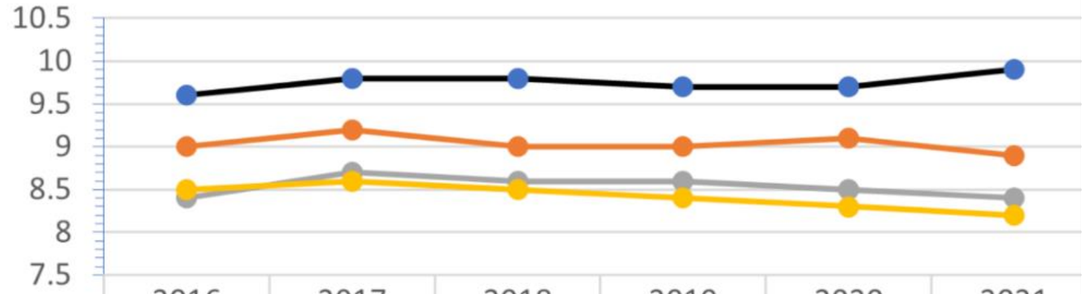


FIG. 2. Average HbA1c by year of age: 2010–2012 versus 2016–2018. Orange line represents 2010–2012 cohort, and blue line represents 2016–2018 cohort. Participants must be contained in both cohorts with at least a 3-year duration for the 2010–2012 collection. * ≥80 years old are pooled.

HbA1c (%) Trend by Race/Ethinicity in the T1DX-QI Cohort 2016 - 2021



	2016	2017	2018	2019	2020	2021
NH Black	9.6	9.8	9.8	9.7	9.7	9.9
Hispanic	9	9.2	9	9	9.1	8.9
Asian/other	8.4	8.7	8.6	8.6	8.5	8.4
NH White	8.5	8.6	8.5	8.4	8.3	8.2

ad the full article: https://doi.org/10.2337/db22-167-OR

Nos últimos anos o avanço foi exponencial.

O que há de mais moderno são os sistemas automatizados de administração de insulina (AID), que combinam uma bomba de insulina e um monitor contínuo de glicose (CGM).

Os sistemas AID podem detectar alterações nos níveis de glicose em tempo real e ajustar automaticamente e individualmente as doses de insulina .

DIABETES TECHNOLOGY & THERAPEUTICS
Volume 24, Number 2, 2022
Mary Ann Liebert, Inc.
DOI: 10.1089/dia.2021.0203

DTT

Italy Netherlands Sweden Belgium

UK Finland Switzerland South Africa

ORIGINAL ARTICLE

Real-World Performance of the MiniMed™ 780G System: First Report of Outcomes from 4120 Users

Julien Da Silva, MS,[1] Giuseppe Lepore, MD,[2] Tadej Battelino, MD,[3,i] Arcelia Arrieta, MS,[4] Javier Castañeda, MS,[4] Benyamin Grossman, PhD,[5] John Shin, PhD,[5] and Ohad Cohen, MD[1,ii]

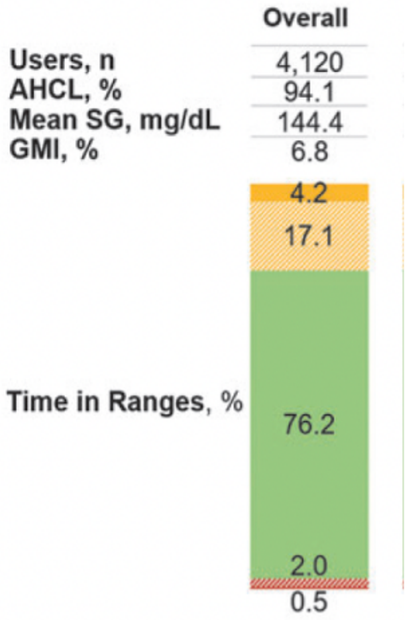
Abstract

Background: The MiniMed™ 780G system includes an advanced hybrid closed loop (AHCL) algorithm that provides both automated basal and correction bolus insulin delivery. The preliminary performance of the system in real-world settings was evaluated.

Methods: Data uploaded from August 2020 to March 2021 by individuals living in Belgium, Finland, Italy, the Netherlands, Qatar, South Africa, Sweden, Switzerland, and the United Kingdom were aggregated and retrospectively analyzed to determine the mean glucose management indicator (GMI), percentage of time spent within (TIR), below (TBR), and above (TAR) glycemic ranges, system use, and insulin consumption in users having ≥10 days of sensor glucose (SG) data after initiating AHCL. The impact of initiating AHCL was evaluated in a subgroup of users also having ≥10 days of SG data, before AHCL initiation.

Results: Users ($N=4120$) were observed for a mean of 54 ± 32 days. During this time, they spent a mean of 94.1% ± 11.4% of the time in AHCL and achieved a mean GMI of 6.8% ± 0.3%, TIR of 76.2% ± 9.1%, TBR <70 of 2.5% ± 2.1%, and TAR >180 of 21.3% ± 9.4%, after initiating AHCL. There were 77.3% and 79.0% of users who achieved a TIR >70% and a GMI of <7.0%, respectively. Users for whom comparison with pre-AHCL was possible ($N=812$) reduced their GMI by 0.4% ± 0.4% ($P=0.005$) and increased their TIR by 12.1% ± 10.5% ($P<0.0001$), post-AHCL initiation. More users achieved the glycemic treatment goals of GMI <7.0% (37.6% vs. 75.2%, $P<0.0001$) and TIR >70% (34.6% vs. 74.9%, $P<0.0001$) when compared with pre-AHCL initiation.

Conclusion: Most MiniMed 780G system users achieved TIR >70% and GMI <7%, while minimizing hypoglycemia, in a real-world condition.



Diabetes Care
American Diabetes Association

Simplified Meal Announcement Versus Precise Carbohydrate Counting in Adolescents With Type 1 Diabetes Using the MiniMed 780G Advanced Hybrid Closed Loop System: A Randomized Controlled Trial Comparing Glucose Control

Goran Petrovski, Judith Campbell, Maheen Pasha, Emma Day, Khalid Hussain, Amel Khalifa, and Tim van den Heuvel

Diabetes Care 2023;46(3):544–550 | https://doi.org/10.2337/dc22-1692

To assess the contribution of **precise carbohydrate counting** to the glycemic control in comparison to **simplified meal announcement,** with three different fixed preset carbohydrate amounts

Aim

Results

2023

NHS to offer 150,000 people with type 1 diabetes an artificial pancreas

Move to make more than half of those living with condition in England and Wales eligible for device hailed as gamechanger

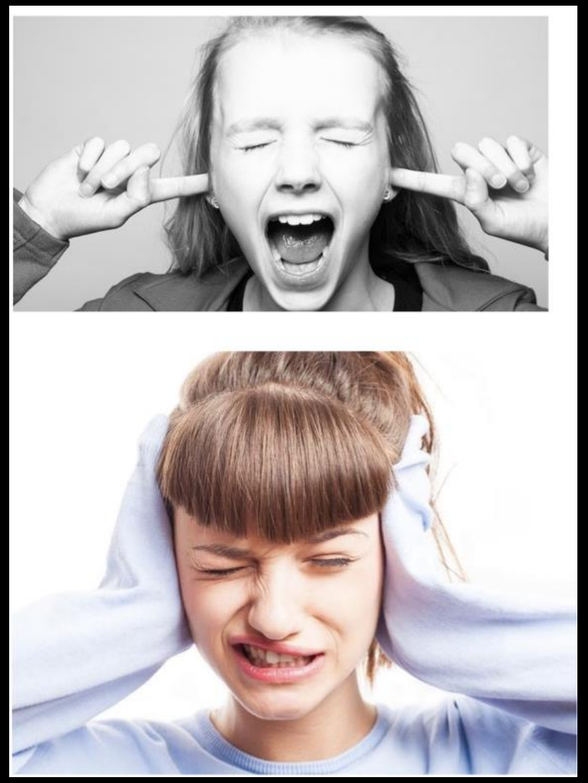
A world-first trial on the NHS showed the artificial pancreas was more effective at managing diabetes than current devices and required far less input from patients. Photograph: NHS

More than 150,000 adults and children with type 1 diabetes in England and Wales are to be offered an artificial pancreas on the NHS, which experts are hailing as a “gamechanger” that will “save lives and heartbreak”.

The groundbreaking device, also called a hybrid closed-loop system, uses a hi-tech algorithm to determine the amount of insulin that should be administered and reads blood sugar levels to keep them steady. A world-first trial on the NHS showed it was more effective at managing diabetes than current devices and required far less input from patients.

Final draft guidance from the National Institute for Health and Care Excellence (Nice) recommends that people in England and Wales should benefit from the wearable device if their diabetes is not adequately controlled by their current pump or glucose monitor. The decision to give the go-ahead for widespread use of the artificial pancreas was announced on Tuesday at Nice’s annual conference in Manchester by Dr Sam Roberts, its chief executive.

Para Quem?



Obrigada


DIABETES TIP
POR MAIS SAÚDE, POR MAIS DIREITOS!
NOVEMBRO DIABETES AZUL
SBD