

# Hermelinda C. Pedrosa, MD

**Coordenadora Polo de Pesquisa-FEPECS-Unidade de Endocrinologia-HRT-SES-DF**

**Pesquisadora Fundação Oswaldo Cruz - Biomanguinhos**

**Assessora de Relações Governamentais – SBD – 2020-2021**

***Vice President and Regional Chair – D-FOOT for SACA***

***Vice President Worldwide Diabetes***

**Ex-Presidente – Departamento de Diabetes – SBEM – 2019-2020**

**Ex-Presidente – Sociedade Brasileira de Diabetes – 2018-2019**



**Descoberta:**

27 de julho 2021

Extratos de pâncreas de  
cachorros



**Frederick Banting**  
**Charles Best**

**University of Toronto,  
Canada – 1921**

**Premio Nobel da Medicina  
em 1923**



*“Insulin does not belong to me, it  
belongs to the world”.*

*F. Banting*

**Patente original: vendida por \$ 1,00  
à Universidade de Toronto**

# Desafios que persistem ao longo dos anos

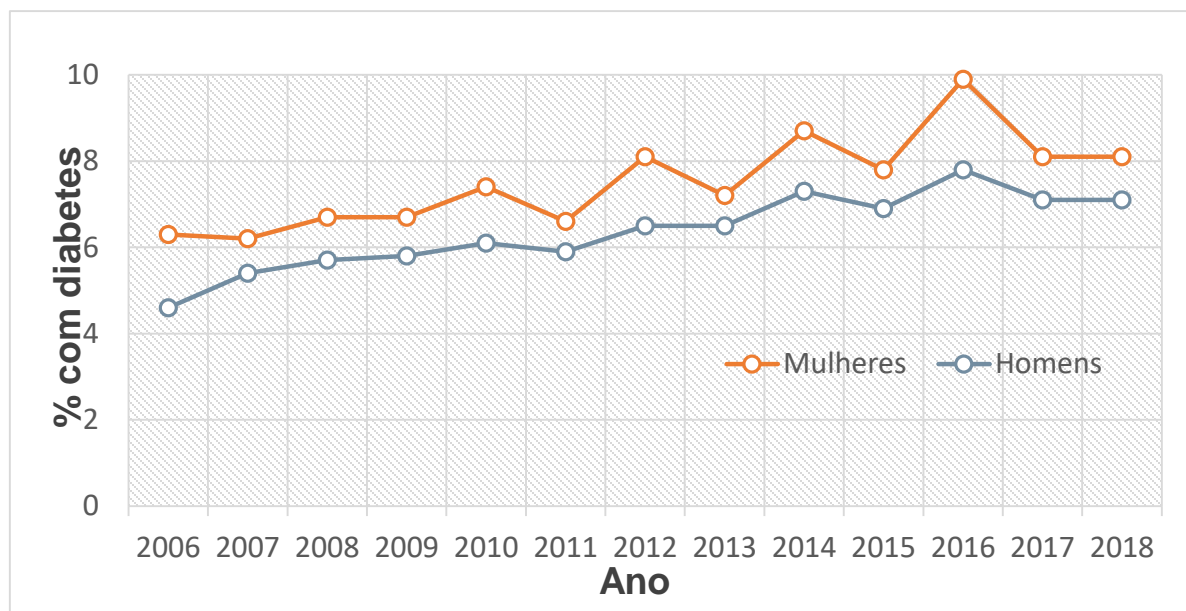
- Números crescentes de DM
- Mau controle
  - Complicações microvasculares (**retinopatia**, doença renal e neuropatia) e macrovasculares (infartos, AVCs, doença arterial periférica – amputações)
  - Morte
- Custo Elevado
- Injeções subcutâneas
- Hipoglicemia

# **Diabetes – uma epidemia global**

# PREVALÊNCIA DE DIABETES MELLITUS

## Diabetes auto referido

Prevalência de diabetes mellitus em adultos ( $\geq 18$  anos) de acordo com sexo, nas capitais dos estados brasileiros e no Distrito Federal - Vigitel, 2018\*



**Mulheres mais Acometidas;** aumento entre homens tem sido expressivo  
**entre 2006 a 2018:**  
**54% - homens**  
**28% - mulheres**

Percentual\* de indivíduos que referiram diagnóstico médico de diabetes (população adulta  $\geq 18$  anos):

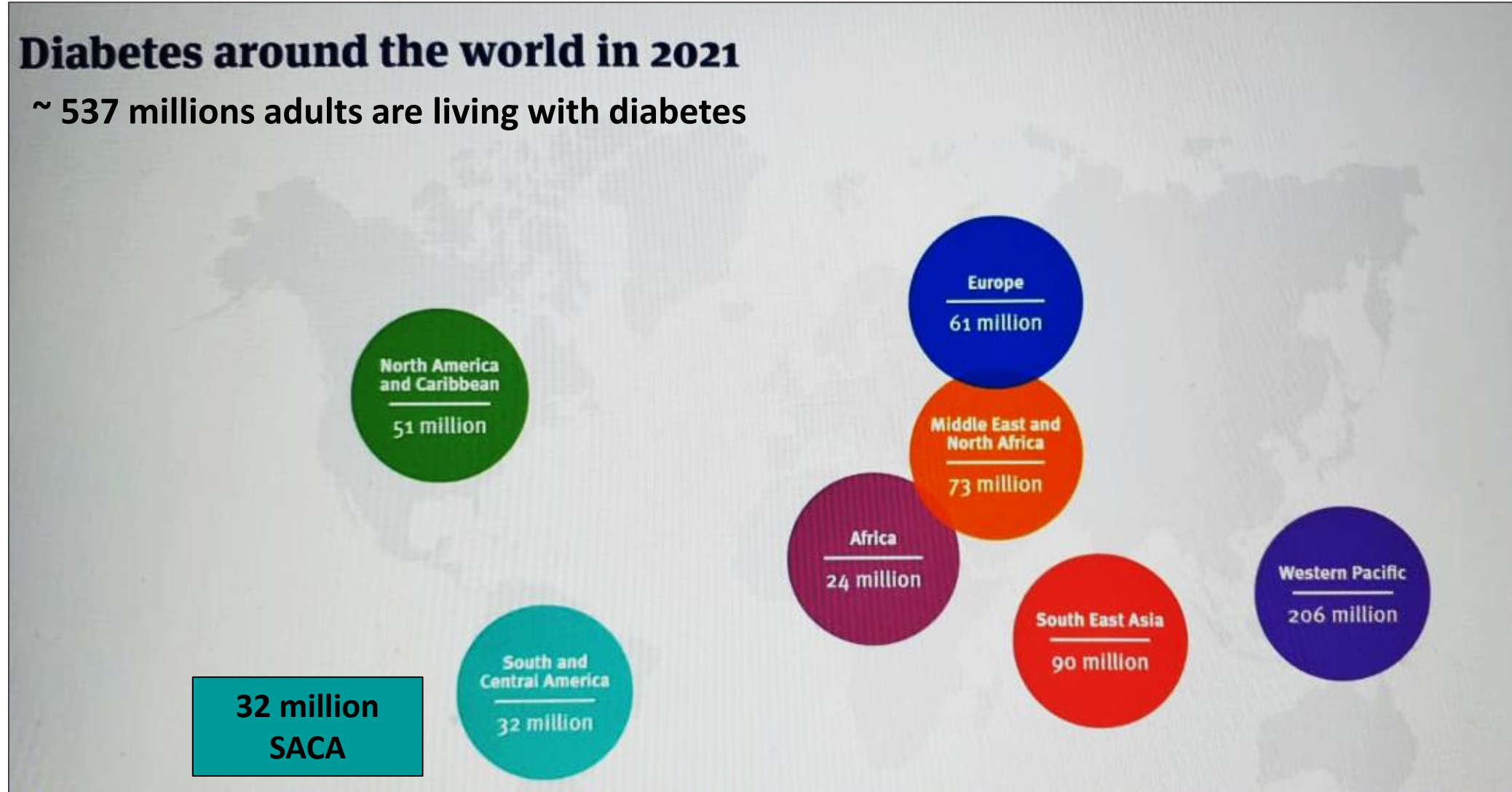
\* Vigitel 2006 a 2018

	Sexo	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
% com diabetes	Homens	4,6	5,4	5,7	5,8	6,1	5,9	6,5	6,5	7,3	6,9	7,8	7,1	7,1
	Mulheres	6,3	6,2	6,7	6,7	7,4	6,6	8,1	7,2	8,7	7,8	9,9	8,1	8,1

# IDF Diabetes Atlas – 10th edition, 2021

## Diabetes around the world in 2021

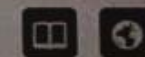
~ 537 millions adults are living with diabetes



At a glance	2000	2011	2021	2030	2045
<b>Diabetes estimates (20-79 y)</b>					
People with diabetes, in 1,000s	151,000.0	366,000.0	536,600.0	642,800.0	783,700.0
Age-adjusted comparative prevalence of diabetes, %	4.6	8.5	9.8	10.8	11.2
People with undiagnosed diabetes, in 1,000s	-	183,000.0	-	-	-
Proportion of people with undiagnosed diabetes	-	-	44.7	-	-
<b>Impaired glucose tolerance</b>					
People with impaired glucose tolerance, in 1,000s	-	-	541.0	622.7	730.3
Age-adjusted comparative prevalence of impaired glucose tolerance, %	-	-	10.2	10.8	11.2
<b>Impaired fasting glucose</b>					
People with IFG, in 1,000s	-	-	319.0	369.7	440.8
Age-adjusted comparative prevalence of IFG, %	-	-	5.7	6.0	6.3

**DM ~ 537.000 – 9.8%**  
**SEM diagnóstico = 44.7%**  
**Pré-DM = 860.000 – 15.9%**  
**(TAG = 541.000 + GJA = 319.000)**





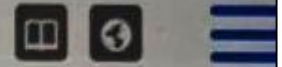
## Brazil

Diabetes report 2000 – 2045

At a glance	2000	2011	2021	2030	2045
<b>Diabetes estimates (20-79 y)</b>					
People with diabetes, in 1,000s	3,310.4	12,440.0	<b>15,733.6</b>	19,224.1	23,223.6
Age-adjusted comparative prevalence of diabetes, %	-	10.1	<b>8.8%</b>	10.2	10.9
People with undiagnosed diabetes, in 1,000s	-	-	<b>5,025.3</b>	-	-
Proportion of people with undiagnosed diabetes, %	-	-	<b>31.9%</b>	-	-

# IDF Diabetes Atlas

10th edition 2021



Total diabetes-related health expenditure, ID million	-	-	77,459.7	87,167.6	92,819.9
Diabetes-related health expenditure per person, USD	-	1,038.0	2,728.5	3,070.4	3,269.5
Diabetes-related health expenditure per person, ID	-	-	4,923.2	5,540.2	5,899.5

## Demographics

Total adult population (20-79 y), in 1,000s	102,431.0	127,994.8	149,916.8	161,892.7	169,190.2
Population of children (0-14 y), in 1,000s	58,042.0	-	43,762.9	-	-
Population of children and adolescents (0-19 y), in 1,000s	-	-	59,701.5	-	-

## Complications of diabetes

Microvascular	→ Nephropathy: 6.9%	→ Retinopathy: <b>5.5%</b>
	→ Neuropathy: 11.4%	
Macrovascular	→ Coronary artery disease: 8.9%	→ Cerebrovascular disease: 2.7%
	→ Peripheral artery disease: 0.7%	→ Heart failure: 4.1%



## Regional differences in the prevalence of diabetic retinopathy: a multi center study in Brazil

Karla Rezende Guerra Drummond<sup>1\*</sup>, Fernando Korn Malerbi<sup>2</sup>, Paulo Henrique Morales<sup>2</sup>, Tessa Cerqueira Lemos Mattos<sup>3</sup>, André Araújo Pinheiro<sup>4</sup>, Felipe Mallmann<sup>5</sup>, Ricardo Vessoni Perez<sup>6</sup>, Franz Schubert Lopes Leal<sup>7</sup>, Laura Gomes Nunes de Melo<sup>1</sup> and Marília Brito Gomes<sup>1</sup> on behalf of The Brazilian Type 1 Diabetes Study Group

Drummond et al. *Diabetol Metab Syndr* (2018) 10:17

### Abstract

**Background:** Diabetic retinopathy has a significant impact in every healthcare system. Despite that fact, there are few accurate estimates in the prevalence of DR in Brazil's different geographic regions, particularly proliferative DR and diabetic macular edema. This study aims to determine the prevalence of diabetic retinopathy in Brazil's five continental regions and its determinant factors.

**Methods:** This multi center, cross-sectional, observational study, conducted between August 2011 and December 2014, included patients with type 1 diabetes from the 5 Brazilian geographic regions (South, Southeast, North, Northeast and Midwest). During a clinical visit, a structured questionnaire was applied, blood sampling was collected and each patient underwent mydriatic binocular indirect ophthalmoscopy evaluation.

**Results:** Data was obtained from 1644 patients, aged  $30.2 \pm 12$  years (56.1% female, 54.4% Caucasian), with a diabetes duration of  $15.5 \pm 9.3$  years. The prevalence of diabetic retinopathy was 242 (36.1%) in the Southeast, 102 (42.9%) in the South, 183 (29.9%) in the North and Northeast and 54 (41.7%) in the Midwest. Multinomial regression showed no difference in the prevalence of non-proliferative diabetic retinopathy in each geographic region, although, prevalence of proliferative diabetic retinopathy ( $p=0.022$ ), and diabetic macular edema ( $p=0.003$ ) was higher in the Midwest. Stepwise analyses revealed duration of diabetes, level of HbA1c and hypertension as independent variables.

**Conclusions:** The prevalence of non proliferative diabetic retinopathy in patients with type 1 diabetes was no different between each geographic region of Brazil. The Midwest presented higher prevalence of proliferative diabetic retinopathy and diabetic macular edema. Duration of DM and glycemic control is of central importance to all. Hypertension is another fundamental factor to every region, at special in the South and Southeast. Glycemic control and patients in social and economic vulnerability deserves special attention in the North and Northeast of Brazil.

**Keywords:** Diabetic retinopathy, Diabetic macular edema, Risk factors

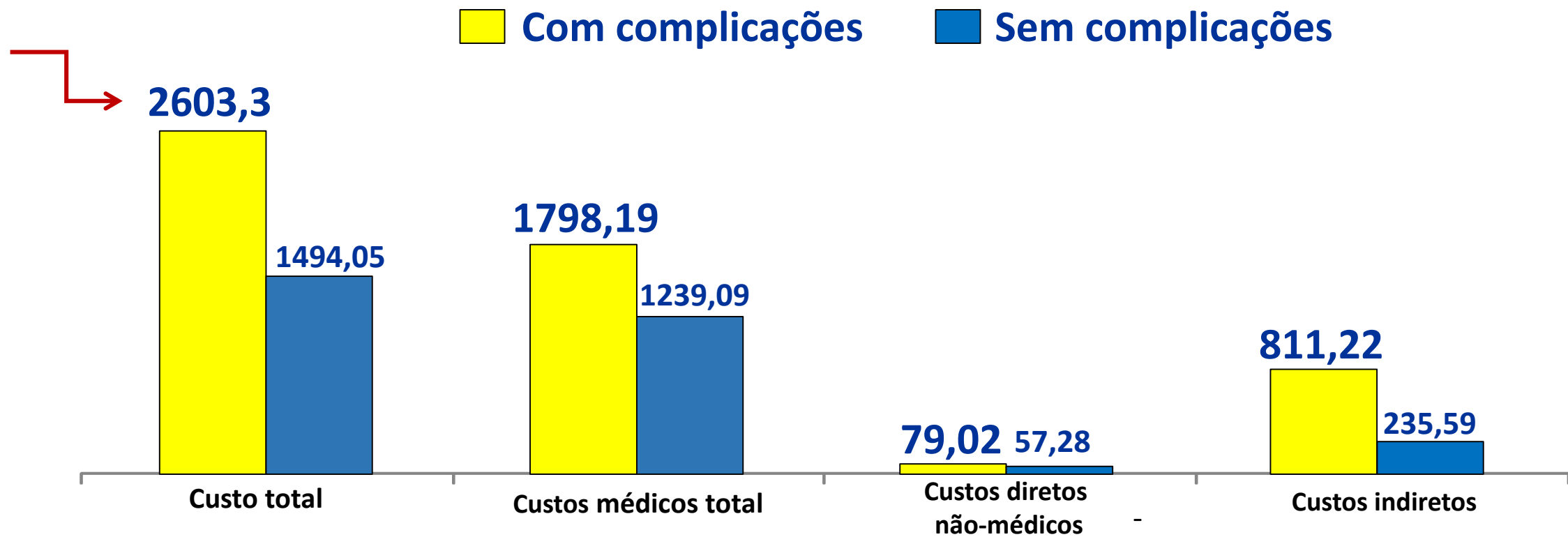
- N = 1.644
- Age  $30.2 \pm 9.3$  years
- Female – 56.1%
- Caucasian = 54.4%
- DM duration =  $15.5 \pm 9.3$  yrs
- Diabetic retinopathy:
  - Southeast = 36.1%
  - South = 42.9%
  - North/Northeast = 29.9%
  - Midwest = 41.7%
- No regional difference Non-proliferative retinopathy
- Midwest: higher prevalence of Proliferative Ret ( $p=0.022$ ) and Macular edema (0.003) higher

# Estudo Multicêntrico de DM Tipo 1 no Brasil BRAZDiab

## Custo anual médio

Complicações vs Sem complicações (US\$):

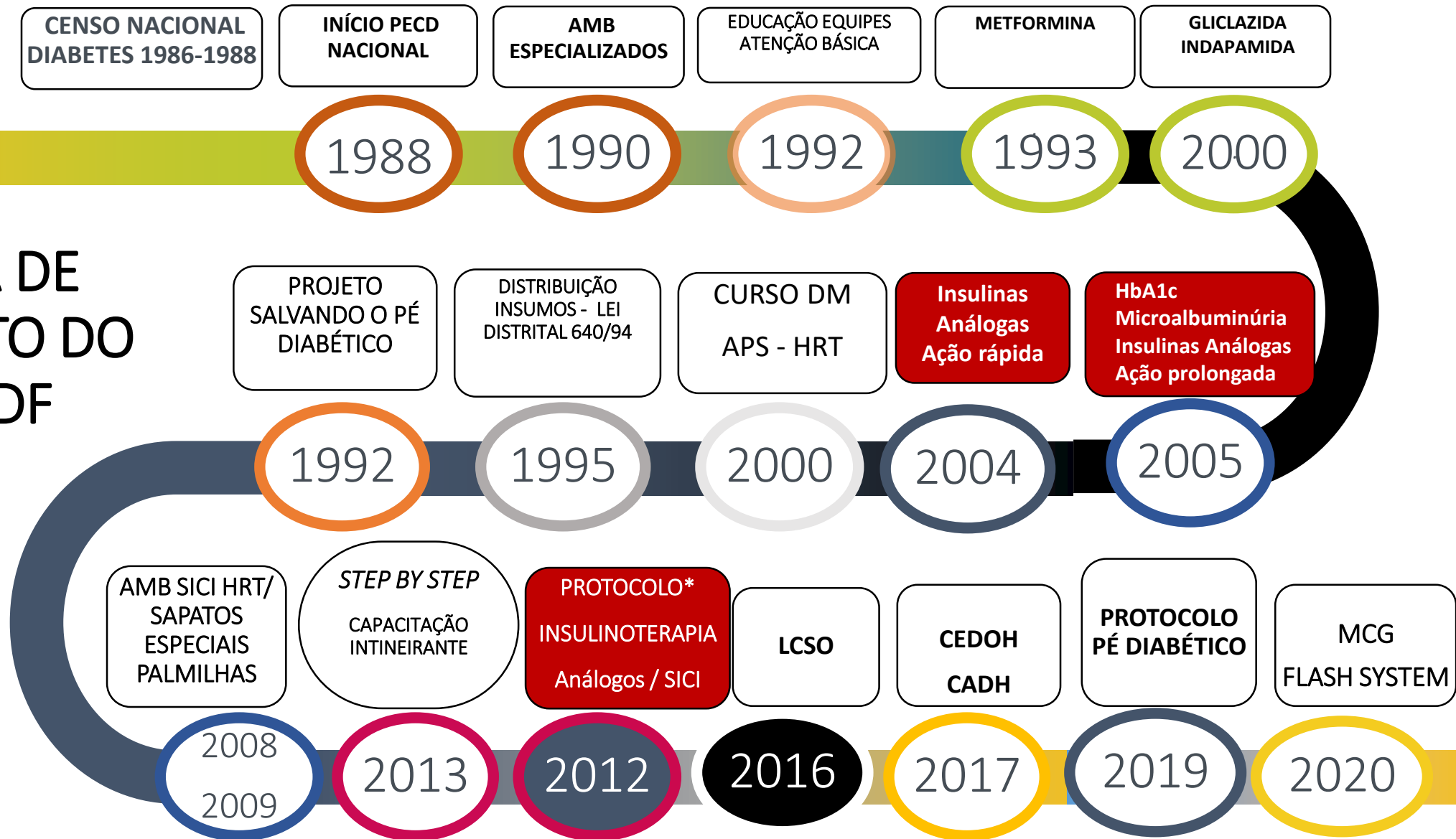
aumento de 50 a 70%



# **Alcances recientes**

# PROGRAMA DE TRATAMENTO DO DIABETES - DF

1988-2020



\*Comissão de Protocolo SES-DF: implantada em 2008

Slide: Cortesia EB Leite, RT Endocrinologia SES-DF

# SBD - Saga para a incorporação de “nova tecnologia” para insulinoterapia no SUS

**DOSSIÊ PARA SOLICITAÇÃO DA  
INCORPORAÇÃO DE INSULINAS  
ANÁLOGAS DE AÇÃO RÁPIDA, NO  
TRATAMENTO DE INDIVÍDUOS COM  
DIABETES MELLITUS TIPO 1, NO SISTEMA  
ÚNICO DE SAÚDE BRASILEIRO**

Karla F S de Melo  
Luciana Bahia  
Luiz Alberto A Turatti  
Walter Minicucci

2016



**Reunião Ministério da Saúde – SBD e SPD, 2016**

# Incorporação de insulinas análogas ao SUS

## Ministério da Saúde

### Insulina análoga de ação rápida

- Portaria SCTIE/MS nº 10, de **21 de fevereiro de 2017**

Ref. Portaria SCTIE/MS nº 10, de 21 de fevereiro de 2017, que torna pública a decisão de incorporar insulina análoga de ação rápida para o tratamento da Diabetes Mellitus Tipo 1, no âmbito do Sistema Único de Saúde - SUS. Publicada no DOU de 22/02/2017 (nº 38, Seção 1, pág. 50)

### Insulina análoga de ação prolongada

- Portaria SCTIE/MS nº 19, de **27 de março de 2019 - PENDENTE**

Ref. Portaria SCTIE/MS nº 19, de 27 de março de 2019, que torna pública a decisão de incorporar insulina análoga de ação prolongada para o tratamento de Diabetes Mellitus Tipo 1, no âmbito do Sistema Único de Saúde - SUS. Publicada no DOU de 29/03/2019 (nº 61, Seção 1, pág. 99)

**Art. 25 do Decreto 7.646/2011, o prazo máximo para efetivar a oferta ao SUS é de cento e oitenta dias.**



# Incorporação

## Protocolo Retinopatia Diabética / Edema Macular do Diabetes

### Incorporação - Aflibercepte

- Portaria nº 50/MS, de 5 de novembro de 2019 (publicação no DOU)
- Disponibilidade: 180 dias – 5 de maio de 2020 **(não contemplada)**

### Incorporação - Ranibizumabe

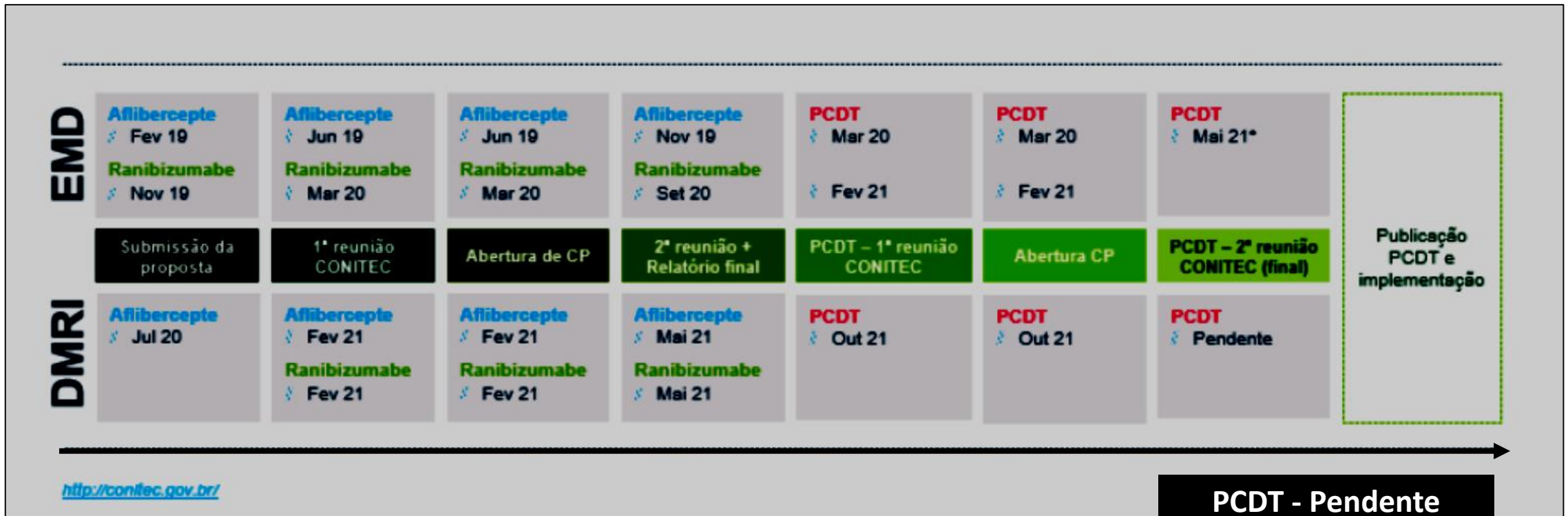
- CONITEC – Publicação 21 de setembro de 2020 – Atualização em 12 de novembro de 2020

### PCDT (Fevereiro/2021)

- Disponibilidade: Reavaliado pela CONITEC e aprovado desde maio 2021 **(não publicado)**

# Incorporação Protocolo Retinopatia Diabética / Edema Macular do Diabetes

## Linha do tempo



<http://conitec.gov.br/>

**PCDT - Pendente  
desde Maio 2021**

## **Importante atentar:**

**Art. 25 do Decreto 7.646/2011, o prazo máximo para efetivar a oferta ao SUS é de cento e oitenta dias**

**Com a COVID 19, 60 dias adicionais**

**Atraso total, desde 2019: > 700 dias !**

**As Sociedades Científicas e Associações de Pessoas com Diabetes requerem, mais uma vez, o cumprimento dos prazos estabelecidos**

# Homenagem póstuma da SBD em 2021



DCV + Neuropatia + Edema macular = Queda = Óbito

**Muito obrigada !**



**Ponte JK, Brasília – AZUL**