

**HERMELINDA PEDROSA**

**PRESIDENTE ELEITA DA SOCIEDADE  
BRASILEIRA DE DIABETES**

Representando a SBD

**De acordo com a Norma 1595/2000 do Conselho Federal de Medicina e a Resolução RDC 102/2000 da Agência Nacional de Vigilância Sanitária declaro os seguintes conflitos de interesses:**

- *Board:*  
Sanofi, Roche, Novo Nordisk
- Suporte em atividades científicas:  
AstraZêneca, Boehringer-Ingelheim, Mantecorp, Merck Serono, MSD, Novo Nordisk, Novartis, Sanofi, Servier, Lilly
- Apresentação atual: **sem conflito de interesses**

# Agenda

1. Impacto epidemiológico
2. Custos
3. Disponibilidade atual de medicamentos
4. Situação do controle

# Diabetes around the world

## Top ten countries/territories for number of people with diabetes (20-79 years), 2015 and 2040

2015

Rank	Country/territory	Number of people with diabetes
1	China	109.6 million (99.6-133.4)
2	India	69.2 million (56.2-84.8)
3	United States of America	29.3 million (27.6-30.9)
4	Brazil	<b>2015 = 14.3 milhões</b>
5	Russian Federation	12.1 million (6.2-17.0)
6	Mexico	11.5 million (6.2-13.7)
7	Indonesia	10.0 million (8.7-10.9)
8	Egypt	7.8 million (3.8-9.0)
9	Japan	7.2 million (6.1-9.6)
10	Bangladesh	7.1 million (5.3-12.0)

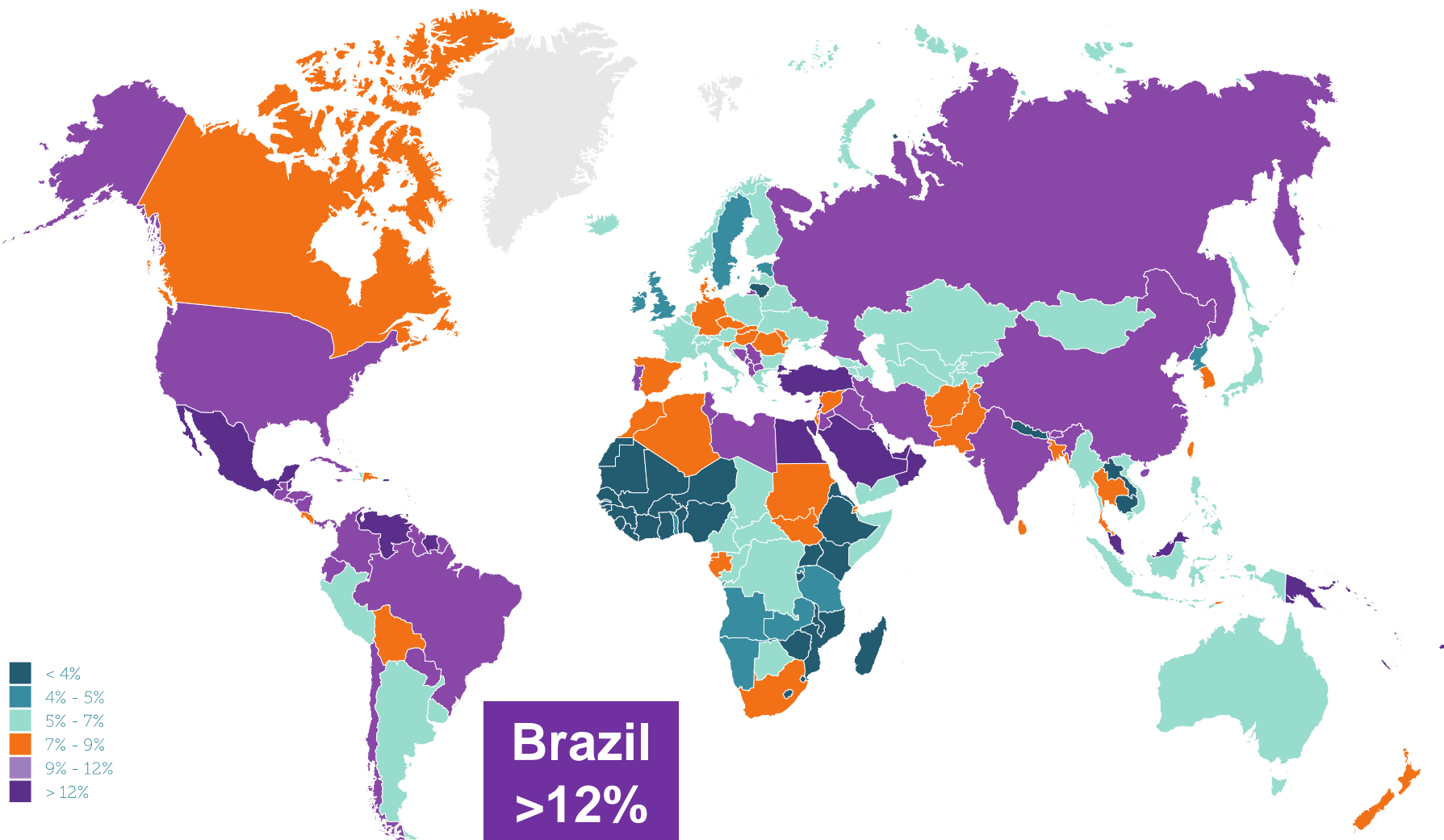
2040

Rank	Country/territory	Number of people with diabetes
1	China	150.7 million (138.0-179.4)
2	India	123.5 million (99.1-150.3)
3	United States of America	35.1 million (33.0-37.2)
4	Brazil	<b>2040 = 23.3 milhões</b>
5	Mexico	20.6 million (11.4-24.7)
6	Indonesia	16.2 million (14.3-17.7)
7	Egypt	15.1 million (7.3-17.3)
8	Pakistan	14.4 million (10.6-20.4)
9	Bangladesh	13.6 million (10.7-24.6)
10	Russian Federation	12.4 million (6.4-17.1)

# Diabetes no mundo



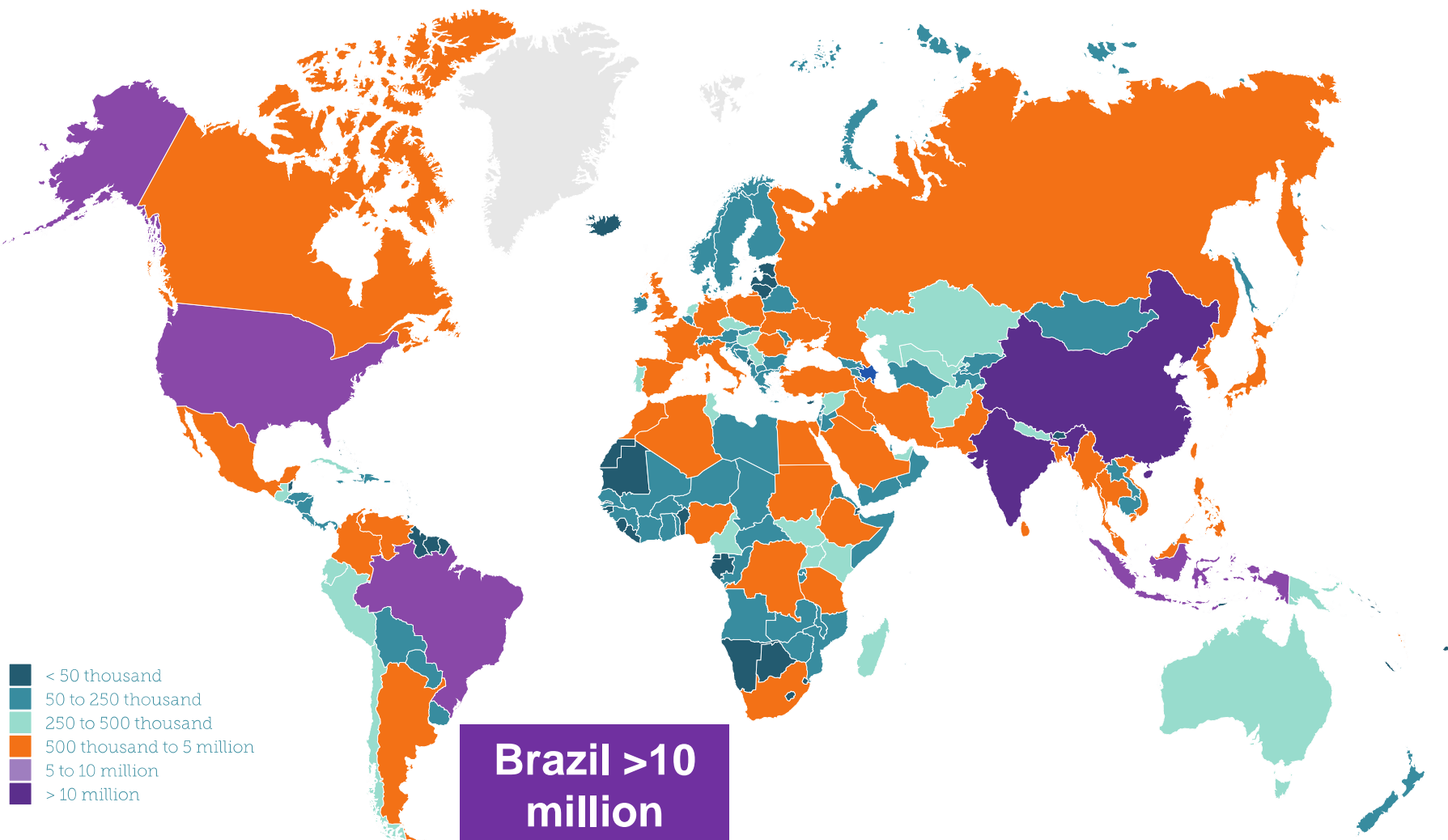
Prevalência de Diabetes em adultos ajustada para a idade (20-79 anos) em 2015



# Diabetes no mundo



Número estimado de pessoas entre 20 e 79 anos com Diabetes sem diagnóstico



# Diabetes no mundo

Número estimado de pessoas entre 20 e 79 anos com Diabetes sem diagnóstico

## Cenário brasileiro<sup>1-3</sup>

**TIPO**

**DM1**

**DM2**

**Prevalência**

**10%**

**90%**

**A1c < 7%**

**10%**

**27%**

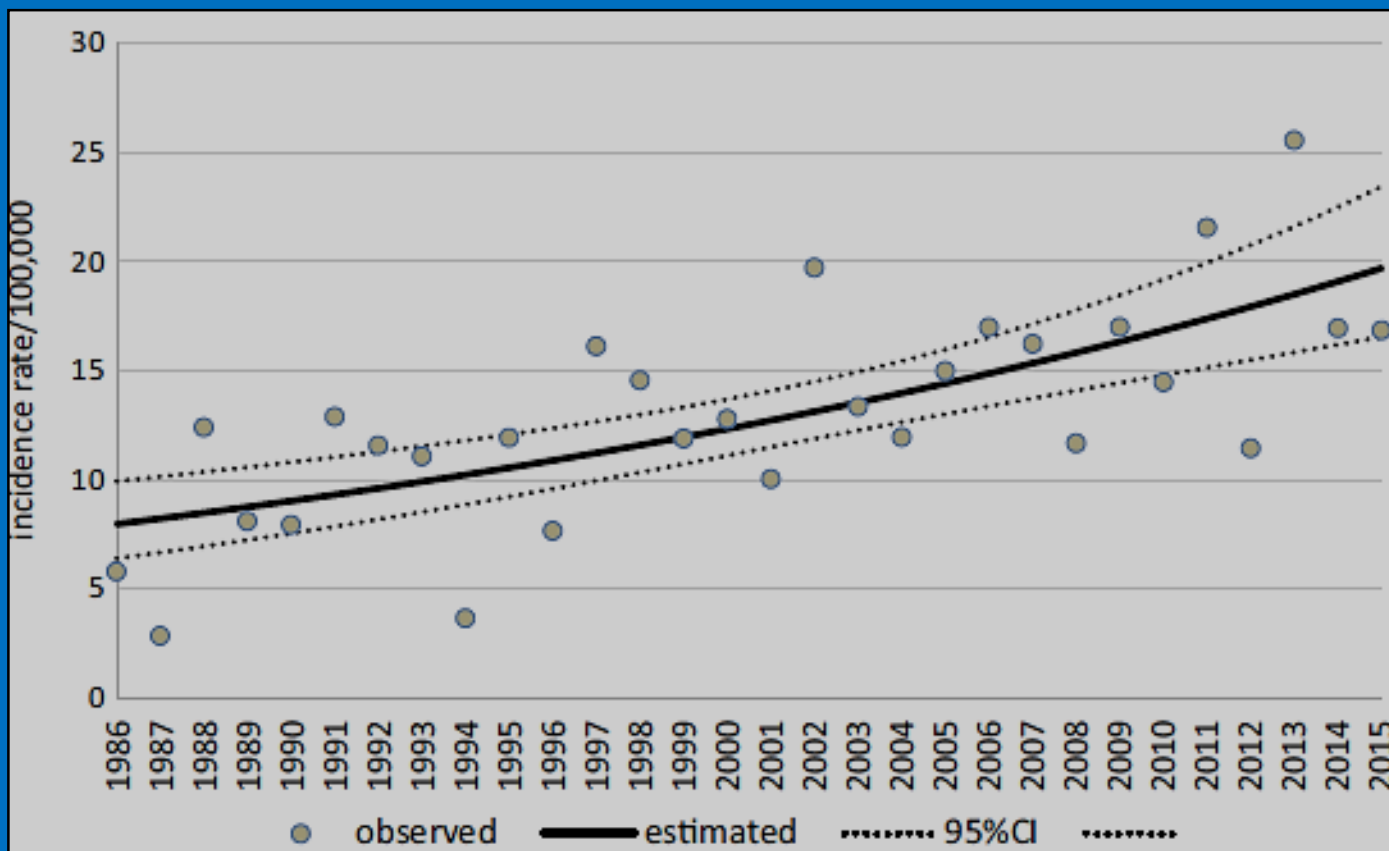


(1) IDF Diabetes Atlas, 7th Edn, 2016.

(2) SBD Guidelines, 2015 (3) Mendes ABV, et al. Acta Diabetol. 2009

# Increasing incidence of type 1 diabetes between 1986 and 2015 in Bauru, Brazil

Carlos Antonio Negrato<sup>a,\*</sup>, José Roberto Pereira Lauris<sup>b</sup>, Ieso Braz Saggioro<sup>a</sup>,  
Maria Cristina Morato Corradini<sup>a</sup>, Pricila Rubia Borges<sup>a</sup>, Maria Cristina Crês<sup>a</sup>,  
Aluysio Leal Junior<sup>a</sup>, Maria Fatima Soares Guedes<sup>a</sup>, Marilia Brito Gomes<sup>c</sup>



**12.8/100,000 < 15 anos | ↑ 3,1% anual = Alta incidência**



# IDF Diabetes Atlas 2015

**Brasil: US\$ 22 bilhões - 2015 – US\$ 36 bilhões - 2040**

10 países com maior gasto de saúde relacionados ao Diabetes - 2015 e 2040

Rank	Country/ territory	2016 Diabetes-related health expenditure, R-2*		Rank	Country/ territory	2040 Diabetes-related health expenditure, R-2*	
		USD	ID			USD	ID
1	United States of America	320 billion	320 billion	1	United States of America	349 billion	349 billion
2	China	51 billion	90 billion	2	China	72 billion	127 billion
3	Germany	35 billion	33 billion	3	Germany	36 billion	35 billion
4	Japan	29 billion	28 billion	4	Brazil	36 billion	48 billion
5	Brazil	22 billion	29 billion	5	Japan	27 billion	25 billion
6	France	19 billion	17 billion	6	France	22 billion	19 billion
7	Canada	17 billion	14 billion	7	Canada	22 billion	18 billion
8	Russian Federation	14 billion	23 billion	8	Mexico	19 billion	30 billion
9	United Kingdom	13 billion	12 billion	9	Russian Federation	14 billion	23 billion
10	Italy	12 billion	12 billion	10	United Kingdom	14 billion	13 billion

USD = US Dollars  
ID = International Dollars

# Costs

IDF DIABETES ATLAS - Sixth edition, Update 2014

Health expenditure Estimates | Mean diabetes-related expenditure per person with diabetes (USD) | 2014

Filter: Region | South and Central America



Select data to view

Filter the data

Print this report

Save an image

Help

Map



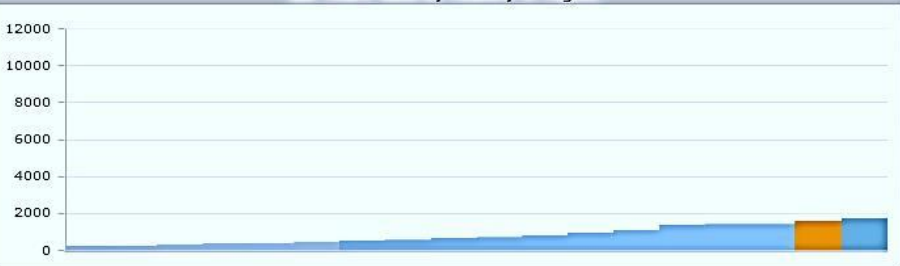
© Copyright IDF 2014

Table: data by country or region

Sort by Country		Mean diabetes-related expenditure per person with diabetes (USD)
<input type="checkbox"/>	Argentina	1,423
<input type="checkbox"/>	Bolivia (Plurinational State of)	252
<input checked="" type="checkbox"/>	Brazil	1,528
<input type="checkbox"/>	Chile	1,427
<input type="checkbox"/>	Colombia	805
<input type="checkbox"/>	Costa Rica	1,364
<input type="checkbox"/>	Cuba	705
<input type="checkbox"/>	Dominican Republic	466
<input type="checkbox"/>	Ecuador	563
<input type="checkbox"/>	El Salvador	377
<input type="checkbox"/>	French Guiana	-
<input type="checkbox"/>	Guatemala	385
<input type="checkbox"/>	Honduras	320
<input type="checkbox"/>	Nicaragua	221
<input type="checkbox"/>	Panama	1,096
<input type="checkbox"/>	Paraguay	658
<input type="checkbox"/>	Peru	524
<input type="checkbox"/>	Puerto Rico	-

2014 mean cost US\$ 1.528

Bar Chart: data by country or region



Legend

- Countries
- less than \$50
- \$50 - \$499
- \$500 - \$1,499
- \$1,500 - \$2,999
- \$3,000 - \$6,499
- \$6,500 or more
- 10,001 - 12,000
- 

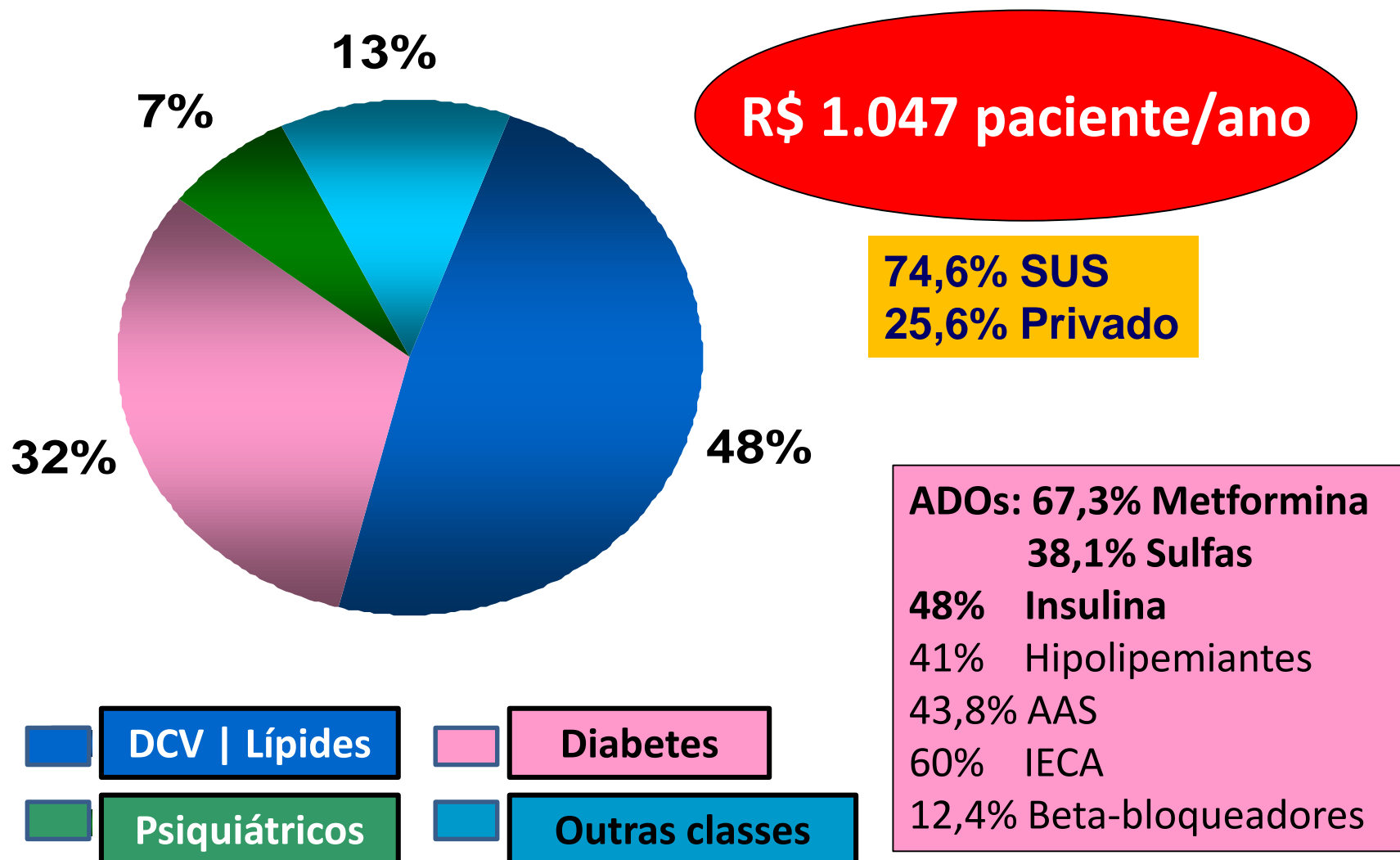
About this data

Diabetes imposes a large economic burden on the individual, national healthcare systems, and countries. Healthcare expenditures due to diabetes account for 11% of the total healthcare expenditures in the world in 2014. About 80% of the countries covered in this report are estimated to spend between 5% and 18% of their total healthcare expenditures on diabetes. Healthcare expenditures include spending on diabetes by the health system as well as by people living with diabetes.

2015 - Brazil: mean cost per person: US\$ 2.047

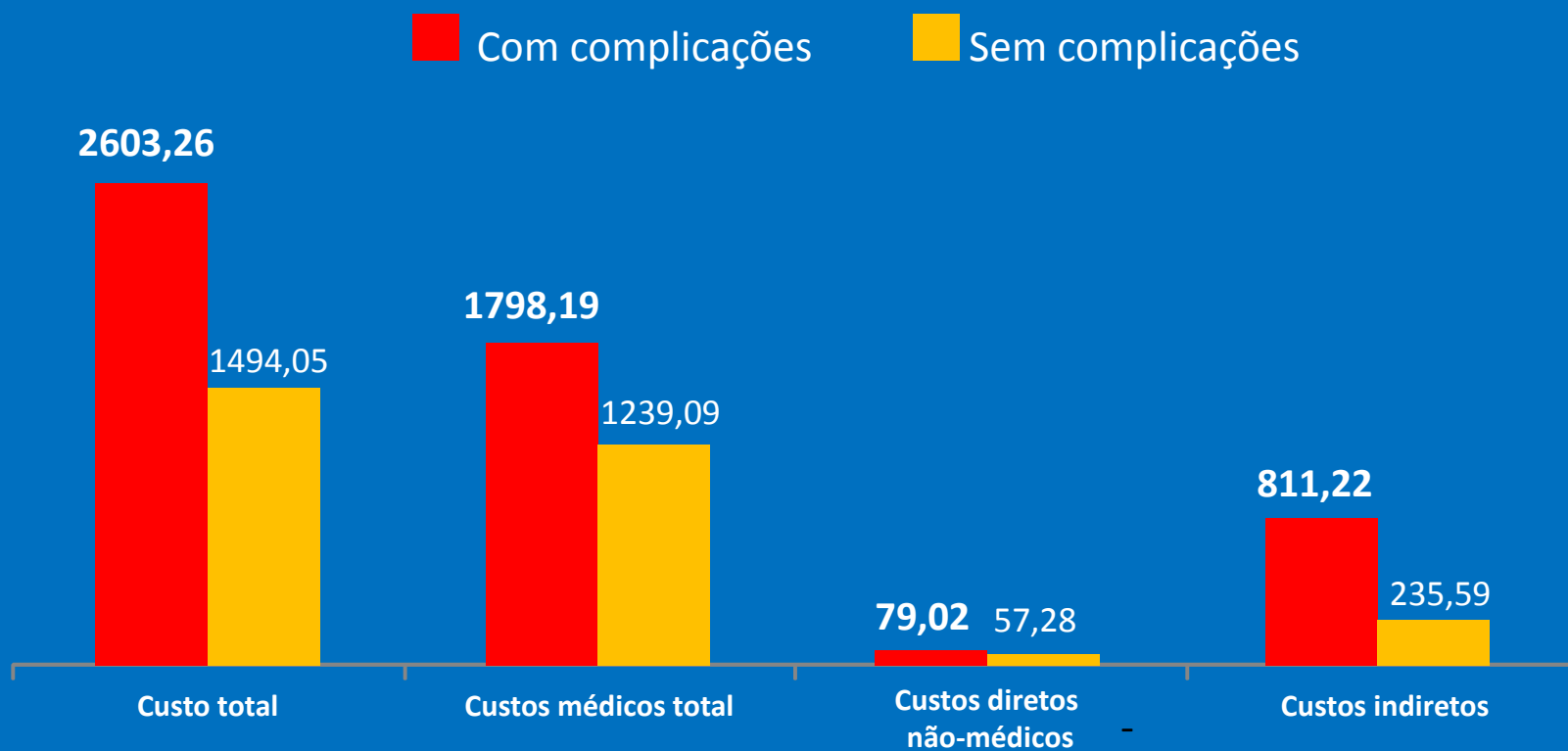
# ESCUDI - Estudo Brasileiro dos Custos do tratamento ambulatorial do DM Tipo 2 no SUS (08 cidades)

## CUSTOS MEDICAMENTOS



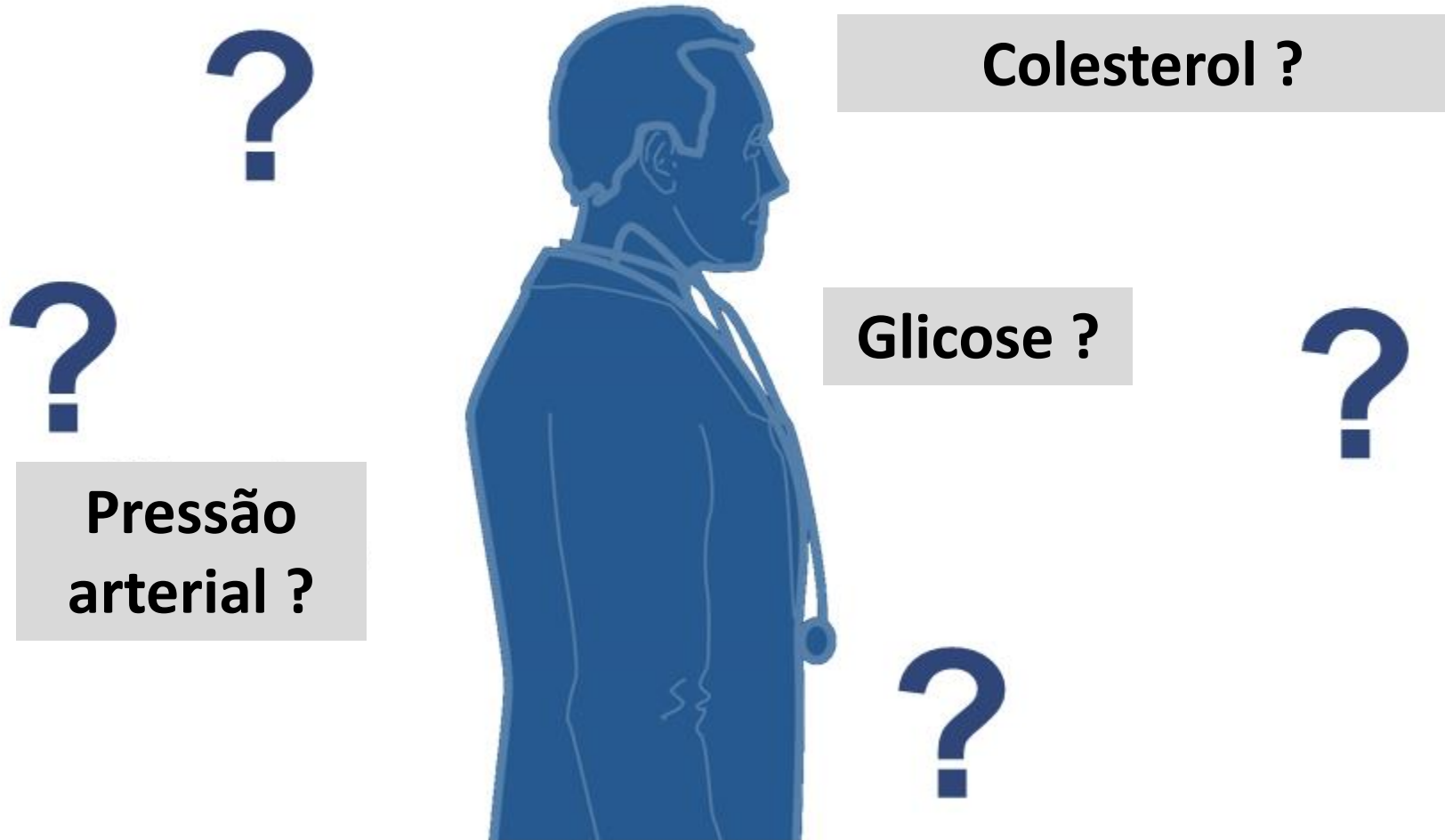
# Estudo Multicêntrico de DM Tipo 1 no Brasil BrasDiab1SG

Custo anual médio / paciente com vs. sem  
complicações (US\$): aumento de 50 a 70%



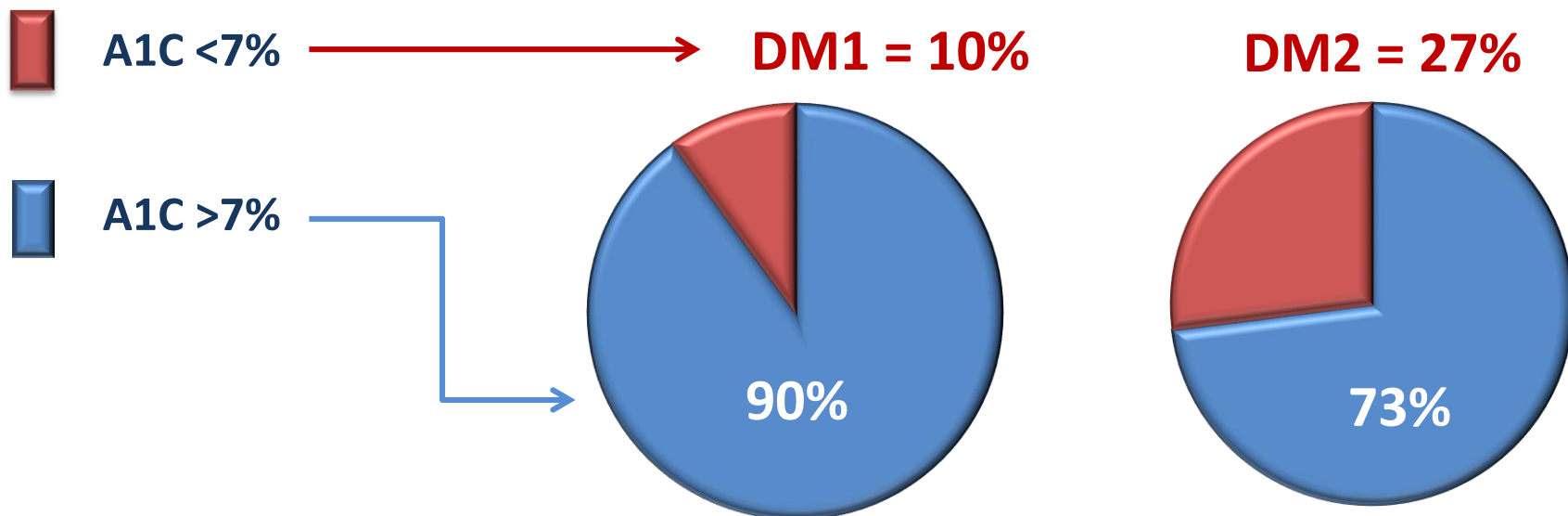
**Qual a situação do controle  
no Brasil e de outros países, nos últimos  
10 anos ?**

# Quais são as prioridades para manuseio do Diabetes ?



# PREVALÊNCIA DO GRAU DE CONTROLE GLICÊMICO (BRASIL, 2007)

Estudo realizado com 6.701 pacientes em 10 cidades brasileiras<sup>1</sup>



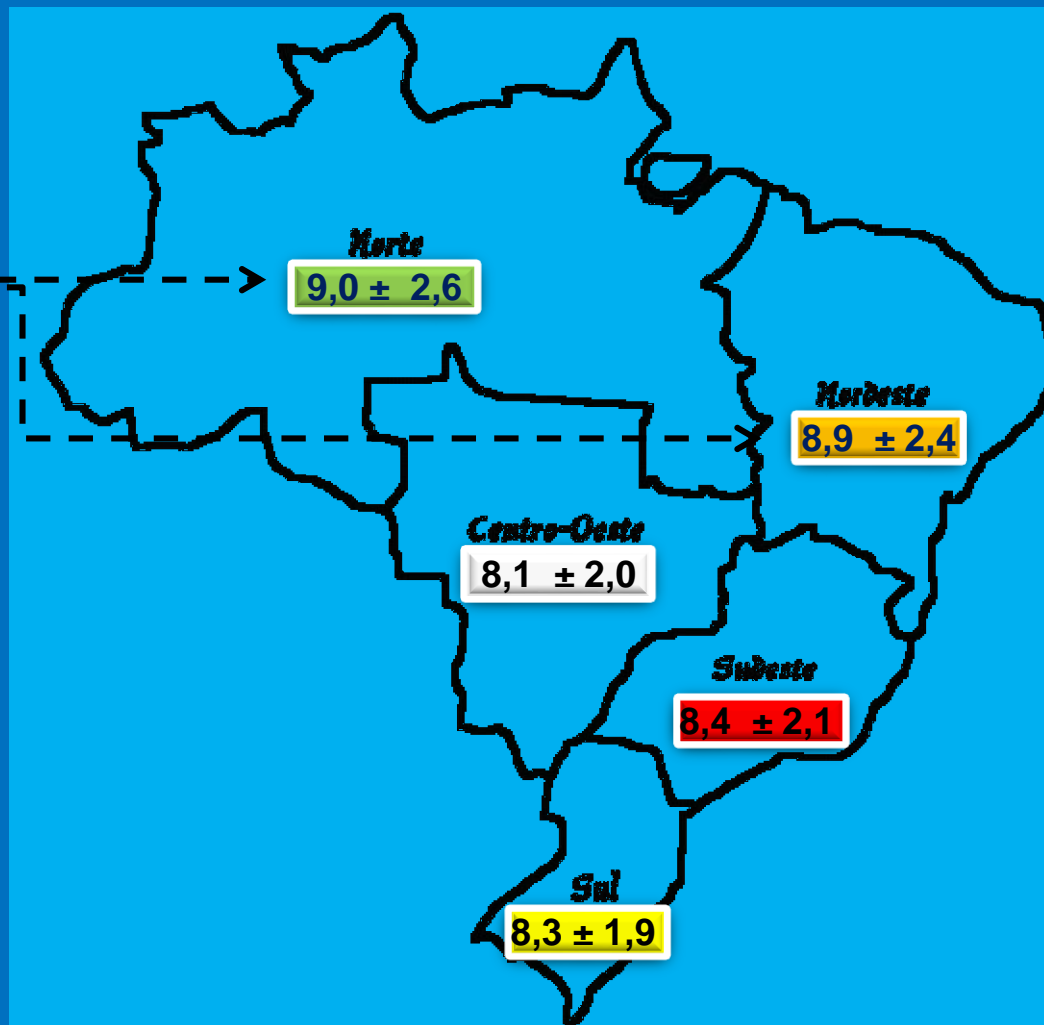
**HbA1c > 7% em 88% dos 1.535 DM1 de 28 centros públicos<sup>2</sup>**

**HbA1c > 7% em 74% dos 5.750 DM2 de 14 centros públicos<sup>3</sup>**

# Mau controle do DM Tipo 2 nas regiões do Brasil, segundo a HbA1c (2007)

## PIOR controle: NE e Norte

- N = 5.750
- Idade = 61±10 a
- Duração do DM = 11±8 a
- M = 66% H = 56%
- IMC = 28.0±5.3 kg/m<sup>2</sup>
- HbA1c (média)=8.6±2.2%
- HbA1c (mediana)=8.1% (6.9%-9.9%)
- HbA1c <7%=26%





A map of Brazil is shown in the background, with different states or regions highlighted in various colors: orange, green, yellow, and red. Overlaid on the map is the title of the study in large, bold, blue letters. The text is arranged in several lines: 'Estudo' at the top, 'Multicêntrico' in the middle, 'DIABETES' in a larger font below that, 'no Brasil' below that, and 'Tipo 1' on the right side.

# Estudo Multicêntrico DIABETES no Brasil Tipo 1

28 Centros | 20 cidades  
N = 3,180 patients  
Age = 22 ± 11.8 yrs  
(56.3% female, 57.4%  
caucasians, 43.6% non-  
caucasians)

# Participantes Estudo Dm1

## Coordenação Geral: Dra Marília de Brito Gomes (UERJ)

### Participantes por Centro:

- Universidade Estadual do Rio de Janeiro UERJ: Dra Marília Brito Gomes, Dra. Lucianne Tannus
- Universidade Federal do Rio de Janeiro UFRJ: Dra Melanie Rodacki, Dra Denita Zadverg
- Escola Paulista de Medicina UNIFESP: Dr Sérgio Atala Dib, Dr Celso Sallum Filho
- Hospital das Clínicas FMUSP: Dra Maria Lucia Giannella, Sharon Nina Admoni, Daniele Pereira dos Santos
- Associação de Diabéticos de Bauru: Dr Carlos Antonio Negrato, Maria Fátima Guedes
- Hospital de Clínicas de Porto Alegre: Dra Mirela Azevedo, Dr Luis Henrique Canani
- UNICAMP: Dra Elizabeth João Pavin, Caroline Takano
- Hospital de Clínicas da Universidade Federal do Paraná: Dra Rosângela Rea, Dr Nicole Balster Romanzini
- Hospital Universitário João de Barros: Dr João Soares Felício, Dra Flávia Marques Santos
- Universidade Federal do Ceará: Dr Renan Montenegro Jr., Dra Virginia Fernandes
- Centro Integrado de Diabetes e Hipertensão: Dra Adriana Forti, Dra Angela Delmira
- Centro de Diabetes e Endocrinologia do Estado da Bahia: Dra Reine Marie Fonseca, Dra Ludmila Fonseca, Dra Raffaele Barros
- Hospital Regional de Taguatinga: Dra Hermelinda Pedrosa, Dra Cejana Hamu Aguiar, FT Monica Tolentino

## Coordenação Oftalmologia: Dr Paulo Henrique Morales (UNIFESP)

### Participantes por Centro:

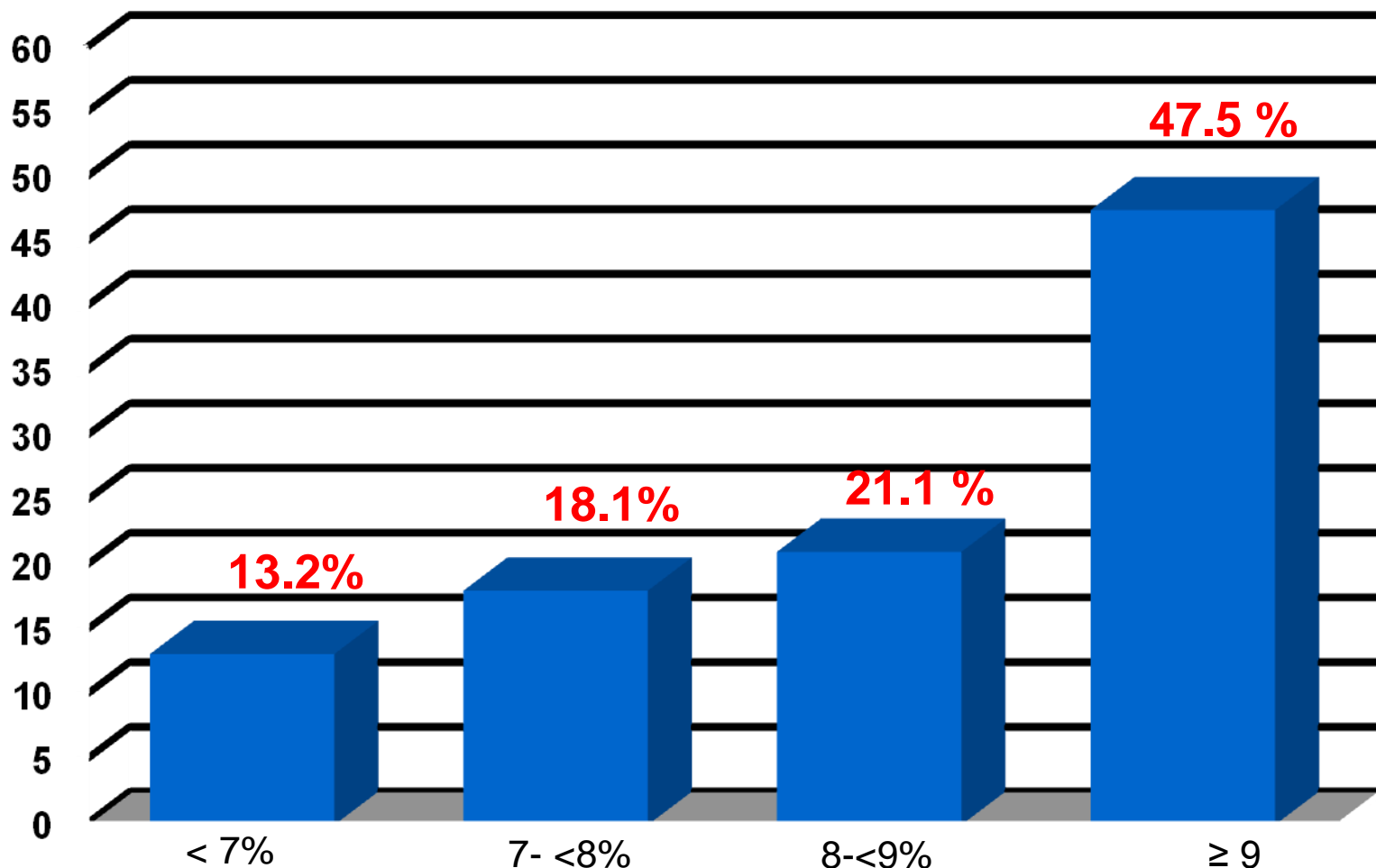
- Universidade Estadual do Rio de Janeiro UERJ: Dra Karla Guerra Drummond
- Escola Paulista de Medicina UNIFESP: Dr Fernando Malerbi
- Hospital das Clínicas FMUSP: Dr Ricardo Perez
- Hospital de Clínicas de Porto Alegre: Equipe de oftalmologia
- UNICAMP: Dr Franz Schubert Leal
- Centro de Diabetes e Endocrinologia do Estado da Bahia: Dra Tessa Matos
- Hospital Regional de Taguatinga: Dr. André Pinheiro

## Coordenação Análise Bioquímicas: Maria de Fátima Bevilacqua da Mata (UERJ)

# Estudo Multicêntrico de DM Tipo 1 no Brasil

## BrasDiab1SG | 28 Centros | 20 cidades, 3,180 pacientes

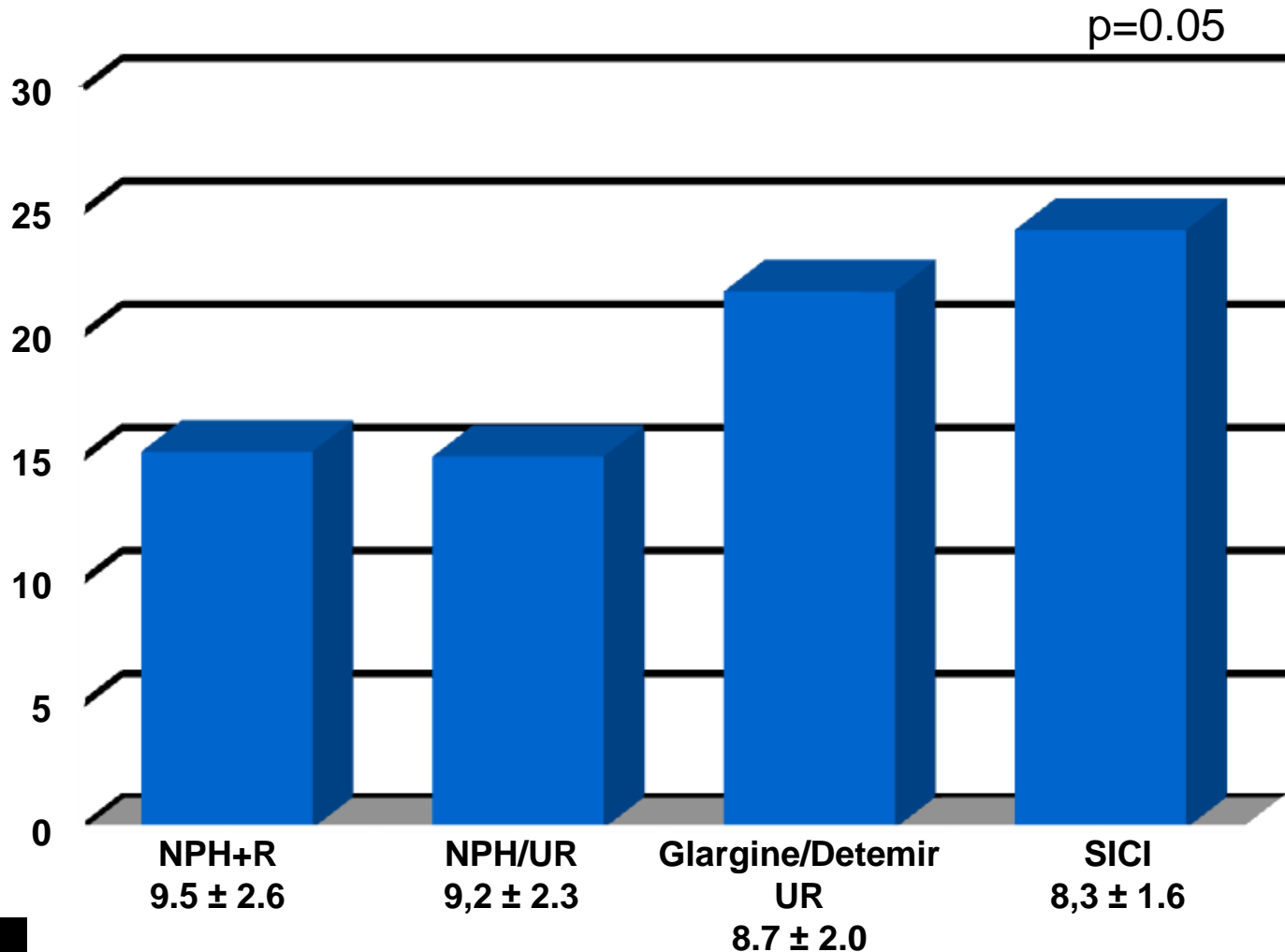
### HbA1c nos diferentes centros de pesquisa - 2010



# Estudo Multicêntrico de DM Tipo 1 no Brasil

## BrasDiab1SG | 28 Centros | 20 cidades, 3,180 pacientes

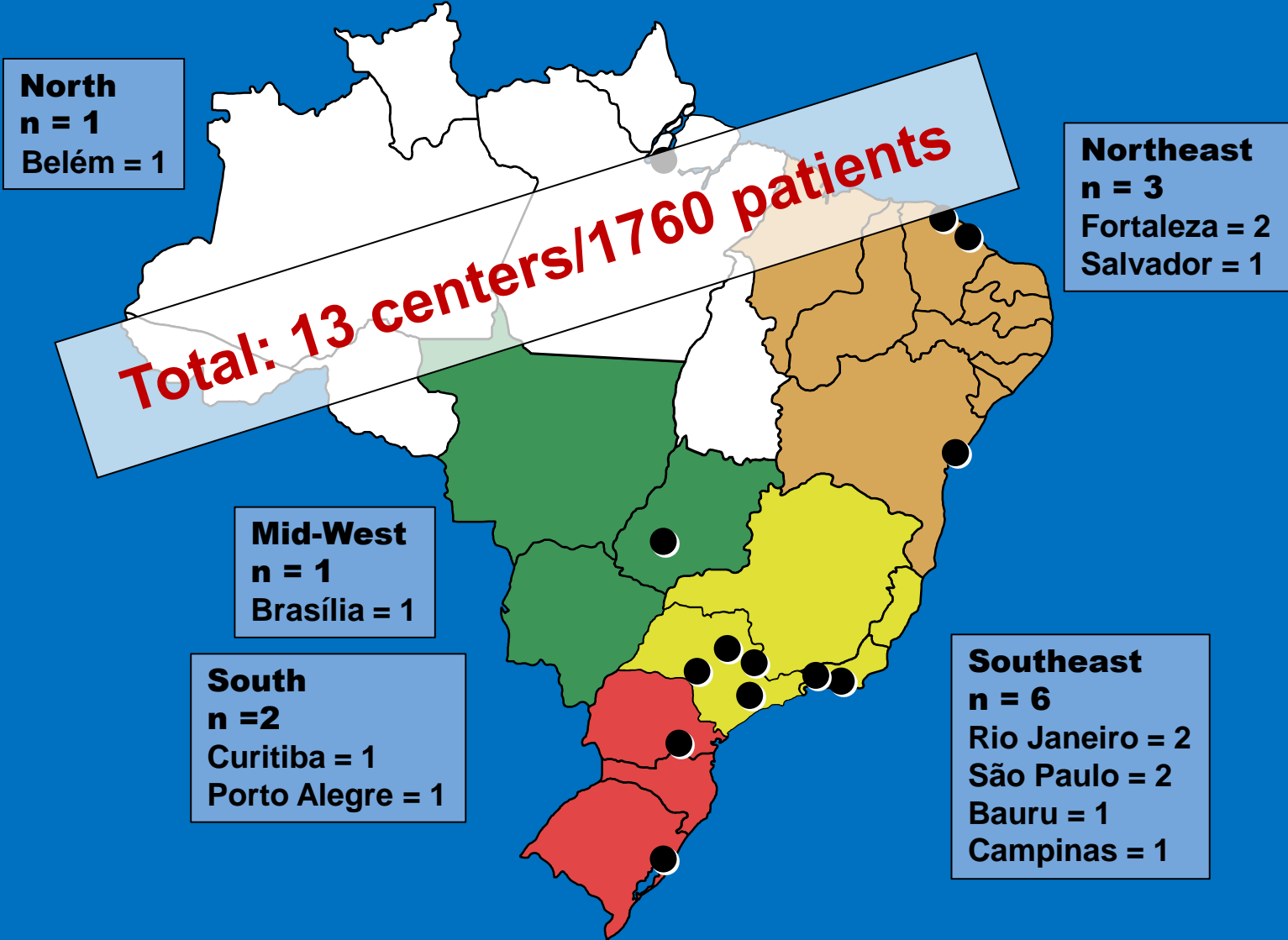
HbA1c (<7%) e tipo de terapia MDI\*



\* MDI = múltiplas doses de insulina

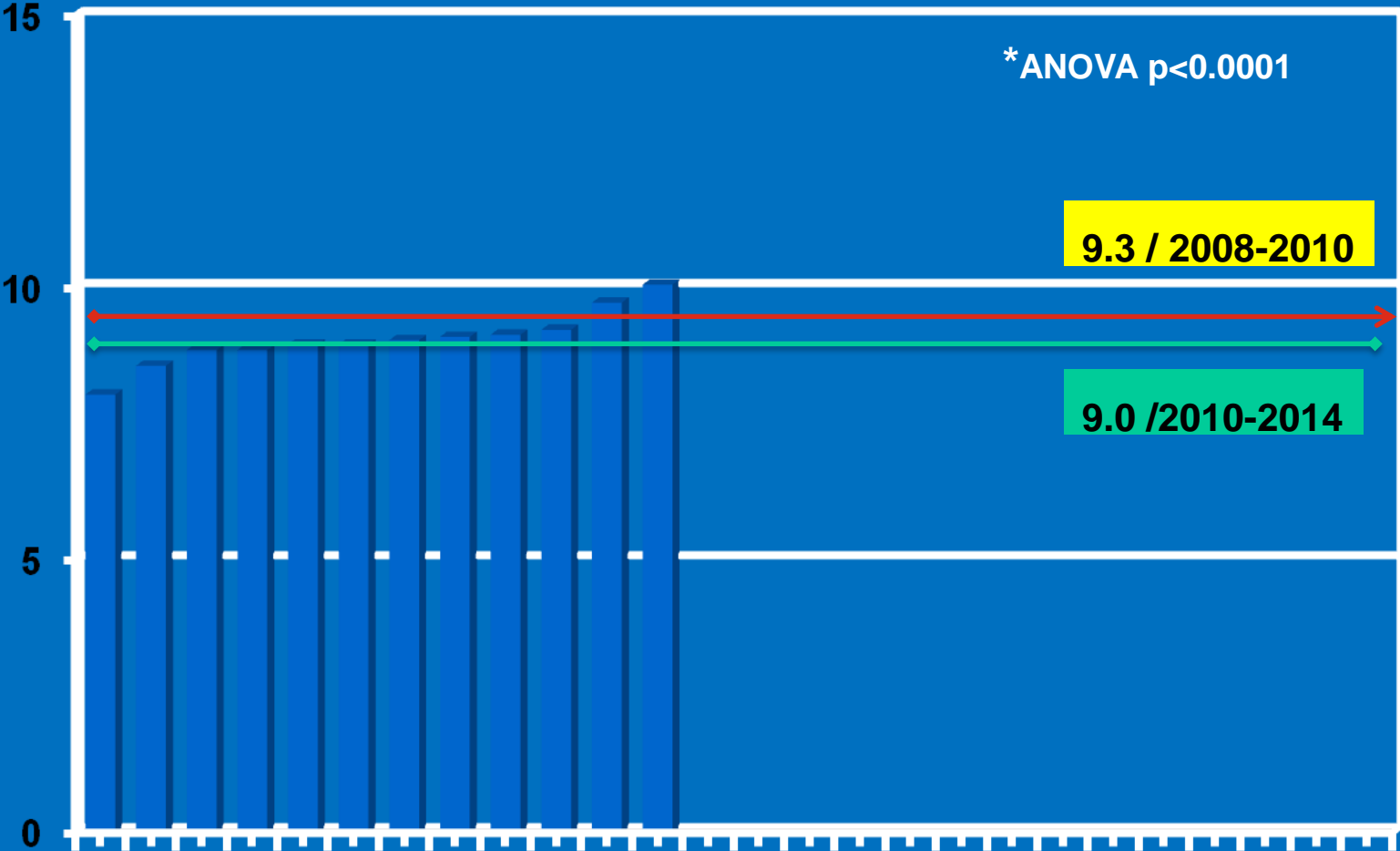
Prevalence of adults with type 1 diabetes who meet the goals of care in daily clinical practice: A nationwide multicenter study in Brazil. *Diabetes Research and Clinical Practice* 2012

# Multicenter Study of Type 1 Diabetes in Brazil | 2015



# Multicenter Study of Type 1 Diabetes in Brazil

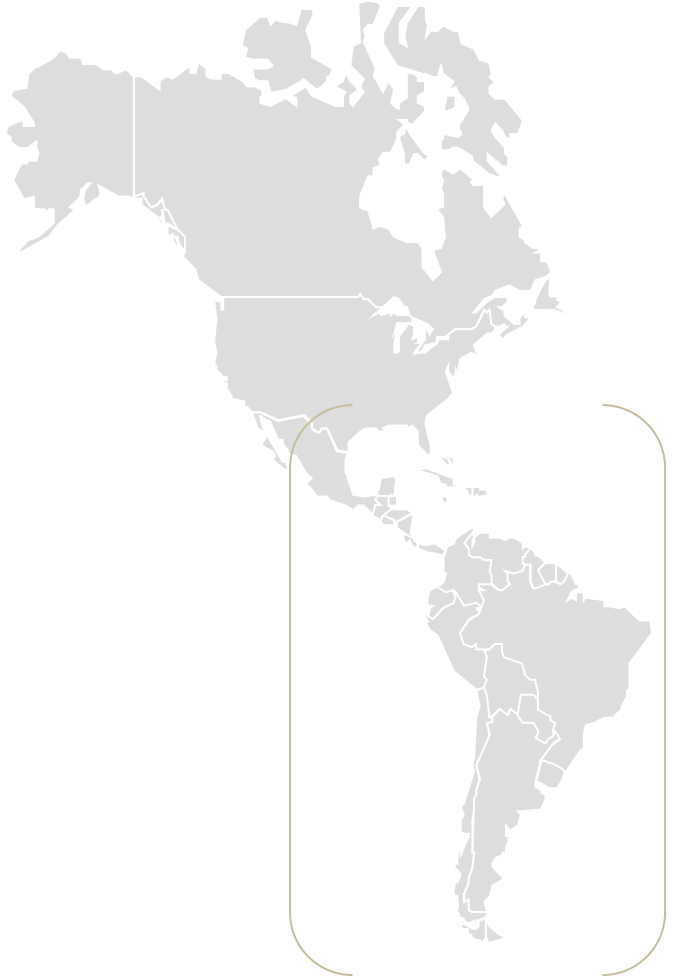
## HbA1c at each Center



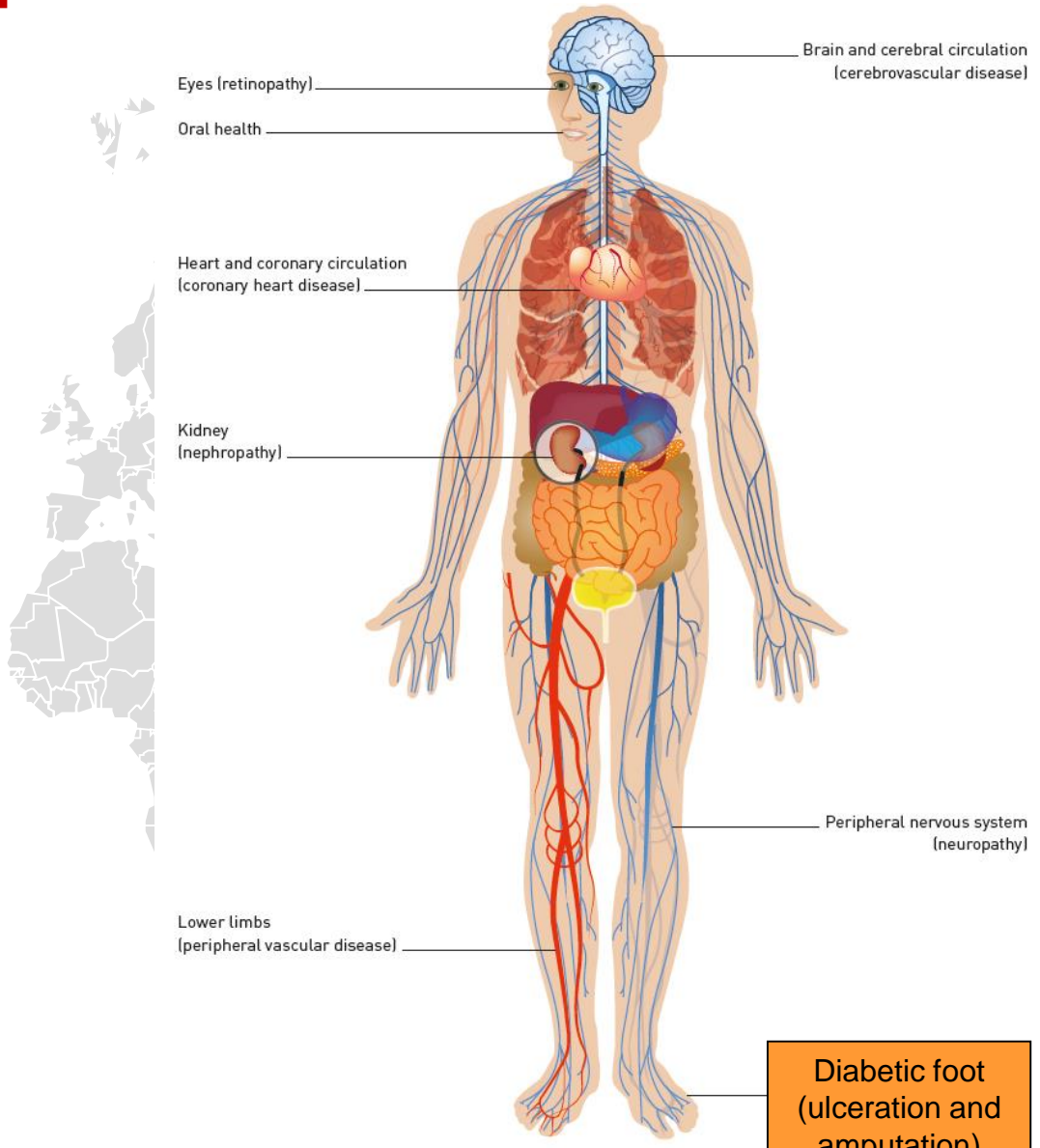
In 54% of the centers the level of HbA1c was lower than the National mean

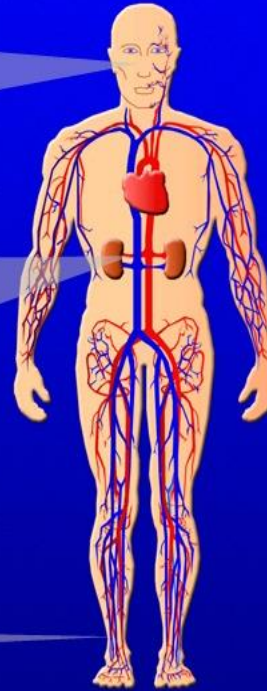
# Screening anual: DM2 ao diagnóstico

## micro e macrovasculopatias



SACA





Microalbuminuria & eGFR



**Neuropatia:  
ainda a  
Cinderela da  
Diabetologia ?**





**Prevalence of Type 2 Diabetic Patients Within the Targets of  
Care Guidelines in Daily Clinical Practice: A Multi-Center  
Study in Brazil**

Rev Diabetic Stud (2006) 3:73-78

Marilia de Brito Gomes<sup>1</sup>, Daniel Gianella<sup>2</sup>, Manuel Faria<sup>3</sup>, Marcos Tambascia<sup>4</sup>, Reine Marie Fonseca<sup>5</sup>,  
Rosangela Réa<sup>6</sup>, Geísa Macedo<sup>7</sup>, João Modesto Filho<sup>8</sup>, Helena Schmid<sup>9</sup>, Alcina Vinhaes Bittencourt<sup>10</sup>,  
Saulo Cavalcanti<sup>11</sup>, Nelson Rassi<sup>12,13</sup>, Hermelinda Pedrosa<sup>13</sup>, Sérgio Atala Dib<sup>14</sup>

14 brazilian centres

# Patients at goal: metabolic parameters

Fasting glucose Mean 173 mg/dL (SD 76)	<b>33.0%</b>
Blood pressure •Systolic •Diastolic	<b>28.5%</b> <b>18.3%</b>
Triglycerides	<b>54.8%</b>
HDL	<b>38.6%</b>
LDL	<b>20.6%</b>

# Patients at goal

## Diabetic complication parameters\*

Foot examination	<b>58.2%</b>
Fundoscopy	<b>46.9%</b>
Microalbuminuria: screening	<b>38.9%</b>
Smoking status	<b>54.5%</b>

\* Measured in prior year

# Cause-specific mortality in a cohort of Brazilian patients with type 1 diabetes

Marilia B. Gomes<sup>1</sup> · Ana P. Almeida<sup>1</sup> · Deborah C. Santos<sup>1</sup> · Eliete Leão<sup>1</sup> ·  
Edna F. Cunha<sup>1</sup> · Carlos A. Negrato<sup>2</sup>

**N = 986 pacientes**

- Rio de Janeiro = 271 patients
- Bauru = 715 pacientes
- Idade média = 30 anos
- Duração média DM = 15,6 anos
- **Standard mortality rate: 3.13 [2.35–4.08]**
- **70% ESRD**
- **17.7% DKA and Hypoglycemia**

# ADA Symposium – 2016

## Diabetic foot costs in Brazil-SUS: based on 2015 DM IDF and cumulative inflation (59%)\*

<b>Hospital admission - amputation</b> (total estimated cost**)	<b>US\$ 175.958.000,00 million</b> <b>R\$ 707.453.964,00 million</b>
<b>Hospital admission – foot ulcer</b> (total estimated cost**)	<b>US\$ 370.476.000,00 million</b> <b>R\$ 1.489.530.000,00 billion</b>

\*Cumulative inflation 2006 – 2015 = **59%**  
Real vs US dolar = 28/may/2016

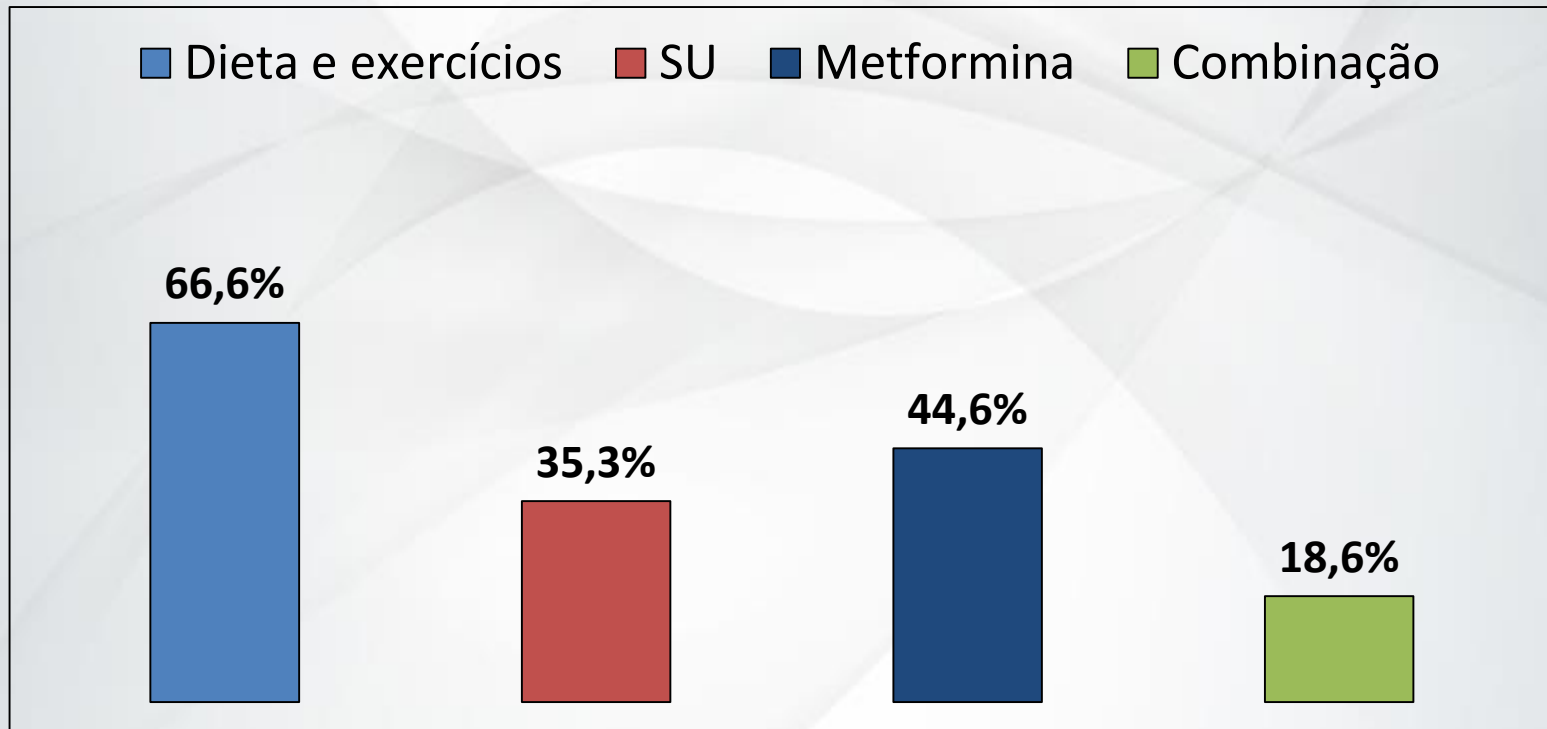
\*\* Based on IDF estimates of diabetes in Brazil for 2015: 14.000.000 million people

# O porquê do mau controle

*Inércia clínica*

# INÉRCIA TERAPÊUTICA FREQUENTEMENTE, A TERAPIA NÃO É OTIMIZADA APESAR DO CONTROLE GLICÊMICO INADEQUADO

Percentual de indivíduos que avançam na terapia quando a A1C >8%



# O porquê do mau controle

*Inércia clínica*

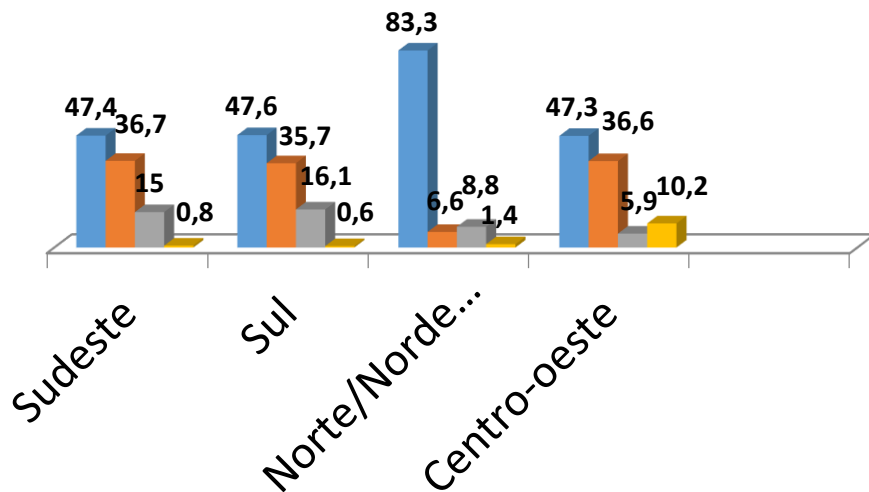
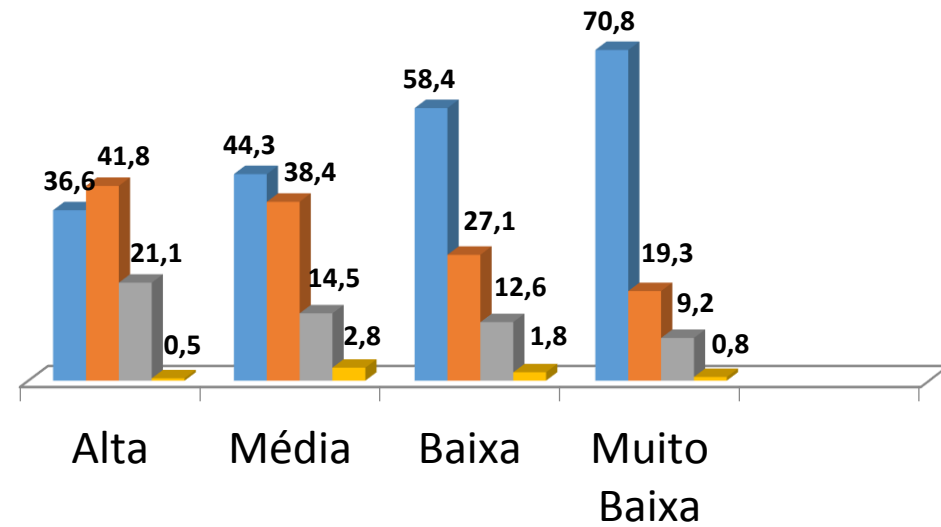
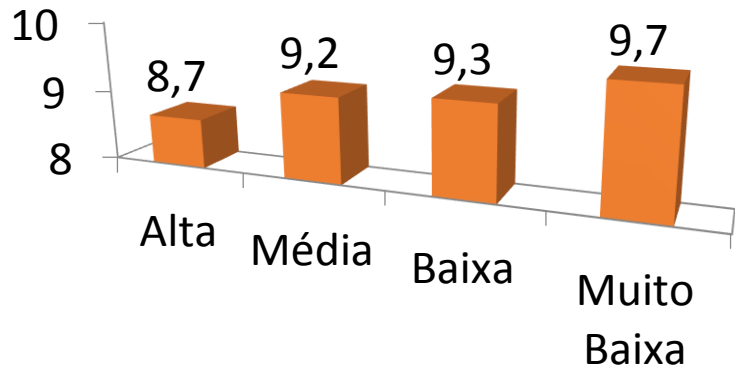
+

*Desigualdade social*



# DM1, Classe Social & Região do Brasil

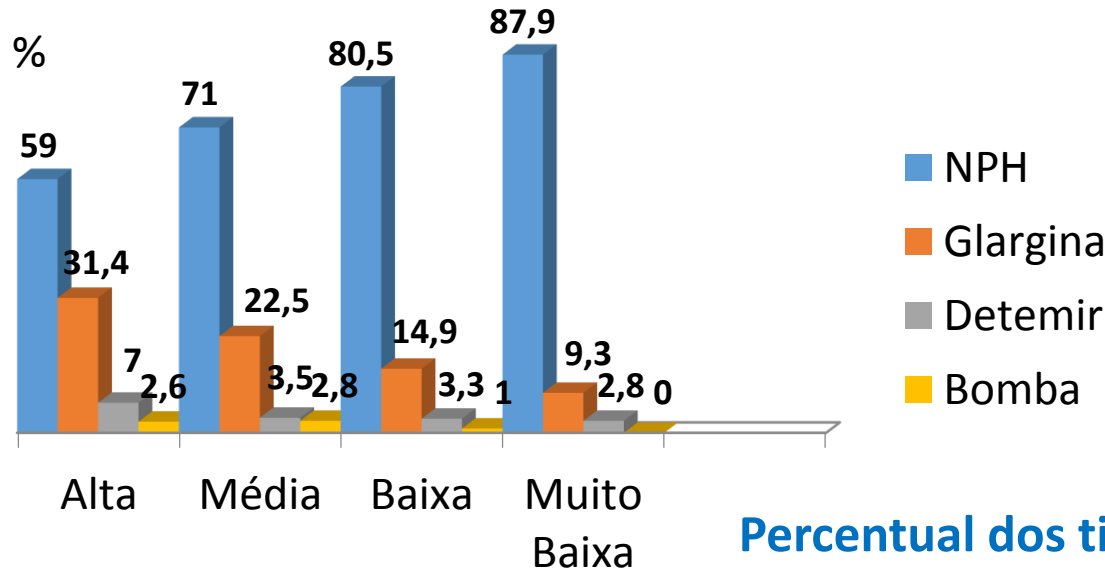
## HbA1c



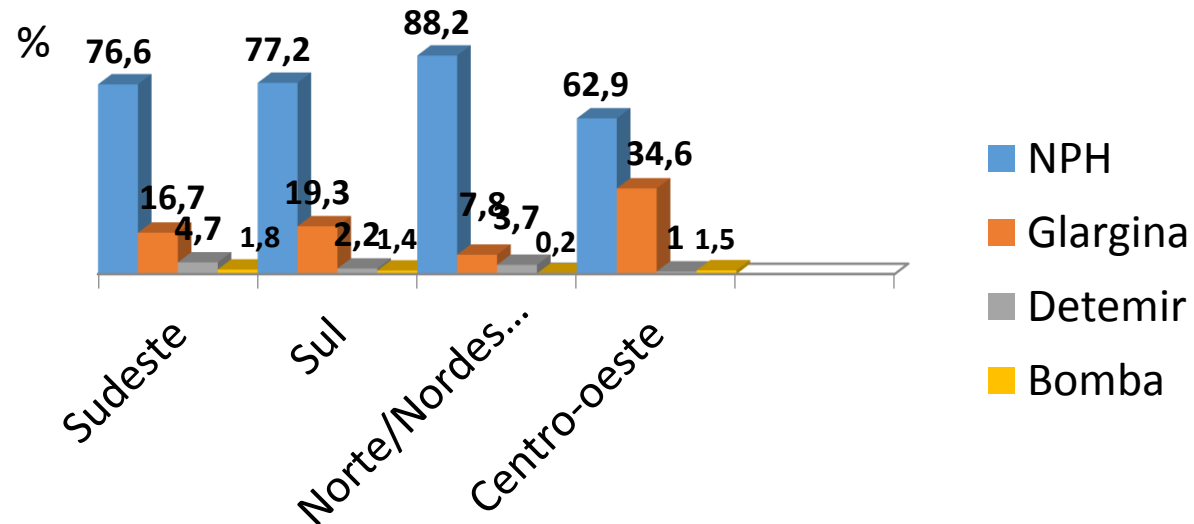
- Regular
- Lispro
- Aspart
- Glulisina

# DM1, Classe Social & Região do Brasil

## Percentual dos tipos de insulina basal por classe social



## Percentual dos tipos de insulina basal por região



**Boas perspectivas no horizonte ?**

***Sim... Apesar de tudo !***



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  
Subscrito pela: SBD, SBEM, SBP, ADJ, ANAD e FENAD

APROVADO CONITEC

Dezembro de 2016

PUBLICADO NO DF

Janeiro de 2017

RESEARCH ARTICLE

# Association between expansion of primary healthcare and racial inequalities in mortality amenable to primary care in Brazil: A national longitudinal analysis

Thomas Hone<sup>1\*</sup>, Davide Rasella<sup>2,3</sup>, Mauricio L. Barreto<sup>2,3</sup>, Azeem Majeed<sup>1</sup>, Christopher Millett<sup>1,4,5</sup>

**1** Public Health Policy Evaluation Unit, Department of Primary Care and Public Health, School of Public Health, Imperial College London, London, United Kingdom, **2** Centre for Data and Knowledge Integration for Health (CIDACS), Instituto Fonçalo Muniz, Fundação Oswaldo Cruz, Salvador, Brazil, **3** Instituto de Saúde Coletiva, Universidade Federal da Bahia, Salvador, Brazil, **4** Center for Epidemiological Studies in Health and Nutrition, University of São Paulo, São Paulo, Brazil, **5** Department of Epidemiology, Institute of Social Medicine, Rio de Janeiro State University, Rio de Janeiro, Brazil

*\* Imperial College of London*

- The ESF\* has rapidly expanded since the mid-1990s to become the largest community-based PHC program in the world (1).
- In 2014, it covered ≈ 121.2 million individuals: 62.5% of the population (2).

\* PACS (Agentes Comunitários de Saúde – 1994; PSF – 1994; ESF - 2011)

1. Macinko J, Harris MJ. Brazil's Family Health Strategy—delivering community-based primary care in a universal health system. *N Engl J Med*. 2015; 372(23):2177–81. <https://doi.org/10.1056/NEJMp1501140> PMID: 26039598

2. Ministerio da Saude. Departamento de Atenção Básica. Histórico de cobertura da saúde da família. Brasília: Ministério da Saúde; 2015 [cited 2015 Apr 11]. [http://dab.saude.gov.br/portaldab/historico\\_cobertura\\_sf.php](http://dab.saude.gov.br/portaldab/historico_cobertura_sf.php).



# Objectives - Methods

- This study seeks to address this important gap by examining associations between ESF coverage and mortality from ACSCs\* in white and black/*pardo* populations in Brazil.
  - We test the hypothesis that **expansion of PHC coverage through the ESF in Brazil is associated with reduced inequalities in mortality between racial groups.**
- **1.622 municipalities**
  - **2000 – 2013**
  - **Imperial College – London | CIDACS (Centro de Integração de Dados), Fiocruz**

\*ACSCs – Ambulatory-care-sensitive conditions

# Resultados

Agravos	DCV	Doenças infecciosas	Diabetes	Mortalidade geral
Negros/Pardos	12,9	27,5	<b>19,3</b>	<b>15,4</b>
Branco	7,1	NS	<b>NS</b>	<b>6,8</b>

Negros/Pardos = 54% da população brasileira

**Redução de 19% na mortalidade por Diabetes entre Negros e Pardos**

**Obrigada !**



**Brasília – Ponte JK**

**Visite o site da SBD e associe-se: [www.diabetes.org.br](http://www.diabetes.org.br)**