GLOBAL HEALTH CONSORTIUM GHC
9th INTERNATIONAL GLOBAL HEALTH CONFERENCE

COUNTRY EXPERIENCES WITH COMMUNITY BASED DIABETES INTERVENTIONS AND LESSONS LEARNED

MAY 9,2019

Reine Marie Chaves Fonseca, MD

ENDOCRINOLOGIST, MASTER DEGREE IN INTERNAL MEDICINE AND ENDOCRINOLOGY

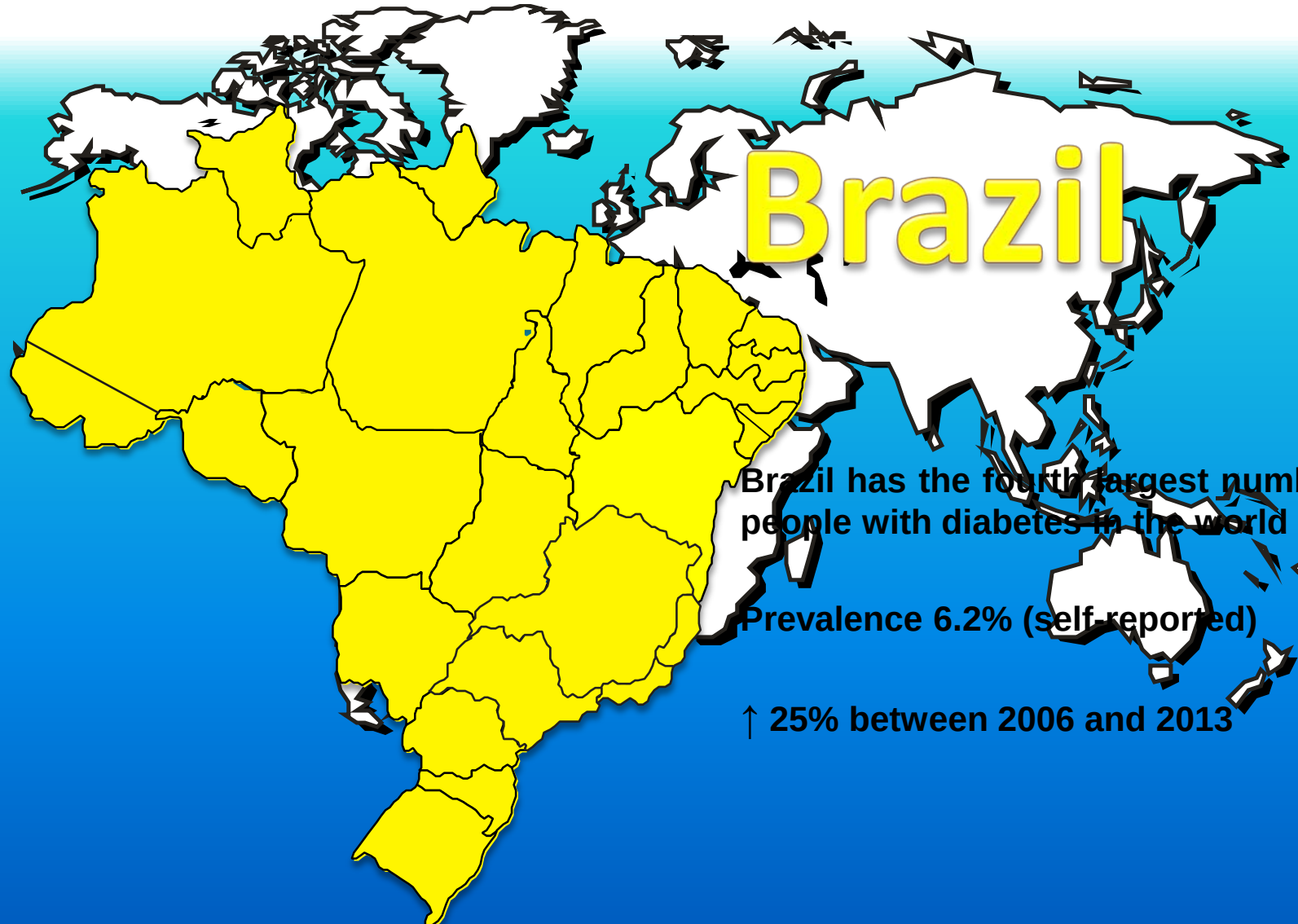
MEMBER OF THE MEDICAL ACADEMY OF BAHIA, BRAZIL

DIRECTOR OF THE DIABETES AND ENDOCRINOLOGY REFERRAL

CENTER OF THE STATE OF BAHIA, BRAZIL (CEDEBA) since its founding in 1994

STATE HEALTH DEPARTMENT OF BAHIA- BRAZIL

DIABETES IN BRAZIL



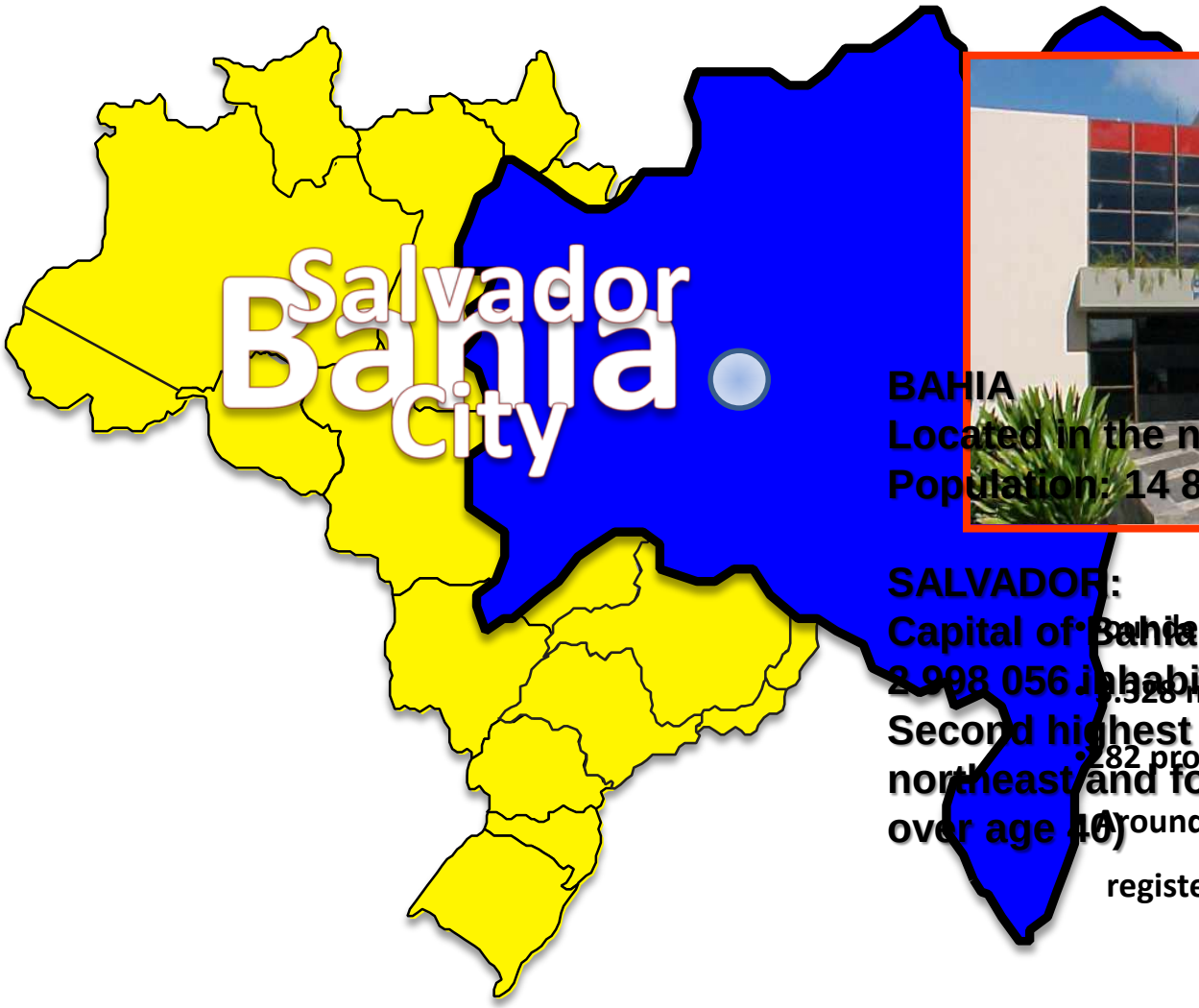
Brazil has the fourth largest number of people with diabetes in the world (IDF)

Prevalence 6.2% (self-reported)

↑ 25% between 2006 and 2013

DIABETES IN BRAZIL

Diabetes and Endocrinology Referral Center of the State of Bahia, Brazil



BAHIA
Located in the northeast of Brazil
Population: 14 812 617 inhabitants

SALVADOR:
Capital of Bahia
2 998 056 inhabitants
Second highest prevalence of diabetes in northeast and fourth in the country (7.8% over age 40)

- Founded in 1994
- 3.328 m²
- 282 professionals – multidisciplinary staff
- Around 75.000 patients registered for assistance

Diabetes and Endocrinology Referral Center of the State of Bahia, Brazil

Mission

- **Improvement of diabetes care in Bahia**
- **Referral center for primary health centers in Salvador and throughout Bahia (417 municipalities)**
- **Responsibility for technical training of all professionals involved in public diabetes care in Bahia**
- **Development of clinical research in Endocrinology and Diabetes**

Diabetes and Endocrinology Referral Center of the State of Bahia, Brazil

International Partnerships

- **WHO/PAHO – World Health Organization/Pan American Health Organization**
- **IDC – International Diabetes Center – Minneapolis MN – USA**
  - **SDM – Staged Diabetes Management: Clinical Protocols for Diabetes Care**
- **WDF – World Diabetes Foundation**

PROJAD - BA

Training Program

- **Sensitized local government in improving diabetes care in each municipality**
- **Organized diabetes care, based on SDM customized protocols**
- **Developed a Statewide network for diabetes care**
- **Established links among regional health centers and CEDEBA**

CEDEBA 1998 - 2001

PRODIBA

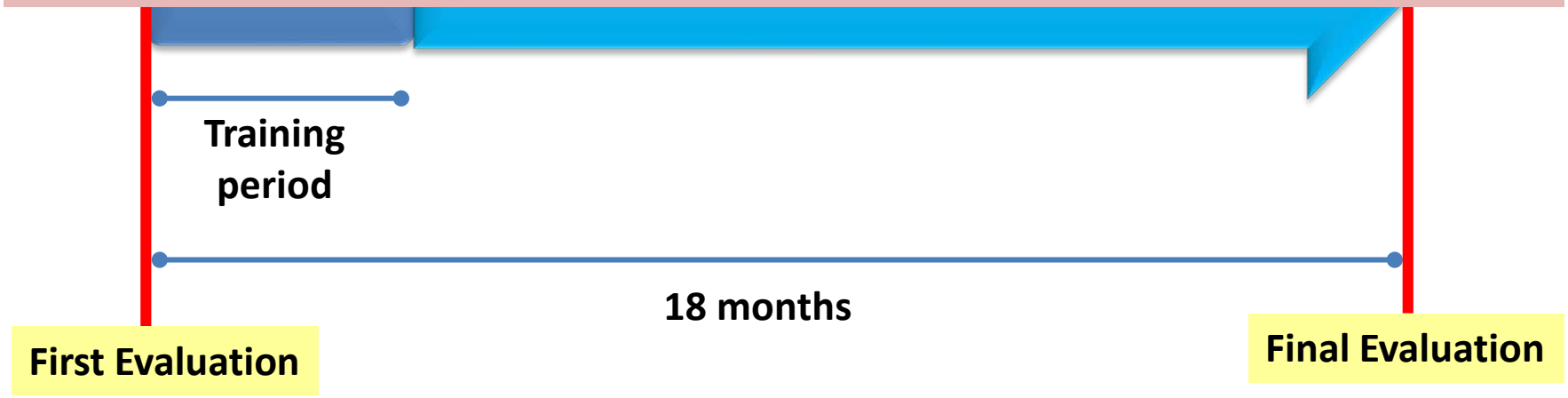
Project for Dissemination of Diabetes Care in the State of Bahia

Trained city
Lauro de Freitas
100 patients

X

Untrained city
Conceição do Coité
100 patients

We hypothesized that in the municipality with staff trained using protocols to guide clinical decisions, patients would have better outcomes



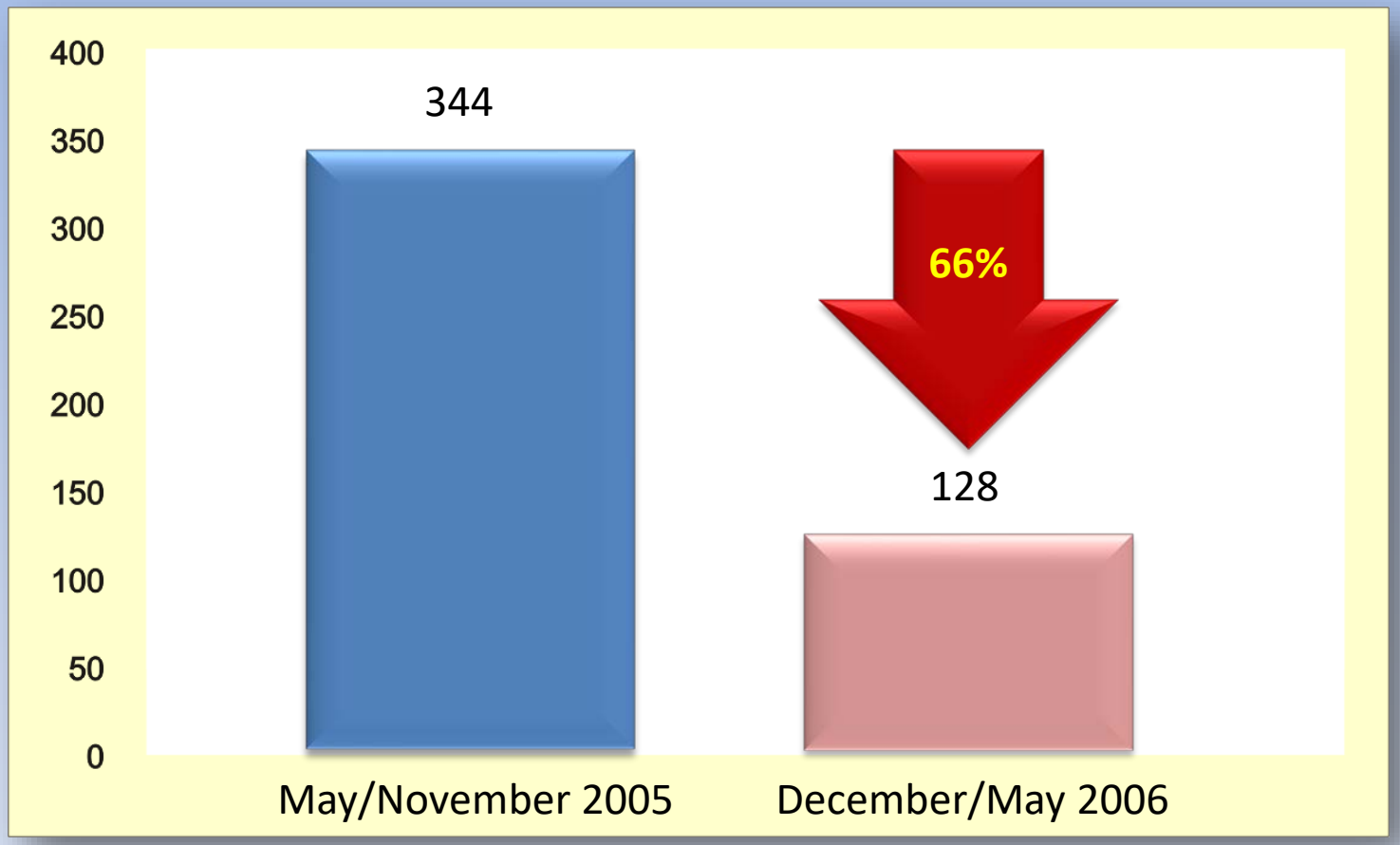
Chaves-Fonseca R.M., et al. Diabet Med. 2009 Mar;26(3):286-92

Average of clinical evaluated parameters in 47 patients that completed the study in Conceição do Coité and in 66 patients that completed the study in Lauro de Freitas.

	Conceição do Coité(Not Trainned)					Lauro de Freitas(Trainned)			
	n	Baseline	18 months	p		n	Baseline	18 months	p
Randon Glucose (mg/dl)	47	233	212	0.77	↓	64	228	189	0.004
HbA1C (%)	45	8.6	8.2	0.17	↓	46	9.2	7.7	<0.001
Cholesterol (mg/dl)	38	214	246	0.005		43	205	222	0.221
BMI(Kg/m²)	44	25.3	25.8	0.02		60	26.5	26.3	0.622
SBP(mmHg)	46	149	157	0.047		59	139	131	0.006
DBP(mmHg)	46	91	93	0.355		59	85	75	<0.001

Chaves-Fonseca R.M., et al. Diabet Med. 2009 Mar;26(3):286-92

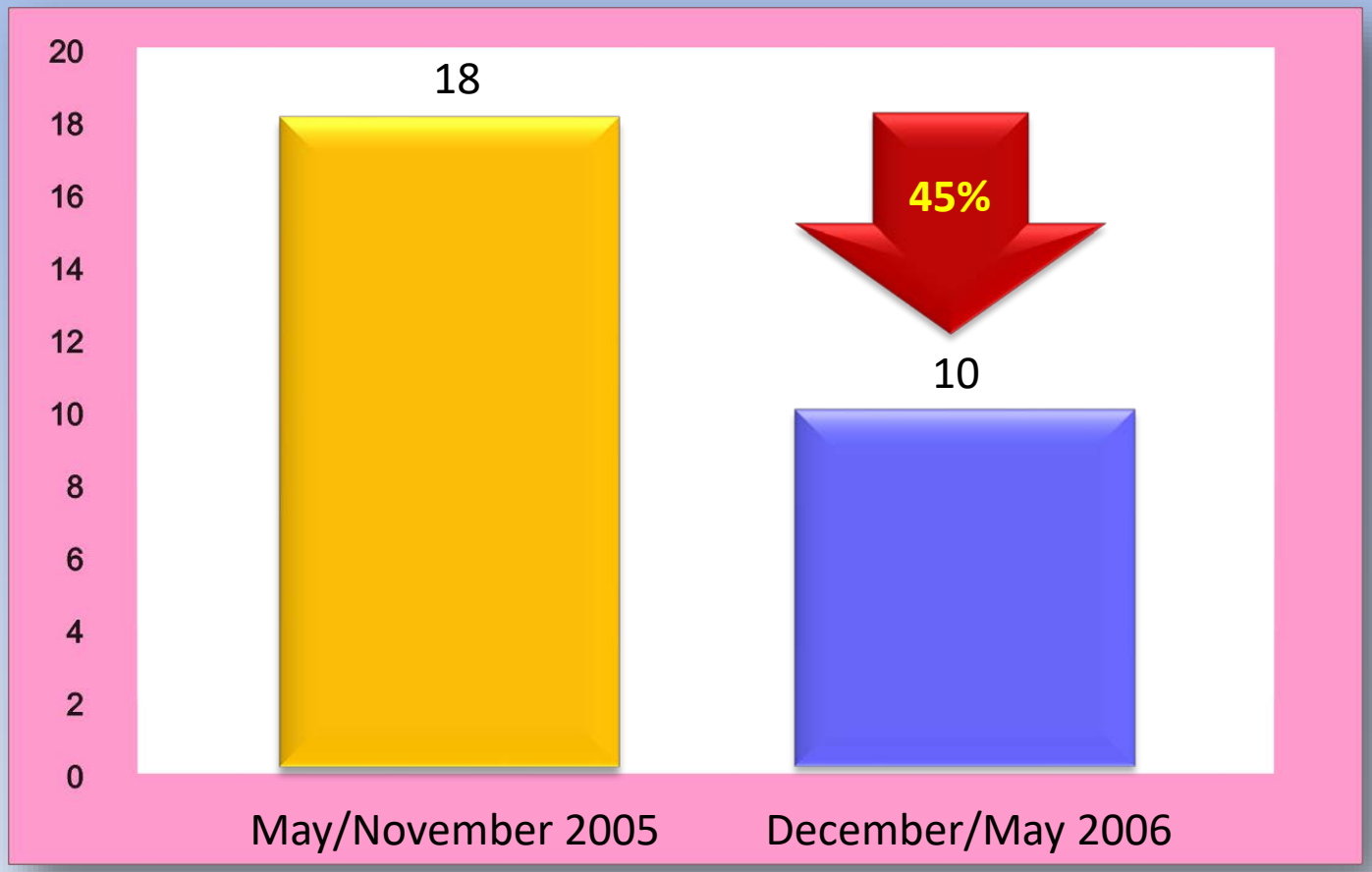
Frequency of Hospitalized Patients with Hyperglycemia in the 5 Main Hospitals of the 31st Health Regional-Cruz das Almas



Fonte:31ª DIRES/SESAB

Chaves Fonseca, R et al. Data presented at American Diabetes Association Meeting, 2009

Frequency of Amputations in Type 2 DM Patients of the 31st Health Regional-Cruz das Almas



Fonte:31ª DIRES/SESAB

Chaves Fonseca, R et al. Data presented at American Diabetes Association Meeting, 2009

PROCED

Module 1 and 2 – Diabetes Capacity Building and Community Awareness Project for Brazilian State and Portuguese Speaking Countries

Module 3 and 4 - Capacity Building and Education Project to Improve Diabetes Care in Bahia/ Brazil

PROCED

Diabetes Capacity Building and Community Awareness Project for Brazilian States and Portuguese Speaking Countries

The Project – Module 1 and 2

- **AIMS**
  - **To expand CEDEBA's experience with clinical protocols for diabetes care to other Brazilian States and Portuguese speaking countries;**
  - **To develop strategies and implementation plans to increase community awareness using diabetes educational tools.**

PROCED

Diabetes Capacity Building and Community Awareness Project for Brazilian States and Portuguese Speaking Countries

The Project – Module 1 and 2

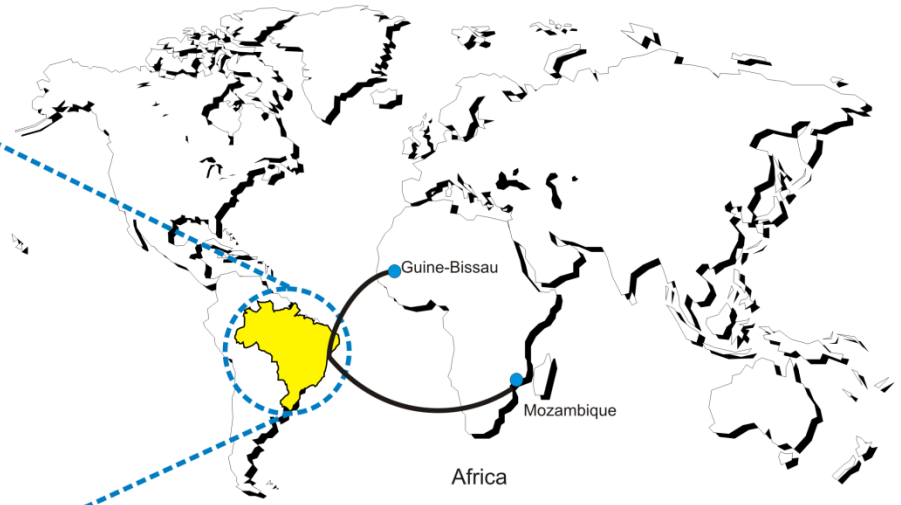
- **Partners (Financial Resources)**
  - **WHO / PAHO**
  - **Ministry of Health - Brazil**
  - **State Health Department of Bahia**

Diabetes Capacity Building and Community Awareness Project for Brazilian States and Portuguese Speaking Countries

PROCED

Sites

Brazil

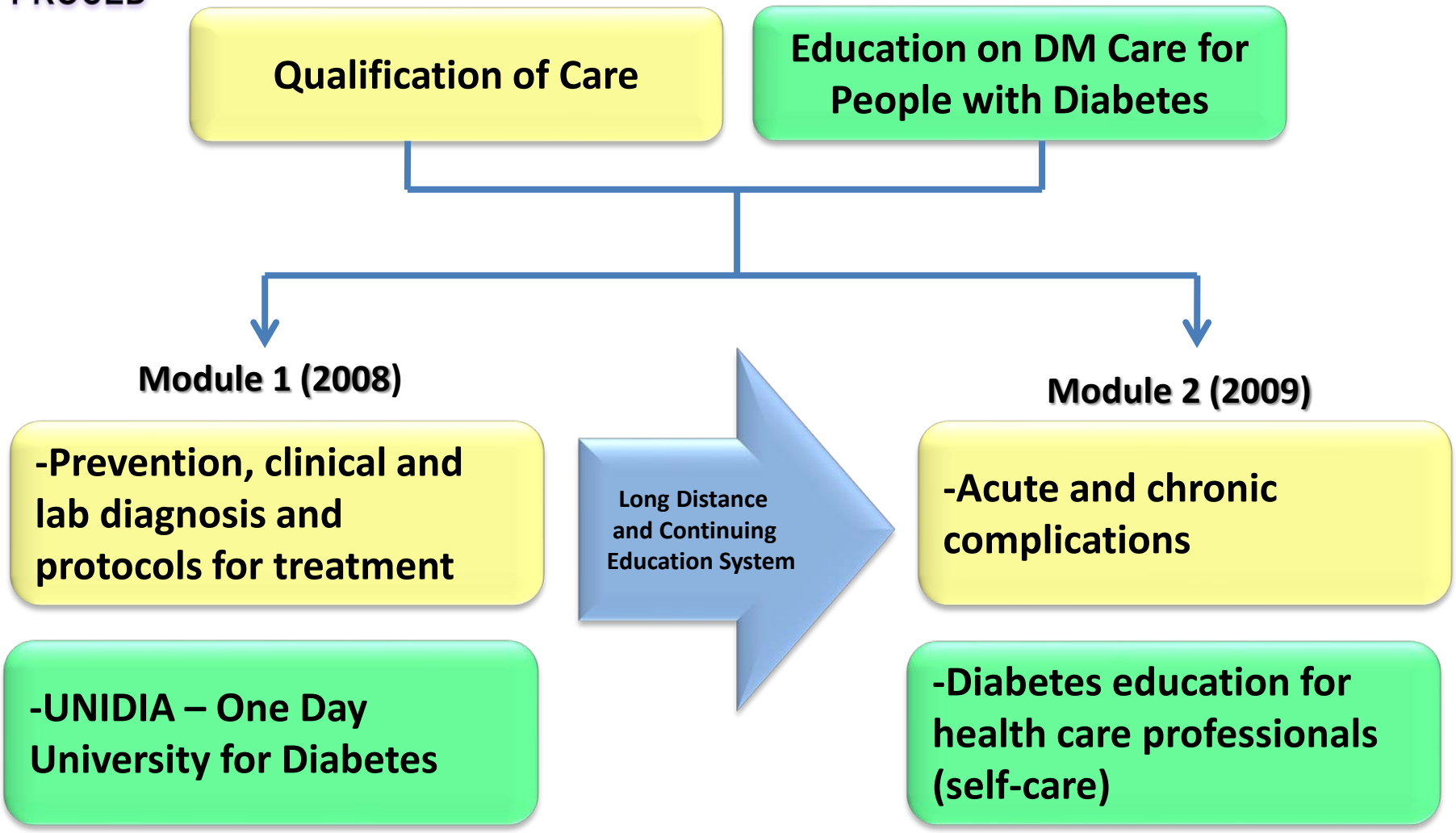


Mozambique, Guine-Bissau

Alagoas, Acre, Mato Grosso, Tocantins, Paraíba, Bahia (Lauro de Freitas, Vitória da Conquista, Jacobina, Alagoinhas, Salvador)

PROCED

Diabetes Capacity Building and Community Awareness Project for Brazilian States and Portuguese Speaking Countries



Mouth care School

Exercise School

UNIDIA

Universidade do Diabetes

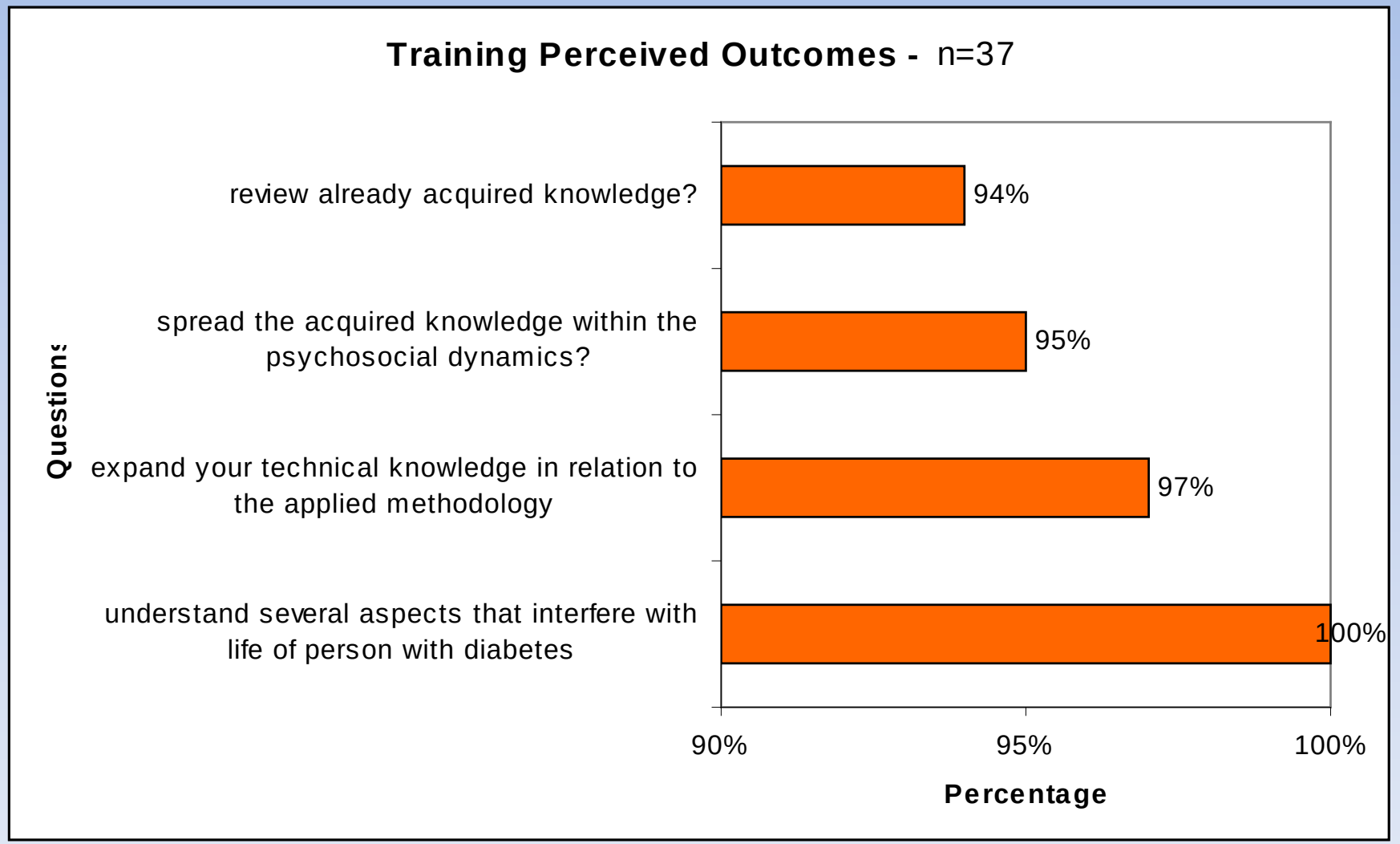
Diet School

Graduated Team 2009

PROCED Module 2

DESG – Diabetes Education Study Group

Training Results



Capacity Building and Project to Improve Diabetes Care

PROCED

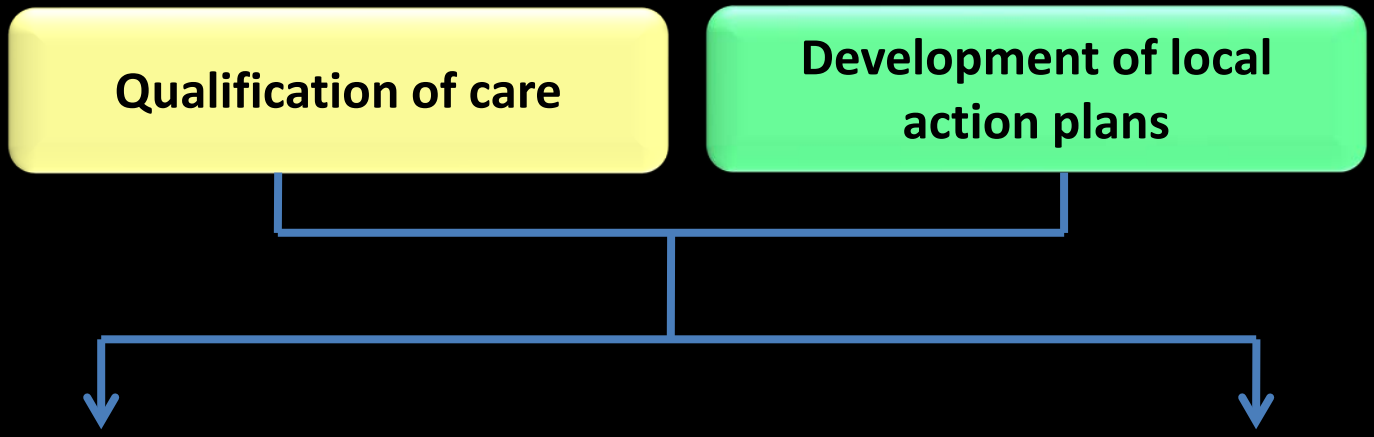
The Project – Module 3 and 4

- **Partners (Financial Resources)**
  - **World Diabetes Foundation (WDF 09 – 480)**
  - **PAHO**
  - **SESAB/Bahia Government**

July 2013 to December 2015

Capacity Building and Project to Improve Diabetes Care

PROCED



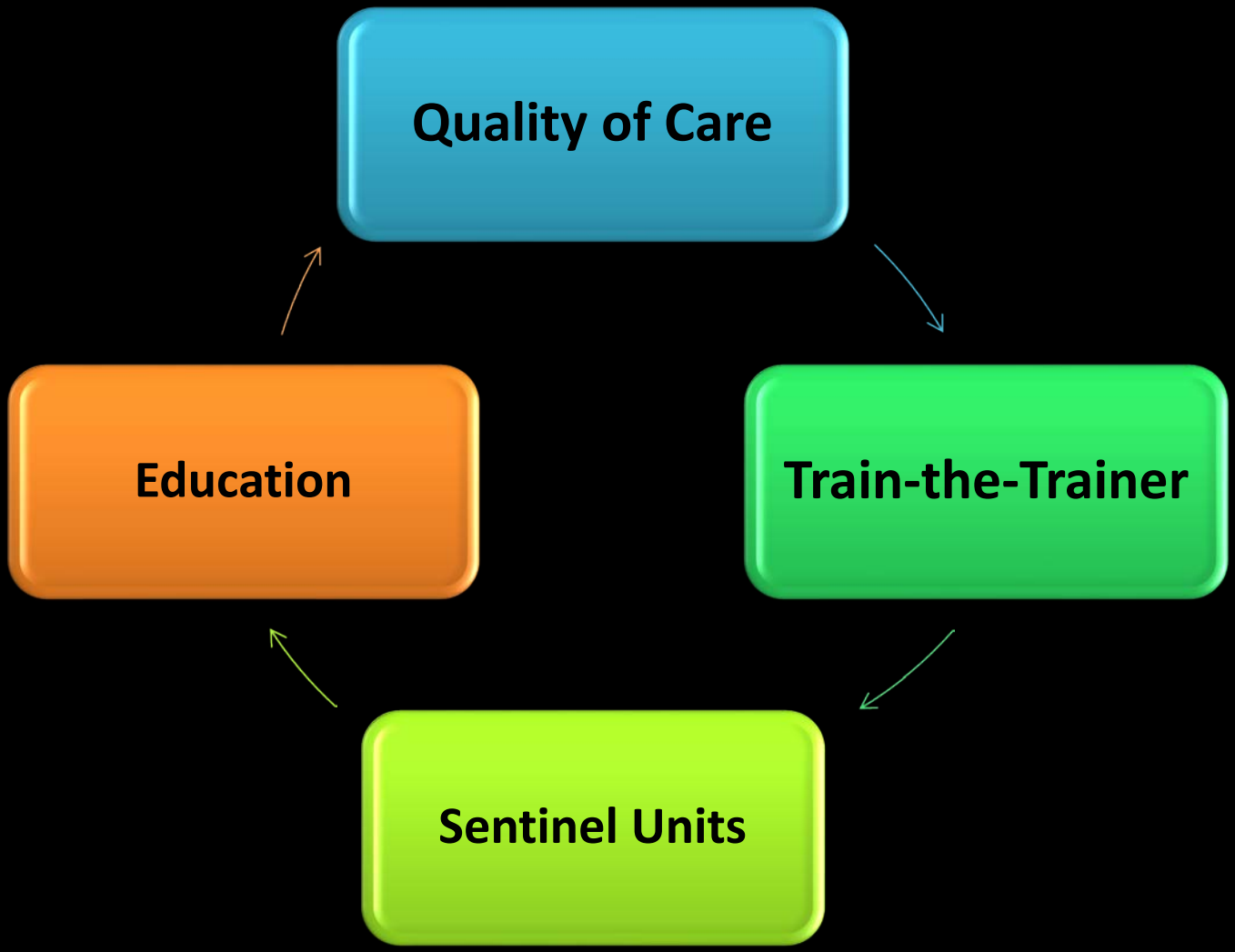
-Primary prevention, macro- and microvascular complications focused on diabetes foot care

-Election of Setinel Units in each site
-Technical visits (monitoring)
-Educational activities in each site (UNIDIA)

PROCED

Modules 3 and 4

Specific Objectives



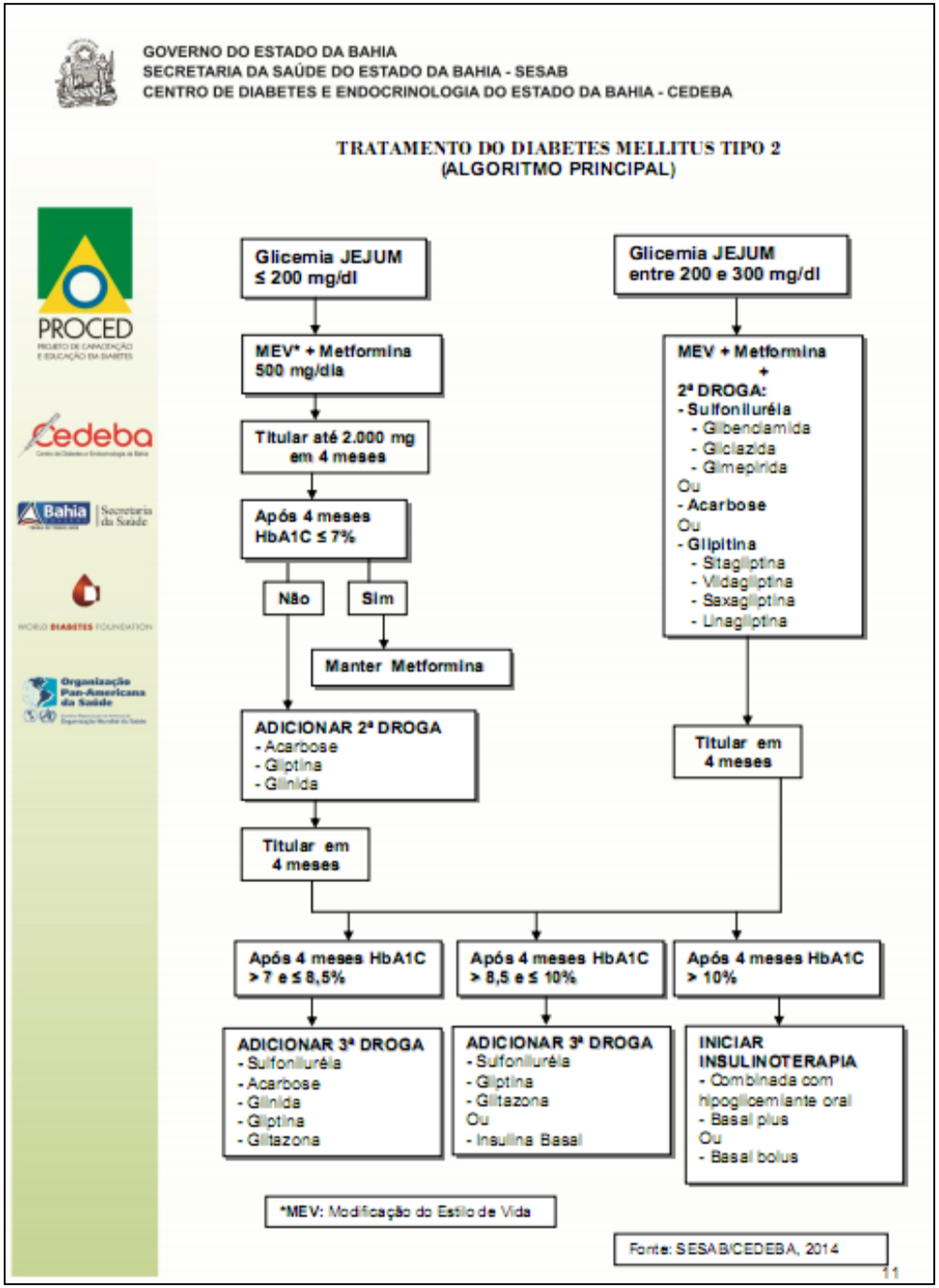
Specific Objectives

PROCED

Quality of care

- Improvement of quality of care in the Primary Care network through capacity building services (trainings and availability of clinical protocols)

Clinical Protocols for Diabetes Care



Specific Objectives

PROCED

Train-the-Trainer Program

- Qualification of graduated health professionals as TOTs (the trained health care professionals are expected to train more people in their own, local area) with focus on primary prevention and especially on diabetes foot care
- Dissemination of Clinical Protocols and educational materials (newsletters)

Specific Objectives

PROCED

Sentinel Units

- **Identification of a basic health unit for implementation of PROCED (Physisician, nurse and nurse-aid)**
- **Continuously monitoring of the quality of care in the 11 Sentinel Units through the following goals:**

  - Rate of Diabetes in the Sentinel Units

  (Evaluation the increase of diabetes diagnosis)

  - Proportion of patients with HbA1C evaluated

  (Before and after intervention)

  - Proportion of patients with diabetes and loss of foot protective sensation

  (Before and after the training)

- **Monitoring action plans for Sentinel Units**

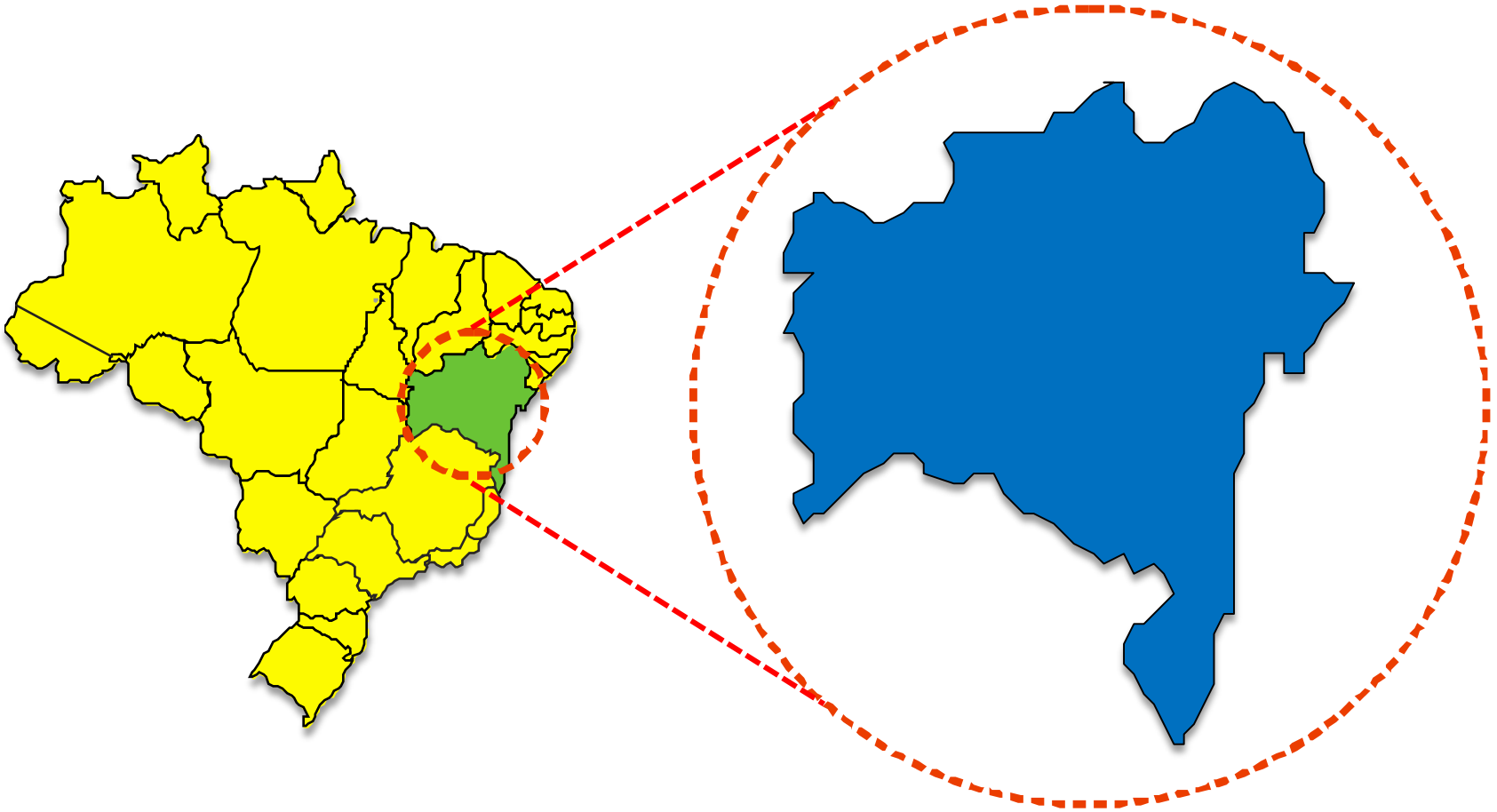
Specific Objetives

PROCED

Education

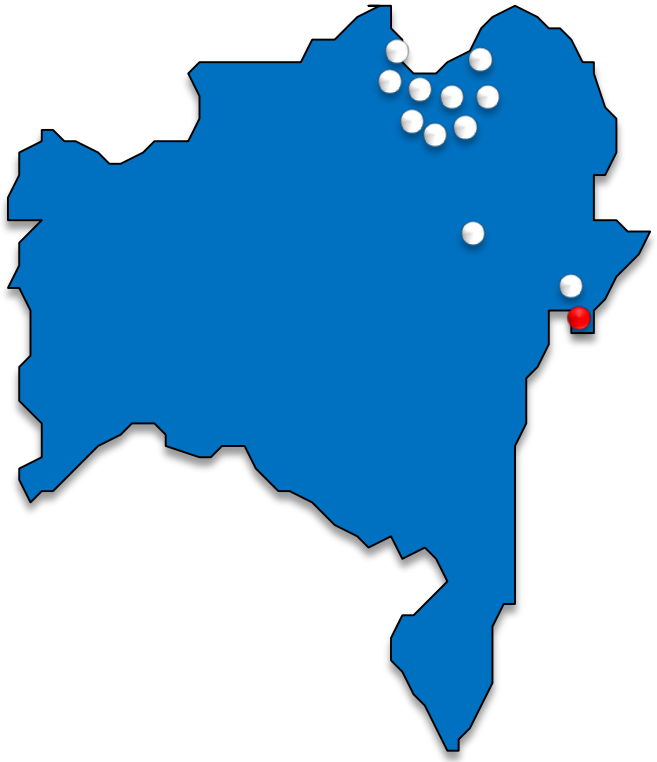
- **Strengthening of health education, health promotion, prevention, care components for the development of autonomy in self- care (empowerment).**
- **UNIDIA – One Day University for Diabetes Care in each site.**

PROCED - Results
Modules 3 and 4



PROCED - Results
Modules 3 and 4

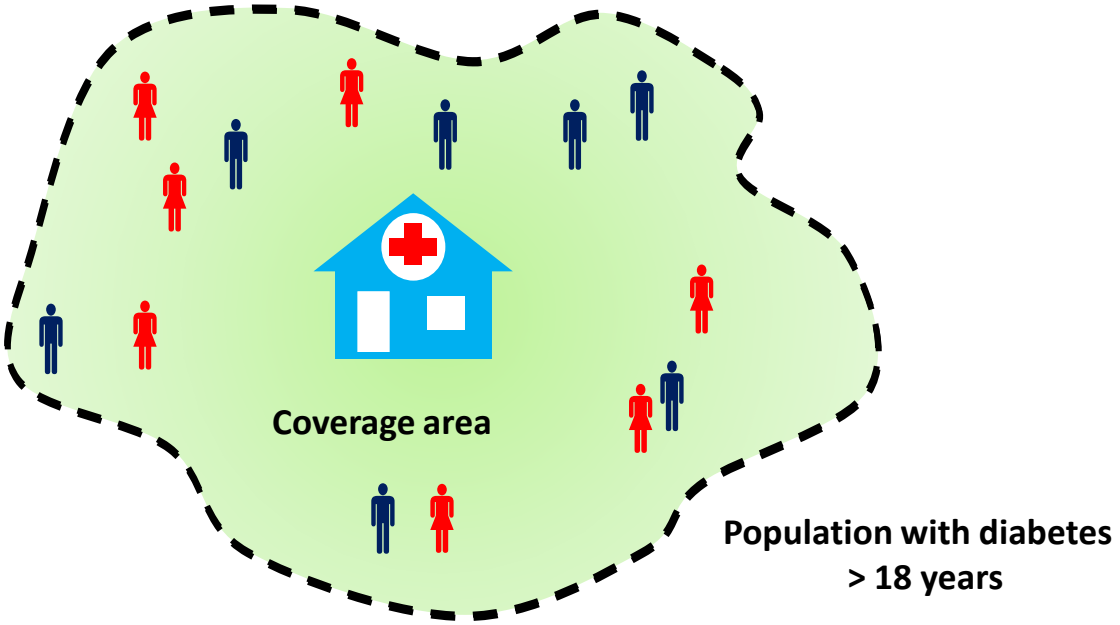
Municipality	Distance*	Trip **
Abaré	551 km	7h 49 min
Chorrochó	505 km	7h 12 min
Glória	475 Km	5h 36 min
Jeremoabo	386 Km	5h 14 min
Macururé	496 Km	7h 27 min
Paulo Afonso	468 Km	6h 29 min
Pedro Alexandre	434 km	5h 53 min
Rodelas	585 km	7h 58 min
Santa Brígida	437 km	5h 54 min
Cícero Dantas	319 Km	4h 24 min
Dias D'Ávila	55,9 km	53 min



* Distance from the Capital; ** Time for the trip from Salvador)
Fonte : Google Maps

PROCED - Results Modules 3 and 4

- Sentinel Units
  - 11 Sentinel units chosen by each of the 11 municipalities (228.266 people)



PROCED - Results Modules 3 and 4

DEMOGRAPHIC VARIABLES AND BASELINE DATA OF 844 PATIENTS REGISTERED FOR DIABETES CARE IN THE SENTINEL UNITS (SU)

		TOTAL (N)
Female % (N)	**67,8 (572)***	**844**
AGE (years)	**61,1 (± 13,7)†**	**835**
DM DURATION (years)	**6,9 (±5,6)†**	**703**
DM DIAGNOSIS % (N)	**44,5 (373)***	**838**
HAS EVER HAD HbA1C DONE? % (N)	**10,2 (85)***	**835**
TIME TO HAVE THE FIRST HbA1C done (years)	4,19 (± 3,1)†	**80**
PREVIOUS FOOT SCREENING % (N)	12,2 (100)*	**820**

**percentage % (N); †mean (standard deviation), HbA1C=Glycated Haemoglobin*

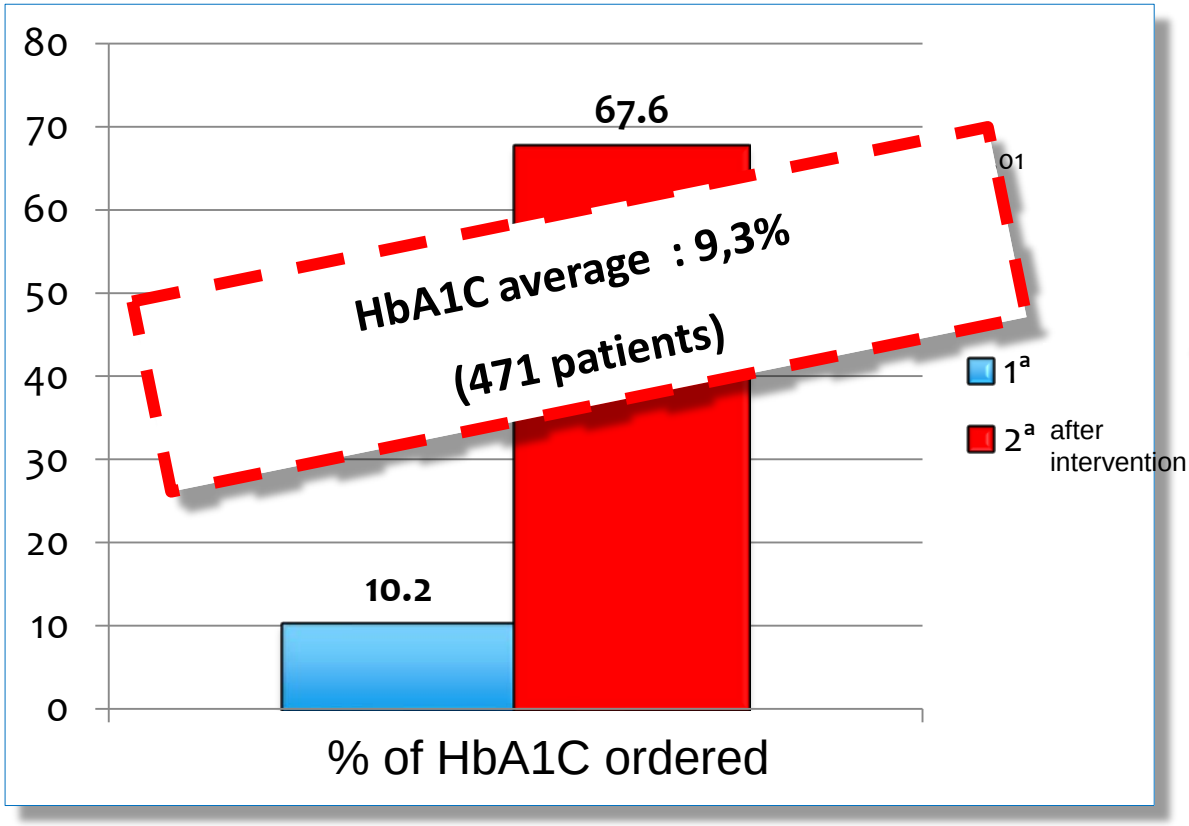
PROCED- RESULTS MODULES 3 AND 4

BASELINE: 844 patients **AFTER INTERVENTION**: 1012 patients (20,9%)

Municipality	Percentage of Patients of total sample (%)
Abaré	5
Chorrochó	9,1
Cícero Dantas	4,7
Dias D'Ávila	10,3
Glória	18,9
Jeremoabo	9,3
Macururé	1,2
Paulo Afonso	19,1
Pedro Alexandre	5,1
Rodelas	10,4
Santa Brígida	6,9

PROCED- RESULTS MODULES 3 AND 4

Percentage of Patients With HbA1C Ordered BEFORE And AFTER Intervention



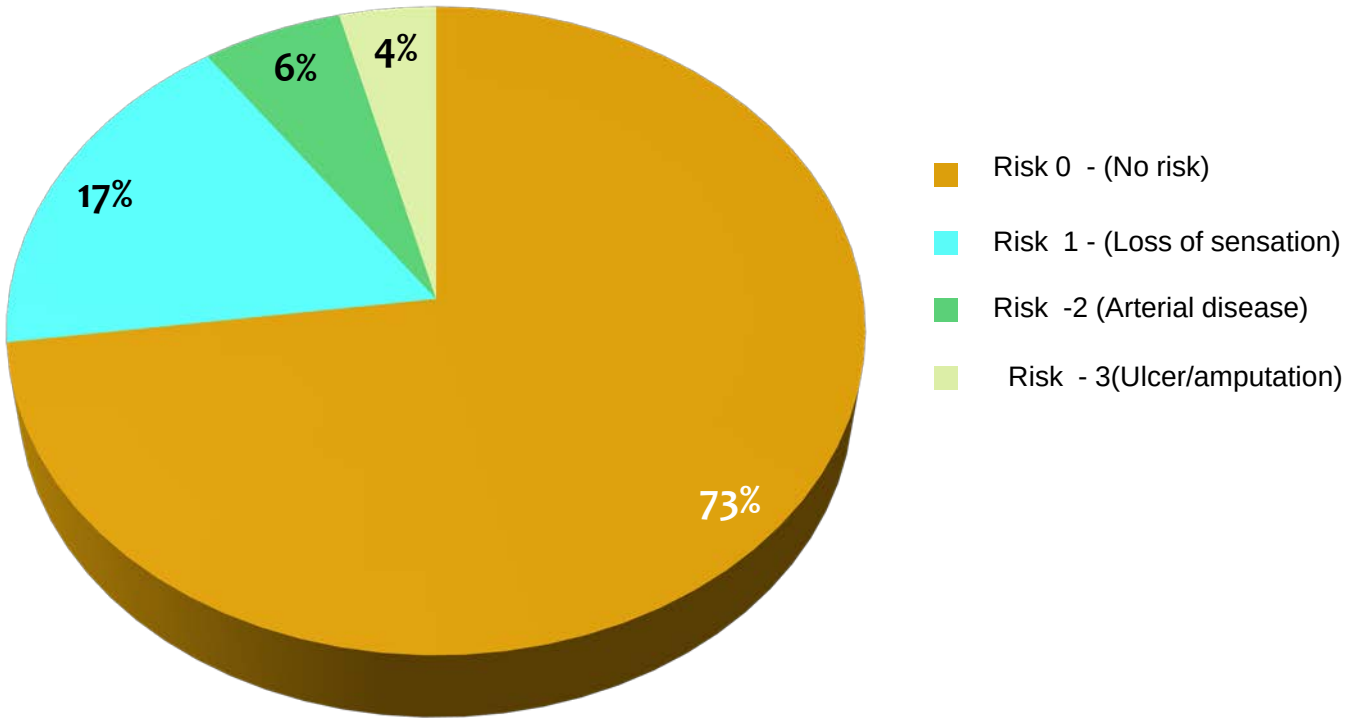
6,6 X

Increase of HbA1C Orders

PROCED- RESULTS MODULES 3 AND 4

RISK STRATIFICATION FOR DIABETIC FOOT

Assessment of feet by Risk Category:



* International Consensus on Diabetic Foot Care, 1999

PROCED- RESULTS MODULES 3AND 4

PROCED
PROJETO DE CAPACITAÇÃO E EDUCAÇÃO EM DIABETES

Conclusions

- ↑20%in detection of new cases of diabetes in the Sentinel Units

- ↑6.6 X in orders for HbA1C (and results)

- ↑5.7 X in diabetes foot screening (risk 3* for ulcer and amputation in 4% of all evaluated patients)

* International Consensus on Diabetic Foot Care, 1999

LESSONS LEARNED

- Training local health care teams for diabetes care and providing free diabetes medications for primary care patients is important, but not the main factor in improving metabolic outcomes.
- Training along with implementation of clinical protocols, with monitoring may be a key factor in achieving improvement in metabolic control for diabetes at primary care.
- Qualification of care through continuing training of health professionals is important: LONG DISTANCE AND CONTINUING EDUCATIONAL SYSTEM.
- Diabetes education (strengthening of self-care) and empowerment, are extremely important to improve diabetes control.

Cedeba

1994 1998 2001 2005 2008 2015 2017 2020

Cedeba founded

PROJAD - BA

30 Health Regions of Bahia
73% staff trained

PRODIBA

Lauro de Freitas – BA
Conceição do Coité - BA

PROCED

Module 1 & 2

Module 3 & 4

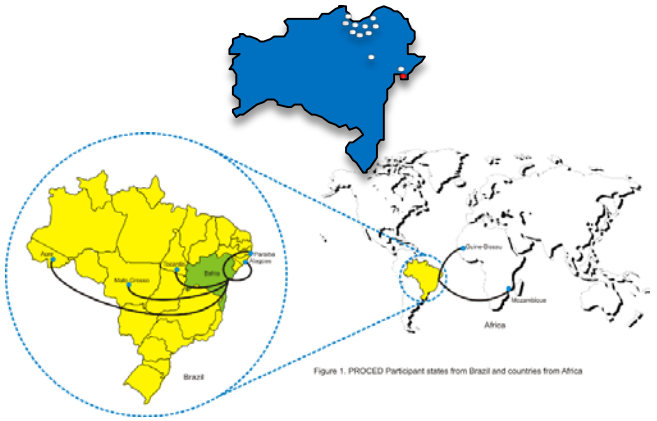
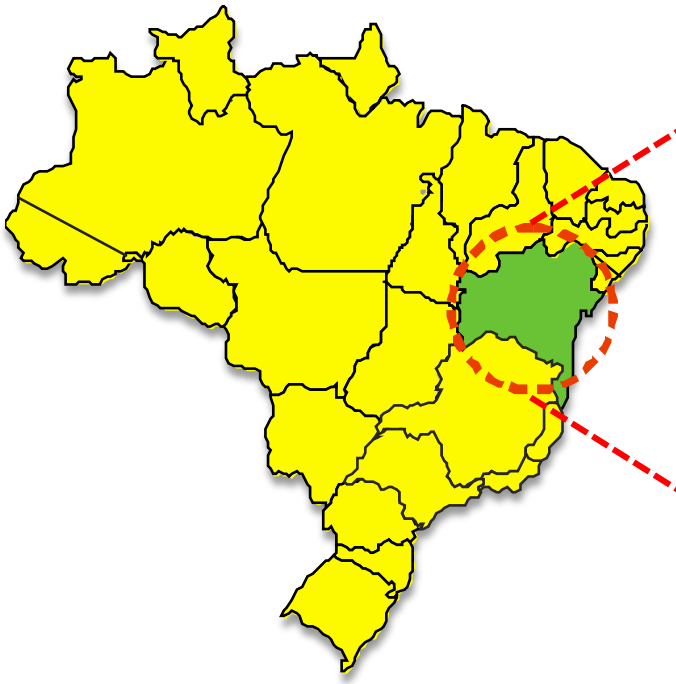


Figure 1. PROCED Participant states from Brazil and countries from Africa

E-PROCED

On going PROJECT:E-PROCED 2017/2020



15 municipalities(including Salvador)

90 sentinel units

Diabetes retinopathy and foot care

7050 patients registered for regular diabetes care

Acknowledgements

GENERAL COORDINATION
Dra. Reine Marie Chaves-Fonseca

Scientific Staff

- Odelisa Matos
- Alexis Guedes
- Maria das Graças Velanes Faria
- Júlia Coutinho
- Iraci Lúcia Costa
- Tessa Mattos
- Cicero Fidelis
- Maria Palmira Romero
- Lorena Guedes

Administrative Staff

- Cristina Rodrigues
- Sandra Mara Liuna

Pan American Health Organization
World Health Organization Americas
WORLD DIABETES FOUNDATION
GOVERNO DO ESTADO
SECRETARIA DA SAÚDE

If Diabetes is increasing around the world...

...implementing education may be part of the solution.


Thank you for your attention.