

Online Marketplace of good practices in Primary Care

Type 2 Diabetes Mellitus care route

Gandia Health Department

01-04 June 2021



Ruta asistencial de la
DIABETES mellitus tipo 2

Agenda

INTRODUCTION:

- ✓ Structure of our Health System
- ✓ General principles of “routes of care” of chronic conditions
- ✓ Reasons to start with diabetes

METHODS

- ✓ Description of the diabetes care route
- ✓ Baseline analysis
- ✓ Specific actions

RESULTS

CONCLUSIONS (keys for improvement)

Introduction

Based on:

- Universality
- Free access
- Equity
- Fairness of financing

Spain's national health system “Sistema Nacional de Salud (SNS)”

Structured into 17 regional departments of health with primary jurisdiction over:

- Strategic and operational planning at the regional level
- Resource allocation
- Purchasing and provision

Coordinated by the SNS Interterritorial Council, which comprises:

- the national and
- the 17 regional ministers of health.

Co-payments by patients (based on income level and employment status):

- Pharmaceuticals
- Medical devices outside hospitals.



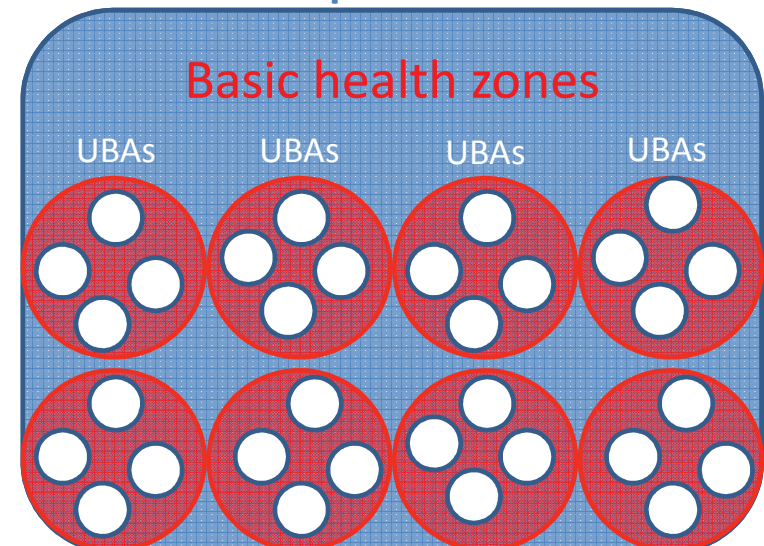
Introduction

Structure of our regional health system

- The “Comunidad Valenciana” is divided into **24 health departments**.
- **Each department** has at least a secondary care hospital and is **divided into ‘basic health zones’ – ZBS** in Spanish
- **Each ZBS is served by General Practitioners (GPs) and Nurses**, whose number depend on the size of the area and of its population
- **A GP and a Nurse together constitute a ‘basic assistance unit’ – UBA** in Spanish
- Each *UBA* provides acute and chronic care to the whole population, and also provide specific preventive and health promotion services targeting children, women and older people. GPs act as gatekeepers to more specialised care and play a crucial role in continuity of care between primary and secondary levels.
- Secondary care takes the form of outpatient specialised care, inpatient care, day care or emergency care.



Department



Introduction

The department of Gandia has a secondary care hospital and is divided into 8 “basic health zones” - ZBS

	POPULATION	GPs	NURSES
GANDIA HEALTH DEPARTMENT	178.722	102	77
BELLREGUARD	26.461	15	6
CASTELLÓN DE RUGAT	5.441	5	5
COREA	29.377	15	10
BENIOPA	38.832	21	14
GRAU	20.922	12	9
OLIVA	25.479	14	13
VILLALONGA	10.155	7	6
TAVERNES DE LA VALLDIGNA	22.043	13	12

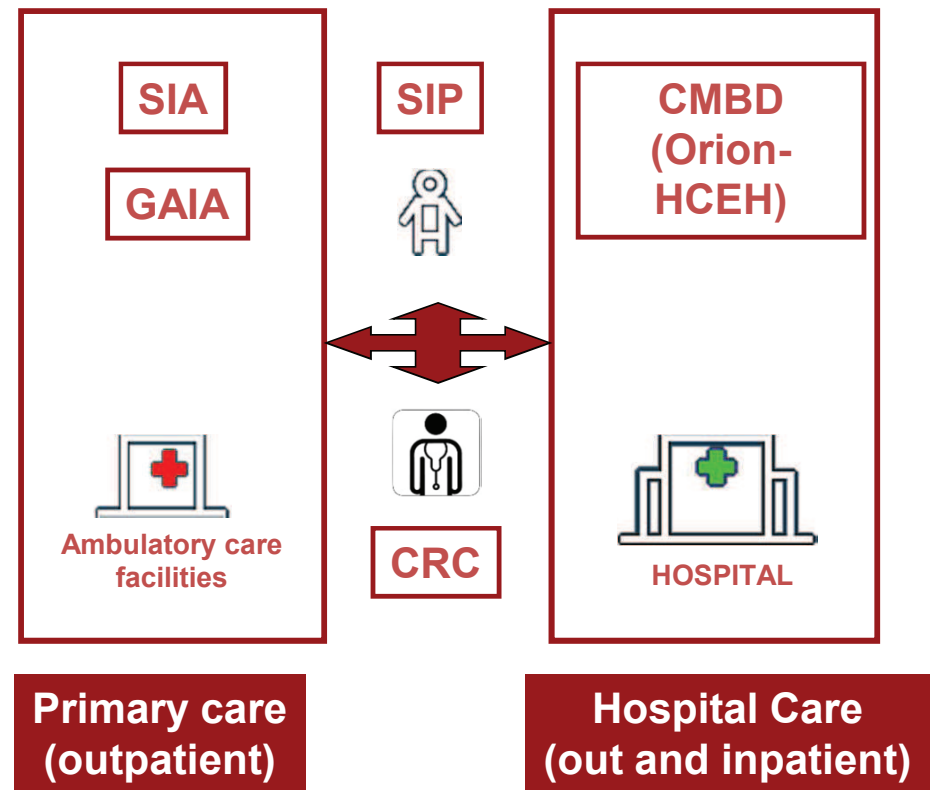


Introduction

Regional health system: “Conselleria de Sanitat Universal i Salut Pública”
database

- Each user is identified by a unique number – SIP – linked to her/his Electronic Health Record and administrative information (accessible by health care workers from every institutional access)
- This allows to have a complex regional database, which integrates the medical and administrative information
- This information can be extracted by a dedicated software: “Alumbra”. It includes:
 - Administrative and demographic registry.
 - Patient’s health records
 - Pharmaceutical and instrumental costs.

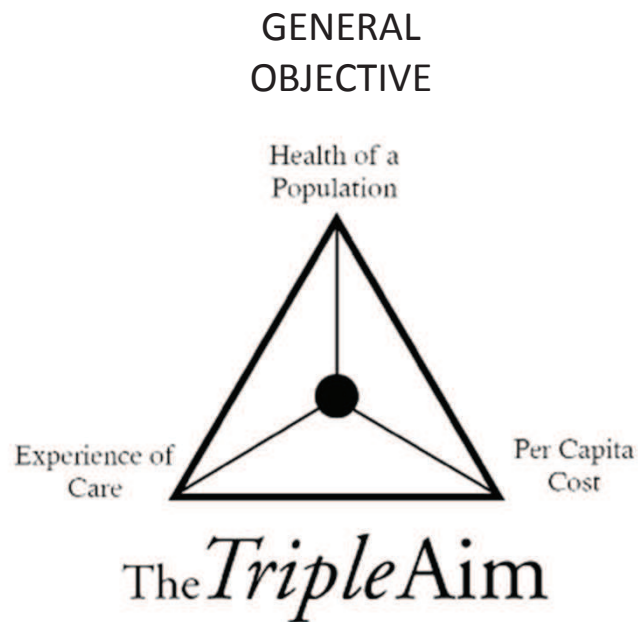
ALUMBRA



Introduction

Chronic conditions “Care Routes”

In 2016 the “Conselleria de Sanitat Universal i Salut Pública” promoted the improvement of the care of chronic conditions



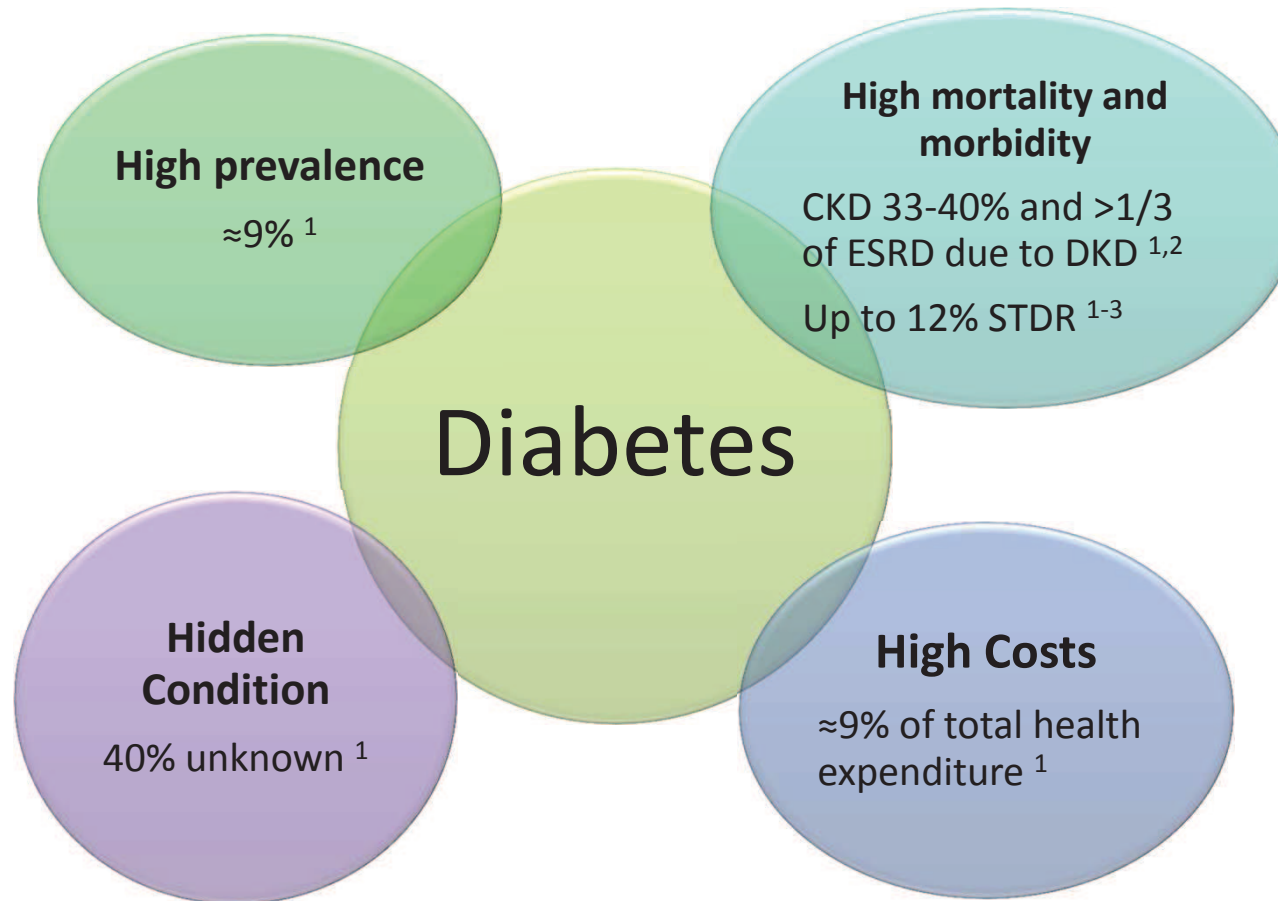
Introduction

Chronic conditions “Care Routes”: Principles



Introduction

Why a *Care Route* for diabetes?

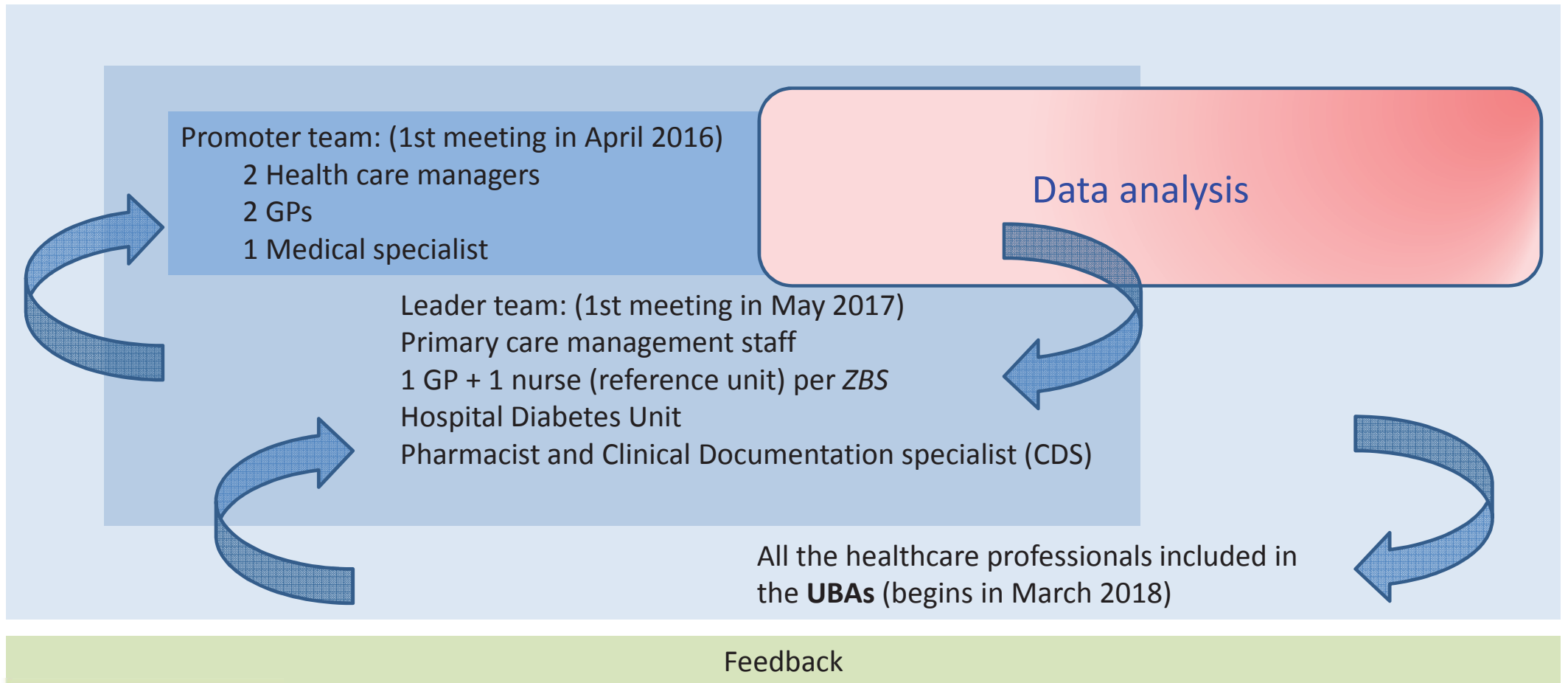


1. Diabetes Atlas, IDF, 2019
2. Adapted from: CDC National Diabetes Fact (accessed 22 Feb 2016); Sheet www.cdc.gov/diabetes/pubs/statsreport14/national-diabetes-report-web.pdf
3. Retinopatía diabética y ceguera en España. Epidemiología y prevención Endocrinología y Nutrición, 55:10, 459-475, Diciembre 2008

WHO

Methods

Diabetes Care Route Structure



Promoter team

General actions

- Ensure availability of material and human resources
- Define the leaders
- Supervise the route

Specific actions

- Specific training on the “route” methodology (20h)
- 4 meetings in 2 months: list/organization of human and material resources
- Elaborate a work scheme



WHAT

Methods

Leader team – main objectives

Baseline Analysis

- Diabetes situation
- **Facilitating factors:**
 - commitment of the management staff and health care professionals
 - Reference physician and nurse in each ZBS
 - E-database
- **Obstacles**
 - Healthcare practice variability
 - Need for training
 - Scarce Physician-Nurse cooperation
 - Personnel turnover

Actions Prioritization

- Standardization of diagnosis/codification
- Implementation of automatic screening
- Healthcare professionals specific training
- Criteria for referral to specialist care
- Pathway for ophthalmologic screening and care

Task Assignment

- Nurse: planning of activities (education, prevention, etc)
- Physician: protocol review
- Nurse and physician: shared decision on task division
- Nurse and physician: content of training material
- Physicians, Pharmacists, CDS: *Route* continuous evaluation

Protocol Generation

- Dynamic document



WHAT

Methods

UBA

General actions

- Implementation of shared protocols into daily practice



Specific actions

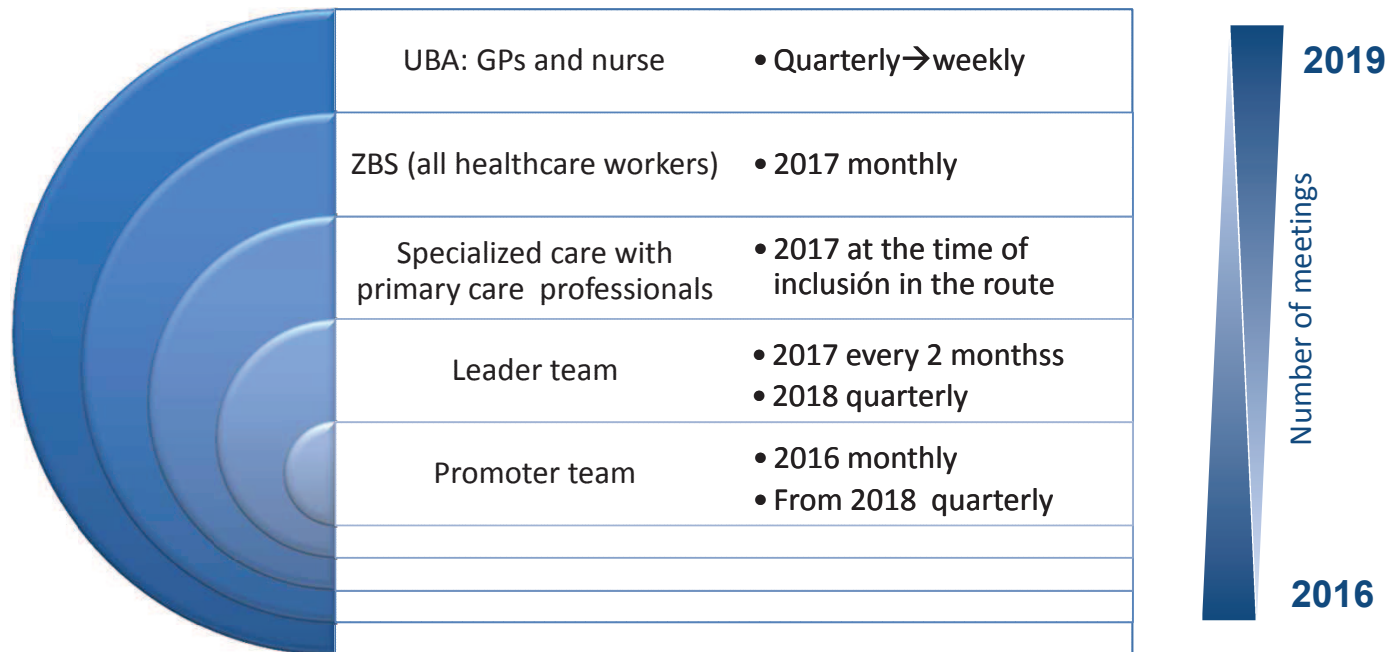
- Scheduled *UBA* meetings for all the primary care teams: specific DM agenda, standardized patients follow-up, shared objectives
- Proactive search for uncontrolled (elevated HbA1c) or non-compliant (no visits in the last 12m) patients
- Active search of patients who do not achieve the minimum of one blood analysis per year
- Diabetic Foot screening and care, including tests for peripheral neuropathy and artery disease (monofilament, ABI, ..)
- Standardized diabetic education
- Inclusion of the information into the health records



WHAT

Methods

Meetings timeline and frequency



Communication:

Starting from 2017, every step of the process and each **consensus** achieved within the leader group and among the leader group and the *UBAs* (Nurse and Family Physician) were communicated in **routine meetings and committees**.

Each ZBS (basic health zone) received detailed information by a team composed by the coordinator of the ZBS and two components from the leader team/management staff (8 sessions between April and June 2018, one per ZBS)

Training:

- I. **General**, Department level: Type 2 Diabetes Update, plenary session (June 2017).
- II. **Specific**, ZBS level. Given by professionals of the department, periodically with frequency variable upon needs (new personnel). At least one session per topic:
 - Use of *Alumbra*: clinical record entries, data exploitation, relevant variables/indicators (Physician, Nurse)
 - Insulinization (Physician, Nurse)
 - Non-insulin antidiabetic drugs (Physician)
 - Diet and exercise prescription (Physician, Nurse)
 - Physical examination, Diabetic foot (Physician, Nurse)



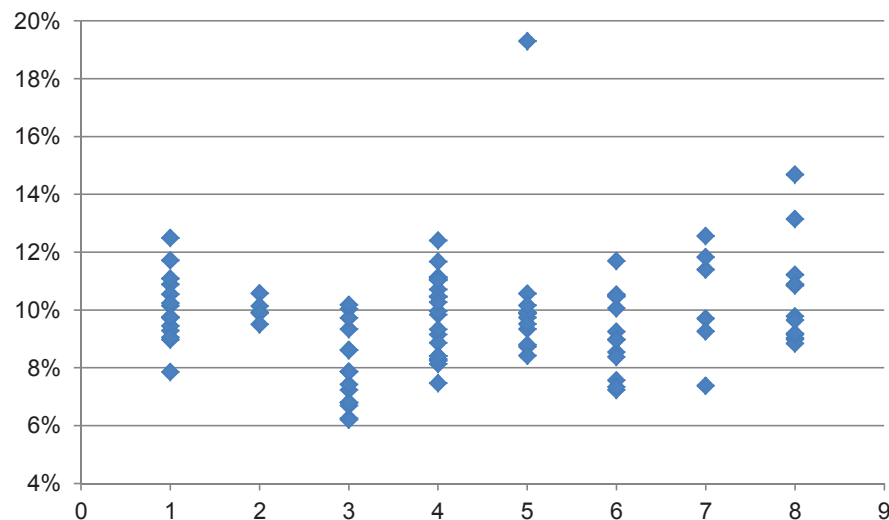
Baseline analysis 2016

WHY TYPE2 DIABETES?

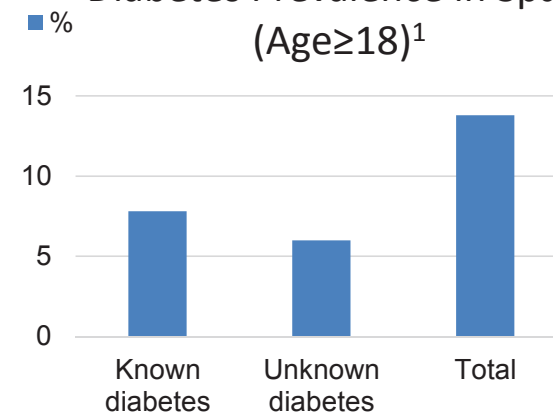
- **Prevalence lower than expected**
- Heterogeneity of diagnosis/codification
- Heterogeneity of treatment and control
- Economic impact

Diabetes prevalence	May 2016 Gandia	Diabetes Atlas IDF 2015 Spain ²
GANDIA HEALTH DEPARTMENT	7,79% (6,25 – 19,30)	10,4%
1 BELLREGUARD	8,42% (7,86 – 12,50)	
2 CASTELLO DE RUGAT	8,38% (9,51 – 10,59)	
3 GANDIA COREA	6,21% (6,25 – 10,04)	
4 GANDIA 1(BENIOPA)	7,93% (7,48 – 12,40)	
5 GRAU DE GANDIA	7,89% (8,73 – 19,30)	
6 OLIVA	7,51% (7,25 – 11,70)	
7 VILALLONGA/VILLALONGA	8,70% (7,39 – 12,56)	
8 TAVERNES DE VALLDIGNA	8,51% (9,03 – 14,69)	

Prevalence of DM in each ZBS



Diabetes Prevalence in Spain
(Age≥18)¹



Baseline analysis 2016

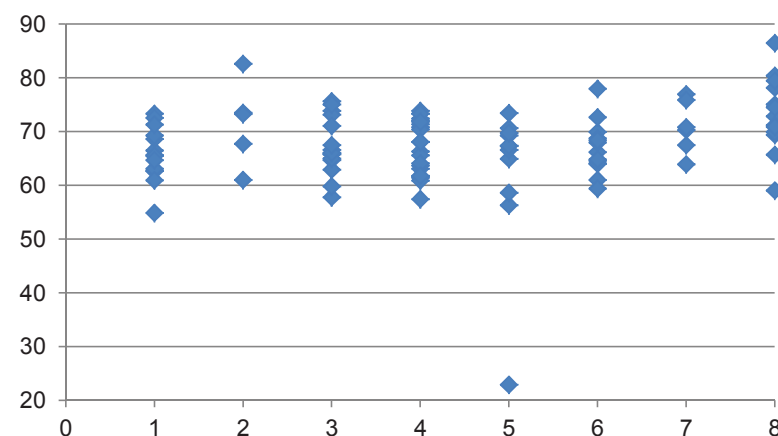
Diabetes screening:
% of subjects >45y whose fasting blood glucose was measured in the
past 12 months

ZBS

2016 may	Screening for diabetes
GANDIA HEALTH DEPARTMENT	67,78% (22,96 – 86,57)
BELLREGUARD	65,73% (54,92 – 77,32)
CASTELLO DE RUGAT	70,86% (61,02 – 82,64)
GANDIA COREA	67,58% (57,80 – 73,87)
GANDIA 1(BENIOPA)	67,23% (57,44 – 71,39)
GRAU DE GANDIA	64,92% (22,96 – 73,47)
OLIVA	66,63% (61,00 – 77,99)
VILALLONGA/VILLALONGA	70,51% (63,97 – 77,00)
TAVERNES DE VALLDIGNA	72,90% (59,08 – 86,57)

- **Prevalence lower than expected**
- Heterogeneity of diagnosis/codification
- Heterogeneity of treatment and control
- Economic impact

Diabetes screening per ZBS (n) and
physician (diamonds)



WHY TYPE2 DIABETES?

Baseline analysis 2016

Diabetic complications.

Expected prevalence:

- Nephropaty 35¹%
- Retinopathy 30²%
- Peripheral Neuropathy 25-40^{3,4}% (3-5% if based only on symptoms)
- Peripheral Artery Disease (PAD) 20-30⁵% (Ankle/brachial index – ABI)

- Prevalence lower than expected
- **Heterogeneity of diagnosis/codification**
- Heterogeneity of treatment and control
- Economic impact

Diabetic complications (January 2017)	E. Health Record – regional data ⁶	E. Health Record – Our Department
Nephropathy	2,5%	3,73%
Retinopathy	5,67%	7,56%
Neuropathy	2%	2,73%
PAD	2,6%	4,14%

¹Gómez-Huelgas R., Nefrologia 2014;34(1):34-45

²Vila LL., Endocrinol Nutr. 2008;55(10):459-75

³Cabezas Cerrato, Diabetologia. 1998 Nov;41(11):1263-9

⁴Miralles-García JM, Endocrinología Nutrición. 2010 Nov;57(9):414-20.

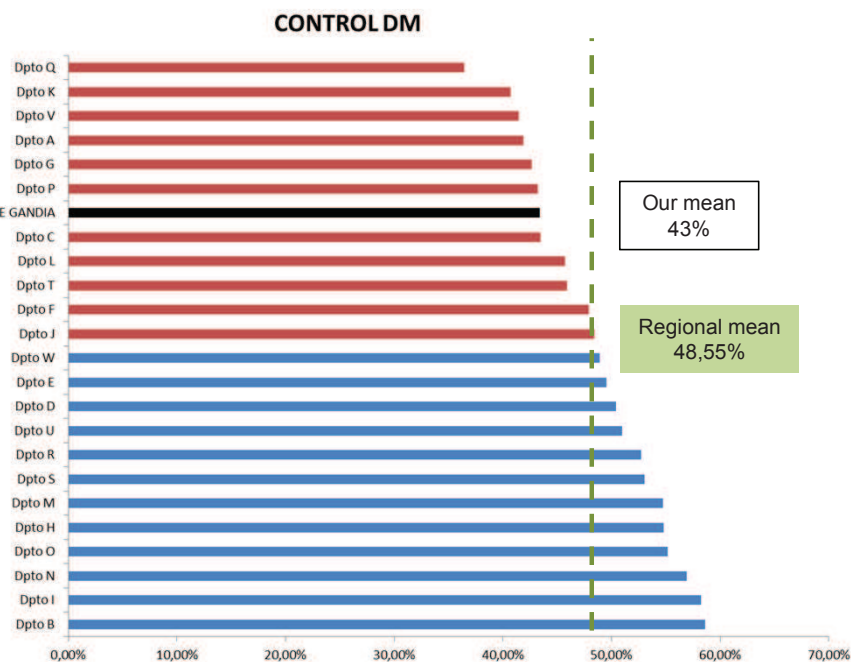
⁵Marso S.P. JACC. 2006, 47(5): 921-929

⁶Plan Estrategia de Diabetes de CV 2017-2021

Baseline analysis 2016

Acceptable control defined as:

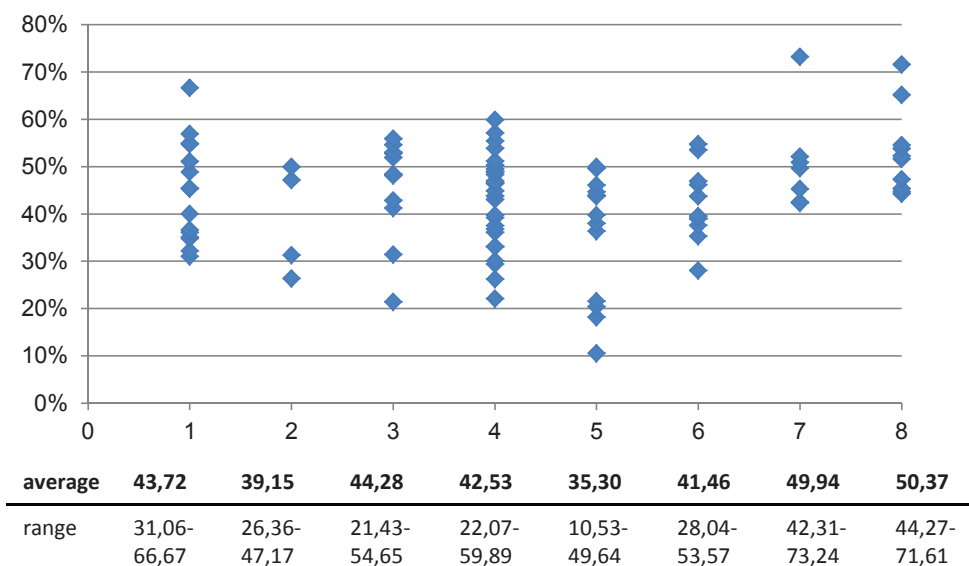
- 65y or older: % of patients with yearly mean HbA1c<8%
- Younger than 65y: % of patients with yearly mean HbA1c<7%



WHY TYPE2 DIABETES?

- Prevalence lower than expected
- Heterogeneity of diagnosis/codification
- **Heterogeneity of treatment and control**
- Economic impact

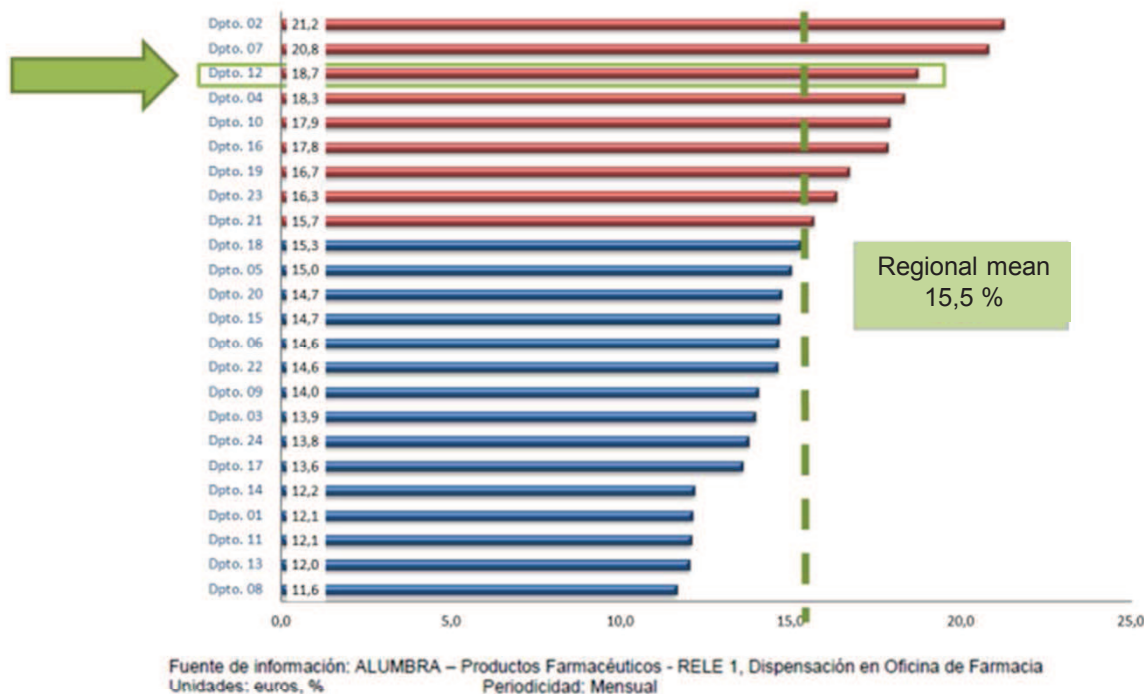
% of patients in target per ZBS (n) and physician (diamonds)



WHY TYPE2 DIABETES?

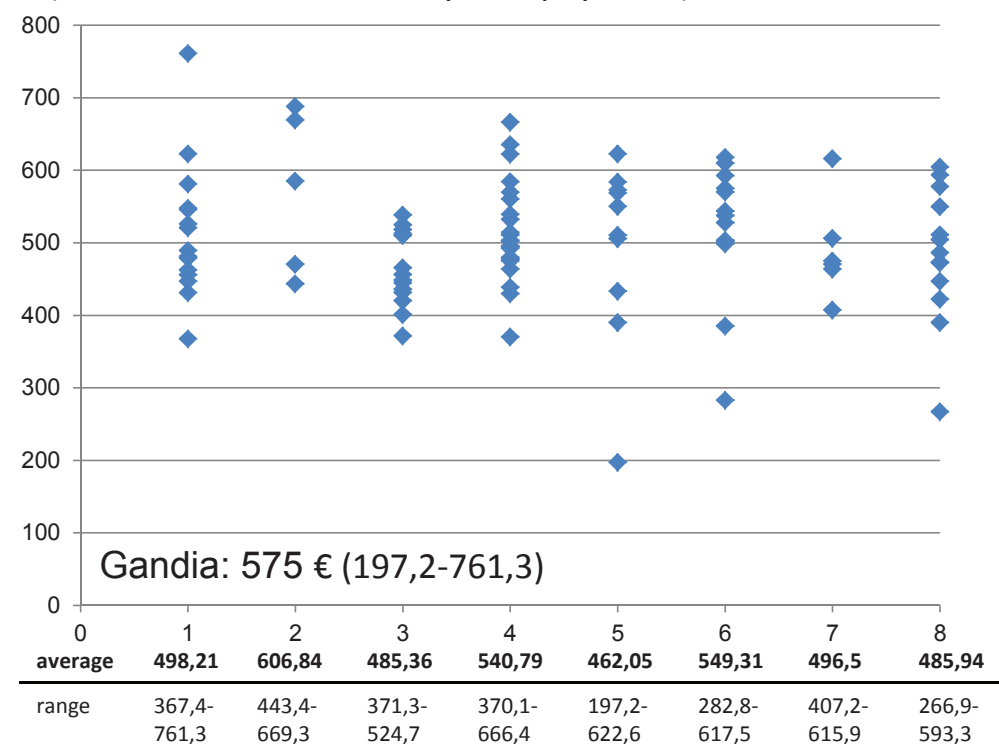
Baseline analysis 2016

Interannual increase in expenditure for antidiabetic drugs (excluding insulin) in 2016 in Gandia (18,7%) is above Regional Mean (15,5%)



- Prevalence lower than expected
- Heterogeneity of diagnosis/codification
- Heterogeneity of treatment and control
- **Economic impact**

Antidiabetic drugs expenditure (€) per patient in each ZBS (each diamond is a Primary care physician) in 2016



Ruta asistencial de la
DIABETES mellitus tipo 2

Objectives

In Type 2 diabetes,

1. To improve:

- Screening (reduction of non-treated patients)
- Codification (correct description of DM complications would improve care and cost planning)
- Control (starting from intermediate endpoint – HbA1c. A good codification, in the future should allow to measure the impact of the route on the hard endpoints)
- Cost-efficiency
- Communication and coordination between primary care, specialist care and health care managers
- Database exploitation through «Alumbra»

2. To reduce

- Health care practice variability

Methods

Leader team – Main actions

1. Standardize clinical records
2. Standardize type 2 diabetes management, achieving a consensus with the UBAs about relevant clinical issues:
 - Number of visits per patient/year
 - Procedures in each visit (anthropometric measures, blood and urine analysis, foot examination,)
 - Pharmacological and non pharmacological treatment
3. Continuous and standardized training of health care providers
4. Coordinate Primary Care, Specialist Care and Laboratory
5. Control and feedback to all of the health care workers

HOW

Methods

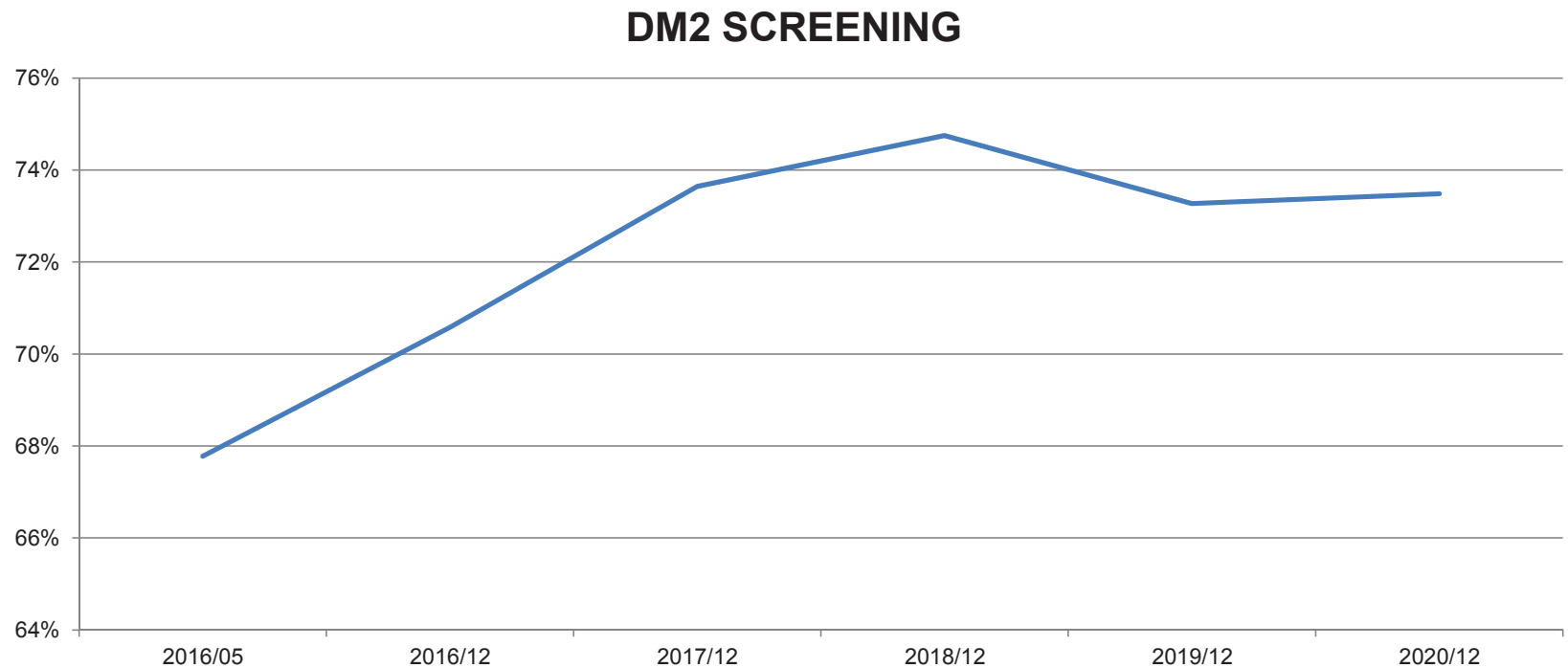
Implementation: the most important interventions to achieve our objectives

ISSUE	CODIFICATION AND RECORD	SCREENING	PATIENTS FOLLOW-UP AND CONTROL
OBJECTIVE	Correct DM2 identification and recording	EARLY AND PROACTIVE DETECTION OF PATIENTS WITH DIABETES.	SHARED PROTOCOLS and REGISTRY (among and within the UBA)
WORKING GROUP	Primary care physicians and nurses Primary care management staff Ambulatory Information System coordinator	Primary care physicians and nurses Laboratory Primary care management staff Primary care pharmacist	Primary care physicians and nurses Primary care management staff Documentary doctor
INTERVENTION	TRAINING of GPs on the correct use of ICD codes for DM2 Distribution of a sheet with the appropriate ICD codes	Laboratory: <ul style="list-style-type: none"> Automatic A1C test in every analysis with fasting blood glucose ≥ 126 mg/dl (if not performed in the last year) Communication (email) to PC pharmacist, who informs the GP responsible for the patient (electronic health record-based notification system) 	Standardized checklist (to ensure completeness of the registered information) The agenda includes time specifically dedicated to the shared GP-Nurse actions *Feedback with data collected from ALUMBRA Supervision by the Primary care management staff (quarterly)
RESOURCES	Primary care physicians and nurses Primary care management staff	Primary care physicians and nurses Laboratory Primary care management staff Primary care pharmacist	Primary care physicians and nurses Primary care management staff ZBS coordinator
FURTHER ACTIONS NEEDED	Periodic review and/or update of correct codification: currently ICD 10	Automatic and direct communication between the Laboratory and the UBAs	Continuous improvement of data registries Continuing training about the use of ALUMBRA

Results 2019

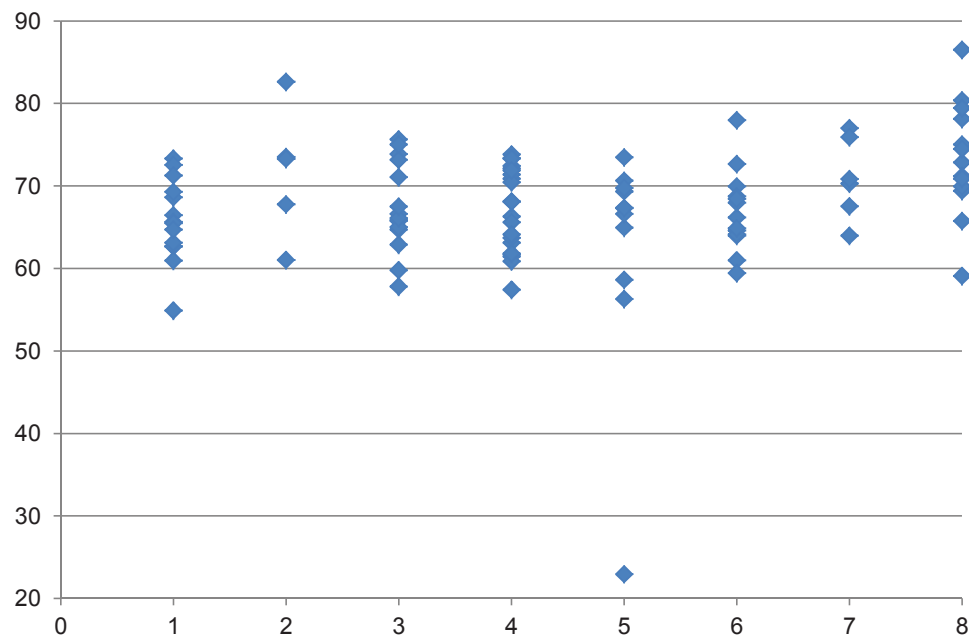
Screening for type 2 diabetes mellitus increased from 67,78% in 2016 to 73% in 2019

- Screening
- Prevalence
- Control and follow-up
- Economic impact: cost of treatment



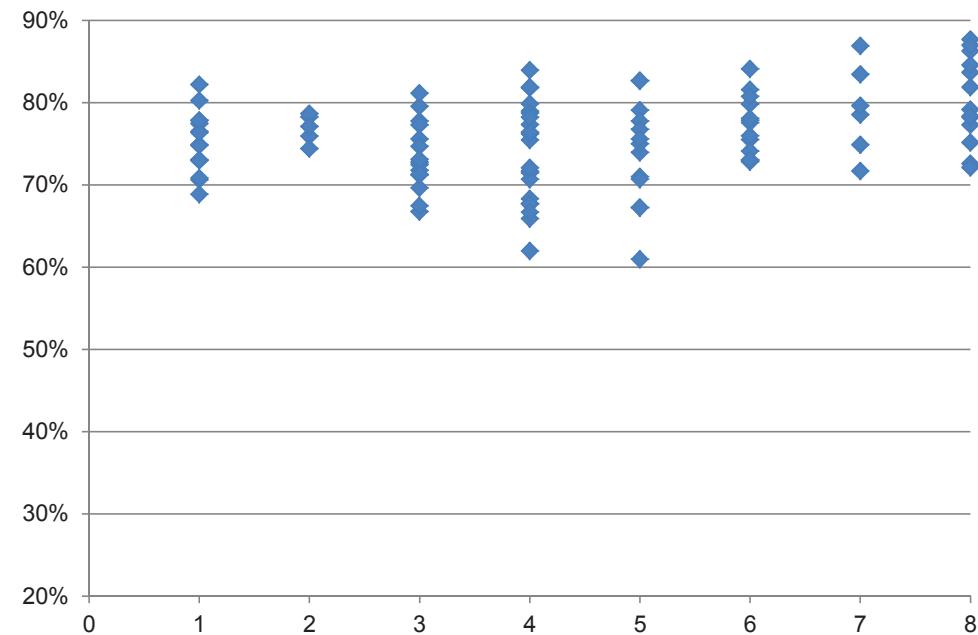
Reduction of variability in screening per ZBS

Diabetes screening per ZBS (n) and physician (diamonds) 2016 (%)



average	65,73	70,86	67,58	67,23	64,92	66,63	70,51	72,90
range	54,92- 77,32	61,02- 82,64	57,80- 63,87	57,44- 71,39	22,96- 73,47	61,00- 77,99	63,97- 77,00	59,08- 86,57

Diabetes screening per ZBS (n) and physician (diamonds) 2019

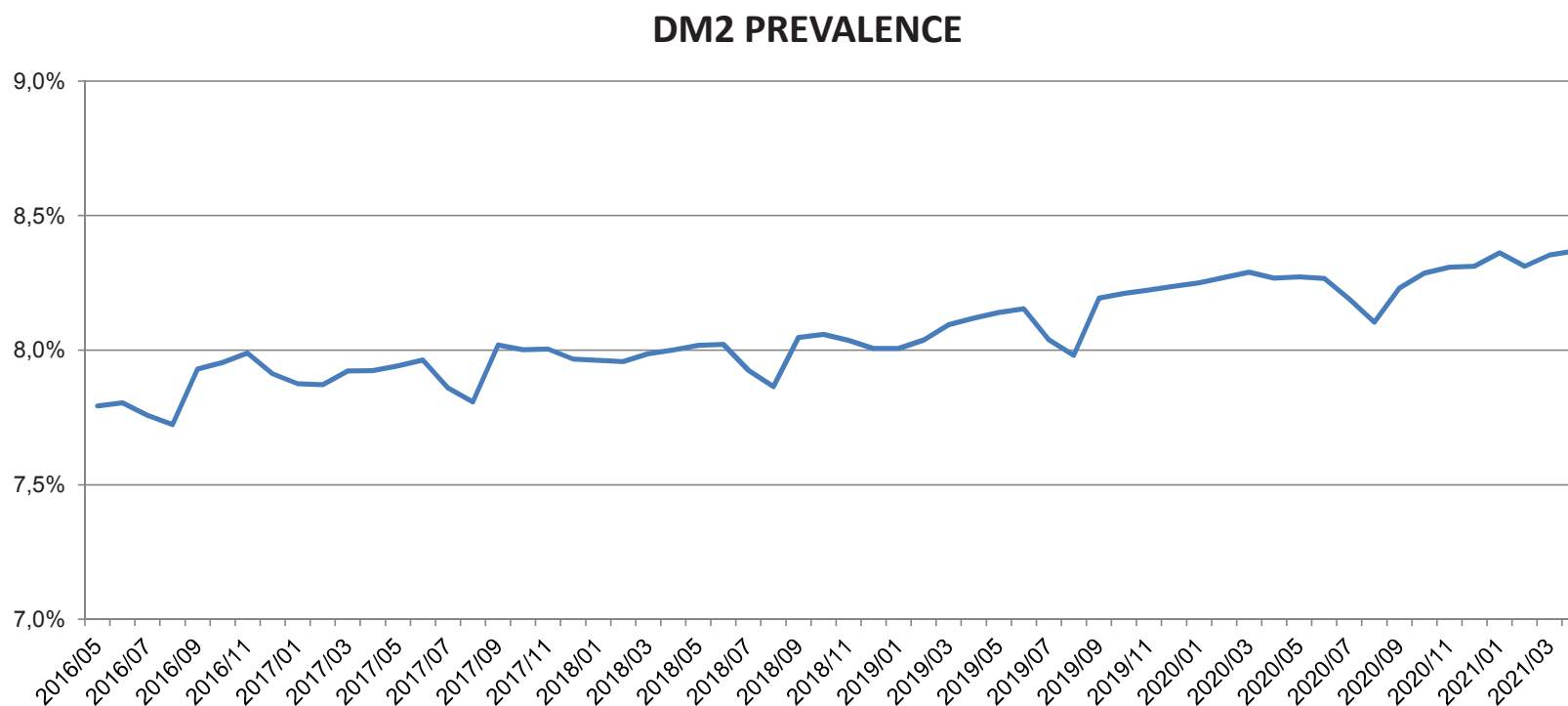


average	74,42	75,74	70,21	71,33	70,66	74,26	77,26	77,59
range	68,86- 82,20	74,42- 78,28	66,76- 79,54	61,98- 83,95	60,96- 82,64	72,96- 84,08	71,70- 86,88	72,60- 87,67

Results 2019

- Screening
- **Prevalence**
- Control and follow-up
- Economic impact: cost of treatment

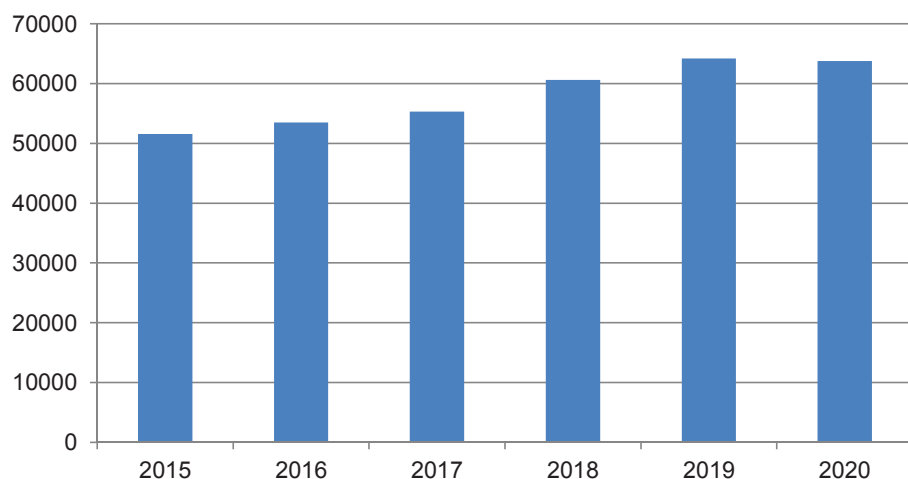
Better screening contributed to the increase from 7,79% in 2016 to 8,24% in 2019



Results 2019

With the implementation of the route, the number of follow-up visits to diabetic patients has increased (from 3,3 to 4 visits per patient/year)

Number of follow-up visits to diabetic patients in Primary Care



- Screening
- Prevalence
- **Control and follow-up**
- Economic impact: cost of treatment

Number of patients with DM2 and any anti-diabetic drug prescription, tested for HbA1c

A1C test	2016	2019	% change
Total tests	9.745	11.150	12,6%
Patients with 2 test per year	2.207	4.259	48,2%
Patients with 1 test per year	5.480	4.991	-9,8%
Without any test	1.147	0	NA

Results 2019

The % of patients on target improved already during the route development and reached a peak shortly after its active diffusion/implementation, increasing from 43% in 2016 to 62% in 2019.

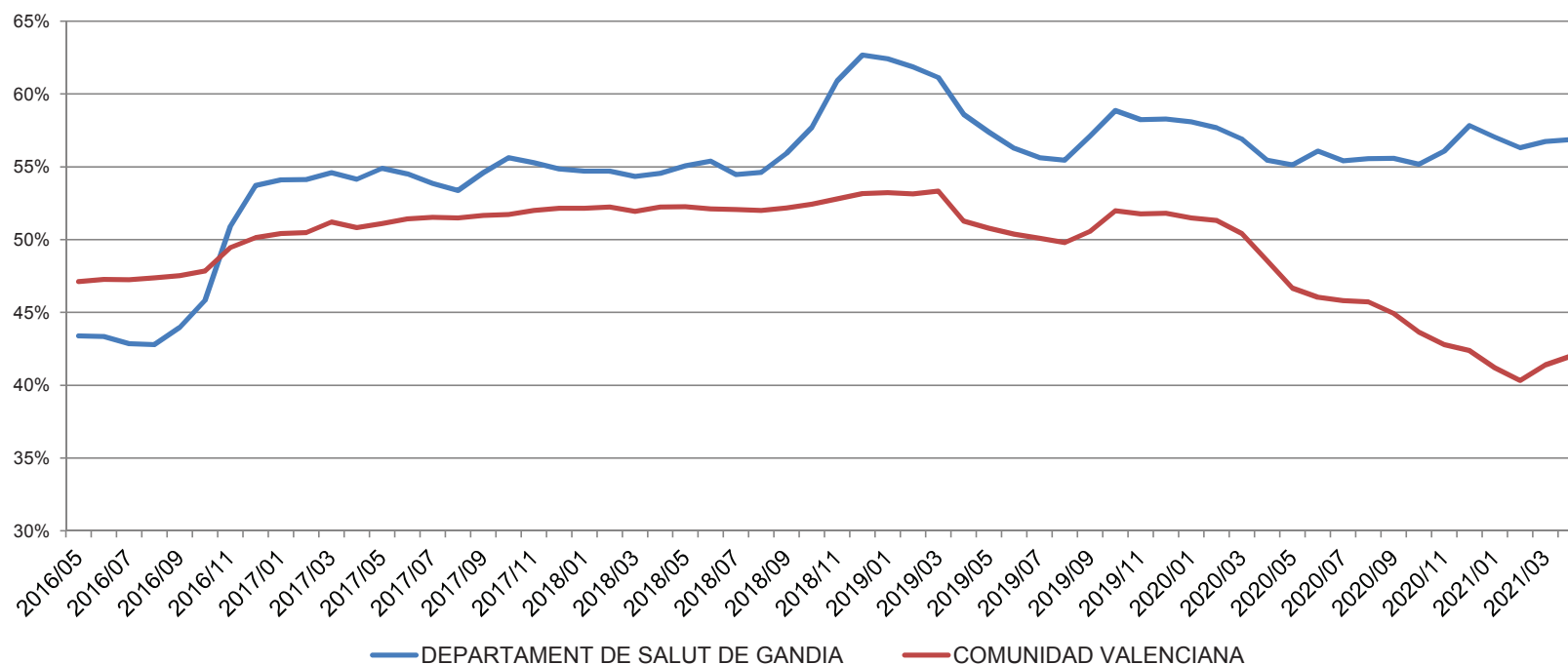
In 2020, despite the pandemic, the result was maintained above baseline values

- Screening
- Prevalence
- **Control and follow-up**
- Economic impact: cost of treatment

% of patients with HbA1c on target

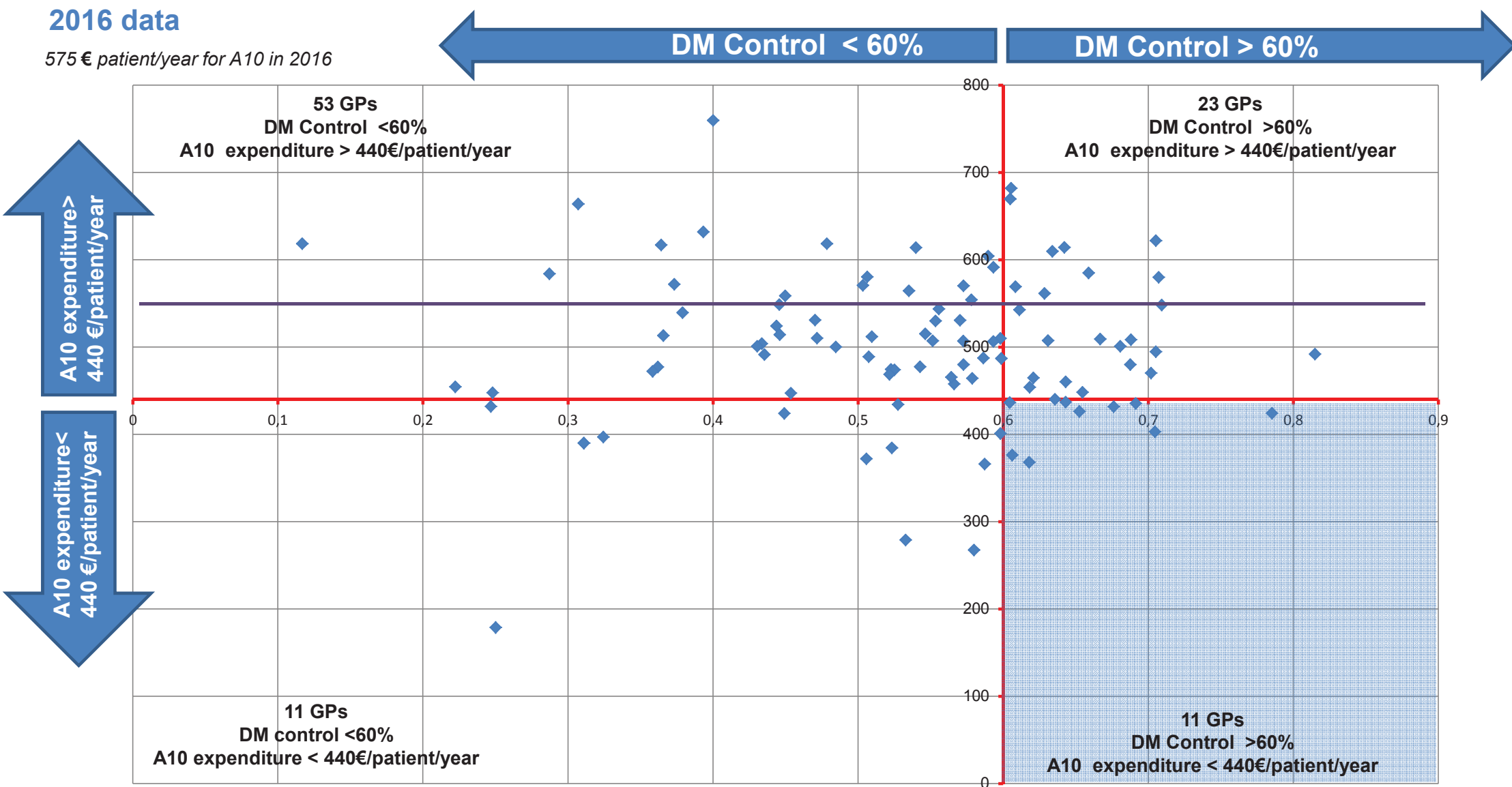
- Older than 65y<8%
- Younger than 65y<7%

DM2 CONTROL



2016 data

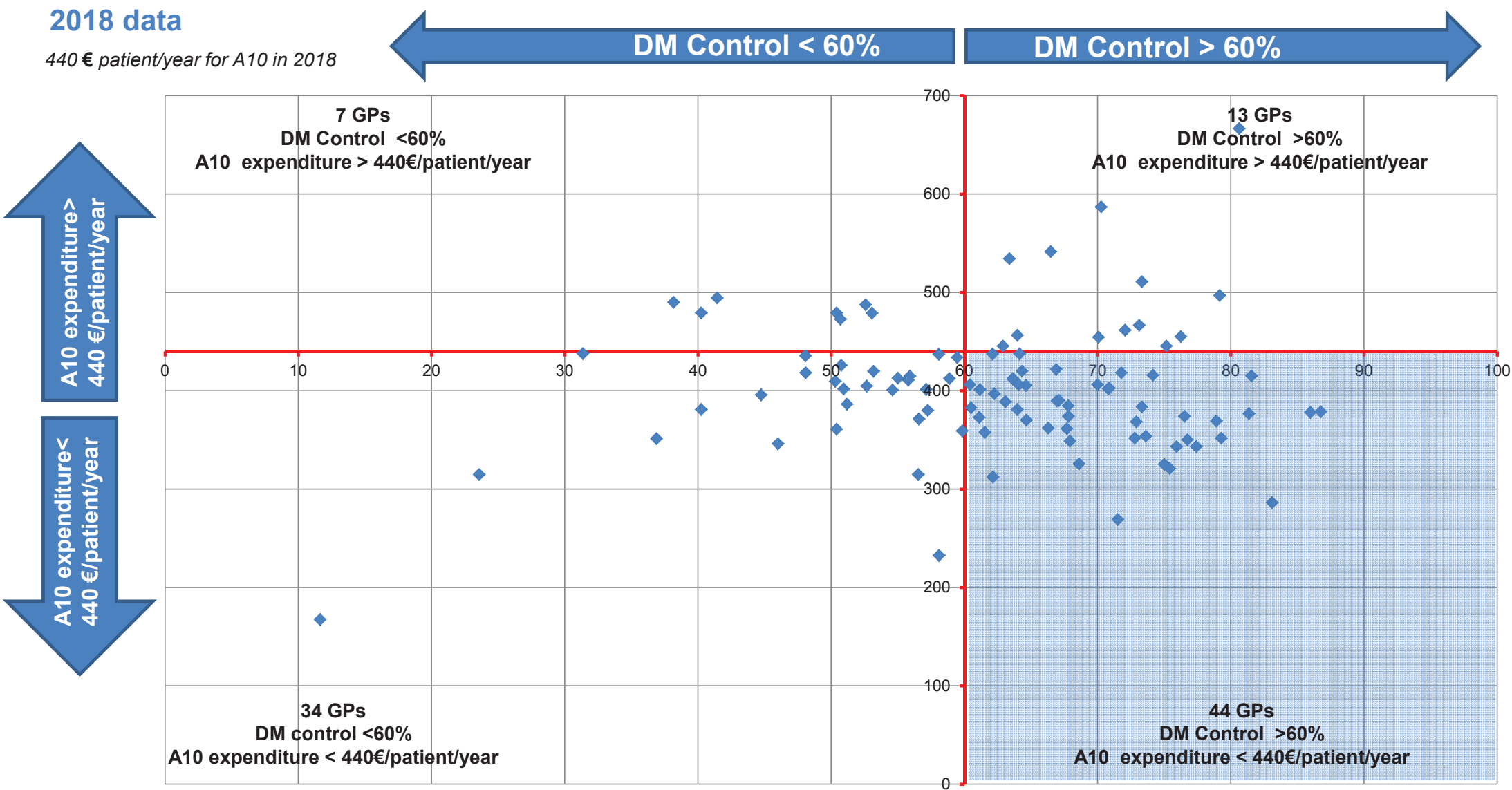
575 € patient/year for A10 in 2016



GPs distribution by % of patients on target and antidiabetic drug expenditure (Group A10)

2018 data

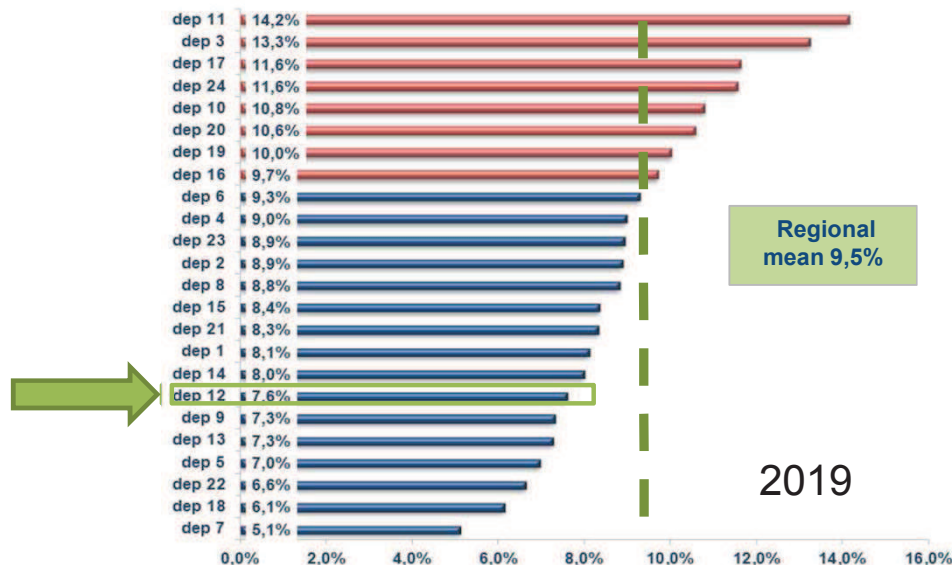
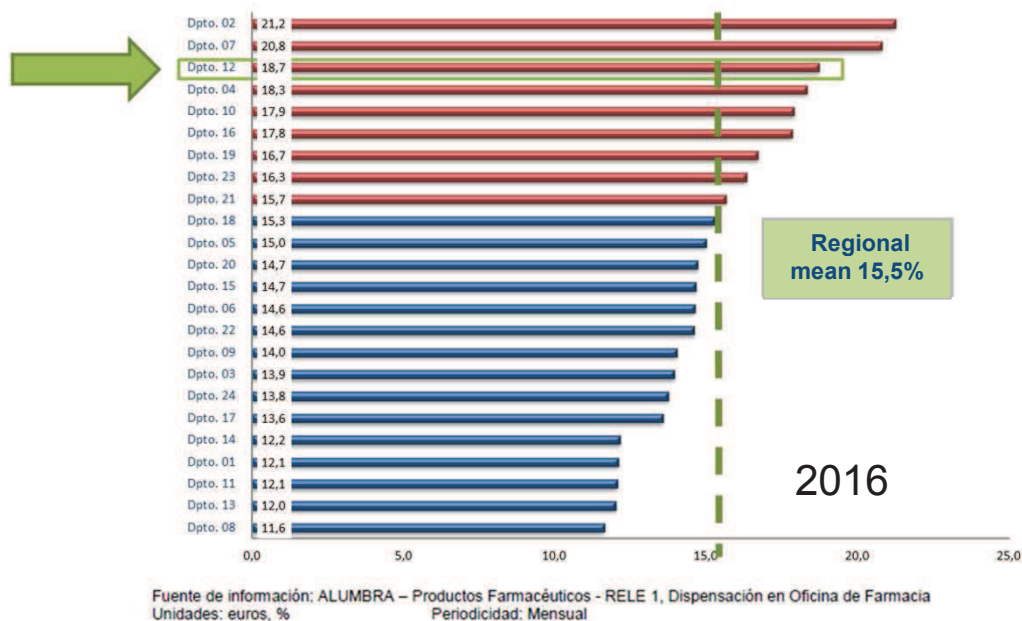
440 € patient/year for A10 in 2018



Results 2019

- Screening
- Prevalence
- Control and follow-up
- **Economic impact: cost of treatment**

- The cost of antidiabetic drugs per patient and year (group A10) decreased from 575 € in 2016 to 440€ in 2018.
- The interannual expenditure growth for the A10B therapeutic subgroup of antidiabetic drugs (excluding insulins) decreased from 18,7% in 2016 to 7.6% in 2019.



Conclusions

Improvement can be achieved through:

- Standardization of healthcare (clinical protocols) and administrative procedures (codification)
- Coordination between PC, Specialist Care and Laboratory
- Continuing education and training (including the use of the available informatic tools)
- Active communication of the relevant information and the obtained results (feedback)

Thank you for your attention