Πρόληψη Τ2 σακχαρώδη διαβήτη

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Λεμεσός

International Diabetes Federation

Diabetes facts

Diabetes is a chronic disease that arises when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces.

At present there is no cure for diabetes.

The International Diabetes Federation [redacted] million people around the world have diabetes. This total is [redacted] Each year a further 7 million people develop diabetes.

▸ More about diabetes ...

The Economist

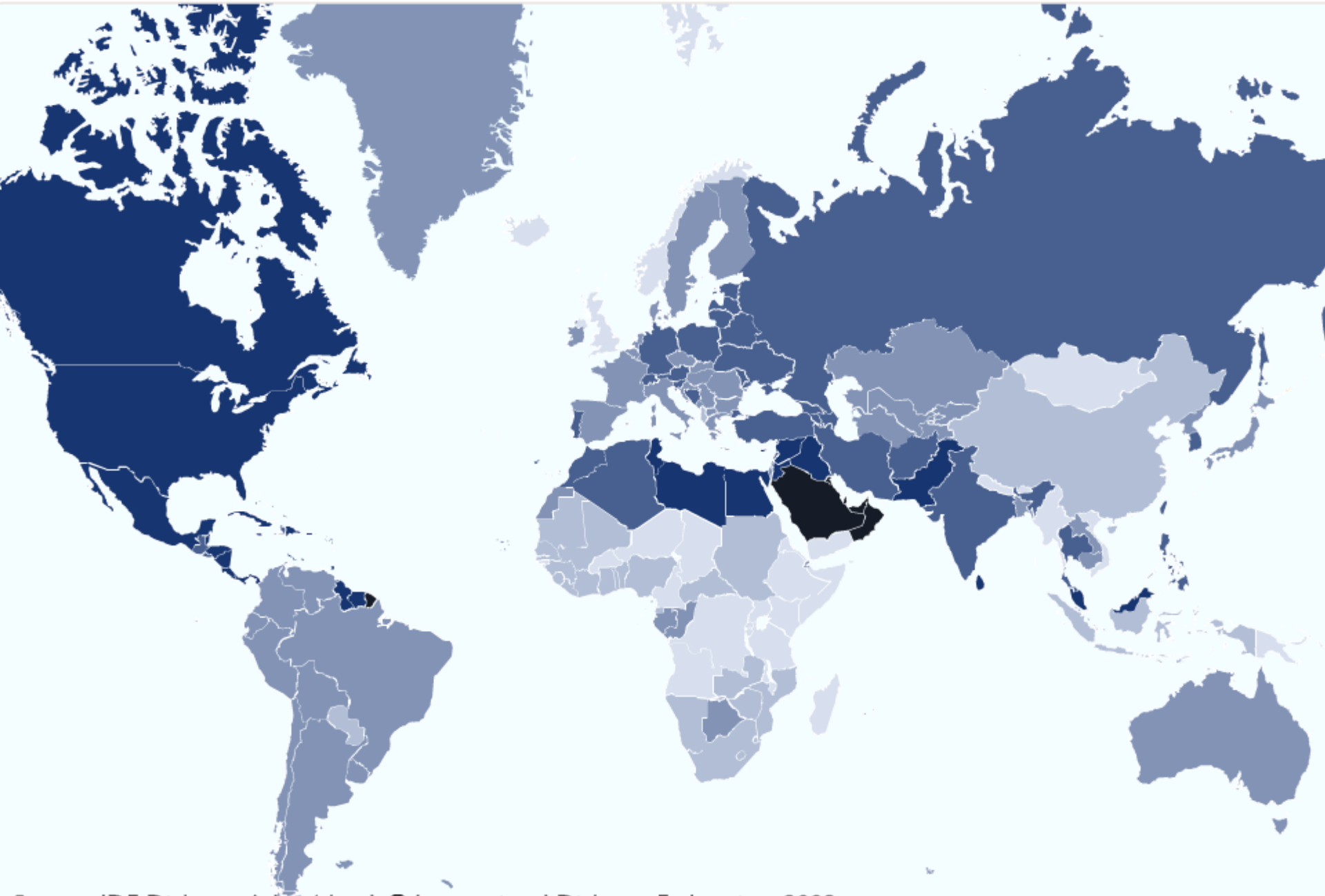
An American epidemic

Fighting diabetes is as much a social problem as a scientific one

Percent with diabetes (20-79 years), 2010

Proportion of people with diabetes (20-79 years), 2010 (Comparative prevalence

< 4
4 -
5 -
7 -
9 -
>= 12



Εξέλιξη σακχαρώδη διαβήτη

	2010			2030			2010/2030
	POPULATION (20-79 YEARS)	NO. OF PEOPLE WITH DIABETES	COMPARATIVE DIABETES PREVALENCE	POPULATION (20-79 YEARS)	NO. OF PEOPLE WITH DIABETES	COMPARATIVE DIABETES PREVALENCE	INCREASE IN THE NO. OF PEOPLE WITH DIABETES
Region	Millions	Millions	%	Millions	Millions	%	%
NAC	320	37.4	[illegible]	390	53.2	[illegible]	42.4%
MENA	344	26.6	9.3	533	51.7	10.8	93.9%
SEA	838	58.7	[illegible]	1.200	101.0	9.1	72.1%
EUR	646	55.2	[illegible]	659	66.2	[illegible]	20.0%
SACA	287	18.0	[illegible]	382	29.6	7.8	65.1%
WP	1,531	76.7	4.7	1.772	112.8	5.7	47.0%
AFR	379	12.1	[illegible]	653	23.9	[illegible]	98.1%
Total	4,345	284.6	6.4	5.589	438.4	7.7	54.0%

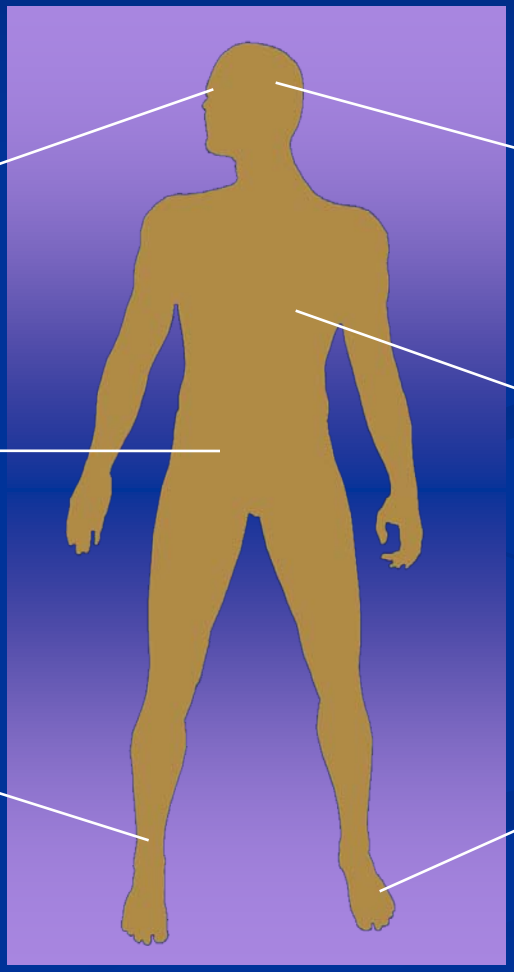
Το 50% των ΝΕΟΔΙΑΓΝΩΣΘΕΝΤΩΝ ασθενών έχουν εγκατεστημένες επιπλοκές

Μίκρο - αγγειακές

Ρετινοπάθεια, γλαύκωμα ή καταρράκτης

Νεφροπάθεια

Νευροπάθεια



Μάκρο - αγγειακές

Εγκεφαλοαγγειακή νόσος

Στεφανιαία νόσος

Περιφερική αρτηριοπάθεια

[1]UK Prospective Diabetes Study Group. UKPDS 33. *Lancet* 1998; 352:837–853.

The Economist

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More about diabetes ...

Diabetes and Pre-Diabetes Cost the U.S. $218 Billion in 2007: En Route to $336 Billion by 2034

Patrick Totty
Feb 3, 2010


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px264001 www.fotosearch.com


www.foodfacts.info/blog

Risk Factors for Diabetes

- Age 45 and older
- Overweight (BMI ≥ 25)
- Hypertension
- Abnormal lipid levels
- Family history of diabetes
- Race/ethnicity
- History of gestational diabetes

- History of vascular disease
- Signs of insulin resistance (such as PCOS or acanthosis nigricans)
- Pre-diabetes
- Inactive lifestyle

American Diabetes Association. Diabetes Care 2010, 33;(Suppl.1):S11-61

Κύριες μελέτες πρόληψης Τ2ΣΔ

Μελέτη	Νο	BMI	Ηλικ.	Χρ. Π.	Παρέμβαση
Da Qing (1) Da Qing ext.	577	31	45	6 20	Ομάδα ελέγχου, δίαιτα, Άσκηση, δίαιτα+άσκηση
DPS (2) DPS EXT.	522	31	55	3,2 7	Δίαιτα+άσκηση Εντατική δίαιτα+άσκηση
DPP (3) DPPOS	3234	34	51	2,8 10	Ομάδα ελέγχου, μετφορμ Τρόπος ζωής
STOP-NIDMM (4)	1429	26	54	3,3	Δίαιτα+άσκηση+εικονικό Δίαιτα+άσκηση+ακαρβόζη
IDPP-1 (5) IDPP-2	531	26	46	2,5	Ομάδα ελέγχου, LSM, Metformin, LSM+MET,Pio

1Pan et al. Diabetes Care 1997;20:537-44.

2Tuomilehto et al. N Engl J Med 2001;344:1343-50;

3 DPP Research Group, Diabetes Care 2000;23:1619-29;

4Chiasson et al. Lancet 2002;359:2072-7;

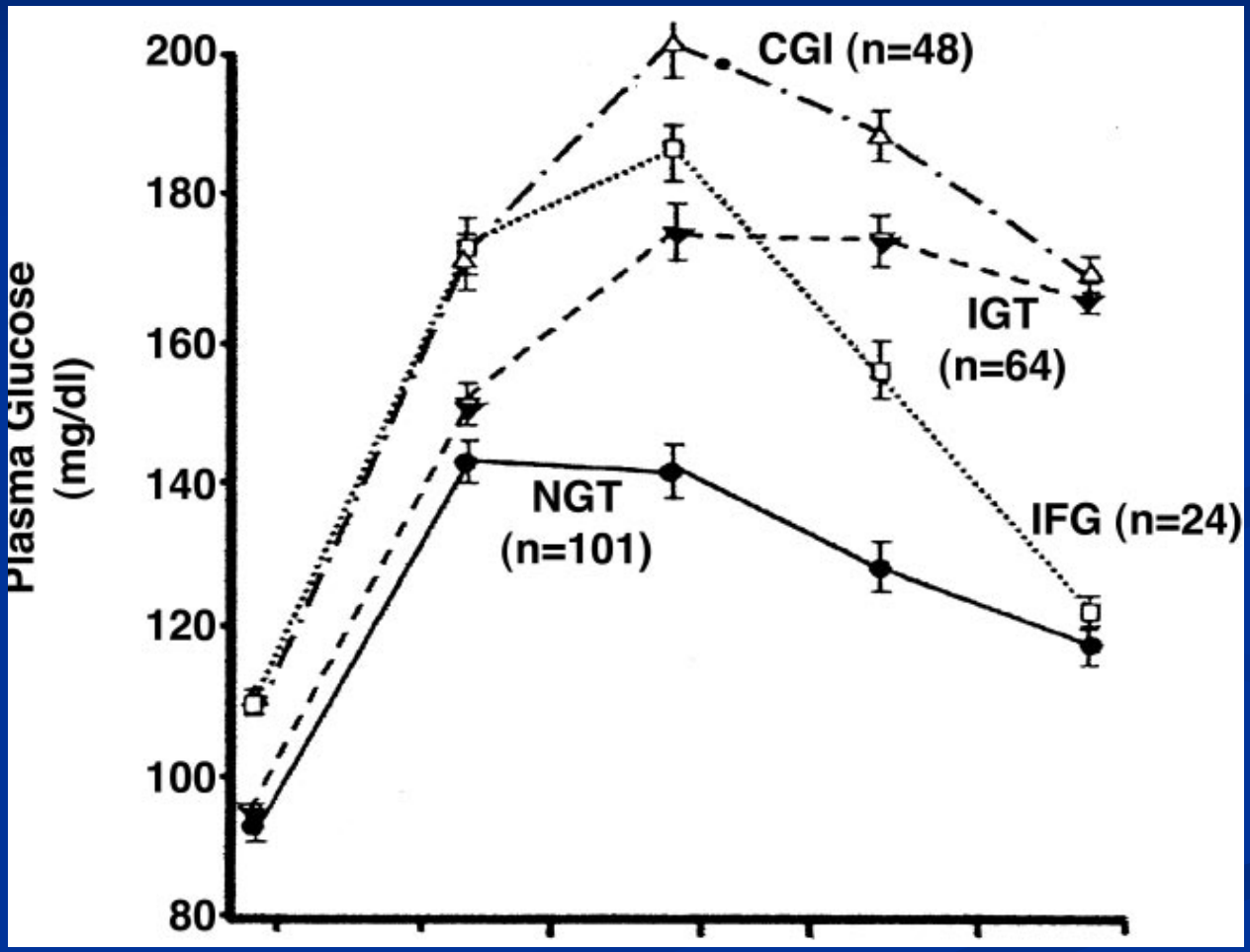
5Diabetologia (2006) 49: 289–297

Classification of glucose tolerance states

State	FPG level (mg/dl)	2-h plasma glucose in OGTT(mg/dl)
Isolated IFG	100-125	<140
Isolated IGT	<100	140–199
Combined IFG/IGT	100–125	140–199
NGT	<100	<140

DIABETES CARE, VOLUME 30, NUMBER 3, MARCH 2007

Plasma glucose concentration during an OGTT performed in subjects with IFG, IGT,NGT, or combined IFG/IGT (CGI)



DIABETES CARE, VOLUME 30, NUMBER 3, MARCH 2007

Prevalence of pre-diabetes in 2005–2006 of a nationally representative sample of 1,547 nondiabetic U.S. adults using older vs. newer ADA criteria

	1997 ADA criteria (110 FPG 125)	2003 ADA criteria (100 FPG 125)
Pre-diabetes	19.8 (16.3–23.3)	34.6 (30.3–38.9)
IFG only	4.5 (3.0–6.0)	19.4 (16.3–22.4)
IGT only	11.8 (9.2–14.3)	5.4 (3.5–7.3)
IFG and IGT	3.5 (2.1–4.9)	9.8 (7.5–12.0)

DIABETES CARE, VOLUME 33, NUMBER 11, NOVEMBER 2010

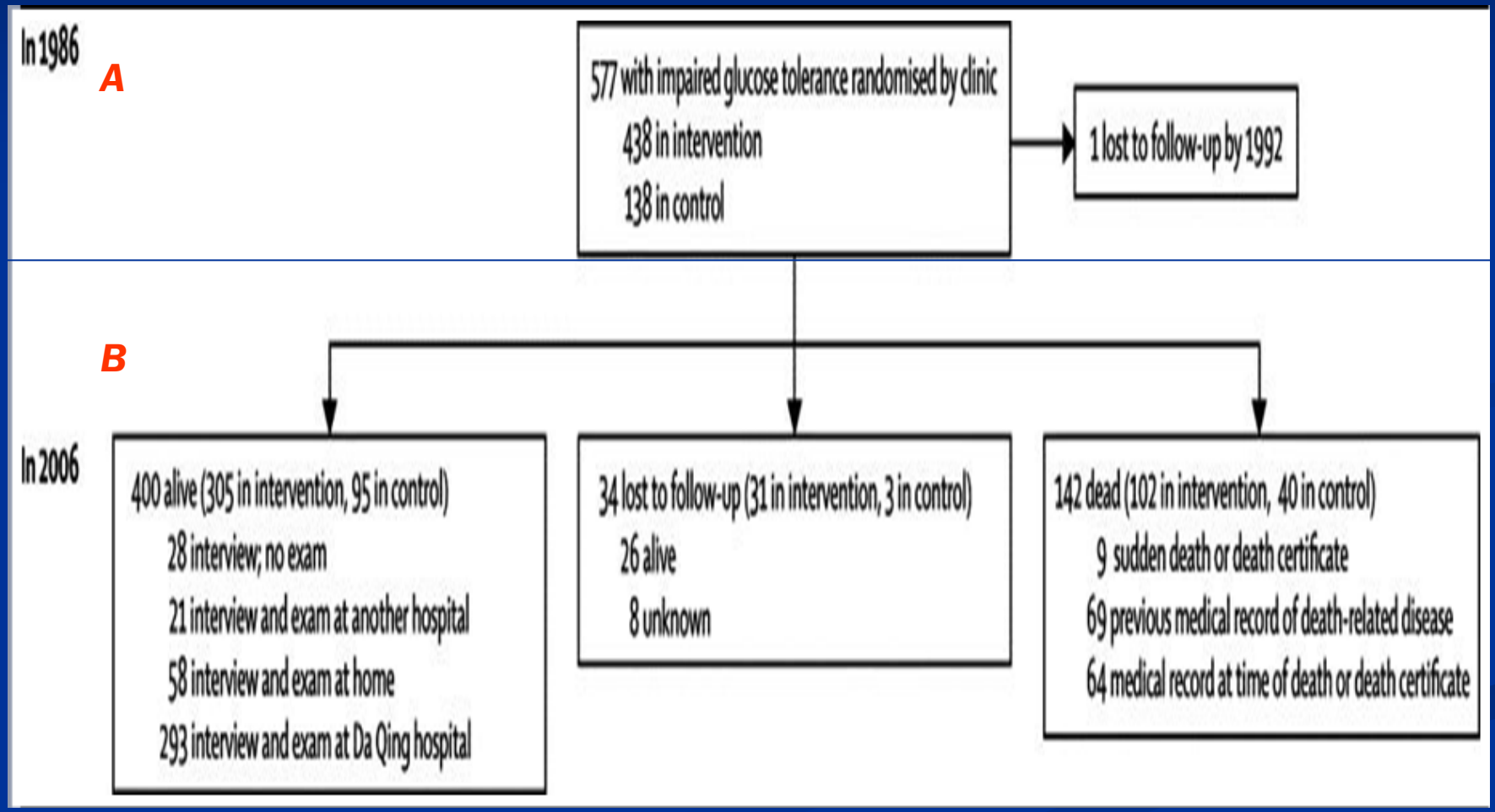
MALMO STUDY

Outcome of oral glucose tolerance tests at 6-year follow-up:

	0≥6.7 and/or 2-h ≥ 11.1	0<6.7 and 2-h 7.8-11.0	0<6.7 and 2-h 7.0-7.7	0<6.7 2-h<7.0
Type 2 Diabetes Group *intervention* (n=39)	18 (46.2%)	10 (25.6%)	2 (5.1%)	9 (23.1%)
IGT Group *intervention* (n=161)	17 (10.6%)	33 (20.5%)	27 (16.8%)	84 (52.2%)
IGT Group *Normal care* (n = 56)	12 (21.4%)	19 (33.9%)	5 (8.9%)	20 (35.7%)
Control Group (normal OGTT) *normal care* (n= 114)	0 (0%)	6 (5.3%)	2 (1.8%)	106 (93.0%)
Total (n=370)	47 (12.7%)	68 (18.4%)	36 (9.7%)	219 (59.2%)

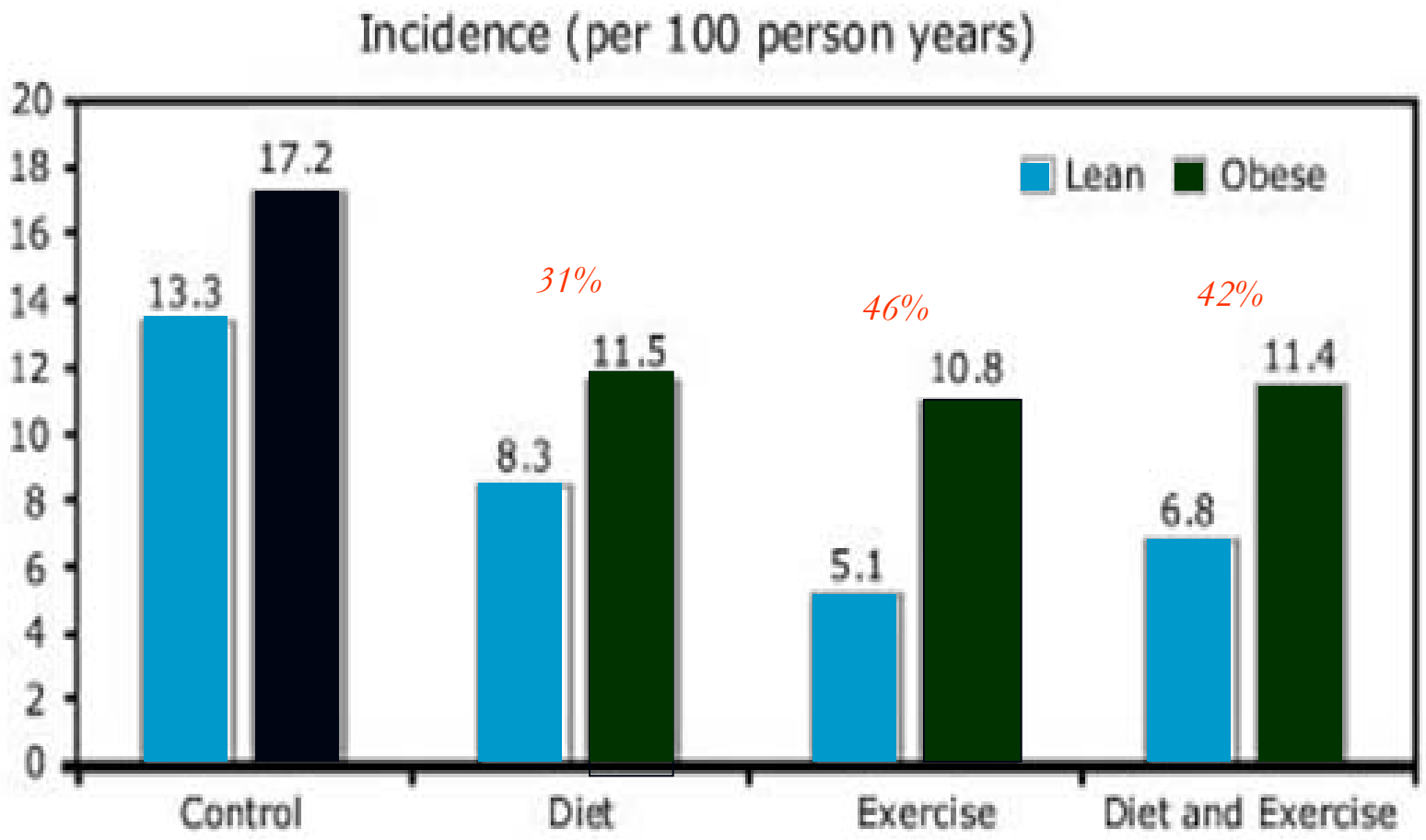
Diabetologia 1991,34:891-898

Da Qing Study,20 χρόνια παρακολούθησης



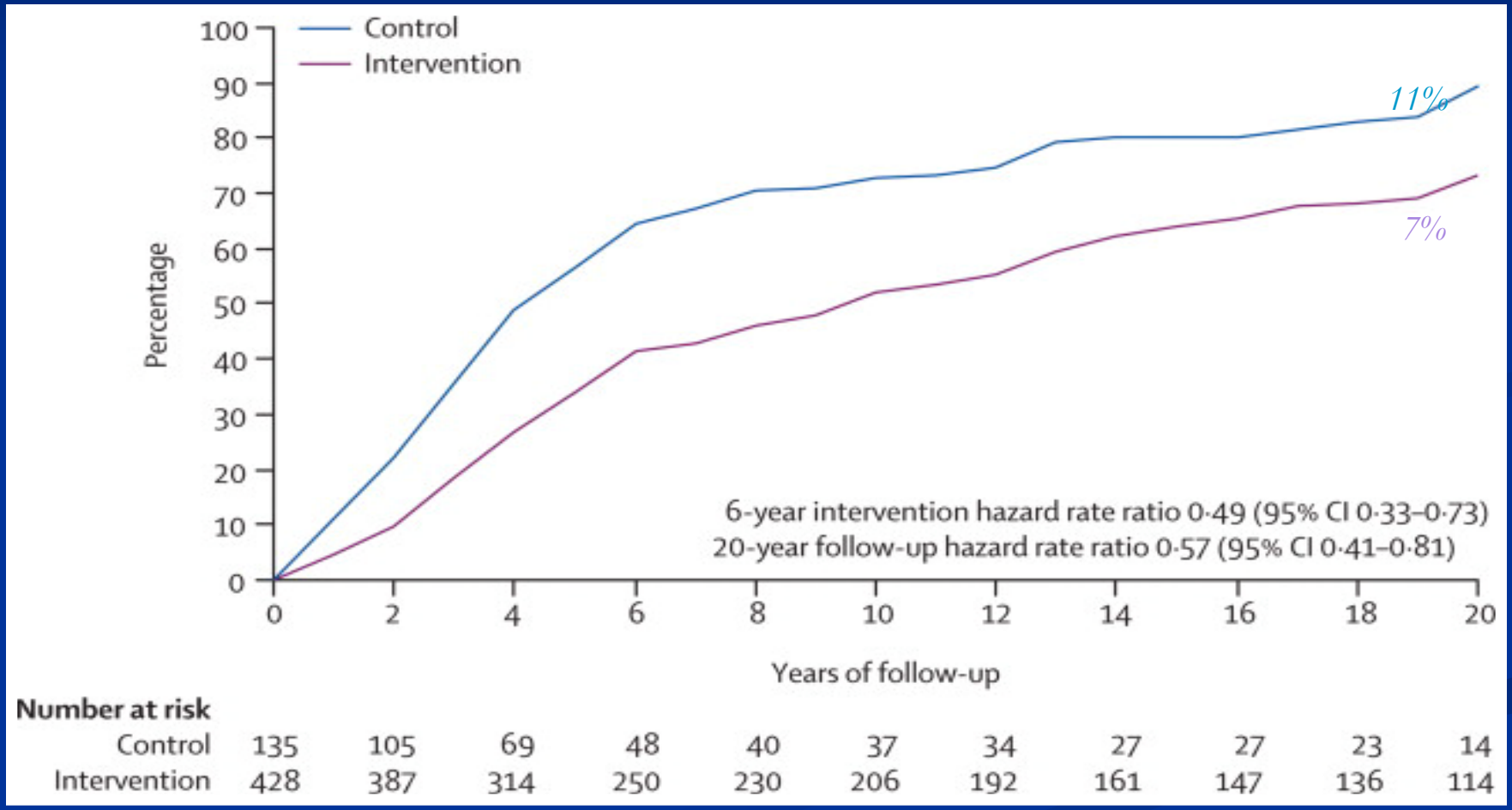
Li G., The lancet 371:1783-89,2008

Incidence of type 2 diabetes at or before the six year follow-up in the Da Qing study



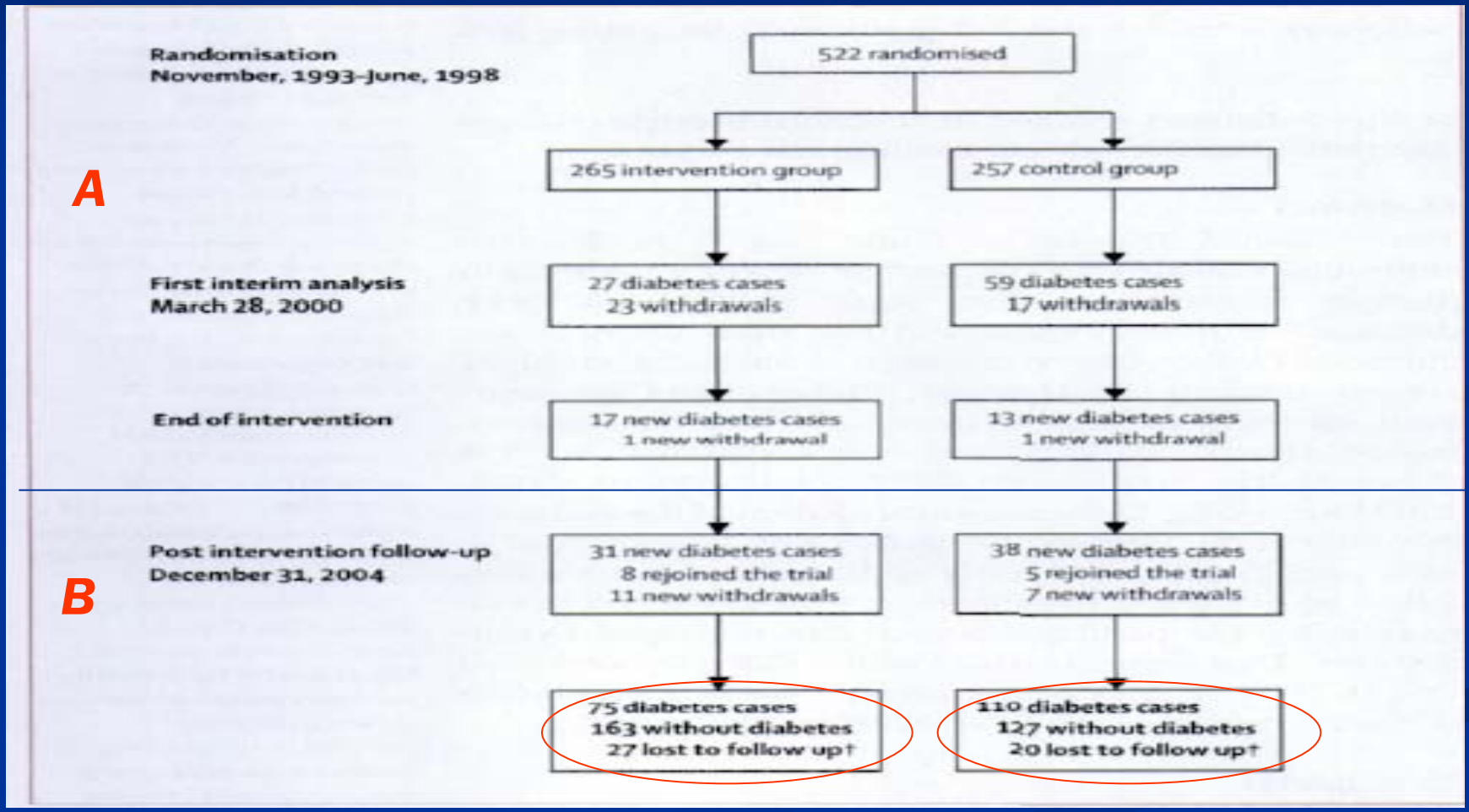
Pan XR:Da Qing IGT and Diabetes Study. Diabetes Care 20:537- 44,1997

Da Qing Study: επιπολασμός Τ2ΣΔ



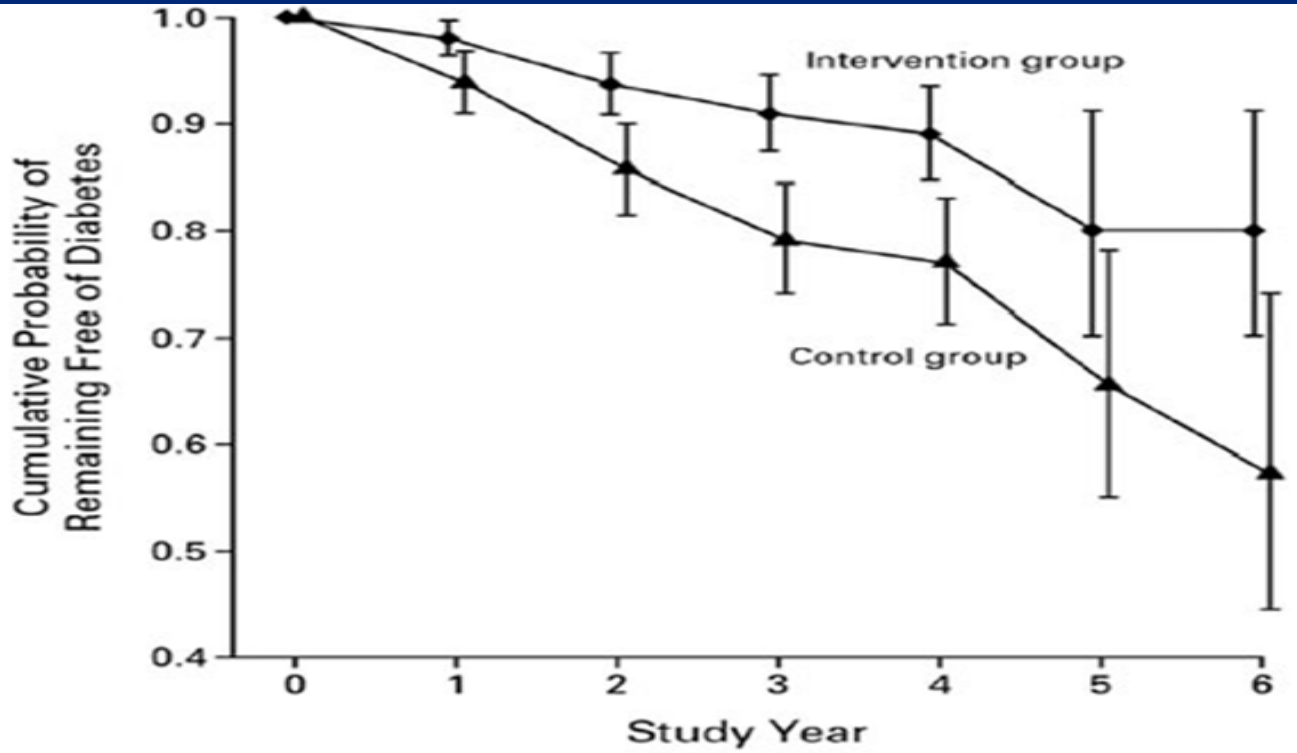
Lancet 371:1783-89,2008

Sustained reduction in the incidence of type 2 diabetes by lifestyle intervention: follow-up of the Finnish Diabetes Prevention Study



The Lancet; Nov 11-Nov 17, 2006
pg. 1673

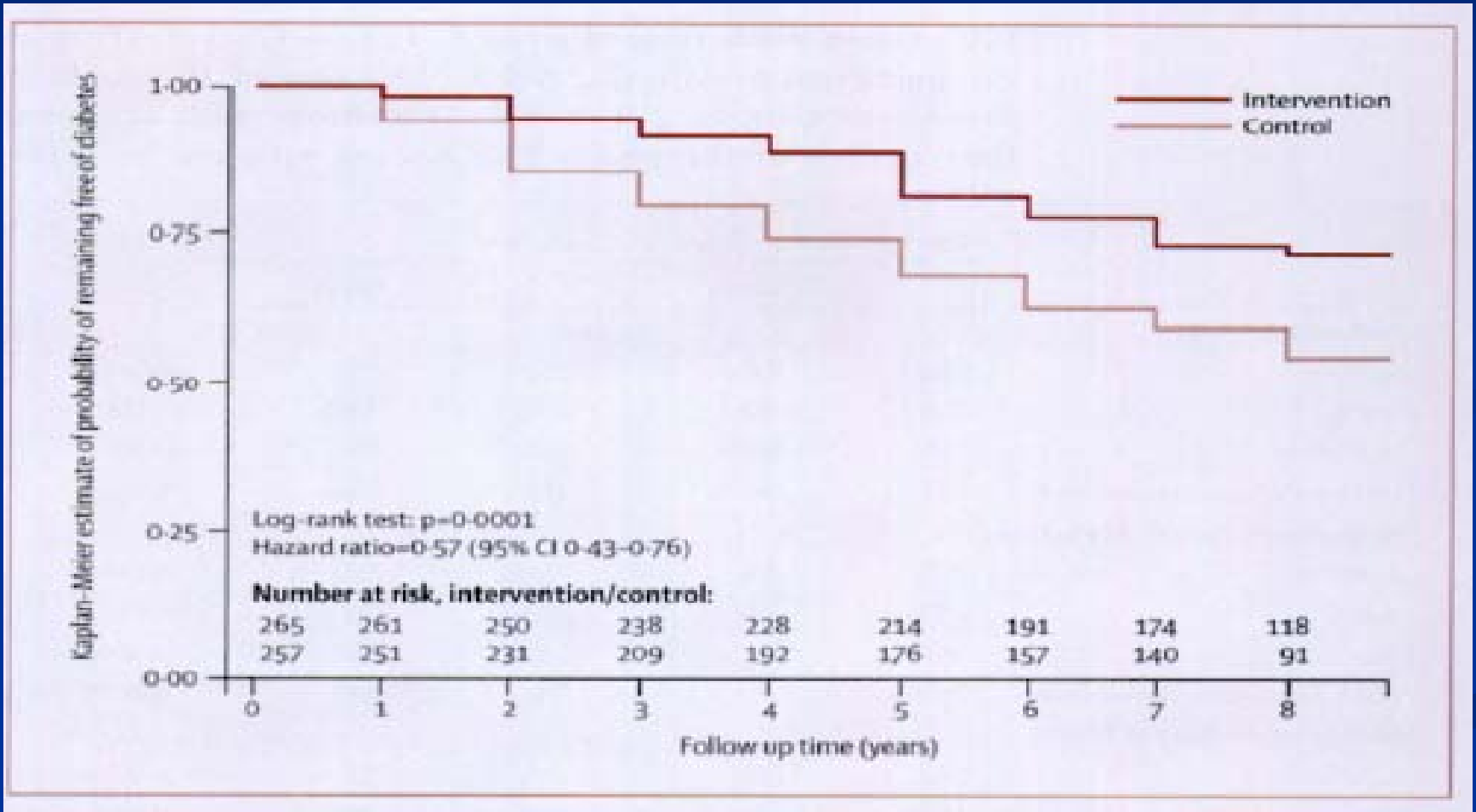
Diabetes Prevention Study



Subjects at Risk						
Total no.	507	471	374	167	53	27
Cumulative no. with diabetes:						
Intervention group	5	15	22	24	27	27
Control group	16	37	51	53	57	59

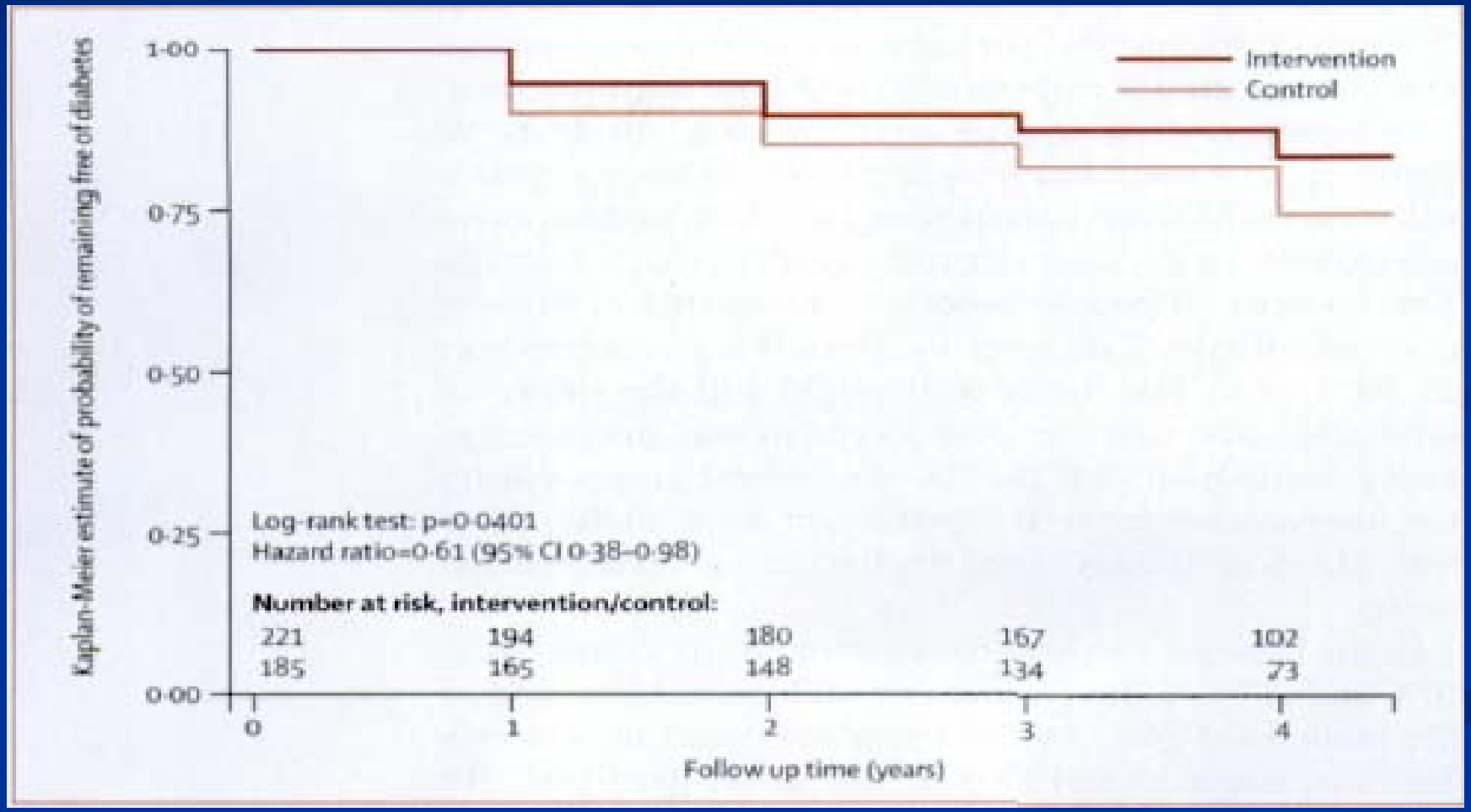
NEJM 344:1343-1350,2001

DPS: Diabetes by treatment group



The Lancet; Nov 11-Nov 17, 2006 pg. 1673

DPS-Diabetes during the post intervention follow-up period



The Lancet 368:1673-79,2006

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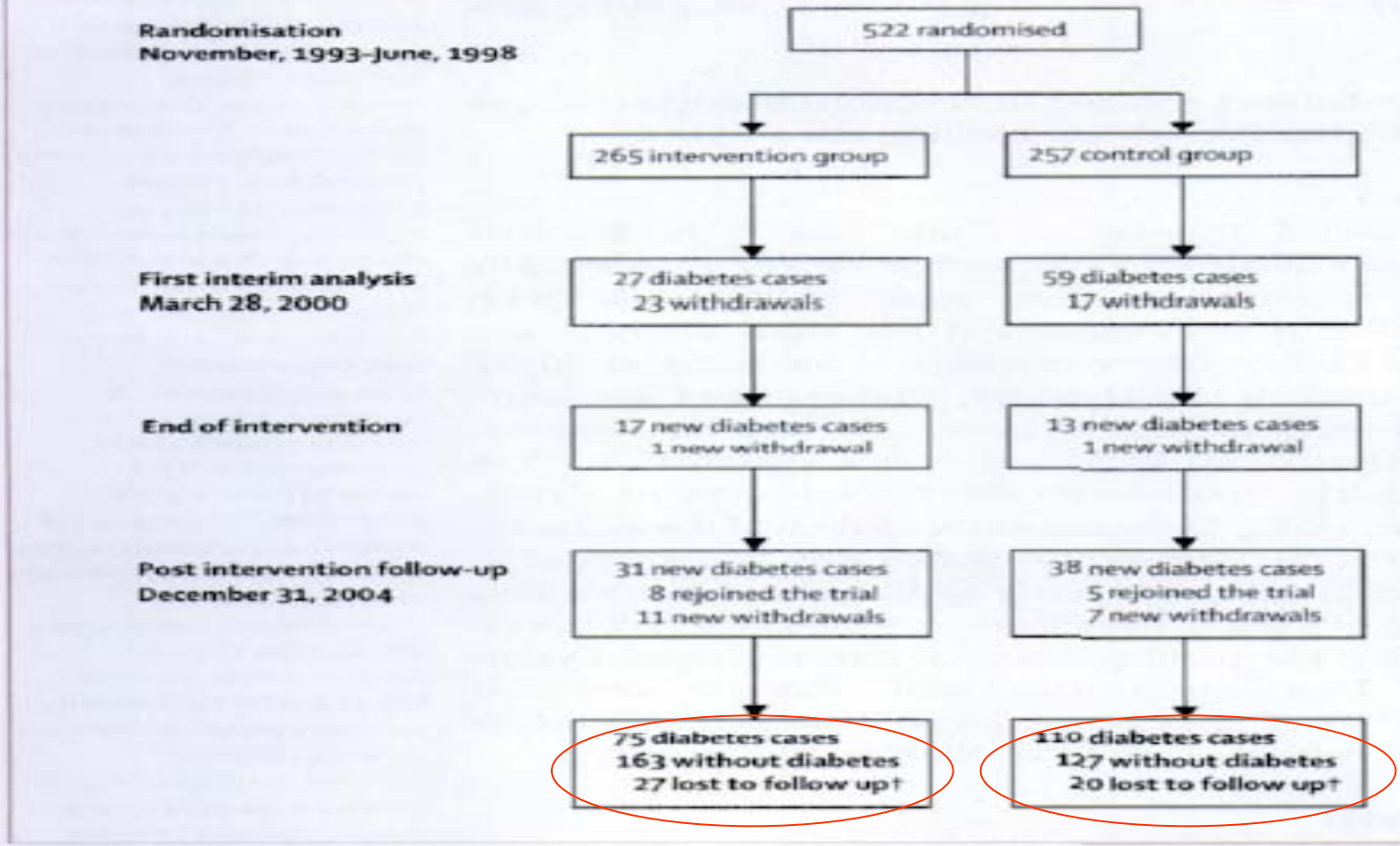
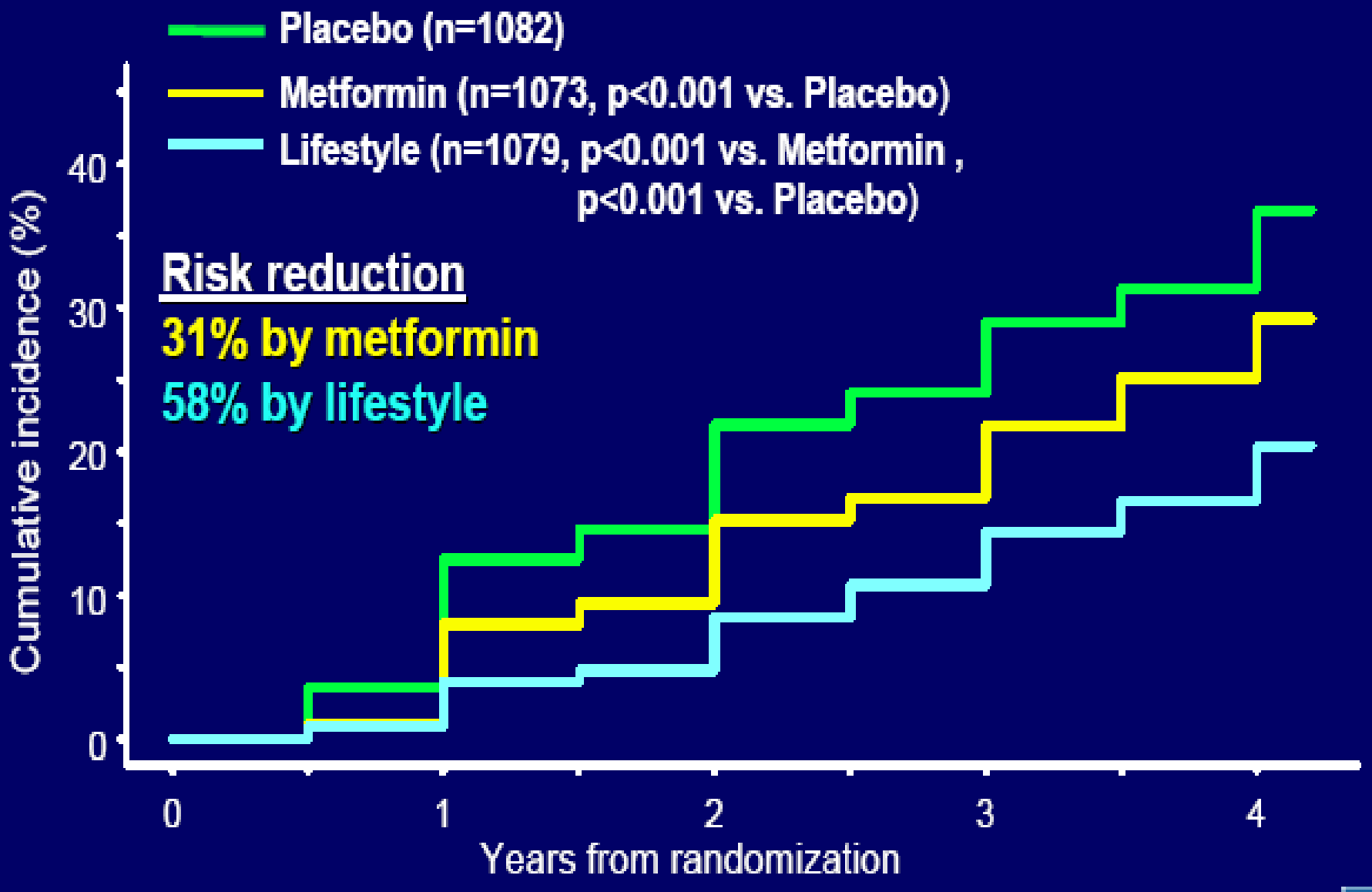
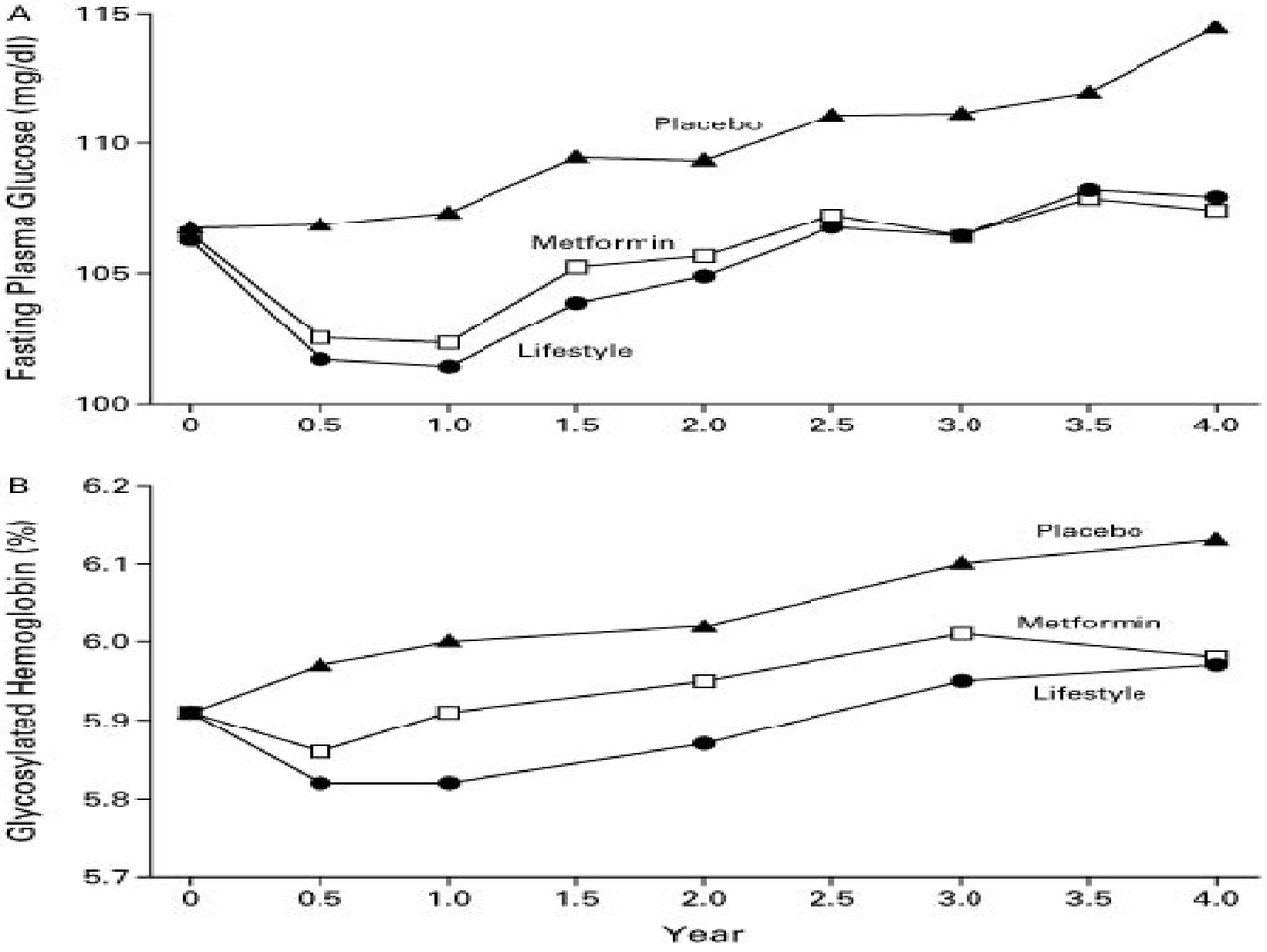


The Lancet; Nov 11-Nov 17, 2006 pg. 1673

Incidence of Diabetes

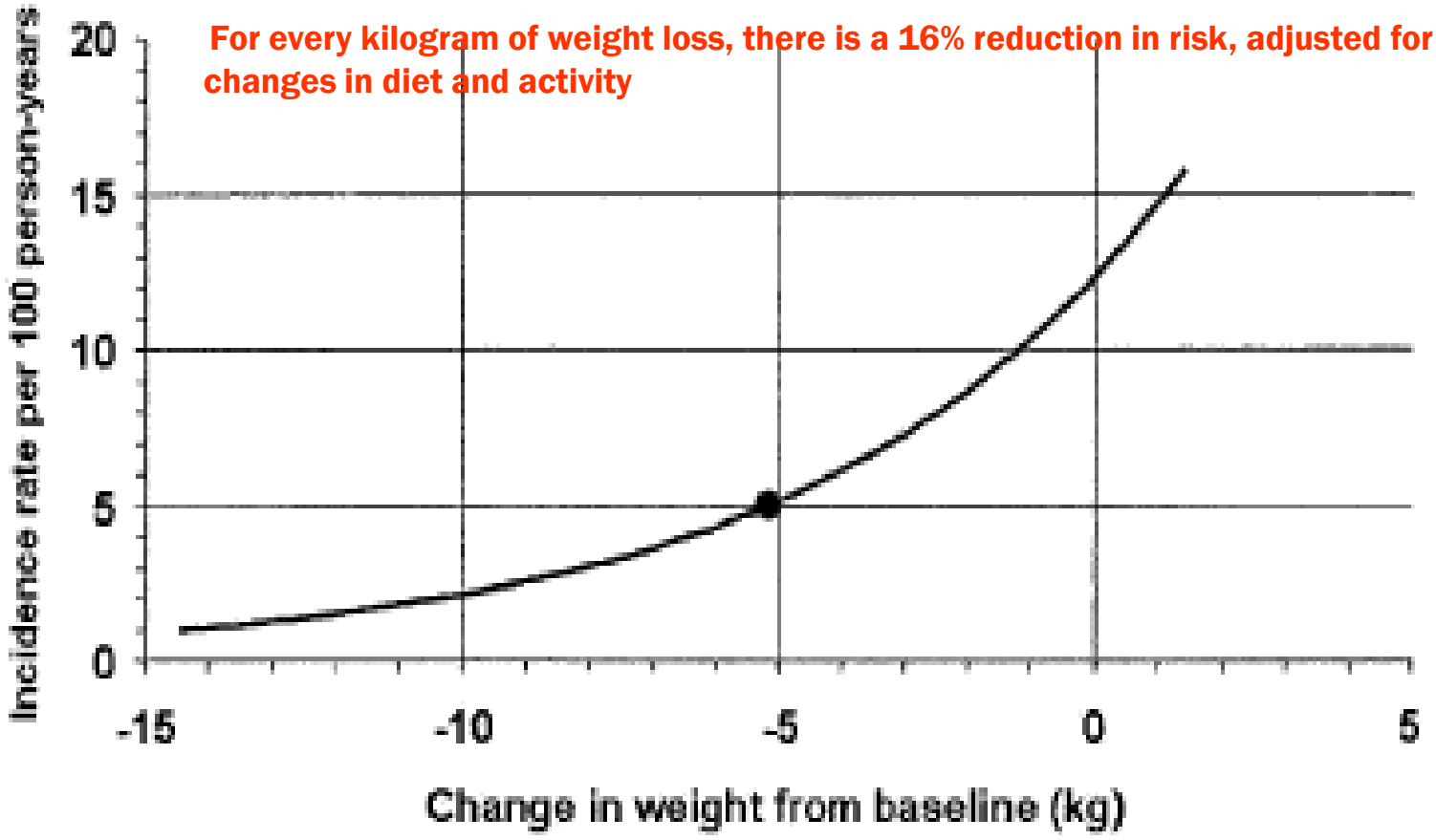


The DPP Research Group, *NEJM* 346:393-403, 2002



DPP. NEJM 346:393-403,2002

Diabetes incidence (per 100 person-years) by change in weight after baseline among DPP ILS participants



Diabetes Care , September 2006,vol 29,No 9, 2102-2107

DPPOS

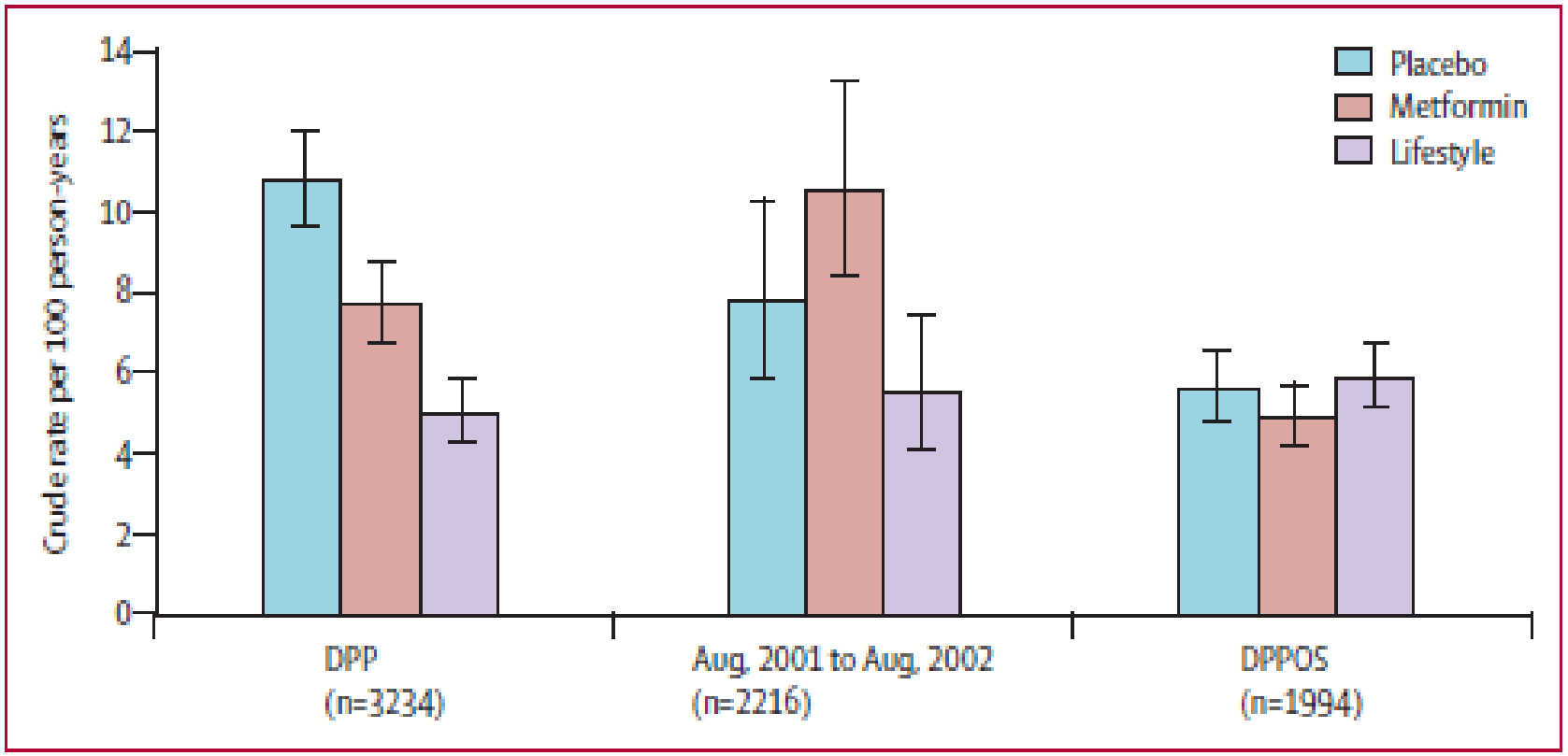


Figure 4: Incidence rates of diabetes during the three study phases of DPP, bridge, and DPPOS
The bars show diabetes incidence rates and the error bars 95% CIs. DPP=Diabetes Prevention Program.

The Lancet 374:1677-1686,2009

Diabetes Prevention Program Outcomes Study (DPPOS)

After 10 years' follow up, **lifestyle intervention:**

- reduced the rate of developing type 2 diabetes by 34 %
- reduced the rate of developing type 2 diabetes by 49 % in those age 60 and older
- delayed type 2 diabetes by about 4 years
- reduced cardiovascular risk factors.
- Reduced A1C and FPG

DPP Research Group. The Lancet 2009: Vol.374, No. 9702.

Diabetes Prevention Program Outcomes Study (DPPOS)

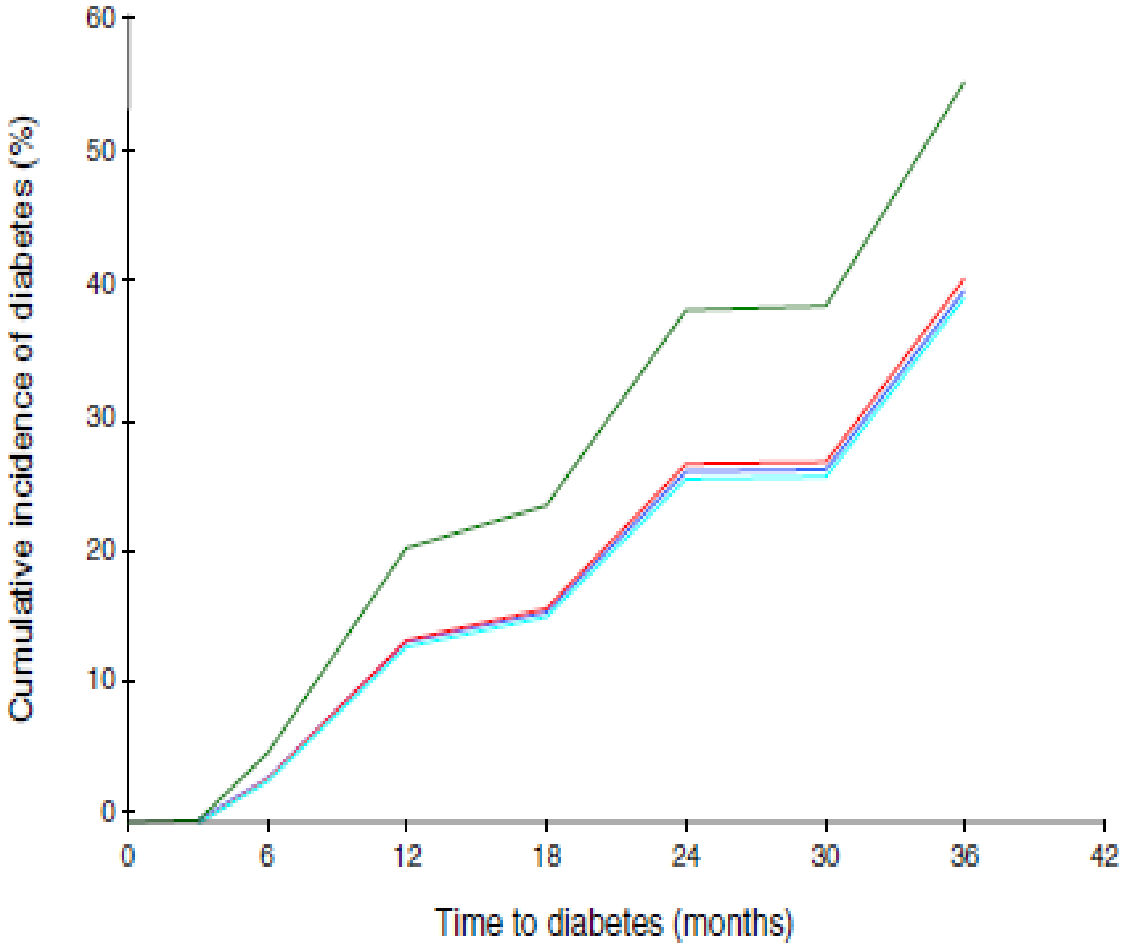
At 10 years' follow up, **metformin**

- reduced the rate of developing diabetes by 18 % compared with placebo.
- delayed diabetes by 2 years compared with placebo.
- reduced A1C and fasting glucose compared with placebo.

DPP Research Group. The Lancet 2009: Vol.374, No. 9702

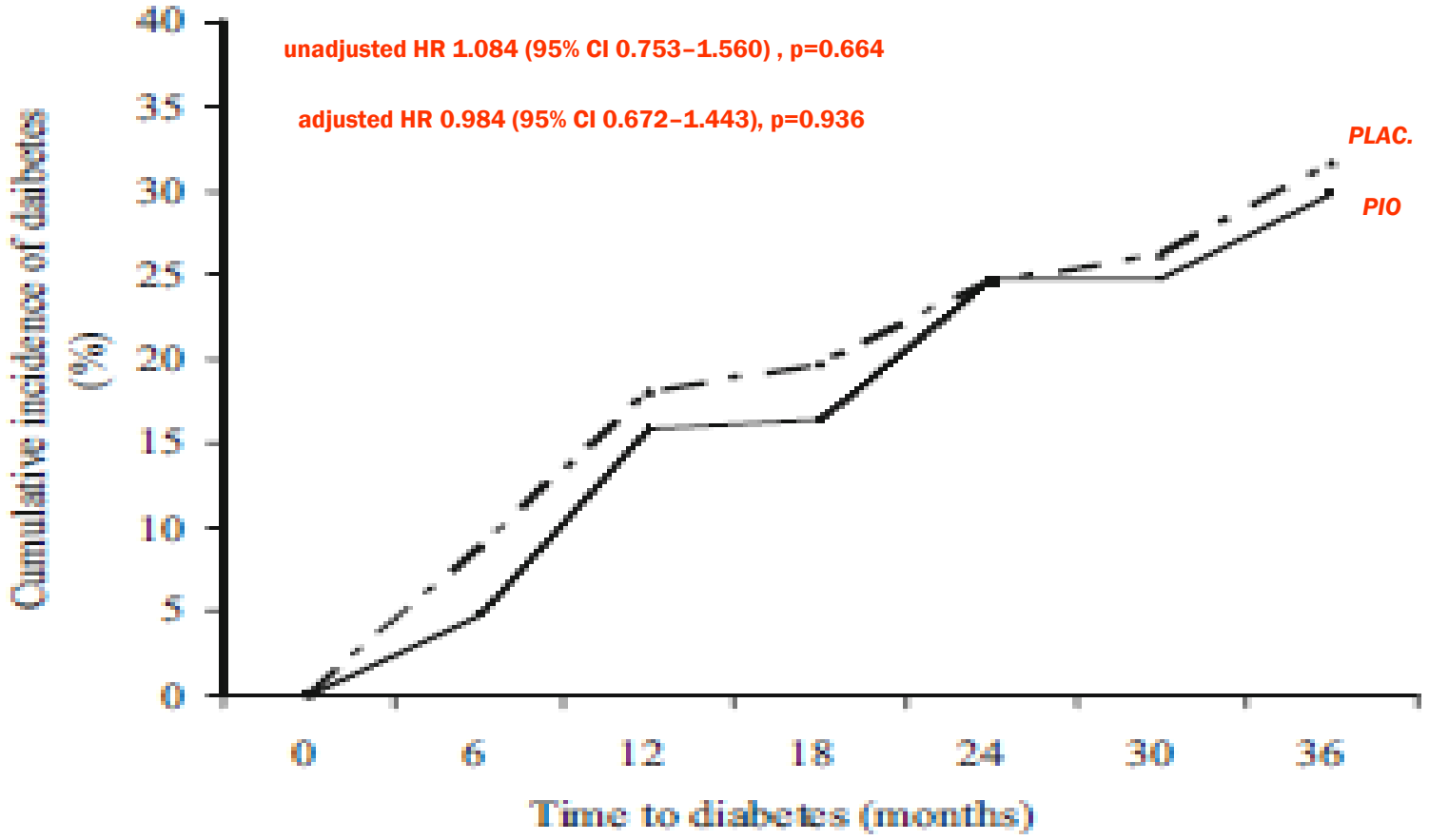
IDPP-1:Επιπολασμός τ2 ΣΔ

Fig. 2 Cumulative incidence of diabetes, calculated using the Cox proportional hazards model. The number of subjects who underwent an annual OGTT were 484, 403 and 345 at 12, 24 and 30/36 months, respectively. Rates of progression to diabetes were as follows: [redacted] = 55%, [redacted], [redacted], [redacted]. The *p* values for relative risk reduction were as follows: LSM = 0.018, LSM + MET = 0.022, MET = 0.029. LSM and LSM + MET showed identical results, therefore, the graphs overlap



Diabetologia 2006:49, 289-297

IDPP-2: ΕΠΙΠΟΛΑΣΜΟΣ Τ2ΣΔ



Diabetologia (2009) 52:1019–1026

ΒΑΡΙΑΤΡΙΚΗ

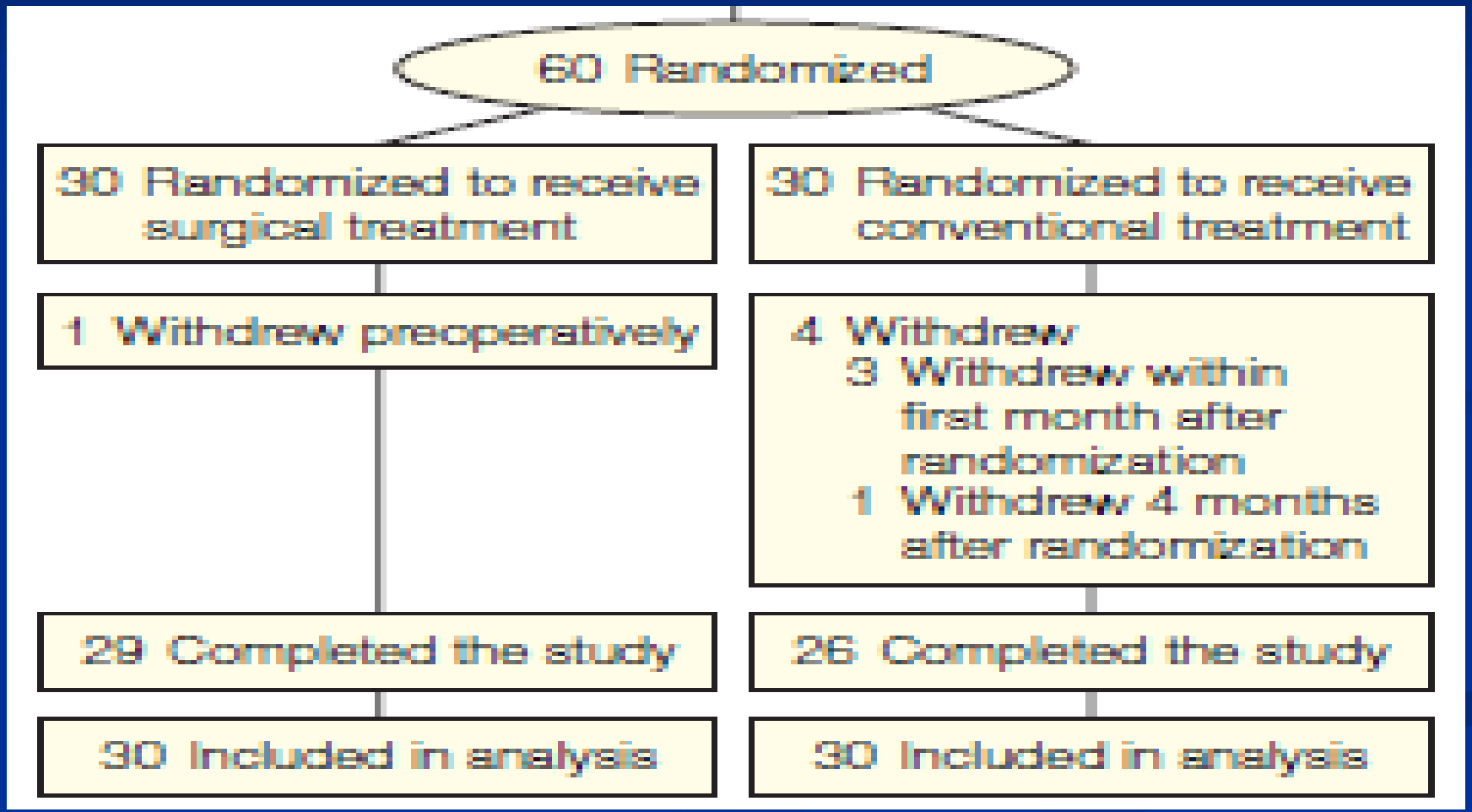
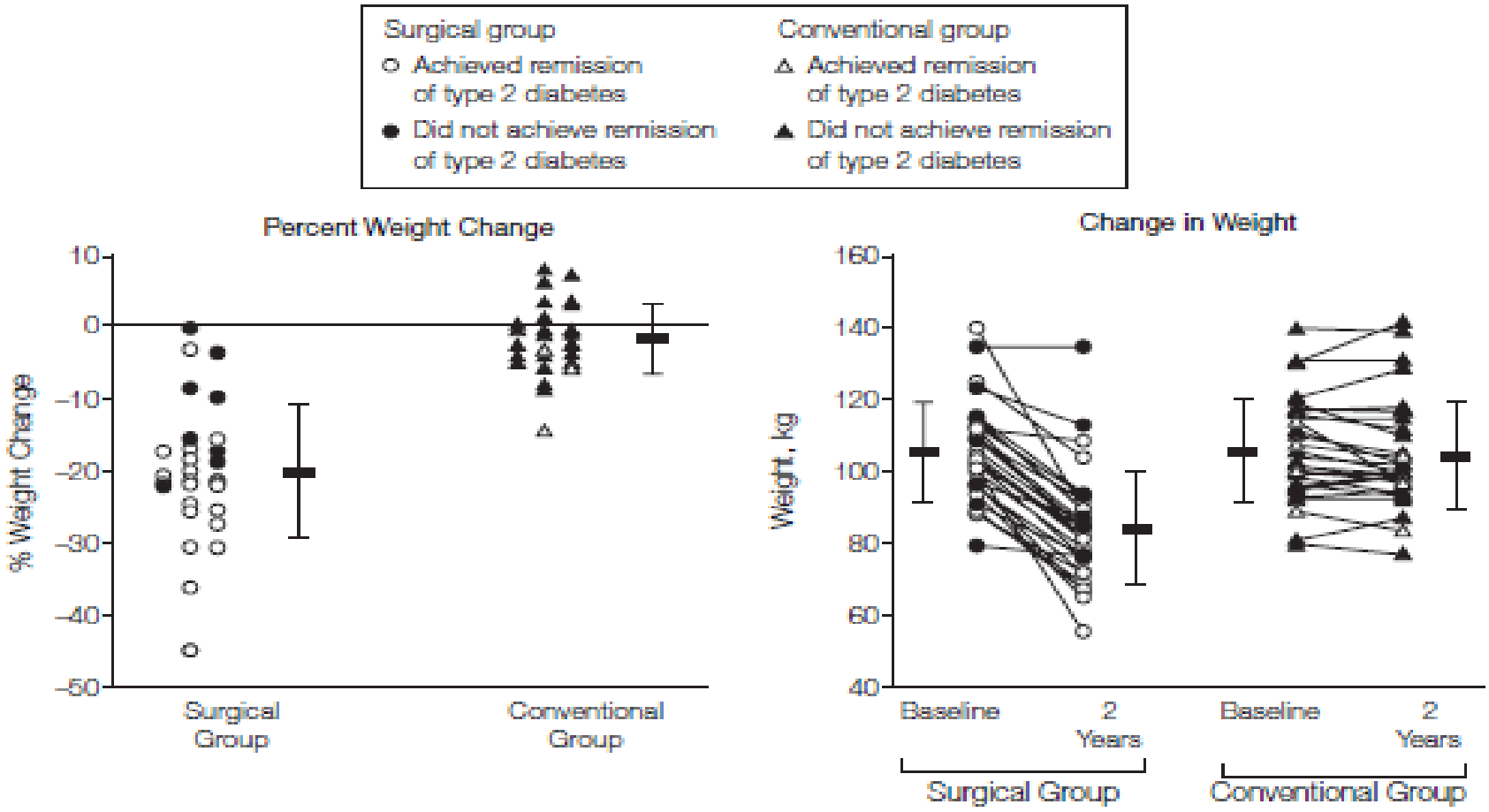

60 Randomized
30 Randomized to receive surgical treatment
30 Randomized to receive conventional treatment
1 Withdrew preoperatively
4 Withdrew
3 Withdrew within first month after randomization
1 Withdrew 4 months after randomization
29 Completed the study
26 Completed the study
30 Included in analysis
30 Included in analysis

Figure 2. Percentage of Weight Loss Achieved Over the 2-Year Study Period (n=60) and Individual Weight Measures at Baseline and at 2 Years



JAMA Jan. 23, 2008-vol. 299, No 3

Φάρμακα που δοκιμάστηκαν σε πρόληψη Τ2ΣΔ

- Μετφορμίνη
- Ακαρβόζη
- Γλιταζόνες
- Ραμιπρίλη
- Ορλιστάτη
- Νατεγλινίδη

ΜΕΤΦΟΡΜΙΝΗ: DPP+DPPOS+IDPP

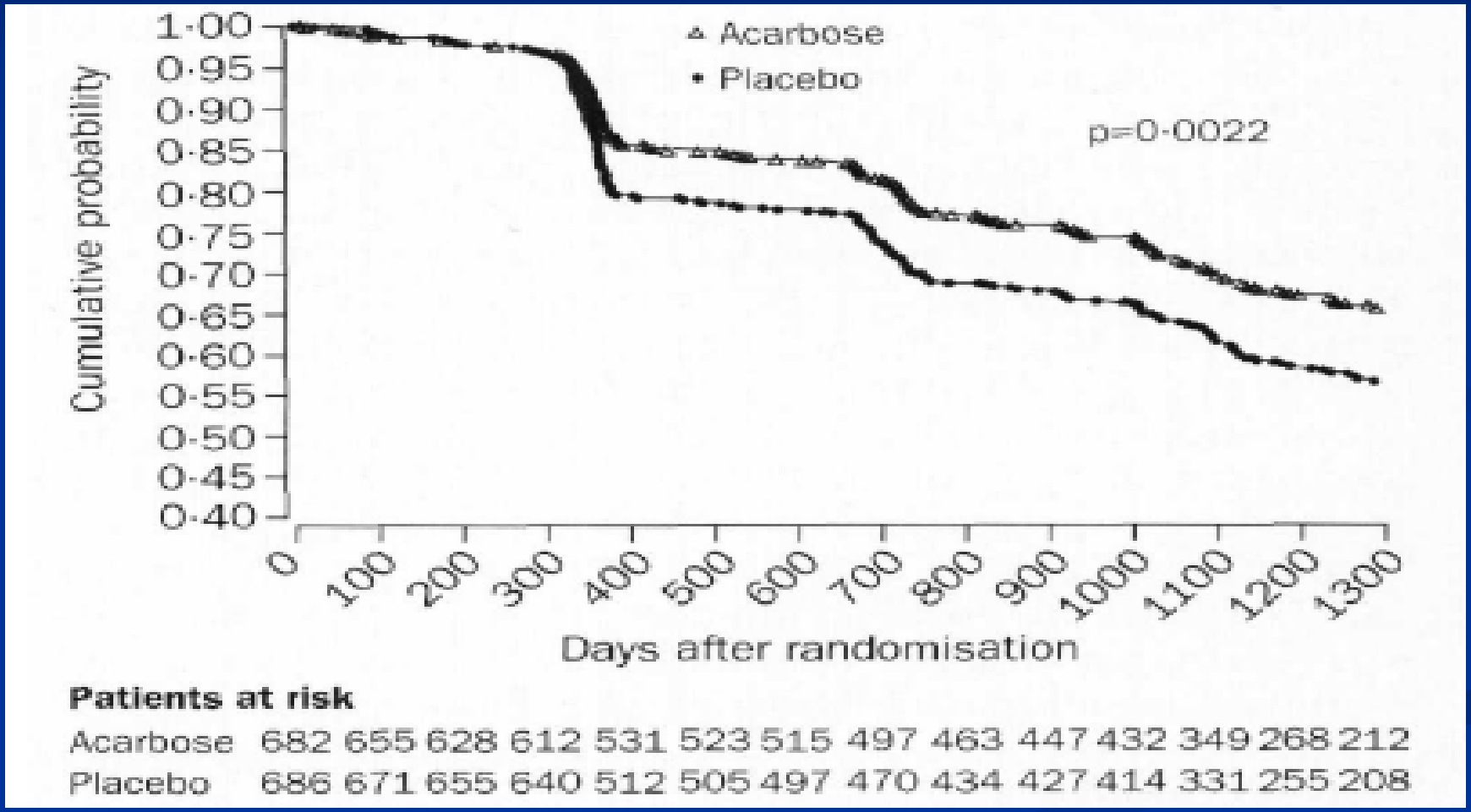
- 31% μείωση Τ2ΣΔ σε σύγκριση με εικονικό
- Πιο αποτελεσματική σε παχύσαρκους(BMI>35 Kg/m2) και σε ηλικίες<45 χρ.
- Μετά από 10 χρόνια η ομάδα της μετφ. διατηρούσε μια απώλεια βάρους 2,5 Kg

  και ο κίνδυνος για τ2ΣΔ μειώθηκε κατά 18% σε σύγκριση με το εικονικό

AKAPBOZH

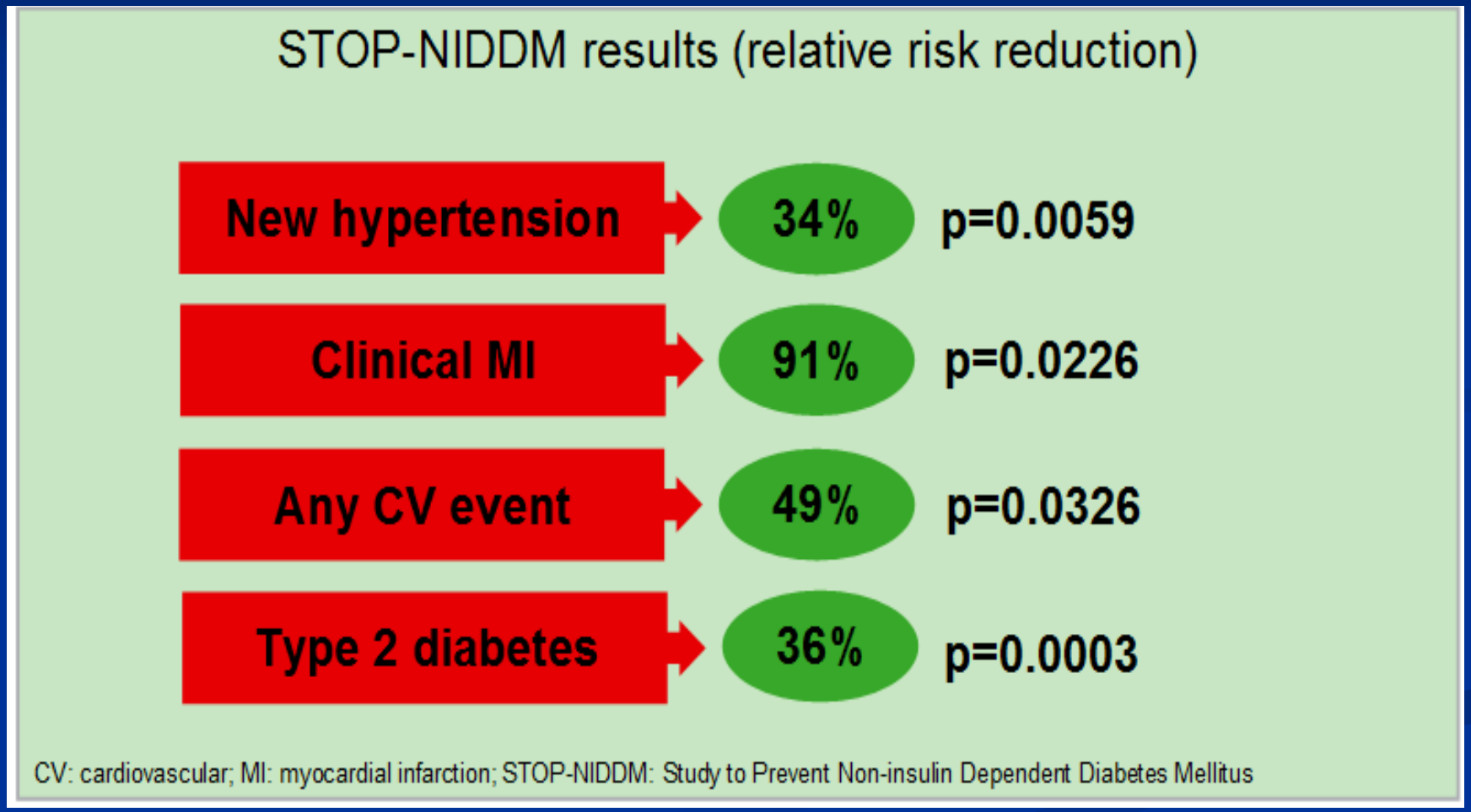
STOP-NIDDM

Figure 3: **Effect of acarbose and placebo on cumulative probability of remaining free of diabetes over time**



The Lancet; Jun 15, 2002; 359, 9323

Ακαρβόζη:πρόληψη ΚΑΕ –Τ2ΣΔ σε δυσγλυκαιμία



Chiasson, Lancet 2002+JAMA 2003

ΓΛΙΤΑΖΟΝΕΣ?

DPP (Troglitazone)

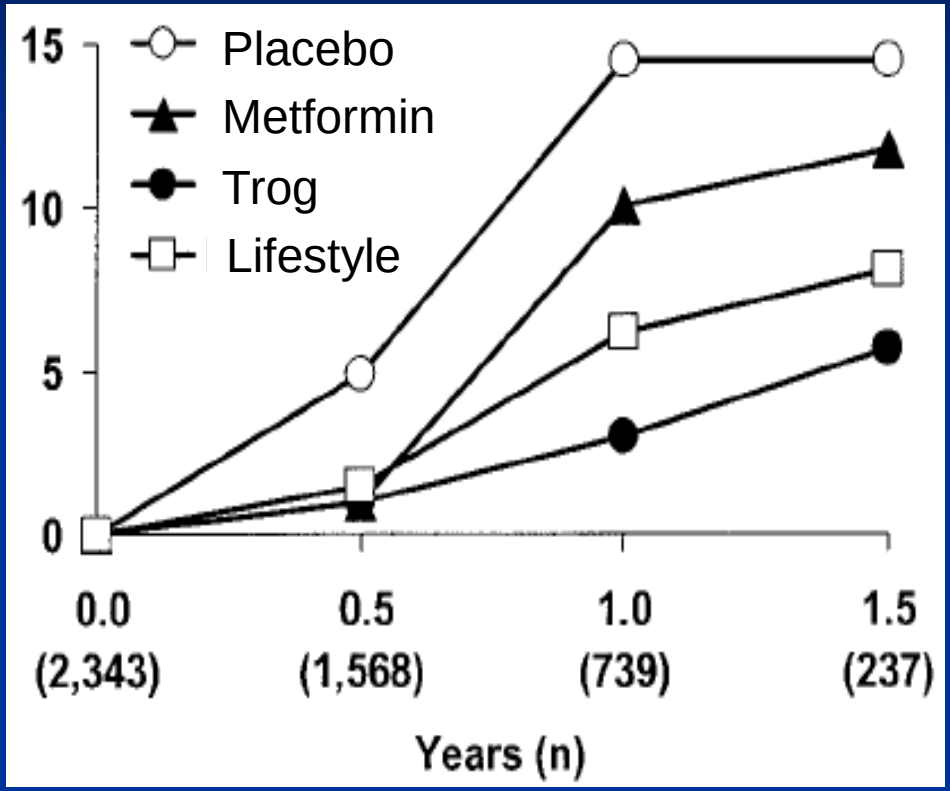
TRIPOD(Troglitazone)

DREAM (Rosiglitazone)

IDPP-2(Pioglitazone))

ACT NOW (Pioglitazone)

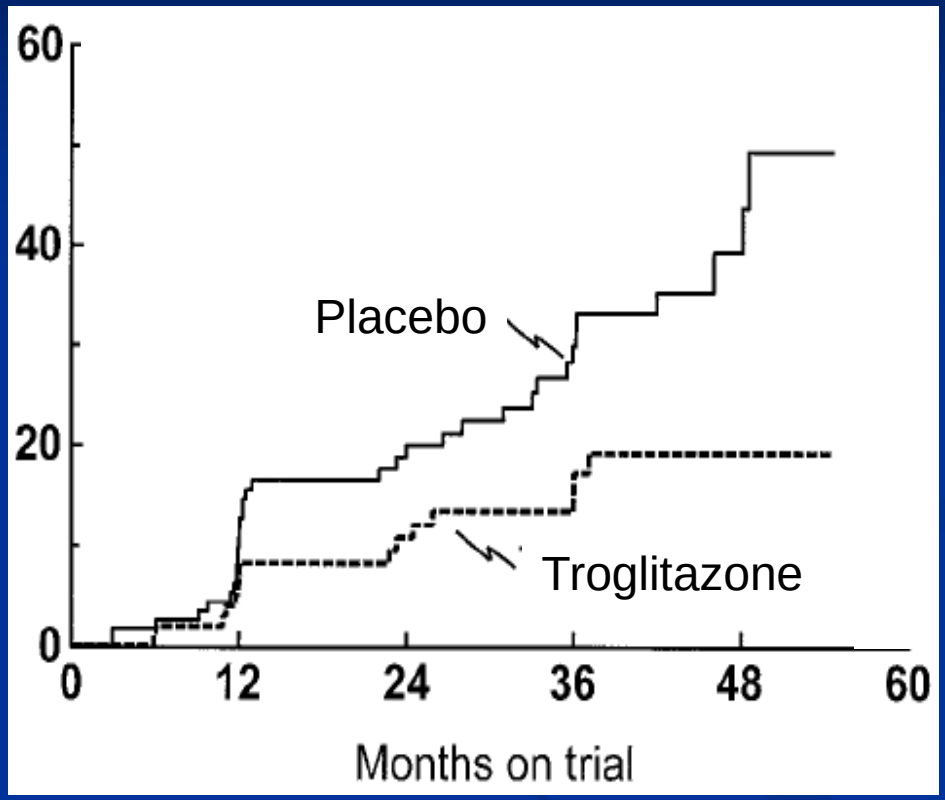
Troglitazone & New Diabetes



Median=0.9 yrs; N (Trog)=585

HR = 0.25 (95%CI 0.14-0.43)

DPP. Diabetes 2005; 1150

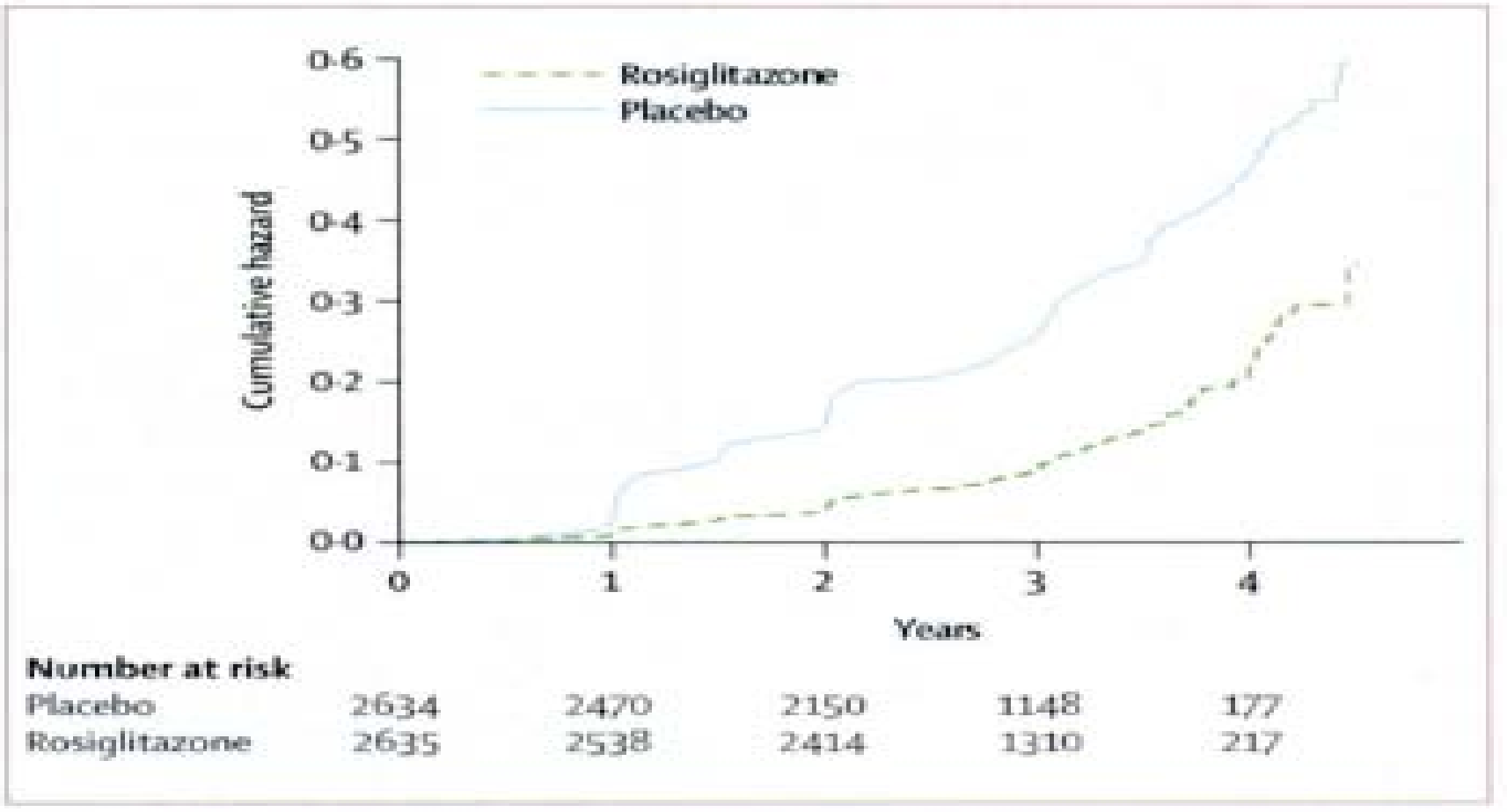


Median=30 mo; N (Trog)=133

HR = 0.45 (95%CI 0.25-0.83)

Buchanan et al. Diabetes 2002: 2796

Πρόληψη τ2 ΣΔ με ροσιγλιταζόνη



DREAM STUDY:The Lancet; Sep 23-Sep 29, 2006; 368

DREAM STUDY

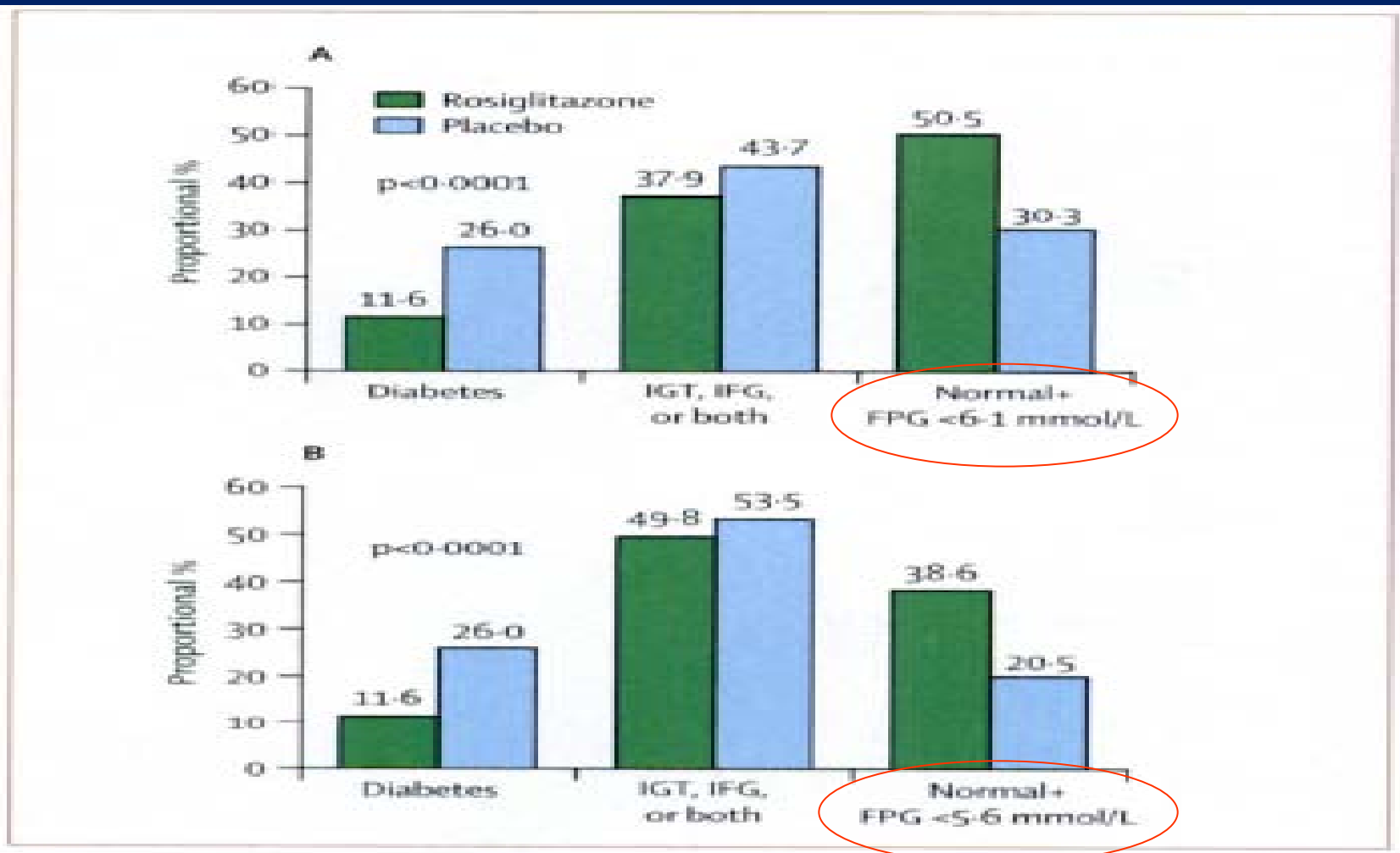


Figure 4: Proportion of participants who either developed diabetes, regressed to normal, or had impaired fasting glucose or impaired glucose tolerance, or both, at the last assessment

The Lancet; Sep 23-Sep 29, 2006; 368, 9541

DREAM

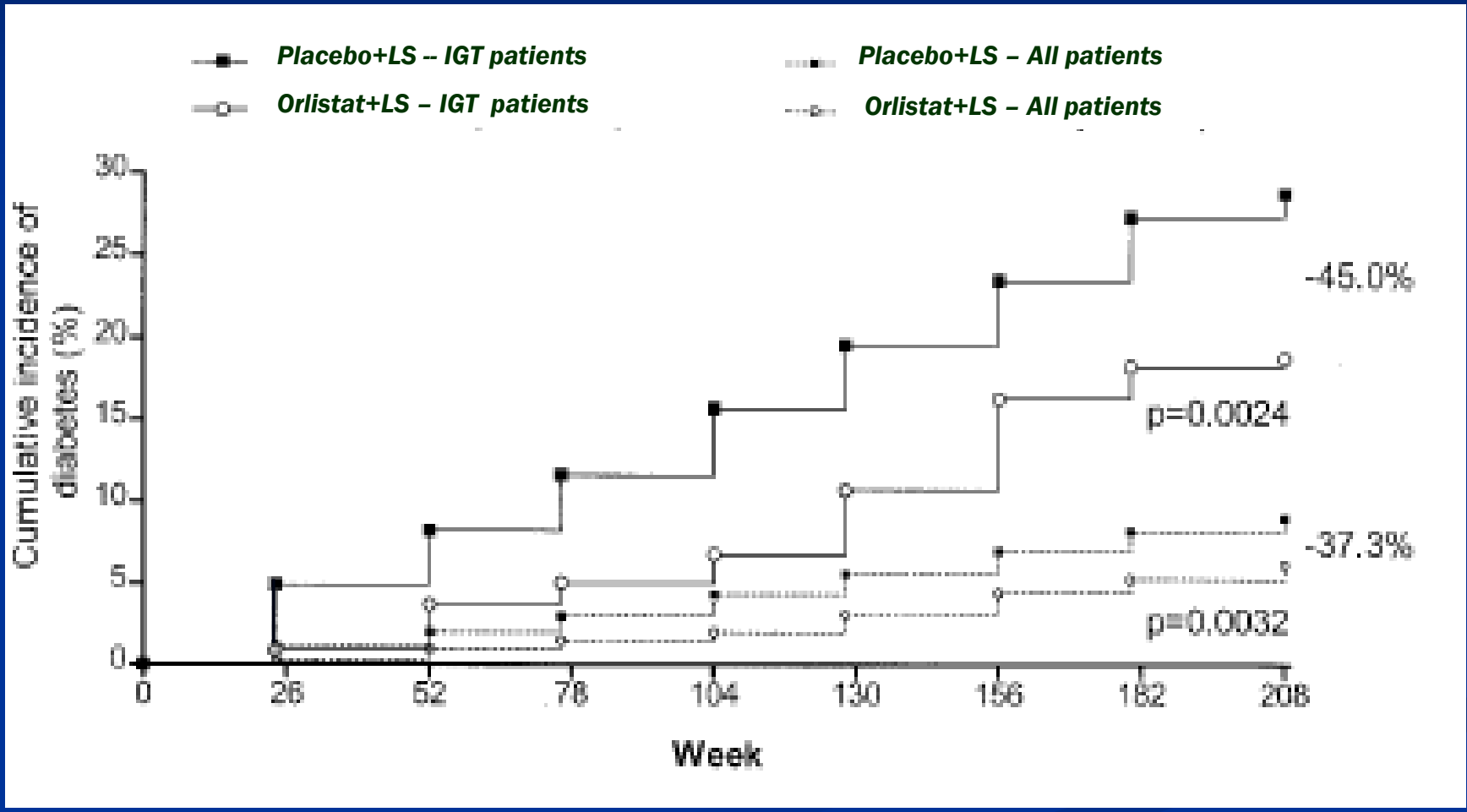
Summary & Conclusions: Rosiglitazone

- A dose of 8 mg/day reduces new DM by > 60% in people with IGT or IFG
- Promotes regression to normal FPG & 2 hr PG by >70%
- Effective in all regions of the world
- Eliminates the gradient of DM risk with increasing weight
- ~ 3% increase in body weight, but a favourable effect on waist/hip ratio
- Reduces ALT

Summary & Conclusions: Ramipril

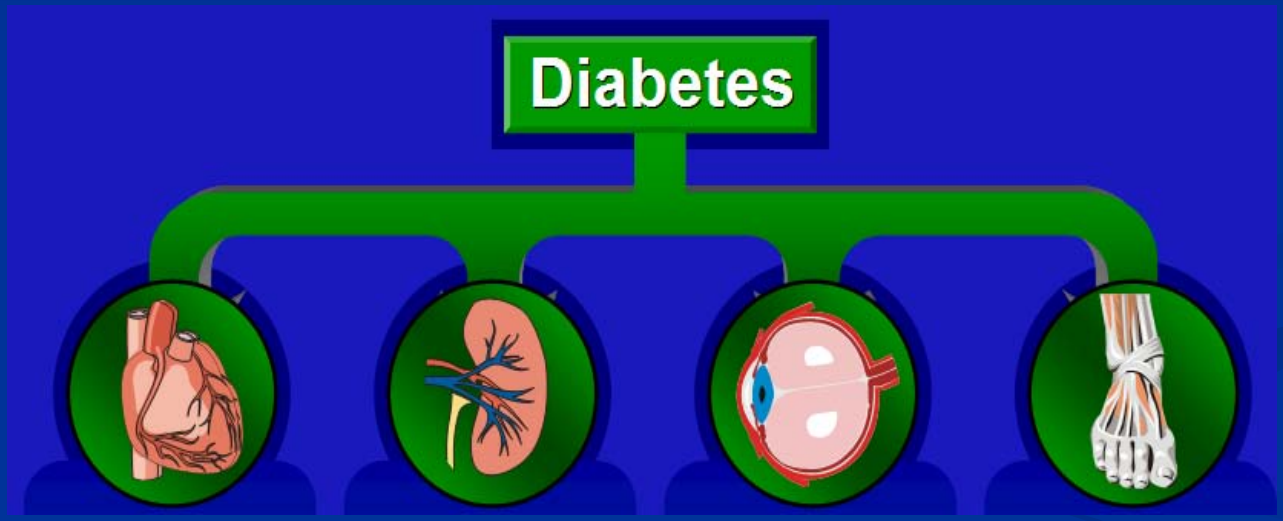
- Modestly improves glycemic status in IFG/IGT
  - A nonsignificant 9% DM reduction
  - Significant 16% increase in regression to normal glucose levels by at least 2 yrs
  - Reduced 2 hr glucose by 0.3 mM by study end
- Significantly reduces BP in IGT / IFG
- Small, favourable effect on liver function

XENDOS: Επιπολασμός Τ2ΔΜ



Diabetes Care 27:155–161, 2004

Χρόνιες επιπλοκές Τ2ΣΔ



DPP-Hypertension

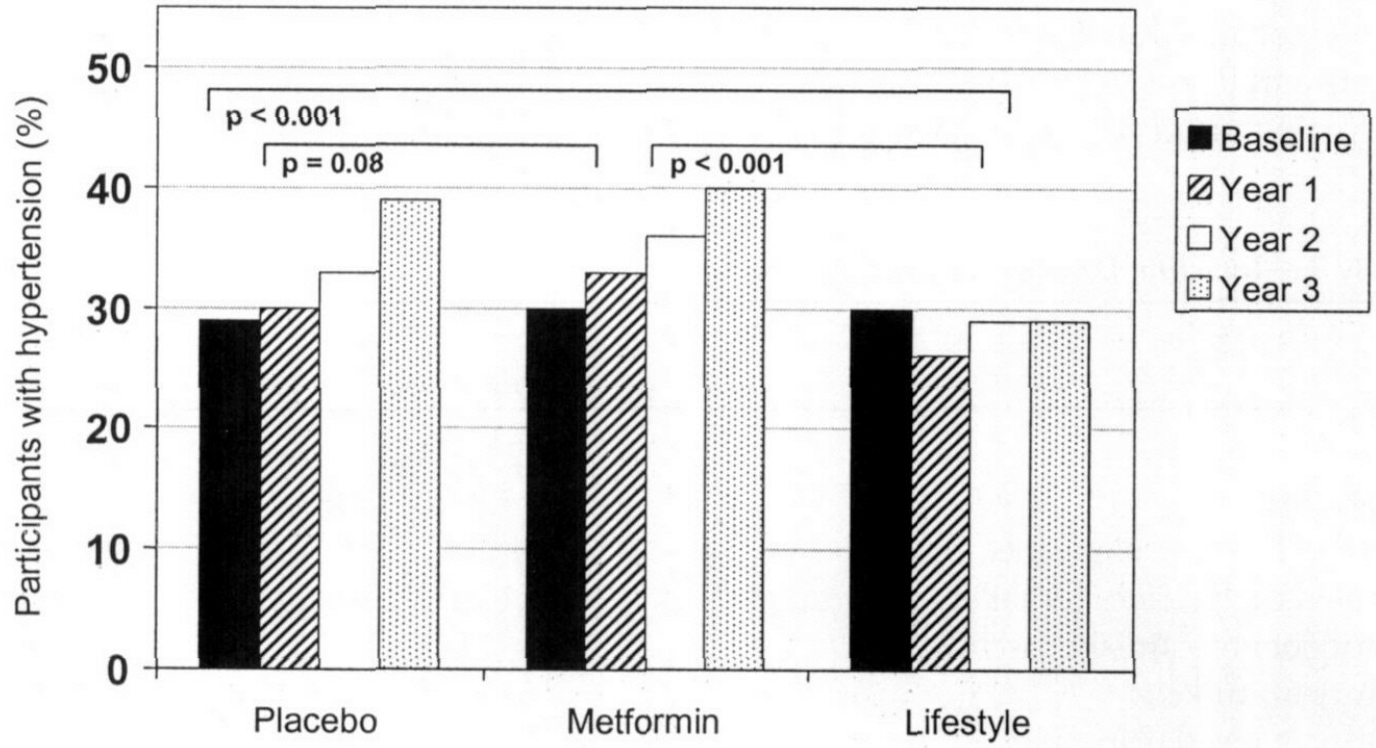
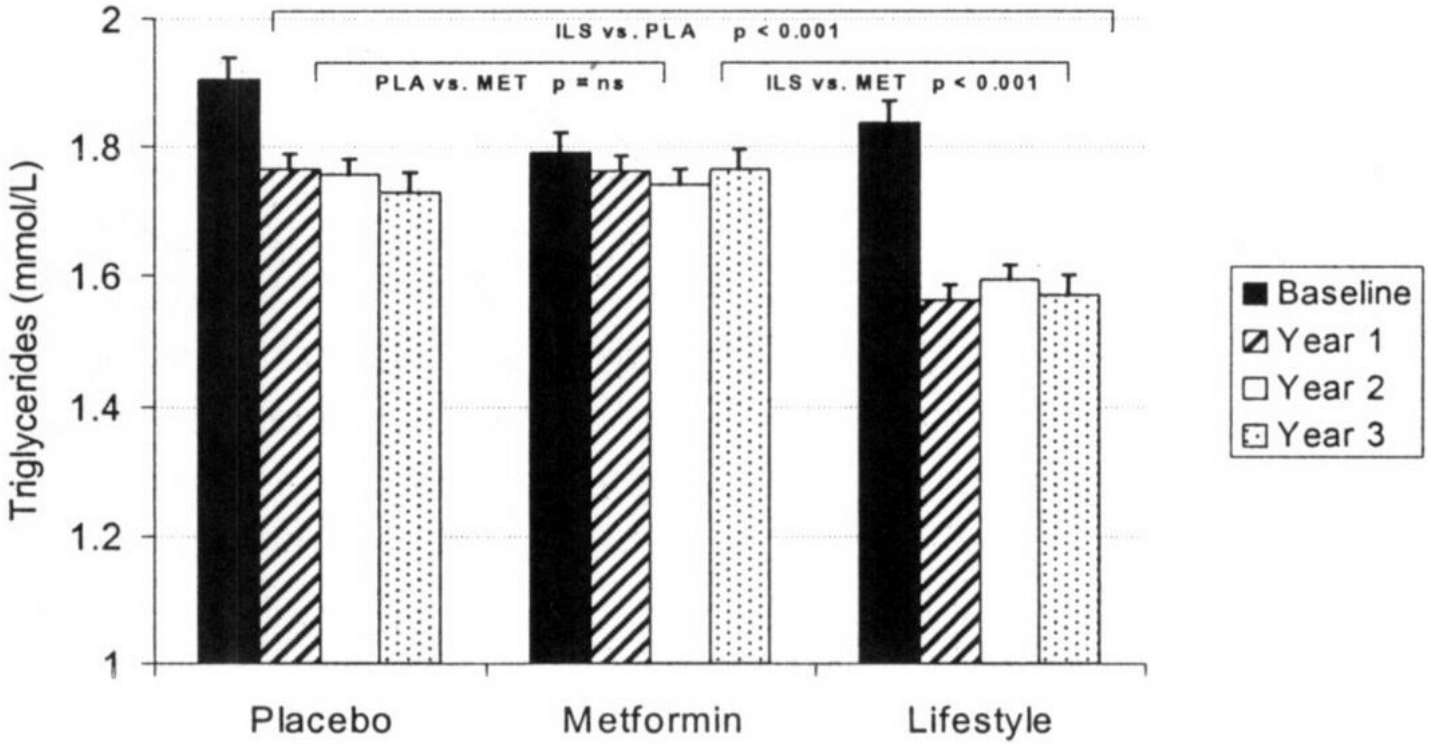


Figure 1—*Categorical changes in hypertension over time by treatment assignment. P represents the pairwise comparison from generalized estimating equation models.*

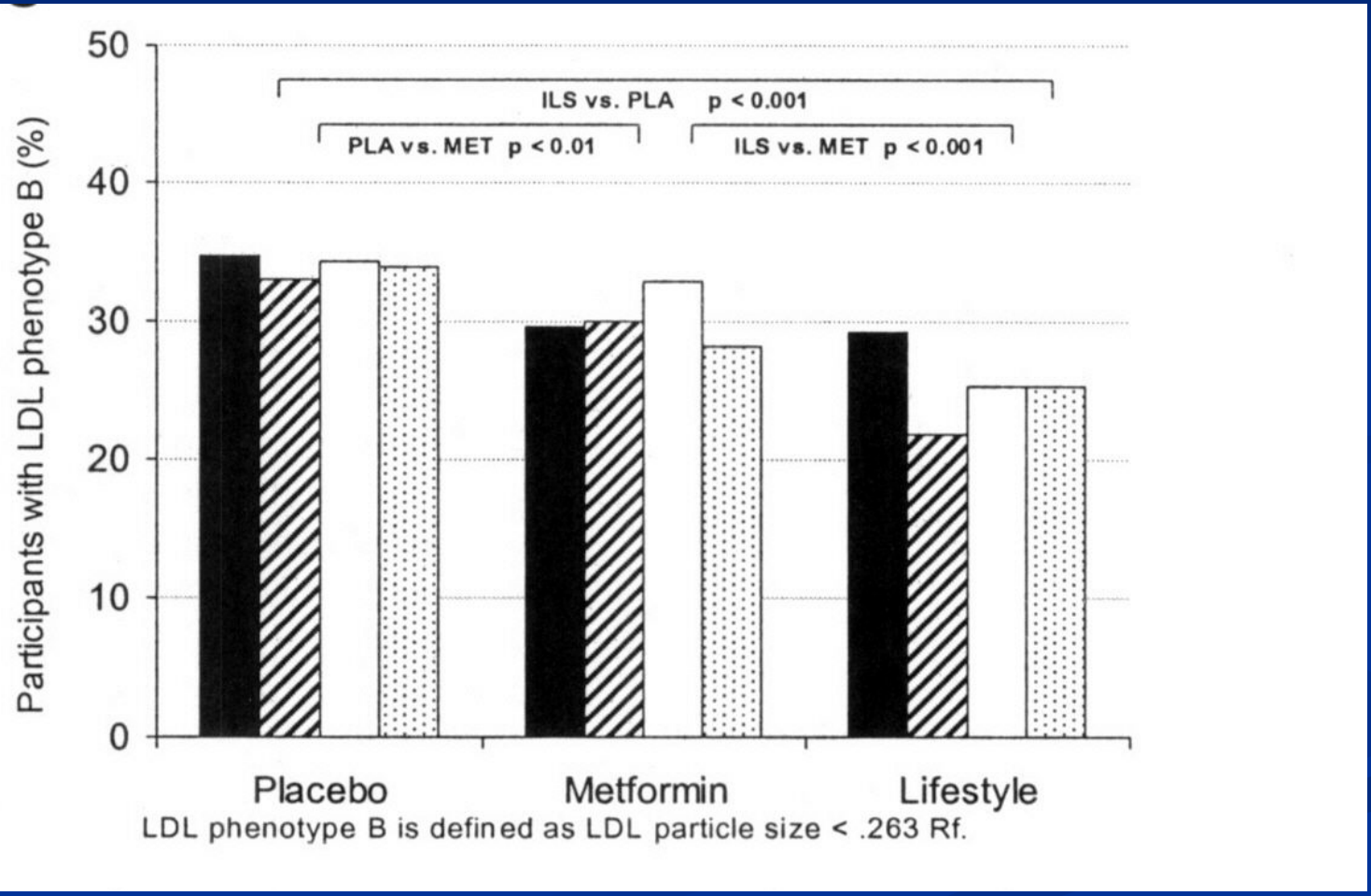
Diabetes Care , April 2005 ,vol. 28, No 4,p. 888-94

DPP-Triglycerides



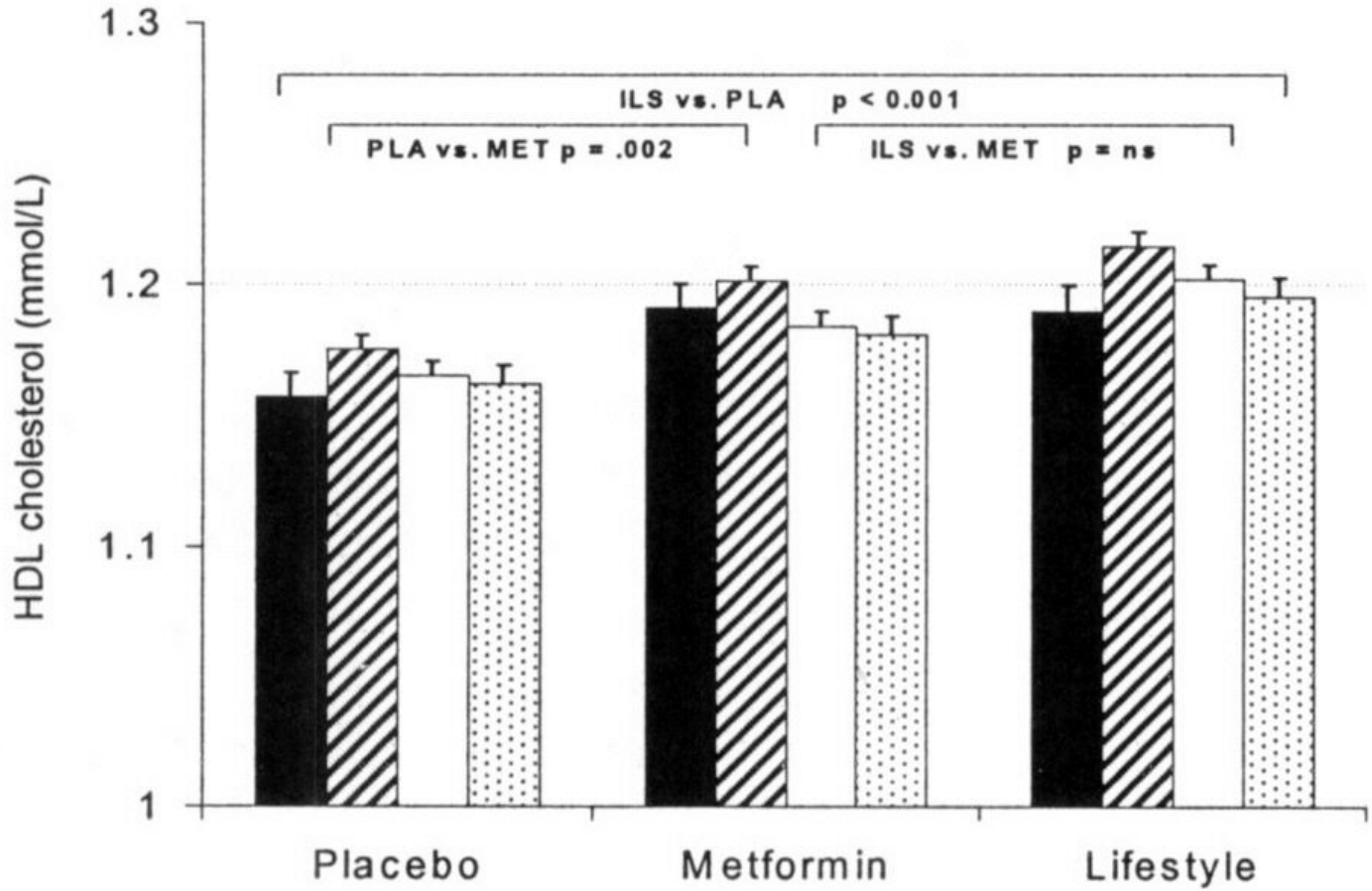
Diabetes Care; Apr 2005; 28, 4; p. 888-94

DPP-LDL



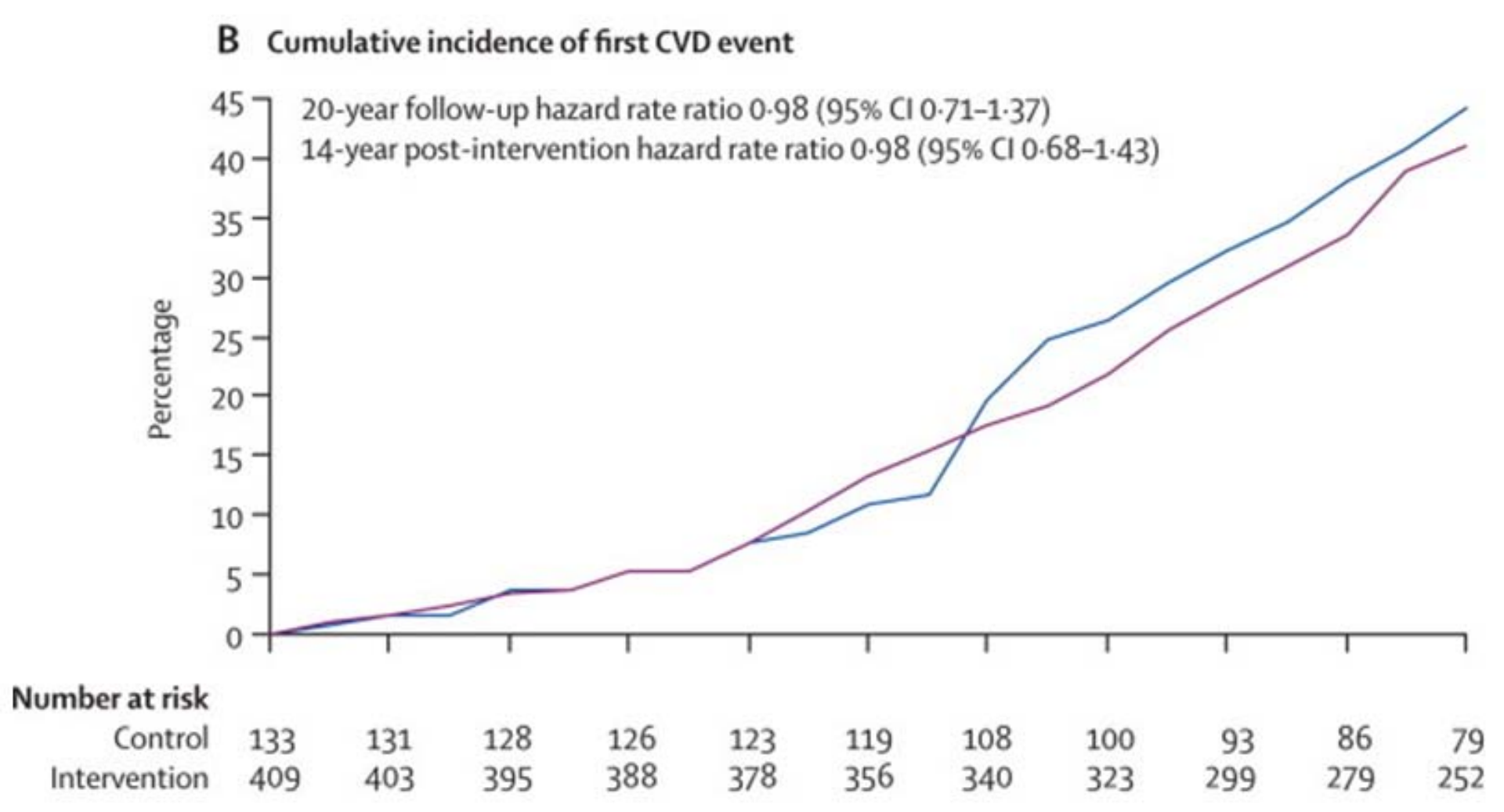
Diabetes Care; Apr 2005; 28, 4; P. 888-94

DPP-HDL



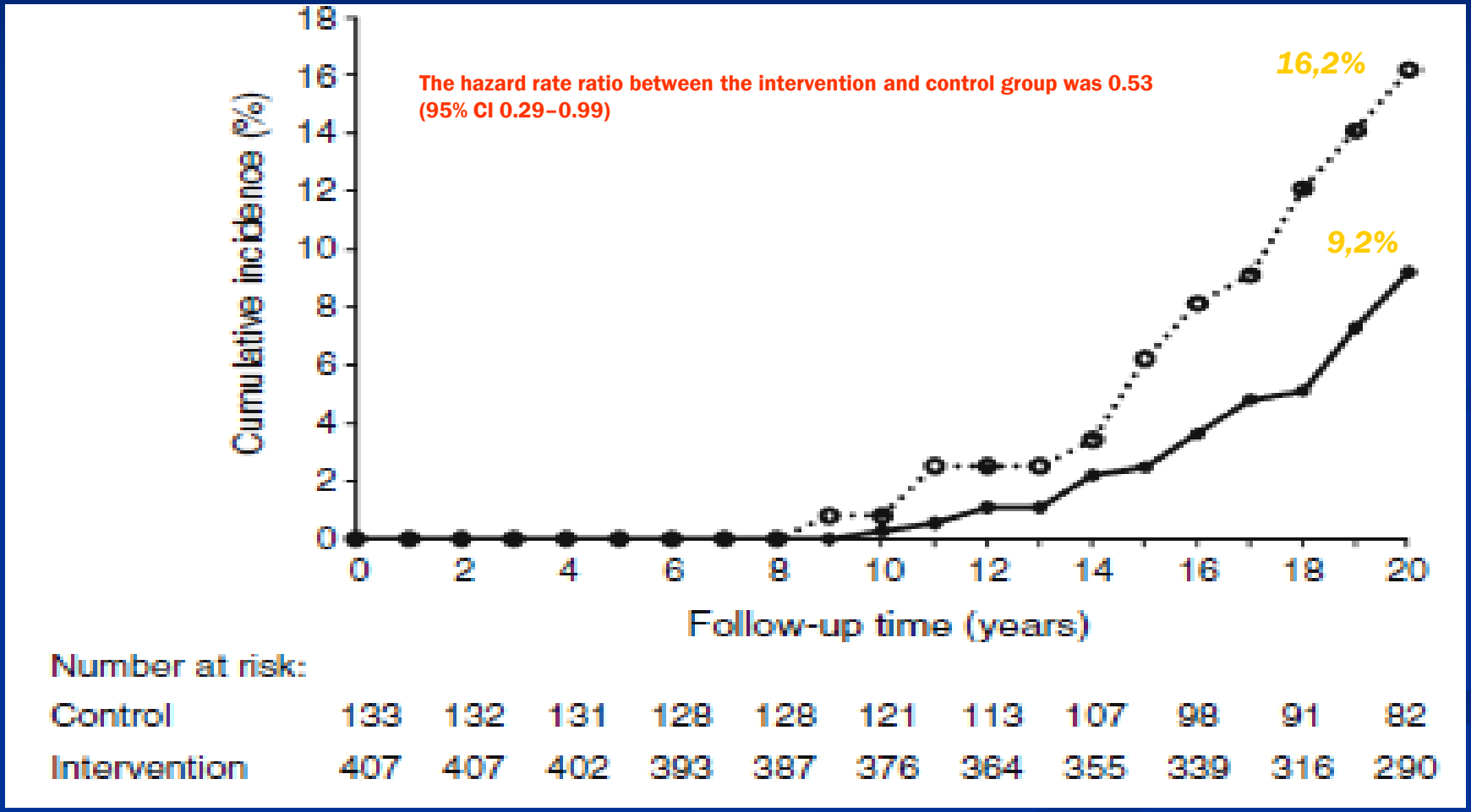
Diabetes Care; Apr 2005; 28, 4; PG. 888-94

Da Qing Study, 20 χρόνια παρακολούθησης



Lancet 371, 1783-89,2008

Severe retinopathy during the 20 year follow-up of the China Da Qing study



Diabetologia puplished on line 3 Nov. 2010

Table 1. Resources for Implementing Lifestyle Modification

For Professionals	For Patients
• DPP Lifestyle Program, http://www.bsc.gwu.edu/dpp/manuals.htmlvdoc o Includes lifestyle manuals for Core (sessions 1–16) and Beyond Core for implementing the ILS program	• National Diabetes Education Program, http://www.ndep.nih.gov/ o Includes the "Game Plan" package of risk assessment, fat and calorie counter, and a food and activity tracker o Tips on preventing diabetes
• GOAL Program, http://www.palmenia.helsinki.fi/ikihyva/InEnglish.html o Guide for implementing the Finnish GOAL community-based ILS program	• American Diabetes Association, http://www.diabetes.org/diabetes-basics/prevention/ o Prevention resources

Πρόληψη Τ2ΣΔ: Κόστος vs Αποτελέσμα

- Ποια από τις στρατηγικές είναι πιο συμφέρουσα σε σχέση με κόστος-αποτέλεσμα?
- Πότε είναι πιο οικονομικά σωστό να ξεκινούμε τέτοια προγράμματα:

  -σε άτομα υψηλού κινδύνου ή

  -με την εμφάνιση του Τ2Σ/Δ

Table 2. Recommendations for Screening for Pre-Diabetes and Diabetes[41]

1. Testing should be considered in all adults who are overweight (BMI $\leq$ 25 kg/m^2) and have additional risk factors:

- physical inactivity
- first-degree relative with diabetes
- members of a high-risk ethnic population (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
- women who delivered a baby weighing > 9 lb or were diagnosed with gestational diabetes mellitus
- hypertension ($\leq$ 140/90 mmHg or on therapy for hypertension)
- HDL cholesterol level < 35 mg/dl and/or a triglyceride level > 250 mg/dl
- women with polycystic ovarian syndrome
- A1C $\leq$ 5.7%, impaired glucose tolerance or impaired fasting glucose on previous testing
- other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)
- history of cardiovascular disease

2. In the absence of the above criteria, testing for pre-diabetes and diabetes should begin at the age of 45 years.

3. If results are normal, testing should be repeated at least at 3-year intervals, with consideration of more frequent testing depending on initial results and risk status.

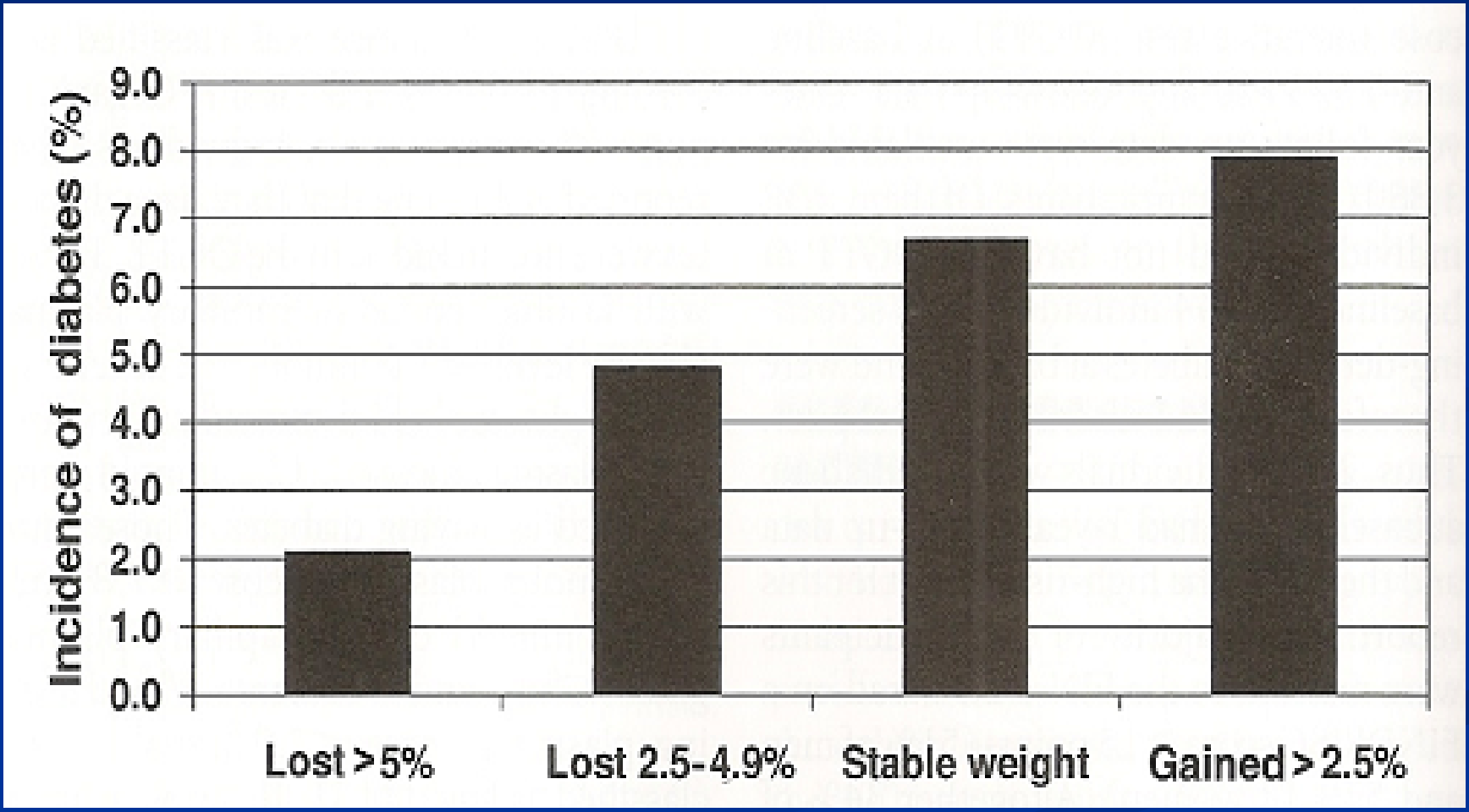
Table 1—*Changes in clinical and metabolic characteristics from baseline to years 1 and 3 in the GOAL Lifestyle Implementation Trial*

	Baseline	Change from baseline to year 1	Paired *t* test (df), *P*	Change from baseline to year 3	Paired *t* test (df), *P*
n	352	312		266	
[redacted]	90.0 ± 16.6	**−0.8 ± 4.5**	*t* = 3.135 (299), *P* = 0.002	[redacted]	*t* = 3.042 (261), *P* = 0.003
[redacted]	32.6 ± 5.0	**−0.3 ± 1.6**	*t* = 2.988 (299), *P* = 0.003	[redacted]	*t* = 3.493 (261), *P* = 0.001
Waist circumference (cm)	105.3 ± 12.3	**−1.6 ± 4.8**	*t* = 5.528 (291), *P* < 0.001	0.1 ± 6.4	NS
Fasting plasma glucose (mmol/l)	5.7 ± 0.8	**0.1 ± 0.6**	*t* = 3.523 (309), *P* < 0.001	0.0 ± 0.8	NS
2-h plasma glucose (mmol/l)	6.6 ± 1.7	0.1 ± 1.7	NS	0.1 ± 1.9	NS
[redacted]	5.5 ± 1.0	**−0.1 ± 0.9**	*t* = 2.133 (311), *P* = 0.034	[redacted]	*t* = 6.573 (265), *P* < 0.001
Serum HDL cholesterol (mmol/l)	1.5 ± 0.4	−0.0 ± 0.3	NS	0.0 ± 0.3	NS
[redacted]	3.9 ± 1.0	−0.0 ± 0.8	NS	[redacted]	*t* = 3.196 (265), *P* = 0.002
[redacted]	1.6 ± 0.8	−0.07 ± 0.63	NS	[redacted]	*t* = 3.745 (265), *P* < 0.001

Data are mean change ± SD. Values in bold are statistically significant differences between measurement points.

Diabetes Care August 2009 vol. 32 no. 8 1418-1420

FIN-D2D: Επιπολασμός Τ2ΣΔ κατά τη διάρκεια του 1ου χρόνου σύμφωνα με την απώλεια βάρους



DIABETES CARE, VOL . 33, N0. 10,OCT. 2010, P.2146-2151

Table 1—*Lifetime impact of the DPP lifestyle intervention in overweight or obese 50-year-old adults with IGT

Outcomes	Placebo intervention	DPP lifestyle intervention begun at age 50	DPP lifestyle intervention delayed until age 65†
Progression to diabetes			
Lifetime direct medical costs	$52,321	$53,079	$52,552
Lifetime QALYs	10.68	11.27	10.83
Incremental cost versus placebo	—	$758	$231
Incremental QALY versus placebo	—	0.59	0.27
Incremental cost per QALY gained	—	$1,288	$1,575

Diabetes Care June 2006 vol. 29 no. 6 1237-1241

Treatment recommendation for individuals with IFG, IGT, or both

Population	Treatment
IFG or IGT	Lifestyle modification (i.e., 5–10% weight loss and moderate intensity physical activity 30 min/day)
Individuals with IFG *and* IGT and one of the following: ● < 60 years of age ● BMI >35 kg/m2 ● Family history of diabetes in first-degree relatives ● Elevated triglycerides ● Reduced HDL cholesterol ● Hypertension ● A1C 6.0%	Lifestyle modification (as above) and/or metformin

DIABETES CARE, VOLUME 30, NUMBER 3, MARCH 2007

International Diabetes Federation

2010

Summary of Published Cost-Effectiveness Analyses

Study and setting(s)	Year of Costs	Methods	Findings
Quilici et al.[1] **Sweden**	2003 (SEK)	Within trial cost-effectiveness analysis of acarbose, based on STOP-NIDDM, 40 month time horizon, projected total direct costs based on progression to type 2 diabetes or cardiovascular disease.	Acarbose dominant to placebo for high risk groups.
Caro et al.[2] **Canada**	2000 ($CD)	Markov model, based on DPP, DPS and STOP-NIDDM, projected LE, diabetes-free years, and total direct lifetime costs, 10 year time horizon.	Acarbose and metformin dominant versus control, ILC cost-effective to control (ICER $749 per life year gained)
DPP Research Group[3] **USA**	2000 ($US)	Within trial cost-effectiveness of DPP interventions (3 years), direct and indirect costs, extensive sensitivity analyses.	ILC cost-effective versus placebo. Significant improvements in economic benefits if implementation costs reduced.
Herman et al.[4] **USA**	2000 ($US)	Markov model, DPP and UKPDS data adapted to US setting, projected LE, QALE and total direct medical costs, lifetime time horizon, healthcare payer and societal perspectives taken.	ILC dominant versus metformin, metformin not cost-effective for over 65 years of age, outcomes sensitive to the pricing of treatments
Palmer et al.[5] **Australia, France, Germany, Switzerland, UK**	2002 (€)	Markov model, based on DPP, projected LE, years free of diabetes and total direct costs, lifetime time horizon, extensive sensitivity analyses and sub-group analyses on age and BMI.	ILC and metformin dominant versus control except UK (ICER €6,381 and 5,400 per life year gained, respectively)
Mantavani et al.[6] **Italy**	2004 (€)	Markov model, based on DPP, adapted to Italian setting, projected LE, years free of diabetes and total direct costs, lifetime time horizon.	ILC and metformin cost-effective versus control (ICER €11,234 and 11,556 per life year gained, respectively)
Palmer et al.[7] **Spain**	2004 (€)	Markov model, based on DPP, adapted to Spanish setting, projected LE, years free of diabetes and total direct costs, lifetime time horizon.	Metformin cost-effective versus control (ICER €5,080 per life year gained), ILC costs prohibitive due to personnel costs.
Eddy et al.[8] **USA**	2005 ($US)	Archimedes model, based on ILC intervention from DPP, projected LE, total direct costs, 30 year time horizon.	ICER $62,602 and $35,523 for ILC and metformin versus control, respectively

ΣΥΜΠΕΡΑΣΜΑΤΑ 1

- Υπέρβαροι+παχύσαρκοι
  1. Απώλεια βάρους 5-10%
  2. Άσκηση μετρίας έντασης ,150 λ./βδ.
  3. Λίπος <30% καθημερινών θερμιδικών αναγκών.
  4. Μείωση μερίδας φαγητού και θερμίδων
  5. Αύξηση κατανάλωσης φρούτων και λαχανικών.

ΣΥΜΠΕΡΑΣΜΑΤΑ 2

- Σ αυτούς που δεν πετυχαίνουν τους προηγούμενους στόχους ή παρά την επίτευξη τους η διαταραχή εξελίσσεται συνιστάται μετφορμίνη, ιδιαίτερα σε νέους παχύσαρκους.
- Η ακαρβόζη, επίσης μπορεί να προσφέρει μείωση της πιθανότητας εμφάνισης τ2 ΣΔ.

New Blood Markers for Type 2 Diabetes May Help to Identify Patients at Risk

For the first time, scientists have found that blood levels of some ribonucleic acids (microRNAs) are different among people with type 2 diabetes and those who subsequently develop the disease compared to healthy controls, according to research reported in *Circulation Research: Journal of the American Heart Association.*

0 comments - Sep 22, 2010 -


World Diabetes Day - 14 November
Let's take control of Diabetes.
Now.

Κατεχόμενη Αμμόχωστος