Il Follow-up materno



Cristina Lencioni

UO Diabetologia e Malattie del Metabolismo
ASL Toscana Nordovest-
Sezione di Lucca

DOPO NOVE MESI

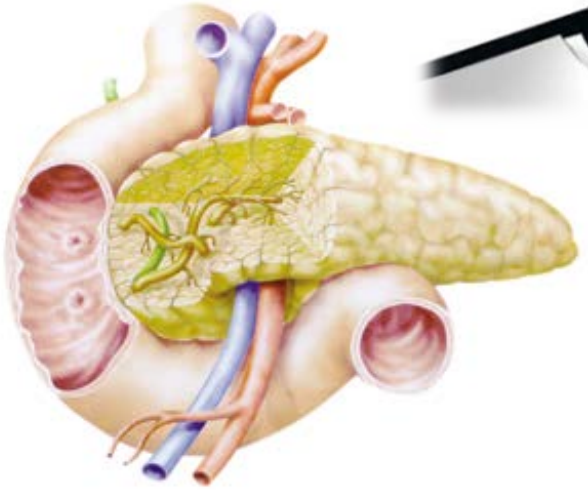


MI HA SFRATTATO E HA PURE IL CORAGGIO DI DIRE CHE MI AMA!!!!

Glucose tolerance returns to normal levels after delivery in the majority of GDM women

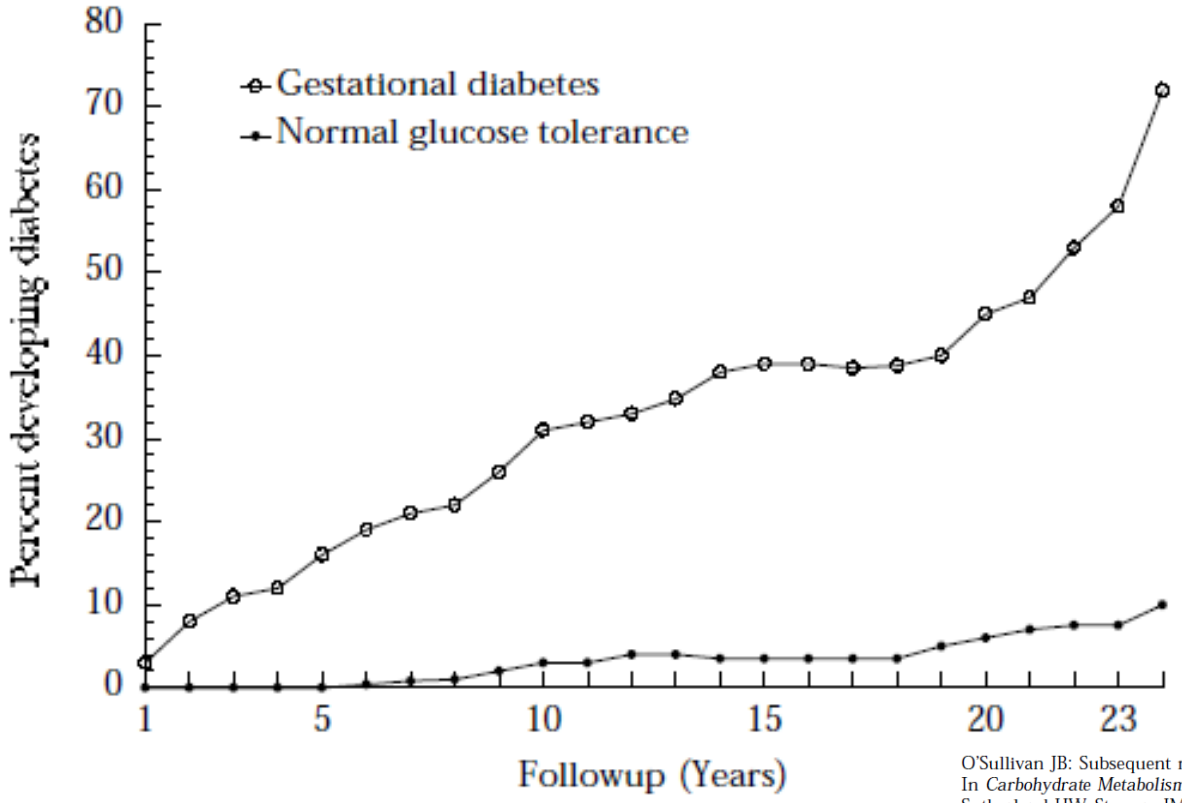
GDM





GDM and Type 2 Diabetes
"Boston Gestational Diabetes Study"

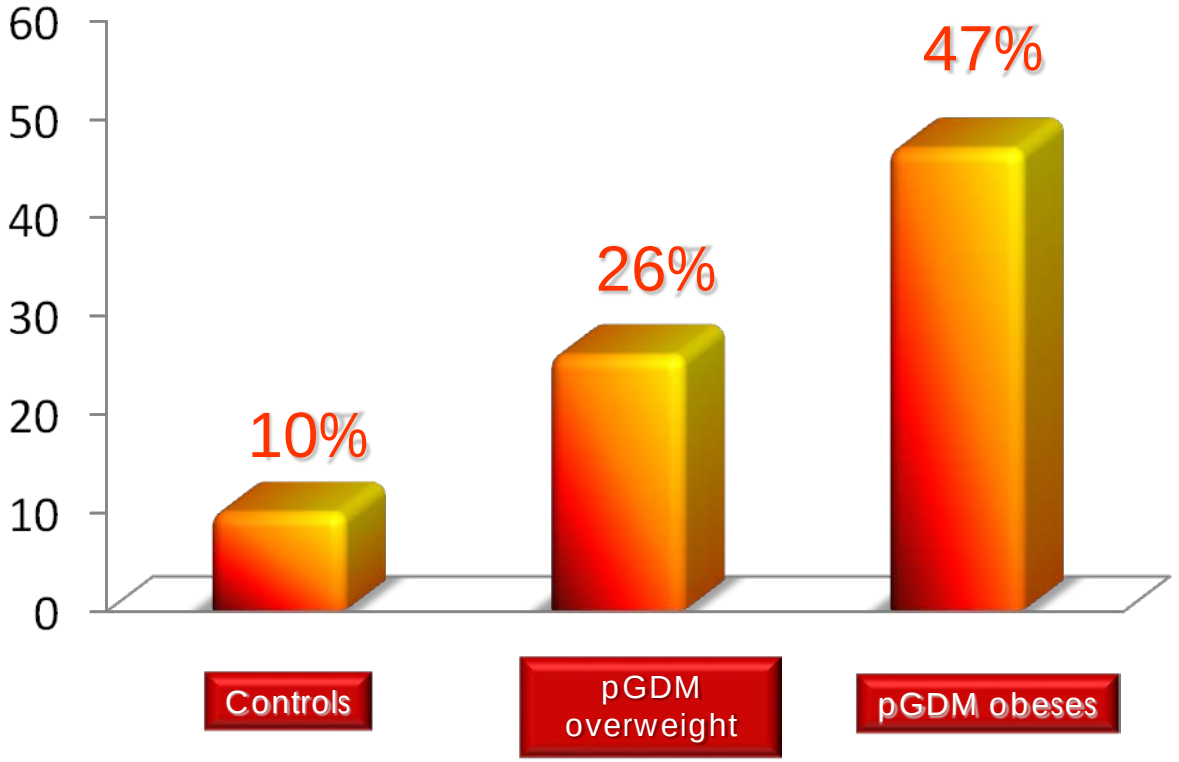
Cumulative Incidence of Diabetes in Women with Normal Glucose Tolerance or Gestational Diabetes During Their Index Pregnancy



O'Sullivan JB: Subsequent morbidity among GDM women. In *Carbohydrate Metabolism in Pregnancy and the Newborn*. Sutherland HW, Stowers JM, Eds. New York, NY, Churchill Livingstone, 1984, p. 174-80

United States Public Health Service criteria were used to diagnose diabetes during the followup.

GDM and Type 2 Diabetes
"Boston Gestational Diabetes Study"

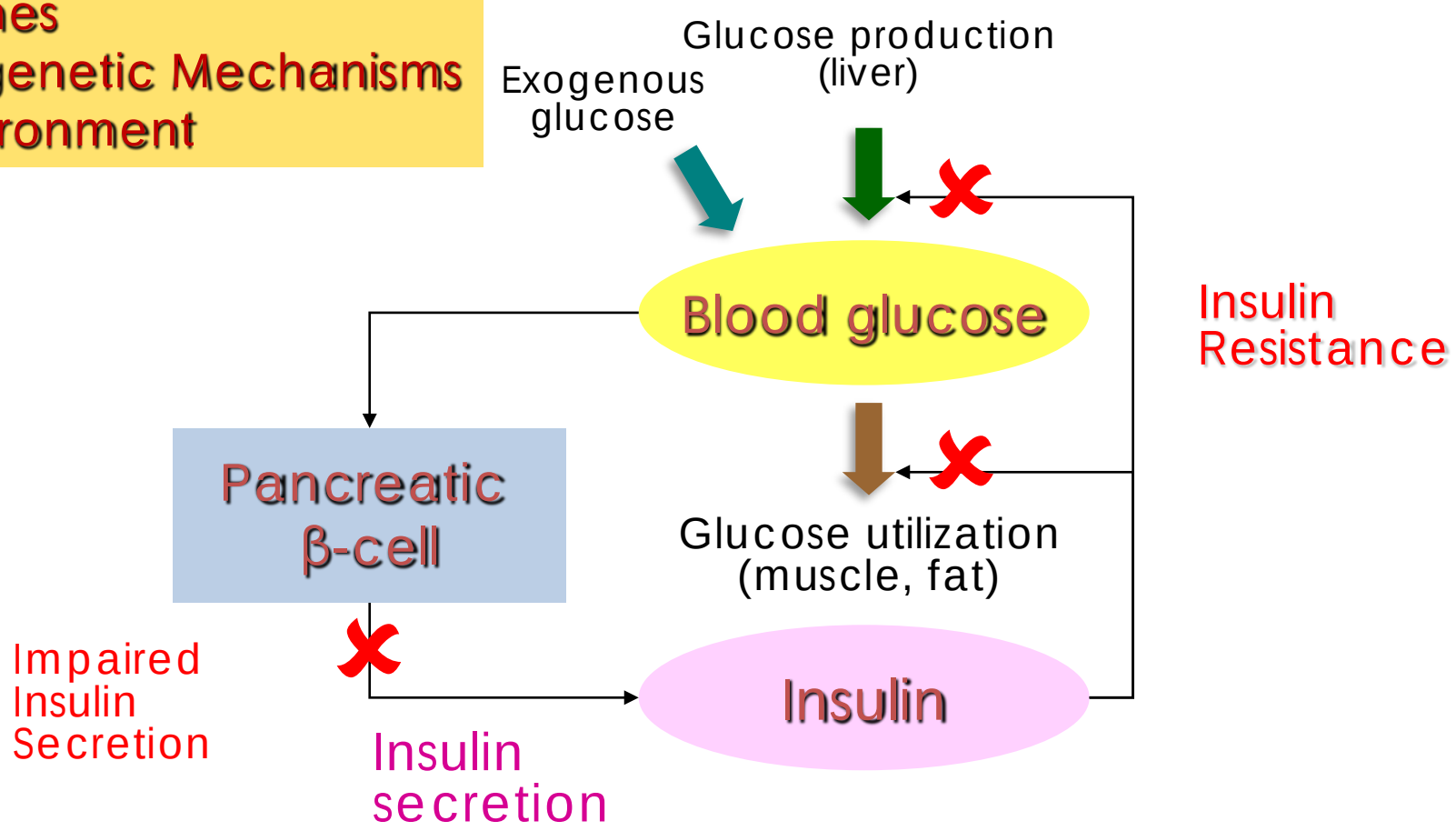


Follow-up 22-28 years

O' Sullivan 1982

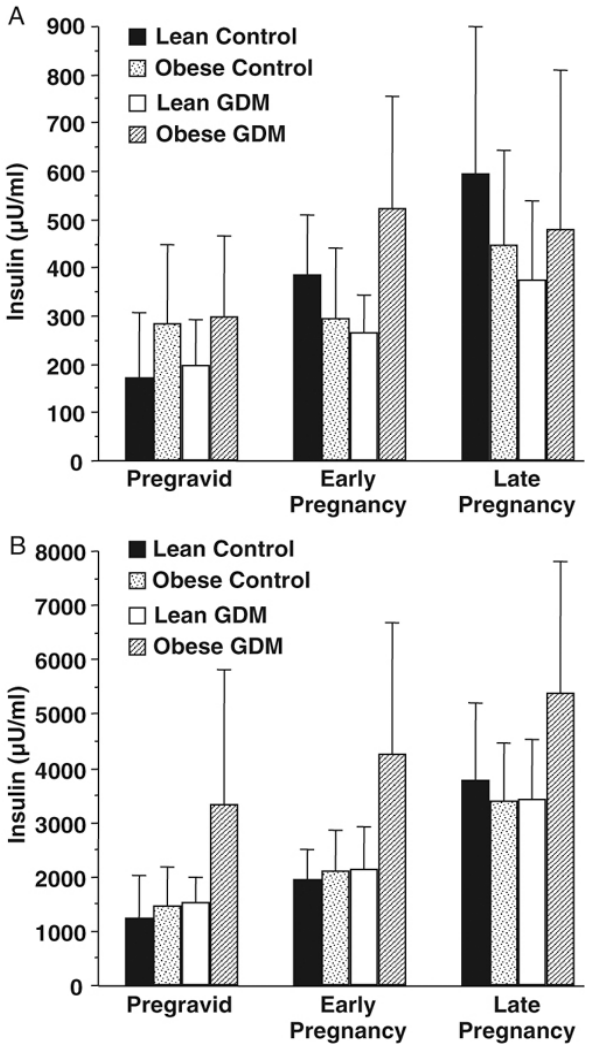
Type 2 DM – GDM defect in the regulation of blood glucose

- Genes
- Epigenetic Mechanisms
- Environment



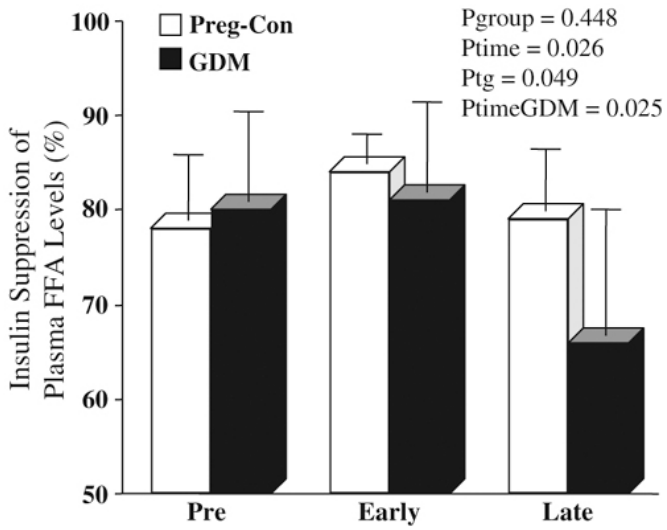
Longitudinal metabolic changes in normal pregnancy and woman with GDM

1st Phase Insulin Secretion



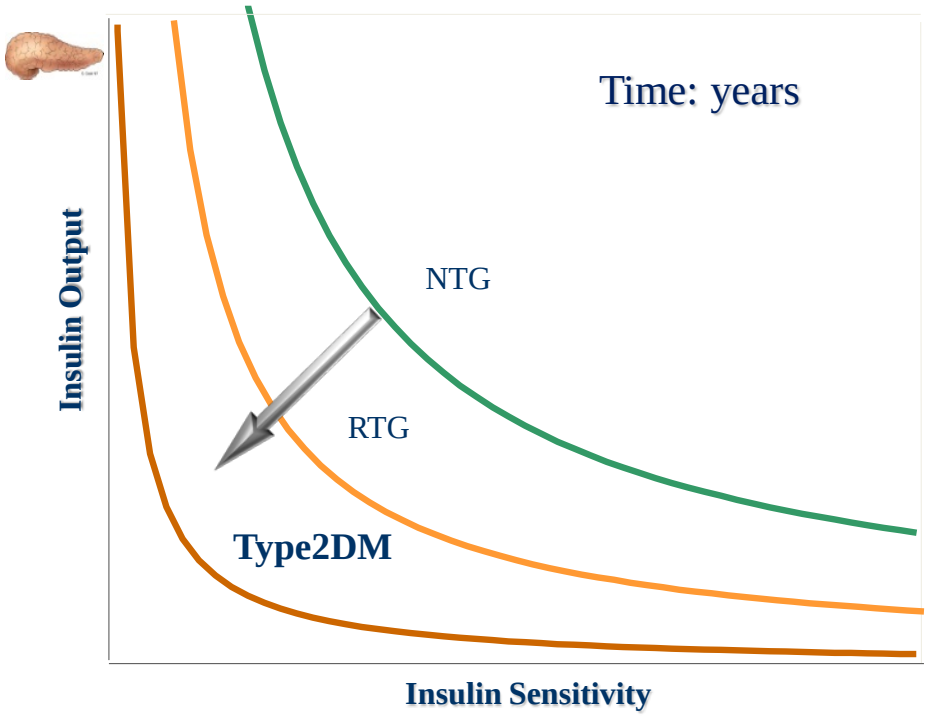
LATE GESTATION

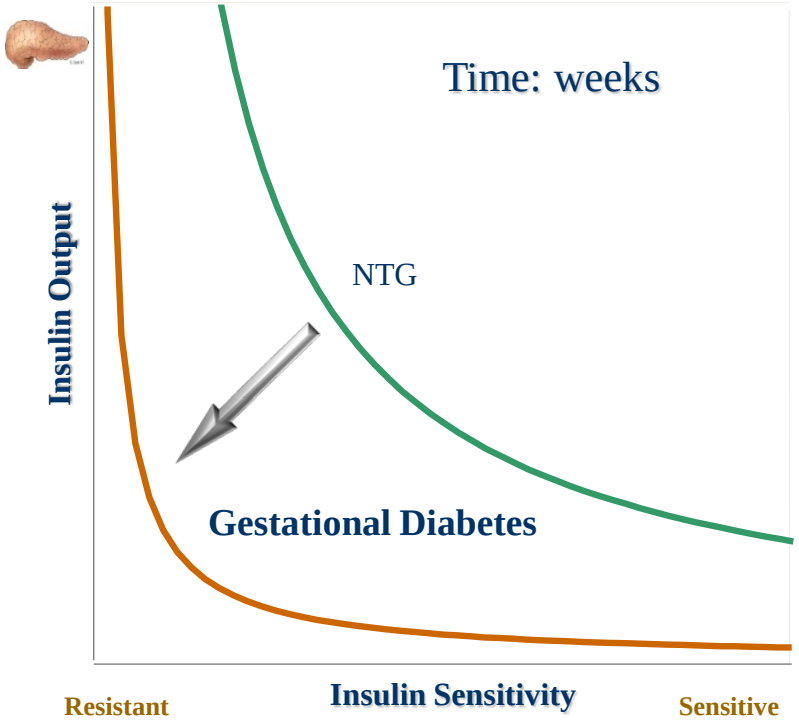
- *Increased hepatic glucose production*
- *Decreased hepatic insulin sensitivity*
- *Decreased lipid insulin sensitivity*



Lain K and Catalano P, Clin Obstet and Gynecol 2007 (Review)

Type 2 Diabetes and GDM relationship between β-cell secretion and insulin sensitivity





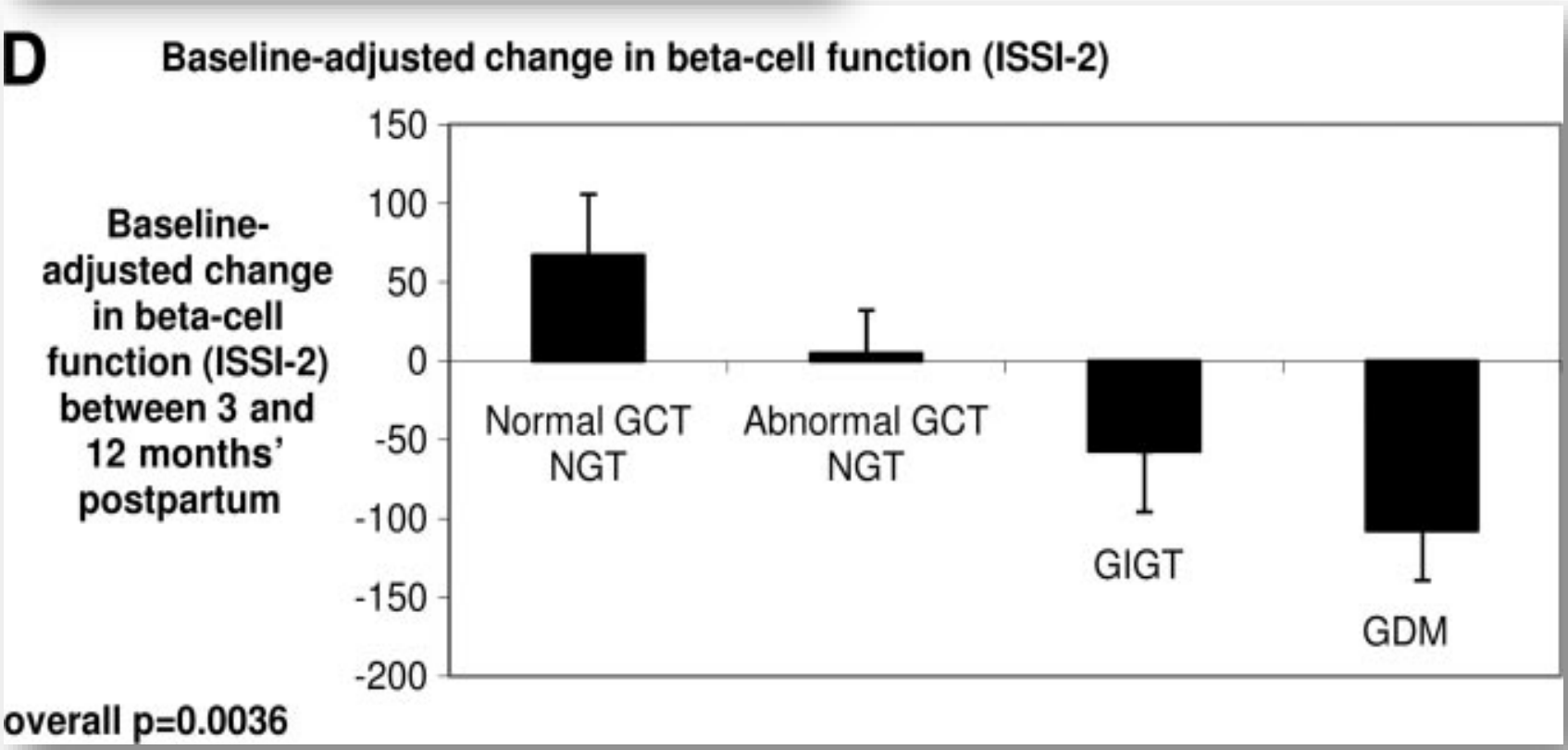
GDM an early stage in the natural history of type 2 diabetes!

Mod from Reece,1995

β-Cell Function Declines Within the First Year Postpartum in Women With Recent Glucose Intolerance in Pregnancy

RAVI RETNAKARAN, MD[1,2]
YING QI, MSC[1]
MATHEW SERMER, MD[3]
PHILIP W. CONNELLY, PHD[2,4]
ANTHONY J.G. HANLEY, PHD[1,2,5]
BERNARD ZINMAN, MD[1,2]

Diabetes Care 33:1798–1804, 2010



Clinical Study | T Lekva and others | Visceral fat linked with β-cell dysfunction | 173:1 | 63–70

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β-cell dysfunction in women with previous gestational diabetes is associated with visceral adipose tissue distribution

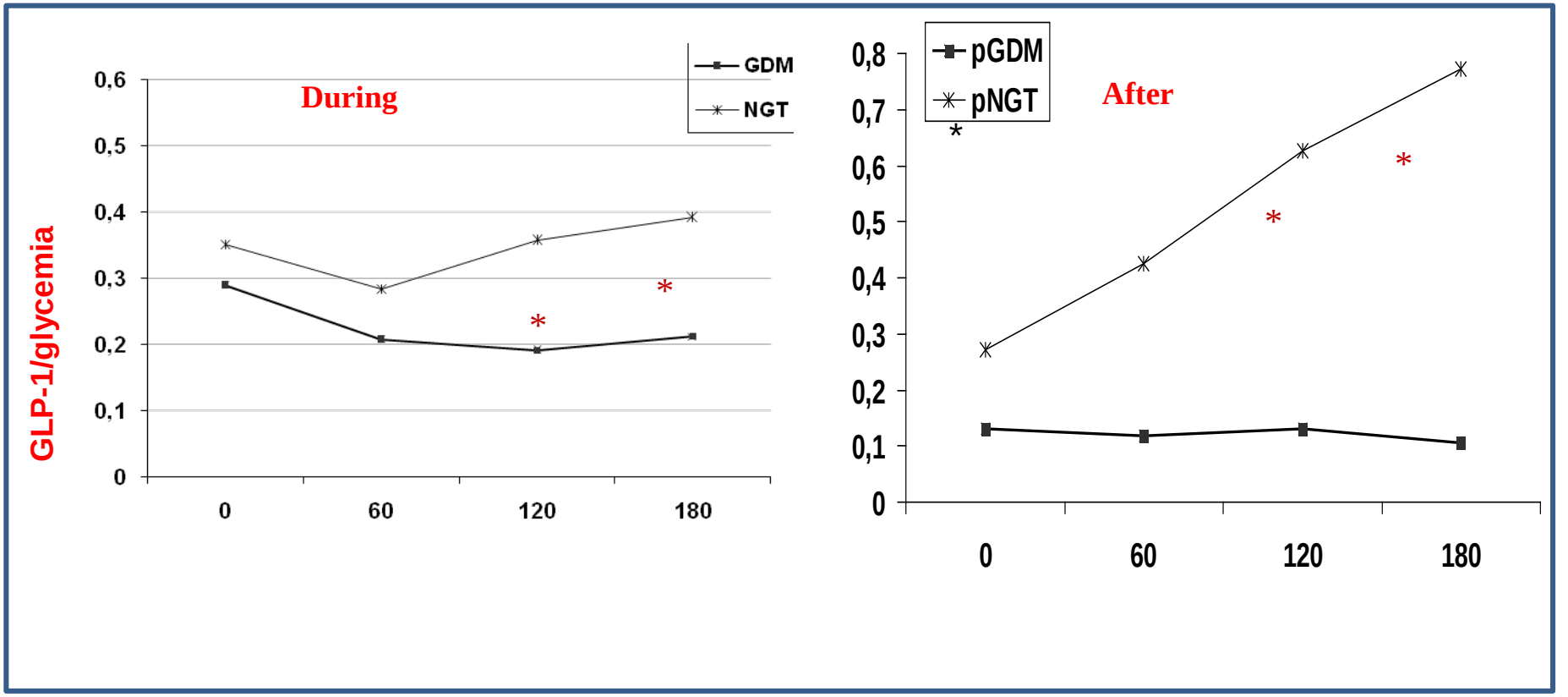
Tove Lekva[1], Jens Bollerslev[2,3], Kristin Godang[2], Marie Cecilie Paasche Roland[4], Camilla Margrethe Friis[4], Nanna Voldner[4], Tore Henriksen[3,4] and Thor Ueland[1,3]

[1]Research Institute for Internal Medicine, Oslo University Hospital, Rikshospitalet, University of Oslo, P.b 4950 Nydalen, 0424 Oslo, Norway, [2]Section of Specialized Endocrinology, Department of Endocrinology, Oslo University Hospital, Rikshospitalet, Oslo, Norway, [3]Faculty of Medicine, University of Oslo, Oslo, Norway and [4]Department of Obstetrics, Oslo University Hospital, Rikshospitalet, Oslo, Norway

Correspondence should be addressed to T Lekva
Email
tove.lekva@rr-research.no

Lekva T et al. Eur J Endocrinol.. 2015

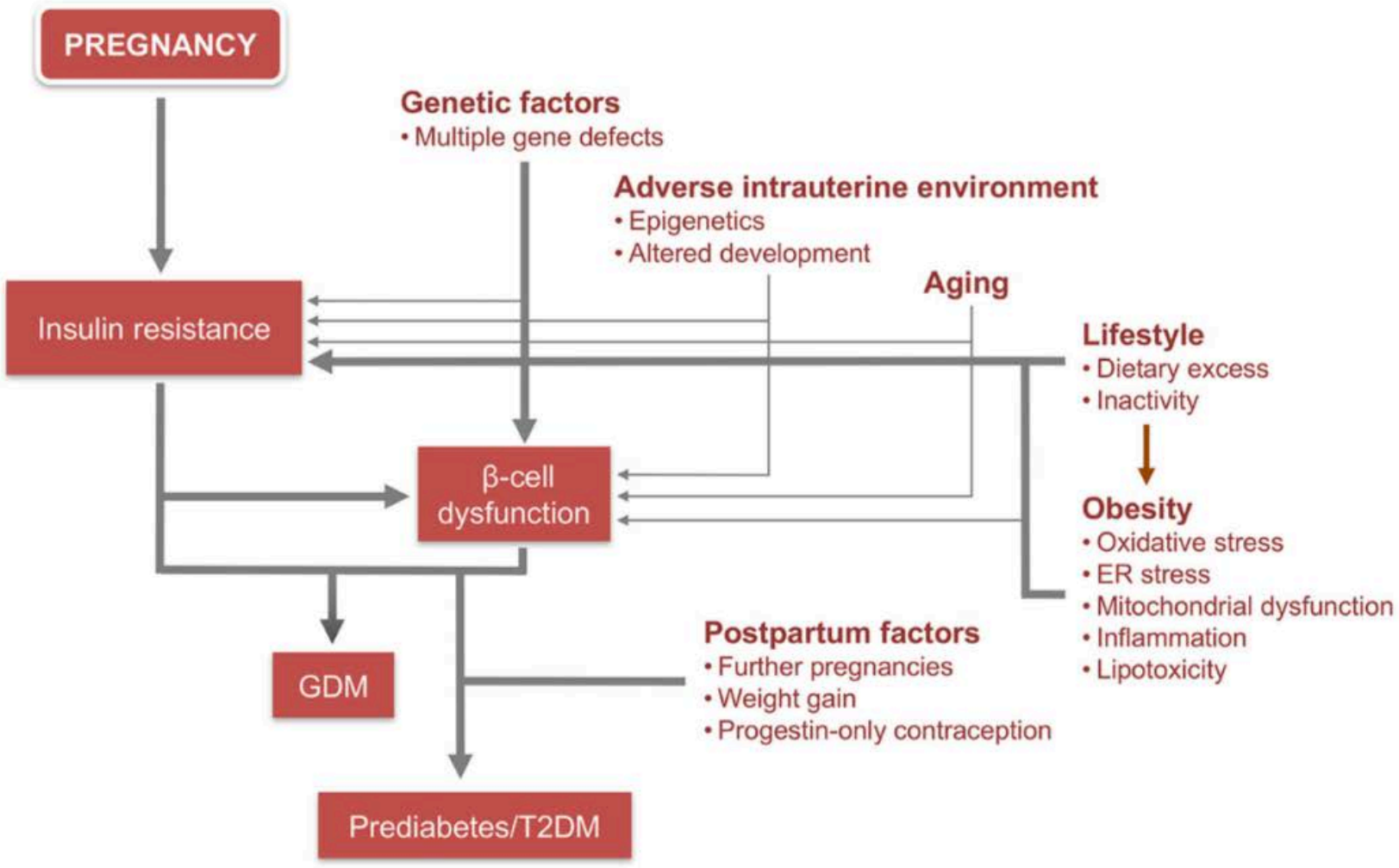
Glucagons-like peptide-1 (GLP-1) secretion in women with gestational diabetes mellitus during and after pregnancy



GLP-1 concentrations are lower during and after pregnancy in GDM, * p<0.05 pGDM vs pNGT

C. Lencioni, G Di Cianni JEI, 2011

Previous Gestational Diabetes

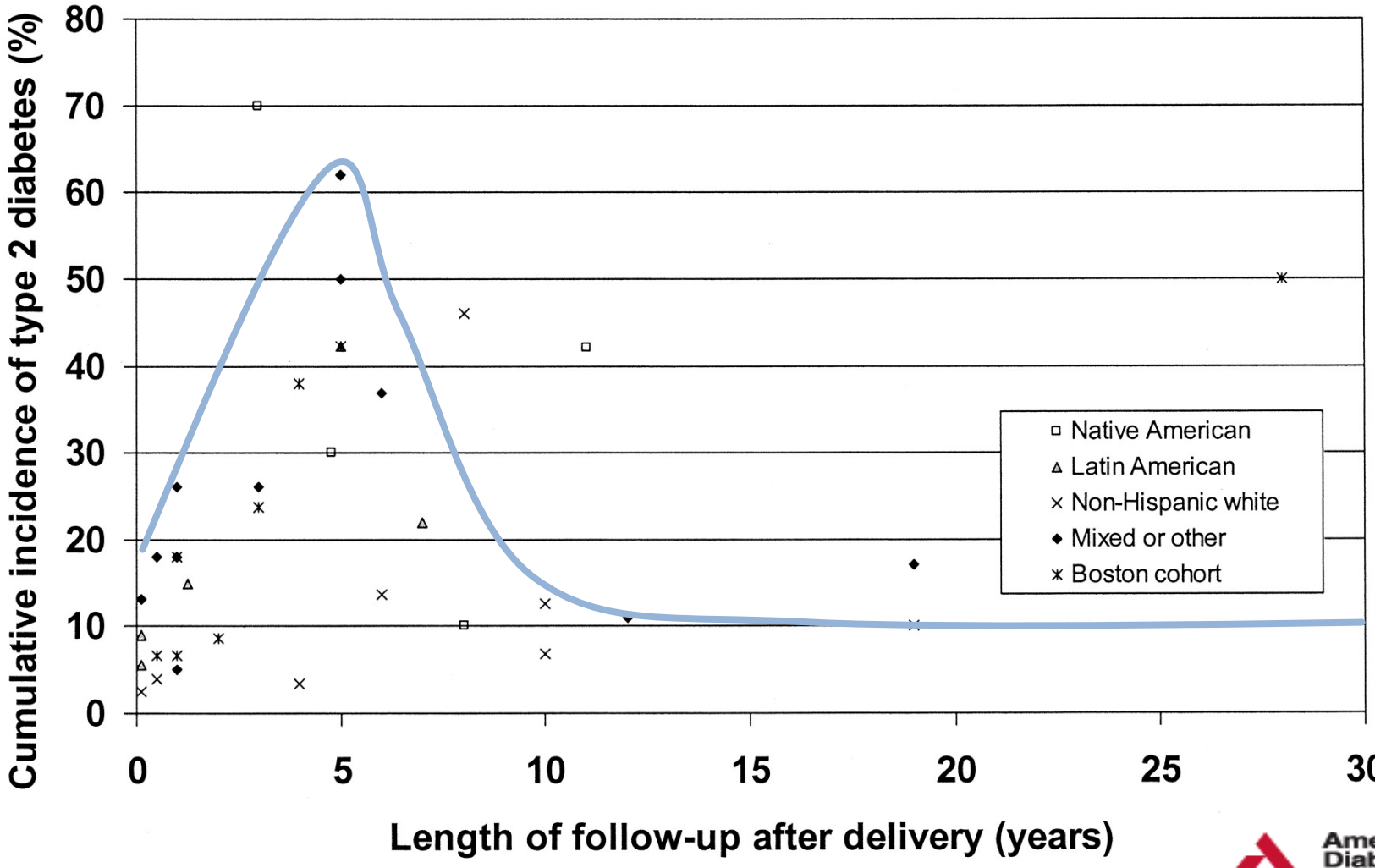


Pastore I, Chiefari E, Vero R, Brunetti A. Endocrine. 2018 Mar;59(3):481-494.

GDM:
a risk for T2DM

Type 2 diabetes mellitus after gestational diabetes: a systematic review and meta-analysis
Bellamy L, Casas JP, Hingorani AD, Williams D. *Lancet. 2009 May 23;373(9677):1773-9.*

Cumulative incidence of T2DM by ethnicity and length of follow-up in all studies



American Diabetes Association.

Kim C et al. Dia Care 2002;25:1862-1868

Risk of development of type 2 diabetes
Cumulative Probability (95% CI)

Author	*Follow-up years*	*pGDM (n)*	*RR pGDM vs controls*
Cheung *Diabetes Care 2003*	6-28	>150000	6
Lee A *Diabetes Care 2007*	15	5470	9.6
Bellamy L *Lancet 2009*	34	675,455	7.43

The risk for type 2 diabetes doubled after 5 years

DIAGEST 2 STUDY
(6.75 years follow-up)

	DM (%)	IGT (%)	IFG (%)	ALL (%)
Control (221)	0.9	2.1	3.6	8.3
Previous GDM (466)	18	13.4	8.5	43.5
p vs control	<0.001	<0.001	NS	<0.001
Previous AGT (322)	6.3	11.3	6.3	28.7
p vs control	<0.05	<0.05	Ns	=0.005
Total	11.2	11.3	6.9	34.4

Vambergue A – Diabet Med 25:58-64, 2008

Type 2 diabetes risk after GDM

Antepartum predictors

- Family history of type 2 diabetes
- Ethnic group
- Pre-pregnancy overweight/obesity
- Increased age in pregnancy
- Early Diagnosis in pregnancy
- IFG/IGT before pregnancy
- Multiparity
- GAD autoantibodies
- Hypertensive disordes
- Higher glucose values during OGTT
- Insulin therapy during pregnancy

Accelerating factors

- Weight gain after pregnancy
- Physical inactivity
- Additional pregnancy

GDM:
a risk for CVD

CVD risk factors in women with a history of GDM

	NO GDM (N.633)	***PRIOR GDM (N.313)***	*p**
Waist (cm)	104 ± 0.7	106.4 ± 1	0.2
Systolic Blood Pressure (mmHg)	127.9 ± 0.8	127.9 ± 1.1	0.07
Diastolic Blood Pressure (mmHg)	76.4 ± 0.4	77.1 ± 0.7	0.3
HDL-C (mmol/l)	1.09 ± 0.01	1.09 ± 0.02	1
Non HDL-C (mmol/l)	3.83 ± 0.05	3.95 ± 0.07	0.02
LDL-C (mmol/l)	3.08 ± 0.04	3.21 ± 0.05	0.01
Total-C (mmol/l)	4.93 ± 0.05 3	5.05 ± 0.06	0.009
Triglycerides (mmol/l)	1.669 ± 0.068	1.732 ± 0.09	0.007
Fasting Plasma Glucose (mmol/l)	8.04 ± 0.15	9.36 ± 0.24	<0.001
Fasting Insulin (pmol/l)	83.5	102	<0.001

* Adjusted for age, menopausal status and clustering on the proband

Carr D.B., Diabetes Care 2006

Epidemiology/Health Services Research
BRIEF REPORT

Increased Risk of Hypertension After Gestational Diabetes Mellitus

Findings from a large prospective cohort study

RESULTS—During 16 years of follow-up, GDM developed in 1,414 women (5.6%) and hypertension developed in 3,138. A multivariable Cox proportional hazards model showed women with a history of GDM had a 26% increased risk of developing hypertension compared with those without a history of GDM (hazard ratio 1.26 [95% CI 1.11–1.43]; $P = 0.0004$). These results were independent of pregnancy hypertension or subsequent type 2 diabetes.

CONCLUSIONS—These results indicate that women with GDM are at a significant increased risk of developing hypertension after the index pregnancy.

Table 1—*Association of GDM with future risk of hypertension*

Model	HR (95% CI)	*P*
Model 1: age	1.83 (1.65–2.12)	<0.0001
Model 2: + BMI	1.42 (1.25–1.61)	<0.0001
Model 3: + history of pregnancy, HTN	1.29 (1.14–1.46)	<0.0001
Model 4: + family history of HTN/T2D, parity, DASH score, alcohol, total physical activity, smoking status, race/ethnicity, analgesic use, OC use, birth weight, BMI at age 18 years	1.26 (1.11–1.43)	0.0004

DASH, Dietary Approaches to Stop Hypertension; HTN, hypertension; OC, oral contraceptive; T2D, type 2 diabetes.

Diabetes Care 34:1582–1584, 2011

Glucose Intolerance in Pregnancy and Postpartum risk of Metabolic Syndrome in Young Women

R.Retankaran, JCEM 2010

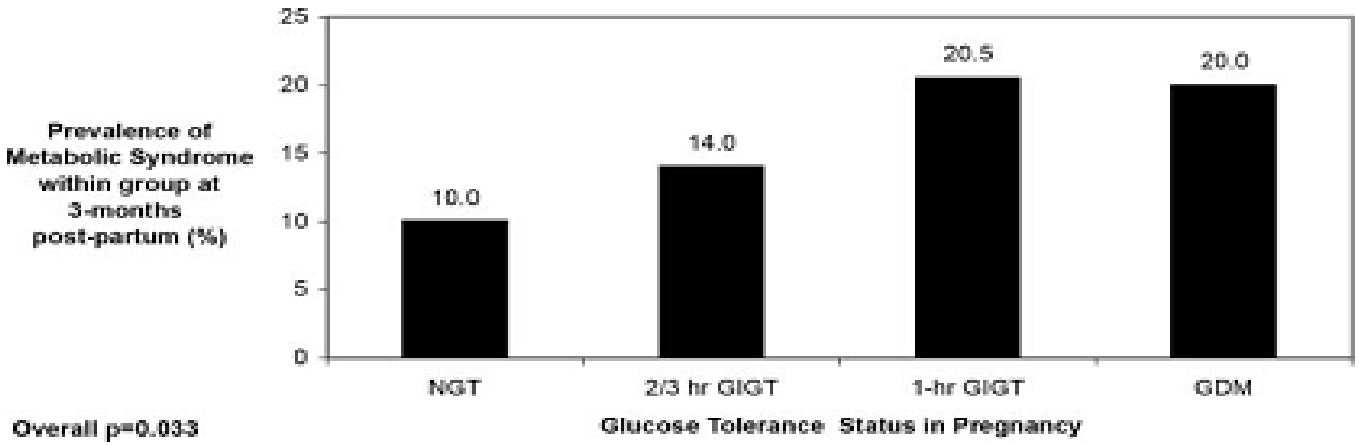


FIG. 3. Prevalence of metabolic syndrome (IDF criteria) at 3 months postpartum by glucose tolerance status in pregnancy, stratified as NGT, 2- to 3-h GIGT, 1-h GIGT, and GDM.

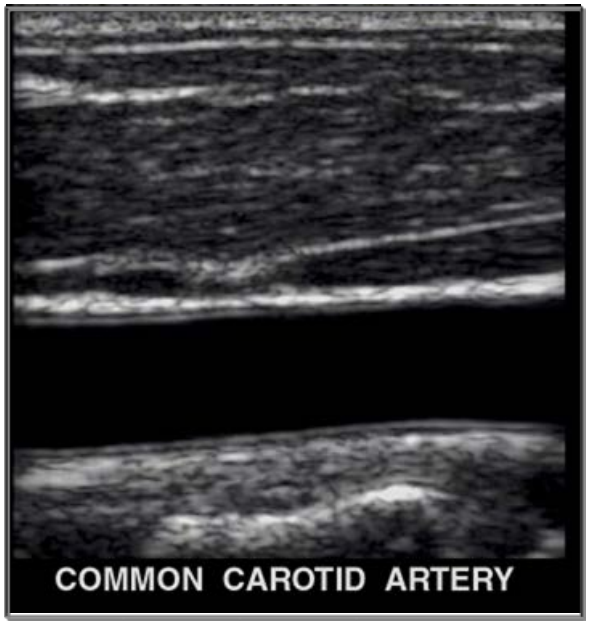
Conclusions: Both GDM and mild glucose intolerance in pregnancy predict an increased likelihood of metabolic syndrome at 3 months postpartum, supporting the concept that women with gestational dysglycemia may have an underlying latent metabolic syndrome. (***J Clin Endocrinol Metab*** **95: 670–677, 2010)**

Carotid Artery Intimal Media Thickness in pGDM women

Methods:

41 pGDM women and 25 controls.

4 points measured at common and internal carotid arteries at the thickest point for both arteries



	PGDM (N=41)	*CONTROLS (N=25)*
IMT CCA Right	0.58 ± 0.079	0.51 ± 0.059*
IMT CCA Left	0.55 ± 0.051	0.51 ± 0.066*
IMT CCA R/L	0.57 ± 0.058	0.51 ± 0.051*

* $p < 0.01$ Controls vs pGDM

L.Volpe, Diabetes Care 2008,5:31-32

Previous gestational diabetes is independently associated with increased carotid intima-media thickness, similarly to metabolic syndrome – a case control study

Claudia Maria Vilas Freire[1,2]

CARDIO VASCULAR DIABETOLOGY

Freire et al. Cardiovascular Diabetology 2012, 11:59
http://www.cardiab.com/content/11/1/59

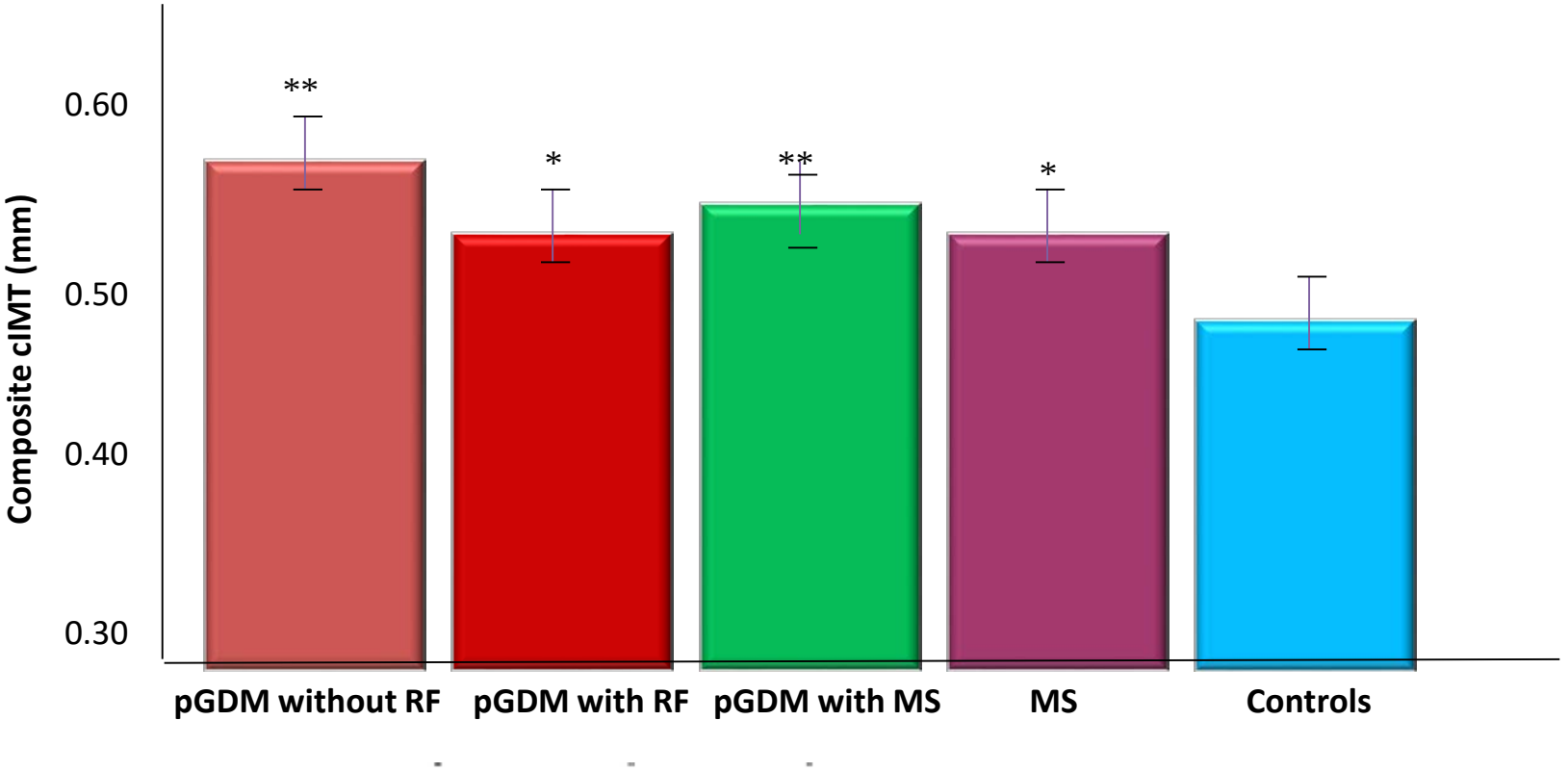
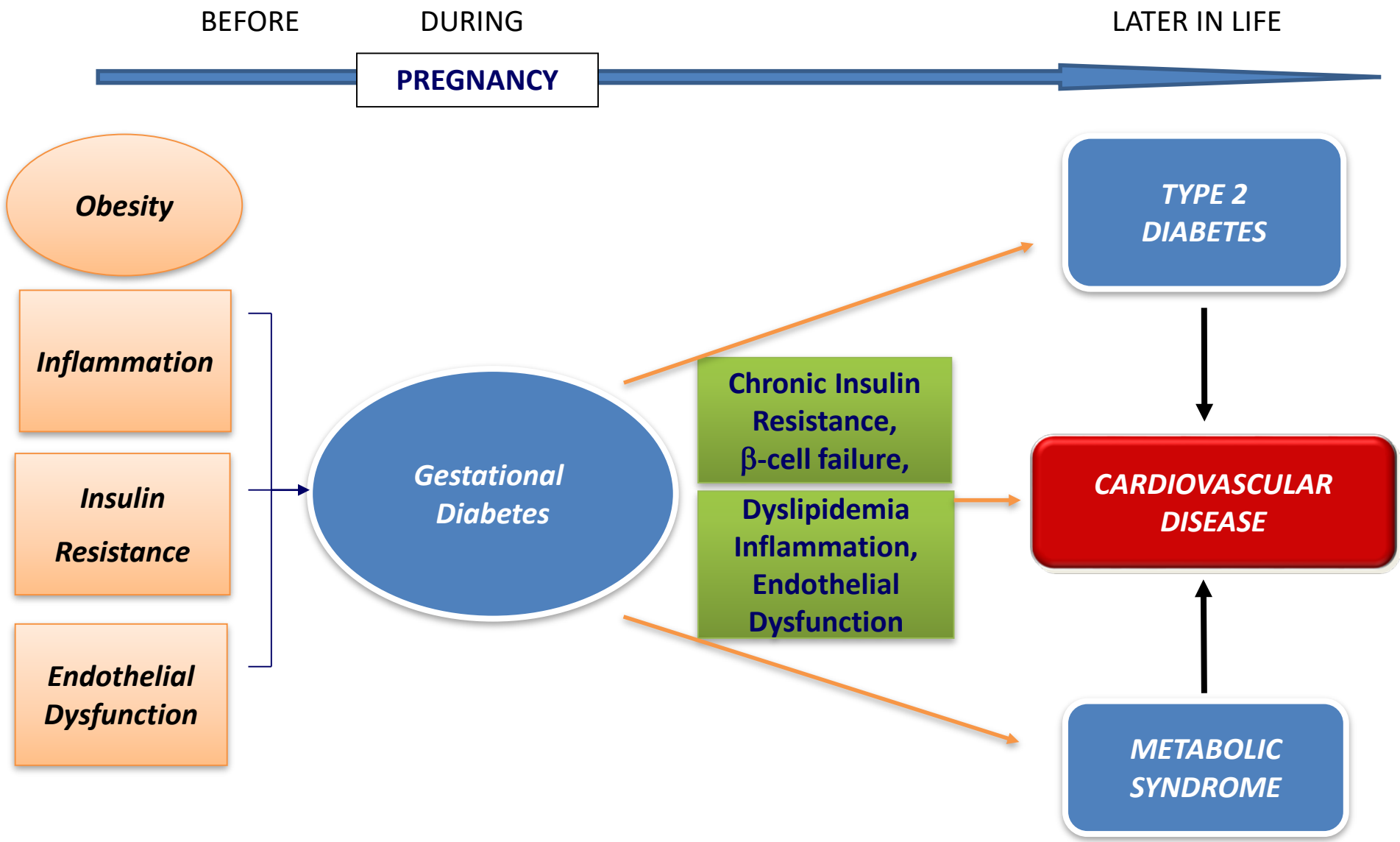


Figure 1 Graphic representation of the differences in carotid intima-media thickness (means ± SEM) in pGDM without RF (N = 15), pGDM with RF (N = 31), pGDM with MS (N = 33), MS (N = 30), and Controls (N = 60). cIMT = carotid intima-media thickness; pGDM = previous gestational diabetes group; RF = risk factor; MS = metabolic syndrome * $P < 0.05$ for comparisons to controls ** $P < 0.01$ for comparisons to controls.

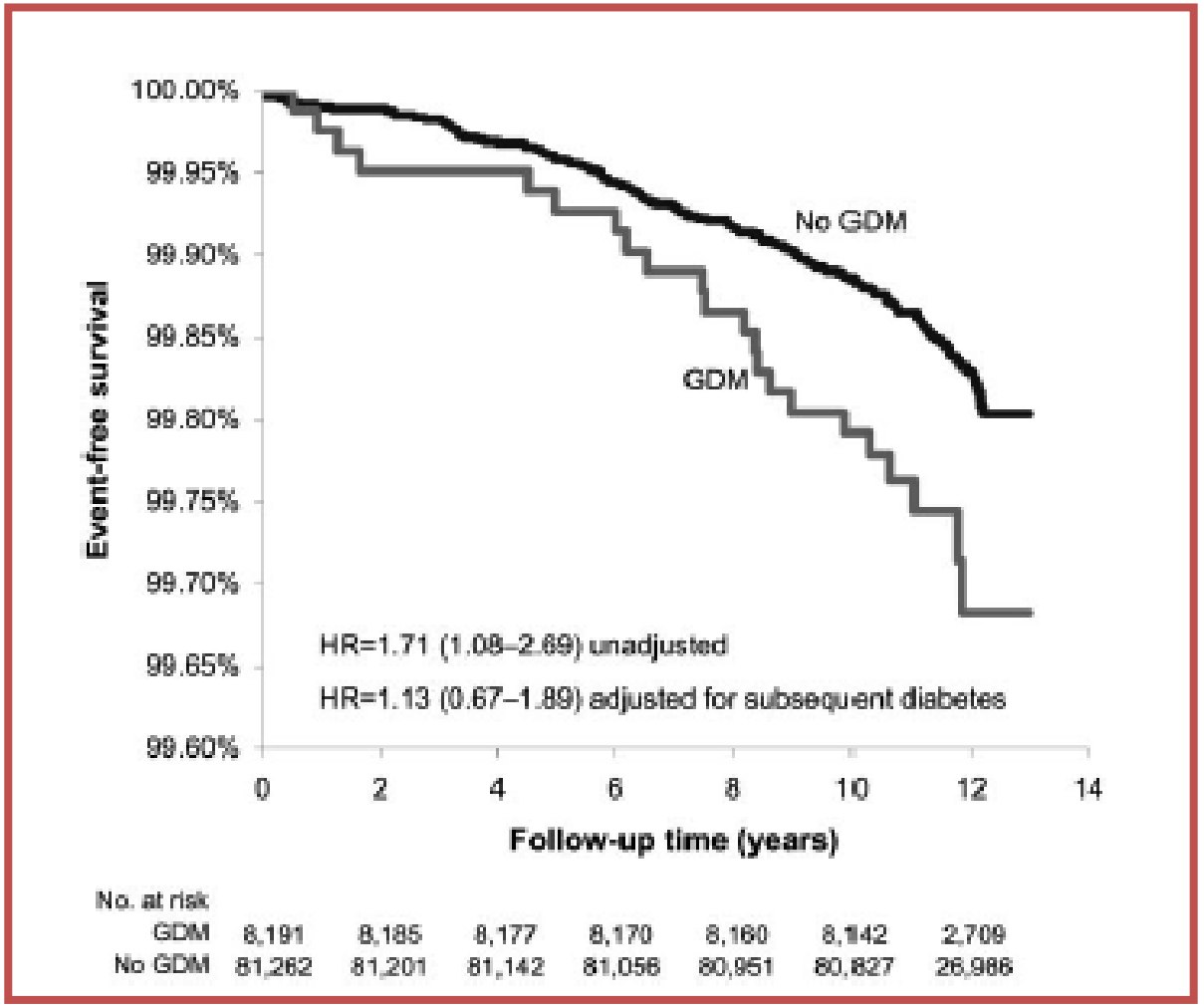
GDM, Inflammation And Late Vascular Disease

Volpe L , Di Cianni Get al. JEI, 2007



Increased Risk of Cardiovascular Disease in Young pGDM women

Young women with GDM had a substantially increased risk for CVD compared with women without GDM. Much of this increased risk was attributable to subsequent development of DM2



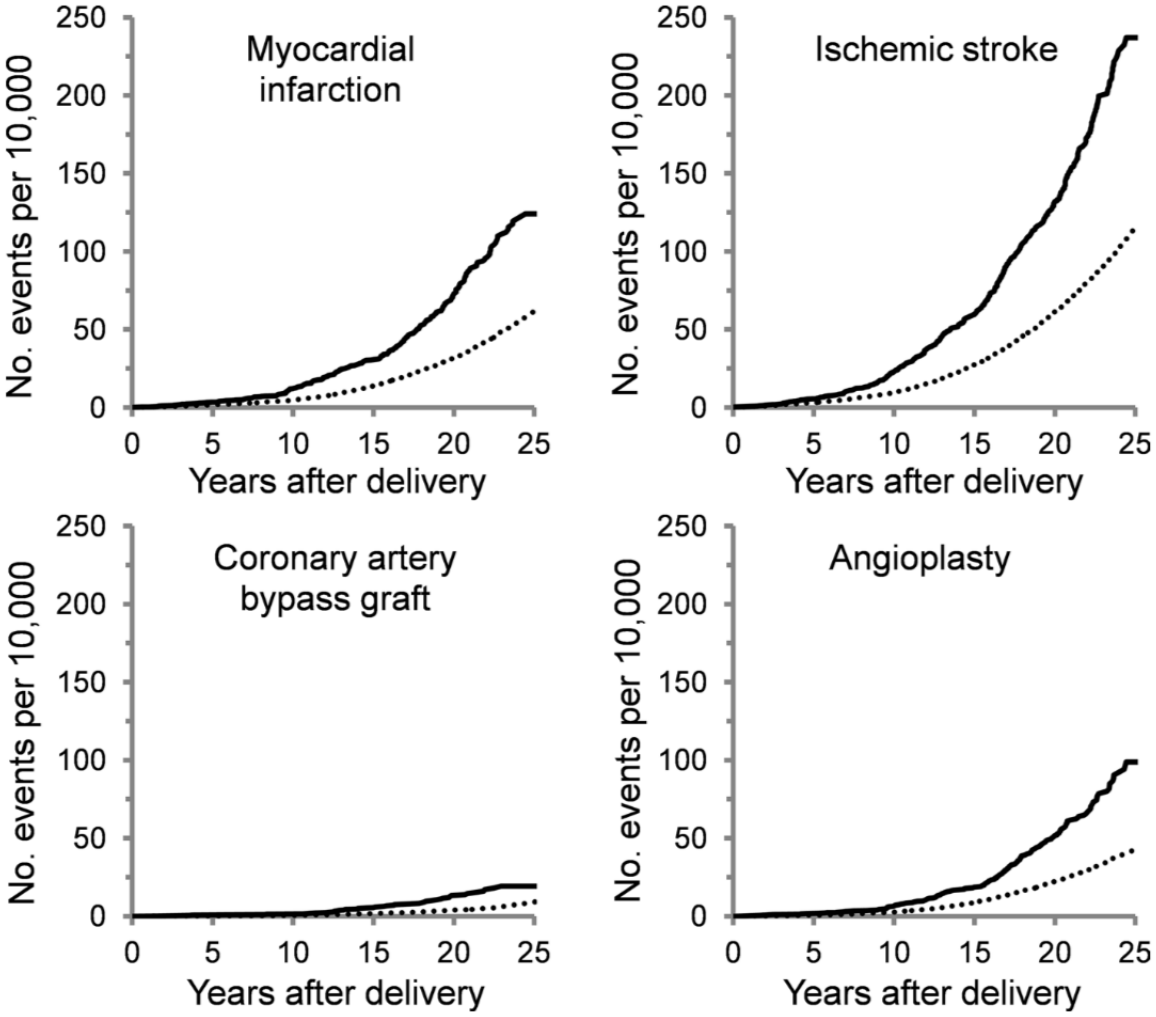
B.R. Shah, Diabetes Care 2008; 31:1668-1669.2008

Gestational diabetes and risk of cardiovascular disease up to 25 years after pregnancy: a retrospective cohort study

Safyer McKenzie-Sampson[1,2,3] · Gilles Paradis[2,3] · Jessica Healy-Profitós[1,3] · Frédérique St-Pierre[4] · Nathalie Auger[1,2,3]

Acta Diabetologica 2018

1,070,667 women
(67,356 GDM, 1,003,311NGT)
Cumulative incidence of cardiovascular hospitalization per 10,000 women over time*.
(*Solid line, women with GDM; dotted, women without GDM).



History of Gestational Diabetes Mellitus in Relation to Cardiovascular Disease and Cardiovascular Risk Factors in US Women

Derrick C. V. Shostrom[1†], Yangbo Sun[1†], Jacob J. Oleson[2], Linda G. Snetselaar[1] and Wei Bao[1]*

This study included 8,127 parous women aged 20 years or older in the 2007–2014 cycles of the National Health and Nutrition Examination Survey in the United States. Among women with a history of both GDM and CVD, CVD was diagnosed on average 22.9 years after the diagnosis of GDM .

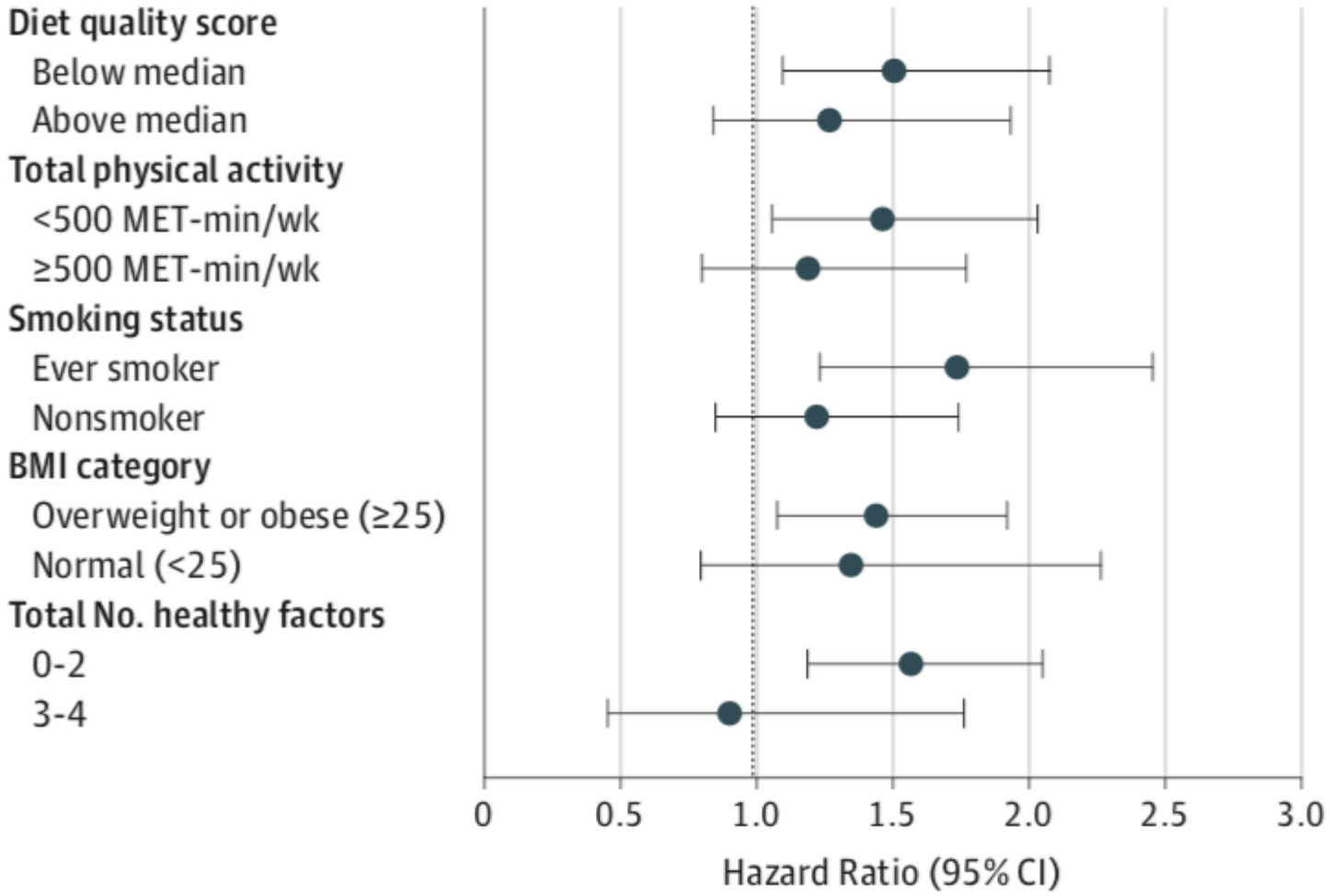
Conclusion: Women with a previous history of GDM have significantly higher risk for developing CVD and lower serum level of HDL cholesterol, compared to women without a history of GDM. The associations may be explained, at least partly, by BMI.

frontiers in Endocrinology

ORIGINAL RESEARCH
published: 26 June 2017
doi: 10.3389/fendo.2017.00144

Multivariable-Adjusted Models for the Relationship Between History of GD With Incident CVD Risk.

89 479 Parous US Women in the Nurses' Health Study II Cohort, 1989-2015



Tobias DK, *JAMA Intern Med*. 2017;177(12):1735-1742.

Il GDM, aumenta il rischio cardiovascolare indipendentemente dalla diagnosi di DM

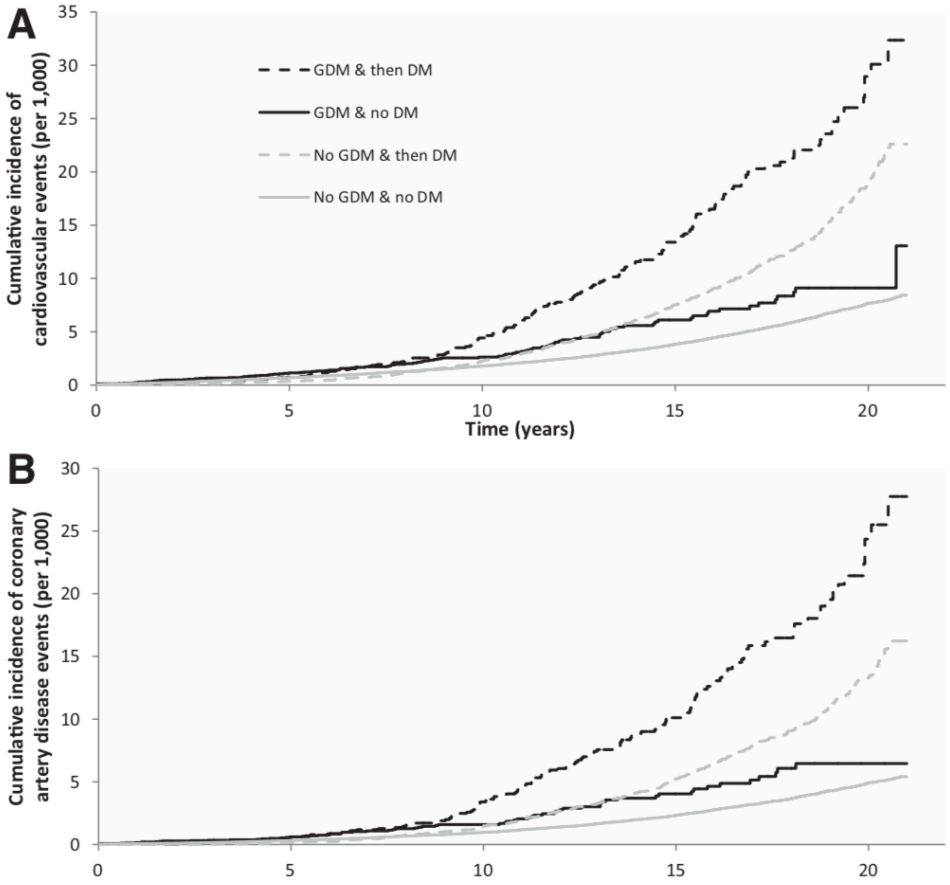


Figure 2—Cumulative incidence of CVD events (*A*) and CAD events (*B*) in each of the following four groups: *1*) GDM and then DM; *2*) GDM and no DM; *3*) no GDM and then DM; and *4*) no GDM and no DM.

All women in Ontario, with a live-birth pregnancy between April 1994 and March 2014 (n = 1,515,079)
Women with GDM have an elevated risk of cardiovascular outcomes, even in the absence of T2DM. In contrast, microvascular risk (retinal,renal, foot infection) emerges only in those in whom T2DM develops.

Retnakaran R

Diabetes Care 2017;40:101–108 | DOI: 10.2337/dc16-1400

Lifestyle Interventions to prevent the onset of type 2 DM

Hindawi Publishing Corporation
Journal of Diabetes Research
Volume 2015, Article ID 798460, 11 pages
http://dx.doi.org/10.1155/2015/798460

Can the Onset of Type 2 Diabetes Be Delayed by a Group-Based Lifestyle Intervention in Women with Prediabetes following Gestational Diabetes Mellitus (GDM)? Findings from a Randomized Control Mixed Methods Trial



Angela O'Dea,[1] Marie Tierney,[1] Brian E. McGuire,[2] John Newell,[3] Liam G. Glynn,[4] Irene Gibson,[5] Eoin Noctor,[1] Andrii Danyliv,[6] Susan B. Connolly,[7] and Fidelma P. Dunne[1]

A Randomised Controlled Trial to Delay or Prevent Type 2 Diabetes after Gestational Diabetes: Walking for Exercise and Nutrition to Prevent Diabetes for You

Hindawi Publishing Corporation
International Journal of Endocrinology
Volume 2015, Article ID 423717, 8 pages
http://dx.doi.org/10.1155/2015/423717



A. S. Peacock,[1,2] F. E. Bogossian,[1] S. A. Wilkinson,[2,3] K. S. Gibbons,[2] C. Kim,[4] and H. D. McIntyre[3,5]

J Clin Endocrinol Metab. 2015 Apr;100(4):1646-53. doi: 10.1210/jc.2014-3761. Epub 2015 Feb 23.

The effect of lifestyle intervention and metformin on preventing or delaying diabetes among women with and without gestational diabetes: the Diabetes Prevention Program outcomes study 10-year follow-up.

Aroda VR, Christophi CA, Edelstein SL, Zhang P, Herman WH, Barrett-Connor E, Delahanty LM, Montez MG, Ackermann RT, Zhuo X, Knowler WC, Ratner RE
Diabetes Prevention Program Research Group.

- ✓ in the DPP/Diabetes Prevention Program Outcomes Study, both
  - In ***pGDM women*** lifestyle and metformin were highly effective in reducing progression to diabetes during a 10-year follow-up period.
  - Among ***women without a history of GDM***, lifestyle but not metformin reduced progression to diabetes.□

Aroda VR. et al. J Clin Endocrinol Metab. 2015

Diabetes prevention with pharmacological intervention in pGDM women

Study	Subjects	Intervention	Duration	Diabetes risk reduction
DPPOS	350 pGDM and 1416 with no hystory of pGDM	placebo, lifestyle intervention (ILS) or metformin 850 mg BID	10 years	In pGDM ILS and metformin reduced progression to DM compared with placebo by 35% and 40%, respectively.
TRIPOD	266 pGDM	Troglitazone 400 mg/day or placebo	30 months	55% reduction in the risk of DM progression (12.1% /year /placebo, and 5.4% /year/ troglitazone)
PIPOD	95 pGDM	Pioglitazone 30 to 45 mg/day or placebo	35 months	61.9% reduction rate in the risk of DM
Phase II RCT with vildagliptin	113 insulin treated pGDM	50 mg vildagliptin BID or placebo	24 months	The cumulative probability of postpartum DM was 5% in the vildagliptin and 3% in the placebo group respectively.
Sitagliptin/Metformin & GDM Pregnancy	36 Prediabetic women with recent GDM	Placebo,Metformin (1,000 mg BID), or Sitagliptin/metformin (50/ 1,000 mg BID)	16 weeks	75% of SITA-MET participants achieved normal glycemia in 16 weeks, compared to only 33% on Metformin and 22% on Placebo

Gestational Diabetes
A risk factor later in life

Mother

Elevated risk of:

- Type 2 Diabetes
- Metabolic Syndrome
- Cardiovascular Disease

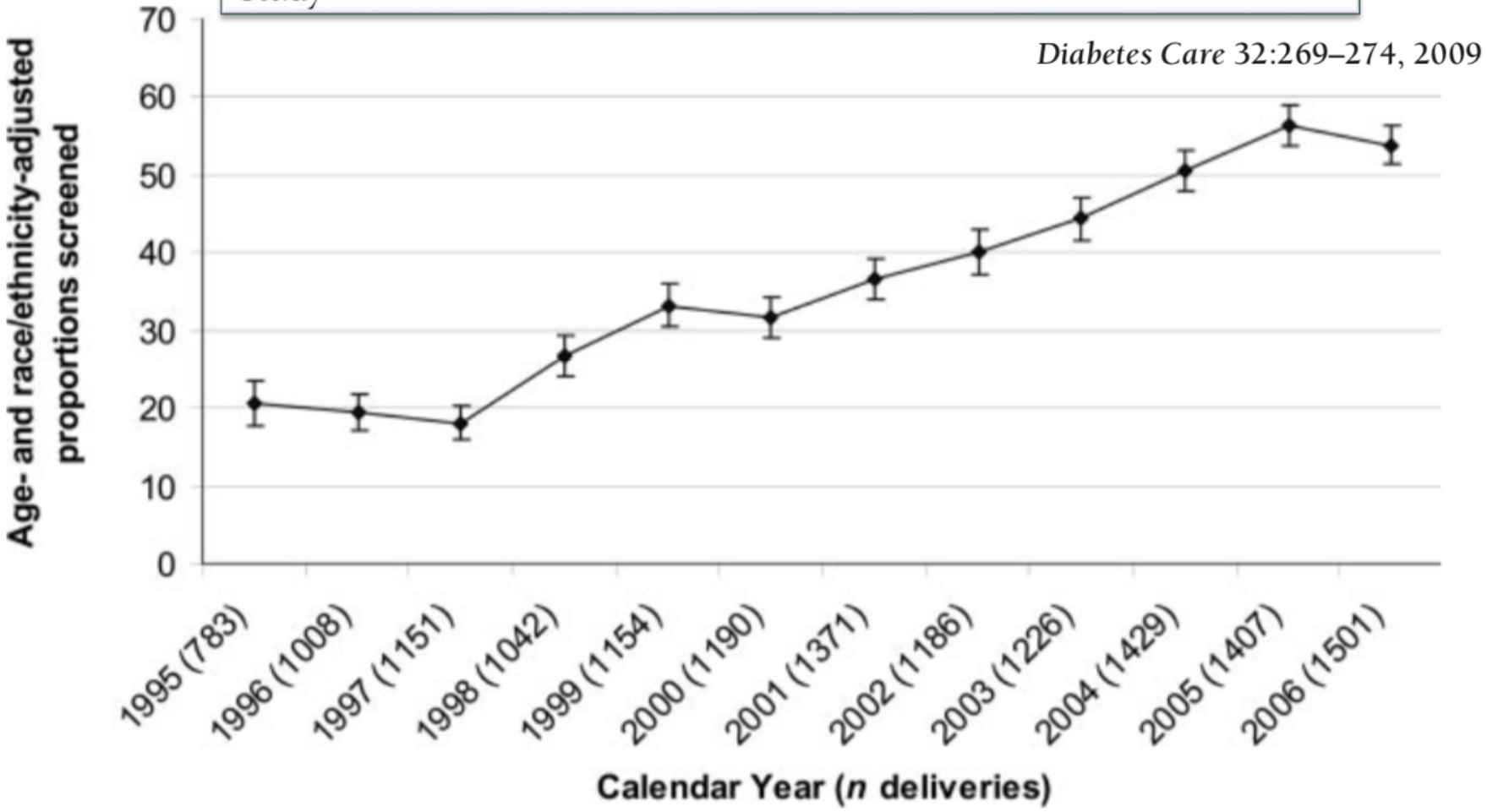
Newborn

Elevated risk of:

- Obesity
- Type 2 Diabetes
- Hypertension

Trends in Postpartum Diabetes Screening and Subsequent Diabetes and Impaired Fasting Glucose Among Women With Histories of Gestational Diabetes Mellitus

A report from the Translating Research Into Action for Diabetes (TRIAD) Study

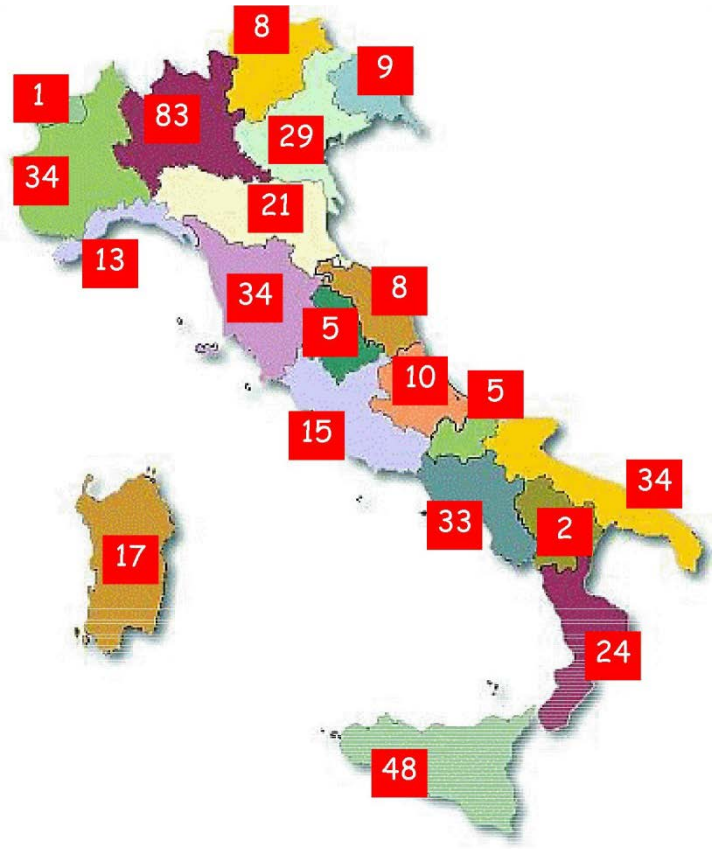


Cohort study of 14,448 GDM pregnancies delivered between 1995 and 2006.
(OGTT/FPG from 4 wks to 1 year after delivery).

Care of diabetes in pregnancy in Italy: structural and organizational aspects. Mamma Serena Study

Maternal follow-up program proposed in 70.8% of active centers

- **No figures for the number of women actually involved in such programs**
- **No follow-up programs for offspring**



Bonomo M et al: Diabetic Medicine, 2007

Post-partum follow-up in pGDM women

The rate of follow-up in pGDM women remain less than 50%

- **understimation of the risk**
- **mobile population**
- **busy women providing care for young children**
- **difficult to follow a diet and excercise program**

- *Clark Hd, Diabetes Care 2003*
- *Gabbe S, Obstet Gynecol 2004*
- *Rumbold J, Aus Nzel Obstet Gynecol 2001*
- *Lewis RB, Endocrine Metab 2008*

Barriere al follow-up

Sub-theme	Barriers		Enablers	
	GP-perceived	Reported by women	GP-perceived	Reported by women
Screening test access and test type	• Dislike of OGTT • Need to arrange transport and childcare for test	• Dislike of OGTT • Need to arrange transport and childcare for test	• Convenient access to pathology	• Convenient access to pathology
Reminders			• Linking screening recall with other health tests (e.g. Pap smear) • Reminder systems	• Linking screening recall with other health tests (e.g. Pap smear) • Reminder systems
Mother's attitudes around self-care and health	• Denial of risk • Apathy towards lifestyle change • Lack of time	• Apathy towards lifestyle change • Lack of time		
Support environments	• Lack of social support • Cost of GP visit • Poor health literacy	• Cost of GP visit • Poor health literacy	• Good social support • Continuity of care with GP • Caring attitude of GP • Good antenatal education • Good health literacy	• Good social support • Involvement of allied health • Continuity of care with GP • Good antenatal education

Andrew V. R. Pennington .Australian Journal of Primary Health, 2017, 23, 66–74

Women's views on postpartum testing for type 2 diabetes after gestational diabetes: Six month follow-up to the DIAMIND randomised controlled trial



	Overall
Barriers as listed on questionnaire	(*n* = 33)
Concern or anxiety about being diagnosed with T2DM	5 (15)
Baby's health	10 (30)
Not enough time	24 (73)
Feeling down or low	4 (12)
Childcare not available or inadequate	10 (30)
Transport not available or inadequate	4 (12)
Did not know needed OGTT	1 (3)
Low perceived risk of type 2 diabetes	5 (15)
Test too unpleasant	2 (6)
Did not know where to go	0 (0)
Additional barriers suggested by women	(*n* = 18)
Test too long	6 (18)
Doctor wanted me to do a different glucose test (not OGTT)	1 (3)
Doctor access difficult (rural/remote)	1 (3)
Too difficult to attend while breast-feeding	1 (3)
6 weeks too soon for attendance	2 (6)
Overseas trip	1 (3)
Attended for OGTT but was given OGCT	1 (3)
No lab form	2 (6)

Figures are number (%). Women were able to choose multiple barriers.

Van Ryswyk EM. Prim Care Diabetes. 2016 Apr;10(2):91-102.

Strategie per aumentare l'aderenza

Authors	Country	Adopted strategy
Capula et al. [83]	Italy	Verbal and written counseling
Carnody et al. [138]	Ireland	Verbal remainders, postal reminders, telephone calls
Carson et al. [139]	Multicountries	Phone calls, education programs or postal reminders
Clark et al. [106]	Canada	Postal reminders
		Reminder letters both to physician and patient, to patient only or to physician only vs no reminders sent
Cosson et al. [92]	France	Reminder letter to woman's caregivers
Halperin et al. [105]	Canada	Improvements in physicians' dictations patient-directed e-mail reminder systems family physician-directed fax reminder systems
Khorshidi Roozbahani et al. [140]	Iran	Telephone reminder
Van Ryswyk et al. [141]	Australia	SMS-reminders
Shea et al. [142]	Canada	Reminders mails with a laboratory requisition for OGTT, laboratory requisition for OGTT only, laboratory requisition for OGTT and a telephone call, a telephone call only
Soffer et al. [143]	USA	Advanced order sets for glucose monitoring at the 35-week pregnancy visit, educational modules, and nutritionist phone calls reminding patients to attend postpartum visits fasting
Vesco et al. [108]	USA	Combined telephone calls/emails and staff education



FIGO recommendations for Postpartum care

- FIGO supports the concept that the postpartum period in women with GDM provides an important platform to initiate early preventive health for both the mother and the child who are both at a heightened risk for future obesity, metabolic syndrome, diabetes, hypertension, and cardiovascular disorders.

- FIGO encourages obstetricians to establish connections with family physicians, internists, pediatricians, and other healthcare providers to support postpartum follow-up of GDM mothers linked to the regular check-up and vaccination program of the child to ensure continued engagement of the high-risk mother–child pair.

PREGNANCY OFFERS A WINDOW OF OPPORTUNITY TO:

- **Establish** services
- **Improve** health
- **Prevent** intergenerational transmission of non-communicable diseases

POSTPARTUM AIMS

- Early **DETECTION** of infections
- **SUPPORT** of breastfeeding
- **ADVICE** on pregnancy spacing
- **RETEST** all women with GDM at 6-12 weeks postpartum
- Future blood glucose **TESTS**

Endocrine
DOI 10.1007/s12020-017-1388-0

REVIEW

Postpartum glucose intolerance: an updated overview

Ida Pastore[1] · Eusebio Chiefari[1] · Raffaella Vero[2] · Antonio Brunetti[1]

Current recommendations for postpartum screening of glucose intolerance

Year	Society	Time	Test
2017	American Diabetes Association [71]	4–12 weeks postpartum	2 h 75-g OGTT
2015	National Institute for health and Clinical Excellence [70]	6–13 weeks postpartum	FPG
2014	Australasian Diabetes in Pregnancy Society [66]	6–12 weeks postpartum	2 h 75-g OGTT
2013	American Congress of Obstetricians and Gynecologists [69]	6–12 weeks postpartum	2 h 75-g OGTT or FPG
2013	Endocrine Society [67]	6–12 weeks postpartum	2 h 75-g OGTT
2013	Canadian Diabetes Association [68]	6 weeks to 6 months	2 h 75-g OGTT
2007	Fifth International Workshop-Conference on Gestational Diabetes Mellitus [65]	6–12 weeks postpartum	2 h 75-g OGTT

OGTT oral glucose tolerance test, *FPG* fasting plasma glucose

Immediate Postpartum Glucose Tolerance Testing in Women with Gestational Diabetes: A Pilot Study

Cheryl Dinglas, DO[1,2] Jolene Muscat, MD[1] Hye Heo, MD[1] Shahidul Islam, MPH[3]

Am J Perinatol 2017;34:1264–1270.

	Abnormal 6–12 wk test	Normal 6–12 wk test	Total	
Abnormal immediate GTT	7	16	23	30.4% PPV (24.1–37.6%)
Normal immediate GTT	0	12	12	**100% NPV**
Total	**7**	28	35	
	100% sensitivity (CI: 59–100%)	42.8% specificity (24.5–62.8%)		

Abbreviations: CI, confidence interval; GTT, glucose tolerance test; NPV, negative predictive value; PPV, positive predictive value.

Of the 80 participants who completed the immediate GTT, 35 (45%) followed up for 6- to 12-week postpartum glucose testing.

…a negative immediate GTT may obviate the need for the 6- to 12-week GTT, while a positive GTT may identify women who should follow up closely.

ORIGINAL ARTICLE

Early versus 6–12 week postpartum glucose tolerance testing for women with gestational diabetes

EB Carter, S Martin, LA Temming, GA Colditz, GA Macones and MG Tuuli

Journal of Perinatology (2018) 38, 118–121

Table 4. Impaired glucose tolerance in early vs routine postpartum testing

6–12-Week postpartum GTT	*Early GTT*		*Sensitivity (%)*	*Specificity (%)*	*PPV (%)*	*NPV (%)*
	Impaired glucose tolerance or diabetes	*Normal*				
Impaired glucose tolerance or diabetes	5	3	62.5	52.2	31.3	80.0
Normal	11	12				

Abbreviations: GTT, glucose tolerance testing; NPV, negative predictive value; PPV, positive predictive value; ROC, receiver-operating characteristic. ROC area = 0.57.

Early GTT was completed by 100% of subjects, only 31 of 58 (53%) women returned to complete the 6–12-week postpartum GTT.

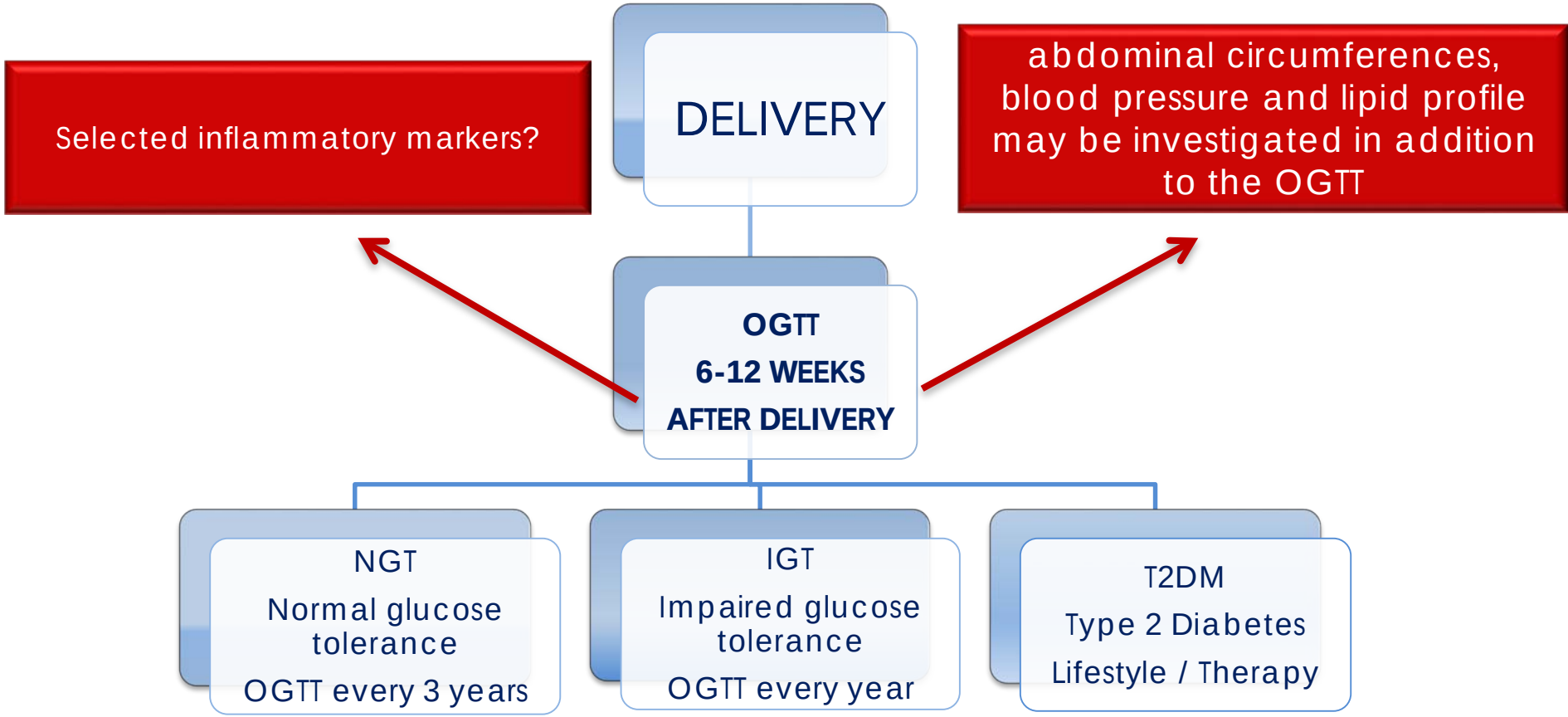
The early GTT had modest sensitivity for IGT (62.5%) and overt DM (50%). excellent specificity (100%), PPV (100%) and NPV (96.7%) for DM. The NPV for IGT with the early GTT was 80%.

Table 5. Diabetes in early vs routine postpartum GTT testing

6–12-Week postpartum GTT	*Early GTT*		*Sensitivity (%)*	*Specificity (%)*	*PPV (%)*	*NPV (%)*
	Diabetes	*No diabetes*				
Diabetes	1	1	50	100	100	96.7
No diabetes	0	29				

Abbreviations: GTT, glucose tolerance testing; NPV, negative predictive value; PPV, positive predictive value; ROC, receiver-operating characteristic. ROC area = 0.75.

Prevention Of Type 2 Diabetes And Cardiovascular Disease



Conclusioni

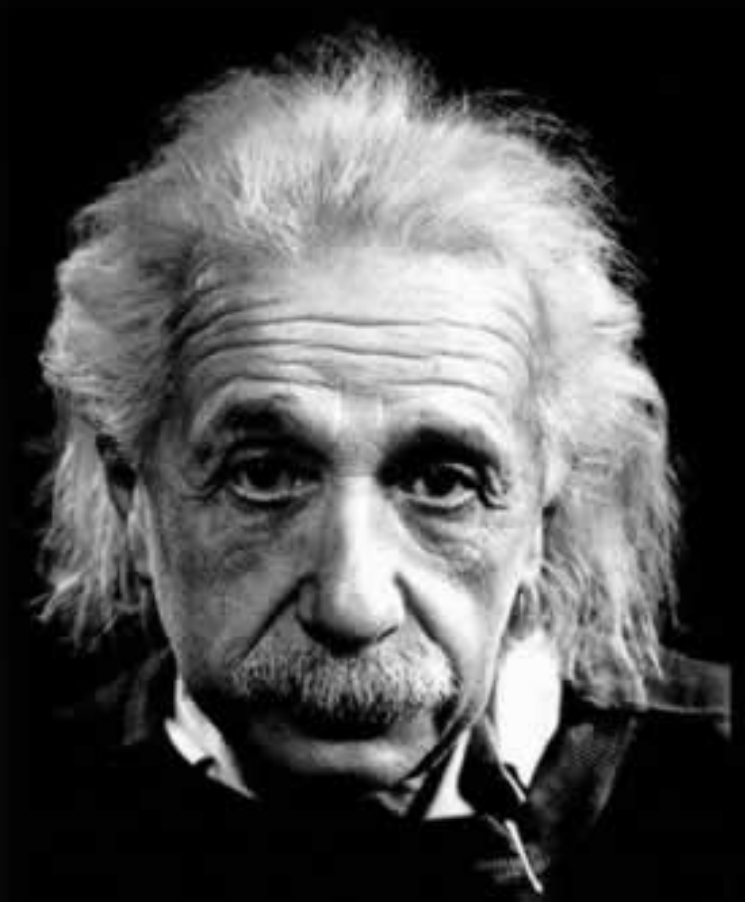
- **Il diabete gestazionale è a tutti gli effetti un fattore di rischio per il successivo sviluppo di DM2 e CVD**

- **Necessari interventi specificatamente indirizzati per la popolazione con pregresso GDM**
  - ✓ **campagne informative**
  - ✓ **protocolli codificati di follow-up a lungo termine**
  - ✓ **studi di intervento (nuovi farmaci?)**

- **Misure atte a prevenire o ritardare l'evoluzione del GDM possono avere un significativo impatto sullo stato di salute pubblica**

"Everything should be made as simple as possible, but not simpler."

Albert Einstein



GRAZIE PER L'ATTENZIONE