ACTUALITES SUR LE DIABETE GESTATIONNEL

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Recommandations françaises

En début de grossesse

		DG	DT2
GAJ seule	→ GAJ	≥ 0,92 g/l	≥ 1,26 g/l

DEPISTAGE SELECTIF (≥ 1 critère)

- Age ≥ 35 ans
- IMC ≥ 25 kg/m²
- ATCD familiaux de 1er degré de diabète
- ATCD de DG ou d'enfant macrosome

24-28 SA

		DG (≥1 critère)	DT2
Charge orale de 75g de glucose →	GAJ	≥ 0,92 g/l	≥ 1,26 g/l
	ou		
	G1h	≥ 1,80 g/l	
	ou		
	G2h	≥ 1,53 g/l	

RECOMMANDATIONS FRANCAISES

Principale conséquence de ces nouveaux critères

La forte prévalence de DG avec les nouveaux critères

- **17,8% dans l'étude HAPO**
- **Entre 10 et 25% dans la littérature**

Sack et al. Diabetes Care 2012; 35:526-8

Prévalence du diabète gestationnel dans la région Nord Pas de Calais

Nombre de patientes suivies 2012: 525 2013: 705 2014 > 800

Prévalence du DG: 14%

Wery E, Vambergue A et al.J Gynecol Obstet Repro 2013

Prévalence du diabète gestationnel dans 47 pays

Prévalence entre 1 et 28% variable entre les pays et également dans chaque pays

Jiwani et al., J Maternal Fetal Neonat 2012;25:600

Type de diabète et complications périnatales en 2011 : données françaises de la CNAM

- 806 579 accouchements en France (60 % du total des naissances)

	Diabète de type 1	Diabète de type 2	Diabète gestationnel	Absence de diabète
Prévalence (%)	0,16	0,24	**6,4**	93,2
Âge maternel (ans)	30,3	33,3	**32**	29,5
Prématurité (%)	24,9 OR 5,5 (IC_{95} : 4,9-6,3)	16,1 OR 3,3 (IC_{95} : 2,9-3,6)	**7,2** **OR 1,2 (IC_{95} : 1,1-1,2)**	5,4 OR 1
Césarienne (%)	57,7 OR 4,3 (IC_{95} : 3,8-4,8)	49,2 OR 2,9 (IC_{95} : 2,7-3,2)	**29,1** **OR 1,5 (IC_{95} : 1,4-1,5)**	19,8 OR 1
Prééclampsie (%)	9,2 OR 6,7 (IC_{95} : 5,6-8,2)	5,9 OR 3,9 (IC_{95} : 3,2-4,7)	**2,4** **OR 1,5 (IC_{95} : 1,5-1,6)**	1,5 OR 1
Mort fœtale après 22 SG	11/1 000	6/1 000	**1/1 000**	3/1 000
Macrosomie (%)	42,5 OR 7,0 (IC_{95} : 6,1-8)	30,4 OR 3,9 (IC_{95} : 3,2-4,7)	**15,7** **OR 1,7 (IC_{95} : 1,7-1,8)**	9,4 OR 1

Billionnet C et al., EASD 2014 abstract 151

Type de diabète et complications périnatales en 2011 : données françaises de la CNAM

	Diabète de type 1	Diabète de type 2	Diabète gestationnel	Absence de diabète
Fracture clavicule OR (IC_{95})	7,3 (4,2-12,9)	2,7 (1,3-5,5)	**1,1 (0,9-1,3)**	1
Malformation cardiaque OR (IC_{95})	4,4 (3-6,5)	3,2 (2,2-4,7)	**1,1 (1-1,2)**	1
Détresse respiratoire OR (IC_{95})	2,6 (2-3,4)	1,9 (1,5-2,5)	**1,2 (1,1-1,2)**	1

Billionnet C et al., EASD 2014 abstract 151

Données 2012

- Évaluer la prévalence du DG et le risque de complications périnatales liées au DG dans la population française
- Données issues du PMSI et du SNIRAM dans la cohorte de naissances 2012
- Risques périnataux en cas de DG après 26 SA *versus* femmes non DT et *versus* femmes DT

796 346 accouchements (issues de grossesse après 22 SA) dans le PMSI 2012			
	N	%	Âge maternel, ans (ET)
DT1	1 291	0,16	30 (5,5)
DT2	1 907	0,24	33,5 (5,5)
DG	57 629	7,24	31,9 (5,5)
Non DT	735 519	92,34	29,5 (5,3)
Total	796 346	100	29,7 (5,4)

- *D. Mittanchez et al. Gestational diabetes: what is the ral level of risk? Data from the French population in 2012. OP15-85*

Le risque materno-fœtal est moins élevé en cas de DG *versus* DT1 et DT2

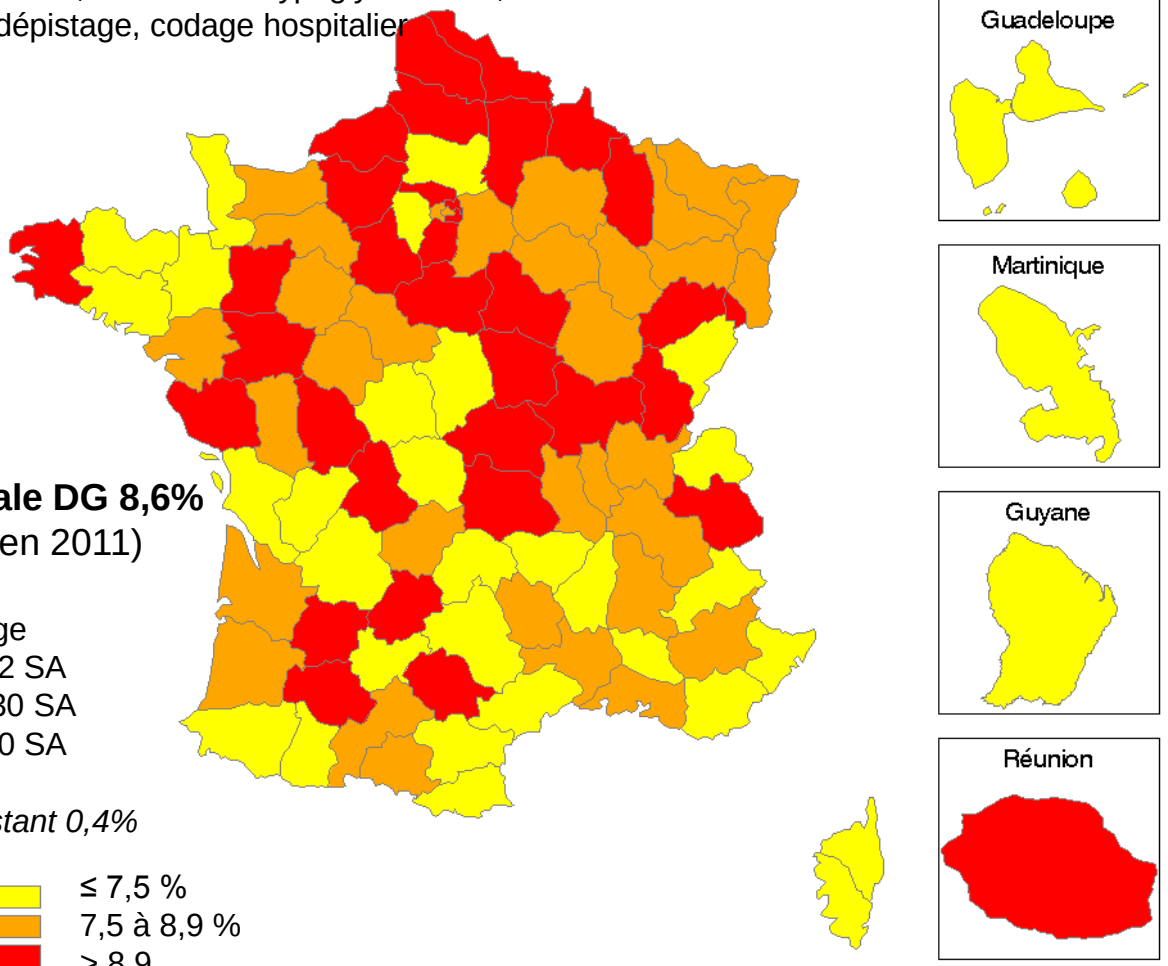
- Comparativement aux mères non diabétiques, le DG augmente les risques de :
  - Prématurité (< 37 SA) : OR 1,2
  - Césarienne : OR 1,4
  - Prééclampsie/éclampsie : OR 1,6

Risques fœtaux				
	DT1	DT2	DG	Non-DT
Mortalité périnatale	3,6	1,8	0,7	1
Asphyxie	3,9	2,4	1,2	1
Macrosomie	7,7	3,8	1,8	1
Paralysie cérébrale/fracture col	3,7	2,7	1,3	1
Malformations cardiaques	5,3	3,8	1,2	1
Malformations SNC	2,3	2,7	0,8	1
Détresse respiratoire	2,1	1,7	1,3	1

- *D. Mittanchez et al. Gestational diabetes: what is the ral level of risk? Data from the French population in 2012. OP15-85*

Disparités géographiques dans la prévalence du diabète gestationnel en France en 2013* (788 494 accouchements > 22 SA)

Remboursement ASG, traitements hypoglycémiants, tests de dépistage, codage hospitalier



Prévalence globale DG 8,6%
(contre 6,4% en 2011)

Dépistage
27,9% < 22 SA
55,8% 22-30 SA
14,4% > 30 SA

Diabète préexistant 0,4%

≤ 7,5 %
7,5 à 8,9 %
> 8,9

*Données standardisées pour la population nationale des femmes enceintes en France.

ADA 2016 - D'après Regnault N et al., abstr. 1370-P, actualisé

Seasonal Changes in the Prevalence of Gestational Diabetes Mellitus

Robert G. Moses,[1] Veronica C.K. Wong,[1] Kelly Lambert,[1] Gary J. Morris,[2] and Fernando San Gil[1]

Diabetes Care 2016;39:1218–1221 | DOI: 10.2337/dc16-0451

Objectif:

Déterminer la prévalence de DG en fonction des saisons définis selon les critères de l'OMS.

Design:

Etude prospective sur une durée de 3 ans.

Résultats:

N=7369 pregnancy 75 g OGTT.

En hiver, les glycémies moyennes à 1h et à 2h sont plus basses ($p < 0.0001$).

La prévalence de DG sur la valeur 1h est de 29% plus élevée en été et de 27% plus basse en hiver ($p = 0.02$).

La prévalence de DG sur la glycémie de 2h est de 28% plus élevé en éte et de 31% plus basse en été ($p = 0.01$).

Conclusion:

Surdiagnostic en été et sous diagnostic en hiver.

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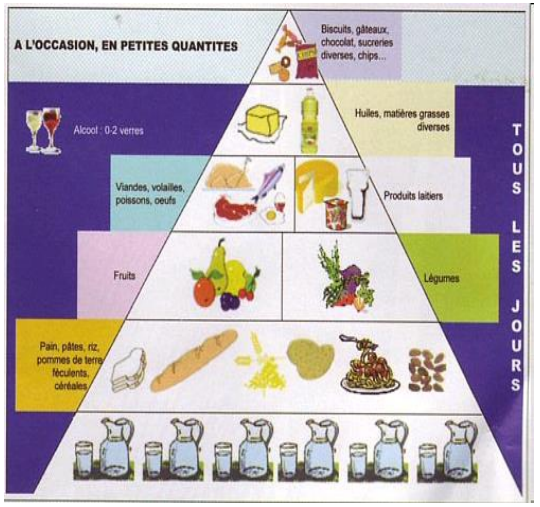
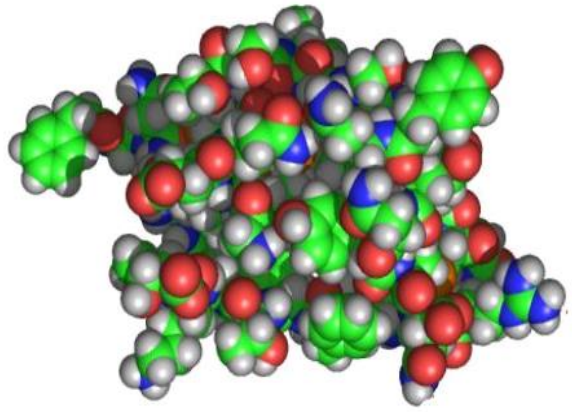


DEPISTAGE ET DIAGNOSTIC DU DIABETE GESTATIONNEL



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	ou		
	G1h	≥ 1,80 g/l	
	ou		
	G2h	≥ 1,53 g/l	

Age at Menarche and Risk of Gestational Diabetes Mellitus: A Prospective Cohort Study Among 27,482 Women

Liwei Chen,[1] Shanshan Li,[2] Chunyan He,[3] Yeyi Zhu,[2] Germaine M. Buck Louis,[2] Edwina Yeung,[2] Frank B. Hu,[4,5,6] and Cuilin Zhang[2]

Diabetes Care 2016;39:469–471 | DOI: 10.2337/dc15-2011

Table 1—Relative risk (95% CI) of GDM according to age at menarche among 42,109 pregnancies in the Nurses' Health Study II (1,404 GDM events)

Age at menarche	GDM (events/pregnancies)	Multivariate model 1	Multivariate model 2	Multivariate model 3
≤11 years	361/8,730	1.39 (1.19–1.63)	1.36 (1.16–1.60)	1.34 (1.14–1.58)
12 years	405/12,335	1.13 (0.97–1.32)	1.13 (0.97–1.31)	1.13 (0.97–1.31)
13 years	381/11,980	1.10 (0.95–1.29)	1.11 (0.95–1.29)	1.11 (0.95–1.29)
≥14 years	257/9,064	Reference	Reference	Reference
P for trend		<0.0001	0.0003	0.0005

42,1% de cette association expliquée par IMC prégestationnel

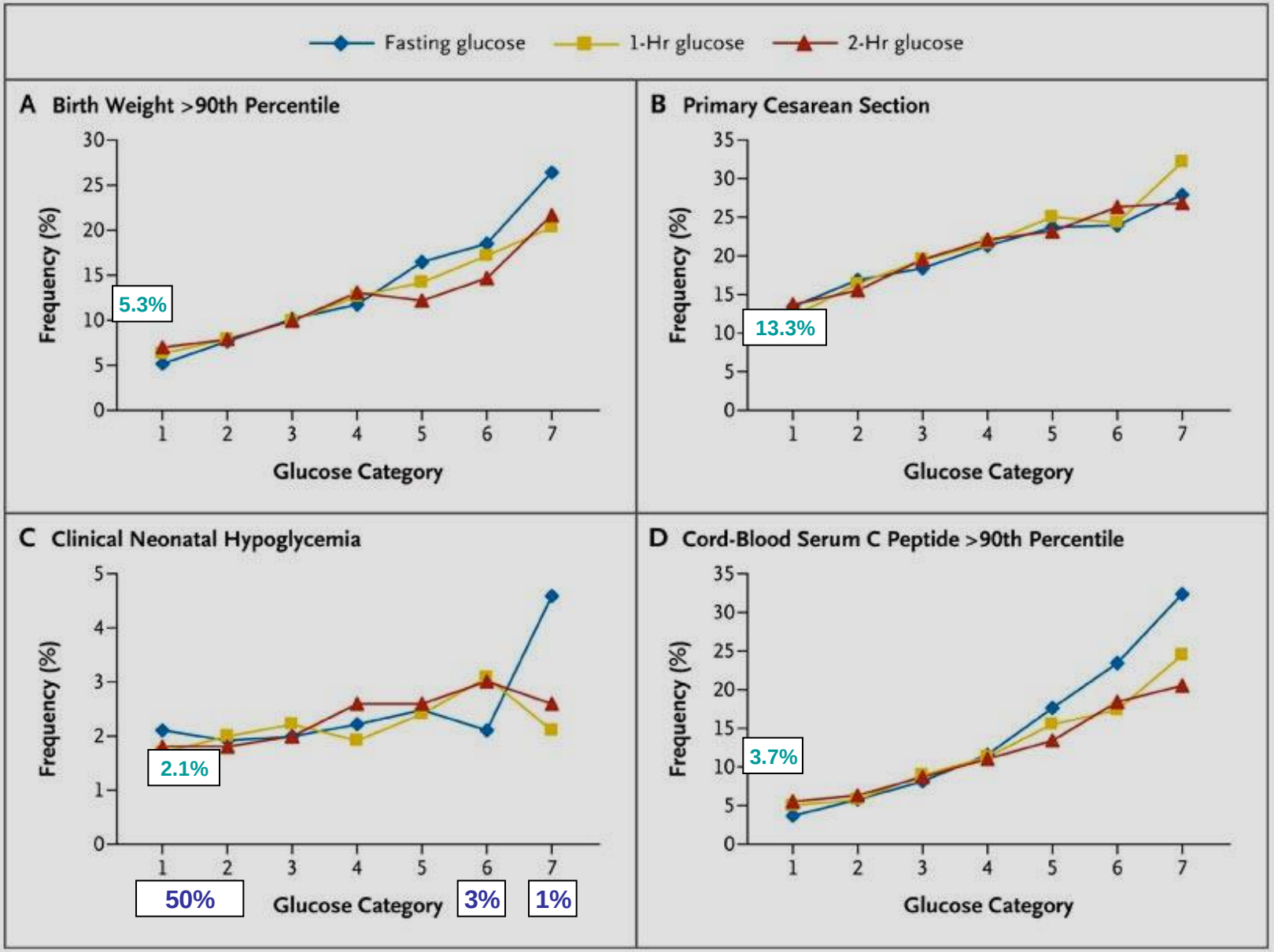
Folic Acid Supplement Intake in Early Pregnancy Increases Risk of Gestational Diabetes Mellitus: Evidence From a Prospective Cohort Study

Beibei Zhu,[1,2] Xing Ge,[1] Kun Huang,[1,2] Leijing Mao,[1] Shuangqin Yan,[3] Yeqing Xu,[3] Sanhuan Huang,[1] Jiahu Hao,[1,2] Peng Zhu,[1,2] Ying Niu,[1] Shilu Tong,[2,4] and Fangbiao Tao[1,2]

Diabetes Care 2016;39:e36–e37 | DOI: 10.2337/dc15-2389

- The China-Anhui Birth Cohort Study: (n= 3,474) between May 2013 and September 2014.
- 75-g oral glucose tolerance test at 28 weeks of gestation, and diagnosis of GDM was made according to ADA .
- Only women who had either used FA supplements or never used any vitamin supplements (n =1,938) were included in the analysis.
- GDM was diagnosed in 249 of the 1,938 (12.8%) women.
- Daily FA supplement consumption in the first trimester was associated with an increased risk of GDM (OR= 2.25 [1.35–3.76]).
- Women with a prepregnancy BMI ≥25 kg/m2 and taking FA supplements daily in the first trimester had a much higher risk of GDM (OR 5.63 [95% CI 2.77–11.46]) compared with women with a prepregnancy BMI <25 kg/m2 and not taking any FA supplements.
- An increased risk of GDM was not apparent for women using FA before pregnancy alone or in the second trimester alone.

Morbidité materno-foetale dans l'étude HAPO



The HAPO Study Cooperative Research Group. N Engl J Med 2008;358:1991-2002

The NEW ENGLAND JOURNAL of MEDICINE

Maternal and Neonatal Morbidity for Women Who Would Be Added to the Diagnosis of GDM Using IADPSG Criteria: A Secondary Analysis of the Hyperglycemia and Adverse Pregnancy Outcome Study

Thaddeus P. Waters,[1] Alan R. Dyer,[2] Denise M. Scholtens,[2] Sharon L. Dooley,[2] Elaine Herer,[3] Lynn P. Lowe,[2] Jeremy J.N. Oats,[4] Bengt Persson,[5] David A. Sacks,[6] Boyd E. Metzger,[2] and Patrick M. Catalano,[7] for the HAPO Cooperative Study Research Group

DOI: 10.2337/dc16-1194

HAPO: 25 505 participants dont 6159 d'Amérique du Nord

81% normotolérantes

4,2% DG selon CC

14,3% DG selon IADPSG non CC

Morbidité materno-foetale DG selon IADPSG

↑ poids de naissance OR=1,87 (1,50-2,34)

↑ C peptide au cordon OR= 2,00 (1,54-2,58)

↑ % masse grasse > 90 th percentile OR = 1,73 (1,35-2,23)

↑ césarienne OR=1,31 (1,07-1,60)

↑ prééclampsie OR=1,73 (1.32–2.27)

Gestational Diabetes Mellitus in Early Pregnancy: Evidence for Poor Pregnancy Outcomes Despite Treatment

Arianne N. Sweeting,[1,2] Glynis P. Ross,[1,2] Jon Hyett,[3,4] Lynda Molyneaux,[1,2] Maria Constantino,[1] Anna Jane Harding,[1] and Jencia Wong[1,2]

Diabetes Care 2016;39:75–81 | DOI: 10.2337/dc15-0433

Table 1—Baseline maternal characteristics stratified by type of diabetes and timing of GDM diagnosis

		GDM			
Maternal demographics (*N* = 4,873)	Type 2 diabetes (*n* = 65)	<12 weeks (*n* = 68)	12–23 weeks (*n* = 1,247)	≥24 weeks (*n* = 3,493)	*P* value
Ethnicity (%)					0.0001
Anglo-Celtic	14	35	16	24	
Chinese/Southeast Asian	29	32	47	38	
Indian	14	13	11	10	
Mediterranean	5	4	10	11	
Middle Eastern	5	4	5	5	
Aboriginal and Torres Strait Islander	21	6	4	4	
Other	12	4	8	8	
Age (years)	34.5 ± 5.6	34.7 ± 4.5*	35.1 ± 4.9*	32.9 ± 5.0	<0.0001
Prepregnancy BMI (kg/m^2)	30.2 ± 6.2*	28.0 ± 6.9*	25.3 ± 6.2*	24.2 ± 5.3	<0.0001
Final BMI (kg/m^2)	35.6 ± 6.3* (*n* = 32)	32.4 ± 7.5* (*n* = 40)	29.6 ± 6.0 (*n* = 1,069)	29.2 ± 5.3 (*n* = 2,955)	<0.0001
GWG (kg)	12.8¶ (9.1–19.2)	6.4* (3.5–13.0)	10.5*¶ (7.4–14.0)	12.5¶ (9.0–16.0)	<0.0001
Family history DM (%)	84.4	61.8	58.0	47.5	<0.0001
Parity (%)					<0.0001
Primiparous	45	25	34	42	
Multiparous	55*	75*	66*	58	

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Diabetes Care 2016;39:75–81 | DOI: 10.2337/dc15-0433

Table 2—Treatment stratified by type of diabetes and timing of GDM diagnosis

Maternal demographics (*N* = 4,873)	Type 2 diabetes (*n* = 65)	GDM <12 weeks (*n* = 68)	GDM 12–23 weeks (*n* = 1,247)	GDM ≥24 weeks (*n* = 3,493)	*P* value
Insulin treatment (%)	100.0	75.0*	59.1	42.7	<0.0001
Maximum daily insulin dose (units)	106* (69–165)	48* (20–89)	33* (16–62)	20 (10–38)	<0.0001
Gestation insulin commenced (weeks)	8.7 ± 4.3*	15.2 ± 8.9*	25.3 ± 5.4*	33.0 ± 3.2	<0.0001
Gestation GDM diagnosis (weeks)		8.1 ± 2.6	18.0 ± 2.8	29.5 ± 2.7	
Antenatal OGTT					
0 min		5.3 ± 1.5*	4.9 ± 1.0	4.8 ± 1.7	0.04
60 min		10.8 ± 3.0*	10.0 ± 1.8	9.9 ± 1.8	0.001
120 min		9.1 ± 3.1	8.8 ± 2.3*	8.5 ± 1.9	0.001
AUC glucose (units)		1,078 ± 300*	1,004 ± 159*	988 ± 153	<0.0001
HbA_{1c} (%)	6.0 ± 0.9	5.7 ± 1.3*	5.2 ± 0.6*	5.3 ± 0.5	0.0001

Table 3—Maternal outcomes for type 2 diabetes and GDM stratified by timing of diagnosis

Maternal outcomes	T2DM (*n* = 65)	GDM <12 weeks (*n* = 68)	GDM 12–23 weeks (*n* = 1,247)	GDM ≥24 weeks (*n* = 3,493)	*P* value
Gestation at delivery (weeks)	37.4 ± 1.9*	37.5 ± 3.2*	38.3 ± 2.4*	38.8 ± 1.7	<0.0001
Preterm delivery (%)	25.9*	16.7*	11.2*	6.4	<0.0001
Cesarean section (%)	57.9*	30.7	36.2*	28.1	<0.0001
Hypertensive disorders in pregnancy (%)	34.6*	26.3*	13.8*	11.2	<0.0002
Postpartum OGTT (%)‖		(*N* = 28)	(*N* = 702)	(*N* = 1,877)	<0.0001
Normal		79*	71*	85	
IGT		11	24	14	
T2DM		11	5	1	

Table 4—Neonatal outcomes for type 2 diabetes and GDM stratified by timing of diagnosis

Neonatal complications	T2DM (*n* = 65)	GDM <12 weeks (*n* = 68)	GDM 12–23 weeks (*n* = 1,247)	GDM ≥24 weeks (*n* = 3,493)	*P* value
Macrosomia	21.8*	20.3*	9.0	10.0	<0.0001
LGA	39.6*	32.8	21.5	22.8	0.008
Stillbirth	1.8	3.4	0.8	0.3	0.2
Jaundice	41.7*	28.1*	24.8	19.8	<0.0001
Neonatal intensive care admission	38.5	39.7	38.3*	34.0	0.04
Respiratory distress syndrome	12.3*	7.4*	3.8	4.0	0.005
Hypoglycemia	14.9	20.7	20.2*	17.2	0.1
SGA	0.0	5.2	8.5	7.3	0.2

Un pronostic materno-fœtal différent selon la date de diagnostic du diabète gestationnel: données de 788 494 femmes ayant accouché en France en 2013

- Selon le SNIIRAM, date de début du DG (DD): date de la dernière évaluation de la glycémie avant le premier remboursement de bandelettes, d'insuline ou d'hospitalisation avec un diagnostic de diabète.

- Quatre sous-types de DG : précoce (DD <22 SA), intermédiaire (22≤DD≤30SA) et tardif (DD> 30SA), et le diabète non diagnostiqué reconnu pour la première fois pendant la grossesse (DG-DT2, si au moins un médicament antidiabétique était remboursé dans l'année après l'accouchement).

- Données maternelles et de l'enfant chainées pour 91,8% des cas.
- Régressions logistiques pour estimer les OR des indicateurs du pronostic materno-foetal selon les sous-types de DG en ajustant sur l'âge maternel, le désavantage social et l'âge gestationnel.

RESULTATS

- **La prévalence du DG était de 8,6% en France dont**
  - 26,9% diagnostiqués précocement,
  - 55,2% de DG diagnostiqués à un terme intermédiaire,
  - 14,3% de diagnostiques tardifs
  - 1,8% de DG-DT2.

- **Le risque de prééclampsie/éclampsie était augmenté**
  - chez les DG-DT2 (OR=1,75 [IC95% :1,34 - 2,28]),
  - n'était pas différent chez les DG précoces
  - était inférieur chez les DG tardifs (0,84 [0,71-0,99]).

- **Le risque de césarienne était augmenté**
  - chez les DG-DT2 (OR=2,02 [1,79-;2,28])
  - chez les DG précoces (OR=1.07 [IC95% :1.02 -1.11])
  - n'était pas différent chez les DG tardifs.

RESULTATS

- **Le risque de dystocie des épaules était augmenté**
  - chez les DG tardifs (OR=1,14 [1,04- 1,25])
  - n'était pas différent chez les DG précoces
  - n'était pas différent chez les DG-DT2.

- **Le risque de détresse respiratoire était augmenté**
  - chez les DG-DT2 (OR=1,53 [1,2-1,94])
  - n'était pas différent chez les DG précoces.
  - n'était pas différent chez les DG tardifs.

- **Le risque de LGA était augmenté**
  - chez les DG précoces (OR=1,2 [1,13-1,25]),
  - chez les DG tardifs (OR=1,50 [1,41-1,59]),
  - chez les DG-DT2 (OR=2,32 [2,02-2,68]).

An Early Pregnancy HbA_{1c} ≥5.9% (41 mmol/mol) Is Optimal for Detecting Diabetes and Identifies Women at Increased Risk of Adverse Pregnancy Outcomes

Ruth C.E. Hughes,[1] M. Peter Moore,[2] Joanna E. Gullam,[1] Khadeeja Mohamed,[3] and Janet Rowan[4]

Diabetes Care 2014;37:2953–2959 | DOI: 10.2337/dc14-1312

- GDM diagnosed <20 versus >20 week's gestation
- Between 2008–2010
- Pregnant women (n=16122)
- **Results**: This HbA1c threshold was also 98.4% (95% CI 97–99.9%) specific for GDM before 20 weeks (positive predictive value = 52.9%).
- In the total cohort, excluding women referred for GDM management women with HbA1c of 5.9–6.4% (n = 200) had poorer pregnancy outcomes than those with HbA1c <5.9% (n = 8,174):
  relative risk (95% CI) of congenital anomaly,
  preeclampsia,
  shoulder dystocia,
  and perinatal death.
- **HbA1c ≥5.9% identified all women with diabetes and a group at significantly increased risk of adverse pregnancy outcomes**.

Baseline HbA1c to Identify High Risk Gestational Diabetes: Utility in Early Versus Standard Gestational Diabetes

Arianne N Sweeting[1,2], Glynis P Ross[1,2], Jon Hyett[3,4], Lynda Molyneaux[1,2], Kris Tan[5], Maria Constantino[1,2], Anna Jane Harding[1], Jencia Wong[1,2]

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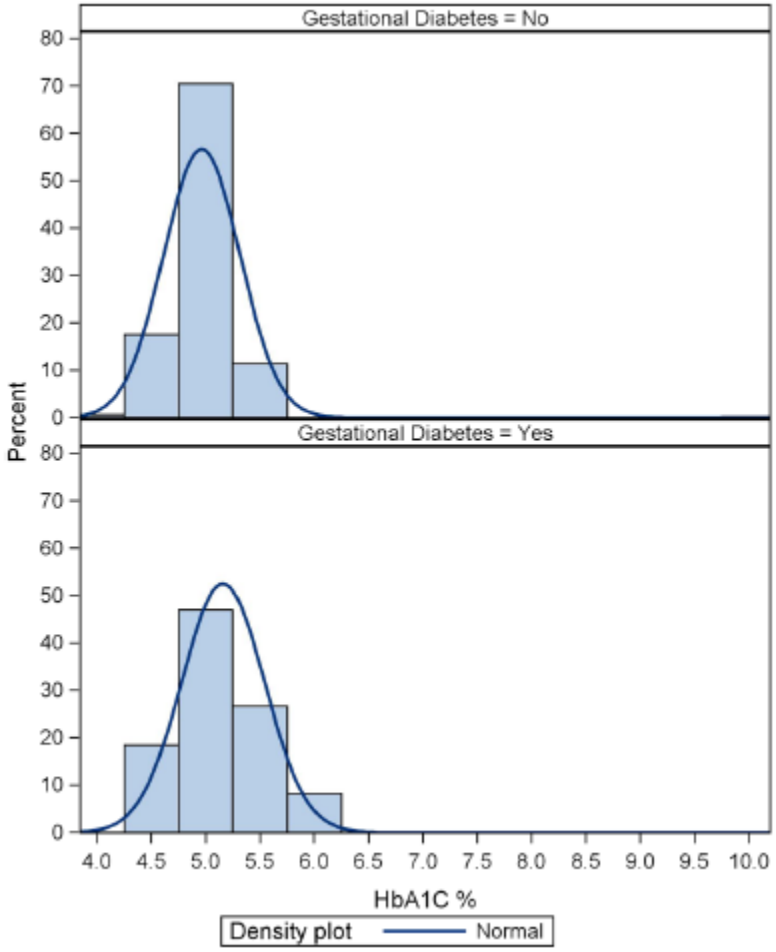
- GDM diagnosed <24 versus ≥24 weeks' gestation
- between 1991-2011.
- Pregnant women (n=3098)
- **Results:** HbA1c was measured at a median 17.6±3.3 weeks' gestation in early GDM (*n*=844)
  and 29.4±2.6 weeks' gestation in standard GDM (*n*=2254).
- In standard GDM, HbA1c>5.9% was associated with the greatest risk of LGA, macrosomia,
  cesarean section and hypertensive disorders
- In early GDM, similar HbA1c associations were seen,
  lower HbA1c correlated with the greatest risk of SGA and neonatal hypoglycaemia.
- **This study evaluated whether a single baseline HbA1c at GDM diagnosis identifies pregnancies at higher risk, concluding that an HbA1c >5.9% threshold has utility in standard but not early GDM**.

Glycosylated haemoglobin for screening and diagnosis of gestational diabetes mellitus

Alhossain Khalafallah,[1,2,3] Eileen Phuah,[4] Abdul Majeed Al-Barazan,[2] Irena Nikakis,[4] Andrea Radford,[5] Wade Clarkson,[5] Clinton Trevett,[5] Terry Brain,[5] Val Gebski,[6] Anne Corbould[1,2]



490 femmes

11,9% DG

Cut-off de HbA1c: 5,4%

Sensibilité : 27%

Specificité: 95%

Valeur prédictive négative: 91%

Objectifs de l'intervention thérapeutique

- Objectifs généraux de la prise en charge du DG (grade A):
  - Réduction des complications périnatales sévères: macrosomie fœtale et prééclampsie
  - Sans majoration des risques de césarienne

les 3 piliers dans la prise en charge des patientes avec un DG sont:

1. **Prise en charge hygiéno-diététique**
2. **Autosurveilance glycémique (ASG)**
3. **± Insulinothérapie**

- Objectifs glycémiques: (grade A)
  - GAJ < 0,95 g/L voire 0,92 g/l
  - GPP 2h < 1,20 g/L

Objectifs glycémiques : études interventionnelles

	Etude ACHOIS	Etude NICHD
Objectifs glycémiques	**GAJ ≤ 1,00 g/l** **GPP ≤ 1,26 g/l**	**GAJ ≤ 0,95 g/l** **GPP ≤ 1,20 g/l**
Critère principal	**Critère composite* :** **RR 0,33 [0,14-0,75], p<0,01** **Hospitalisation du nouveau né :** **1,13 [1,03-1,23], p<0,05** **Décès néonatal, dystocie des épaules, ictère, césarienne : NS**	**Critère composite § :** **RR 0,87 [0,72-1,07], NS**
Objectifs secondaires	**Macrosomie fœtale** **0,47 [0,34-0,64], p<0,05** **Prééclampsie** **0,70 [0,51-0,95], p<0,05** **Hypoglycémie, convulsions néonatales, détresse respiratoire : NS**	**Macrosomie fœtale** **0,41 [0,26-0,66], p<0.01** **Césarienne** **0,79 [0,64-0,99], p<0,05** **Dystocie des épaules** **0,37 [0,14-0,97], p<0,05** **Prééclampsie** **0,46 [0,22-0,97], p<0,05** **Prématurité, hospitalisation du nouveau né, détresse respiratoire : NS**

***critère composite : décès, dystocie des épaules, fracture osseuse**
§ critère composite : hypoglycémie et/ou hyperbilirubinémie et/ou C peptide élevé au sang du cordon et/ou décès et/ou traumatisme à la naissance

Crowther et al. NEJM 2005:2477 **Landon et al. NEJM 2009:1339**

OBJECTIFS GLYCEMIQUES AU COURS DU DIABETE MATERNEL POUR REDUIRE LA MACROSOMIE

Tests and Cutoffs, mg/dL	Macrosomia n	OR (95% CI)	*P*	Heterogeneity *P* Value[a]	*P*[b]
FBG					.01
90	3	0.39 (0.29–0.52)	<.01	<.01	
100	3	0.73 (0.51–1.04)	.08	.11	
110	0	NA	NA	NA	
1-h GTT					.81
120	2	0.70 (0.42–1.19)	.19	.28	
130	2	0.65 (0.42–1.01)	.05	.15	
140	0	NA	NA	NA	
2-h GTT					.05
110	3	0.47 (0.35–0.63)	<.01	<.01	
120	3	0.90 (0.84- 1.48)	.47	0.48	
130	3	0.74 (0.55- 3.35)	.51	.52	
Preprandial					1.00
90	2	0.88 (0.30- 2.57)	.82	.82	
100	2	0.88 (0.30- 2.57)	.82	.82	

Abbreviation: GTT, glucose tolerance test; NA, not applicable.

[a] Heterogeneity *P* values were calculated between groups by χ^2 test.

[b] *P* values for interaction test are based on ANOVA test ($P < .05$ implies statistically significant difference across the subgroups).

J Clin Endocrinol Metab, November 2013, 98(11):4319–4324

Prise en charge hygiéno-diététique

- **PRISE EN CHARGE DIETETIQUE INDIVIDUALISEE**

➢ Apport calorique recommandé
  - 25 et 35 kcal/kg/j
  - Restriction calorique en cas d'obésité mais > 1 600 kcal/j (accord professionnel)

➢ Apport en hydrates de carbone
  - 40 % à 50 % de l'apport calorique total (grade C)
  - A index glycémique faible (accord professionnel)
  - A répartir en 3 repas et 2/3collations (accord professionnel)

- **ACTIVITE PHYSIQUE REGULIERE**
  - En l'absence de contre-indication obstétricale
  - 30 min, 3-5 fois/sem (grade C)

Société francophone du diabète

CNGOF

Different types of dietary advice for women with gestational diabetes mellitus (Review)

Han S, Crowther CA, Middleton P, Heatley E

Han S, Crowther CA, Middleton P, Heatley E.
Different types of dietary advice for women with gestational diabetes mellitus.
Cochrane Database of Systematic Reviews 2013, Issue 3. Art. No.: CD009275.
DOI: 10.1002/14651858.CD009275.pub2.

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METHODOLOGIE

- **Objectif:**
  - évaluer les effets des différentes diététiques chez des femmes avec DG sur les complications materno-foetales

- **Design:**
  - études controllées randomisées
  - Comparaison des diététiques les unes par rapport aux autres

- **2 reviewers indépendants**

  - 9 ETUDES
  - 429 patientes avec DG (436 enfants)
  - 11 diététiques différentes

INDEX GLYCEMIQUE

Analysis 1.2. Comparison 1 Low-moderate GI food versus high-moderate food, Outcome 2 Large-for-gestational age (birthweight ≥ 90th percentile for gestational age).

Review: Different types of dietary advice for women with gestational diabetes mellitus

Comparison: 1 Low-moderate GI food versus high-moderate food

Outcome: 2 Large-for-gestational age (birthweight ≥ 90th percentile for gestational age)

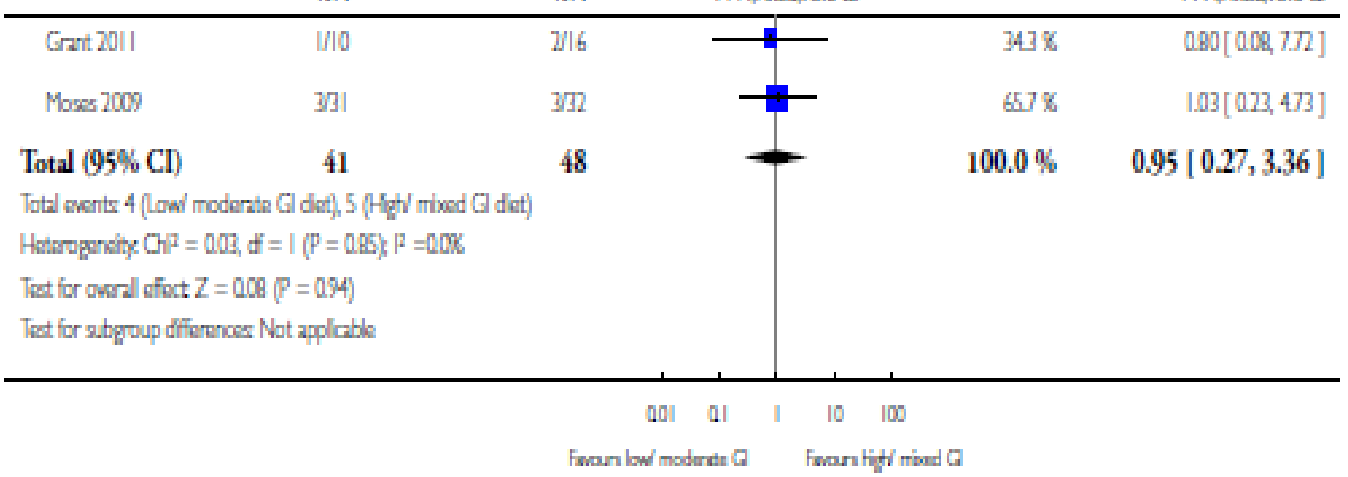
Study or subgroup	Low/ moderate GI diet n/N	High/ mixed GI diet n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Grant 2011	1/10	2/16		34.3 %	0.80 [0.08, 7.72]
Moses 2009	3/31	3/32		65.7 %	1.03 [0.23, 4.73]
Total (95% CI)	**41**	**48**		**100.0 %**	**0.95 [0.27, 3.36]**

Total events: 4 (Low/ moderate GI diet), 5 (High/ mixed GI diet)

Heterogeneity: $Chi^2 = 0.03$, df = 1 ($P = 0.85$); $I^2 = 0.0\%$

Test for overall effect: $Z = 0.08$ ($P = 0.94$)

Test for subgroup differences: Not applicable



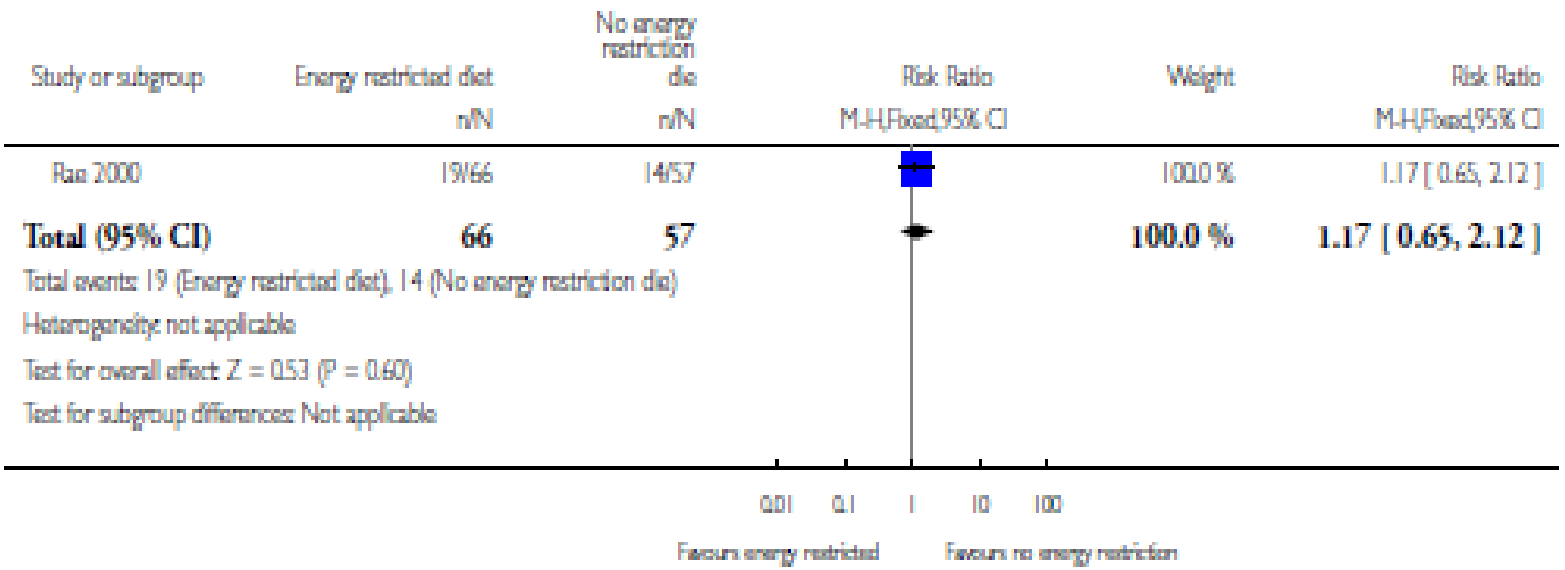
RESTRICTION ENERGETIQUE

Analysis 3.3. Comparison 3 Energy-restricted diet versus no energy restriction diet, Outcome 3 Large-for-gestational age.

Review: Different types of dietary advice for women with gestational diabetes mellitus

Comparison: 3 Energy-restricted diet versus no energy restriction diet

Outcome: 3 Large-for-gestational age



HYDRATES DE CARBONE

Analysis 4.1. Comparison 4 Low-carbohydrate (CHO) diet (≤ 45% total energy from CHO) versus high-CHO diet (≥ 50% total energy from CHO), Outcome 1 Macrosomia (birthweight greater than 4000 g).

Review: Different types of dietary advice for women with gestational diabetes mellitus

Comparison: 4 Low-carbohydrate (CHO) diet (≤ 45% total energy from CHO) versus high-CHO diet (≥ 50% total energy from CHO)

Outcome: 1 Macrosomia (birthweight greater than 4000 g)

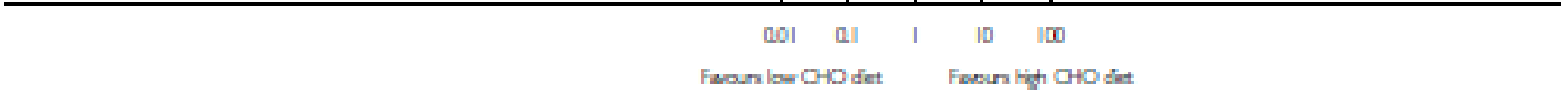
Study or subgroup	Low carbohydrate diet n/N	High carbohydrate diet n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Cypryk 2007	0/15	0/15			Not estimable
Total (95% CI)	**15**	**15**			**Not estimable**

Total events: 0 (Low carbohydrate diet), 0 (High carbohydrate diet)

Heterogeneity: not applicable

Test for overall effect: not applicable

Test for subgroup differences: Not applicable



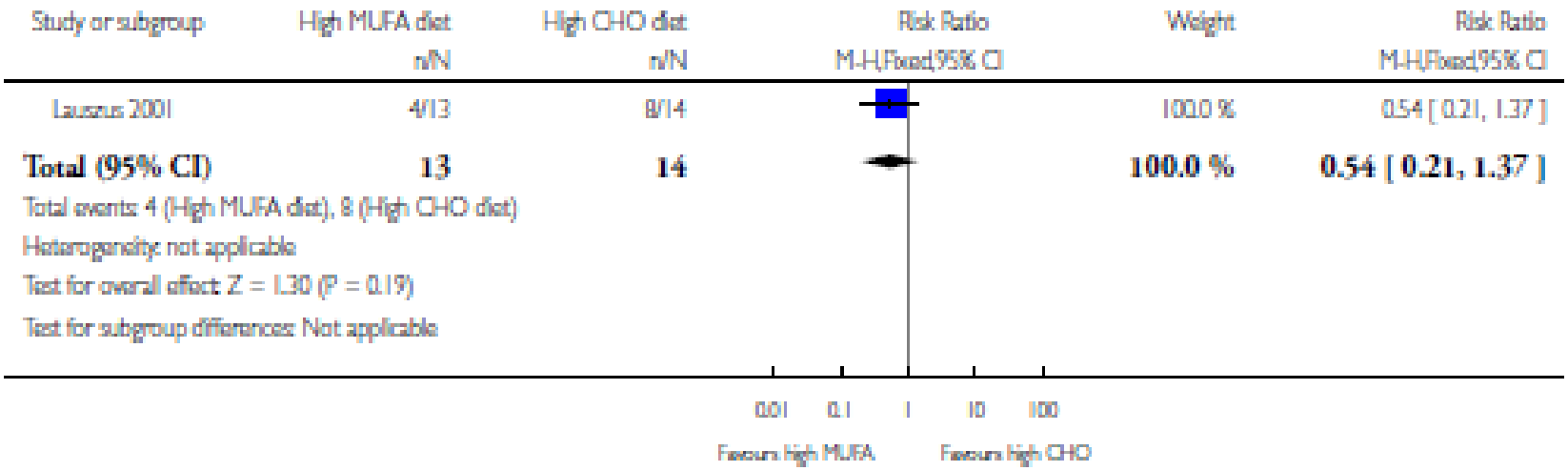
GRAISSES MONOINSATUREES

Analysis 5.2. Comparison 5 High-monounsaturated fat (MUFA) diet (≥ 20% total energy from MUFA) versus high-CHO diet (≥ 50% total energy from CHO), Outcome 2 Large-for-gestational age.

Review: Different types of dietary advice for women with gestational diabetes mellitus

Comparison: 5 High-monounsaturated fat (MUFA) diet (≥ 20% total energy from MUFA) versus high-CHO diet (≥ 50% total energy from CHO)

Outcome: 2 Large-for-gestational age



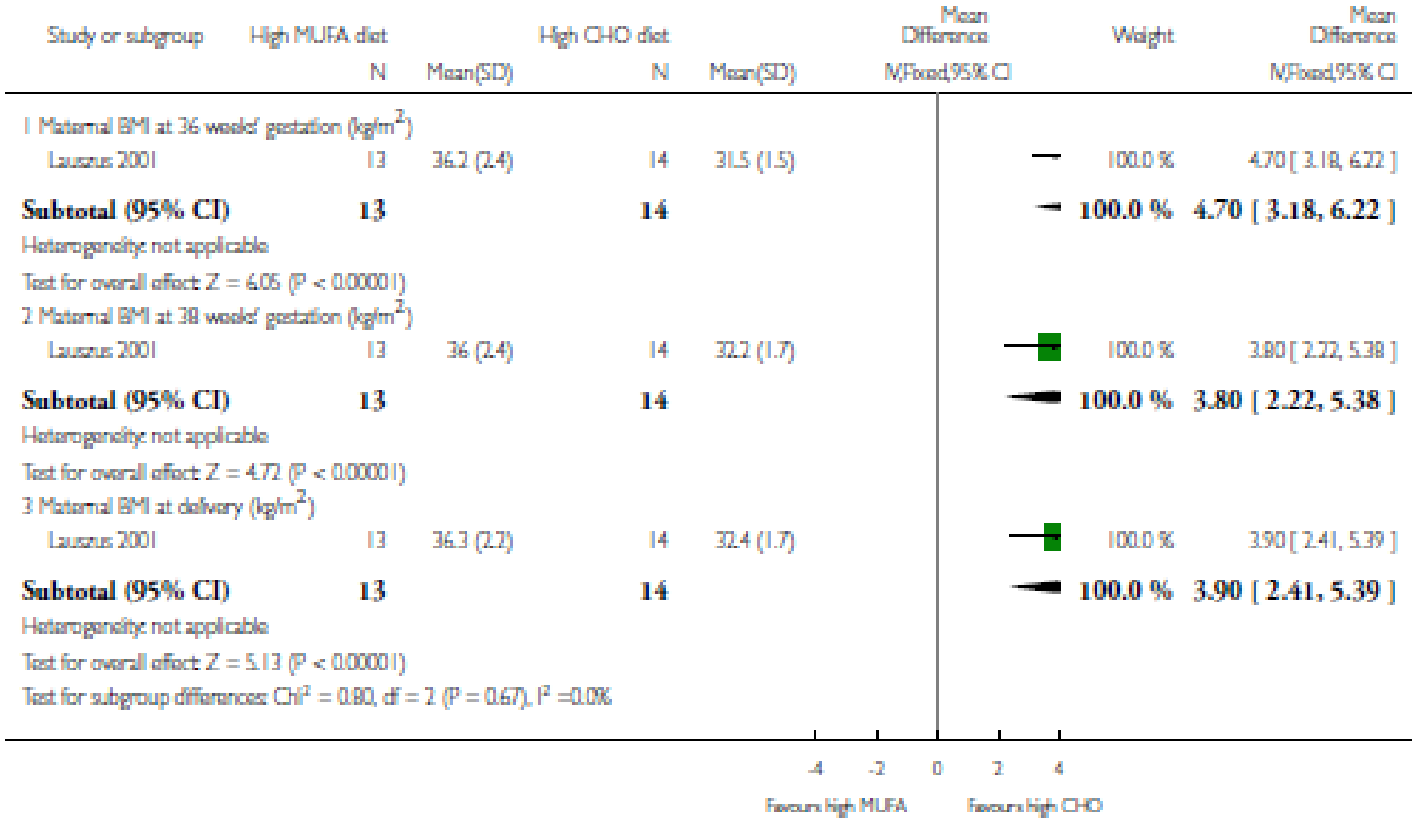
Analysis 5.8. Comparison 5 High-monounsaturated fat (MUFA) diet (≥ 20% total energy from MUFA) versus high-CHO diet (≥ 50% total energy from CHO), Outcome 8 Maternal BMI at late pregnancy (third trimester) (kg/m2).

Review: Different types of dietary advice for women with gestational diabetes mellitus

Comparison: 5 High-monounsaturated fat (MUFA) diet (≥ 20% total energy from MUFA) versus high-CHO diet (≥ 50% total energy from CHO)

Outcome: 8 Maternal BMI at late pregnancy (third trimester) (kg/m^2)

Study or subgroup	High MUFA diet N	Mean(SD)	High CHO diet N	Mean(SD)	Mean Difference M,Fixed,95% CI	Weight	Mean Difference M,Fixed,95% CI
1 Maternal BMI at 36 weeks' gestation (kg/m^2)							
Lauszus 2001	13	36.2 (2.4)	14	31.5 (1.5)		100.0 %	4.70 [3.18, 6.22]
Subtotal (95% CI)	**13**		**14**			**100.0 %**	**4.70 [3.18, 6.22]**
Heterogeneity: not applicable							
Test for overall effect: Z = 6.05 (P < 0.00001)							
2 Maternal BMI at 38 weeks' gestation (kg/m^2)							
Lauszus 2001	13	36 (2.4)	14	32.2 (1.7)		100.0 %	3.80 [2.22, 5.38]
Subtotal (95% CI)	**13**		**14**			**100.0 %**	**3.80 [2.22, 5.38]**
Heterogeneity: not applicable							
Test for overall effect: Z = 4.72 (P < 0.00001)							
3 Maternal BMI at delivery (kg/m^2)							
Lauszus 2001	13	36.3 (2.2)	14	32.4 (1.7)		100.0 %	3.90 [2.41, 5.39]
Subtotal (95% CI)	**13**		**14**			**100.0 %**	**3.90 [2.41, 5.39]**
Heterogeneity: not applicable							
Test for overall effect: Z = 5.13 (P < 0.00001)							
Test for subgroup differences: Chi^2 = 0.80, df = 2 (P = 0.67), I^2 =0.0%							



SYNTHESE

- Trop peu d'études
- Effectifs insuffisants
- Pas d'évidence de bénéfice d'une stratégie nutritionnelle par rapport à une autre
- Nécessité d'avoir des études plus importantes afin de déterminer
  - le bénéfice sur le devenir materno-fœtal à court terme.
  - La qualité de vie
  - L'impact médico -économique

Treatment With Diet and Exercise for Women With Gestational Diabetes Mellitus Diagnosed Using IADPSG Criteria

Oratile Kgosidialwa, Aoife M. Egan, Louise Carmody, Breda Kirwan, Patricia Gunning, and Fidelma P. Dunne

Galway Diabetes Research Centre (O.K., A.M.E., L.C., B.K., F.P.D.), Galway University Hospital, Galway, Ireland; HRB Clinical Research Facility (P.G.), Galway, Ireland; and National University of Ireland (F.P.D.), Galway, Ireland

Outcome	GDM, n (%) (n = 567)	NGT, n (%) (n = 2499)	aOR[b]	95% CI	*P* Value
CD	172 (30.3)	610 (24.4)	0.94	0.75–1.17	.55
Polyhydramnios	21 (3.7)	21 (0.8)	3.60	1.82–7.11	<.01
Pre-eclampsia	24 (4.2)	95 (3.8)	0.81	0.49–1.34	.41
PIH	66 (11.6)	192 (7.7)	1.16	0.84–1.60	.38
HPD	66 (11.6)	207 (8.3)	1.06	0.77–1.47	.72
CMO	226 (39.9)	749 (30.0)	1.10	0.90–1.36	.36
Malformations	10 (1.8)	35 (1.4)	0.78	0.36–1.70	.54
Prematurity	31 (5.5)	85 (3.4)	1.51	0.94–2.43	.86
Mortality	1 (0.2)	12 (0.5)	0.64	0.08–5.19	.68
NICU	88 (15.5)	189 (7.6)	2.16	1.60–2.91	<.01
LGA[a]	71 (12.5)	392 (15.7)	0.61	0.46–0.82	<.01
Macrosomia[a]	77 (13.6)	515 (20.6)	0.48	0.37–0.64	<.01
SGA[a]	23 (4.1)	129 (5.2)	0.81	0.49–1.34	.40
Hypoglycemia	18 (3.2)	8 (0.3)	7.25	2.94–17.9	<.01
Shoulder dystocia	9 (1.6)	39 (1.6)	1.19	0.55–2.58	.66
CNO	167 (29.5)	756 (30.3)	0.79	0.64–0.98	.03

Treatment With Diet and Exercise for Women With Gestational Diabetes Mellitus Diagnosed Using IADPSG Criteria

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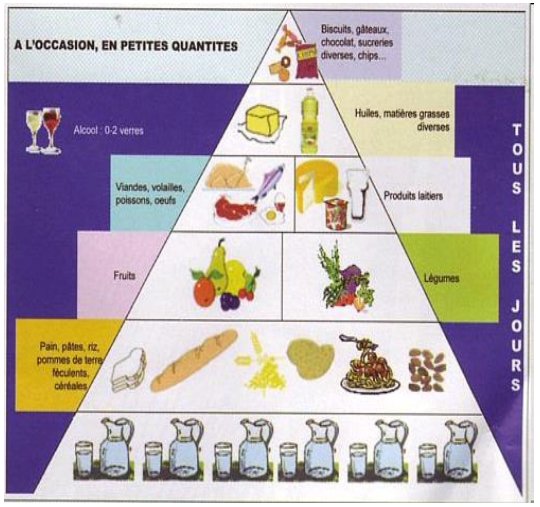
Galway Diabetes Research Centre (O.K., A.M.E., L.C., B.K., F.P.D.), Galway University Hospital, Galway, Ireland; HRB Clinical Research Facility (P.G.), Galway, Ireland; and National University of Ireland (F.P.D.), Galway, Ireland

Outcome, BMI, kg/m²	GDM N/T (%)	NGT N/T (%)	*P* Value
Polyhydramnios			
BMI <25	3/106 (2.8)	5/1028 (0.5)	
BMI 25–29.9	4/182 (2.2)	11/934 (1.2)	
BMI ≥30	14/279 (5.0)	5/505 (1.0)	.02
NICU			
BMI <25	11/105 (10.5)	72/1020 (7.1)	
BMI 25–29.9	26/181 (14.4)	65/926 (7.0)	
BMI ≥30	51/278 (18.3)	47/503 (9.3)	<.01
Hypoglycemia			
BMI <25	3/106 (2.8)	2/1028 (0.2)	
BMI 25–29.9	3/182 (1.6)	2/934 (0.2)	
BMI ≥30	12/279 (4.3)	4/505 (0.8)	.59
LGA			
BMI <25	10/106 (9.4)	125/1025 (12.2)	
BMI 25–29.9	19/182 (10.4)	149/932 (16.0)	
BMI ≥30	42/278 (15.1)	110/505 (21.8)	<.01
Macrosomia			
BMI <25	8/106 (7.5)	169/1024 (16.5)	
BMI 25–29.9	20/181 (11.0)	203/930 (21.8)	
BMI ≥30	49/278 (17.6)	136/503 (27.0)	<.01
CNO			
BMI <25	21/105 (20.0)	265/1016 (26.1)	
BMI 25–29.9	46/180 (25.6)	282/924 (30.5)	
BMI ≥30	100/278 (36.0)	197/502 (39.2)	<.01

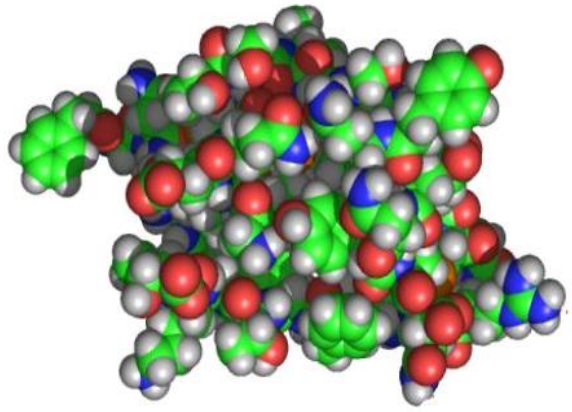
Table 5. Outcomes of Women With GDM Classified According to EWG Compared With AWG (n = 567)

Outcome	n	EWG, n (%)	AWG, n (%)	*P* Value
Macrosomia	77	51 (66.2)	26 (33.8)	<.01
LGA	71	50 (70.4)	21 (29.6)	<.01
NICU	88	52 (59.1)	36 (40.9)	<.01
Hypoglycemia	18	12 (66.7)	6 (33.3)	<.01
CNO	167	102 (61.7)	65 (38.9)	.02

EFFET DE l'IMC



PRISE EN CHARGE OBSTETRICALE



Accelerated Fetal Growth Prior to Diagnosis of Gestational Diabetes Mellitus: A Prospective Cohort Study of Nulliparous Women

Ulla Sovio,[1,2] Helen R. Murphy,[3] and Gordon C.S. Smith[1,2]

Diabetes Care 2016;39:982–987 | DOI: 10.2337/dc16-0160

N=4069 femmes dont 4,2% de DG
Diagnostic de DG à 28SA

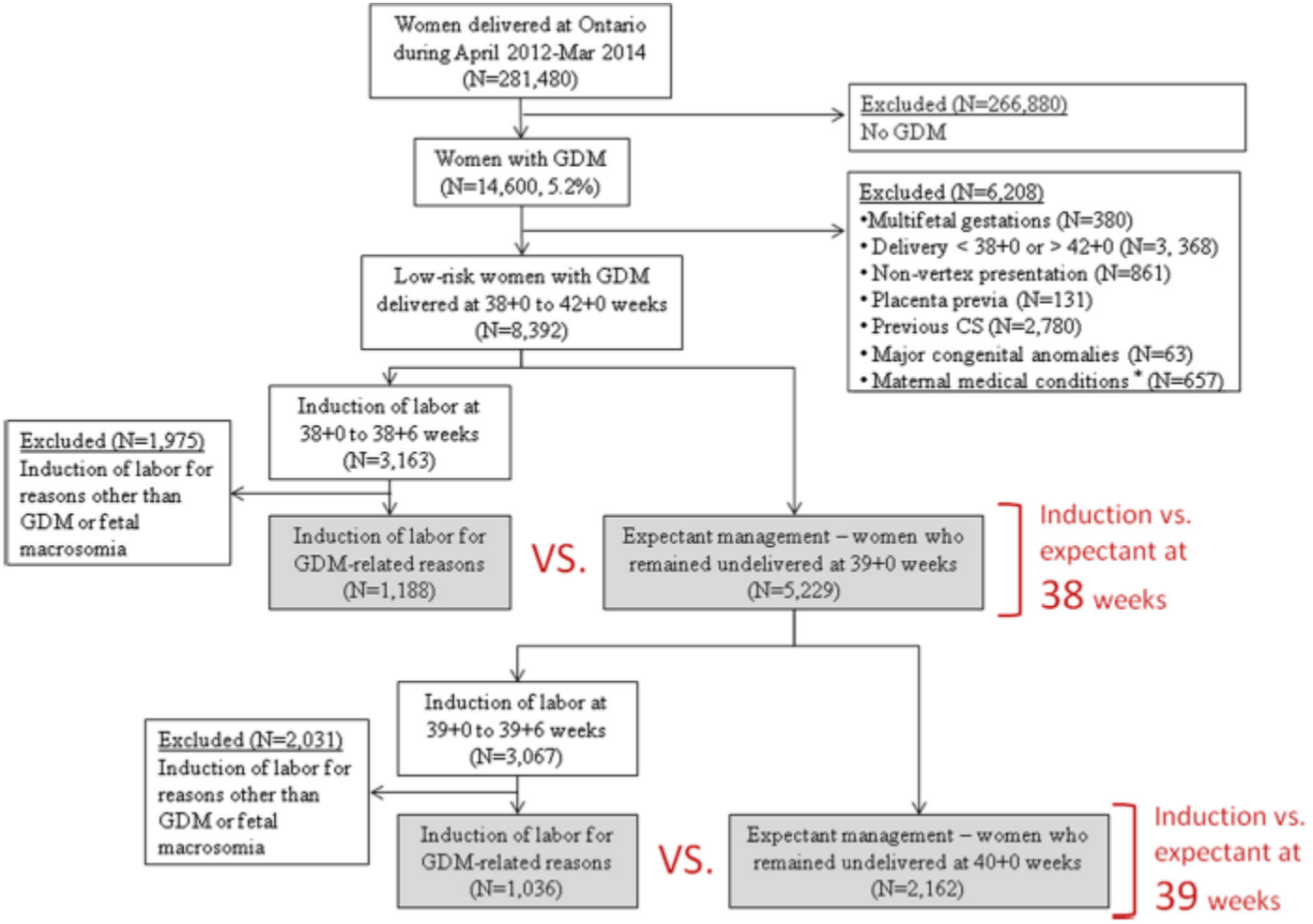
Table 2—Association among GDM, obesity, and fetal growth indicators

		Exposure: obesity only		Exposure: GDM only		Exposure: GDM and obesity		
Growth outcomes†	N*	Adjusted for year	Fully adjusted‡	Adjusted for year	Fully adjusted‡	Adjusted for year	Fully adjusted‡	
AC at 20 wkGA >90th percentile	4,052	1.55 (1.23–1.96)	1.63 (1.29–2.06)	0.89 (0.49–1.63)	0.93 (0.51–1.70)	1.82 (1.00–3.33)	2.01 (1.10–3.69)	
HC:AC at 20 wkGA <10th percentile§	3,994	1.78 (1.41–2.24)	1.80 (1.42–2.27)	1.05 (0.59–1.86)	1.08 (0.61–1.93)	1.78 (0.93–3.39)	1.93 (1.01–3.70)	
ACGV 20–28 wkGA >90th percentile	4,048	1.37 (1.06–1.77)	1.40 (1.08–1.81)	1.72 (1.12–2.64)	1.77 (1.15–2.71)	2.55 (1.54–4.25)	2.78 (1.67–4.65)	
AC at 28 wkGA >90th percentile	4,065	1.86 (1.48–2.34)	2.04 (1.62–2.56)	2.06 (1.38–3.09)	2.05 (1.37–3.07)	3.89 (2.54–5.95)	4.52 (2.98–6.85)	X5
HC:AC at 28 wkGA <10th percentile§	3,861	1.37 (1.05–1.78)	1.46 (1.12–1.90)	2.07 (1.37–3.14)	1.97 (1.30–2.99)	2.64 (1.54–4.50)	2.80 (1.64–4.78)	X3

OBSTETRICS

Induction of labor before 40 weeks is associated with lower rate of cesarean delivery in women with gestational diabetes mellitus

Nir Melamed, MD; Joel G. Ray, MD; Michael Geary, MD; Daniel Bedard, MSc; Cathy Yang, MSc; Ann Sprague, PhD; Beth Murray-Davis, PhD; Jon Barrett, MD; Howard Berger, MD



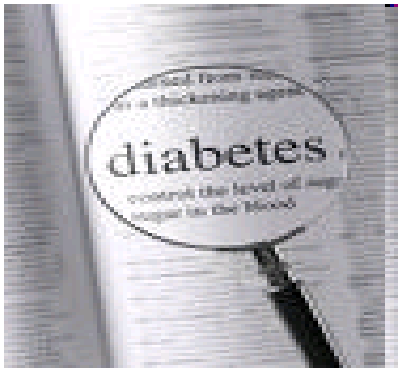
Outcome	Weeks of gestation: 38 — Induction (n = 1188)	38 — Expectant management (n = 5229)	38 — *P* value	39 — Induction (n = 1036)	39 — Expectant management (n = 2162)	39 — *P* value
Gestational age at delivery, wks[a]	38.4 ± 0.3	39.8 ± 0.7	< .001	39.3 ± 0.3	40.5 ± 0.5	< .001
Birthweight, g[a]	3362 ± 468	3486 ± 474	< .001	3473 ± 483	3557 ± 461	< .001
>90th Percentile[b]	117 (9.9)	521 (10.0)	.9	103 (9.9)	214 (9.9)	.9
>4000 gr	108 (9.1)	666 (12.7)	< .001	128 (12.4)	335 (15.5)	.02
>4500 gr	17 (1.4)	128 (2.5)	.03	23 (2.2)	64 (3.0)	.2
Composite morbidity[c]	355 (29.9)	1550 (29.6)	.9	282 (27.2)	673 (31.1)	.02
Perinatal mortality	0 (0.0)	8 (0.2)	.4	0 (0.0)	5 (0.2)	.2
Neonatal intensive care unit admission	165 (13.9)	567 (10.8)	.002	103 (9.9)	247 (11.4)	.2
Total length of stay at neonatal intensive care unit, d[a]	3.0 ± 3.8	3.2 ± 4.8	.6	3.1 ± 5.0	2. 9 ± 3.3	.7
Respiratory morbidity[d]	36 (3.0)	188 (3.6)	.3	27 (2.6)	89 (4.1)	.03
Jaundice requiring phototherapy	59 (5.0)	178 (3.4)	.01	39 (3.8)	70 (3.2)	.4
Hypoglycemia	74 (6.2)	211 (4.0)	< .001	49 (4.7)	77 (3.6)	.1

Association of labor induction (vs expectant management) with adverse maternal and neonatal outcome: multivariable analysis

Outcome	Induction vs expectant management, adjusted odds ratio (95% confidence interval): At 38 wk gestation	At 39 wk gestation
Cesarean delivery	0.73 (0.52–0.90)	0.73 (0.58–0.93)
Instrumental delivery	1.10 (0.89–1.46)	1.19 (0.89–1.57)
Anal sphincter injury[a]	0.97 (0.61–1.55)	1.16 (0.72–1.87)
Composite neonatal morbidity[b]	1.10 (0.93–1.30)	0.84 (0.69–1.03)
Neonatal intensive care admission	1.36 (1.09–1.69)	0.83 (0.61–1.11)

Association of labor induction (vs expectant management) with mode of delivery in the subgroup restricted to nulliparous women: multivariable analysis

Outcome	Induction vs expectant management, adjusted odds ratio (95% confidence interval): At 38 wk gestation	At 39 wk gestation
Cesarean delivery	0.88 (0.68–1.13)	0.75 (0.57–0.99)
Instrumental delivery	1.16 (0.86–1.56)	1.34 (0.96–1.86)



Prévenir le diabète gestationnel ou sa récidive

Diet and exercise interventions for preventing gestational diabetes mellitus (Review)

Bain E, Crane M, Tieu J, Han S, Crowther CA, Middleton P

Bain E, Crane M, Tieu J, Han S, Crowther CA, Middleton P.
Diet and exercise interventions for preventing gestational diabetes mellitus.
Cochrane Database of Systematic Reviews 2015, Issue 4. Art. No.: CD010443.
DOI: 10.1002/14651858.CD010443.pub2.

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METHODOLOGIE

- **Objectif:**
  - évaluer les effets combinés de la diététique et de l'activité physique sur la prévention du diabète gestationnel et de sa morbidité

- **Design:**
  - études contrôllées randomisées
  - Comparaison au standard car (no intervention)

- **2 reviewers indépendants**

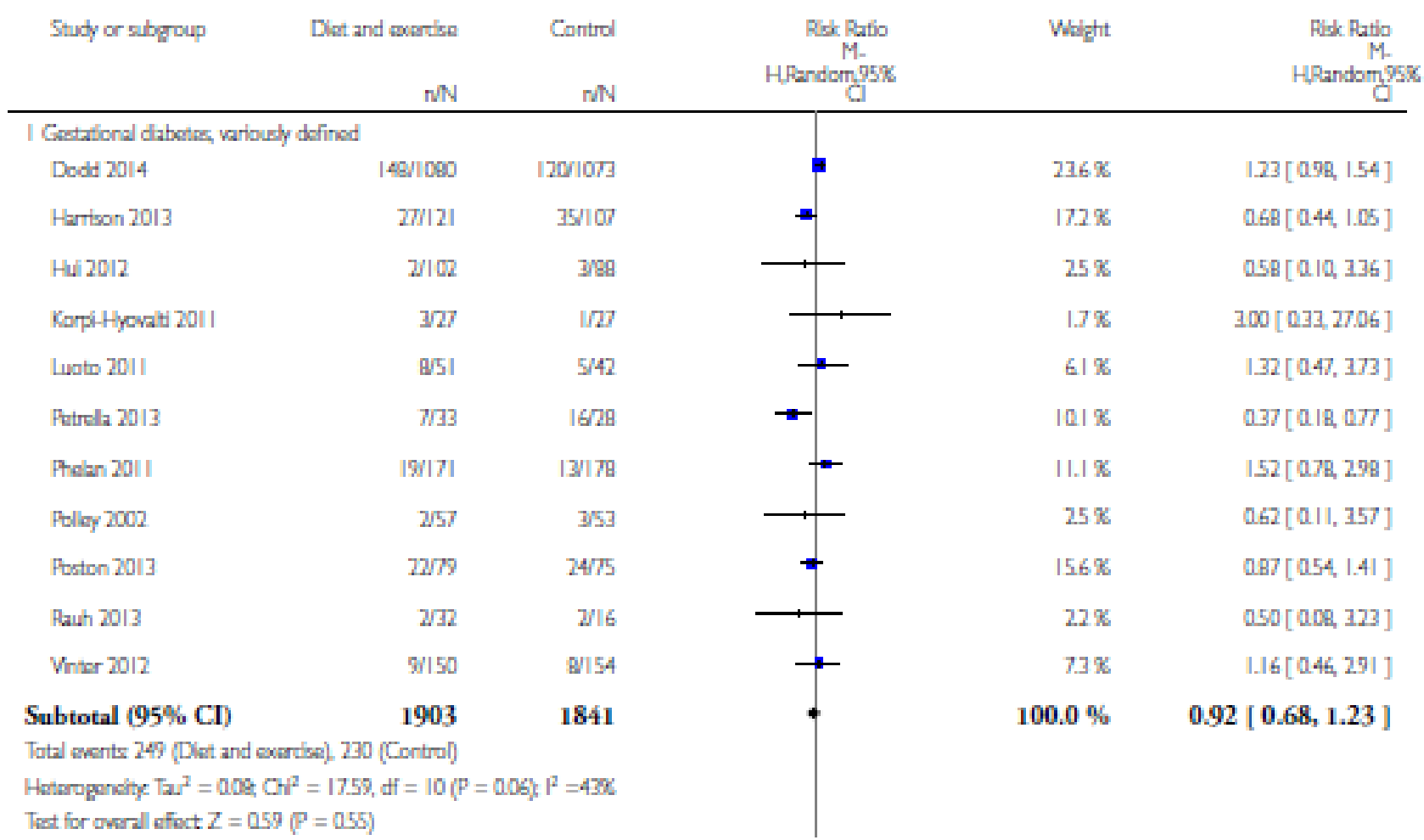
  - 13 ETUDES
  - 4983 patientes

Analysis 1.1. Comparison 1 Combined diet and exercise versus control, Outcome 1 Gestational diabetes.

Review: Diet and exercise interventions for preventing gestational diabetes mellitus

Comparison: 1 Combined diet and exercise versus control

Outcome: 1 Gestational diabetes

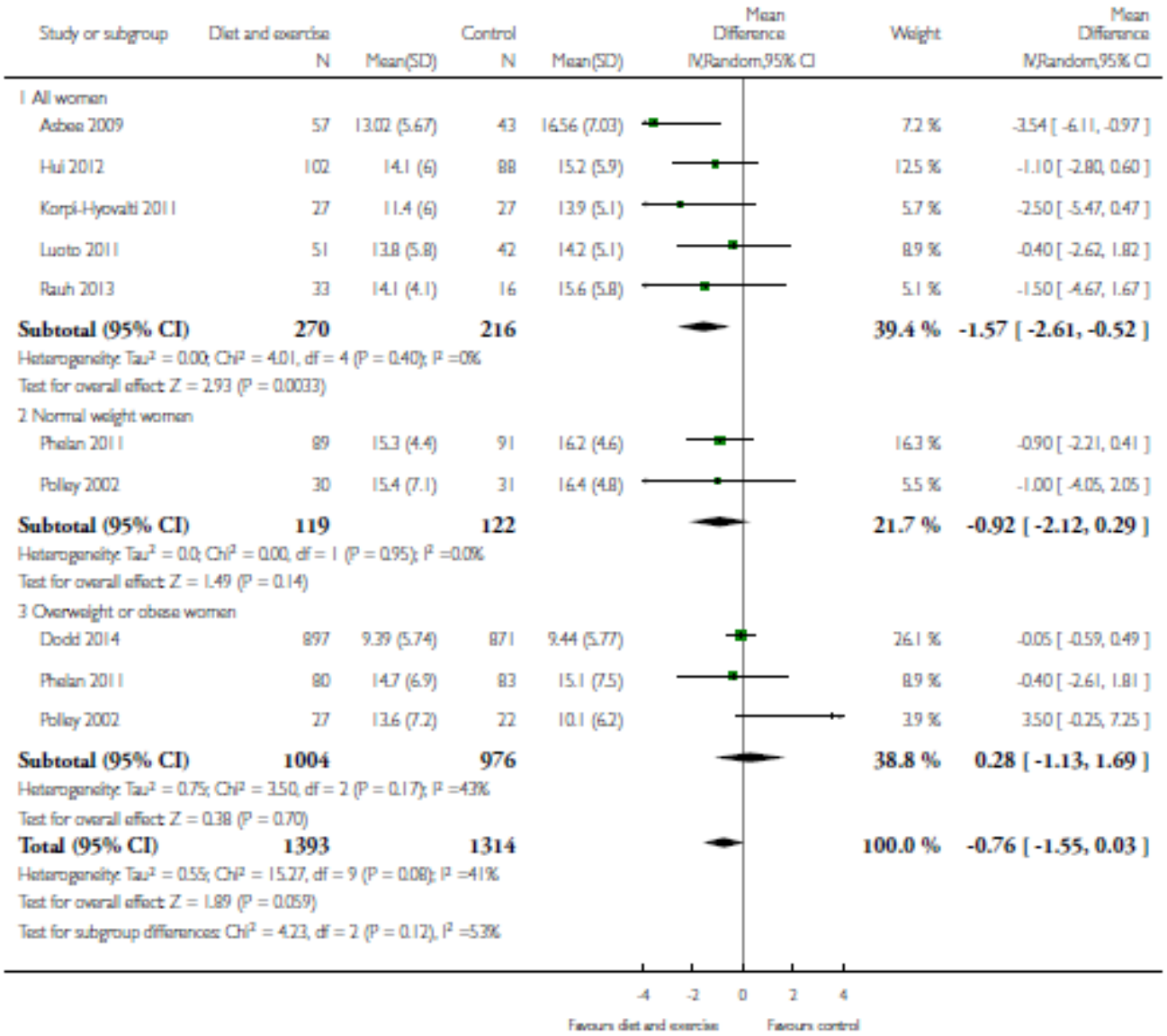


Analysis 1.10. Comparison 1 Combined diet and exercise versus control, Outcome 10 Weight gain during pregnancy (kg).

Review: Diet and exercise interventions for preventing gestational diabetes mellitus

Comparison: 1 Combined diet and exercise versus control

Outcome: 10 Weight gain during pregnancy (kg)



Analysis 1.51. Comparison 1 Combined diet and exercise versus control, Outcome 51 Preterm birth.

Review: Diet and exercise interventions for preventing gestational diabetes mellitus

Comparison: 1 Combined diet and exercise versus control

Outcome: 51 Preterm birth

Study or subgroup	Diet and exercise n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Dodd 2014	62/1075	83/1067		69.0 %	0.74 [0.54, 1.02]
Petrella 2013	0/33	10/28		9.4 %	0.04 [0.00, 0.66]
Phelan 2011	16/171	20/178		16.2 %	0.83 [0.45, 1.55]
Polley 2002	7/57	5/53		4.3 %	1.30 [0.44, 3.85]
Rauh 2013	1/34	1/17		1.1 %	0.50 [0.03, 7.51]
Total (95% CI)	**1370**	**1343**		**100.0 %**	**0.71 [0.55, 0.93]**

Total events: 86 (Diet and exercise), 119 (Control)

Heterogeneity: $Chi^2 = 5.60$, $df = 4$ ($P = 0.23$); $I^2 = 29\%$

Test for overall effect: $Z = 2.51$ ($P = 0.012$)

Test for subgroup differences: Not applicable

SYNTHESE

- Pas d'évidence de bénéfice d'une stratégie diététique et activité physique par rapport à standard care sur la prévention du DG
  - Qualité des études
  - Interventions différentes
  - Populations différentes
  - Définitions des outcomes différentes
- Nécessité d'avoir d'autres études afin de déterminer
  - le bénéfice sur le risque de DG et de ses complications à court terme et à long terme.
  - La qualité de vie
  - L'impact médico–économique
  - **16 ETUDES EN COURS**

Gestational Diabetes Mellitus Can Be Prevented by Lifestyle Intervention: The Finnish Gestational Diabetes Prevention Study (RADIEL)

A Randomized Controlled Trial

Diabetes Care 2016;39:24–30 | DOI: 10.2337/dc15-0511

- **Objectif:**

  Prévention du DG par intervention life style dans une population à risque.

- **Design:**

  n=293 ATCD de DG et/ou IMC ≥ 30 kg/m2 à 20 SA

  Prospectif randomisé intervention (GI) (n = 155) contrôle (GC) (n = 138).

  Intervention: conseils idividualisés, diététique activité physique contrôle du poids atelier en groupes Controle: conseils anténataux

  Diagnostic DG: 75 g OGTT 24 -28 SA.

- **Résultats:**

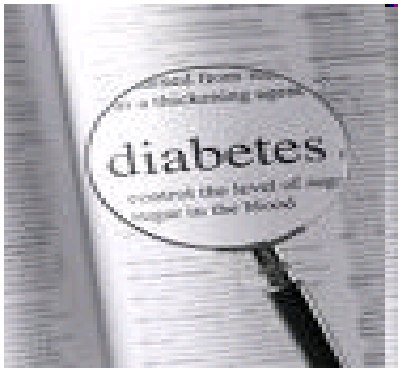
  Incidence DG GI: 13.9% vs 21.6% GC p= 0.044, aprés ajustement.

  Gain de poids moindre GI que GC (-0.58 kg [95% CI -1.12 to -0.04 kg]; p =0.037).

  GI: augmentation de l'activité physique et améliration de la qualité nutritionnelle.

- **Conclusion:**

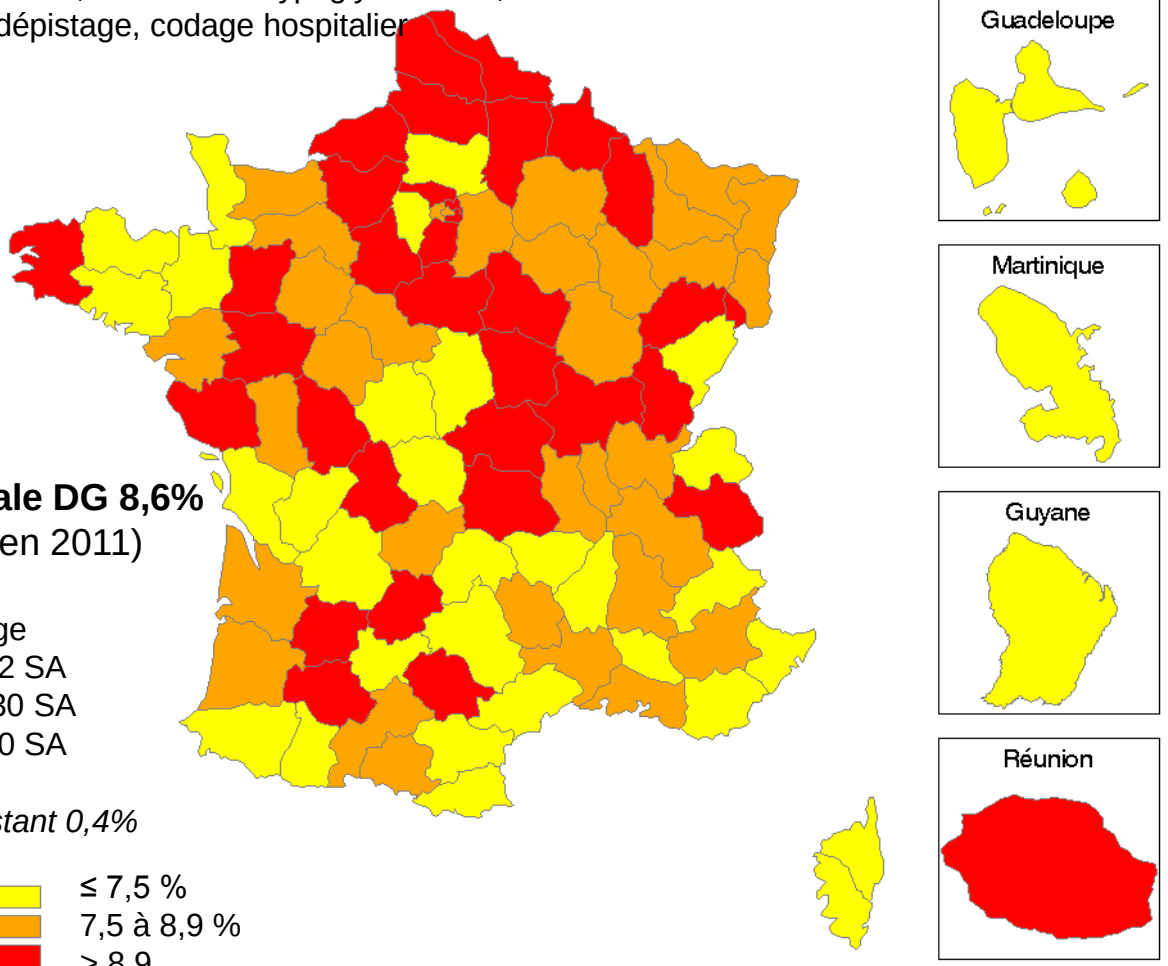
  Réduction de l'incidence de DG de 39 % dans une population à risque.



Prévenir le diabète de type 2 après un diabète gestationnel

Disparités géographiques dans la prévalence du diabète gestationnel en France en 2013* (788 494 accouchements > 22 SA)

Remboursement ASG, traitements hypoglycémiants, tests de dépistage, codage hospitalier



Prévalence globale DG 8,6%
(contre 6,4% en 2011)

Dépistage
27,9% < 22 SA
55,8% 22-30 SA
14,4% > 30 SA

Diabète préexistant 0,4%

≤ 7,5 %
7,5 à 8,9 %
> 8,9

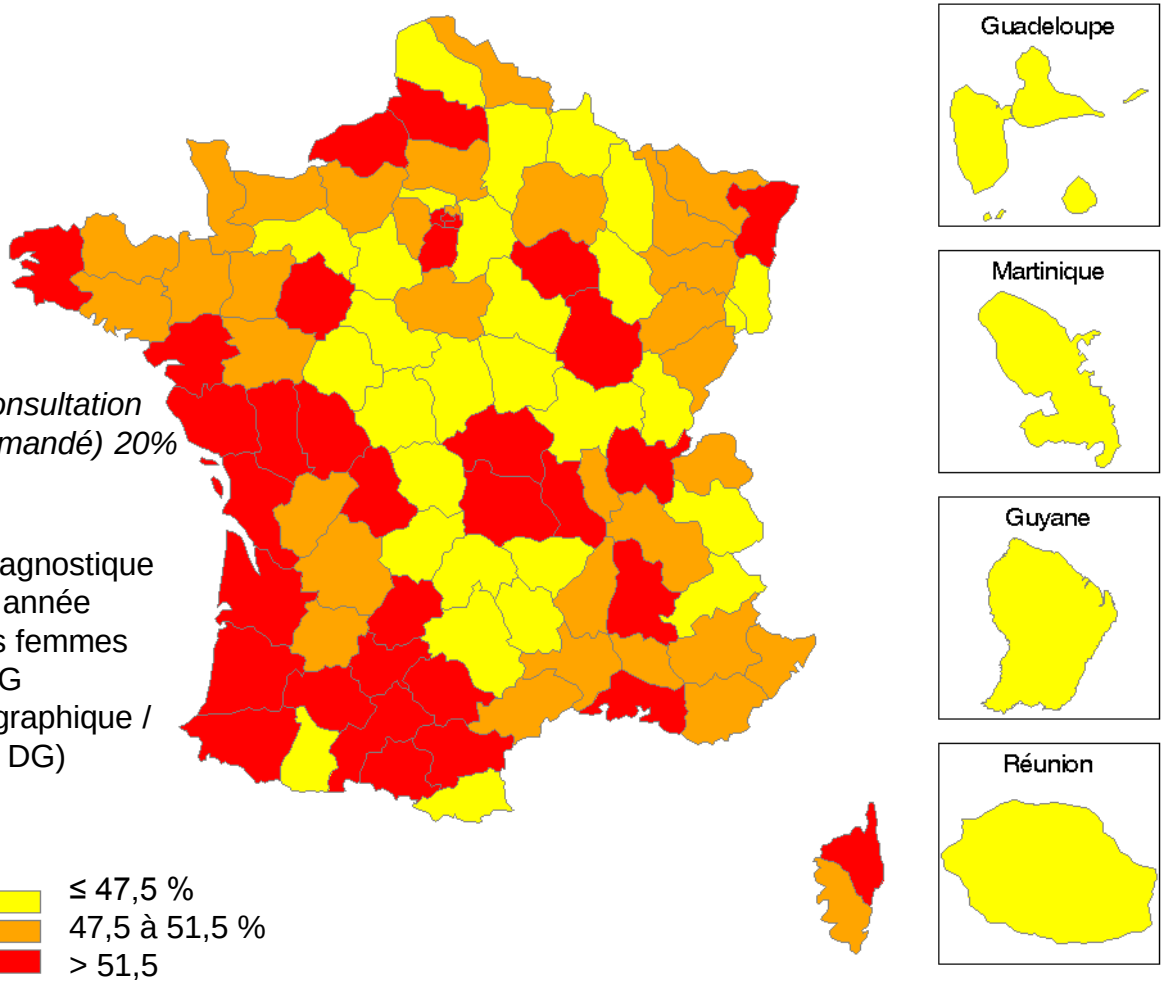
*Données standardisées pour la population nationale des femmes enceintes en France.

ADA 2016 - D'après Regnault N et al., abstr. 1370-P, actualisé

Disparités géographiques dans le dépistage du diabète de type 2 dans le post-partum en France en 2013*

Dépistage à la consultation post natale (recommandé) 20%

Au moins 1 test diagnostique dans la 1ere année chez **52,4%** des femmes après DG (discordance géographique / prévalence DG)



* Données standardisées pour la population nationale des femmes enceintes en France.

ADA 2016 - D'après Regnault N et al., abstr. 1370-P, actualisé

DIABETICMedicine

DOI: 10.1111/j.1464-5491.2007.02306.x

Original Article: Metabolism

Increasing incidence of abnormal glucose tolerance in women with prior abnormal glucose tolerance during pregnancy: DIAGEST 2 study

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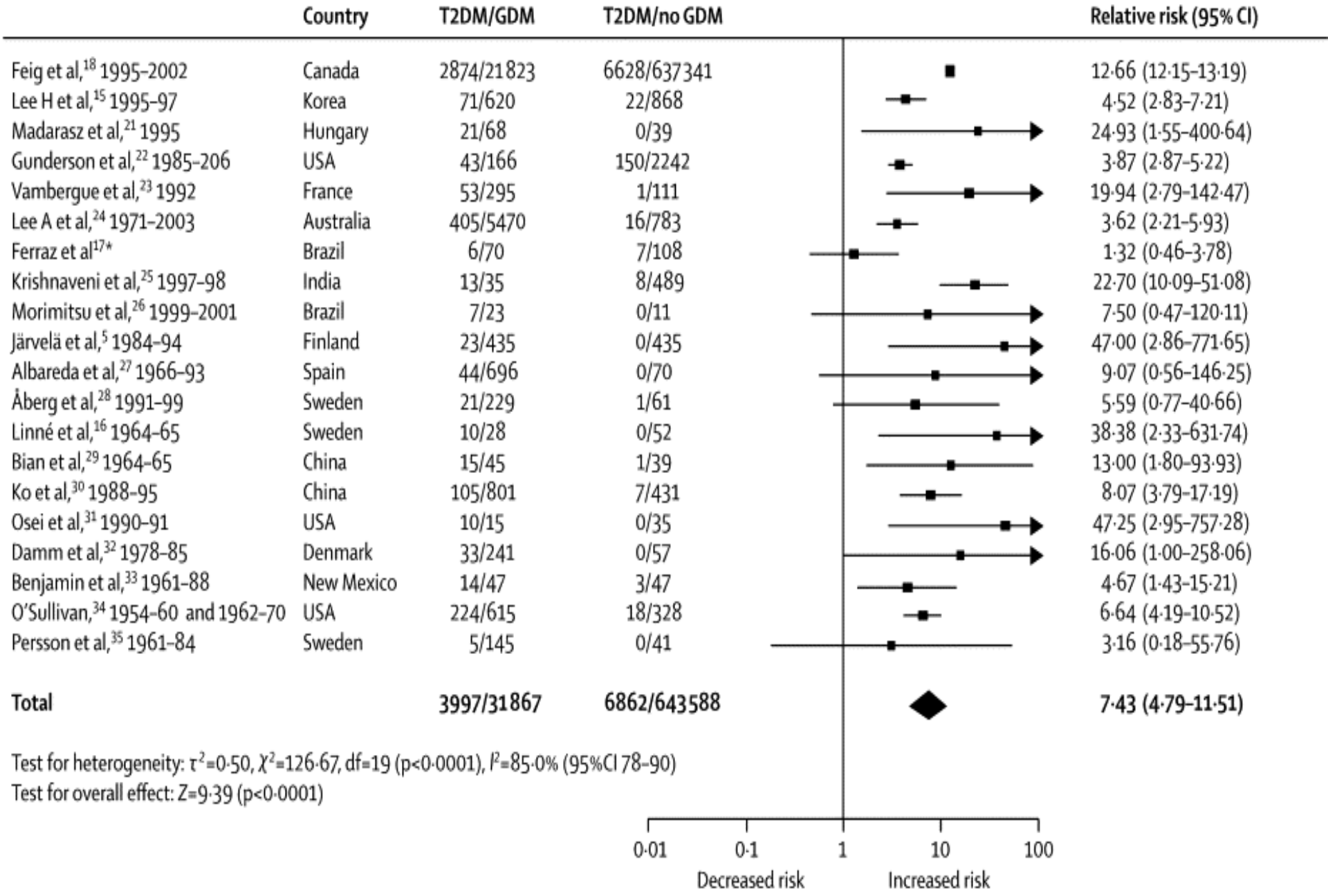
*Department of Diabetology, Centre Hospitalier Universitaire, Lille, France and †Study Group on Gestational Diabetes DIAGEST Group, France

Table 1 Incidence of diabetes, IGT, IFG and 'Any Abnormality' in women with previous GDM, previous AGT and control subjects

	DM at follow-up	IGT at follow-up	IFG at follow-up	'Any Abnormality' at follow-up
Control	0.9% (1/111)*	2.1% (1/48)†	3.6% (4/111)*	8.3% (4/48)†
Previous GDM	18% (53/295)*	13.4% (28/209)†	8.5% (25/295)*	43.5% (91/209)†
(Comparison vs. control)	$P < 0.001$	$P < 0.05$	NS	$P < 0.001$
Previous AGT	6.3% (11/175)*	11.3% (13/115)†	6.3% (11/175)*	28.7% (33/115)†
(Comparison vs. control)	$P < 0.05$	$P < 0.05$	NS	$P = 0.005$
Total	11.2% (65/581)	11.3% (42/372)	6.9% (40/581)	34.4% (128/372)



RR= 7,43 IC 95 % (4,79-11,51)

Research: Pregnancy

Impact of gestational diabetes mellitus and high maternal weight on the development of diabetes, hypertension and cardiovascular disease: a population-level analysis

P. Kaul[1], A. Savu[1], K. A. Nerenberg[2], L. E. Donovan[3], C. L. Chik[1], E. A. Ryan[1] and J. A. Johnson[1]

[1]University of Alberta, Edmonton, Alberta, [2]University of Ottawa, Ottawa, Ontario and [3]University of Calgary, Calgary, Alberta, Canada

Accepted 14 November 2014

Canada Data base 1999-2010

Table 3 Relationship between maternal gestational diabetes mellitus and weight and long-term chronic disease outcomes

Group	Diabetes Adjusted HR (95% CI)*	Hypertension Adjusted HR (95% CI)	Cardiovascular disease Adjusted HR (95% CI)	Combined endpoint† Adjusted HR (95% CI)
No GDM, not overweight	1.00	1.00	1.00	1.00
Overweight only	4.0 (3.5, 4.6)	2.7 (2.5, 2.8)	1.5 (1.2, 1.8)	2.6 (2.4, 2.7)
GDM only	20.3 (18.1, 22.6)	2.0 (1.8, 2.2)	1.4 (1.0, 1.9)	3.8 (3.6, 4.1)
GDM and overweight	40.1 (34.4, 46.6)	3.7 (3.2, 4.3)	2.1 (1.1, 3.5)	6.7 (6.0, 7.4)

Association of Gestational Diabetes Mellitus With Left Ventricular Structure and Function: The CARDIA Study

Duke Appiah,[1] Pamela J. Schreiner,[1] Erica P. Gunderson,[2] Suma H. Konety,[1] David R. Jacobs Jr.,[1] Chike C. Nwabuo,[3] Imo A. Ebong,[4] Hilary K. Whitham,[1] David C. Goff Jr.,[5] Joao A. Lima,[3] Ivy A. Ku,[6] and Samuel S. Gidding[7]

Diabetes Care 2016;39:400–407 | DOI: 10.2337/dc15-1759

- 609 women (43% black) from the Coronary Artery Risk Development in Young Adults (CARDIA) study who delivered one or more births during follow up echocardiograms in 1990–1991 (mean age 28.8 years) and 2010– 2011.
- 20-year follow-up, 965 births were reported, with GDM developing in 64 women (10.5%).

CONCLUSIONS

Pregnancy complicated by GDM is independently associated with increased LV mass and impaired LV relaxation and systolic function. Implementation of post-partum cardiovascular health interventions in women with a history of GDM may offer an additional opportunity to reduce future CVD risk.

Gestational Diabetes Mellitus Is a Significant Risk Factor for Long-Term Maternal Renal Disease

Ofer Beharier, Ilana Shoham-Vardi, Gali Pariente, Ruslan Sergienko, Roy Kessous, Yael Baumfeld, Irit Szaingurten-Solodkin, and Eyal Sheiner

Department of Obstetrics and Gynecology (O.B., G.P., R.K., Y.B., E.S.), Faculty of Health Sciences, Soroka University Medical Center, Ben-Gurion University of the Negev, Beer Sheva, 84101, Israel; Epidemiology and Health Services Evaluation (I.S.-V., R.S.), Ben-Gurion University of the Negev, Beer Sheva, 84101, Israel; and Department of Physiology and Cell Biology (I.S.-S.), Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, 84101, Israel

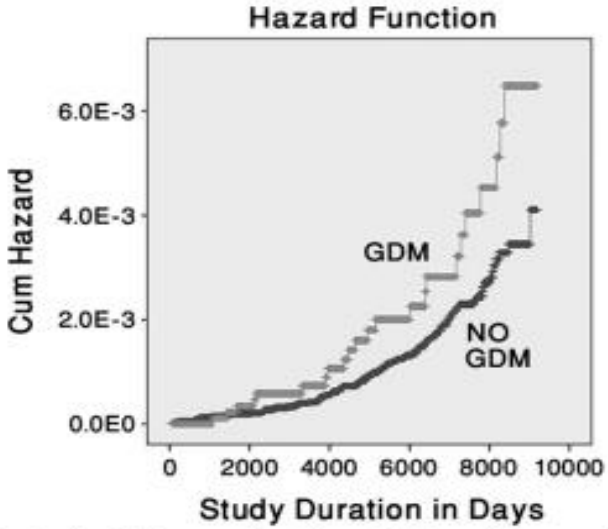


Figure 1. Kaplan-Meier curve for diagnosis of renal disease of patients with and without a history of GDM. Survival analysis (presenting the hazard function). $P = .021$, log rank test. Cum hazard, cumulative hazard.

Table 2. Incidence of Renal Morbidity and Common Renal Diagnosis in Patients With and Without a History of GDM

	GDM (n = 9542)	No GDM (n = 88 426)	OR	95% CI	*P*
Renal morbidity (total), % (no.)	0.2 (23)	0.1 (91)	2.34	1.4–3.7	<.001
Hypertensive renal disease without renal failure	14	32	2.86	1.1–7.3	.025
Hypertensive renal disease with renal failure	2	24	0.42	0.1–1.5	.18
Chronic renal failure	5	25	0.73	0.3–2.2	.58
End-stage renal disease	2	7	1.14	0.2–5.9	.87
Other renal morbidity	0	3			.57

Abbreviations: CI, confidence interval; OR, odds ratio.

Nonalcoholic Fatty Liver Disease Is Prevalent in Women With Prior Gestational Diabetes Mellitus and Independently Associated With Insulin Resistance and Waist Circumference

Signe Foghsgaard,[1–3] Camilla Andreasen,[1] Louise Vedtofte,[1] Emilie S. Andersen,[1] Emilie Bahne,[1] Charlotte Strandberg,[4] Thora Buhl,[5] Jens J. Holst,[2] Jens A. Svare,[6] Tine D. Clausen,[7] Elisabeth R. Mathiesen,[8] Peter Damm,[9] Lise L. Gluud,[1] Filip K. Knop,[1,2] and Tina Vilsbøll[1]

DOI: 10.2337/dc16-1017

24% de NASH après un DG

BMI plus élévé

Tour de taille plus élevé

Augmentation de l'insulinorésistance

Pas d'association avec le degré d'intolérance au glucose

Plus de graisse abdominale

Table 3—Logistic regression analysis

	Odds ratio	95% CI	*P* value
Weight (kg)	1.06	1.02–1.10	0.0013
BMI (kg/m^2)	1.24	1.11–1.41	0.0005
Waist circumference (cm)*	1.09	1.04–1.14	0.0003*
HDL cholesterol (mmol/L)	0.12	0.01–0.86	0.0474
VLDL cholesterol (mmol/L)	5.21	1.23–25.4	0.0287
Triglycerides (mmol/L)	2.28	1.20–4.66	0.0148
Visceral fat mass (kg)	6.69	2.69–19.9	0.0002
Android-to-gynoid fat ratio	6.05	2.12–23.3	0.0199
Total fat mass (%)	1.12	1.02–1.21	0.0215
ALT (units/L)	1.06	1.02–1.12	0.0107
AST (units/L)	1.05	1.01–1.10	0.0440
Matsuda index*	0.35	0.19–0.59	0.0003*
$HOMA2_{IR}$	4.24	3.06–36.8	0.0001
FLI	1.05	1.03–1.09	0.0002
Glucagon tAUC (0–45) (pmol/L × min)	1.01	1.00–1.01	0.0073

The Comparative Effectiveness of Diabetes Prevention Strategies to Reduce Postpartum Weight Retention in Women With Gestational Diabetes Mellitus: The Gestational Diabetes' Effects on Moms (GEM) Cluster Randomized Controlled Trial

Assiamira Ferrara,[1] Monique M. Hedderson,[1] Susan D. Brown,[1] Cheryl L. Albright,[2] Samantha F. Ehrlich,[1] Ai-Lin Tsai,[1] Bette J. Caan,[1] Barbara Sternfeld,[1] Nancy P. Gordon,[1] Julie A. Schmittdiel,[1] Erica P. Gunderson,[1] Ashley A. Mevi,[1] William H. Herman,[3] Jenny Ching,[4] Yvonne Crites,[4] and Charles P. Quesenberry Jr.[1]

Diabetes Care 2016;39:65–74 | DOI: 10.2337/dc15-1254

- **OBJECTIVE:**

  To compare the effectiveness of diabetes prevention strategies addressing postpartum

  weight retention for women with GDM delivered at the health system level: mailed recommendations (usual care) versus usual care plus a Diabetes Prevention Program (DPP)–derived lifestyle intervention.

- **RESEARCH DESIGN AND METHODS**:

  a randomized controlled trial n=2,280 women with GDM.

  The intervention included mailed gestational weight gain recommendations plus 13 telephone sessions between 6 weeks and 6 months postpartum.

- **PRIMARY OUTCOMES:**

  proportion meeting the postpartum goals of 1) reaching pregravid weight if pregravid BMI <25.0 kg/m2)

  or 2) losing 5% of pregravid weight if BMI ‡25.0 kg/m2; and pregravid to postpartum weight change.

- **RESULTS:**

  Over the 12-month postpartum period, women in the intervention had significantly higher odds of meeting weight goals than women in usual care (odds ratio [OR] 1.28 [95% CI 1.10, 1.47]).

  The proportion meeting weight goals was significantly higher in the intervention than usual care at 6 weeks (25.5 vs.22.4%; OR 1.17 [1.01, 1.36]) and 6 months (30.6 vs. 23.9%; OR 1.45 [1.14, 1.83]).

  Condition differences were reduced at 12 months (33.0 vs. 28.0%; OR 1.25 [0.96,1.62]).

  At 6 months, women in the intervention retained significantly less weight than women in usual care; and had greater increases in vigorous intensity physical activity.

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

V. R. Aroda, C. A. Christophi, S. L. Edelstein, P. Zhang, W. H. Herman, E. Barrett-Connor, L. M. Delahanty, M. G. Montez, R. T. Ackermann, X. Zhuo, W. C. Knowler, and R. E. Ratner, for the Diabetes Prevention Program Research Group

Table 2. Age-Adjusted Effects of Intensive Lifestyle Intervention and Metformin on Diabetes Progression in Women With or Without a History of Gestational Diabetes Within the DPP/DPPOS

	Placebo		Metformin		Lifestyle	
	GDM	No GDM	GDM	No GDM	GDM	No GDM
Incidence of diabetes (number of cases per 100 person-years)[a]	11.4[b]	6.9	6.8	6.7	7.6	4.9
Reduction in incidence (compared with placebo)[a]			40.4[c]	3.3	35.2[c]	29.7[c]
Number needed to treat (to prevent one case in 10 y compared with placebo)[a]			7.2	48.8	11.3	9.9

[a] Adjusted for age.

[b] $P < .05$ compared with non-GDM group.

[c] $P < .05$ compared with placebo.

Pre-eclampsia is associated with a twofold increase in diabetes: a systematic review and meta-analysis

Pensee Wu[1,2] · Chun Shing Kwok[3,4] · Randula Haththotuwa[5] · Rafail A. Kotronias[3] · Aswin Babu[3] · Anthony A. Fryer[1] · Phyo K. Myint[6] · Carolyn A. Chew-Graham[5,7] · Mamas A. Mamas[3,4]

21 études

72500 patientes avec

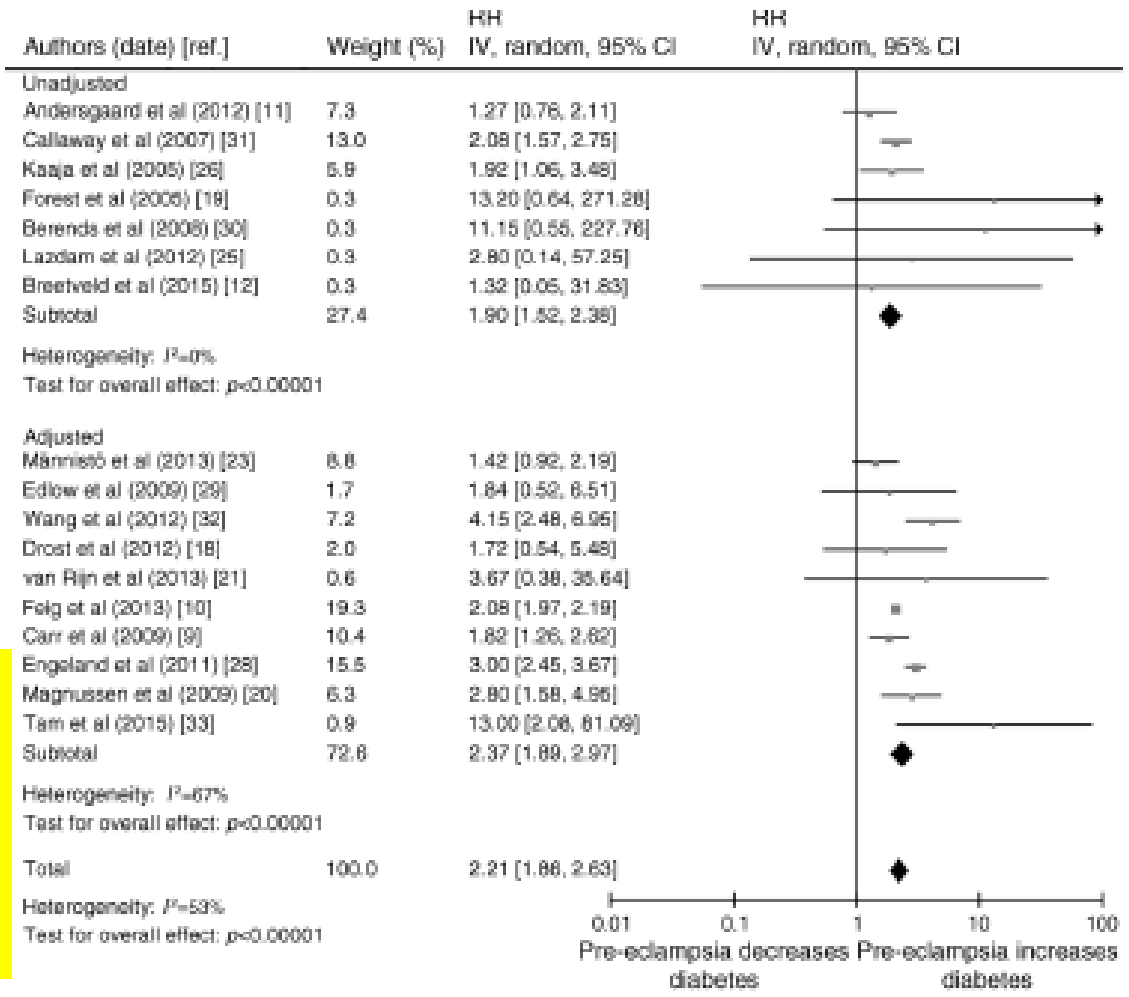
prééclampsie

Risque de diabéte: (RR 2.37 [1.89,-2.97]).

Risque à 1 an (RR 1.97 [1.35- 2.87])

Persistance à 10 ans (RR 1.95 [1.28- 2.97]).

Persistance aprés ajustement sur IMC et DG.



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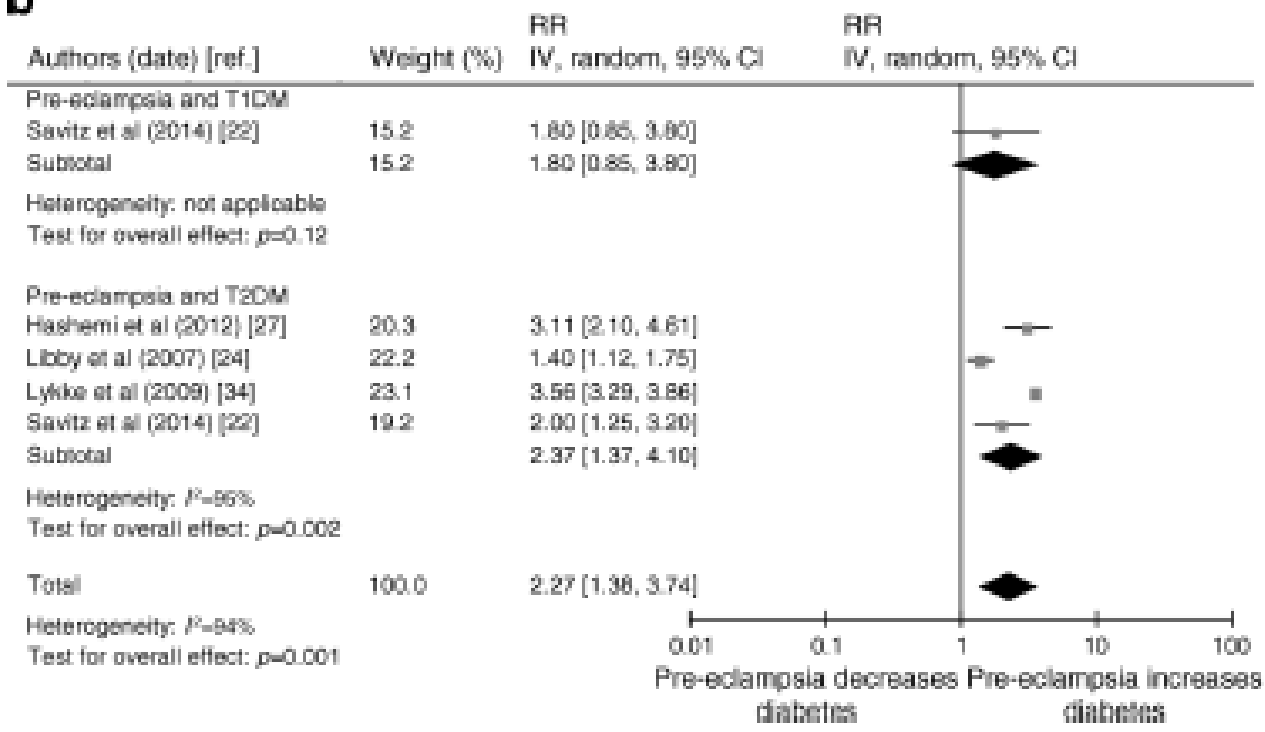
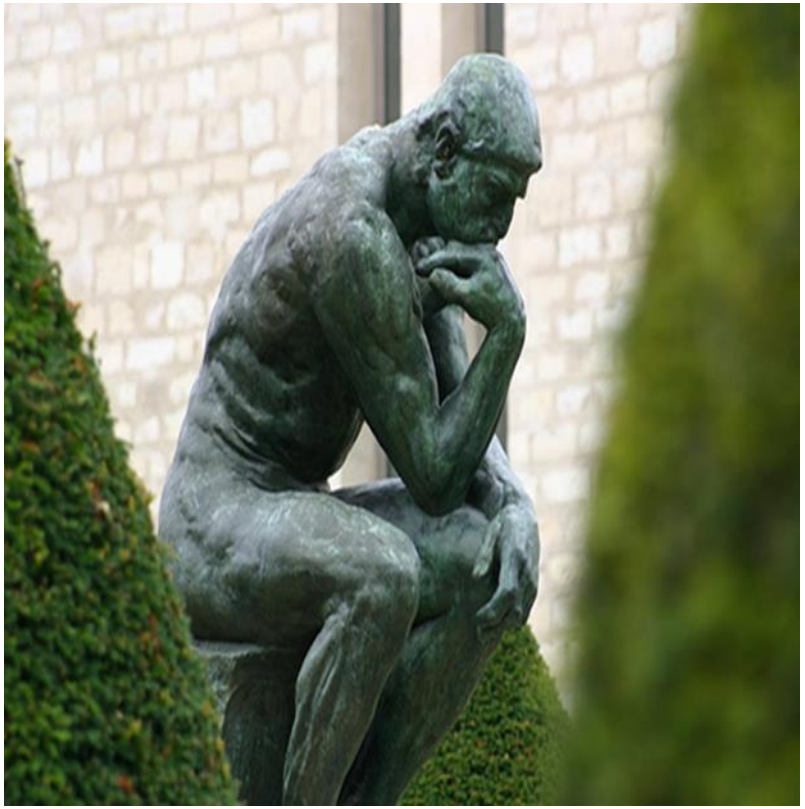
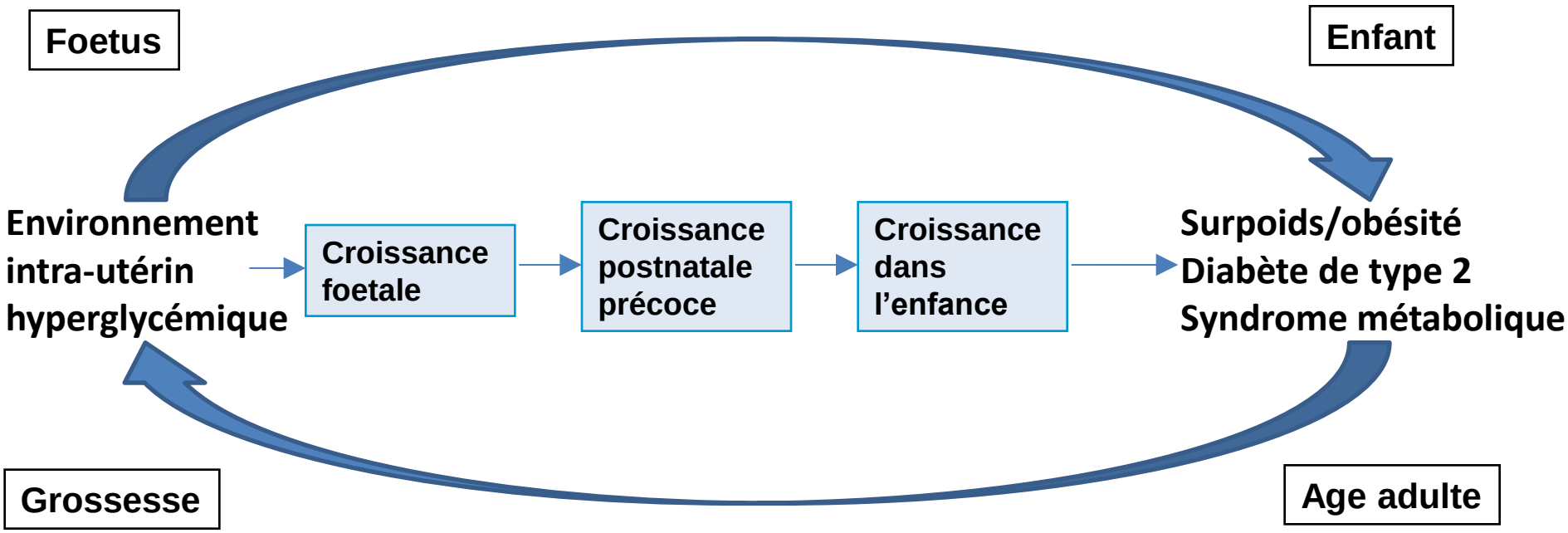




TOUT CELA POURQUOI ?

Programmation métabolique



Cercle vicieux

Transmission trans-générationnelle de l'obésité et du diabète de type 2