

Comorbilità in gravidanza :

Ipertensione

Vito Borzì

Consulente Internista/Diabetologo

CENTRO CLINICO DIAGNOSTICO G.B. Morgagni POLICLINICO

Il Dr Vito Borzì dichiara di aver ricevuto negli ultimi due anni compensi o finanziamenti dalle seguenti Aziende Farmaceutiche e/o Diagnostiche :

1. Novo Nordisk
2. Menarini

Dichiara altresì il proprio impegno ad astenersi, nell'ambito dell'evento, dal nominare, in qualsivoglia modo o forma, aziende farmaceutiche e/o denominazione commerciale e di non fare pubblicità di qualsiasi tipo relativamente a specifici prodotti di interesse sanitario (farmaci, strumenti, dispositivi medico-chirurgici, ecc.).



IPPOCRATE di Cos

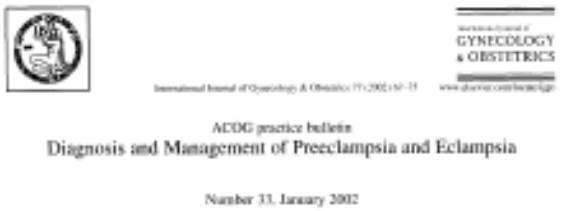
La parola "eclampsia" deriva dal greco antico *eklampo* che comunemente significa risplendere, brillare.
Ippocrate nei suoi trattati parlava di “eclampsia” descrivendola come una sindrome simile all’epilessia e la considerava la più grave delle complicanze della gravidanza

Inquadramento generale

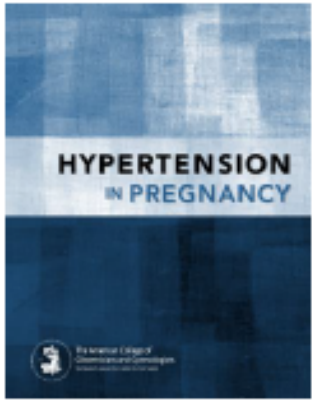
- L'ipertensione in gravidanza rappresenta un argomento di confine tra patologia internistica e ostetrico-ginecologica, spesso trascurato dai Cardiologi.
- E' la più comune complicanza medica incontrata durante la gravidanza e la più importante causa di morbilità materna e fetale nei paesi industrializzati e in via di sviluppo, determinante lesioni potenzialmente letali come abruptio placentae, emorragie cerebrali, insufficienza epatica e renale, coagulazione intravascolare disseminata. Il feto può andare incontro a ritardo della crescita intrauterina, prematurità, morte intrauterina. Inoltre è la seconda più comune causa di morte materna nei paesi industrializzati.
- Complica il 5-10% delle gravidanze negli USA con variazioni in rapporto alle popolazioni studiate ; la maggiore incidenza si riscontra nelle donne di colore . Più colpite le donne con età> 45 anni e con diabete E' inoltre responsabile di ¼ dei ricoveri prima del parto .

PATOLOGIA IPERTENSIVA IN GRAVIDANZA

International Society for the Study of Hypertension in Pregnancy
2014

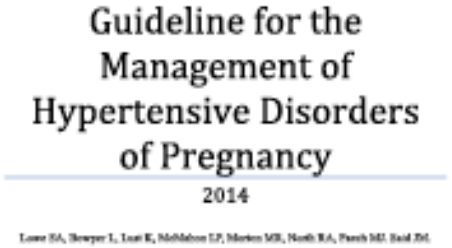


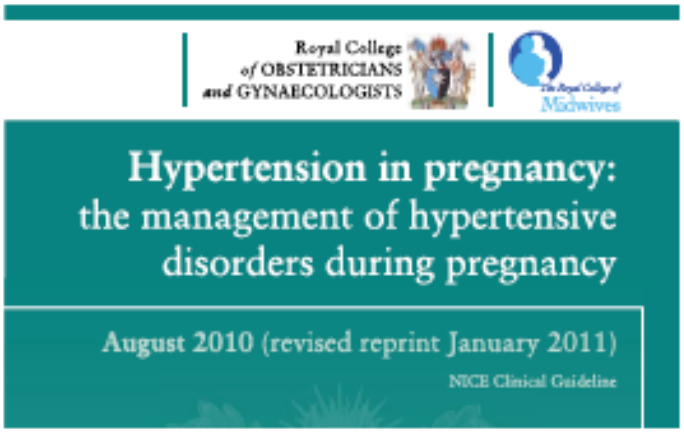
ACOG
Practice bulletin
2002
Task force 2013





SOMANZ 2014





NICE 2011



Diagnosis, Evaluation, and Management of the Hypertensive Disorders of Pregnancy: Executive Summary

SOCG 2014

DEFINIZIONI

Ipertensione in gravidanza

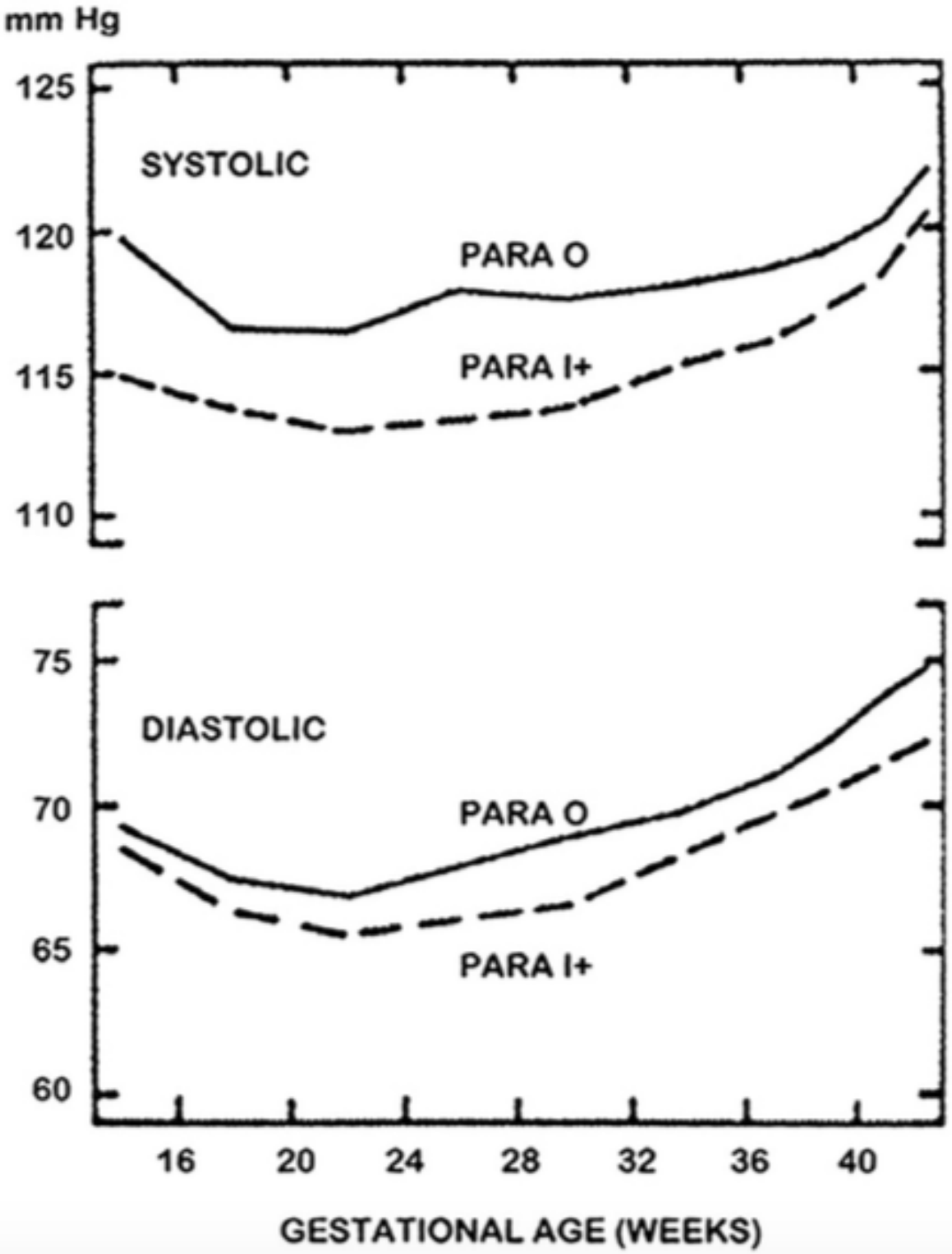
PAS ≥140 mm Hg

PAD ≥ 90 mm Hg

in almeno 2 occasioni ad almeno 4 h di distanza



Gestazionale	Cronica



Systolic and diastolic blood pressures in relation to gestational age in 6,000 White women

Am J Obstet Gynecol 1976;125:509 –13.

Le linee guida europee suggeriscono di considerare due forme di ipertensione gestazionale:

- moderata 140–159/90–109 mmHg
- grave ≥160/110 mmHg

Le linee guida inglesi, invece, prevedono una classificazione dell'ipertensione gestazionale in tre gradi:

- lieve 140-149/90-99mmHg
- moderata 150-159/100-109
- grave ≥160/110

Table I. Defining HTN Disorders of Pregnancy

HTN Disorder	Onset	Proteinuria (>300 mg/d)? Yes/No	Prevalence
Chronic HTN	Prior to pregnancy, recognized <20 wk gestation	No	3% of all pregnancies
Gestational HTN	≥20 wk gestation; usually presents in 3rd trimester	No	6%–17%, nulliparous 2%–4%, multiparous women
Preeclampsia	>20 wk gestation; usually presents in 3rd trimester	Yes (Onset of HTN and proteinuria are not necessarily concurrent)	5%–8% of all pregnancies; 20% among diabetic women
Preeclampsia superimposed on chronic HTN	Chronic HTN: ≤20 wk gestation PE: >20 wk gestation	Yes	25% of women with chronic HTN develop superimposed preeclampsia

Abbreviations: HTN, hypertension; PE, preeclampsia.

Shannon D. Sullivan J Clin Hypertens. 2011;13:275–284.

Classificazione delle forme di ipertensione in gravidanza

- Ipertensione cronica o pre-esistente (1-5%): esiste prima della gravidanza o evidenziata entro le prime 20 settimane di gestazione.
- Ipertensione gestazionale (6-7%): l'aumento della pressione arteriosa compare dopo la 20^ settimana di gravidanza. Nella maggior parte dei casi l'ipertensione ha un decorso benigno con normalizzazione dei valori dopo il parto, nel 25% dei casi progredisce verso la pre-eclampsia.
- Pre-eclampsia (3-5%): presenza di ipertensione associate a proteinuria significativa (>300 mg/24h), danno d'organo materno, disfunzione utero-placentare.
- White coat hypertension: 1 su 4 casi di valori pressori elevati in clinica. Circa metà dei pazienti evolverà in ipertensione gestazionale o pre-eclampsia (rischio raddoppiato rispetto alla popolazione normale).

International Society for the Study of Hypertension in Pregnancy 2014

Ruolo dell'ABPM

- Consente di identificare i casi di ipertensione reale dalle forme di ipertensione da camice bianco la cui prevalenza si aggira fino ad un quarto delle gravide (casi in cui il trattamento farmacologico non sarebbe necessario)
- Consente di identificare pazienti con ipertensione notturna, nota dalla letteratura per essere associata a rischio aumentato di complicanze materno fetali e ad un maggior rischio di preeclampsia.



Definizione di pre-eclampsia

Presenza di ipertensione dopo la 20^ settimana gestazionale associata a:

- Proteinuria: proteinuria/creatinina ≥ 30 mg/mmol o 300 mg/die, oppure 1 g/L (2+) dipstick urinario

International Society for the Study of Hypertension in Pregnancy 2014

Definizione di pre-eclampsia

Presenza di ipertensione dopo la 20^ settimana gestazionale associata a:

- Proteinuria: proteinuria/creatinina ≥ 30 mg/mmol o 300 mg/die, oppure 1 g/L (2+) dipstick urinario
- Danno d'organo materno:

  - insufficienza renale: creatinina ≥90 umol/L ; 1.02 mg/dl

  -coinvolgimento epatico: transaminasi 2 volte il valore normale± dolore epigastrico o al quadrante superiore destro

  - disturbi neurologici: eclampsia, alterazioni dello stato mentale, cecità, cefalea, scotomi, ictus, convulsioni.

  - complicanze ematologiche: trombocitopenia <150.000/L, CID, emolisi (HELLP syndrome)

- Disfunzione utero-placentare: ritardo di crescita fetale

International Society for the Study of Hypertension in Pregnancy 2014

The classification, diagnosis and management of the hypertensive disorders of pregnancy: A revised statement from the ISSHP

It is harder to diagnose pre-eclampsia superimposed upon underlying renal disease because these patients commonly have impaired GFR and/or proteinuria to begin. In these cases preeclampsia can generally be diagnosed when another feature such as new onset liver dysfunction, thrombocytopenia or neurological features develop. Even then uncertainty may remain and this is another area where a diagnostic test such as measurement of angiogenic or inflammatory factors in serum or urine may prove fruitful in the future.

Pregnancy Hypertension: 4 (2014) 97–104

Obstetric and Perinatal Outcomes in Type 1 Diabetic Pregnancies

A large, population-based study

Table 2—*Pregnancy complications and mode of delivery in type 1 diabetic and control pregnancies*

	Proportions (%)		OR (95% CI) for group differences	
Outcome variable	Type 1 diabetes	Nondiabetes	Crude	Adjusted
PIH	1.6	0.87	1.93 (1.50–2.49)	1.53 (1.18–1.99)
Preeclampsia, mild	9.7	2.0	5.37 (4.81–6.00)	4.30 (3.83–4.83)
Preeclampsia, severe	4.3	0.8	5.58 (4.75–6.57)	4.47 (3.77–5.31)
Cesarean section	46	12	5.85 (5.49–6.25)	5.31 (4.97–5.69)
Vacuum extraction/forceps	9.6	6.6	1.48 (1.33–1.66)	1.41 (1.25–1.58)

Data are proportions or OR (95% CI). n = 5,089 for diabetic pregnancies; n = 1,260,207 for control pregnancies. Adjusted OR, OR adjusted for group differences in maternal age, BMI, parity, chronic hypertensive disorder, smoking habits, and ethnicity.

Persson M. Diabetes Care 32:2005–2009, 2009

Perinatal outcomes in type 2 diabetic patients compared with non-diabetic patients matched by body mass index

Kristin M. Knight, Eva K. Pressman, David N. Hackney & Loralei L. Thornburg

Table II. Obstetrical outcomes.

Outcomes	Control ($n=213$)	Type 2 DM ($n=213$)	p-value[a]
Pregnancy (Composite)	40 (18.8)	67 (31.5)	0.003
Preeclampsia/HELLP	11 (5.2)	31 (14.6)	0.001
Gestational hypertension	19 (8.9)	10 (4.7)	NS
Polyhydramnios	4 (1.9)	20 (9.4)	0.001[b]
Oligohydramnios	6 (2.8)	16 (7.5)	0.03
Delivery (Composite)	147 (69.0)	190 (89.2)	<0.001; 0.02[c]

The Journal of Maternal-Fetal and Neonatal Medicine, 2012; 25(6): 611–615

Association between Gestational Diabetes and Pregnancy-induced Hypertension

TABLE 2. Risk of pregnancy-induced hypertension associated with gestational diabetes, Washington State, 1992–1998

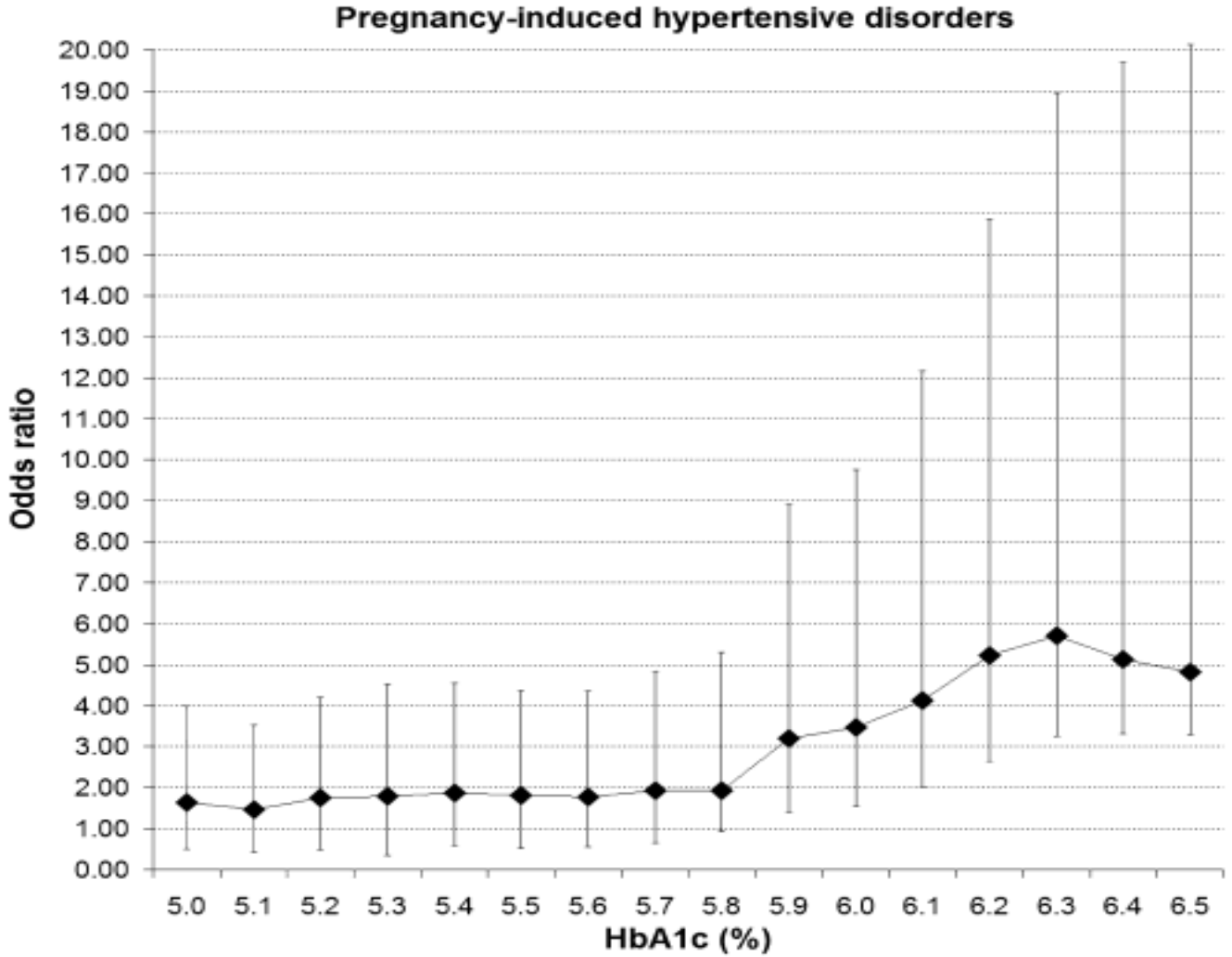
Group	No.	Prevalence of gestational diabetes (%)	Crude OR†	95% CI†	Adjusted OR‡	95% CI
Eclampsia	154	3.9	1.47	0.65, 3.34	1.27	0.52, 3.15
Severe preeclampsia	1,180	4.5	1.71**	1.29, 2.26	1.53*	1.13, 2.06
Mild preeclampsia	5,468	4.4	1.69**	1.47, 1.95	1.50**	1.28, 1.76
Gestational hypertension	8,943	4.4	1.69**	1.51, 1.90	1.40**	1.23, 1.58
Controls	47,237	2.7	1		1	

* $p < 0.01$; ** $p < 0.001$.
† OR, odds ratio; CI, confidence interval
‡ Adjusted for age, ethnicity, body mass index, parity, and adequacy of prenatal care.

Chris L. Bryson Am J Epidemiol 2003;158:1148–1153

Body weight, weight gain and hyperglycaemia are associated with hypertensive disorders of pregnancy in women with gestational diabetes

B. Barquiel [a,*], L. Herranz [a], C. Grande [b], I. Castro-Dufourny [a], M. Llaro [a], P. Parra [a], M.A. Burgos [c], L.F. Pallardo [a]

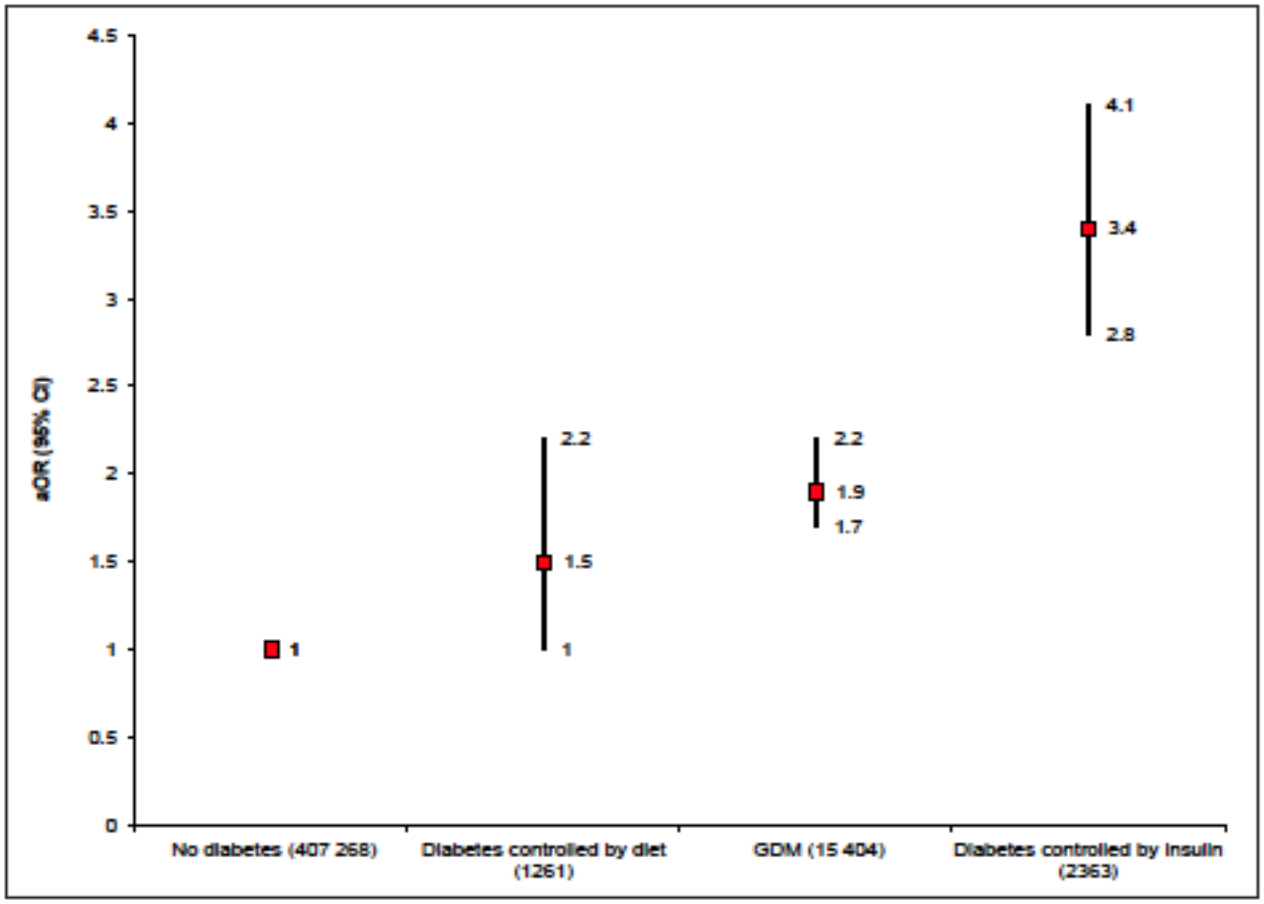


Diabetes & Metabolism 40 (2014) 204–210

Risks of Gestational Diabetes and Preeclampsia Over the Last Decade in a Cohort of Alberta Women

426 296 deliveries between 2000 and 2009

Figure 3. Odds of developing preeclampsia according to level of glucose tolerance—results of multivariable logistic regression presented as adjusted odds ratios with 95% confidence intervals.



Kara A. Nerenberg J. Obstet. Gynaecol 2013: 35 (11); 986-994

Optimal Glycemic Control, Pre-eclampsia, and Gestational Hypertension in Women with Type 1 Diabetes in the Diabetes and Pre-eclampsia Intervention Trial

Table 2—*Optimal vs. suboptimal glycemic control (good, moderate, and poor) and risk of pre-eclampsia and gestational hypertension*

	Pre-eclampsia		Gestational hypertension*	
Time point	*n* (%)	Adjusted odds ratio (95% CI)†	*n* (%)	Adjusted odds ratio (95% CI)†
Prepregnancy‡ A1C				
Optimal (reference)	47 (9)	1.00	44 (10)	1.00
Good	89 (16)	1.68 (0.40–7.07)	80 (18)	0.60 (0.21–1.67)
Moderate	152 (28)	2.44 (0.66–9.05)	128 (28)	0.45 (0.17–1.20)
Poor	254 (47)	3.46 (0.95–12.6)	203 (45)	0.60 (0.24–1.47)
	542		455	
First antenatal visit‡ A1C				
Optimal (reference)	49 (7)	1.00	45 (7)	1.00
Good	147 (20)	1.13 (0.33–3.92)	134 (22)	1.58 (0.48–5.16)
Moderate	221 (31)	2.55 (0.81–8.04)	181 (30)	1.83 (0.58–5.75)
Poor	304 (42)	3.68 (1.17–11.6)	241 (40)	1.39 (0.44–4.40)
	721		601	
26 weeks' gestation§ A1C				
Optimal (reference)	137 (23)	1.00	123 (25)	1.00
Good	275 (46)	2.09 (1.03–4.21)	229 (47)	0.85 (0.43–1.66)
Moderate	140 (24)	3.20 (1.47–7.00)	107 (22)	0.78 (0.35–1.76)
Poor	40 (7)	3.81 (1.30–11.1)	31 (6)	0.66 (0.19–2.26)
	592		490	
34 weeks' gestation§ A1C				
Optimal (reference)	131 (25)	1.00	118 (27)	1.00
Good	276 (53)	1.78 (0.83–3.81)	239 (54)	0.73 (0.37–1.44)
Moderate	92 (18)	3.27 (1.31–8.20)	74 (17)	0.97 (0.41–2.27)
Poor	20 (4)	8.01 (2.04–31.5)	14 (3)	0.64 (0.12–3.54)
	519		445	

749 women with type 1 diabetes

optimal $\leq$ 6.1%:
good (6.1–6.9%),
moderate (7.0–7.9%)
poor $\geq$ 8.0%

V. A. Holmes ,Diabetes Care 34:1683–1688, 2011

Obstetric Nephrology: Pregnancy in Women with Diabetic Nephropathy—The Role of Antihypertensive Treatment

Elisabeth R. Mathiesen,†† Lene Ringholm,*† Bo Feldt-Rasmussen,‡ Peter Clausen,‡ and Peter Damm*§*

- The prevalence of pre-eclampsia in women with diabetic nephropathy is up to 64%, especially in the presence of reduced kidney function, hypertension at the start of pregnancy, or nephrotic proteinuria.
- Women with type 1 diabetes and microalbuminuria are at increased risk of developing pre-eclampsia compared with women with type 1 diabetes and normal urinary albumin excretion.

Clin J Am Soc Nephrol 7: 2081–2088, 2012

Risk factors for preeclampsia among women with type 1 and type 2 diabetes :

- Nulliparity
- Advanced maternal age
- Previous preeclampsia
- Hypertension
- Longer duration of diabetes
- Microalbuminuria
- Nephropathy
- Retinopathy
- Poor glycemic control
- Obesity

Diabetes Care. 2011;34(8):1683–8.
Best Pract Res Clin Endocrinol Metab. 2010;24(4):635–51
Diabetes Care. 2001;24(10):1739–44.

Gravidanza e Sindrome Metabolica…

…quali similitudini?



- Aumento della glicemia postprandiale
- Livelli più elevati di trigliceridi
- Livelli più elevati di insulina
- Aumento dell'insulino-resistenza
- Up-regulation della cascata infiammatoria

Hypertension. 2016 Aug;68(2):455-63

Modificazioni longitudinali dell'insulino-sensibilità nella gravidanza normale

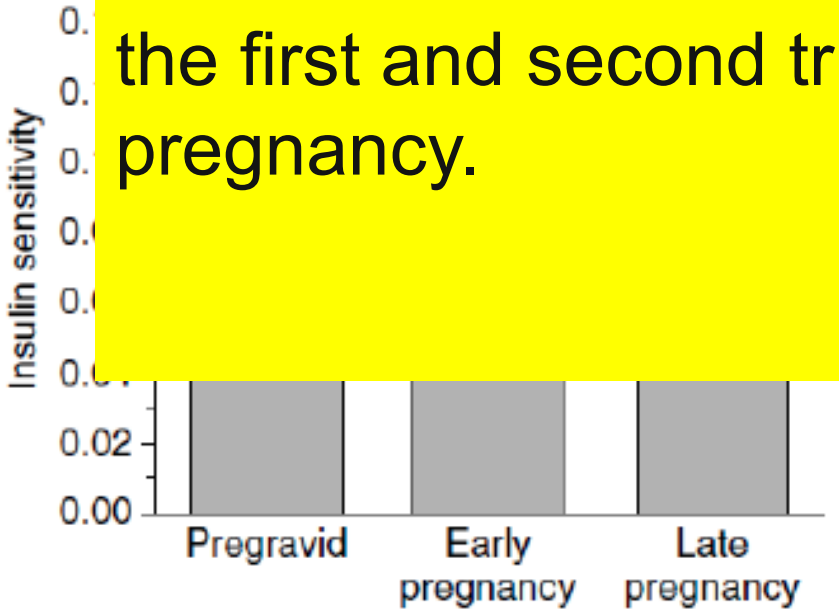
Focus on Obesity

Obes

Patrick

Compared to women who have normotensive pregnancies, women who develop preeclampsia are more insulin resistant prior to pregnancy in the first and second trimesters and years after pregnancy.

Valdes E ; Gynecol Obstet Investig. 2014
Hauth JC ; AmJ Obstet Gynecol. 2011
Alsnes IV ; Am J Obstet Gynecol. 2014

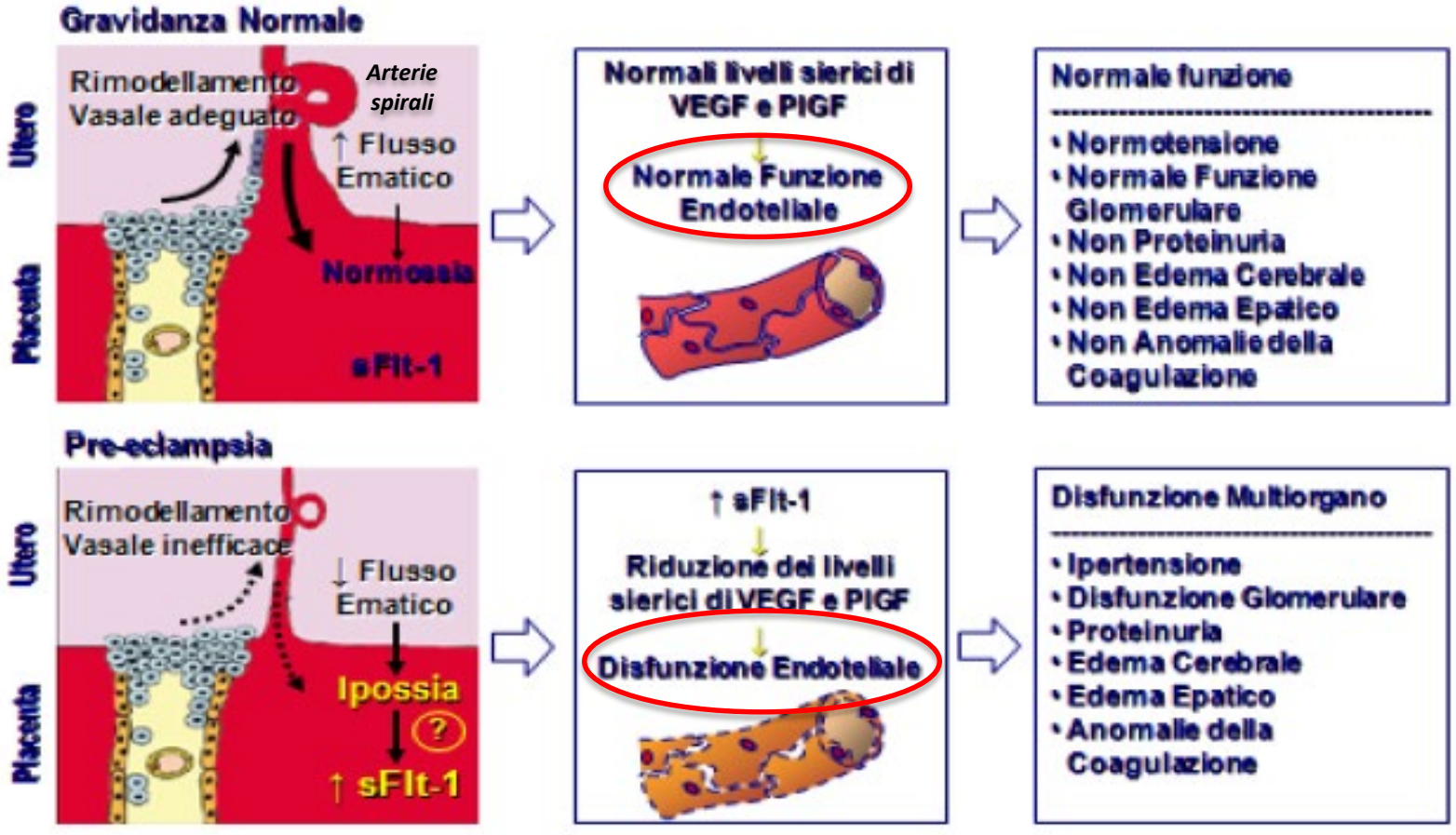


- *Ormoni (hPL, cortisolo, PRL, estrogeni, progesterone)*
- *Infiammazione (citochine, TNFα)*
- *Elevata concentrazione di lipidi*

Eziopatogenesi

Stage 1: reduced placental perfusion

Stage 2: maternal clinical syndrome



fms-like tyrosine kinase-1 si lega al VEGF e ne antagonizza gli effetti (antiangiogenico).
VEGF (vascular endothelial growth factor) e proangiogenic factor (PIGF) promuovono l'angiogenesi

Quando e come trattare la gravida ipertesa?



PRIMA VALUTAZIONE di PZ IPERTESA CRONICA
INDICAZIONI STILI DI VITA E ALIMENTAZIONE















Prepregnancy dietary patterns and risk of developing hypertensive disorders of pregnancy: results from the Australian Longitudinal Study on Women's Health[1,2]

Am J Clin Nutr 2015;102:94–101.

Danielle AJM Schoenaker,[3] Sabita S Soedamah-Muthu,[5] Leonie K Callaway,[4,6] and Gita D Mishra[3]

. The M ized by veg-
etables, le d wine, and
fish) was i HDPs (quar-
tile 4 com 42, 0.81).

Non sono disponibili sufficienti prove di efficacia per raccomandare la **restrizione del sale** nella dieta delle donne con qualunque disordine ipertensivo della gravidanza perchè la riduzione del sale non incide nel meccanismo fisiopatologico della genesi della ipertensione indotta dalla gestazione.







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Interrogativi nella donna gravida

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- Per quali valori inziare il trattamento farmacologico?
- Quali farmaci utilizzare?
- Fino a che valori ridurre la pressione arteriosa?
- Rischi per la donna dopo il parto?

Quali target pressori?

Non ci sono dimostrazioni che la normalizzazione dei valori pressori elimini i rischi di comparsa e/o di evoluzione della preeclampsia e alcuni studi suggeriscono, persino, che i farmaci antipertensivi potrebbero compromettere la crescita fetale modificando la perfusione placentare

Casey Berry, Mohamed G Atta.
Hypertensive disorders in pregnancy.
World J Nephrol 2016

Ben W J Mol, Claire T Roberts e al.
Pre-eclampsia.
The Lancet 2015

Tight
DP ≤ 80
mmHg

Quali target pressori?

Less Tight
DP ≤ 100
mmHg

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JANUARY 29, 2015 VOL. 372 NO. 5

Less-Tight versus Tight Control of Hypertension in Pregnancy

Laura A. Magee, M.D., Peter von Dadelszen, M.B., Ch.B., D.Phil., Evelyne Rey, M.D., Susan Ross, M.B.A., Ph.D., Elizabeth Asztalos, M.D., Kellie E. Murphy, M.D., Jennifer Menzies, M.Sc., Johanna Sanchez, M.I.P.H.,

Conclusions: In summary, we found no significant differences in the rates of major adverse perinatal outcomes or overall serious maternal complications in association with less-tight versus tight control of blood pressure. However, less-tight control was associated with a higher rate of severe maternal hypertension.

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Quando iniziare trattamento farmacologico?

- ESC-ESH Guidelines: non iniziare trattamento per valori <140-160/90-109 mmHg in assenza di proteinuria o danno d'organo
- ACOG Guidelines: ≥160/105 mmHg
- NICE Guidelines: iniziare trattamento per valori pressori 150-159/100-109 mmHg utilizzando labetalolo come farmaco di prima scelta

Table III. Pharmacologic Treatment of Hypertensive Disorders of Pregnancy

Medication Class	1st, 2nd, 3rd-Line, Treatment or Contraindicated	Teratogenicity/ Fetotoxicity	Formulations	Considerations in DM Patients
α-Adrenergic agonists	1st	None	Methyldopa, PO/IV Clonidine, PO	No maternal renal protection
β-Blockers	1st or 2nd	Fetal growth restriction, fetal bradycardia	Labetolol, PO/IV Atenolol, PO	Maternal hypoglycemia unawareness (labetalol)
Vasodilators	2nd (IV)[a] 3rd (PO)	Neonatal thrombocytopenia (hydralazine) Cyanide toxicity if used >4 hour (nitroprusside)	Hydralazine, PO/IV; Nitroprusside, IV	
Calcium channel blockers	2nd	None	Verapamil, PO Diltiazem, PO Nifedipine, PO Nicardipine, IV	Potential decreased maternal albuminuria and CVD[b]
ACE inhibitors/ARBs	Contraindicated in 2nd and 3rd trimesters; Unknown in 1st trimester	Renal failure, anuria; pulmonary hypoplasia; skeletal/calvarial abnormalities[c] Cardiac and CNS defects due to 1st trimester exposure (?)[d]	[e]Any	May slow progression of DM renal disease when given prior to pregnancy and discontinued early in 1st trimester
Diuretics	3rd Avoid when possible	Decreased uteroplacental flow due to volume contraction	Lasix, PO HCTZ, PO	Avoid aldosterone antagonists (spironolactone) due to anti-androgenic effect on fetus; avoid completely in preeclampsia

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Target delle principali società internazionali

- Linee guida Canadesi: PAS: 130-155 mmHg, PAD 90-105 mmHg in assenza di condizioni di comorbidità
- Linee guida NICE: PAS <150mmHg, PAD tra 80 e 100 mmHg.
- ISSHP: PAS> 110 mmHg e PAD > 80 mmHg
- ESH/ESC Guidelines (2011): <140/90 mmHg di ipertensione gestazionale con o senza proteinuria, ipertensione pre-esistente con sovrapposta ipertensione gestazionale, presenza di TOD; in tutti gli altri casi target < 150/95 mmHg

Trattamento della pre-eclampsia

- Prevenzione: aspirina 75-100 mg/die inziata preferibilmente prima della 16 settimana proseguita fino al parto, calcio 1g/die (in donne con basso consumo di calcio). Nessuna utilità della supplementazione di vit C ed E
- Trattamento:

- riduzione dei valori pressori <160-170/110 mmHg con farmaci antiipertensivi: in acuto: nifedipina os, labetalolo ev. In cronico: metildopa, nifedipina. Da evitare ACE-I e ARB

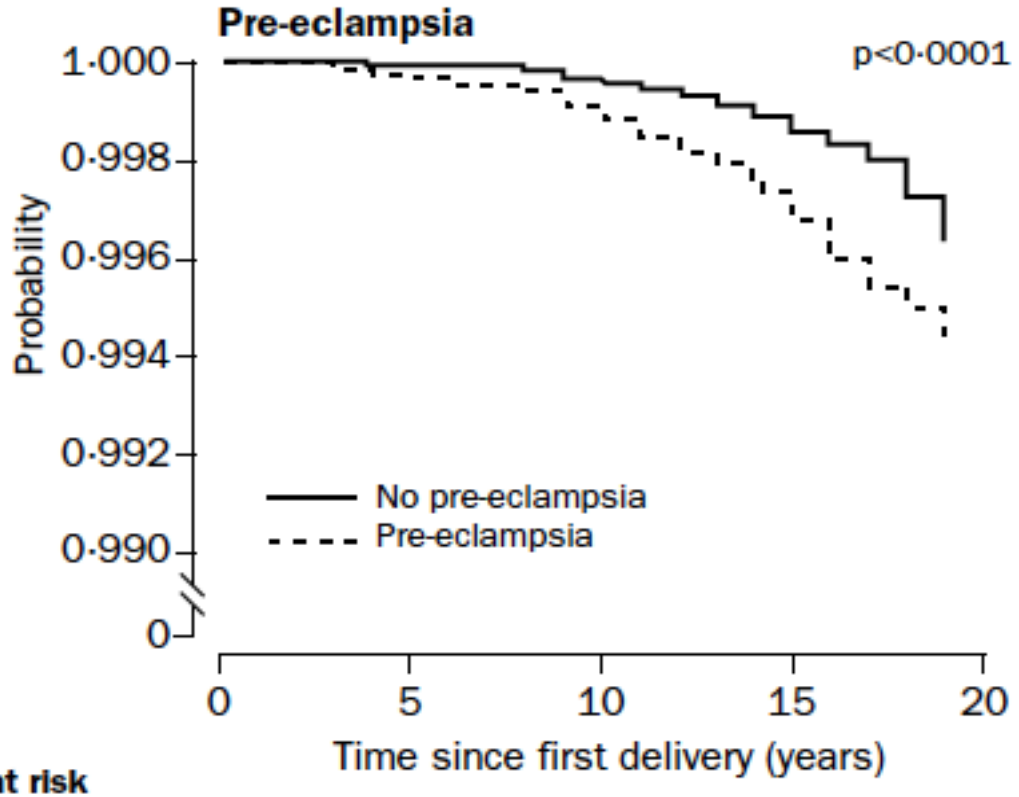
- Utilizzo di infusione di magnesio-solfato (utile in particolare nella prevenzione della ECLAMPSIA)

- Parto: sicuramente in caso di pre-eclamspia ≥37^ SG, tra 34-37^SG possibile atteggiamento conservativo, <34^SG atteggiamento conservativo a meno di complicanze

ISSHP 2014

Dopo il parto?

Pregnancy complications and maternal risk of ischaemic heart disease: a retrospective cohort study of 129 290 births



Number at risk

No pre-eclampsia	106509	106364	106111	84487
Pre-eclampsia	22781	22744	22669	18409

Kaplan-Meier plots of cumulative probability of survival without admission for IHD or death from IHD after first pregnancy in relation to birthweight quintile, preterm delivery, and diagnosis of pre-eclampsia during pregnancy

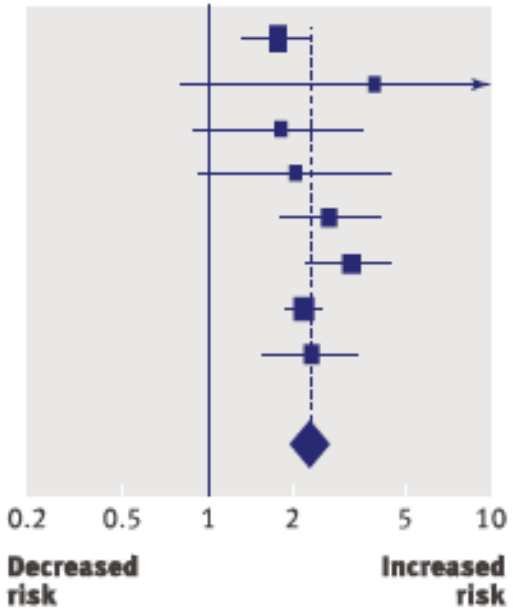
Gordon C S Smith. Lancet 2001; 357: 2002–06

Cardiopatia ischemica dopo la preeclampsia

Study	Ischaemic heart disease: Total No of cases/ women who had pre-eclampsia	Ischaemic heart disease: Total No of cases/ women who did not have pre-eclampsia	Relative risk (random) (95% CI)
Hannaford 1997[w8]	69/2371	216/14 831	1.65 (1.26 to 2.16)
Irgens 2001[w15]	27/24 155	325/602 117	3.61 (0.76 to 17.18)*
Smith 2001[w16]	12/22 781	31/106 509	1.70 (0.86 to 3.35)
Wilson 2003[w13]	26/1043	10/796	1.95 (0.90 to 4.22)
Kestenbaum 2003[w14]	35/20 552	64/92 902	2.55 (1.70 to 3.83)†
Funai 2005[w17]	41/1070	269/35 991	3.01 (2.18 to 4.33)
Ray 2005[w18]	228/36 982†	1262/950 885	2.10 (1.82 to 2.42)
Wirkstrom 2005[w19]	176/12 533	2306/383 081	2.21 (1.56 to 3.31)†
Total (95% CI)	614/121 487	4483/2 187 112	2.16 (1.86 to 2.52)

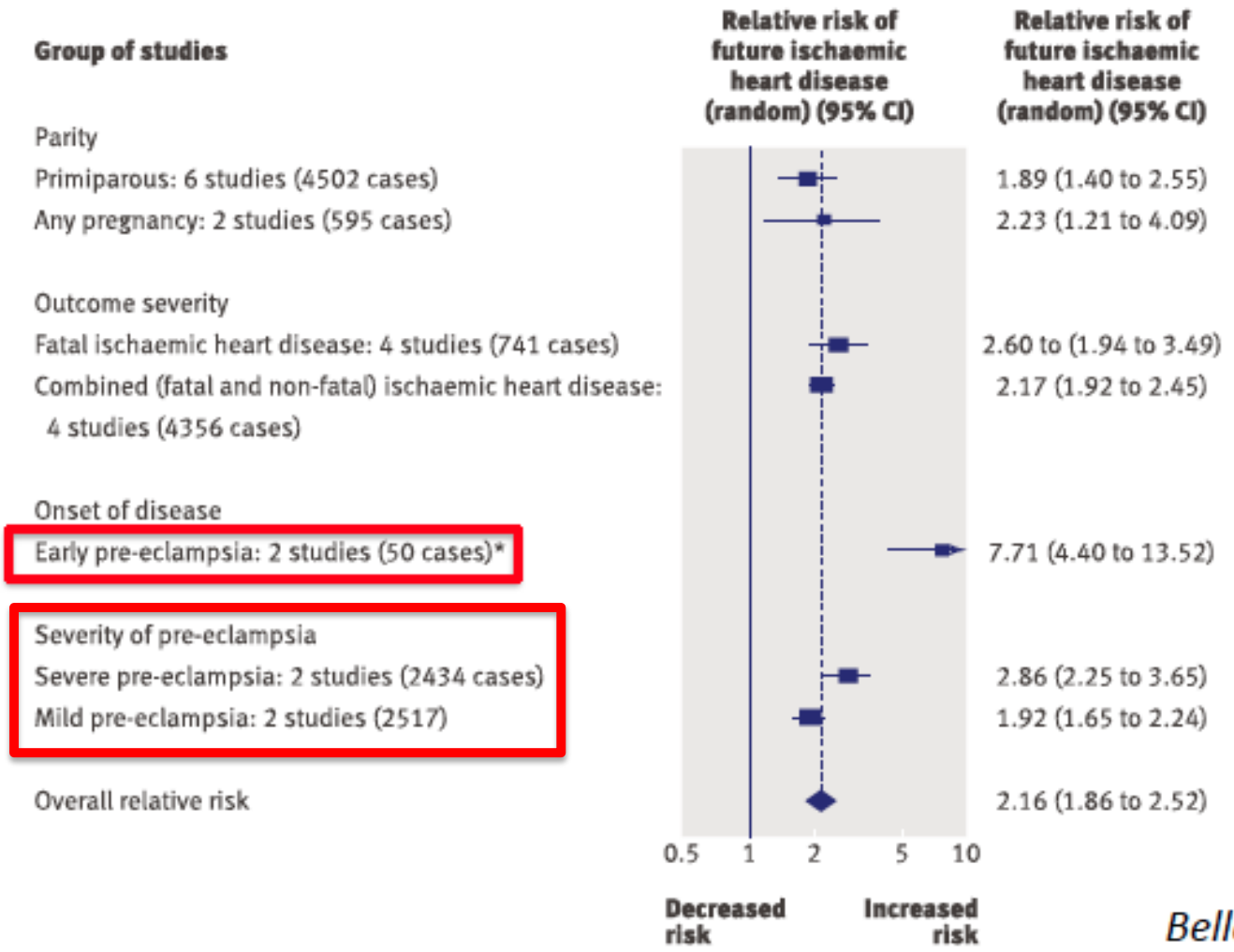
Test for heterogeneity: χ^2=9.60, df=7, P=0.21, I^2=27.1%

Test for overall effect: z=10.00, P=0.001



Bellamy 2007

Relazione con la severità della patologia?



Bellamy 2007

Impact of a History of Hypertension in Pregnancy on Later Diagnosis of Atrial Fibrillation

Dawn C. Scantlebury, MBBS; Andrea G. Kattah, MD; Tracey L. Weissgerber, PhD; Sanket Agarwal, MBBS; Michelle M. Mielke, PhD; Amy L. Weaver, MS; Lisa E. Vaughan, MS; Stanislav Henkin, MD; Katherine Zimmerman, BS; Virginia M. Miller, PhD; Wendy M. White, MD; Sharonne N. Hayes, MD; Vesna D. Garovic, MD, PhD

The presented results indicate that women with AF are 2.6 times more likely to have a history of a HPD compared with women without AF, a finding at least partially mediated by associated obesity and the development of hypertension following pregnancy.

J Am Heart Assoc. 2018;7:e007584. DOI: 10. 1161/JAHA.117.007584

National Library of Medicine PMC National Institutes of Health

The BMJ 2012

BMJ. 345: e7677

Cardiovascular mortality after pre-eclampsia in one child mothers: prospective, population based cohort study

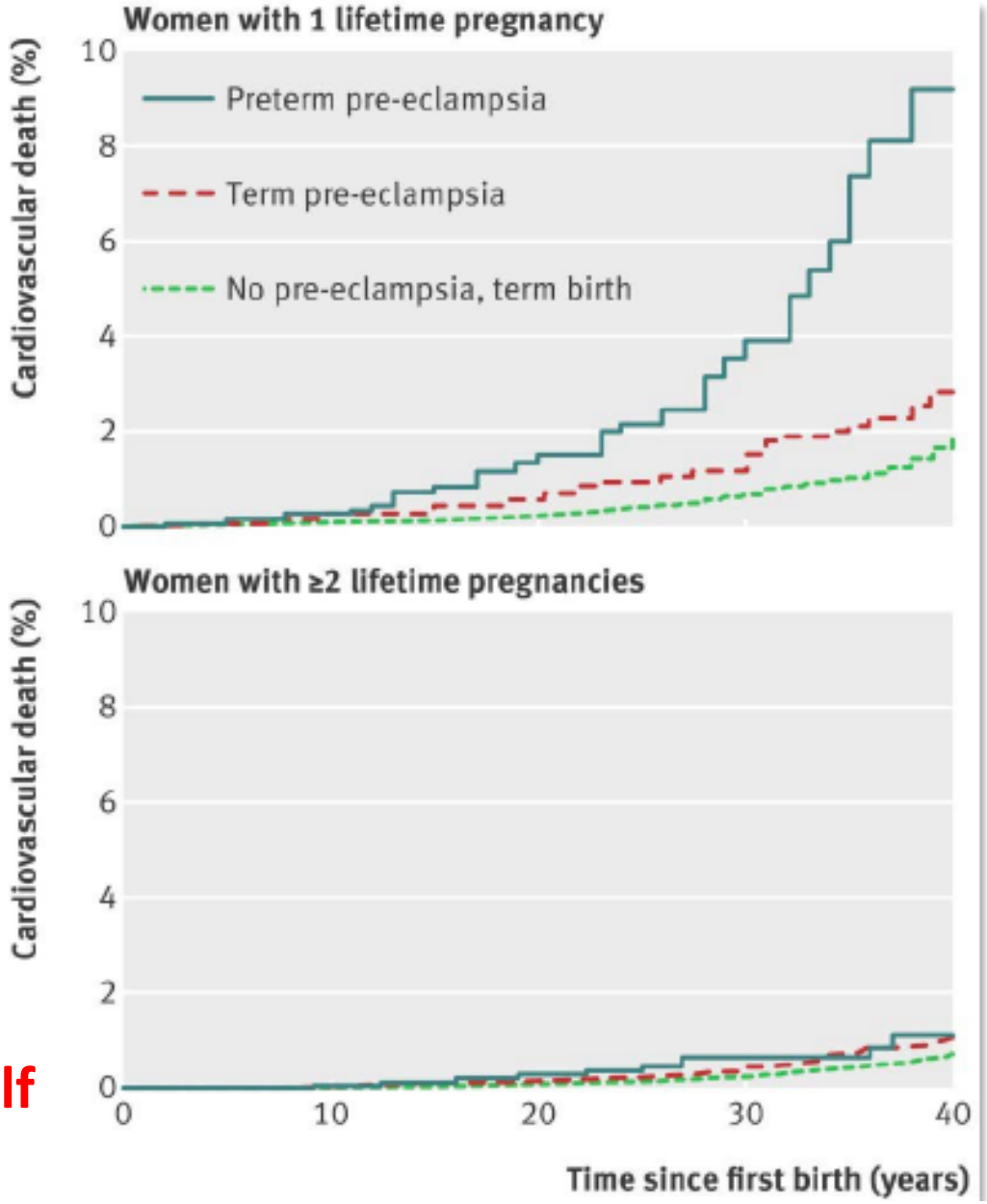
Rolv Skjaerven, professor[12], Allen J Wilcox, senior investigator[3], Kari Klungsøyr, associate professor[12], Lorentz M Irgens, professor[12], Bjørn Egil Vikse, associate professor[45], Lars J Vatten, professor[6], Rolv Terje Lie, professor[12]

N=836.147

Rischio cardiovascolare in più di una gravidanza con PE

OR

This association might be due to health problems that discourage or prevent further pregnancies rather than to pre-eclampsia itself



DOI: 10.1111/1471-0528.12191
www.bjog.org

Risk of cardiovascular disease after pre-eclampsia and the effect of lifestyle interventions: a literature-based study

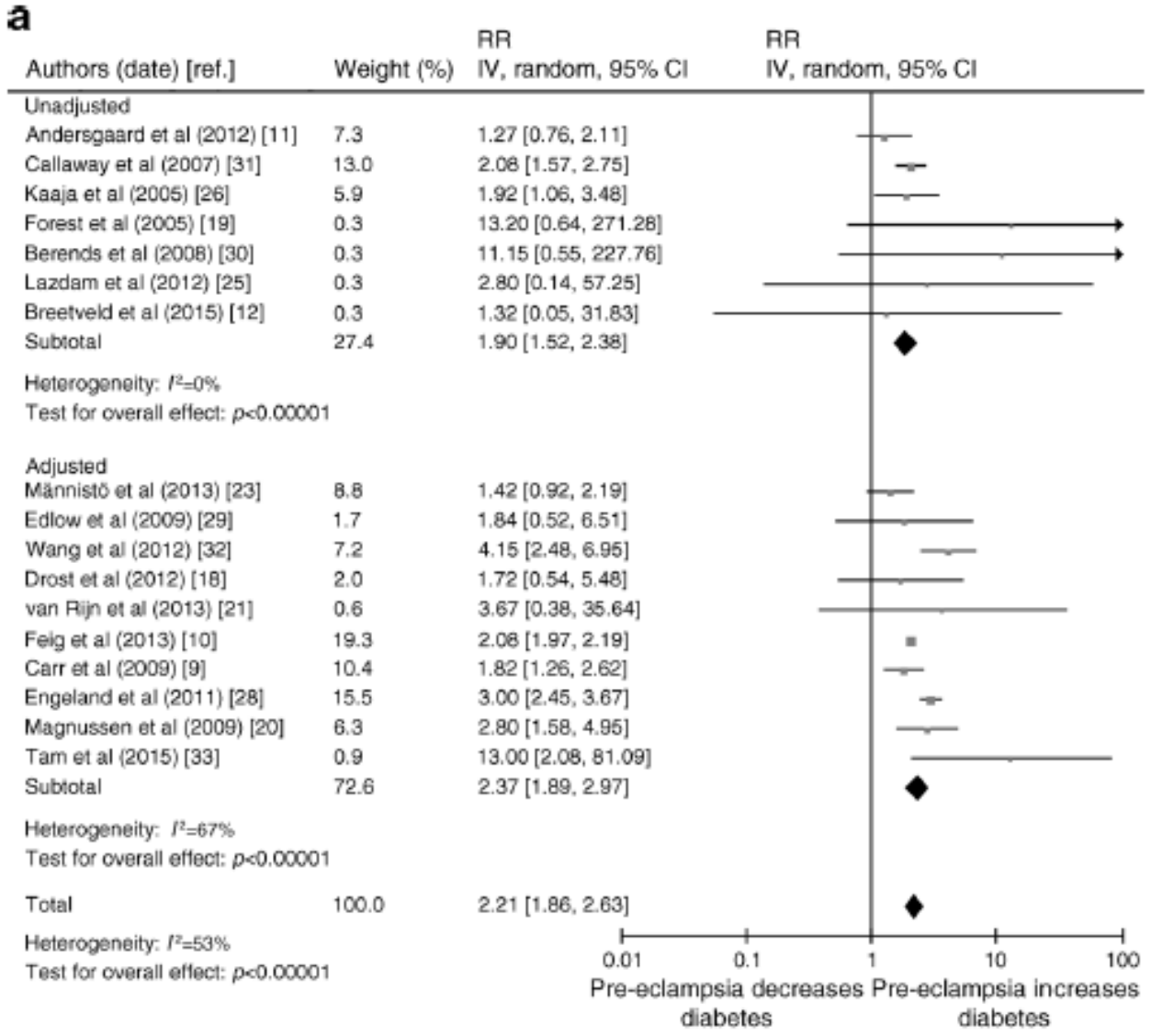
D Berks,[a] M Hoedjes,[b] H Raat,[b] JJ Duvekot,[a] EAP Steegers,[a] JDF Habbema[b]

Conclusions Cardiovascular risk factors do not fully explain the risk of cardiovascu[illegible] after pre-eclampsia. The gap between

- I fattori di rischio CVS non spiegano completamente l'esito in malattia CVS tardiva
- Il gap tra OR stimati e osservati spiegabile da un rischio aggiuntivo della PE
- La PE stessa sarebbe un fattore di rischio piuttosto che un marker di malattia CVS

..... forse c'è altro?

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



Pensee W. Diabetologia (2016) 59:2518–2526

Pre-eclampsia but not pregnancy-induced hypertension is a risk factor for diabetic nephropathy in type 1 diabetic women

D. Gordin · V. Hiilesmaa · J. Fagerudd · M. Rönnback · C. Forsblom · R. Kaaja · K. Teramo · P.-H. Groop · FinnDiane Study Group

Diabetologia. 2007;50(3):516–22

Pre-eclampsia and pregnancy-induced hypertension are associated with severe diabetic retinopathy in type 1 diabetes later in life

Daniel Gordin **Acta Diabetol. 2013;50(5):781–7**



Grazie
per l'attenzione !