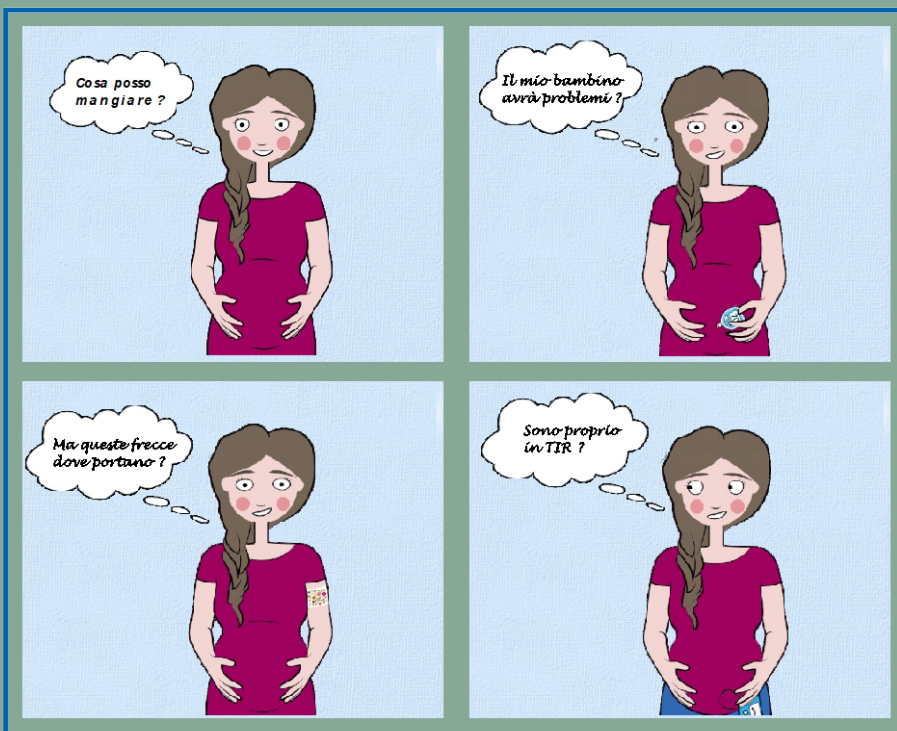


DIABETE IN GRAVIDANZA: ISTRUZIONE PER LA GESTIONE

Sabato 2 Marzo 2024 Unahotels Thotel, Cagliari



Responsabili Scientifici:

Dott.ssa Mariangela Ghiani Consiglio Direttivo SID Italia

Dott.ssa Rosangela Maria Pilosu Presidente Regionale SID Sardegna

Timing e Modalità del Parto

Gian Franco Puggioni

gianfranco.puggioni@asloristano.it

Il Dott. Gian Franco Puggioni dichiara di **Non aver ricevuto** negli ultimi due anni compensi o finanziamenti dalle seguenti Aziende Farmaceutiche e/o Diagnostiche:

-

-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.)

COS'È IL DIABETE GESTAZIONALE?

- Sindrome: una delle grandi sindromi ostetriche
- Iperglicemia in gravidanza
- I risultati dell' HAPO Study
- Conseguenze ancora non del tutto esplorate sull'ambiente intrauterino e quindi sulla salute futura del nascituro

GRAVIDANZA, DIABETE & INFIAMMAZIONE

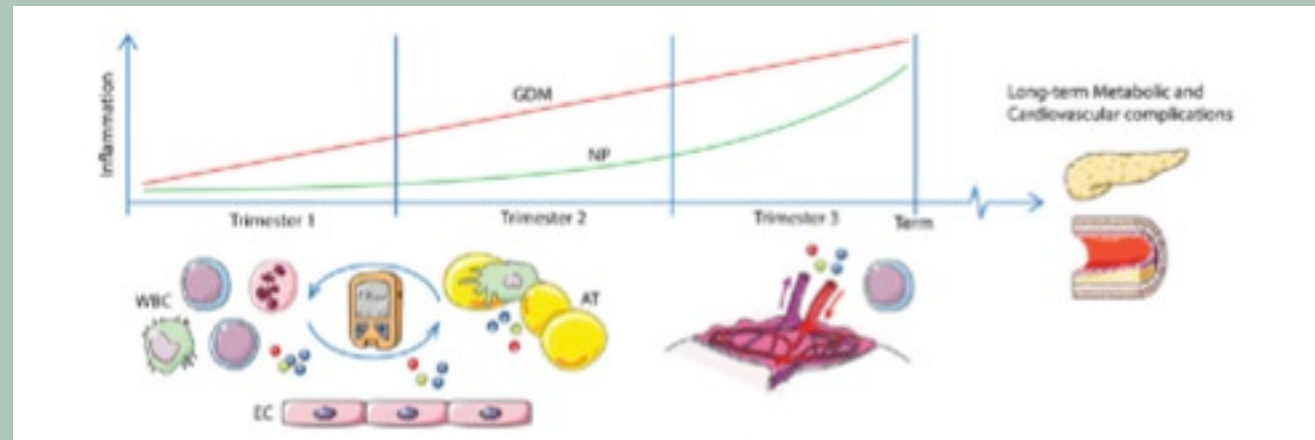
Curr Diab Rep (2016) 16: 26
DOI 10.1007/s11892-016-0715-9



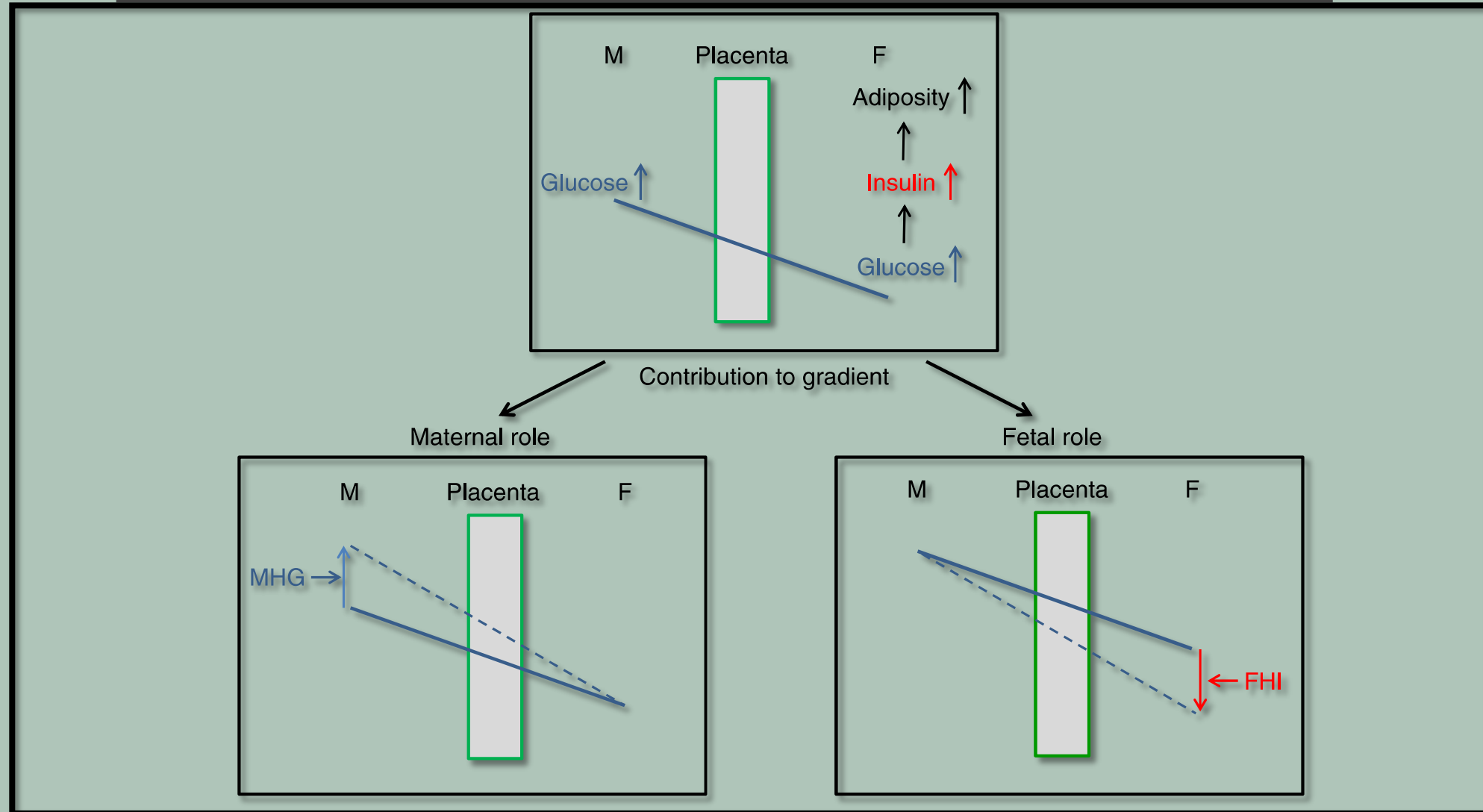
DIABETES AND PREGNANCY (CJ HOMKO, SECTION EDITOR)

Impact of Systemic Inflammation on the Progression of Gestational Diabetes Mellitus

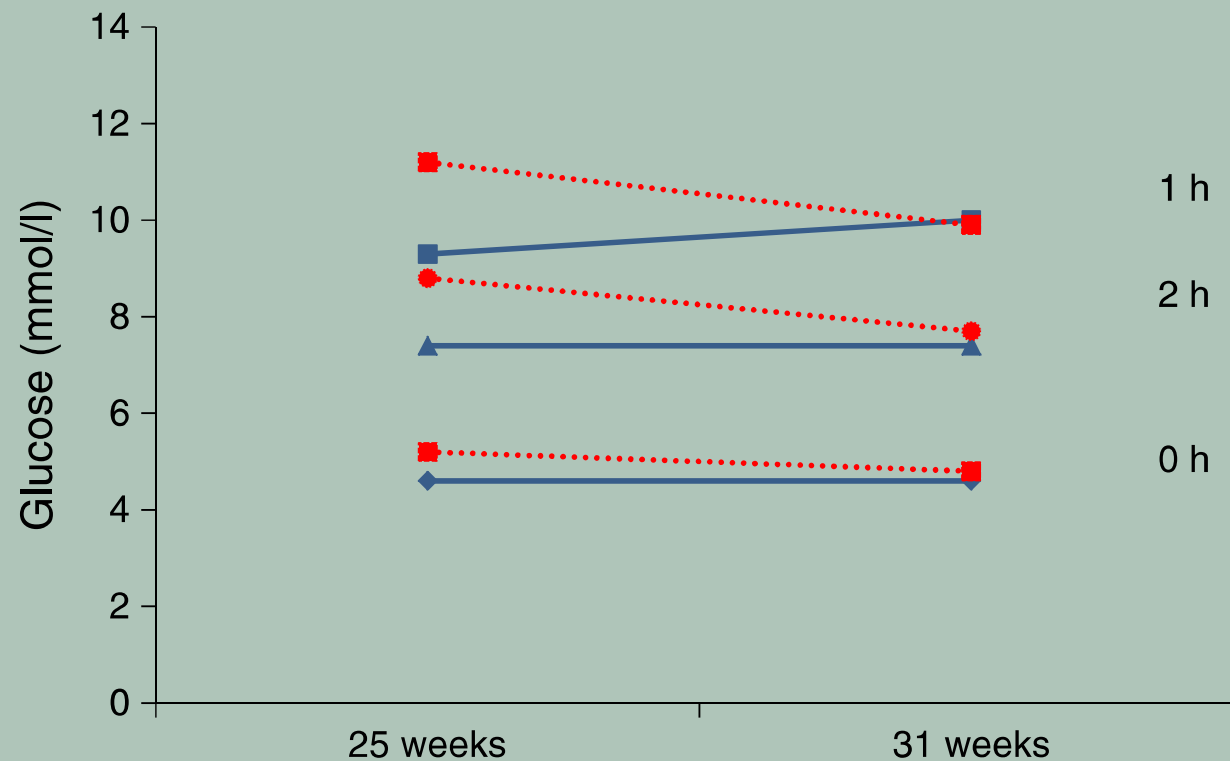
Tove Lekva^{1,2} · Errol R. Norwitz^{2,3} · Pål Aukrust^{1,4,5} · Thor Ueland^{1,4}



FETAL GLUCOSE STEAL



OGTT & INSULINEMIA FETALE



RISCHIO DI MORTE INTRAUTERINA

Immortal Time Bias in the Study of Stillbirth Risk Factors

The Example of Gestational Diabetes

Jennifer A. Hutcheon,^a Verena Kuref,^a K. S. Joseph,^{a,b} Yasser Sabr,^{a,b} and Kenneth Lin^a

Results: Although gestational diabetes was protective against stillbirth when including all births (relative risk = 0.88 [95% confidence interval = 0.79–0.99]), restricting analyses to births at >28 weeks' gestation reversed the effect and diabetes became associated with an increased risk of stillbirth (1.25 [1.11–1.41]).

Conclusion: Immortal time before diagnosis of gestational diabetes may bias our understanding of the stillbirth risk associated with this condition.

(Epidemiology 2013;24: 787–790)

GDM & OBESITÀ

The Hyperglycemia and Adverse Pregnancy Outcome Study

Associations of GDM and obesity with pregnancy outcomes

PATRICK M. CATALANO, MD¹
H. DAVID MCINTYRE, MD²
J. KENNEDY CRUICKSHANK, MD³
DAVID R. McCANCE, MD⁴
ALAN R. DYER, PHD⁵
BOYD E. METZGER, MD⁶
LYNN P. LOWE, PHD⁵
ELISABETH R. TRIMBLE, MD⁷

DONALD R. COUSTAN, MD⁸
DAVID R. HADDEN, MD⁴
BENGT PERSSON, MD, PHD⁹
MOSHE HOD, MD¹⁰
JEREMY J.N. OATS, MD¹¹
FOR THE HAPO STUDY COOPERATIVE
RESEARCH GROUP

Gestational diabetes mellitus (GDM) and maternal obesity are independently associated with adverse maternal and neonatal outcomes (1,2). Both share common metabolic characteristics such as increased insulin resistance, hyperglycemia, and hyperinsulinemia, and GDM may impart distinct effects on clinical outcomes independent of obesity

DIABETES CARE, VOLUME 35, APRIL 2012

OUTCOME NEL GDM E OBESITÀ

Outcome	N	No.	%	Model I		Model II	
				OR	95% CI	OR	95% CI
Birth weight >90th percentile ¹							
No GDM, no obesity	17,244	1,339	7.8	1.00		1.00	
GDM, no obesity	2,791	401	14.4	1.99	(1.77–2.25)	2.19	(1.93–2.47)
No GDM, obesity	2,247	278	12.4	1.68	(1.46–1.92)	1.73	(1.50–2.00)
GDM, obesity	935	203	21.7	3.29	(2.79–3.89)	3.62	(3.04–4.32)
Cord C-peptide >90th percentile ²							
No GDM, no obesity	14,886	916	6.2	1.00		1.00	
GDM, no obesity	2,419	386	16.0	2.90	(2.54–3.30)	2.49	(2.17–2.85)
No GDM, obesity	1,829	201	11.0	1.80	(1.52–2.12)	1.77	(1.49–2.11)
GDM, obesity	751	168	22.4	4.14	(3.43–5.00)	3.61	(2.94–4.42)
Primary cesarean ³							
No GDM, no obesity	15,673	2,522	16.1	1.00		1.00	
GDM, no obesity	2,442	564	23.1	1.48	(1.33–1.65)	1.25	(1.12–1.40)
No GDM, obesity	1,868	430	23.0	1.80	(1.60–2.03)	1.51	(1.33–1.71)
Preeclampsia ⁴							
No GDM, no obesity	16,238	570	3.5	1.00		1.00	
GDM, no obesity	2,518	149	5.9	1.69	(1.40–2.05)	1.74	(1.43–2.11)
No GDM, obesity	1,878	250	13.3	3.47	(2.95–4.08)	3.91	(3.31–4.62)
GDM, obesity	730	147	20.1	5.25	(4.26–6.46)	5.98	(4.81–7.42)
fat >90th percentile ⁵							
No GDM, no obesity	14,367	1,143	8.0	1.00		1.00	
GDM, no obesity	2,338	331	14.2	1.91	(1.67–2.18)	1.98	(1.73–2.27)
No GDM, obesity	1,854	233	12.6	1.66	(1.43–1.93)	1.65	(1.41–1.93)
GDM, obesity	768	185	24.1	3.67	(3.08–4.38)	3.69	(3.06–4.44)
Shoulder dystocia/birth injury ⁴							
No GDM, no obesity	17,247	212	1.2	1.00		1.00	
GDM, no obesity	2,792	41	1.5	1.10	(0.78–2.25)	1.14	(0.81–1.62)
No GDM, obesity	2,252	32	1.4	0.99	(0.68–1.92)	1.03	(0.70–1.53)
GDM, obesity	936	26	2.8	1.71	(1.12–3.89)	1.84	(1.19–2.86)

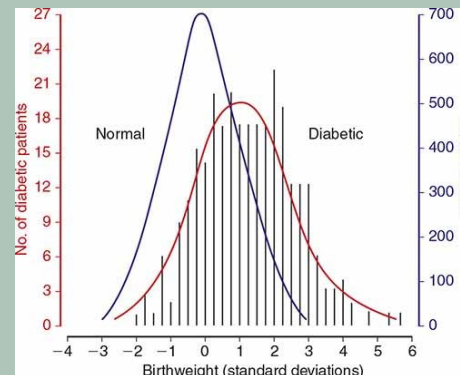
ACCRESCIMENTO FETALE

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

- ❖ La diagnosi di GDM è preceduta da una eccessiva crescita fetale tra 20-28 w
- ❖ Gli effetti sull'accrescimento sono additivi con quelli dovuti all'obesità



Bradley 1988

VALUTAZIONE DELLO SVILUPPO FETALE

- Stima del peso fetale
- Modelli matematici di accrescimento fetale specifici per epoca gestazionale
- Circonferenza addominale
- Valutazione longitudinale

ORIGINAL ARTICLE

Development of a new fetal growth curve from a large sample of Italian population

Sergio FERRAZZANI ¹, Valentina A. DEGENNARO ¹,
Enrico DI STASIO ², Giuseppina POPPA ³, Sascia MORESI ^{1*},
Silvia SALVI ¹, Antonio LANZONE ¹, Sara DE CAROLIS ¹

¹Department of Obstetrics and Gynecology and Pediatrics, Catholic University of Sacro Cuore, Rome, Italy;

²Institute of Biochemistry and Clinical Biochemistry, Catholic University of Sacro Cuore, Rome, Italy; ³Department of Obstetrics and Gynecology, S. Anna University Hospital, Turin, Italy

*Corresponding author: Sascia Moresi, Largo A. Gemelli 8, 00168, Rome, Italy. E-mail: moresisascia@hotmail.it

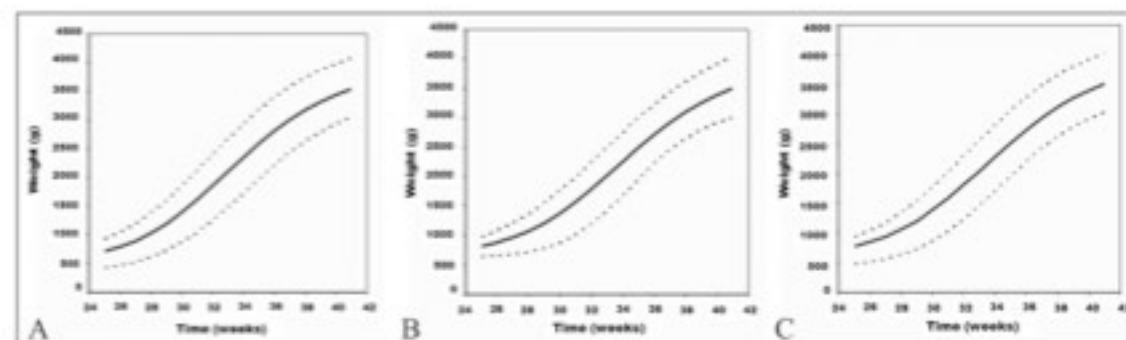


Figure 1. Growth curves (birth weight in grams/time in weeks of gestation) drawn up with the collected data. A) Growth curves in Rome; B) growth curves in Turin; C) growth curves drawn up on pooled data.

BIRTH WEIGHT PERCENTILES

	week	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
	<2.5	390	392	500	572	599	735	874	990	1128	1498	1531	1820	2192	2400	2550	2620	2730
	5	395	404	500	596	645	753	974	1123	1236	1530	1740	1990	2320	2530	2660	2750	2860
	10	420	496	558	666	770	902	1060	1230	1346	1705	1910	2200	2482	2680	2800	2900	3000
	15	565	567	718	800	890	1021	1120	1313	1425	1771	2050	2320	2591	2770	2900	2990	3080
	20	610	642	788	841	907	1101	1150	1382	1537	1872	2136	2420	2680	2840	2960	3060	3160
	25	670	690	804	882	959	1185	1190	1430	1635	1996	2230	2480	2740	2900	3020	3120	3220
	30	680	700	857	922	1041	1215	1265	1478	1724	2070	2290	2550	2800	2960	3070	3180	3280
	35	700	742	926	977	1070	1292	1330	1602	1835	2133	2343	2600	2850	3000	3130	3240	3355
	40	710	825	943	1000	1128	1364	1368	1664	1894	2187	2400	2660	2900	3050	3180	3290	3390
	45	720	836	975	1064	1176	1409	1463	1718	1940	2234	2434	2710	2950	3100	3230	3340	3440
	50	720	850	982	1095	1200	1435	1560	1800	1980	2270	2495	2755	3000	3150	3280	3380	3490
	55	730	882	990	1151	1213	1455	1628	1823	2040	2310	2540	2800	3040	3200	3321	3430	3540
	60	740	900	1000	1170	1246	1490	1656	1876	2070	2363	2583	2850	3090	3240	3370	3480	3600
	65	762	906	1010	1203	1270	1518	1723	1918	2109	2410	2646	2910	3140	3300	3420	3530	3650
	70	795	919	1033	1224	1307	1547	1801	1962	2156	2460	2747	2980	3190	3350	3480	3590	3710
	75	815	950	1059	1267	1364	1590	1855	1992	2205	2530	2800	3030	3247	3400	3540	3650	3770
	80	845	964	1114	1320	1390	1640	1870	2080	2274	2608	2870	3100	3310	3480	3610	3720	3840
	85	850	990	1131	1377	1473	1694	1906	2150	2380	2700	2980	3184	3400	3550	3690	3800	3950
	90	890	1030	1158	1460	1557	1733	2000	2230	2482	2866	3109	3296	3506	3660	3790	3900	4040
	95	990	1120	1500	1525	1766	1839	2176	2494	2760	3138	3359	3500	3660	3820	3950	4060	4190
	>97.5	1090	1380	1526	1752	1871	1954	2808	2640	2949	3365	3540	3680	3810	3960	4090	4230	4346

Percentiles

Ferrazzani 2017

Box 1. Indications for Antepartum Fetal Surveillance Testing ⇐

Maternal conditions

- Pregestational diabetes mellitus
- Hypertension
- Systemic lupus erythematosus
- Chronic renal disease
- Antiphospholipid syndrome
- Hyperthyroidism (poorly controlled)
- Hemoglobinopathies (sickle cell, sickle cell-hemoglobin C, or sickle cell-thalassemia disease)
- Cyanotic heart disease

Pregnancy-related conditions

- Gestational hypertension
- Preeclampsia
- Decreased fetal movement
- Gestational diabetes mellitus (poorly controlled or medically treated)
- Oligohydramnios
- Fetal growth restriction
- Late term or postterm pregnancy
- Isoimmunization
- Previous fetal demise (unexplained or recurrent risk)
- Monochorionic multiple gestation (with significant growth discrepancy)

Data from Liston R, Sawchuck D, Young D. Fetal health surveillance: antepartum and intrapartum consensus guideline. Society of Obstetrics and Gynaecologists of Canada, British Columbia Perinatal Health Program [published erratum appears in J Obstet Gynaecol Can 2007;29:909]. J Obstet Gynaecol Can 2007;29:53–56. (Level III)

SORVEGLIANZA PRENATALE



The American College of
Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

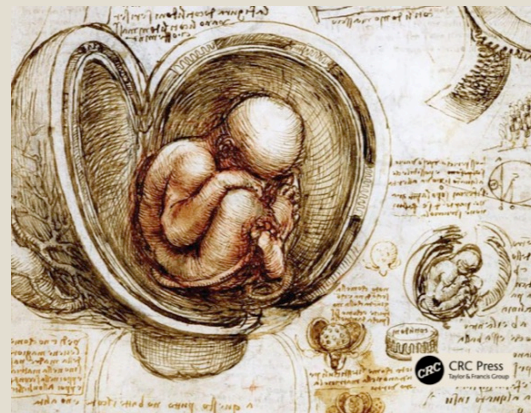
PRACTICE BULLETIN

CLINICAL MANAGEMENT GUIDELINES FOR OBSTETRICIAN—GYNECOLOGISTS

NUMBER 145, JULY 2014

(Replaces Practice Bulletin Number 9, October 1999)

Antepartum Fetal Surveillance



Box 2. Counseling and Management of Women with Pregestational Diabetes Before and During Pregnancy

Prepregnancy visit

- Counsel about potential complications in pregnancy including fetal anomalies, preterm delivery, preeclampsia, fetal macrosomia, mode of delivery, neonatal complications, hyperglycemia, worsening diabetic retinopathy and nephropathy
- Evaluate for baseline complications including hypertension, nephropathy, retinopathy, and cardiovascular disease
- Ensure adequate contraception if not planning pregnancy immediately
- Plan to optimize HbA_{1c} (less than 6.0%)
- Discuss plan to start increased folic acid when attempting to get pregnant

First trimester

- Prenatal labs/tests include HbA_{1c}, TSH, 24-hour urine if no baseline, electrocardiogram
- Evaluation by ophthalmologist, dietitian, possibly endocrinologist, cardiologist or nephrologist
- Regular ongoing assessment of blood glucose values

Second trimester

- Start low-dose aspirin 12–28 weeks of gestation (optimally before 16 weeks of gestation)
- Ultrasonography including a detailed anatomical survey
- Consider fetal echocardiography

Third trimester

- Evaluate fetal growth
- Start low-dose aspirin by 28 weeks of gestation if not started in the second trimester
- Fetal monitoring (nonstress test, nonstress test or amniotic fluid index, biophysical profile)

Delivery

- If estimated fetal weight 4,500 g or greater, consider cesarean delivery
- Without vascular complications and with well-controlled blood glucose levels, deliver at 39 0/7 weeks to 39 6/7 weeks of gestation
- In women with vascular complications or poorly controlled blood glucose, consider delivery at 36 0/7 weeks to 38 6/7 weeks of gestation, and in rare cases, even earlier

Abbreviations: HbA_{1c}, hemoglobin A_{1c}; TSH, thyroid-stimulating hormone.

MONITORAGGIO PRENATALE NEL DIABETE PRE-GESTAZIONALE



The American College of
Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

ACOG PRACTICE BULLETIN

Clinical Management Guidelines for Obstetrician–Gynecologists

NUMBER 201

(Replaces Practice Bulletin Number 60, March 2005)

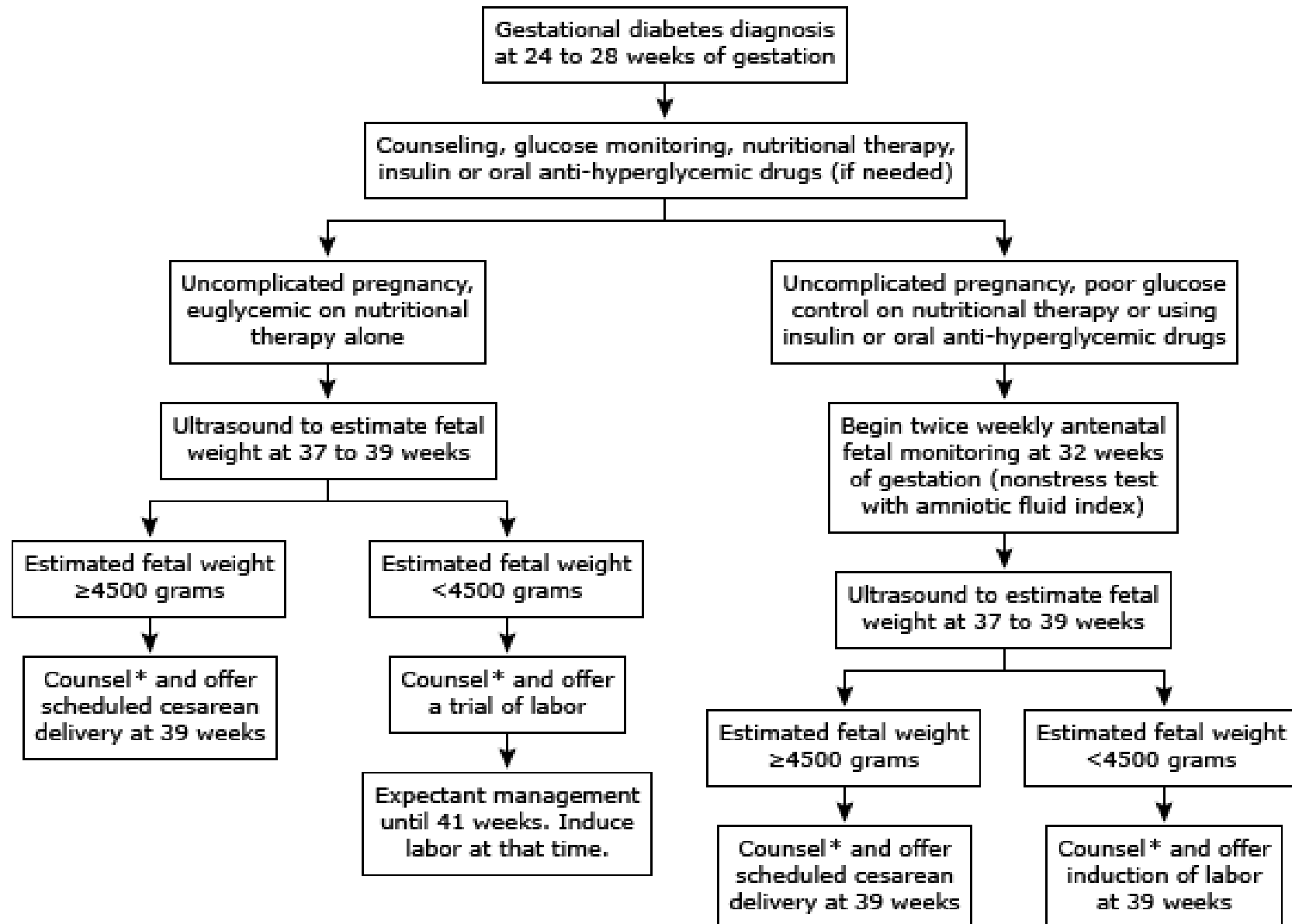
Committee on Practice Bulletins—Obstetrics. This Practice Bulletin was developed by the American College of Obstetricians and Gynecologists' Committee on Practice Bulletins—Obstetrics with the assistance of Aaron B. Caughey, MD, PhD; Anjali J. Kaimal, MD, MAS; and Steven G. Gabbe, MD.

Pregestational Diabetes Mellitus

TIMING PARTO DIABETE PREGESTAZIONALE

Diabete	Timing parto	Sorveglianza fetale
Sempre		32w , 2 volte/w
Buon compenso e senza complicanze vascolari o macrosomia	Induzione 39+0 – 39+6 w	
EFW >4500 g	TC programmato	
Scarso compenso, complicanze vascolari, storia di morte fetale e senza macrosomia	Induzione 36+0 - 38+6	

General approach to obstetrical management of uncomplicated GDM



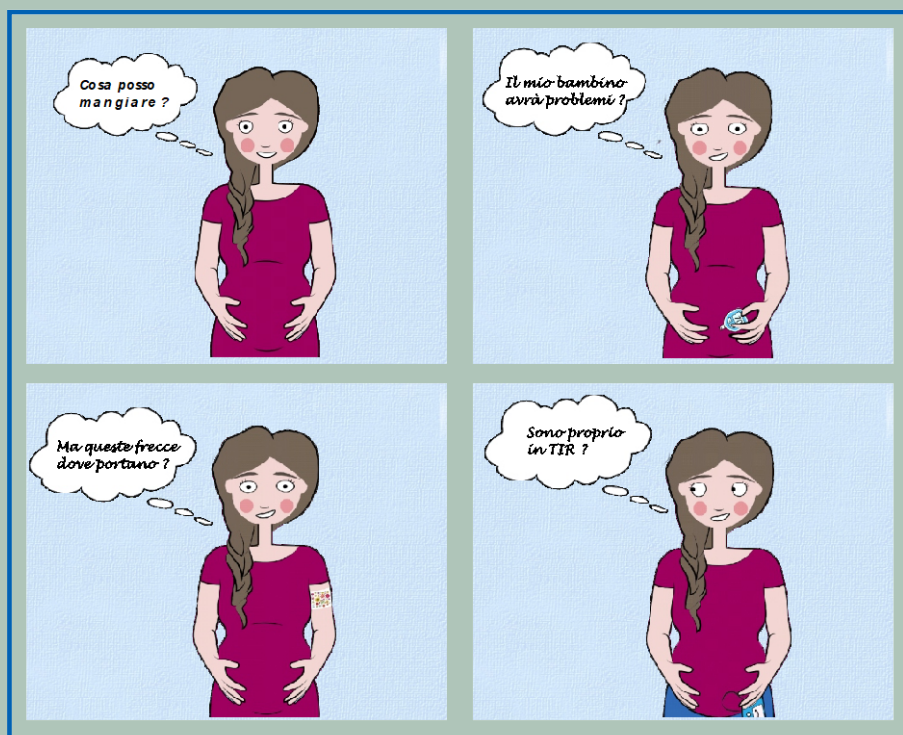
ALCUNI CONSIGLI PRATICI

- Team interdisciplinare ostetrico-diabetologico-neonatologico per il management del diabete in gravidanza
- Acquisire una «logica» materno-fetale: sia da parte dell'ostetrico-ginecologo che del diabetologo
- Puntare ad un'appropriata sorveglianza del benessere fetale, per decidere l'ottimale timing e modalità del parto
- Costruire dei percorsi assistenziali EBM

DIABETE IN GRAVIDANZA: ISTRUZIONE PER LA GESTIONE

Sabato 2 Marzo 2024 Unahotels Thotel, Cagliari

GRAZIE



Responsabili Scientifici:

Dott.ssa Mariangela Ghiani Consiglio Direttivo SID Italia

Dott.ssa Rosangela Maria Pilosu Presidente Regionale SID Sardegna