

Updates in Gestational Diabetes (GDM)

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1. Understand the **rationale** for diagnosis and treatment of GDM.
2. Leave with **a plan** to standardize GDM screening in your practice.
3. Identify appropriate **first line treatments** of GDM.

Gestational Diabetes

There Are Some Frustrations



Most cases identified are
mild in nature

Patients don't like the
OGCT or 3-hr GTT

Really counseling patients
is time-consuming

Patients are reluctant to
check BGs

Do we make a difference?



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

ACOG PRACTICE BULLETIN

Clinical Management Guidelines for Obstetrician–Gynecologists

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Gestational Diabetes Mellitus

Gestational diabetes mellitus (GDM) is one of the most common medical complications of pregnancy. However, debate continues to surround the diagnosis and treatment of GDM despite several recent large-scale studies addressing these issues. The purposes of this document are the following: 1) provide a brief overview of the understanding of GDM, 2) review management guidelines that have been validated by appropriately conducted clinical research, and 3) identify gaps in current knowledge toward which future research can be directed.

Should we
diagnose GDM?

Should we
treat GDM?



GDM associated with

The Author

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Table 2. Adverse Outcomes Associated with Gestational Diabetes Mellitus

<i>Outcome</i>	<i>Relative risk</i>
Maternal	
Subsequent development of type 2 diabetes mellitus	7.4
Gestational hypertension	1.6
Preeclampsia	1.5
Cesarean delivery	1.3
Fetal	
Shoulder dystocia/birth trauma	2.9
Macrosomia	1.6
Subsequent adolescent and childhood overweight	1.5
Birth defects	1.2
Hyperbilirubinemia	*
Hypoglycemia	*

Garrison. *Am Fam Physician*. 2015;91(7):460-7.

- Identifying and Treating GDM may...
 - Reduce preeclampsia
 - Reduce shoulder dystocia
 - Reduce LGA / fetal macrosomia
 - Increase office visits, +/- anxiety
 - Reduce cesarean? Increase cesarean?
 - Long-term metabolic effect (for mother and child)
- Moderate
Certainty
- Low
Certainty
- No
Certainty



Recommendation Summary

Summary of Recommendations and Evidence

Population	Recommendation	Grade (What's This?)
Asymptomatic Pregnant Women, After 24 Weeks of Gestation	The USPSTF recommends screening for gestational diabetes mellitus (GDM) in asymptomatic pregnant women after 24 weeks of gestation.	B
Asymptomatic Pregnant Women, Before 24 Weeks of Gestation	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for GDM in asymptomatic pregnant women before 24 weeks of gestation.	I

Screening and Treatment are
recommended:

How?

Maternal Fetal Medicine First Trimester Diabetes Screening Algorithm

First Prenatal Visit

Test all women for undiagnosed hyperglycemia at the first visit

ALTERNATE: Test women who have ANY risk factor:

- Non-Caucasian
- BMI > 25
- History of GDM or pre-diabetes, unexplained stillbirth, malformed infant
- Previous baby 4000 gm or more (8 lbs 13 oz)
- 1st degree relative with diabetes mellitus
- Glucosuria
- Medications that raise glucose (e.g. steroids, betamimetics, atypical antipsychotics)
- Polycystic ovarian syndrome, cardiovascular disease, hypertension, hyperlipidemia

Universal Testing at 24 to 28 weeks

1 hour 50 gram GCT



GCT < 140

GCT 140-199

GCT ≥ 200

No further testing

3 hour GTT

Diagnose as GDM

< 13 weeks
Hgb A1c

13 weeks to 23w6d
1 hour GCT or Hgb A1c*

HgbA1c < 5.7

HgbA1c 5.7-6.4

HgbA1c ≥ 6.5

Repeat testing
at 24 to 28 weeks

Treat as GDM
Refer to nutrition &
Diabetes Education

Treat as pregestational
Diabetes Mellitus

GCT < 140

GCT 140-199

GCT ≥ 200

Repeat testing
at 24 to 28 weeks

3 hour GTT

Diagnose as GDM

Hour	Carpenter-Coustan	NDDG
0	95 mg/dl	105 mg/dl
1	180 mg/dl	190 mg/dl
2	155 mg/dl	165 mg/dl
3	140 mg/dl	145 mg/dl

If a non diabetic patient presents for care and is already taking Metformin:

- Discuss that we lack data about the potential benefit and long term safety of the exposed fetus
- Discussion of risks/benefits in each individual patient situation is warranted

*Hgb A1c not as reliable in the 2nd and 3rd trimester due to increased red blood cell turnover. Diagnostic cutoffs and indication for repeat testing remain the same as in the 1st trimester

First Trimester Screening

ACOG & ADA. 2017

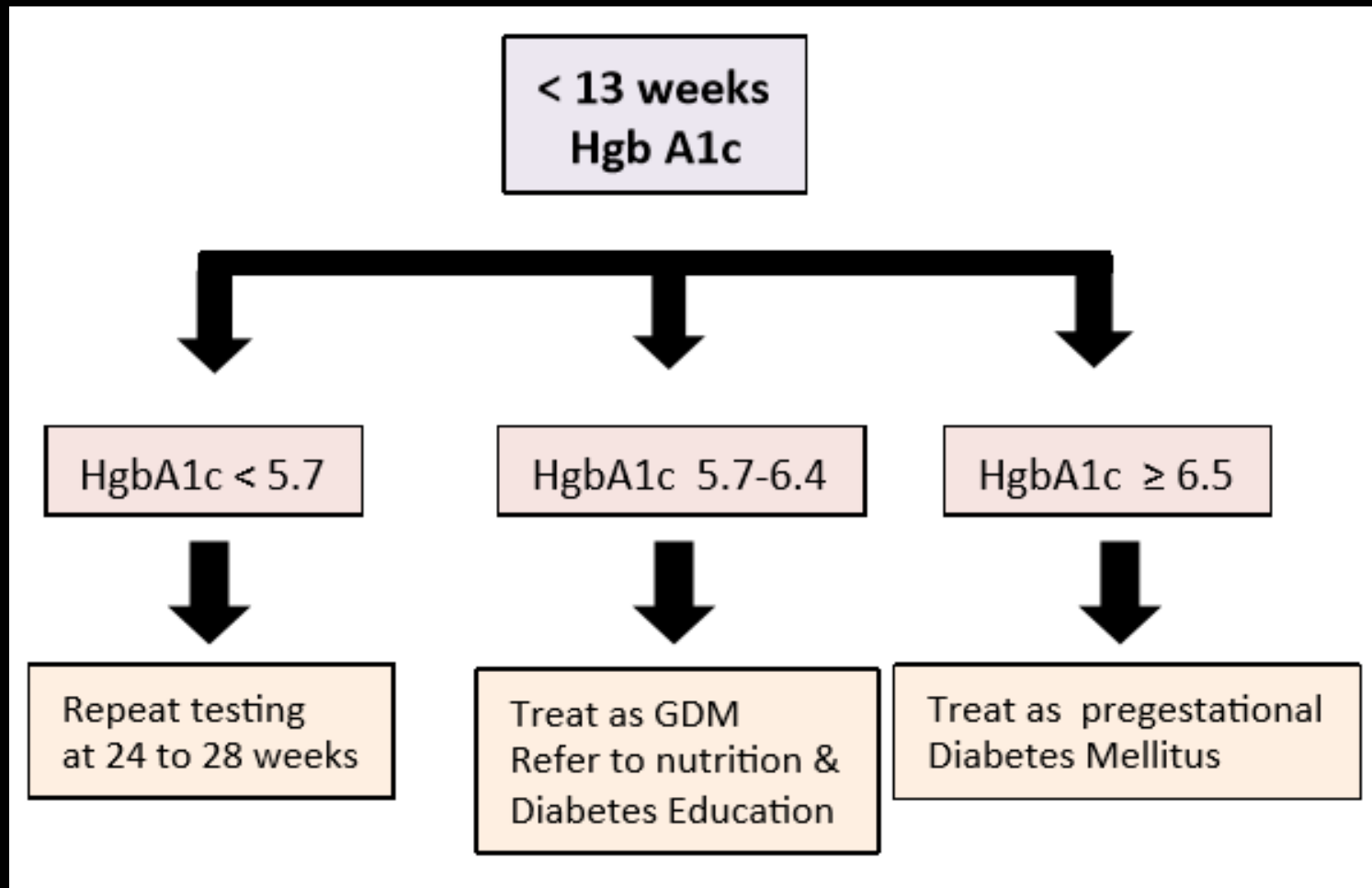
BMI >25 *and* one of the following:

- Physical inactivity
- 1st degree relative w DM
- High-risk ethnicity
- Prior birth $>9\text{lbs}$ ($>4000\text{g}$)
- h/o GDM
- BP $>140/90$, or h/o HTN
- HDL <35 or Trig >250
- PCOS
- History of cardiovascular disease
- Previous A1c $>5.7\%$, impaired glucose tolerance, or impaired fasting glucose
- Other clinical conditions associated with insulin resistance (prepregnancy BMI >40 , acanthosis nigricans)

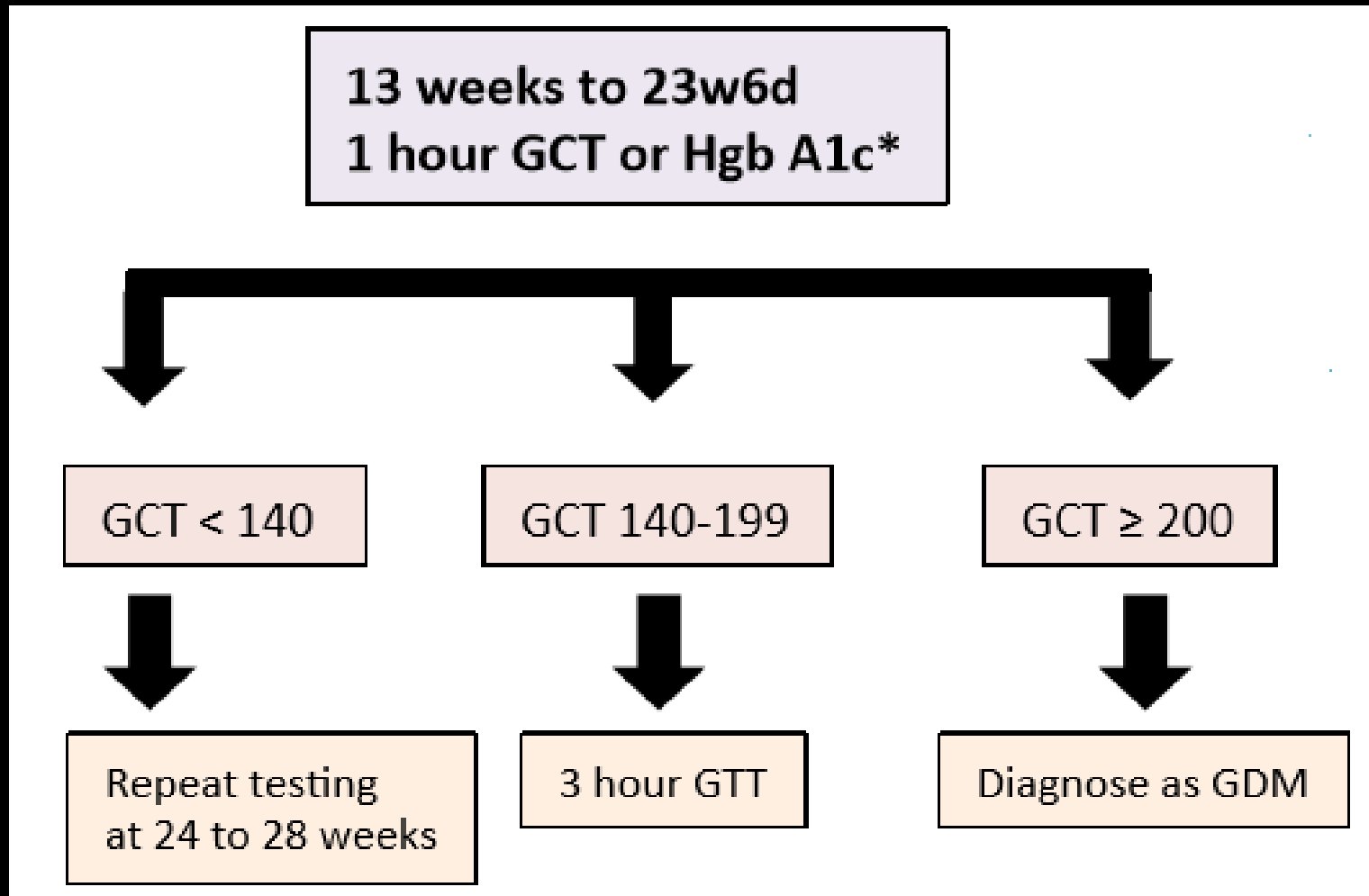
University MFM Policy

Test everyone

Early Screening <13w

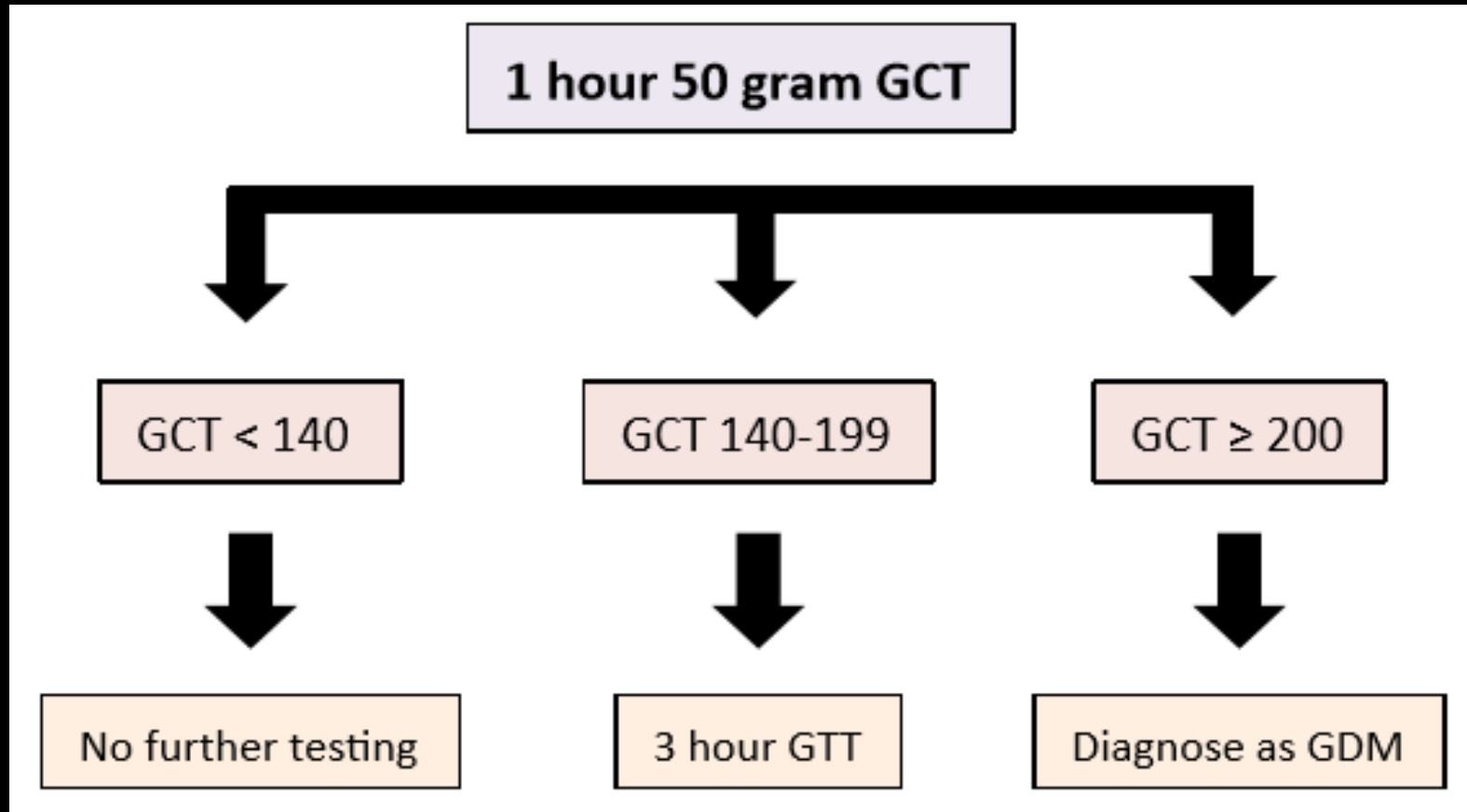


Early Screening >13w



*Hgb A1c less reliable in 2nd/3rd TM due to increased red blood cell turnover

Universal Screening at 24-28w



Diagnostic Testing

3 hour GTT

Hour	Carpenter-Coustan	NDDG
0	95 mg/dl	105 mg/dl
1	180 mg/dl	190 mg/dl
2	155 mg/dl	165 mg/dl
3	140 mg/dl	145 mg/dl

My patient has GDM

What now?

A two week trial

- Surveillance + Diet + Exercise
 - Dietician or comparable
 - F and PP glucose readings (1hr or 2hr)
 - Goals:
 - F < 95, 1h < 140, 2h < 120
 - 150 min activity per week
 - **Weekly check-in** on logs, compliance
 - Referral if **$\geq 2/7$ abnormal x 2 weeks**

Treat Promptly

The *proven* benefit of treatment
reducing excessive fetal growth

Gestational Diabetes Effect of Treatment

Outcome	Treated (N=485)	Routine Care (N=473)	P value
Birthweight	3,302 ± 502	3,408 ± 589	<0.001
LGA	34 (7.1%)	66 (14.5%)	<0.001
Macrosomia	28 (5.9%)	65 (14.3%)	<0.001
Fat Mass (g)	427 ± 198	464 ± 222	<0.003

Landon et al, N Engl J Med 2009; 361:1339

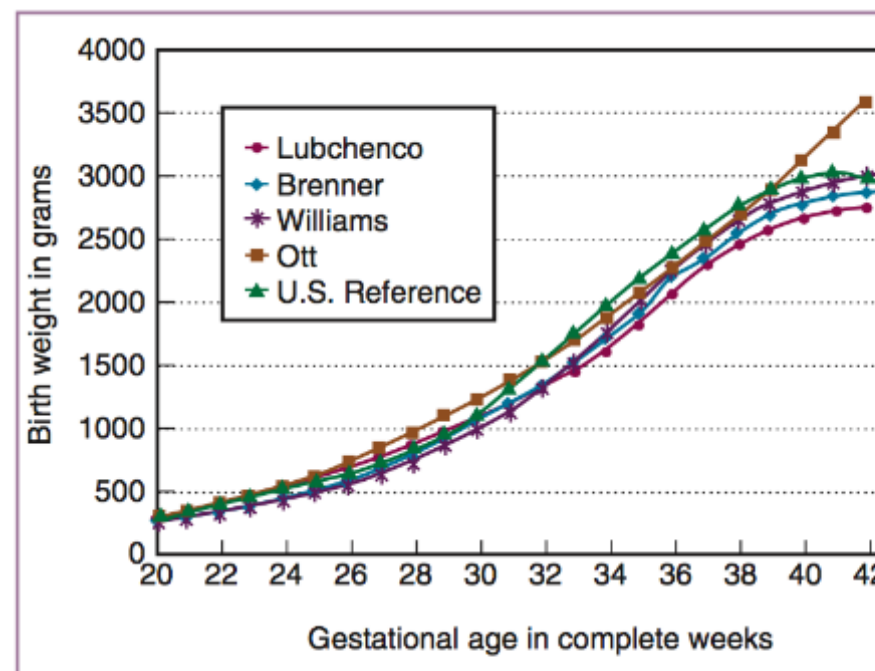


Figure 47-1 Fetal weight as a function of gestational age, selected references. (From Alexander GR, Himes JH, Kaufman RB, et al: A United States national reference for fetal growth, *Obstet Gynecol* 87:167, 1996. Reprinted with permission from the American College of Obstetricians and Gynecologists.)

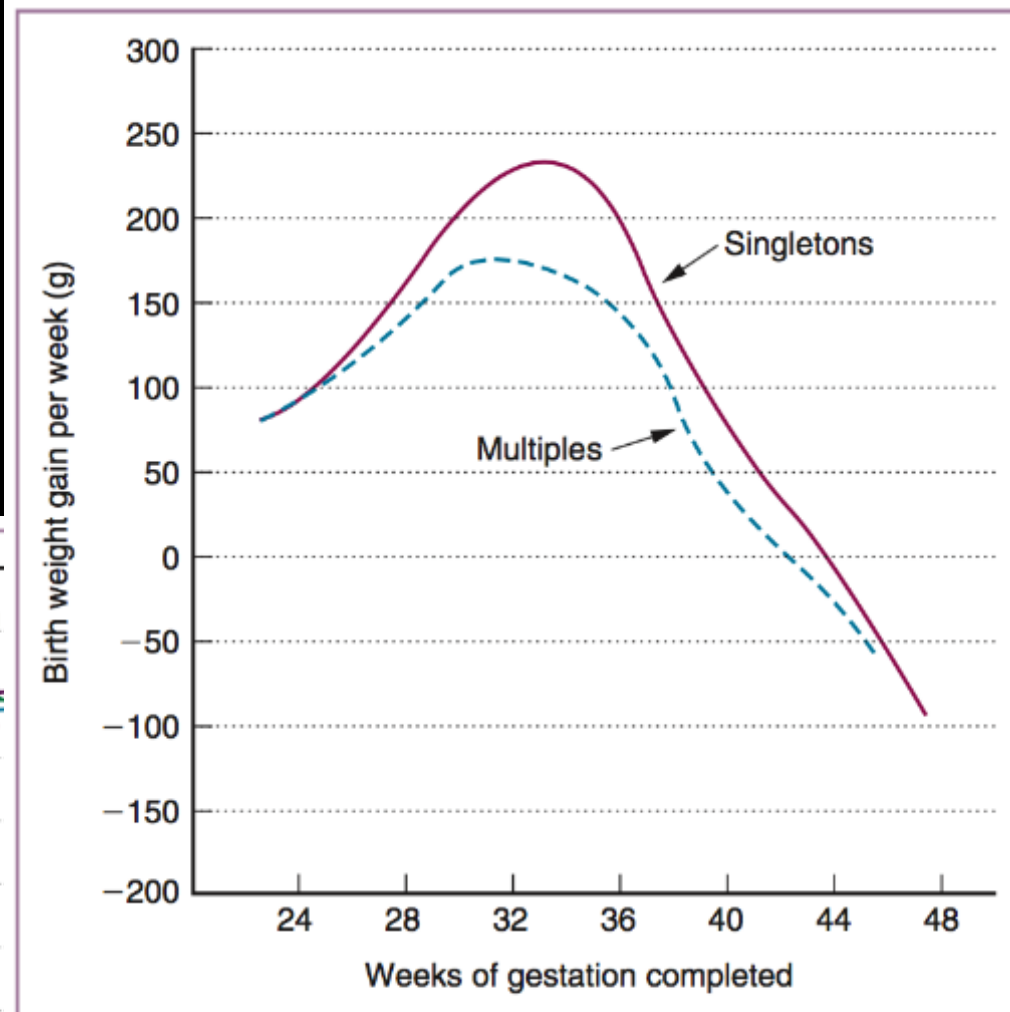
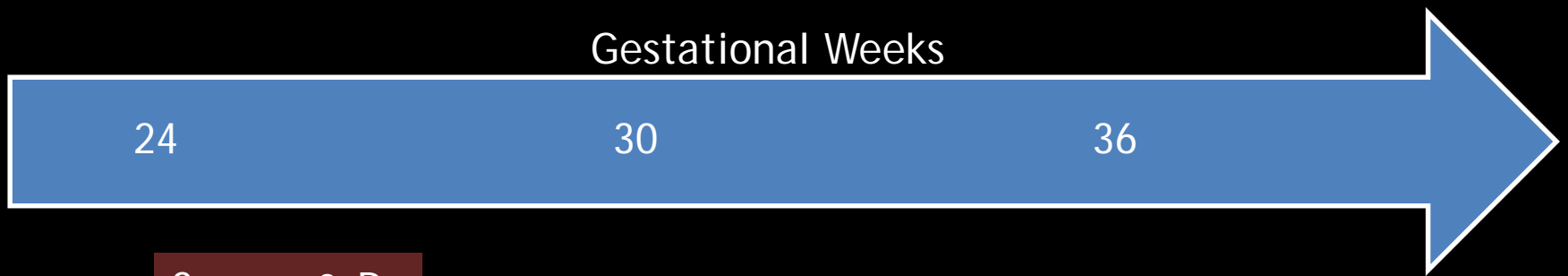


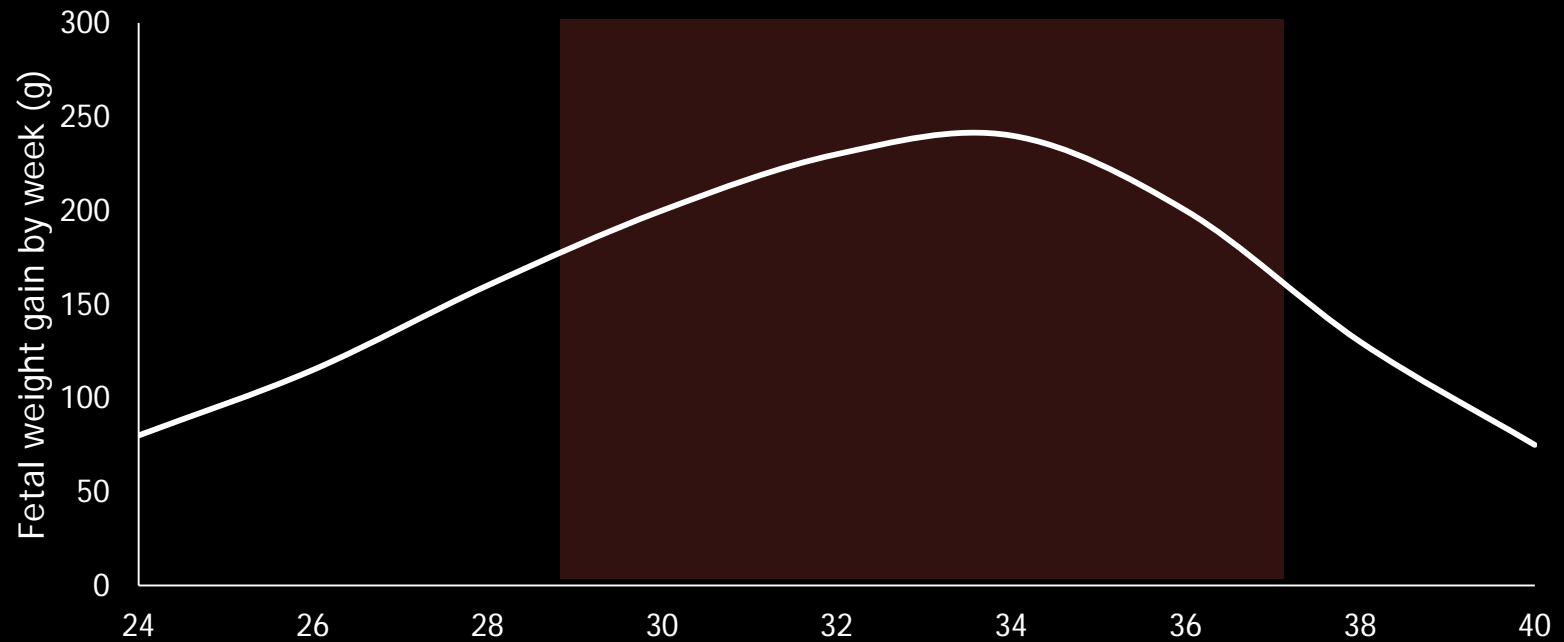
Figure 47-3 Median growth rate curves for single and multiple births in California, 1970-1976. (From Williams RL, Creasy RK, Cunningham GC, et al: *Fetal growth and perinatal viability in California*, *Obstet Gynecol* 59:624, 1982. Reprinted with permission from the American College of Obstetricians and Gynecologists.)

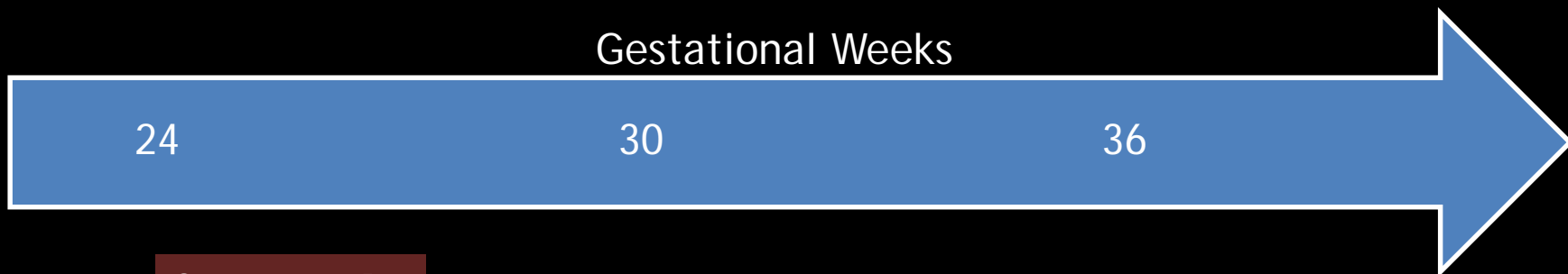


Screen & Dx

Trial of Diet

Treatment if failed Diet

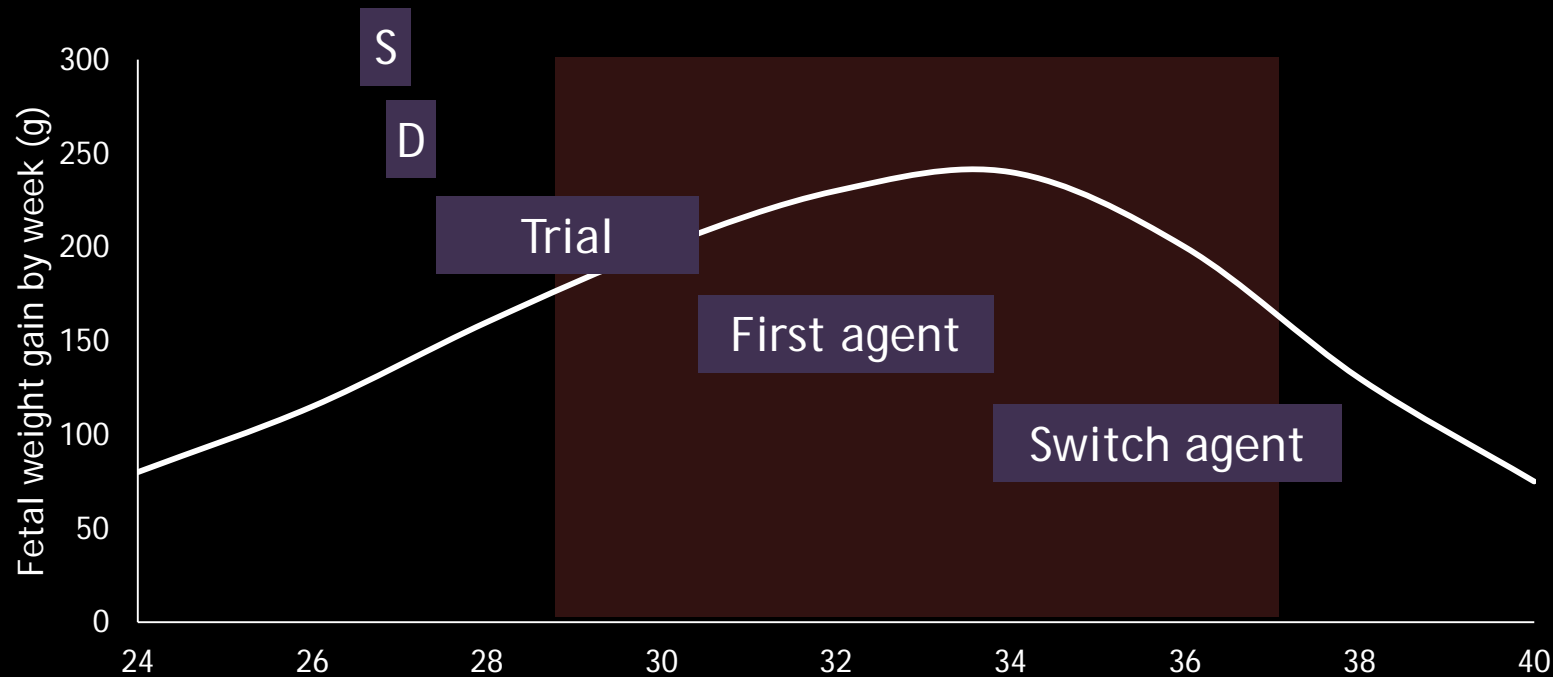


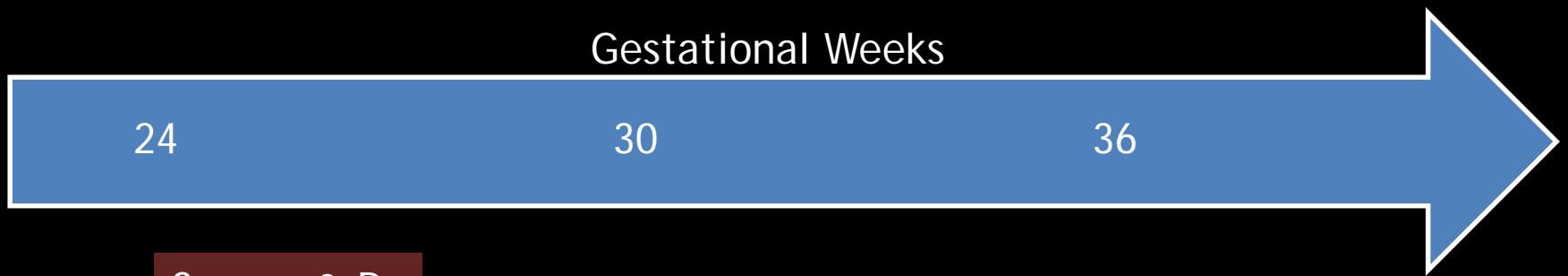


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Trial of Diet

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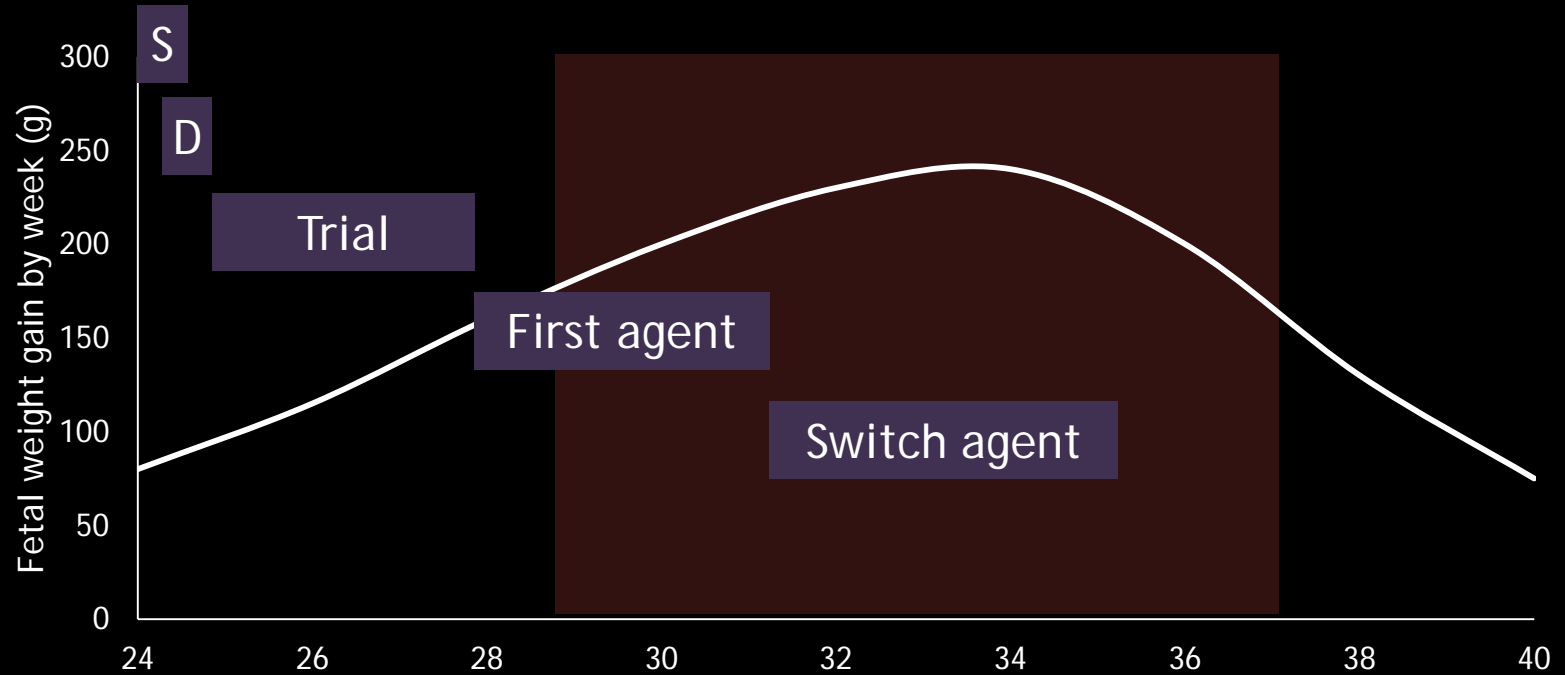




Screen & Dx

Trial of Diet

Treatment if failed Diet



Treat Appropriately

...when 2 week “trial” fails

1. Initiate first-line treatment (Level A)
2. Consider prompt referral to MFM

First-line GDM Treatment

Agent	Short-term Effectiveness	Long-term Safety
Insulin: <ul style="list-style-type: none">+ does not cross placenta- requires injections	+++	+
Metformin: <ul style="list-style-type: none">- crosses placenta+ no injections	+++	?
Glyburide: <ul style="list-style-type: none">- crosses placenta+ no injections, daily dosing	+	???

Why not Glyburide?

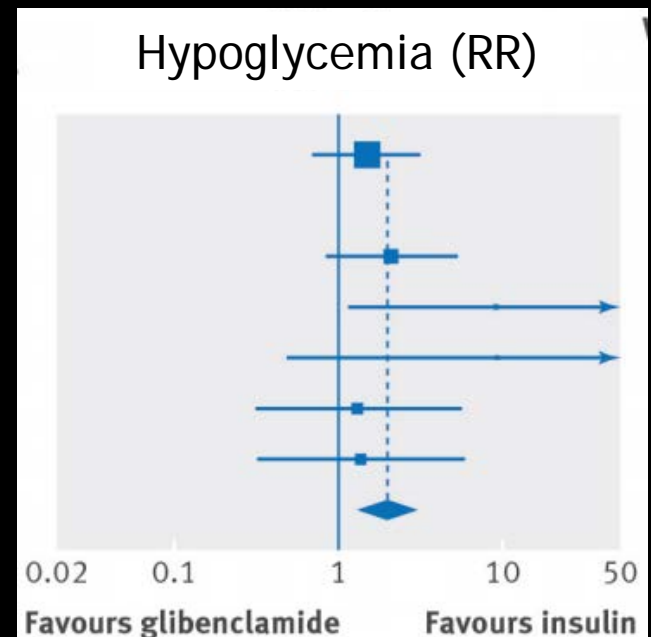
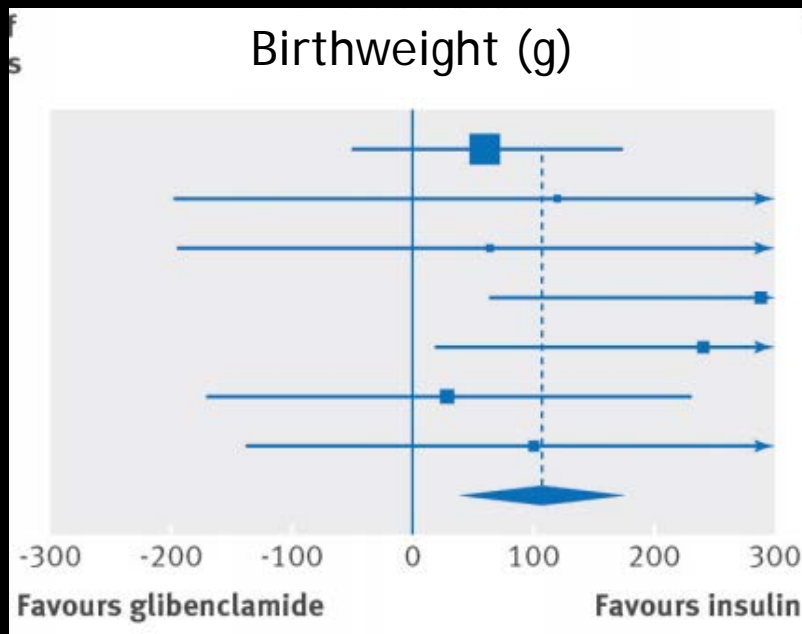
Worse neonatal outcomes in 2 meta-analyses

(Balsells. BMJ 2015. Poolsup PLoS One 2014.)

- Macrosomia RR 2.62
- Hypoglycemia RR 2.04

Glycemic control
not better.

Trend toward more
severe hypoglycemia



Treat Appropriately

...when 2 week “trial” fails

1. Initiate first-line treatment (Level A)

First line: Insulin

Second line: Metformin

Not rec'd: *Glyburide*

2. Consider prompt referral to MFM

Take-Home Points

- GDM screening and diagnosis can be confusing: standardize and simplify for your practice
- Don't miss the opportunity to diagnose early or pre-existing diabetes
- Prompt, appropriate treatment is key - consider metformin and insulin instead of glyburide