2-hour GTT). Data regarding GDM types A1 and A2, birthweight (BW), and ponderal index (PI) were abstracted.

RESULTS: A total of 120 patients were diagnosed with GDM during the study period. Sixty-three (53%) had T1 screening: 23 had elevated HbA1c alone, 9 had elevated FPG alone, 11 had both HbA1c and FPG elevated, and 20 had normal HbA1c and FPG and a subsequently abnormal 2-hour GTT. Fifty-seven (47%) patients were diagnosed using traditional T3 two-step screening. There were no significant differences between T1 or T3 screening groups or within T1 diagnostic subgroups with respect to GDM type (A1 vs. A2), BW, or PI (table).

CONCLUSION: GDM diagnosed with T1 HbA1c, FPG, both HbA1c and FPG, or 2-hour GTT results in similar ratios of subtypes (A1 vs A2) as traditional T3 screening. A prospective study is needed to accurately ascertain whether earlier diagnosis of GDM leads to improved neonatal outcomes.

Gestational diabetes outcomes based on mode of diagnosis

	Diagnosed by A1c (N=23)	Diagnosed by FPG (N=9)	Diagnosed by Both HbA1c and FPG (N=11)	Diagnosed by 2-h GTT (N=20)	Diagnosed by 3-h GTT (N=57)	P-Value
GDMA2 # (%)	14 (61)	6 (67)	7 (64)	9 (45)	24 (42)	0.158
Birthweight (g)*	3045± 862	3648 ± 524	2981 ± 776	3284 ± 366	3313 ± 476	0.190
Ponderal Index (kg/m3)*	2.5 ± 0.35	2.62+ 0.31	2.40 ± 0.23	2.48 ± 0.32	2.59 ± 0.36	0.705

*Mean ± SD.

260 The incidence of hypoglycemic episodes in pregnant women with type 1 diabetes using insulin injections versus insulin pump

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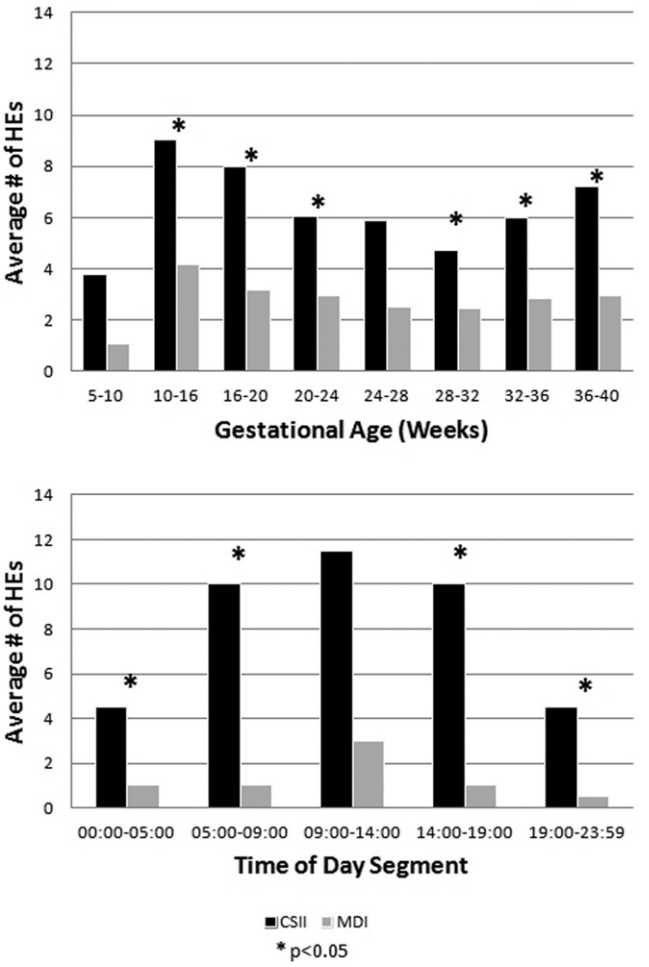
OBJECTIVE: Hypoglycemic episodes (HE) (plasma glucose <60 mg/dL) are not infrequent in patients with Type 1 diabetes mellitus (T1DM) and can lead to morbidity. Our objective was to compare the incidence of HE across gestation and at different times throughout the day between those using multiple daily injections (MDI) or continuous subcutaneous insulin infusion pumps (CSII) for glycemic control.

STUDY DESIGN: This was a retrospective cohort of singleton pregnancies with T1DM from 2007-2010 managed with MDI or CSII. The primary outcome was the total number of HE occurring during gestation in those using MDI as compared with CSII. Secondary outcomes included frequency of HE occurring in 4-6 week gestational age (GA) blocks and during specified time segments throughout the day. BMI, total daily insulin dose per kilogram body weight (TDI), HbA1c and neonatal outcomes were abstracted.

RESULTS: Thirty-five women with T1DM were identified. BMI, TDI, birthweight, GA at delivery, and preconception HbA1c did not differ significantly between MDI and CSII groups. However first (T1) and third trimester (T3) HbA1c were lower with CSII use (T1:MDI 7.0%, CSII 6.2%, p=0.044; T3: MDI 6.5%, CSII 6.2%, p=0.03). The number of HE during gestation in the CSII group was significantly higher (median (25%, 75%); 41 (13, 65) vs. 7 (1, 26), p=0.007). In nearly every GA block and time of day segment, HE were significantly higher with CSII than MDI (Figure). Although mode of insulin administration was the strongest independent predictor of HE, multivariable linear regression controlling for first trimester HbA1c showed no significant difference between MDI and CSII use.

CONCLUSION: Patients using CSII were significantly better controlled during pregnancy than those using MDI but consistently experienced more HE. This trade-off between glucose control and HE must be balanced. Patients with T1DM should be informed regarding occurrence of HE and specifically the importance of having readily available emergency HE therapy.

Figure



Average number of hypoglycemic episodes (HEs) by gestational age (*top*) and by time of day segment (*bottom*).

261 Cord serum C peptide levels in large-for-gestational age infants in diabetic and non-diabetic mothers

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OBJECTIVE: It is hypothesized that diabetic macrosomia is different from non-diabetic macrosomia in terms of fetal metabolic conditions. However, there are few useful clinical markers to distinguish diabetic and non-diabetic macrosomia. The aim of the study was to determine whether cord serum C peptide (CPR) is a useful marker in term large-for-gestational age (LGA) infants.

STUDY DESIGN: In this prospective study, we measured cord serum CPR concentration in singletone term LGA infants of diabetic and non-diabetic mothers. We included both pregestational diabetes and gestational diabetes (GDM) in the diabetic group. We used the Japanese birthweight standard curve to define LGA infants. We compared cord CPR levels between the diabetic and the nondiabetic groups. We also tested the difference between the groups after adjusting for confounding variables including prepregnancy body mass index (BMI), gestational age (GA) at delivery, and birthweight standard deviation (BWSD).

RESULTS: We included 97 LGA infants, in which 25 and 72 infants were born from diabetic and non-diabetic mothers, respectively. Cord

CPR levels were significantly higher in the diabetic infants than in the non-diabetic infants ($p < .01$) (Table). The higher CPR levels were, the more likely infants were diabetic, with an adjusted odds ratio (OR) of 2.73 per 1 ng/ml (95% confidence interval [CI], 1.37-5.44). If CPR>2.0 ng/ml, adjusted OR for diabetic macrosomia was 7.06 (95% CI, 2.02-24.67).

CONCLUSION: Our findings suggest that, in term singleton LGA infants, cord serum CPR is a useful marker of diabetic macrosomia, being distinguishable from non-diabetic macrosomia.

Cord serum CPR levels in diabetic and non-diabetic infants

	Diabetic infants (n=25)	Non-diabetic infants (n=72)	P value
GA at birth (wk)	39.3±0.9	39.8±1.3	ns
BW (g)	3,863±235	3,781±265	ns
BWSD	2.9±0.8	2.4±0.7	< .01
Cord CPR (ng/ml)	1.75±0.07	1.18±0.61	< .01

BW, birthweight; *BWSD*, birthweight standard deviation; *GA*, gestational age.

262 Risk factors associated with postpartum impaired glucose tolerance at the first postpartum screening in women with gestational diabetes

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OBJECTIVE: Gestational diabetes mellitus (GDM) is associated with much increased risk of developing diabetes later on in life. The purpose of this study was to identify risk factors associated with abnormal glucose tolerance (AGT) at the first postpartum 75g oral glucose tolerance test (OGTT) in women with GDM in their index pregnancies.

STUDY DESIGN: We included women with GDM who had the first postpartum OGTT at 6-8 week postpartum. Women with overt diabetes in pregnancy were excluded. We investigated the association between abnormal OGTT results in the first glucose screening at 6-8 weeks postpartum and maternal risk factors including age, prepregnancy body mass index (BMI), insulin therapy in pregnancy, plasma glucose (PG) levels, HbA1c, fasting immunoreactive insulin (IRI), and insulinogenic index ($II = \Delta IRI[30\text{-min}]/\Delta PG[30\text{-min}]$) at the time of OGTT during pregnancy. We defined impaired glucose tolerance and diabetes by using WHO criteria as postpartum AGT. We tested the association between the risk factors and AGT by using logistic regression analysis.

RESULTS: We included 168 women with GDM, to whom we examined OGTT at 6.9±1.5 weeks postpartum. Fifty-seven women (34%) showed postpartum AGT. In univariate analysis, 1-hour PG at OGTT ($p<0.005$), HbA1c ($p<0.0005$), II ($p<0.02$), and insulin therapy ($p<0.001$) were associated with postpartum AGT. Among them, II ($p<0.05$) and insulin therapy ($p<0.0001$) were independent risk factors of postpartum AGT after adjusting for maternal age, prepregnancy BMI, gestational age, and PG levels at OGTT during pregnancy. Adjusted odds ratios for postpartum AGT in women with II<0.4 and women with insulin therapy were 5.6 (95% confidence interval, 1.56-20.39) and 3.43 (1.03-12.6), respectively.

CONCLUSION: In women with GDM, lower II, as a marker of early phase of insulin secretion during OGTT, and insulin therapy during pregnancy are independent risk factors of AGT at 6-8 weeks postpartum.

263 Glycemic control in gestational diabetes: it's all a matter of timing

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OBJECTIVE: For patients with gestational diabetes (GDM), achieving glycemic control (GC) earlier in pregnancy is presumably associated with improved maternal and neonatal outcome. We sought to determine if the gestational age (GA) at which good GC is achieved affects outcome regardless of the method used to diagnose GDM.

STUDY DESIGN: A retrospective cohort study was performed by reviewing the charts of all patients with GDM enrolled in our Diabetes in Pregnancy Program from January 2009-May 2012. Before 10/2010, the 2-step method was used, with a 50-gm OGCT followed by a 100-gm OGTT. From 10/2010, the 75-gm OGTT 1-step method was used, as recommended by the American Diabetes Association. Exclusion criteria included: <18 years of age and initial GDM screening or testing <24 weeks or ≥34 weeks gestation. Good GC was defined as a mean glucose ≤100mg/dL over a 2 week period. Failure to achieve GC with diet modification was followed by medical therapy. Patients were analyzed based on the GA at which good GC was achieved regardless of the diagnostic method used. Patients who achieved good GC by 28, 30, 32, 34 and 36 weeks were compared to those who achieved GC later. Statistical analysis included Chi square and Student's t-test.

RESULTS: The study included 566 patients: 323 were diagnosed by the 2-step method and 234 by the 1-step method. At each GA, regardless of the diagnostic method used, achieving good GC was associated with earlier diagnosis, earlier enrollment in the diabetes program, earlier initiation and lower doses of medications, lower mean glucose, and lower BMI, compared to patients who achieved good GC at a later gestational age. Achieving good GC prior to 32 weeks was also associated with less LGA. The table compares patients who achieved GC before and after 30 and 32 weeks.

CONCLUSION: The method of diagnosing GDM appears to be less significant than reaching good GC as early in pregnancy as possible. Both the 1-step and 2-step methods are acceptable diagnostic tools providing they lead to timely intervention.

	Glycemic Control < 30 wks	Glycemic Control ≥ 30 wks	p
BMI (Kg/m^2)	23.53 ± 4.2	25.19 ± 5.5	<0.001
GA at GTT (weeks)	25.50 ± 0.9	27.57 ± 2.01	<0.001
GA at diabetes program entry (weeks)	27.11 ± 1.1	29.76 ± 2.4	<0.001
GA at glyburide start (weeks)	30.32 ± 2.3	31.85 ± 2.7	<0.05
Final glyburide dose (mg)	3.07 ± 1.6	6.11 ± 4.9	<0.001
GA at insulin start (weeks)	29.78 ± 2.5	32.83 ± 2.5	0.0823
Mean glucose (mg/dL)	91.45 ± 4.6	96.90 ± 8.1	<0.001
	Glycemic control < 32 weeks	Glycemic control ≥ 32 weeks	p
BMI (Kg/m^2)	23.58 ± 4.4	25.75 ± 5.7	<0.001
GA at GTT (weeks)	26.28 ± 1.3	27.84 ± 2.3	<0.001
GA at diabetes program entry (weeks)	28.14 ± 1.6	30.08 ± 2.5	<0.001
GA at glyburide start (weeks)	31.33 ± 2.67	31.18 ± 2.7	0.2673
Final glyburide dose (mg)	3.10 ± 1.8	6.60 ± 5.0	<0.001
GA at insulin start (weeks)	29.68 ± 2.2	32.94 ± 2.5	<0.05
Final insulin dose (units/Kg)	31.60 ± 27.4	66.09 ± 54.7	0.05
Mean glucose (mg/dL)	91.52 ± 4.8	98.79 ± 8.2	<0.001

Data presented as mean ± SD.

264 The one-step method for screening and diagnosis of gestational diabetes: is it really better?

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OBJECTIVE: There is a lack of consensus regarding the optimal method to diagnose gestational diabetes (GDM). The goal of this study was to test the hypothesis that the 1-step method for the diagnosis of GDM