

Diabetes in Pregnancy

MICHIGAN MEDICAID

Delivery Event Indicators

This data brief measures the impact of diabetes during pregnancy among women enrolled in Michigan Medicaid programs. This analysis focuses exclusively on the delivery event; quantifying the experiences for about half of all labor and delivery events in Michigan.

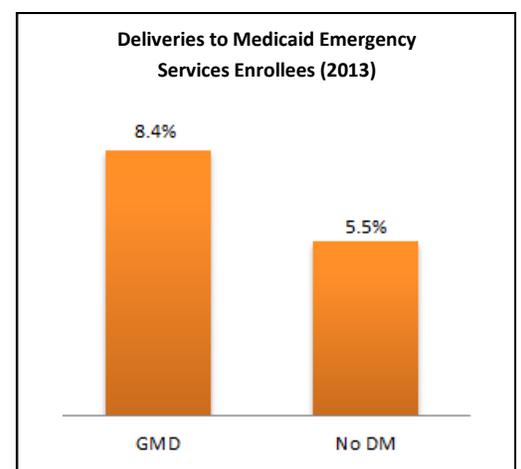
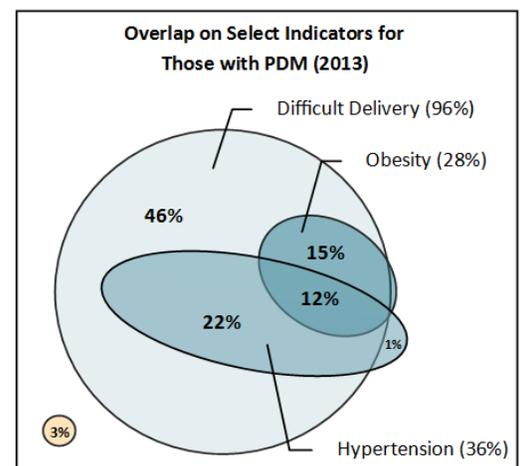
Twenty indicators are now available. Delivery outcomes and comorbidities indicated at time of delivery were calculated for those with preexisting diabetes mellitus (PDM), gestational diabetes mellitus (GDM), and those without diabetes mellitus (No DM). Diagnosis, billing, and enrollment codes from 2008 to 2013 were extracted from the Michigan Medicaid Data Warehouse. A common-use dataset containing these indicators by age, race, and diabetes status has been built.

The need to inform intervention activities is of growing importance. The prevalence of diabetes among women of childbearing potential (18-44 years) in Michigan Medicaid increased 6.4% between 2007 and 2012. This increase is of particular public health concern since deliveries to women with preexisting diabetes result in longer hospital stays at higher levels of care, have a higher rate of adverse delivery outcomes, and are more likely to have other chronic conditions when compared to deliveries to women without diabetes.

Among women with preexisting diabetes in Michigan Medicaid, 96% had a difficult vaginal delivery or Cesarean section; 36% had hypertension; and 28% were indicated as obese. Twelve percent of these women had both hypertension and obesity along with a difficult delivery. Three percent did not have any of these issues.

Education and prevention are key. While about half of all women who have had gestational diabetes develop type 2 diabetes later in life, 5% to 10% are diagnosed immediately after pregnancy.¹ Michigan residents have access to evidence-based programs such as MDCH certified Diabetes Self-Management Education Programs for those with diabetes and CDC recognized Diabetes Prevention Programs for those at high-risk of developing diabetes. These lifestyle change programs include content on reducing diabetes risk, building social support, and managing chronic conditions.

When compared to those without diabetes, women with gestational diabetes were 65% more likely to be enrolled in Medicaid Emergency Services vs. Traditional Medicaid at time of delivery. This raises concerns regarding prenatal care for this high-risk group.



This analysis focuses exclusively on the delivery event; drawing attention to the most important point during any pregnancy. The methodology can be used to answer other critical pre- and post-natal care questions for women in Michigan Medicaid. For example:

- ◇ Are women with gestational diabetes receiving postpartum diabetes testing and prevention education?
- ◇ How does the gestational week of Medicaid enrollment affect preventative measures such as screenings, prenatal visits, or specialty care?
- ◇ Are there differences in prenatal care (Kotelchuck score) for those with and without diabetes during pregnancy; particularly deliveries paid for by Medicaid Emergency Services or those with overlapping comorbidities?

Risk Factors by Maternal Diabetes Status, Live Birth Deliveries, Michigan Medicaid, 2013

	PDM (n=434)	GDM (n=2608)	No DM (n=50808)
Prevalence	0.9	4.8	94.3
Delivery Type			
Cesarean Section (%)	64.3	41.7	30.3
Complicated Vaginal Delivery (%)	31.4	12.7	9.7
Uncomplicated Vaginal Delivery (%)	4.3	45.6	59.9
Hospital Variables			
Average Length of Stay (days)	3.9	2.9	2.4
Intensive/Cardiac Care Unit (%)	2.3	0.9	0.9
Medicaid: Emergency Services (%)	4.5	8.4	5.5
Comorbidities Indicated at Time of Delivery			
Obesity (%)	27.7	16.6	5.0
Hypertension ^a (%)	35.5	10.6	6.8
Mental Health Issue (%)	17.6	10.8	9.5
Previous Cesarean Section (%)	34.1	17.5	15.6
Maternal Indicators			
Anemia During Pregnancy (%)	16.9	13.4	12.7
Infection ^b (%)	13.6	6.5	6.6
Trauma to Perineum and Vulva (%)	13.0	19.1	27.7
Polyhydramnios or Other Amniotic Cavity Problems ^c (%)	16.7	9.9	10.0
Fetopelvic Problems (%)	6.8	5.1	3.2
Nausea and Vomiting (%)	1.4	0.3	0.2

^aIncludes (a) essential hypertension; (b) hypertension with complications & secondary hypertension, & (c) hypertension complicating pregnancy; childbirth & the puerperium.

^bIncludes (a) urinary track infections; (b) bacterial infections; (c) other infections, including parasitic; (d) viral infection; (e) infections of genitourinary tract during pregnancy; and (f) infectious/parasitic complications in mother affecting pregnancy.

^cIncludes (a) premature rupture of membranes; (b) Infections of amniotic cavity; and (c) other problems of amniotic cavity.

Gestational Diabetes

— vs —

No Diabetes

20% to 40% higher rate of Cesarean Section or a complicated vaginal delivery.

More than 50% higher rate of fetopelvic disproportion or obstruction; excessive nausea and vomiting; hypertension; or obesity indicated at time of delivery.

Preexisting Diabetes

— vs —

No Diabetes

100% to 200% higher rate of Cesarean Section or a complicated vaginal delivery; infections; fetopelvic disproportion or obstruction; previous Cesarean Section; or a mental disorder listed at time of delivery.

400% to 600% higher rate of excessive nausea and vomiting; previous Cesarean Section; hypertension; or obesity indicated at time of delivery.

Methods and References

Maternal hospitalizations were defined using the HEDIS General Hospital/Acute Care Utilization measure. **Live birth deliveries** were identified by discharges having a Diagnosis-Related Group code of 768–774 (vaginal deliver with complication), 767–775 (vaginal delivery without complication) or 765–766 (C-section). Analysis restricted to women age 15–44. **Preexisting Diabetes Mellitus (PDM)** defined as any mention of ICD-9-CM=250 on the labor & delivery claim. **Gestational Diabetes Mellitus (GDM)** defined as any mention of ICD-9-CM= 648.8 on the labor & delivery claim. All comorbidities define as ICD-9 codes listed on the delivery event, grouped using AHRQ Clinical Classification Software. This approach likely undercounts the true prevalence. A future direction would be to link Medicaid claims to the Live Birth File which, for example, indicates an obesity rate of 29% for a similar study population.

¹Center for Disease Control and Prevention: National Diabetes Statistics Report. Atlanta, GA: U.S. Department of Health and Human Services, 2014 (Available at <http://www.cdc.gov/diabetes/pubs/statsreport14/national-diabetes-report-web.pdf>).

Fact Sheet Available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_2980_3168-272544--00.html.

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