Postpartum and Ongoing Care

The proportion of women diagnosed with prediabetes or T2DM after a postpartum visit varies dramatically. Factors affecting this variance include individual patient risk factors, type and sensitivity of glucose screening tests utilized, small sample size, and the low rate of glucose testing during recommended timeframes. While some studies identify this type of information, individual risk and timeframes are often reported together and reflect a large variability in the proportion of women diagnosed.

Table 8. Proportion of women with gestational diabetes who develop prediabetes or type 2 diabetes at postpartum visit, and various time points after pregnancy

	Condition	
	Prediabetes	**Type 2 Diabetes**
At post-partum visit	38% identified with either T2DM or pre-diabetes[1]	
	42.2%	1.5%[2]
After 3 years	n/a	6.0 - 13.6%[3] 7.6%[4]
Within 5 years	n/a	25.0 - 48.6%[5] 47% of Latin American women[6]
Within 10 years	n/a	20%[7]
After follow up at 10, 20, 30, 40 & 50 years respectively	n/a	19.72%, 29.36%, 39.00%, 48.64%, 58.27%[8]
6 weeks to 26 years postpartum	n/a	2.6 - 70%[9]
Within past 3 years[A]	24.4%	6.5%[10]
A 2020 systematic review and meta-analysis found a nearly **10-fold higher risk** of developing T2DM in women with a history of GDM than those with a normoglycemic pregnancy.[11]		

Note:
[A]This study identified women with a history of GDM that self-reported a T2DM screen within the past 3 years resulting in a normal glycemic status, but had undiagnosed pre-diabetes or T2DM upon repeat testing.

This table was previously labeled Table 9 in the 2019 Gestational Diabetes in Ohio Data Book.

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Gestational Diabetes in Ohio, 2008-2019

In Ohio, self-reported postpartum visit rates were between 90.9 and 94.8 percent among women with GDM in 2016-2019. Non-Hispanic Black women were less likely than non-Hispanic White women to report completing a postpartum visit. In 2019, women with a GDM-affected pregnancy from a metro county type were least likely to self-report attending a postpartum visit.

Table 9. Prevalence of self-reported postpartum visit completion, Ohio, 2016-2019. Source: Ohio Pregnancy Assessment Survey (OPAS)

	2016		2017		2018		2019	
	% With GDM	% W/out GDM	% With GDM	% W/out GDM	% With GDM	% W/out GDM	% With GDM	% W/out GDM
Overall % (n)[a] [95% CI]	**94.8** (275) [90.2-99.3]	**91.7** (3087) [89.9-93.5]	**94.1** (535) [90.4 - 96.5]	**91.1** (4807) [89.9 - 92.3]	90.9 (660) [85.9 - 94.3]	91.2 (6154) [89.9 - 92.4]	92.2 (440) [87.1 - 95.4]	92.9 (3899) [91.6-94.0]
Age (years)	~	~	ns	ns	ns	ns	ns	ns
<18	—	—	—	—	—	—	—	—
18-24	83.4 [64.7-100.0]	90.3 [86.2 - 94.4]	92.2 [76.4 - 97.7]	87.6 [84.4 - 90.2]	96.5 [78.8 - 99.5]	87.7 [84.1 - 90.6]	82.0 [54.8 - 94.4]	90.3 [86.9 - 92.-9]
25 - 34	98.1 [95.8-100.0]	93.2 [91.2 - 95.2]	93.7 [88.4 - 96.7]	92.8 [91.3 - 94.1]	90.0 [82.4 - 94.5]	92.9 [91.4 - 94.2]	95.4 [91.3 - 97.6]	94.0 [92.4 - 95.3]
35-44	97.4 [93.8-100.0]	89.5 [84.2 - 94.8]	96.7 [92.2 - 98.7]	92.8 [89.8 - 94.9]	90.0 [81.2-95.0]	91.5 [87.9-94.2]	87.6 [70.9-95.4]	94.1 [90.3-96.5]
45+	—	—	—	—	—	—	—	—
Race/Ethnicity	~	~	~	~	^	^	^	^
Non-Hispanic White	96.9 [93.0-100.0]	92.6 [90.5 - 94.8]	94.3 [89.1 - 97.1]	91.9 [90.3 - 93.2]	92.6 [86.1 - 96.2]	92.4 [90.7 - 93.8]	94.1 [86.9 - 97.4]	93.9 [92.3 - 95.2]
Non-Hispanic Black	83.2 [64.5-100.0]	87.8 [83.3 - 92.3]	91.4 [77.6 - 97.0]	88.6 [85.4 - 91.2]	85.8 [73.9 - 92.8]	86.6 [83.5 - 89.2]	85.1 [73.0 - 92.3]	88.9 [85.6 - 91.6]
Hispanic	—	88.9 [79.5 - 98.4]	97.0 [92.2 - 98.9]	87.8 [81.3 - 92.2]	89.6 [53.3 - 98.4]	88.5 [82.3 - 92.8]	84.2 [50.0 - 96.6]	90.2 [82.7 - 94.6]
Other	—	94.5 [88.8 -100.0]	95.5 [86.0 - 98.6]	94.1 [89.1 - 96.9]	90.3 [59.0 - 98.3]	93.8 [90.1 - 96.2]	98.9 [95.3 - 99.7]	96.5 [91.2 - 98.6]
Marital Status - ns								
Married	97.1 [94.5-99.7]	95.1 [93.5 - 96.7]	94.6 [89.7 - 97.2]	93.9 [92.6 - 95.0]	90.0 [82.5 - 94.5]	94.0 [92.7 - 95.2]	94.2 [87.8 - 97.4]	95.1 [93.7 - 96.3]
Unmarried	91.7 [81.7-100.0]	87.6 [84.1 - 91.1]	93.6 [86.4 - 97.1]	87.8 [85.4 - 89.8]	92.3 [84.8 - 96,2]	87.8 [85.3 - 90.0]	88.8 [78.5 - 94.6]	90.3 [87.9 - 92.3]
Education	~	~	*	*	ns	ns	ns	ns
Less than High School	—	79.4 [70.3 - 88.5]	87.6 [67.8 - 95.9]	76.7 [70.6 - 81.9]	90.0 [70.5 - 97.1]	79.6 [72.9 - 85.0]	88.9 [67.1 - 96.9]	84.2 [77.8 - 89.1]
High School grad	84.1 [67.5-100.0]	87.7 [82.7 - 92.8]	94.3 [84.6 - 98.0]	89.7 [86.6 - 92.1]	86.9 [74.6 - 93.8]	87.3 [83.7 - 90.2]	87.8 [73.2 - 95.0]	89.8 [86.6 - 92.3]
Some college	99.2 [97.6-100.0]	92.1 [89.0 - 95.3]	91.9 [80.2 - 97.0]	90.0 [86.7 - 92.5]	89.2 [71.8 - 96.2]	91.1 [87.9 - 93.5]	89.4 [74.2 - 96.1]	94.2 [90.5 - 96.5]
College grad	99.1 [97.9-100.0]	95.9 [94.1 - 97.6]	96.3 [91.1 - 98.5]	96.1 [94.8 - 97.0]	95.4 [90.4 - 97.8]	96.4 [95.4 - 97.2]	97.6 [95.0 - 98.8]	96.7 [95.4 - 97.7]

* p < .05   ^ p < .01   ~ p < .001   ns – not significant

See sources and notes following continuation of Table 9 on page 21.

Table 9, Cont. Prevalence of self-reported postpartum visit completion, Ohio, 2016-2019 (cont.)

	2016		2017		2018		2019	
	% With GDM	% W/out GDM	% With GDM	% W/out GDM	% With GDM	% W/out GDM	% With GDM	% W/out GDM
Overall (n)[a] [95% CI]	**94.8** (275) [90.2-99.3]	**91.7** (3087) [89.9-93.5]	**94.1** (535) [90.4 - 96.5]	**91.1** (4807) [89.9 - 92.3]	90.9 (660) [85.9 - 94.3]	91.2 (6154) [89.9 - 92.4]	92.2 (440) [87.1 - 95.4]	92.9 (3899) [91.6-94.0]
County Type	ns	ns	ns	ns	ns	ns	ns	ns
Metro	92.8 [86.1 - 99.4]	91.7 [89.8 - 93.6]	94.9 [90.2 - 97.4]	90.8 [89.4 - 92.1]	91.6 [86.1 - 95.1]	90.9 [89.5 - 92.0]	90.8 [84.4 - 94.7]	93.0 [91.6 - 94.2]
Suburban	—	92.4 [86.3 - 98.6]	92.9 [80.5 - 97.7]	90.7 [86.3 - 93.8]	85.8 [62.7 -95.6]	95.1 [91.9 - 97.1]	94.2 [71.5 - 91.0]	92.8 [87.5 - 95.9]
Appalachia	—	87.1 [80.4 - 93.9]	93.6 [75.7 - 98.5]	89.1 [83.7 - 92.8]	93.4 [76.4 - 98.4]	86.9 [79.3 - 91.9]	92.1 [61.1 - 98.8]	92.4 [86.9 - 95.7]
Rural	—	95.5 [91.2-99.9]	92.8 [71.5 - 98.5]	95.2 [91.6 - 97.2]	91.7 [68.9 - 98.2]	92.6 [88.1 - 95.5]	97.7 [92.7 - 99.3]	93.1 [88.2 - 96.0]
Insurance Status (Prenatal Care)[b]		~	*	*	*	*	*	*
Uninsured	—	80.2 [68.5 - 91.9]	91.4 [58.4 - 98.7]	79.9 [70.9 - 86.6]	96.8 [84.4 - 99.2]	79.3 [69.1 - 86.8]	98.6 [90.7 - 99.8]	81.2 [70.3 - 88.7]
Medicaid	92.9 [84.5 - 100.0]	91.0 [88.0 - 93.9]	89.1 [79.3 - 94.6]	87.0 [84.4 - 89.2]	85.7 [74.7 - 92.3]	87.9 [85.3 - 90.1]	89.4 [79.1 - 95.0]	90.4 [87.8 - 92.4]
Health Insurance From Job	99.0 [97.8 - 100.0]	97.1 [95.7 - 98.5]	96.7 [90.8 - 98.8]	96.8 [95.6 - 97.6]	96.3 [91.8 - 98.4]	96.5 [95.3 - 97.3]	95.4 [87.3 - 98.4]	97.7 [96.5 - 98.5]
Health Insurance Paid For (not from job)	—	88.7 [81.0 - 96.5]	98.2 [91.9 - 99.6]	87.9 [80.2 - 92.9]	93.6 [65.6 - 99.1]	87.1 [77.9 - 92.8]	—	—
TRICARE Or Other Military Health Care	—	97.4 [93.3 - 100.0]	77.7 [31.8 - 96.3]	98.2 [93.7 - 99.5]	98.1 [91.1 - 99.6]	—	—	89.4 [67.6 - 97.1]
Other	—	74.9 [58.0 - 91.7]	96.9 [87.2 - 99.3]	85.5 [78.7 - 90.4]	88.3 [67.2 - 96.5]	84.7 [73.4 - 91.7]	86.6 [59.6 - 96.6]	83.0 [74.1 - 89.2]
WIC during Pregnancy	~	*	~	~	*	*	*	*
Yes	93.6 [86.8 - 100.0]	89.2 [85.6 - 92.7]	92.6 [84.0 - 96.7]	87.2 [84.4 - 89.5]	87.5 [76.6 - 93.7]	89.3 [87.1 -91.2]	89.9 [86.9 - 92.3]	94.6 [88.5 - 97.6]
No	95.6 [89.5 - 100.0]	93.0 [91.0 - 95.1]	94.8 [90.1 - 97.3]	93.3 [91.9 - 94.4]	92.5 [86.3 - 96.0]	92.1 [90.3 - 93.6]	94.2 [92.7 - 95.4]	90.8 [83.1 - 95.2]

* p < .05   ^ p < .01   ~ p < .001

See sources and notes following continuation of Table 9 on page 21.

Table 9. Prevalence of self-reported postpartum visit completion, Ohio, 2016-2019 (cont.)

Source:. 2016-2019 Ohio Pregnancy Assessment Survey (OPAS).
Notes:
OPAS 2016-2019 Question (and consistent with PRAMS Phase 7) determined GDM from the following question: "During your most recent pregnancy, did you have any of the following health conditions? a) Gestational diabetes (diabetes that started during this pregnancy)."
Based on answers to the question: Since your new baby was born, have you had a postpartum checkup yourself? (A postpartum checkup is a regular checkup a women has after she gives birth).
[a] n represents an estimate of the statewide population; the number of respondents to OPAS survey.
[b] Refers to insurance status for prenatal care. Significant change in structure of survey questions about health insurance for prenatal care in 2009-2010. Also, from 2009 forward mothers chose all that applied.
— too small for meaningful analysis; less than 30 respondents in subpopulation; cells with denominators less than 30 are not presented due to confidentiality concerns.
P-values are not produced in 2016 categories with at least one group reporting zero observations. P values can be interpreted as representing the probability that the differences observed across categories in the rate of self-reported postpartum visit completion were the result of chance. When this probability is less than 0.05 the differences are considered to be statistically significant and unlikely to be due to chance.

This table was previously labeled Table 10 in the 2019 Gestational Diabetes in Ohio Data Book.
Historic data can be found in Appendix C.

Gestational Diabetes in Ohio, 2008-2019

Table 10 displays the prevalence and trends in billing for a postpartum visit among women with deliveries paid by Ohio Medicaid insurance, during the timeframes listed. In 2017-18, about one-third of women with GDM had a bill for a postpartum visit; women with GDM were more likely to have a postpartum visit than women without GDM. The postpartum visit prevalence did not vary by age, with the exception of women greater than 45 where those without GDM was only 13 percent while women greater than 45 with GDM was over 47 percent. 2017-18 also showed that Hispanic women were least likely to attend a postpartum visit, while Non-Hispanic women of other races with GDM were most likely to have a visit (40.7%). Postpartum visits did not vary by geographic region.

Table 10. Prevalence of trends in postpartum visit claims among women with Medicaid insurance, Ohio, 2015 – 2018. Source: Ohio Department of Medicaid claims.

	2015-16		2017-18	
	% With GDM	**% W/out GDM**	**% With GDM**	**% W/out GDM**
Total	**n=11,855**	**n=133,762**	**n=13,871**	**n =132,186**
Total Prevalence	8.8		10.4	
Age (years)				
18-24	30.4	26.7	36.4	28.7
25-34	32.7	28.7	36.1	29.2
35-44	32.8	27.5	38.1	29.7
≥45[a]	31.3	12.7	47.1	13.1
Race[b]				
Non-Hispanic White	32.7	27.8	36.9	29.5
Non-Hispanic Black	29.3	26.8	34.1	26.7
Hispanic	30.5	21.4	27.7	25.4
Other	34.0	26.4	40.7	34.2
Geographic Region				
Urban	31.1	27.0	36.6	27.9
Non-Urban	31.9	28.1	36.6	30.8

Source: 2015-2018 data from Ohio Department of Medicaid Claims.
Note:

[a] If missing, too small for meaningful analysis; less than 30 respondents in subpopulation for mothers ≥ 45 years.

[b] Data on race and ethnicity were unavailable in 2013-2014 claims data for Medicaid enrollees.

Deliveries, gestational diabetes diagnoses, and postpartum visits were identified using the relevant ICD-9, ICD-10, CPT, and UB codes specified by HEDIS. Gestational diabetes diagnoses were included in the analysis if they occurred during mother's Medicaid coverage period. Postpartum visits were included if they occurred during the period 21 to 56 days after delivery, which is the HEDIS-defined postpartum visit timeframe.

This table was previously labeled Table 11 in the 2019 Gestational Diabetes in Ohio Data Book.

Historic data can be found in Appendix C.

Postpartum Behaviors

Appropriate risk reduction after pregnancy, including breastfeeding (Ziegler, 2012) and avoidance of tobacco, is important in reducing the development of T2DM after a GDM-affected pregnancy. Rates of smoking for women with GDM fell to 14.4% in 2019. Rates of breastfeeding status were similar, with approximately 85 percent of women ever attempting to breastfeed. Almost 93 percent of women with a GDM-affected pregnancy were still breastfeeding at two weeks postpartum in 2019.

Table 11. Postpartum health behaviors among women with a recent history of GDM compared to women with no GDM history, Ohio, 2016-2019. Source: Ohio Pregnancy Assessment Survey (OPAS)

	2016		2017		2018		2019	
	% With GDM [95 CI]	% W/out GDM [95 CI]	% With GDM [95 CI]	% W/out GDM [95 CI]	% With GDM [95 CI]	% W/out GDM [95 CI]	% With GDM [95 CI]	% W/out GDM [95 CI]
Current Smoker								
Yes	9.8 [4.9 -14.8]	17.8 [15.2 - 20.3]	15.5 [10.9 - 21.6]	15.3 [13.8 - 17.0]	15.8 [11.4 - 21.4]	15.8 [13.8 - 17.1]	14.4 [9.4 - 21.4]	13.1 [11.5 - 15.0]
Smokers Relapse								
Previous Smokers that Quit During Pregnancy and Did Not Relapse	75.4 [53.5 - 97.3]	49.7 [40.0 - 59.3]	71.1 [53.4 - 83.9]	65.7 [59.9 - 71.0]	69.1 [50.0 - 83.3]	64.1 [58.2 - 69.6]	73.3 [44.5 - 90.3]	63.3 [55.4 - 70.5]
Quit for Pregnancy and Relapsed	24.6 [2.7 - 46.5]	50.3 [40.7 - 60.0]	28.9 [16.0 - 46.5]	34.2 [28.9 - 40.0]	30.8 [16.6 - 49.9]	35.8 [30.3 - 41.7]	26.6 [9.6 - 55.4]	36.6 [29.4 - 44.5]
Breastfeeding Status								
Ever	75.8 [67.4 - 84.3]	85.1 [82.8 - 87.5]	86.6 [81.0 - 90.7]	86.5 [84.9 - 87.9]	85.5 [81.0 - 89.1]	85.7 [84.1 - 87.2]	85.0 [79.0 - 89.4]	85.2 [83.4 - 86.9]
Never	24.2 [15.7 - 32.6]	14.9 [12.5 - 17.2]	13.3 [9.2 - 18.9]	13.4 [12.0 - 15.0]	14.3 [10.7 - 18.8]	14.2 [12.7 - 15.8]	14.9 [10.5 - 20.9]	14.7 [13.0 - 16.5]
Breastfeeding Duration (among those who ever breastfed)								
At 2 weeks Postpartum	99.2 [97.7-100.0]	98.4 [97.7 - 99.1]	99.8 [86.8 - 94.9]	91.8 [86.8 - 94.9]	88.3 [72.9 - 92.5]	94.1 [91.1 - 96.1]	92.9 [80.6 - 97.6]	94.2 [90.9 - 96.3]
Not at 2 weeks Postpartum	0.8 [0.0 - 2.3]	1.6 [0.9 - 2.3]	0.2 [0.02 - 1.1]	8.1 [5.0 - 13.1]	11.6 [4.4 - 27.0]	5.8 [3.8 - 8.8]	7.0 [2.3 - 19.3]	5.7 [3.6 - 9.0]

Source: 2016 -2019 Ohio Pregnancy Assessment Survey (OPAS).

Note:

GDM was determined by the following question:

OPAS 2016-2019 Question (and consistent with PRAMS Phase 7) determined GDM from the following question: "During your most recent pregnancy, did you have any of the following health conditions? a) Gestational diabetes (diabetes that started during this pregnancy)."

This table was previously labeled Table 13 in the 2019 Gestational Diabetes in Ohio Data Book.

Historic data can be found in Appendix C.