Trends in GLP-1 Receptor Agonist Records Before, During, and After Pregnancy

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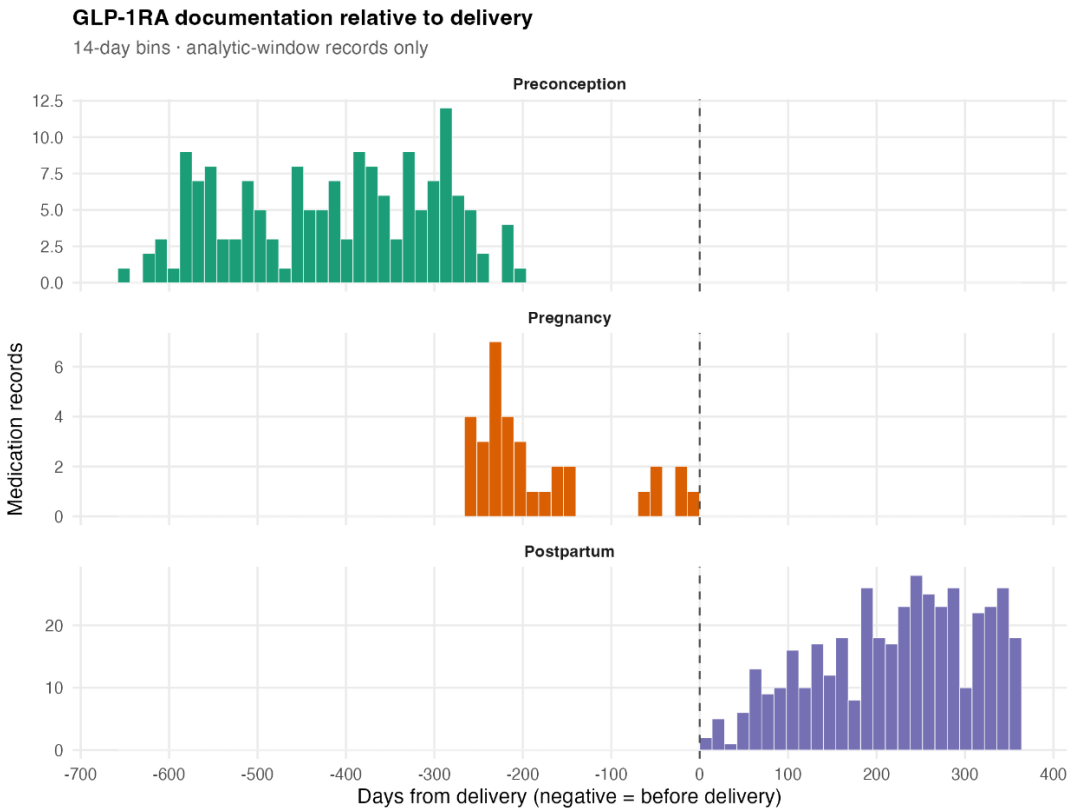
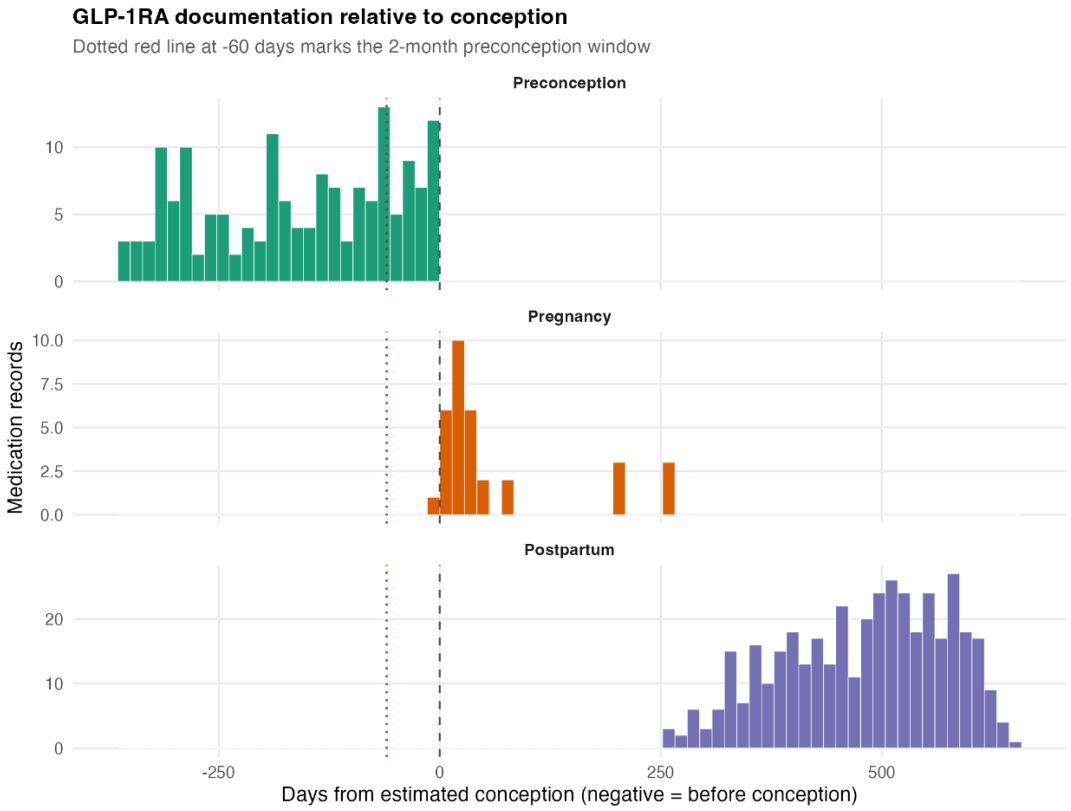
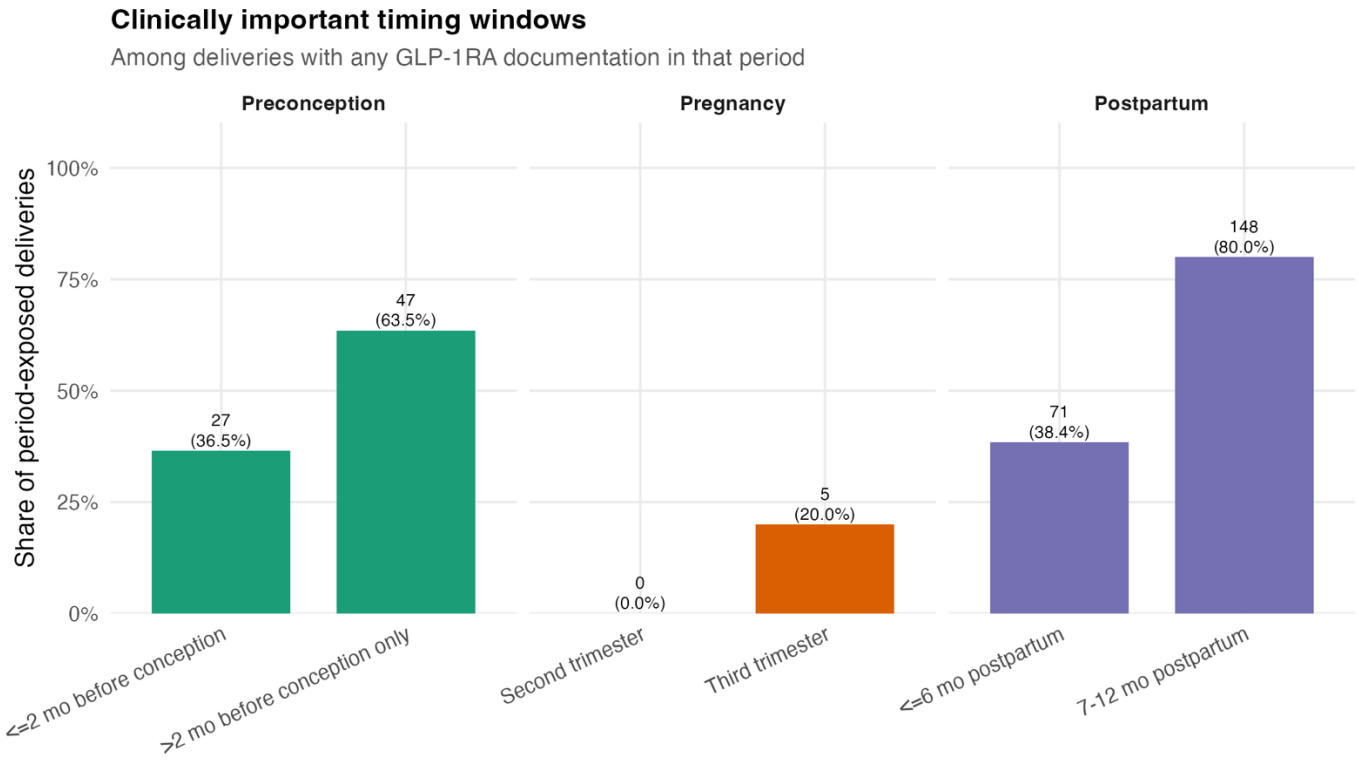
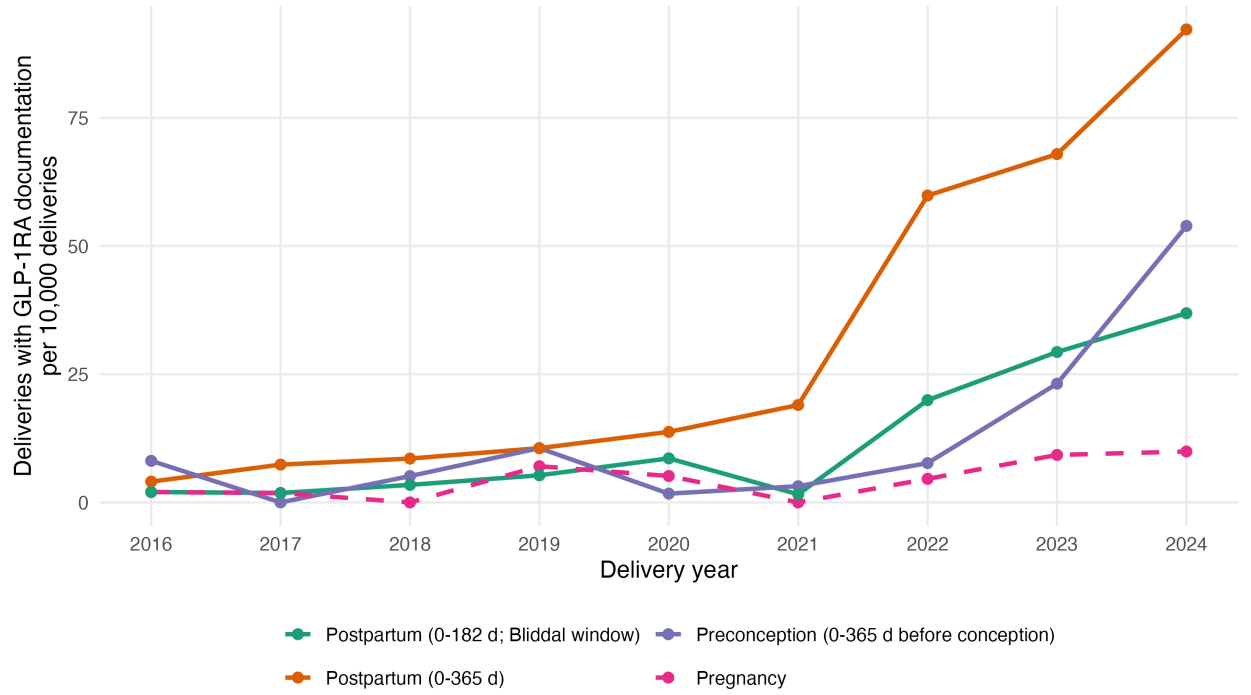
Background: Glucagon-like peptide-1 receptor agonist (GLP-1RA) use has expanded rapidly among reproductive-aged women, but the timing of their use and patient populations driving this growth remain poorly characterized. We evaluated temporal trends in documented GLP-1RA exposure before, during, and after pregnancy.
Methods: We conducted a retrospective analysis of mom-baby linked electronic health records (EHR) from UF Health from January 1, 2016, through December 31, 2024. The eligible cohort included mothers aged 12-55 with infant birth weight between 300-6,000 g, plausible gestational age, and continuous UF Health enrollment (>=270 days before and >=365 days after delivery). GLP-1RA records were extracted from outpatient medication orders or inpatient administration in the EHR. Records preceding drug-specific market availability were excluded. GLP-1RA records were classified as preconception (365-1 days before estimated conception), pregnancy, or postpartum (0-365 days after delivery); postpartum reflects any documented record in this window, including patients also exposed before conception. Mutually exclusive categories were calculated for subgroup analysis. Obesity and diabetes were identified from diagnosis codes documented during the pregnancy window. Trend analysis was calculated using annual prevalence and relative and absolute changes. **Results:** The eligible cohort comprised 54,039 deliveries, of which 236 had a documented GLP-1RA record (semaglutide, liraglutide, tirzepatide, dulaglutide, or exenatide). Among all GLP-1RA-exposed deliveries (n=236), 75.8% had documented obesity (47.4% with comorbid diabetes, 28.4% without), 3.5% had diabetes without obesity, and 20.7% had neither obesity or diabetes. We found that GLP-1RA records increased more than 12-fold, from 0.10% of deliveries in 2016 to 1.23% in 2024. Preconception exposure increased over time to 0.54% of deliveries in 2024. Pregnancy exposure remained near 0.10% throughout the study period. Postpartum exposure showed the largest growth, increasing approximately 23-fold from 0.04% in 2016 to 0.92% in 2024. Postpartum-only was the most common subgroup, representing 56.1% of exposed deliveries.
Conclusions: GLP-1RA use around pregnancy increased markedly from 2016 through 2024, with postpartum documentation of GLP-1RA as the dominant pattern across reproductive transitions. These findings identify an urgent need for evidence-based guidance on postpartum obesity/diabetes pharmacotherapy, lactation, contraception, and continuity of treatment after pregnancy.


GLP-1RA documentation relative to delivery
14-day bins · analytic-window records only
Preconception
Pregnancy
Postpartum
Medication records
Days from delivery (negative = before delivery)


GLP-1RA documentation relative to conception
Dotted red line at -60 days marks the 2-month preconception window
Preconception
Pregnancy
Postpartum
Medication records
Days from estimated conception (negative = before conception)
-250
0
250
500


Clinically important timing windows
Among deliveries with any GLP-1RA documentation in that period
Preconception
Pregnancy
Postpartum
Share of period-exposed deliveries
100%
75%
50%
25%
0%
27
(36.5%)
47
(63.5%)
0
(0.0%)
5
(20.0%)
71
(38.4%)
148
(80.0%)
<=2 mo before conception
>2 mo before conception only
Second trimester
Third trimester
<=6 mo postpartum
7-12 mo postpartum


Deliveries with GLP-1RA documentation
per 10,000 deliveries
75
50
25
0
2016
2017
2018
2019
2020
2021
2022
2023
2024
Delivery year
Postpartum (0-182 d; Bliddal window)
Preconception (0-365 d before conception)
Postpartum (0-365 d)
Pregnancy

1. Tables

1.1. Table 1. Characteristics of deliveries with and without GLP-1RA documentation

Characteristic	Did not use n = 53,803	Used 2016-2022 n = 93	Used 2023-2024 n = 143
Deliveries, No.	53,803	93	143
Age at delivery, mean (SD), y	28.1 (6.0)	32.0 (5.8)	31.6 (5.2)
Age, y			
<30	31,824 (59.1)	33 (35.5)	50 (35.0)
≥30	21,979 (40.9)	60 (64.5)	93 (65.0)
Site			
Gainesville	22,807 (42.4)	45 (48.4)	76 (53.1)
Jacksonville	30,996 (57.6)	48 (51.6)	67 (46.9)
Race and ethnicity			
Non-Hispanic White	22,733 (42.3)	45 (48.4)	75 (52.4)
Non-Hispanic Black	20,010 (37.2)	36 (38.7)	54 (37.8)
Other / unknown	11,060 (20.6)	12 (12.9)	14 (9.8)
Admission BMI, mean (SD)	33.2 (8.0)	43.9 (8.0)	43.0 (8.1)
Admission BMI			
<27	10,034 (18.6)	1 (1.1)	1 (0.7)
≥27	37,805 (70.3)	85 (91.4)	134 (93.7)
Missing	5,964 (11.1)	7 (7.5)	8 (5.6)
Obesity (ICD)			
No	32,288 (60.0)	8 (8.6)	13 (9.1)
Yes	21,515 (40.0)	85 (91.4)	130 (90.9)
Diabetes (ICD)			
No	47,359 (88.0)	22 (23.7)	70 (49.0)
Yes	6,444 (12.0)	71 (76.3)	73 (51.0)
Clinical phenotype			
Obesity + diabetes	3,947 (7.3)	66 (71.0)	68 (47.6)
Obesity only	17,568 (32.7)	19 (20.4)	62 (43.4)
Diabetes only	2,497 (4.6)	5 (5.4)	5 (3.5)
Neither	29,791 (55.4)	3 (3.2)	8 (5.6)

Delivery years			
2016-2019	21,835 (40.6)	29 (31.2)	0 (0.0)
2020-2022	18,585 (34.5)	64 (68.8)	0 (0.0)
2023-2024	13,383 (24.9)	0 (0.0)	143 (100.0)

Values are No. (%) unless otherwise noted.

1.2. Table 1B. Deliveries with vs without GLP-1RA documentation

Characteristic	Overall N = 54039[1]	Did not use GLP-1RA N = 53803[1]	Used GLP-1RA N = 236[1]	p-value[2]
Age at delivery, y	28.1 (6.0)	28.1 (6.0)	31.7 (5.4)	<0.001
Age >=30 y	22,132 (41.0%)	21,979 (40.9%)	153 (64.8%)	<0.001
Site				0.007
Gainesville	22,928 (42.4%)	22,807 (42.4%)	121 (51.3%)	
Jacksonville	31,111 (57.6%)	30,996 (57.6%)	115 (48.7%)	
Race and ethnicity				<0.001
Non-Hispanic White	22,853 (42.3%)	22,733 (42.3%)	120 (50.8%)	
Non-Hispanic Black	20,100 (37.2%)	20,010 (37.2%)	90 (38.1%)	
Other / unknown	11,086 (20.5%)	11,060 (20.6%)	26 (11.0%)	
Admission BMI, kg/m2	33.2 (8.0)	33.2 (8.0)	43.3 (8.1)	<0.001
Admission BMI >=27				<0.001
<27	10,036 (18.6%)	10,034 (18.6%)	2 (0.8%)	
≥27	38,024 (70.4%)	37,805 (70.3%)	219 (92.8%)	
Missing	5,979 (11.1%)	5,964 (11.1%)	15 (6.4%)	
Obesity (ICD)	21,730 (40.2%)	21,515 (40.0%)	215 (91.1%)	<0.001
Diabetes (ICD)	6,588 (12.2%)	6,444 (12.0%)	144 (61.0%)	<0.001
Clinical phenotype				<0.001
Obesity + diabetes	4,081 (7.6%)	3,947 (7.3%)	134 (56.8%)	
Obesity only	17,649 (32.7%)	17,568 (32.7%)	81 (34.3%)	
Diabetes only	2,507 (4.6%)	2,497 (4.6%)	10 (4.2%)	
Neither	29,802 (55.1%)	29,791 (55.4%)	11 (4.7%)	
Cesarean delivery	17,981 (33.3%)	17,832 (33.1%)	149 (63.1%)	<0.001
Preterm	8,201 (15.2%)	8,116 (15.1%)	85 (36.0%)	<0.001
Delivery years				<0.001
2016-2019	21,864 (40.5%)	21,835 (40.6%)	29 (12.3%)	
2020-2022	18,649 (34.5%)	18,585 (34.5%)	64 (27.1%)	
2023-2024	13,526 (25.0%)	13,383 (24.9%)	143 (60.6%)	

[1]Mean (SD); n (%)

[2]Welch Two Sample t-test; Pearson's Chi-squared test

Values are No. (%) or mean (SD). P values are t-tests or chi-square tests.

1.3. Table 2. Timing of GLP-1RA records relative to delivery and conception

Period	N records	N deliveries	Median days from delivery	IQR days from delivery	Median days from conception	IQR days from conception
Preconception	158	74	-402	-512 to -320	-150	-256.5 to -60.75
Postpartum	412	185	236	155 to 292	496	407.25 to 555.75
Pregnancy	33	25	-217	-233 to -156	28	20 to 56

1.4. Table 3. Clinically important windows

Window	N deliveries	% of all deliveries	% of period-exposed	Rate per 10,000
Any preconception exposure	74	0.14%	100%	13.7
Preconception <=2 months before conception	27	0.05%	36.5%	5.0
Preconception >2 months before conception only	47	0.09%	63.5%	8.7
Any pregnancy exposure	25	0.05%	100%	4.6
Pregnancy — first trimester	22	0.04%	88.0%	4.1
Pregnancy — second trimester	0	0.00%	0.0%	0.0
Pregnancy — third trimester	5	0.01%	20.0%	0.9
Any postpartum exposure	185	0.34%	100%	34.2
Postpartum <=6 months	71	0.13%	38.4%	13.1
Postpartum 7-12 months	148	0.27%	80.0%	27.4

1.5. Table 3B. Pregnancy trimesters

Trimester	N deliveries	% of pregnancy-exposed
First	22	88.0%
Second	0	0.0%
Third	5	20.0%

1.6. Table 4. Per-capita annual rates

Year	N deliveries	Any per 10,000	Preconception per 10,000	Pregnancy per 10,000	Postpartum 0-365 d per 10,000	Postpartum 0-182 d per 10,000	Any %
2016	4,929	10.1	8.1	2.0	4.1	2.0	0.101%
2017	5,423	9.2	0.0	1.8	7.4	1.8	0.092%
2018	5,844	13.7	5.1	0.0	8.6	3.4	0.137%
2019	5,668	19.4	10.6	7.1	10.6	5.3	0.194%
2020	5,816	13.8	1.7	5.2	13.8	8.6	0.138%
2021	6,316	22.2	3.2	0.0	19.0	1.6	0.222%
2022	6,517	64.4	7.7	4.6	59.8	19.9	0.644%
2023	6,478	86.4	23.2	9.3	67.9	29.3	0.864%
2024	7,048	123.4	53.9	9.9	92.2	36.9	1.234%

1.7. Table 5. 2024 headlines

Metric	Value
Any GLP-1RA per 10,000 deliveries (2024)	123.4 (1.23%)
Preconception per 10,000 (2024)	53.9 (0.539%)
Pregnancy per 10,000 (2024)	9.9 (0.099%)
Postpartum 0-365 d per 10,000 (2024)	92.2 (0.922%)
Postpartum 0-182 d per 10,000 (2024)	36.9
Bliddal Denmark peak (Q2 2024; <=182 d postpartum fills)	173 per 10,000