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Management of Spontaneous Abortion Among Commercially Insured Individuals in the United States After *Dobbs v Jackson*

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IMPORTANCE Spontaneous abortion is the most common complication of early pregnancy and requires the same treatment options as induced abortion. Limited data on the influence of abortion bans on spontaneous abortion management in the United States exist.

OBJECTIVE To assess the association of state-level abortion bans with spontaneous abortion management and receipt of the evidence-based medication regimen mifepristone plus misoprostol among commercially insured individuals in the United States.

DESIGN, SETTING, AND PARTICIPANTS Retrospective cross-sectional study using the Merative MarketScan Commercial Claims database to identify 123 598 individuals aged 15 to 45 years with spontaneous abortion at fewer than 77 days' gestation from January 1, 2018, through September 30, 2024. A difference-in-differences framework compared management changes from prepolicy (January 2018 to May 2022) to postpolicy (July 2022 to September 2024) in 14 states with trigger bans vs 17 comparison states.

EXPOSURES State-level abortion bans restricting abortion to fewer than 6 weeks' gestation, triggered by the *Dobbs v Jackson Women's Health Organization* decision on June 24, 2022.

MAIN OUTCOMES AND MEASURES Spontaneous abortion management type (expectant, medication, or surgical) and, among individuals receiving medication, receipt of mifepristone plus misoprostol vs misoprostol alone.

RESULTS The study included 123 598 individuals (54 181 in trigger ban states; 69 417 in comparison states) with a mean age of 30.17 years (SD, 6.25 years). In adjusted models, trigger bans were associated with a 2.8 percentage point increase in expectant management (95% CI, 1.0-4.6; baseline to postpolicy change: 26 260 of 35 855 [73.2%] to 14 048 of 18 326 [76.7%] in trigger ban states vs 32 927 of 47 232 [69.7%] to 15 617 of 22 185 [70.4%] in comparison states), a 2.2 percentage point decrease in medication management (95% CI, −3.5 to −0.9; 3183 of 35 855 [8.9%] to 1446 of 18 326 [7.9%] vs 5054 of 47 232 [10.7%] to 2687 of 22 185 [12.1%]), and no significant change in surgical management. Among individuals receiving medication, trigger bans were associated with a relative 13.8 percentage point increase in misoprostol-only regimens (95% CI, 9.0-18.6; 3124 of 3183 [98.1%] to 1401 of 1446 [96.9%] in trigger ban states vs 4250 of 5054 [84.1%] to 1840 of 2687 [68.5%] in comparison states).

CONCLUSIONS AND RELEVANCE State-level abortion bans were associated with a shift in spontaneous abortion management away from medication and toward expectant approaches, with persistent reliance on suboptimal misoprostol-only regimens in ban states, suggesting a decrease in management options for individuals with spontaneous abortion in ban states.

Supplemental content

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Spontaneous abortion is the most common complication of early pregnancy in the United States.[1] Individuals experiencing an uncomplicated spontaneous abortion in the first trimester may want a period of expectant management or proceed directly to definitive therapy with medication or procedural management.[2] Clinical management of spontaneous abortion requires the same medications and procedures used for induced abortion, including mifepristone, misoprostol, and uterine aspiration.[3] This overlap in clinical care has created an unintended consequence of abortion restrictions: patients experiencing pregnancy loss may face delayed or denied treatment because of legal uncertainty and clinician and health system concerns about criminal liability.[4]

The June 2022 Supreme Court decision in *Dobbs v Jackson Women's Health Organization* eliminated federal constitutional protection for abortion, with 14 states enacting trigger bans restricting abortion before 6 weeks.[5] Emerging evidence suggests these restrictions are associated with adverse clinical outcomes. In Texas, where the first post-*Roe v Wade* abortion ban took effect in September 2021, blood transfusions among patients hospitalized for pregnancy loss increased 15% above expected levels after the total ban.[6]

Surveys of clinicians have suggested that access to evidence-based medication management of spontaneous abortion has also been affected.[7,8] Combination therapy with mifepristone plus misoprostol is more effective than misoprostol alone for medication management of early pregnancy loss, reducing need for subsequent procedural intervention.[3] However, ongoing legal challenges to mifepristone distribution, combined with institutional restrictions on its use, have limited availability of evidence-based miscarriage treatment even in settings in which abortion remains legal.

The primary objective of our study was to evaluate whether abortion bans restricting access to fewer than 6 weeks' gestation, triggered by the *Dobbs* decision, were associated with a change in how spontaneous abortion of fewer than 77 days' gestation were managed. Among individuals receiving medication management, we also examined whether these abortion bans were associated with a change in receipt of the evidence-based regimen for spontaneous abortion (mifepristone and misoprostol) compared with the older misoprostol-only protocol.

Key Points

Question Was the *Dobbs v Jackson Women's Health Organization* decision associated with changes in the clinical management of spontaneous abortion in states with trigger abortion bans?

Findings In this cross-sectional study of 123 598 commercially insured individuals with spontaneous abortion, trigger bans were associated with a 2.8 percentage point increase in expectant management and a 2.2 percentage point decrease in medication management. Among individuals receiving medication, trigger ban states had a 13.8 percentage point increase in misoprostol-only regimens relative to the evidence-based mifepristone plus misoprostol combination.

Meaning State-level abortion bans were associated with shifts in spontaneous abortion management away from evidence-based care, with implications for the hundreds of thousands of individuals experiencing miscarriage annually in affected states.

Methods

Data Source

We performed a retrospective cross-sectional study of individuals who received a diagnosis of spontaneous abortion in the United States, using the Merative MarketScan Commercial Claims database (**Figure 1**). This database comprises deidentified longitudinal claims data from commercially insured individuals in the United States, representing a large convenience sample of employers and health plans. Available data included dates and location of service, demographic characteristics, diagnosis codes, procedure codes, and outpatient medication prescriptions.

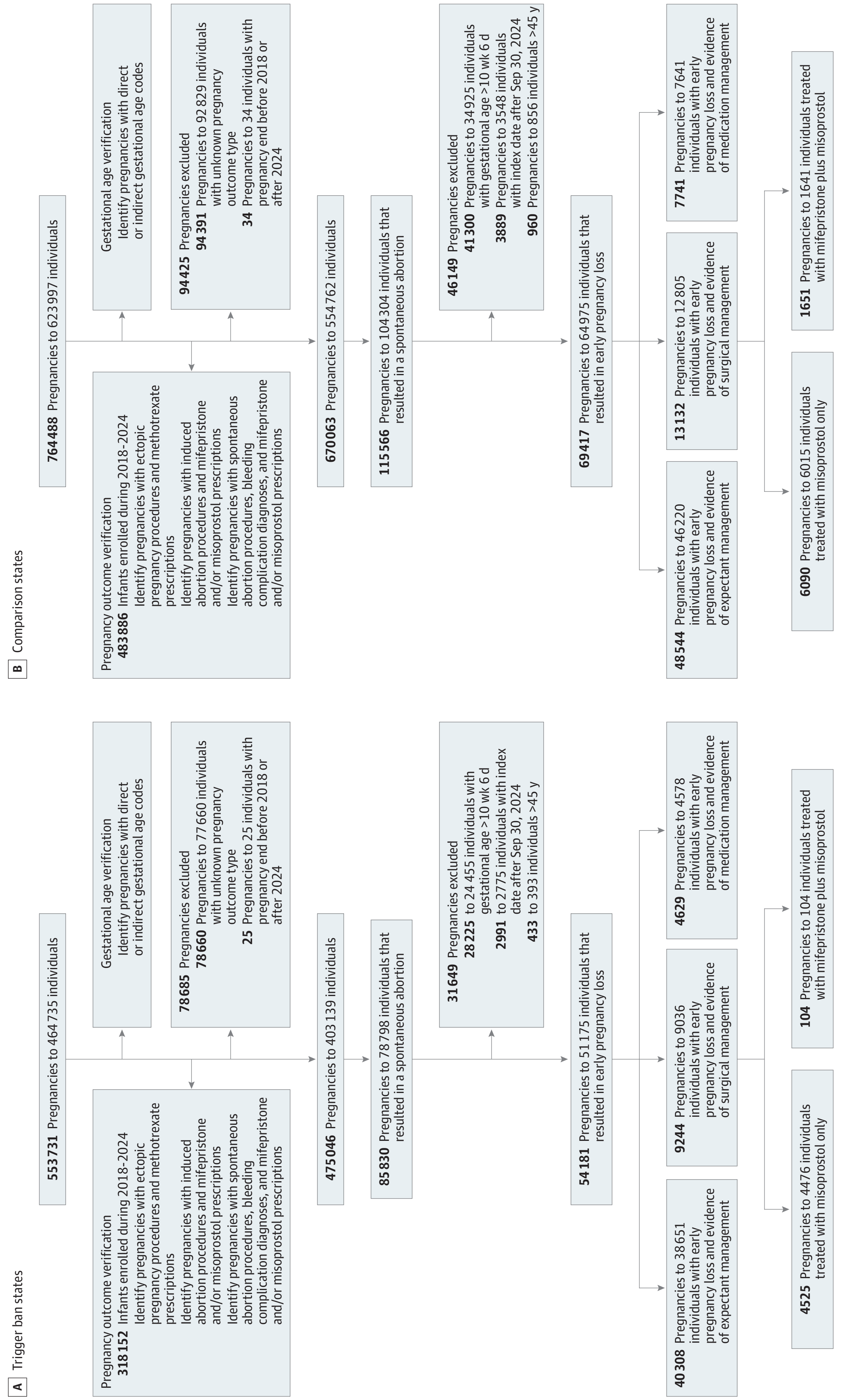
We used a hierarchic algorithm, modified to improve sensitivity to spontaneous abortion, to determine outcomes for all pregnancies recorded in the database from January 1, 2018, through December 31, 2024.[9] To ensure data completeness and avoid misclassification of outcomes, the analysis of spontaneous abortion was restricted to cases with an index date between January 1, 2018, and September 30, 2024. This 3-month buffer at the end of the study period ensured that individuals with a preliminary diagnosis were not mistakenly categorized as having had a spontaneous abortion if they subsequently had a different outcome in early 2025. The primary exposure was the implementation of 6-week abortion bans after the *Dobbs* decision on June 24, 2022.

We evaluated spontaneous abortion occurring in states with a trigger ban at 6 weeks or fewer (Alabama, Arkansas, Georgia, Idaho, Kentucky, Louisiana, Mississippi, Missouri, North Dakota, Oklahoma, South Dakota, Tennessee, Texas, and West Virginia) and states without an abortion ban (Alaska, California, Colorado, Connecticut, Delaware, Illinois, Maine, Maryland, Michigan, Minnesota, Montana, New Jersey, New Mexico, New York, Oregon, Rhode Island, and Washington).[5] The study period included 53 months of data before the policy implementation (January 2018 to May 2022) and 27 months of postimplementation data (July 2022 to September 2024). The month of June 2022 was dropped. The institutional review board at Oregon Health & Science University approved the study, and the need for written informed consent was waived due to the use of deidentified data. The study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.[10]

Study Population

We included individuals aged 15 to 45 years with a diagnosis of spontaneous abortion. We used the Centers for Disease Control and Prevention and Centers for Medicare & Medicaid Services definition of spontaneous abortion as the spontaneous expulsion of a pregnancy of fewer than 20 weeks' gestation.[11] We further focused our analyses on spontaneous abortions occurring at 77 days' gestation (11 weeks) or fewer because clinical practice for expectant or medication management may vary

Figure 1. Flowchart Showing Trigger Ban States and Comparison States



Identification of a cohort of pregnancies resulting in spontaneous abortion in the United States, MarketScan commercial data, 2018 to 2024.

after this gestational age (Figure 1).[2] To be included in the analysis, individuals were required to have continuous insurance enrollment for at least 60 days before and 60 days after the spontaneous abortion index date to allow for adequate follow-up and determination of study outcomes. We considered whether to exclude individuals with multifetal pregnancies from the cohort because of different risk profiles. We identified pregnancies with multifetal gestations by using *International Classification of Diseases, Tenth Revision, Clinical Modification* (*ICD-10-CM*) O30.x codes. The number of multifetal pregnancies documented before 11 weeks was clinically negligible (1 case), and we did not exclude it from the analytic cohort. We used a complete-case analysis for all multivariate regression models. Approximately 6% of the observations were excluded because of missing covariate data, a threshold considered unlikely to introduce systematic bias into the treatment effect estimates.

To ensure the highest degree of accuracy in outcome determination and to establish a denominator of total pregnancies within the study period, we first used a comprehensive algorithm to identify all pregnancy episodes.[9] This approach allowed us to adjudicate between competing outcomes and minimize misclassification. We identified spontaneous abortion cases by using *ICD-10* diagnosis codes, procedure codes, and diagnosis related group codes (eTable 1 in Supplement 1).[9]

We followed the approach used for pregnancy outcome identification reported by Ailes et al,[9] with several important modifications. We included procedure codes for mifepristone and misoprostol; refined the classification of outcomes with codes suggestive of ectopic and spontaneous abortion as ectopic only if codes for methotrexate or laparoscopy were present; prioritized the longitudinal evidence of a live birth so that postpartum dilation and curettage would not be classified as a spontaneous abortion; and captured spontaneous abortions occurring before 8 weeks' gestation.

Study Outcomes

The primary outcome was the type of spontaneous abortion management, categorized into 3 mutually exclusive groups: expectant, medication, or surgical management. We defined expectant management as pregnancies with a diagnosis of spontaneous abortion that had no claims for either surgical intervention or medication management within 60 days after the spontaneous abortion index date. Medication management was defined as the receipt of mifepristone and misoprostol or misoprostol only within 7 days of the spontaneous abortion index date, provided there was no evidence of a surgical procedure during that same 7-day window. We identified these medications by using National Drug Code and Healthcare Common Procedure Coding System codes (eTable 2 in Supplement 1). We examined management with medication overall and by regimen. We created a binary variable to identify treatment with the evidence-based combined regimen of mifepristone and misoprostol vs misoprostol alone.[3]

Surgical management was identified using *Current Procedural Terminology* and *ICD-10* procedure codes for uterine aspiration or evacuation. If individuals had both medication and surgical management within 7 days of the spontaneous abortion index date, they were categorized as having received surgical management to account for immediate clinical interventions. Codes used for each definition, including National Drug Codes for specific medication regimens and *Current Procedural Terminology* codes for procedures, are listed in eTable 2 in Supplement 1. In January 2023, the US Food and Drug Administration removed the in-person dispensing requirement for mifepristone.[12] We therefore used both outpatient professional claims (Healthcare Common Procedure Coding System code S0190) and outpatient pharmacy claims (National Drug Codes for mifepristone and its branded generics) to capture all instances of mifepristone prescription.

Study Variables

We abstracted demographic information on age, rurality, state of residence, and insurance plan type (managed care, preferred provider, high deductible, or unknown). We determined rural location using metropolitan statistical area codes. Location of diagnosis was captured with the MarketScan place of service variable code and categorized as emergency department (ED), inpatient, or outpatient. We used state of residence and abortion policy classifications from the Guttmacher Institute to determine whether the spontaneous abortion occurred in a state where a trigger ban was implemented after *Dobbs*. The control group was restricted to states identified as having protected or very protected abortion access, and states with intermediate or inconsistent restriction were excluded to ensure a robust comparison.[5] For trigger ban states, we included all states that implemented abortion bans restricting the procedure to 6 weeks' gestation or fewer after the *Dobbs* decision.[13] Clinical characteristics included estimated gestational age. We determined gestational age by identifying the last direct gestational age code (*ICD-10-CM* Z3A.XX codes) available within the pregnancy episode.

Statistical Analysis

We used descriptive statistics to examine longitudinal trends of spontaneous abortion incidence, their associated diagnosis coding patterns, and management strategies. We conducted bivariate analyses to explore associations between demographic and clinical characteristics and residence in a state with an abortion ban, using χ^2 tests for categorical variables and *t* tests for continuous variables. We examined trends over time in spontaneous abortion management by year and state policy environment (eFigure in Supplement 1).

We estimated the association between abortion bans and spontaneous abortion management with multivariable linear probability models within a 2-way fixed-effects difference-in-differences framework. This approach allowed us to compare changes in rates of the outcomes of interest from the prepolicy period (January 1, 2018, to May 31, 2022) to the postpolicy period (July 1, 2022, to September 30, 2024) in states with and without an abortion ban of 6 weeks or fewer.

We adjusted models for the individual-level covariates of age, rurality, and location of diagnosis. Potential confounders were identified a priori based on known clinical associations and published literature.[14] To assess the timing of changes and test the parallel trends assumption, we used an event study

specification. All models met the parallel trends assumption. We included state fixed effects to control for time-invariant differences between states and year-quarter fixed effects to account for national trends. SEs were clustered at the state level to account for correlation within geographic units. All difference-in-differences model results are reported as percentage point changes with corresponding 95% CIs (2-sided tests with α = .05).

Texas implemented a 6-week abortion ban (Texas Heartbeat Act) in September 2021, before the *Dobbs* decision, and accounted for a large proportion of the trigger ban group.[15] To ensure that the observed national shifts in spontaneous abortion management were not driven exclusively by the unique legal and demographic landscape of Texas, we conducted a sensitivity analysis excluding Texas from the treatment cohort. Results were consistent with those of the main model and are included in eTable 3 in Supplement 1.

The study dataset was prepared with SAS version 9.4 (SAS Institute), and all statistical analyses were performed with R version 4.5.1 (R Foundation for Statistical Computing). Data were analyzed from October 15, 2025, through February 6, 2026.

Results

The overall analytic sample included 123 598 commercially insured individuals with a spontaneous abortion at fewer than 77 days' gestation; 54 181 individuals (43.8%) resided in states with trigger abortion bans (35 855 pre-*Dobbs*; 18 326 post-*Dobbs*) and 69 417 (56.2%) resided in comparison states (47 232 pre-*Dobbs*; 22 185 post-*Dobbs*) (**Table**). Because of patient privacy concerns, data on race and ethnicity categories are not included in the MarketScan Commercial Claims database. Individuals in trigger ban states were slightly younger than those in comparison states (mean [SD], 30.17 [6.25] vs 32.45 [5.98] years). Individuals in trigger ban states were more likely to reside in rural areas (pre-*Dobbs,* 14.6% [4982 of 34 235] vs 5.1% [2293 of 44 610]) and to receive their diagnosis in the ED (pre-*Dobbs,* 21.0% [7298 of 34 825] vs 14.8% [6759 of 45 672]) compared with those in comparison states. Gestational age at spontaneous abortion was similar across groups, with most occurring between 8 weeks 0 days and 8 weeks 6 days of gestation (66.8% [23 956 of 35 855] in trigger ban states pre-*Dobbs* vs 67.3% [31 785 of 47 232] in comparison states pre-*Dobbs*). In both abortion ban and comparison states, the proportion of the sample from rural areas decreased slightly (trigger abortion ban states, 14.6% [4982 of 34 235] pre-*Dobbs,* 11.8% [1985 of 16 840] post-*Dobbs*; comparison states, 5.1% [2293 of 44 610] pre-*Dobbs,* 4.0% [821 of 20 588] post-*Dobbs*), whereas the proportion of spontaneous abortion identified in the ED increased (trigger abortion ban states, 21.0% [7298 of 34 825] pre-*Dobbs,* 26.4% [4714 of 17 843] post-*Dobbs;* comparison states, 14.8% [6759 of 45 672] pre-*Dobbs,* 18.7% [4020 of 21 512] post-*Dobbs*).

Before the policy change, the most common spontaneous abortion management strategy in both intervention and comparison states was expectant management (baseline to postpolicy change, 26 260 of 35 855 [73.2%] to 14 048 of 18 326 [76.7%] in trigger ban states vs 32 927 of 47 232 [69.7%] to 15 617 of 22 185 [70.4%] in comparison states), followed by surgical management (6412 of 35 855 [17.9%] to 2832 of 18 326 [15.5%] vs 9251 of 47 232 [19.6%] to 3881 of 22 185 [17.5%]) and medication management (3183 of 35 855 [8.9%] to 1446 of 18 326 [7.9%] vs 5054 of 47 232 [10.7%] to 2687 of 22 185 [12.1%]) (**Figure 2**). Postpolicy, a decrease in medication management and a corresponding increase in expectant management in abortion ban states vs states with abortion access were observed. In the adjusted difference-in-differences models, this change translated to a 2.8 percentage point (95% CI, 1.0-4.6) increase in expectant management and a 2.2 percentage point (95% CI, −3.5 to −0.9) decrease in medication management in abortion ban states. No significant change in procedural management was identified.

Abortion restrictions were also associated with a significant change in receipt of the evidence-based regimen for medication management of spontaneous abortion. Before the policy change, most individuals with spontaneous abortion who chose medication management received misoprostol only in states with a trigger ban in place and without a trigger ban (3124 of 3183 [98.1%] to 1401 of 1446 [96.9%] in trigger ban states vs 4250 of 5054 [84.1%] to 1840 of 2687 [68.5%] in comparison states). After the policy change, use of the mifepristone and misoprostol evidence-based regimen for spontaneous abortion nearly doubled in states without a ban (804 of 5054 [15.9%] before to 847 of 2687 [31.5%] after) but changed minimally in states with a ban (59 of 3183 [1.9%] before to 45 of 1446 [3.1%] after), which corresponded to a 13.8 percentage point increase (95% CI, 9.0-18.6) in the adjusted model postpolicy in misoprostol-only management of spontaneous abortion among individuals receiving medication management (Figure 2).

Discussion

In this retrospective cross-sectional cohort study of 123 598 commercially insured individuals with spontaneous abortion at fewer than 77 days' gestation, state-level abortion bans triggered by the *Dobbs* decision were associated with shifts in management away from evidence-based medication management.[2,3] Trigger bans were associated with a 2.8 percentage point increase in expectant management and a 2.2 percentage point decrease in medication management, with no significant change in procedural management. Among individuals receiving medication, the bans were associated with a 13.8 percentage point increase in misoprostol-only management compared with the evidence-based regimen of mifepristone plus misoprostol. This difference was propelled by an ongoing increase in the use of mifepristone with misoprostol in comparison states, whereas growth in the evidence-based regimen for medication management in ban states stagnated. Much work remains to continue to improve access to the optimal routine for medication management of spontaneous abortion: in states with and without abortion bans, few individuals with miscarriages who elect medication management continue to receive the evidence-based regimen for care. To date, these

Table. Characteristics of Commercially Insured US Individuals With a Spontaneous Abortion of Fewer Than 77 Days' Gestation[a]

Characteristic[b]	States, No. (%)[c]			
	Trigger ban (n = 14)		Comparison (n = 17)	
	Pre-*Dobbs*	Post-*Dobbs*	Pre-*Dobbs*	Post-*Dobbs*
Individuals of reproductive age	3 760 533	2 601 381	4 953 813	3 149 242
Pregnancies	315 628	159 443	450 602	219 495
Spontaneous abortions	35 855	18 326	47 232	22 185
Age, mean (SD), y	30.07 (6.24)	30.35 (6.27)	32.37 (6.00)	32.64 (5.94)
Encounter year	n = 35 855	n = 18 326	n = 47 232	n = 22 185
2018	8701 (24.3)	0	12 714 (26.9)	0
2019	8109 (22.6)	0	11 538 (24.4)	0
2020	7616 (21.2)	0	10 147 (21.5)	0
2021	8111 (22.6)	0	8801 (18.6)	0
2022	3318 (9.3)	3495 (19.1)	4032 (8.5)	4197 (18.9)
2023	0	7533 (41.1)	0	9025 (40.7)
2024	0	7298 (39.8)	0	8963 (40.4)
Rurality	n = 34 235	n = 16 840	n = 44 610	n = 20 588
Urban	29 253 (85.4)	14 855 (88.2)	42 317 (94.9)	19 767 (96.0)
Rural	4982 (14.6)	1985 (11.8)	2293 (5.1)	821 (4.0)
Insurance type	n = 34 343	n = 17 904	n = 46 224	n = 21 711
Provider preferred	17 294 (50.4)	8322 (46.5)	19 652 (42.5)	8101 (37.3)
High deductible	9774 (28.5)	5032 (28.1)	9529 (20.6)	4423 (20.4)
Managed care	6956 (20.3)	4411 (24.6)	15 842 (34.3)	8748 (40.3)
Other	319 (0.9)	139 (0.8)	1201 (2.6)	439 (2.0)
Insurance coverage	n = 35 855	n = 18 326	n = 47 232	n = 22 185
Employee	19 770 (55.1)	10 795 (58.9)	25 868 (54.8)	13 014 (58.7)
Spouse	10 269 (28.6)	4962 (27.1)	16 375 (34.7)	7108 (32.0)
Child	5816 (16.2)	2569 (14.0)	4989 (10.6)	2063 (9.3)
Location of diagnosis	n = 34 825	n = 17 843	n = 45 672	n = 21 512
Outpatient	25 377 (72.9)	12 030 (67.4)	35 831 (78.5)	15 980 (74.3)
Emergency department	7298 (21.0)	4714 (26.4)	6759 (14.8)	4020 (18.7)
Other	2115 (6.1)	1061 (5.9)	2896 (6.3)	1361 (6.3)
Telemedicine	35 (0.1)	38 (0.2)	186 (0.4)	151 (0.7)
Gestational age, wk	n = 35 855	n = 18 326	n = 47 232	n = 22 185
6	237 (0.7)	109 (0.6)	321 (0.7)	130 (0.6)
7	480 (1.3)	206 (1.1)	709 (1.5)	282 (1.3)
8	23 956 (66.8)	12 046 (65.7)	31 785 (67.3)	14 738 (66.4)
9	5062 (14.1)	2604 (14.2)	6234 (13.2)	3013 (13.6)
10	3487 (9.7)	1943 (10.6)	4748 (10.1)	2340 (10.5)
>10	2633 (7.3)	1418 (7.7)	3435 (7.3)	1682 (7.6)

[a] By presence of an abortion ban (January 1, 2018-September 30, 2024; N = 123 598) triggered by the *Dobbs v Jackson Women's Health Organization* decision.

[b] Because of patient privacy concerns, data on race and ethnicity categories are not included in the MarketScan Commercial Claims database.

[c] Trigger ban states: Alabama, Arkansas, Georgia, Idaho, Kentucky, Louisiana, Missouri, Mississippi, North Dakota, Oklahoma, South Dakota, Tennessee, Texas, and West Virginia; comparison states: Alaska, California, Colorado, Connecticut, Delaware, Illinois, Maine, Maryland, Michigan, Minnesota, Montana, New Jersey, New Mexico, New York, Oregon, Rhode Island, and Washington.

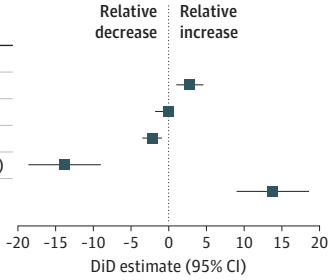
findings provide the first large-scale, national claims-based evidence that abortion restrictions have altered the clinical management of spontaneous abortion in the United States.

The findings are consistent with and extend prior work on the downstream effects of abortion restrictions on pregnancy loss care. Surveys of clinicians in states with restrictive abortion policies found that physicians were less likely to offer mifepristone or office-based uterine aspiration for miscarriage management, with these decisions motivated by a lack of institutional support.[7,8] Although those studies relied on clinician self-report, this analysis of administrative claims provides direct evidence of management changes at the population level. The observed shift toward expectant management aligns with reports from Texas, where expectant management became the default approach for complicated previable pregnancies after the Texas Heartbeat Act was implemented, resulting in maternal complications in 43% of affected patients.[4] Blood transfusions among patients hospitalized for pregnancy loss in Texas increased 15% above expected levels after the total abortion ban.[6]

This study's findings suggest a plausible upstream mechanism for such morbidity: shifting patients away from active management toward expectant approaches may increase the risk of hemorrhage and incomplete expulsion.[16] In a prior analysis using the same MarketScan database, ED presentation for early pregnancy loss was independently associated

Figure 2. Univariate Plot Showing Association of 6-Week Abortion Bans With Management of Spontaneous Abortion in the United States, 2018-2024

Outcomes	Trigger ban states, No. (%)		Comparison states, No. (%)		DiD estimate (95% CI) adjusted difference, percentage point
	Prepolicy (n = 35 855)	Postpolicy (n = 18 326)	Prepolicy (n = 47 232)	Postpolicy (n = 22 185)	
Primary treatment					
Expectant management	26 260 (73.2)	14 048 (76.7)	32 927 (69.7)	15 617 (70.4)	2.8 (1.0 to 4.6)
Surgical management	6412 (17.9)	2832 (15.5)	9251 (19.6)	3881 (17.5)	0 (-1.8 to 0.5)
Medication management	3183 (8.9)	1446 (7.9)	5054 (10.7)	2687 (12.1)	-2.2 (-3.5 to -0.9)
Mifepristone and misoprostol	59 (1.9)	45 (3.1)	804 (15.9)	847 (31.5)	-13.8 (-18.6 to -9.0)
Misoprostol only	3124 (98.1)	1401 (96.9)	4250 (84.1)	1840 (68.5)	13.8 (9.0 to 18.6)



Difference-in-differences (DiD) estimates were adjusted for maternal age, rural location, and location of spontaneous abortion diagnosis. SEs clustered at the state level. Pre–*Dobbs v Jackson Women's Health Organization* trend difference was estimated from an interaction between a linear pre-*Dobbs* trend and comparison state residence, adjusted for maternal age, rural location, and location of spontaneous abortion diagnosis. SEs clustered at the state level. Cohort N = 123 598.

with lower odds of receiving active management, and the higher rates of ED diagnosis in trigger ban states in the current study's cohort (22.8% vs 16.0%) may further compound this effect.[14]

The divergence in medication regimen use between trigger ban and comparison states is notable. Mifepristone pretreatment followed by misoprostol is more effective than misoprostol alone for medication management of early pregnancy loss, reducing the need for subsequent procedural intervention.[3,17] Yet in trigger ban states, misoprostol-only regimens accounted for more than 96% of all medication management both before and after *Dobbs,* whereas comparison states demonstrated a near doubling in use of the combined mifepristone/misoprostol regimen, from 15.9% to 31.5% post-*Dobbs*. This pattern suggests that the legal and institutional environment surrounding mifepristone—driven largely by its association with induced abortion—has prevented adoption of the evidence-based regimen even for an indication (spontaneous abortion management) that is not legally restricted. An estimated 400 000 miscarriages occur annually in US states with abortion bans, underscoring the population-level magnitude of this gap in evidence-based care.[1] Ongoing legal challenges to mifepristone distribution, combined with pharmacy refusal and institutional formulary restrictions, have created barriers to access that extend well beyond induced abortion.

Several mechanisms may explain the observed shifts in management. First, legal ambiguity and fear of criminal liability may have created clinician hesitancy and institutional conservatism. Early studies describe obstetrician-gynecologists in ban states reporting confusion about the scope of permissible care, delayed intervention, and institutional policies that default to expectant management even when active treatment is clinically appropriate.[4,18] In Wisconsin, the threat of criminalization after *Dobbs* resulted in uncertainty and confusion for physicians, lack of clear guidance from hospitals and health systems, and worse care for pregnant patients.[19]

Second, workforce changes in states with abortion bans may compound these effects. The *Dobbs* decision was associated with moderate but significant relative decreases in the number of practitioners in the most restrictive states compared with comparison states, providing early quantitative evidence of clinician migration.[20] These effects may be particularly acute in individual states: Idaho lost 94 of 268 obstetrician-gynecologist physicians practicing obstetrics (35%) between August 2022 and December 2024, with remaining clinicians concentrated in just 7 of 44 counties.[21] A shrinking workforce reduces access to the procedural expertise and medication management capacity needed for evidence-based spontaneous abortion care, potentially contributing to the shift toward expectant management observed in the current study's data.

Third, barriers to mifepristone access operate at multiple levels—pharmacy refusal to dispense, institutional formulary restrictions, and clinician unfamiliarity or reluctance to prescribe a medication associated with induced abortion—even though its use for spontaneous abortion management is not legally restricted.[7] The increase in ED-based diagnosis in trigger ban states may reflect delayed presentation, reduced outpatient access, or avoidance of care until symptoms become acute.

Limitations

This study should be interpreted with the following limitations in mind. Patient preferences cannot be captured in claims data and thus cannot distinguish between expectant management chosen by patients and that resulting from clinician or systemic barriers. The study population was limited to individuals with commercial insurance, who may face fewer financial barriers to care than uninsured or Medicaid-enrolled populations; the findings may therefore underestimate the magnitude of disparities in spontaneous abortion management, which affects their generalizability. *ICD-10-CM* Z3A codes were used for gestational age, which may be subject to documentation variability. For example, nearly two-thirds of spontaneous abortions are reported as occurring at 8 weeks' gestation. Although spontaneous abortion rates do peak in the first trimester, the clustering at 8 weeks in claims data likely reflects a combination of clinical documentation patterns (eg, timing of the initial dating ultrasonography or first prenatal visit) and may reflect the use of the 8-week *ICD-10* code (Z3A.08) as a common clinical proxy for late first-trimester

encounters rather than a true biological phenomenon. Although the enhanced pregnancy outcome algorithm was designed to minimize misclassification between spontaneous and induced abortion, some residual misclassification may remain. Finally, the post-*Dobbs* period spanned 27 months, which may not fully capture the longer-term effects of these policy changes on clinical practice and workforce adaptation.

Conclusions

In this cohort study of commercially insured individuals with spontaneous abortion, state-level abortion bans triggered by the *Dobbs* decision were associated with a shift in management away from medication and toward expectant approaches, as well as with persistent reliance on suboptimal misoprostol-only regimens in ban states, whereas comparison states increasingly adopted the evidence-based mifepristone/misoprostol combination. These management changes have direct clinical implications for the hundreds of thousands of individuals experiencing miscarriage annually in states with abortion restrictions and for the ongoing maternal mortality crisis in the United States. Efforts to clarify that spontaneous abortion management is legally distinct from induced abortion to protect formulary access to mifepristone for pregnancy loss indications and to sustain the outpatient reproductive health infrastructure necessary for evidence-based care are needed. Ongoing monitoring is indicated to assess whether management patterns continue to diverge and whether these shifts are associated with worsening clinical outcomes.

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