Maternal morbidity and fetal outcomes among pregnant women at 22 weeks' gestation or less with complications in 2 Texas hospitals after legislation on abortion

OBJECTIVE: Recent state-level legislation on abortion has encroached on access to reproductive care with disproportionate effects on underserved communities.[1] In Texas, 2 legislative actions have been at the forefront of this public health issue. Senate Bill 8 bans abortions once cardiac activity is identified using standard medical practice on the basis of the estimated gestational age with enforcement by private plaintiffs through civil lawsuits. Senate Bill 4 states that a physician administering medicine to end a pregnancy even in the setting of a maternal medical emergency has committed a felony, with jail time ranging from 180 days to 2 years and a $10,000 fine; it also expands abortion complication reporting. The current national standard of care of women not in labor presenting with rupture of membranes before neonatal viability allows expectant management or immediate delivery following shared decision-making.[2] We report the experiences from 2 urban, inner-city healthcare systems in Texas after these legislative actions.

STUDY DESIGN: William P. Clements Jr. University Hospital and Parkland Hospital—the safety net hospital for Dallas County—are both level IV designated maternal care facilities, with approximately 14,000 deliveries annually.[3] The inclusion criteria were pregnant patients presenting at <22 weeks without preterm labor and with a medical indication for delivery (preterm premature rupture of membranes, preeclampsia with severe features, and/or vaginal bleeding) and a fetus with cardiac motion, identified from electronic health records and direct patient care. Given the potential of a felony, all cases were discussed with and managed by maternal fetal medicine leadership (C.Y.S., D.B.N., and S.P.). Before the passage of state Senate Bills 8 and 4 (effective 21 September 2021), women with these conditions were counseled and offered expectant management or induction of labor. After September 2021, all were expectantly managed with medical intervention when there was an immediate threat to maternal life. The primary perinatal outcome was fetal or neonatal demise. The primary maternal outcomes were maternal morbidities (Table), time from presentation to delivery, and indications for delivery. The University of Texas Southwestern Medical Center Institutional Review Board approved this study with exemption of patient consent.

TABLE
Maternal demographics, pregnancy outcomes, and morbidities for women presenting with cardiac activity at <22 weeks gestation and requiring obstetrical management

Demographics	Median (Q1–Q3) or N (%)
Maternal age (y)	30 (26–33)
Nulliparity	15/28 (54%)
Gestational age at presentation	19 wk 4 d (17 wk 6 d–20 wk 2 d)
Gestational age at delivery	20 wk 1 d (18 wk 4 d–21 wk 0 d)
Clinical characteristics at presentation	
Preterm premature rupture of membranes	26/28 (93%)
Fever	1/28 (4%)
Antepartum hemorrhage	2/28 (7%)
Severe hypertension	1/28 (4%)
Fetal parts or cord in vagina	7/28 (25%)
Clinical course	
Mean duration (presentation to delivery, d)	9.2±23.0 (0–121)
Duration (presentation to delivery, d)	3 (1–7)
Antenatal corticosteroids	4/28 (14%)
Indications for delivery[a]	
Fetal demise	9/28 (32%)
Fever/clinical chorioamnionitis[b]	10/28 (36%)
Severe preeclampsia	1/28 (4%)
Spontaneous labor	8/28 (29%)
Delivery outcomes	
Vaginal delivery	25/28 (89%)
Induction of labor	14/25 (56%); 14/28 (50%)
Cesarean delivery	2/28 (7%)
Hysterectomy	1/28 (4%)

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TABLE
Maternal demographics, pregnancy outcomes, and morbidities for women presenting with cardiac activity at <22 weeks gestation and requiring obstetrical management *(continued)*

Demographics	Median (Q1–Q3) or N (%)
Fetal or neonatal outcomes	
Intrapartum demise	10/28 (36%)
Born with cardiac activity	8/28 (29%)
Admitted to neonatal intensive care unit	3/8 (38%); 3/28 (11%)
Neonatal demise <1 d	7/8 (88%)
Maternal complications	
Clinical chorioamnionitis[b]	10/28 (36%)
Placental pathology with chorioamnionitis	22/26 (85%)
Placental abruption	2/28 (7%)
Intensive care unit admission	1/28 (4%)
Blood transfusion	5/28 (18%)
Dilatation and curettage	7/28 (25%)
Maternal death	0
Postpartum emergency room visit[c]	4/28 (14%)
Postpartum readmission[c]	1/28 (4%)
Composite maternal morbidity[4]	16/28 (57%)

The data are reported as median (interquartile range) and number (percent) with mean ±standard deviation (range) only where noted.

Q1–Q3, first quartile to third quartile.

[a] There may be >1 indication for delivery; [b] Clinical chorioamnionitis defined as chorioamnionitis documented by a physician and prompting treatment with intravenous antibiotics;[4]; [c] Postpartum emergency room visits and readmissions limited to those within 42 days after delivery. Placental pathology complete for 26 patients at time of submission.

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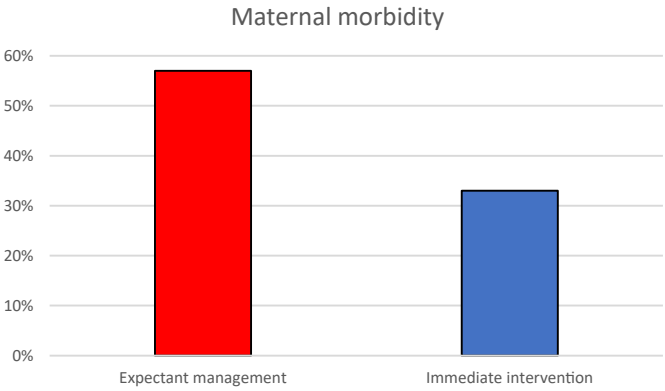
FIGURE
Maternal morbidity nearly double with expectant management[4]



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RESULTS: Between September 21, 2021 and May 20, 2022, 28 pregnant patients met the inclusion criteria. The most common reason for presentation was preterm premature rupture of membranes affecting 26 of 28 (93%) patients, with 7 of them (25%) having fetal parts or umbilical cord prolapsed into the vagina. The mean (standard deviation) days between presentation and delivery was 9.2 (23.0) (range: 0–121) (Table). Of the 28 cases, indications for delivery included infection in 10 (36%), spontaneous labor in 8 (29%), and fetal demise in 9 (32%) patients. Twenty-seven patients (96%) had loss of the fetus or infant. Of 8 infants with cardiac motion at birth, 7 died within 24 hours and 1 remains hospitalized (Supplemental Table). Maternal morbidity—including conditions such as clinical chorioamnionitis and hemorrhage—occurred in 12 of the 28 patients (43%), and 9 of them (32%) required intensive care admission, dilatation and curettage, or readmission. One patient required a hysterectomy after presenting at 20 weeks 6 days with hemoperitoneum from uterine rupture owing to a placenta accreta spectrum.

CONCLUSION: In 2 Texas hospitals, state-mandated expectant management of obstetrical complications in the periviable period was associated with significant maternal morbidity (Figure). Consistent with reports evaluating outcomes in women requesting expectant management,[4] most of the pregnant patients at <22 weeks presenting with medical indications for delivery experienced serious morbidity, and fetal outcomes were poor. Expectant management resulted in 57% of patients having a serious maternal morbidity compared with 33% who elected immediate pregnancy interruption under similar clinical circumstances reported in states without such legislation.[4] The patients were observed 9 days before developing complications that qualified as an immediate threat to maternal life. Because of the intense politicization of these issues nationally, some have questioned, "What does the threat of death have to be?" and "How imminent must it be?"[5] As large academic medical centers prepare to navigate the potential for loss of access to services, more questions are raised than answers.[5] Although limited by sample size, our

findings offer a glimpse into the possible not-so-distant future.

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Improving primary care follow-up for gynecologic patients with hypertension: an implementation science pilot study

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OBJECTIVE: Hypertension is the leading modifiable risk factor for cardiovascular disease (CVD), the leading cause of death in women.[1] Timely referral to primary care from specialty clinics for hypertension occurs infrequently, even among gynecologists.[2] BP Connect, a staff protocol for specialty clinics, doubled the odds of timely primary care follow-up for rheumatology patients with hypertension (42% after BP Connect implementation vs 29% before BP Connect implementation).[3] Here, we sought to evaluate the feasibility and impact of implementing BP Connect in gynecology clinics.

STUDY DESIGN: In 2 academic gynecology clinics, the BP Connect intervention trained medical assistants and nurses to "check" (remeasure) blood pressure (BP) of ≥140/90, "advise" patients of links between hypertension and CVD, and "connect" patients with confirmed high BP for timely primary care follow-up. The implementation included (1) tailored staff engagement focus groups, (2) staff education defining hypertension (≥140/90) and CVD risk, (3) electronic health record alerts prompting staff to remeasure elevated BPs and order timely follow-up (≤4 weeks) for confirmed high BP, (4) staff feedback (monthly audits), and (5) patient education and tools (brochure and BP log).[4] The BP Connect implementation toolkit can be accessed at http://www.hipxchange.org/BPConnect.[5]

Descriptive analyses compared the rates of BP remeasurement and the offers for and fulfillment of timely primary care follow-up in the 6 months before (August 2020 to February 2021) and after (February 2021 to August 2021) BP Connect implementation. Multivariable logistic regression, controlling for age, insurance, hypertension, and CVD, evaluated impacts on BP remeasurement and timely primary care follow-up.

RESULTS: BP was elevated in 676 preimplementation and 708 postimplementation visits. The Table describes the sociodemographics and relevant comorbidity of the patient visits. The only statistically significant difference between the pre- and postimplementation visit cohorts was a higher proportion insured by Medicaid before implementation (16% vs 11%, $P = .004$). The rate of BP remeasurement increased from 19% before implementation to 76% after implementation ($P<.001$). Staff provided patient education in 83% of postimplementation visits where patients had confirmed high BP and offered a referral for primary care follow-up in 60% of instances. Overall, the rate of timely primary care follow-up for high BP increased from 28% before implementation to 48% after implementation ($P<.001$) despite implementation during the COVID-19 pandemic. BP Connect implementation resulted in a 12-fold increase in BP remeasurement among patients with high BP in unadjusted (odds ratio [OR], 12.6; 95% confidence interval [CI],

SUPPLEMENTAL TABLE

Outcomes of infants with cardiac activity at birth

Gestational age at presentation	Gestational age at delivery	Neonatal intensive care unit	Infant length of stay	Infant complications	Maternal complications
17 wk 5 d	17 wk 5 d	N	<1 d	NND	PPROM, antepartum hemorrhage
18 wk 4 d	19 wk 0 d	N	<1 d	IUFD twin A, fetal parts in vagina, NND twin B	PPROM, clinical chorioamnionitis
19 wk 1 d	20 wk 1 d	N	<1 d	NND	PPROM and clinical chorioamnionitis
19 wk 2 d	32 wk 1d	Y	<1 d	PPHN, pulmonary hypoplasia, multiple pneumothoraces, chest tubes × 3, ventilator, pressor support, and NND	PPROM and cesarean delivery for nonreassuring fetal heart tracing
20 wk 2 d	24 wk 0 d	Y	Admitted	IVH and NEC; respiratory failure, chronic lung disease; hypotension, PDA, TPN-induced cholestasis, NEC, and germinal matrix hemorrhage	PPROM, NRFHT at 24 wk, repeat Cesarean delivery, postpartum hemorrhage, and ileus
20 wk 3 d	20 wk 4 d	N	<1 d	NND	PPROM, clinical chorioamnionitis, and cerclage
21 wk 0 d	22 wk 0 d	N	<1 d	Twin gestation NND	PPROM, clinical chorioamnionitis
21 wk 5 d	25 wk 5 d	Y	<1 d	NND unable to ventilate	PPROM

IUFD, intrauterine fetal demise; *IVH*, intraventricular hemorrhage; *NEC*, necrotizing enterocolitis; *NND*, neonatal demise; *NRFHT*, nonreassuring fetal heart tracing; *PDA*, patent ductus arteriosus; *PPROM*, preterm premature rupture of membranes; *TPN*, total parenteral nutrition.

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