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Original Research

Birth Outcomes for Planned Home and Licensed Freestanding Birth Center Births in Washington State

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OBJECTIVE: To describe rates of maternal and perinatal birth outcomes for community births and to compare outcomes by planned place of birth (home vs state-licensed, freestanding birth center) in a Washington State birth cohort, where midwifery practice and integration mirrors international settings.

METHODS: We conducted a retrospective cohort study including all births attended by members of a statewide midwifery professional association that were within professional association guidelines and met eligibility criteria for planned birth center birth (term gestation, singleton, vertex fetus with no known fluid abnormalities at term, no prior cesarean birth, no hypertensive disorders, no prepregnancy diabetes), from January 1, 2015 through June 30, 2020. Outcome rates were calculated for all planned community births in the cohort. Estimated relative risks were calculated comparing delivery and perinatal outcomes for planned births at home to state-licensed birth centers, adjusted for parity and other confounders.

RESULTS: The study population included 10,609 births: 40.9% planned home and 59.1% planned birth center births. Intrapartum transfers to hospital were more frequent among nulliparous individuals (30.5%; 95% CI 29.2–31.9) than multiparous individuals (4.2%; 95% CI 3.6–4.6). The cesarean delivery rate was 11.4% (95% CI 10.2–12.3) in nulliparous individuals and 0.87% (95% CI 0.7–1.1) in multiparous individuals. The perinatal mortality rate after the onset of labor (intrapartum and neonatal deaths through 7 days) was 0.57 (95% CI 0.19–1.04) per 1,000 births. Rates for other adverse outcomes were also low. Compared with planned birth center births, planned home births had similar risks in crude and adjusted analyses.

CONCLUSION: Rates of adverse outcomes for this cohort in a U.S. state with well-established and integrated community midwifery were low overall. Birth outcomes were similar for births planned at home or at a state-licensed, freestanding birth center.

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A small but increasing[1] number of families are choosing community births[2] at home or in freestanding (out of hospital) birth centers in the United

States'[3] in part because of low intervention[3] rates and high patient satisfaction.[4] In countries with well-integrated midwifery, perinatal outcomes for planned home and birth center births are not statistically different from planned hospital births.[5,6] However, in the United States, some studies have indicated elevated perinatal mortality rates for planned home births,[7–10] leading the American College of Obstetricians and Gynecologists' (ACOG) Planned Home Birth Committee to conclude that "*hospitals* and accredited *birth centers* are the safest settings for birth."[11]

ACOG identified elements for safe planned home birth: high degree of integration of midwives, education meeting International Confederation of Midwives standards,[12] ready access to consultation and transfer, and "appropriate selection of candidates."[11] All are present in Washington State, with integrated[13,14] and well-established[11] community midwifery, a midwifery formulary of drugs and devices,[15] and professional regulatory practices that mirror international best practices.[13,16] Midwifery licensure in Washington meets or exceeds International Confederation of Midwives standards and requires participation in a state- or nationally recognized data registry.[17,18] The largest midwifery professional organization, the Midwives' Association of Washington State, has developed guidelines[19] to inform risk assessment and shared birthplace decision making.[20,21]

In this study, we examined outcomes from a large, contemporary cohort in Washington State. Our objectives were to describe delivery and perinatal outcome rates and to compare outcomes by planned place of birth (home vs state-licensed freestanding birth center).

METHODS

For this retrospective cohort study, we obtained clinical, demographic, and birth outcome data for all planned community births attended by Midwives' Association of Washington State members from January 1, 2015 through June 30, 2020 from the Obstetrical Care Outcomes Assessment Program data set. The Obstetrical Care Outcomes Assessment Program[22,23] is a clinician-led, continuous quality improvement collaborative based at the Foundation for Health Care Quality, a nonprofit organization in Seattle, Washington.

Midwives' data in the Obstetrical Care Outcomes Assessment Program are populated through a semiannual data transfer from the Midwives Alliance of North America Statistics data registry, a validated[24] national birth registry. As per the Midwives Alliance of North America Statistics data registry protocol, demographic and antenatal clinical data for all pregnant clients providing consent for data collection are entered prospectively into the data set at initiation of care.[24] Client consent for participation in this data registry was previously reported as higher than 95%.[25] After the birth occurs, the remaining delivery, neonatal and postpartum data are abstracted from the medical records. Planned birth setting (planned home or planned birth center) is ascertained at the onset of labor and coded during chart abstraction.

The Midwives' Association of Washington State membership list is updated annually to identify midwives' records to transfer to the Obstetrical Care Outcomes Assessment Program. Based on 2019 membership data, 93% of professional members were direct-entry Licensed Midwives, most of whom also held a Certified Professional Midwife credential, and 7% were Certified Nurse–Midwives. Seventeen freestanding birth centers participated in the Midwives' Association of Washington State during the study period; all are state-licensed, and more than half also held national birth center accreditation. Median distance to a hospital for birth centers in the study was 2.2 miles (range 0.5–12); none were physically "attached" to or inside a hospital.

In a 2020 survey by the Midwives' Association of Washington State Data Committee, 94% of members reported they were participating in data collection, as mandated by Washington State licensure; of these, 99% reported their outcome data using the Midwives Alliance of North America Statistics data registry.[26] Midwives' Association of Washington State members represent approximately 85% of actively practicing Licensed Midwives in Washington State (estimated comparing 2019 membership lists to state licensure data and using publicly available data to assess active practice). Because Certified Nurse–Midwives are licensed as advanced practice nurses in Washington, we cannot determine the proportion of Certified Nurse–Midwives offering planned community births. Research using Midwives' Association of Washington State records in the Obstetrical Care Outcomes Assessment Program was deemed exempt from Institutional Review Board review due to the deidentified nature of these data by the Western Copernicus Group Institutional Review Board.

Race and ethnicity data were abstracted by the midwife from clients' medical records according to classifications predefined in the data registry. Categories for race and ethnicity were combined. We do not have detailed information for the "other race" group as this categorization was predefined by the data registry.

All births that met Washington State eligibility for birth center birth[27] and with none of the Midwives' Association of Washington State Guidelines criteria for transfer out of midwifery care[19] (referred to as "meeting guidelines and eligibility criteria for community birth") were included in the study cohort. These guidelines are comparable with community birth guidelines from countries with well-integrated midwifery.[16] This excluded multifetal pregnancy, prior cesarean delivery, onset of labor at more than 42 0/7 weeks of gestation or preterm (less than 37 weeks), pre-existing hypertension or diabetes, known amniotic fluid abnormality, gestational hypertension or preeclampsia, or malpresentation. Guidelines and birth center eligibility criteria are described in Appendix 1, available online at http://links.lww.com/AOG/C464. We used an intent-to-treat approach to define planned community birth, which retained births planned as home or birth center at the onset of labor in these birth setting groups, regardless of where the birth actually occurred, in keeping with best practices for birth setting research.[28] Because the focus of this study was on outcomes after initiation of labor, prelabor hospital transfers out of midwifery care, antepartum fetal deaths, and unplanned or precipitous preterm deliveries were excluded (Fig. 1).

Maternal outcomes included hospital admission (any, intrapartum [birth occurred in hospital], postpartum less than 6 hours after delivery, postpartum 6 hours–6 weeks after delivery), mode of delivery (cesarean, operative vaginal, spontaneous vaginal), epidural analgesia, episiotomy, third- or fourth-degree laceration, a composite of severe maternal morbidity (including any of placenta accreta spectrum, eclampsia, uterine rupture, shock, or deep vein thrombosis or thrombophlebitis), and "physiologic birth," defined according to the ACOG reVITALize definition[29] (with the exception of allowing for artificial rupture of membranes, which was not captured in the data set). Perinatal outcomes included hospital admission (less than 6 hours after birth, 6 hours–6 weeks after birth), small- and large-for-gestational age (less than the 10th and greater than the 90th birth weight percentile for gestational age and sex),[30] neonatal intensive care unit admission, a composite of severe perinatal mortality and morbidity (including perinatal death, seizure, meconium aspiration syndrome, or septicemia), exclusive breastfeeding at discharge from midwifery care (usually 6 weeks postpartum), and perinatal death (all and after excluding known fetal anomalies). All perinatal deaths were cross-referenced with the Midwives' Association of Washington State Quality Management Program, which enabled detailed classification of timing, cause of death, and whether lethal fetal anomalies were detected while maintaining confidentiality.

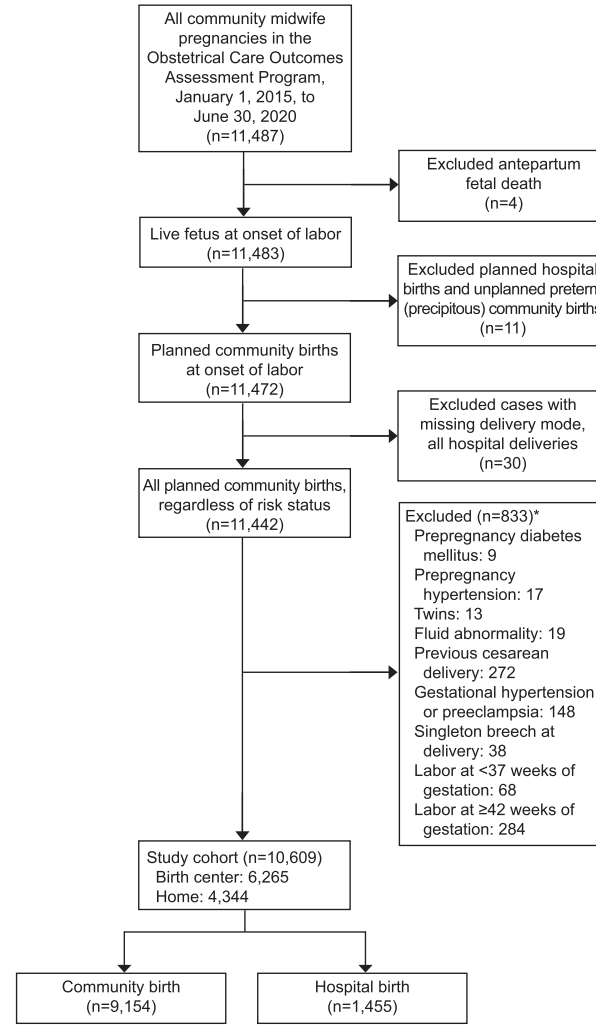

Fig. 1. Derivation of the study cohort. *Items not mutually exclusive.

Nethery. Planned Home and Birth Center Births. Obstet Gynecol 2021.

We examined maternal, delivery, and perinatal outcomes as counts, percentages, and rates per 1,000 births. Because our data set did not include patient-level identifiers, we bootstrapped 200 samples with replacement from the study population to estimate valid CIs around our estimates to account for non-independence between outcomes of successive births to the same person.[31] We estimated risk ratios (RRs) comparing outcomes by planned place of birth (home birth vs birth center birth as the baseline) using log binomial regression. Multivariable models were adjusted for age (35 years or older), body mass index

(BMI, calculated as weight in kilograms divided by height in meters squared) at initial prenatal visit (30 or higher), delivery at 41 4/7 weeks of gestation or later, rural residence,[32] insurance payer type (commercial or government or self pay) and parity (nulliparous or multiparous) based on a priori identification of potential confounding variables. Multiple regression models were restricted to cases with complete data (n=10,266 pregnancies); fewer than 3% of records were excluded due to missing confounder data. Regression models, adjusting for only confounders without missing data (age, gestational age at delivery and parity), were assessed in a sensitivity analysis. We analyzed cesarean birth, intrapartum transfers, and perinatal mortality (after the onset of labor) rates stratified by parity. All denominators were restricted to the population at risk: for perinatal outcomes other than intrapartum and neonatal death, the denominator was restricted to liveborn neonates to remove those no longer at risk. We conducted parallel descriptive analyses for all births, including those that did and did not meet guidelines for eligibility for planned community birth, as a sensitivity analysis. All analyses were conducted using SAS 9.4[33] and R.[34]

RESULTS

Of the 11,442 births planned as community births at the onset of labor, 10,609 (93%) were within guidelines, met eligibility criteria for planned community birth,[19,27] and were included in the study cohort (Fig. 1 and Appendix 2, available online at http://links.lww.com/AOG/C464). Fewer people planned home births (41%) compared with freestanding birth center births (59%). Births were attended by a total of 139 individual midwives. Pregnant people who received midwifery care and planned a community birth were predominantly White non-Hispanic (84%) and multiparous (64%) (Table 1). Nearly one third (29%) of births were paid for by Medicaid, and 10% of clients lived in rural areas.

Compared with those planning to birth at state-licensed freestanding birth centers, those planning home birth (Table 1) were more likely to be multiparous, to have self-pay or no insurance, and to be rural residents.

When evaluating outcomes for all planned community (home or birth center) births (Table 2), 86% gave birth in their planned location. Intrapartum transfers to hospital were more frequent among nulliparous individuals (30.5%; 95% CI 29.2–31.9) than multiparous individuals (4.2%; 95% CI 3.6–4.6). The cesarean birth rate was 11% for nulliparous individuals and 1% for multiparous individuals. Among all births in this cohort, 94% were spontaneous vaginal births, and 85% had a physiologic birth.[29] Among those transferred to hospital during labor, 66% (n=961/1,455) had a vaginal birth (Table 2) and, among transfers, 37% (435/1,170) of nulliparous individuals and 20% (59/285) of multiparous individuals had a cesarean birth. The group who delivered in hospital had higher rates of nulliparity, BMI 30 or higher, 35 years age or older, and labor that started after 41 4/7 weeks of gestation (Appendix 3, available online at http://links.lww.com/AOG/C464).

Only 5% of neonates were small-for-gestational age (Table 3), and 18% were large-for-gestational age. Most neonates (93%) were exclusively breastfed at discharge from midwifery care. The rate of perinatal death (intrapartum stillbirth or neonatal death within 7 days) was 0.57 (95% CI 0.19–1.04) per 1,000 births. None of the perinatal deaths were associated with lethal congenital anomalies. Of four intrapartum fetal deaths, two were transferred during labor for fetal heart rate abnormalities and were stillborn in hospital and two were intrapartum stillbirths in the community setting. In our sensitivity analysis, among all planned community births attended by Midwives' Association of Washington State midwives, whether they did or did not meet guidelines for eligibility for community birth, the cesarean birth rate was 5.3% (Appendix 4, available online at http://links.lww.com/AOG/C464), and the rate of perinatal death after excluding one case with lethal anomalies was 0.87 per 1,000 births (95% CI 0.44–1.31) (Appendix 5, available online at http://links.lww.com/AOG/C464).

We found no increased risk of cesarean birth (adjusted RR 0.97, 95% CI 0.81–1.16), neonatal intensive care unit admission (adjusted RR 1.17, 95% CI 0.91–1.48) or other adverse delivery or postpartum outcomes when comparing planned home to planned birth center births in models adjusting for parity and other risk factors (age, obesity, rural residence, 41 4/7 weeks of gestation or more at delivery and insurance payer) (Appendix 6, available online at http://links.lww.com/AOG/C464). For rare outcomes with low numbers (perinatal death and a composite of severe maternal morbidity), there was no statistical difference in unadjusted perinatal mortality rates by planned place of birth although we lacked sufficient power to model adjusted risks for these outcomes. Adjusting for confounders attenuated RRs for most outcomes, with adjusted estimates closer to the null than crude RRs. In a sensitivity analysis using all cases but adjusting only for confounders without missing data, all modeled relative risks were essentially unchanged (results not shown).

Table 1. Demographics and Clinical Characteristics

Characteristic	All Planned Community Births (N=10,609)	Planned Home Births (n=4,344 [40.9])	Planned Birth Center Births (n=6,265 [59.1])
Age at delivery (y)			
Younger than 25	1,262 (11.9)	381 (8.8)	881 (14.1)
25–29	3,211 (30.3)	1,236 (28.5)	1,975 (31.5)
30–34	3,910 (36.9)	1,675 (38.6)	2,235 (35.7)
35 or older	2,226 (21.0)	1,052 (24.2)	1,174 (18.7)
Prepregnancy BMI (kg/m^2)*			
Lower than 25 (normal or underweight)	6,585 (62.8)	2,748 (64.1)	3,837 (61.9)
25–29 (overweight)	2,387 (22.8)	952 (22.2)	1,435 (23.2)
30 or higher (obese)	1,510 (14.4)	586 (13.7)	924 (14.9)
Race and ethnicity†			
Non-Hispanic White	8,861 (83.8)	3,723 (85.9)	5,138 (82.4)
Hispanic or Latinx	581 (5.5)	207 (4.8)	374 (6.0)
Non-Hispanic Black	173 (1.6)	58 (1.3)	115 (1.8)
Asian or Pacific-Islander	339 (3.2)	121 (2.8)	218 (3.5)
Native American or Native Alaskan	77 (0.7)	15 (0.3)	62 (1.0)
Other or mixed race	538 (5.1)	212 (4.9)	326 (5.2)
Insurance payer‡			
Medicaid or Medicare§	3,092 (29.4)	1,194 (27.8)	1,898 (30.6)
Commercial or military or non-U.S.	6,533 (62.3)	2,470 (57.6)	4,063 (65.6)
Self-pay or no insurance	858 (8.2)	626 (14.5)	232 (3.7)
Rural residence‖	1,091 (10.4)	529 (12.3)	562 (9.0)
Parity			
Nulliparous	3,831 (36.1)	1,091 (25.1)	2,740 (43.7)
Multiparous	6,778 (63.9)	3,253 (74.9)	3,525 (56.3)
Multiparous with more than 4 prior births	572 (8.4)	374 (11.5)	198 (5.6)
Conditions known at onset of labor			
Gestational diabetes	340 (3.2)	135 (3.1)	205 (3.3)
Onset of labor at 41 4/7 wk or later	795 (7.5)	329 (7.6)	466 (7.4)

BMI, body mass index.
Data are n (%).
* One hundred twenty-seven patients had missing initial BMI data.
† Forty patients had missing race–ethnicity data.
‡ Ninety-six patients had missing insurance payer data.
§ Less than 1% of the study group had Medicare as payer.
‖ Ninety-one patients had missing ZIP code for rural–urban coding.

The absolute risk of perinatal death in our study cohort compared with those reported in previous studies[5] of planned home birth is shown in Table 4.

DISCUSSION

This study quantifies maternal and perinatal outcomes for a large contemporary cohort of planned community births meeting eligibility criteria in Washington State, where midwifery is well-established and regulated and midwifery data collection is mandated by law. Overall, we found low cesarean birth rates (4.7%), high physiologic birth rates (85%), high breastfeeding rates (93%) and low rates of complications. The perinatal mortality rate in this cohort was comparable with other international settings, defined as high-income countries where community birth and community midwifery are an established part of the health care system.[35–38] Importantly, rates of maternal and newborn adverse outcomes were similar for planned home and birth center births.

The intrapartum mortality rate in this cohort of planned community births within guideline criteria (0.38/1,000, 95% CI 0.09–0.75), is comparable to a previously reported U.S. community birth cohort (0.85/1,000, 95% CI 0.39–1.31) for a low-risk subgroup)[25] and congruent with rates from countries with

Table 2. Hospital Admissions, Interventions, Delivery, and Postpartum Outcomes

Outcomes for Birthing Person	All Planned Community Births (n=10,609)	% (95% CI)
Hospital admission		
Any transfer, intrapartum or postpartum, less than 6 h after delivery	1,721	16.2 (15.5–16.9)
Intrapartum transfer, birth occurred in hospital	1,455	13.7 (13.0–14.4)
Subgroup by parity		
Nulliparous	1,170	30.5 (29.2–31.9)
Multiparous	285	4.2 (3.6–4.6)
Postpartum transfer to hospital, 6 h or less after delivery	266	2.5 (2.2–2.8)
Late postpartum admission to hospital, more than 6 h–6 wk after delivery	102	0.96 (0.78–1.1)
Spontaneous vaginal birth	10,030	94.5 (94.1–95.0)
Operative vaginal birth	85	0.8 (0.7–1.0)
Vacuum assistance	60	0.6 (0.4–0.7)
Forceps assistance	25	0.2 (0.2–0.3)
Cesarean birth (all pregnancies)	494	4.7 (4.2–5.0)
Subgroup by parity		
Nulliparous	435	11.4 (10.2–12.3)
Multiparous	59	0.87 (0.7–1.1)
Interventions		
Epidural analgesia	953	9.0 (8.4–9.4)
Episiotomy*	89	0.88 (.7–1.1)
Delivery complications		
3rd- or 4th-degree laceration*	101	1.0 (0.8–1.2)
Any severe morbidity	11	0.1 (0.1–0.2)
Physiologic birth†	9,052	85.3 (84.7–86.0)

* Cesarean deliveries (n=494) removed from population at risk for episiotomy and third- and fourth-degree laceration.
† Physiologic birth defined as per ACOG's reVITALize definition, except artificial rupture of membranes allowed (no data available for artificial rupture of membranes in this data set). Specifically, physiologic birth is spontaneous labor and spontaneous vaginal delivery without epidural, other pharmaceutical pain medication, or augmentation of labor with oxytocin.

Table 3. Perinatal Outcomes

Outcome	Planned Community Births (n=10,609)	% or Rate/1,000 (95% CI)
Hospital admission		
Neonatal transfer to hospital, less than 6 h after birth*	189	1.8 (1.5–2.0)
Hospital admission, more than 6 h–6 wk after birth	245	2.3 (2.0–2.6)
Neonatal birth weight†		
SGA birth weight less than the 10th percentile	548	5.2 (4.9–5.7)
LGA birth weight greater than the 90th percentile	1,927	18.4 (17.6–19.2)
Neonatal complications		
NICU admission‡	237	2.2 (2.0–2.5)
Severe perinatal morbidity or mortality§	44	0.4 (0.3–0.5)
Exclusive breastfeeding at discharge from midwifery care (6 wk)‖	9,744	93.0 (92.5–93.5)
Perinatal death¶ after the onset of labor (intrapartum and neonatal less than 7 d)	6	0.57 (0.19–1.04)
Nulliparous individuals only	4	1.04 (0.26–2.30)
Multiparous individuals only	2	0.30 (0.15–0.74)
Intrapartum fetal death	4	0.38 (0.09–0.75)
Neonatal death (to less than 7 d)	2	0.19 (0.09–0.57)

SGA, small for gestational age; LGA, large for gestational age; NICU, neonatal intensive care unit.
Data are n unless otherwise specified.
* Restricted to live births.
† One hundred fifty-three patients had missing neonatal birth weight; restricted to live births.
‡ Restricted to live births; NICU cases by timing of admission to hospital: 72 (0.68%) after an intrapartum transfer, 98 (0.92%) after neonatal transfer less than 6 hours, 65 (0.61%) after a hospital admission more than 6 hours–30 days after birth.
§ "Severe perinatal mortality or morbidity" defined as any of: perinatal death, seizures, meconium aspiration syndrome, or septicemia with hospital admission.
‖ One hundred twenty-seven patients had missing data for breastfeeding on discharge from care; restricted to live births.
¶ All perinatal deaths are cases without known lethal fetal anomalies.

Table 4. Perinatal Mortality After the Onset of Labor, Comparison With Other Studies

Study Data Source (All Planned Home Births Unless Noted Otherwise)	Perinatal Deaths* (Intrapartum and Neonatal Deaths to Less Than 7 d)	Perinatal Mortality* Rate/ 1,000 Births (95% CI)†
Cohorts restricted to eligibility criteria for this birth setting based on local standards		
This study, Washington State home and birth center	6/10,609	0.57 (0.19–1.04)
Stapleton 2013,[10] U.S. birth centers	13/14,881	0.87 (0.49–1.45)
Cheyney 2014,[25] United States (low-risk subgroup for intrapartum deaths only and neonatal deaths)	NR	1.26‡
Birthplace in England[36]	11/16,732	0.67 (0.32–1.26)
de Jonge 2015,[39] the Netherlands§	361/466,041	0.77 (0.70–0.86)
Nulliparous individuals only		
This study, Washington State home or birth center	4/3,831	1.04 (0.26–2.30)
Birthplace in England (data from reference 5)	6/4,538	1.32 (0.55–2.72)
de Jonge 2015,[39] the Netherlands	203/198,312	1.02 (0.89–1.17)
Hutton 2016,[37] Ontario, Canada	7/4,027	1.74 (0.78–3.41)
Multiparous individuals only		
This study, Washington State home or birth center	2/6,778	0.30 (0.15–0.74)
Birthplace in England (data from reference 5)	5/12,194	0.41 (0.16–0.90)
de Jonge 2015,[39] the Netherlands	158/267,368	0.59 (0.50–0.69)
Hutton 2016,[37] Ontario, Canada	2/7,465	0.27 (0.06–0.86)
Cohorts using all births regardless of risk status (no exclusions for eligibility for community birth)		
This study (Appendix 4‖), Washington State home and birth center	10/11,455	0.87 (0.44–1.31)
Cheyney 2014,[25] United States	29/16,980	1.71 (1.17–2.42)
Hutton 2016,[37] Ontario, Canada	9/11,492	0.75 (0.37–1.38)
Janssen 2009,[38] BC, Canada¶	1/2,881	0.35 (0.04–1.62)

NR, not reported.
Data are n/N unless otherwise specified.
* Lethal anomalies excluded from all studies where reported.
† CIs calculated using Bayes' estimates for all rates based on sample size and number of cases as reported in published studies. Bootstrapped CIs reported for this study.
‡ Authors in this article report an intrapartum mortality rate of 0.85 (95% 0.39–1.31) for a sample that excludes "breech, TOLAC, GDM or pre-eclampsia" and an early neonatal mortality rate that does not exclude higher risk cases of 0.41 (0.11–0.72). For purposes of comparison, we estimate a "low risk" combined (intrapartum and neonatal) mortality rate of 1.26, acknowledging that this may not exclude higher risk cases from the neonatal deaths.
§ Authors note in this study that there was discrepancy between death timing registration in some cases, so this rate may overestimate the true perinatal mortality rate.
‖ Appendix 4 is available online at http://links.lww.com/AOG/C464.
¶ Authors in this study defined perinatal death as any fetal death after 28 weeks of gestation through to neonatal deaths up to less than 7 days of life.

well-integrated midwifery.[36–39] Although we are limited in this study in not having a readily available planned hospital birth cohort for direct comparison, we comprehensively compared the absolute risk of adverse outcomes with those reported in previous studies included in the recent meta-analysis[5] of planned home birth. Furthermore, the perinatal mortality rate in our cohort (0.57/1,000: 0.38 in 1,000 [intrapartum] and 0.19 in 1,000 [neonatal]) is identical to the rate ACOG cited as a benchmark against which home birth perinatal mortality should be compared: "0.57 per 1,000 (0.4 in 1,000 and 0.17 in 1,000 for intrapartum and neonatal deaths, respectively)."[11]

We found no increased risk of adverse maternal or perinatal outcomes by birth setting, which may be expected given the same availability of emergency medication, medical equipment and the midwives' management at home and at a state-licensed birth center. Antepartum, intrapartum and postpartum management by community midwives (Licensed Midwives, Certified Professional Midwives, and Certified Nurse–Midwives) is essentially the same in both settings and midwives follow national and international standards and guidelines for low-risk birthing people.[40–42] These findings suggest that, where community midwives are more integrated[13] into the health system, hospitals, birth centers, and homes can all be safe settings for birth in the United States.

Our finding that 30% of nulliparous individuals planning a community birth ultimately delivered in

hospital is comparable with the UK (32%)[43] but higher than in a national U.S. study (23%)[25] and in Oregon (27%).[7] Multiparous individuals were less likely to transfer to hospital. Detailed transfer data for this cohort were not available; however, others have reported slow labor progress as the most common indication for transfer in nulliparous individuals[43–45] and the rate of "potentially urgent" hospital transfers[45] was 0–5% of all births. Although we did not evaluate Medicaid cost implications,[46,47] nearly 30% of births were paid for by Medicaid. Additionally, in this cohort, midwifery care is not being widely used by a racially diverse population. These contemporary U.S. data for planned community births, including hospital transfer rates, provide crucial information for pregnant people considering community birth, policy makers and hospital-based health care professionals who receive community birth transfers.

We focused this study on pregnancies meeting eligibility guidelines for community birth,[19] similar to those from countries with well-integrated midwifery.[14,16,19] Greater availability in U.S. hospital obstetric units of ACOG-supported practices such as trial of labor after cesarean,[48] vaginal twin birth[49,50] and vaginal breech[51] in carefully selected cases may reduce the likelihood of pregnant people choosing planned home births outside of guidelines. Notably, planned community births outside guidelines were infrequent (7%) in our study cohort and no more common than the 7% reported in planned home births in the UK Birthplace cohort study where midwife-attended community births are fully integrated within the health system.[36,52]

This large study population of planned home and planned birth center births in a single state with well-integrated midwifery enabled our study to overcome previous limitations to studying planned community births in the United States. Specifically, we used an intent-to-treat approach to define planned place of birth, compared outcomes by community birth setting, and verified the midwife type.[7,8,16] However, our findings must be interpreted in the context of several limitations. Because some Washington midwives are not Midwives' Association of Washington State members or do not participate in data collection, our study population is representative of this organization's members and may not include all planned community births in the state during our study period. As with many studies of birth outcomes, we had limited power to detect small differences in rare outcomes by birth setting. Demographics and obstetric characteristics of this cohort were similar to home and birth center births in other U.S. states[1]; however, results reported in this study may not be generalizable to states with different legislation, training, and integration of community midwives. Although this cohort is not representative of the broader U.S. birthing population (including planned hospital births), this reflects eligibility for community birth and does not limit the internal validity of the comparison between home and birth centers or the generalizability of our findings to a low-risk, more racially diverse cohort within a state with a similar level of midwifery integration.

Despite these limitations, our findings demonstrate that outcomes from community-based midwifery and either a planned home birth or a planned state-licensed birth center birth are comparable with international settings, in a U.S. state with well-established community midwifery. Improving the integration of community midwives in the United States could be important to achieve comparable outcomes in other U.S. states.

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