Appendix 1. Key Definitions and Labor Management Recommendations From the Consensus for Prevention of the Primary Cesarean Delivery for Active, Latent, and Second Stage Labor

Phase or stage	Cervical dilatation	Minimum criteria for diagnosis of labor arrest	Cesarean delivery not indicated for
Latent labor	0 to < 6 cm	Oxytocin administered for ≥12-18 hours	Arrest of dilation, any specific duration
Active labor	≥6 cm	No cervical change after membrane rupture and ≥4 hours of adequate contractions, or ≥ 6 hours of oxytocin administration with inadequate contractions	Slow progression
Second stage labor	10 cm	≥ 3 hours of pushing if nulliparous and ≥ 2 hours of pushing if parous	Any specific duration

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The authors provided this information as a supplement to their article.

Appendix 2. Guideline to Lower Cesarean Delivery Rates

For most pregnancies, which are low-risk, Cesarean delivery appears to pose greater risk of maternal morbidity and mortality than vaginal delivery. The current Cesarean rate is high and thus needs to be lowered.

Recommendations for safe prevention of Cesarean delivery;

1. First stage of labor
   A. A prolonged latent phase (e.g., >20 h in nulliparous women and >14 h in multiparous women) should not be indication for Cesarean delivery.
   B. Slow but progressive labor in first stage of labor should not be indication for Cesarean delivery.
   C. Cervical dilation of 6 cm should be considered threshold for active phase of most women in labor. Thus, before 6 cm of dilation is achieved, standards of active phase progress should not be applied.
   D. Cesarean delivery for active-phase arrest in first stage of labor should be reserved for women $\geq$ 6 cm of dilation with ruptured membranes who fail to progress despite 4 h of adequate uterine activity, or at least 6 h of oxytocin administration with inadequate uterine activity and no cervical change.

2. Second stage of labor
   A. A specific absolute maximum length of time spent in second stage of labor beyond which all women should undergo operative delivery has not been identified.
   B. Before diagnosing arrest of labor in second stage, if maternal and fetal conditions permit, allow for following:
      - At least 2 h of pushing in multiparous women
      - At least 3 h of pushing in nulliparous women

      Longer durations may be appropriate on individualized basis (eg, with use of epidural analgesia or with fetal malposition) as long as progress is being documented.
   C. Operative vaginal delivery in second stage of labor by experienced and well-trained physicians should be considered safe, acceptable alternative to Cesarean delivery. Training in, and ongoing maintenance of, practical skills related to operative vaginal delivery should be encouraged.

3. Fetal heart rate monitoring
   A. Amnioinfusion for repetitive variable fetal heart rate decelerations may safely reduce rate of Cesarean delivery.
   B. Scalp stimulation can be used as means of assessing fetal acid-base status when abnormal or indeterminate (formerly, nonreassuring) fetal heart patterns (eg, minimal variability) are present and is safe alternative to Cesarean delivery in this setting.

4. Induction of labor

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A. Before 41 0/7 wks of gestation, induction of labor generally should be performed based on maternal and fetal medical indications. Inductions at ≥ 41 0/7 wks of gestation should be performed to reduce risk of Cesarean delivery and risk of perinatal morbidity and mortality.
B. Cervical ripening methods should be used when labor is induced in women with unfavorable cervix.
C. If maternal and fetal status allow, Cesarean deliveries for failed induction of labor in latent phase can be avoided by allowing longer durations of latent phase (up to ≥ 24 h) and requiring that oxytocin be administered for at least 12-18 h after membrane rupture before deeming induction failure.

5. Fetal malpresentation
   A. Fetal presentation should be assessed and documented beginning at 36 0/7 wks of gestation to allow for external cephalic version to be offered.

6. Suspected fetal macrosomia
   A. Cesarean delivery to avoid potential birth trauma should be limited to estimated fetal weights of at least 5000 g in women without diabetes and at least 4500 g in women with diabetes. Prevalence of birth weight of ≥ 5000 g is rare, and patients should be counseled that estimates of fetal weight, particularly late in gestation, are imprecise.

7. Excessive maternal weight gain
   A. Women should be counseled about Institute of Medicine maternal weight guidelines in attempt to avoid excessive weight gain.

It is essential that these be followed if a lower Cesarean delivery rate is to be achieved.

PERSON RESPONSIBLE FOR REVIEW
Chief, Division of Maternal Fetal Medicine

Maternal Fetal Medicine	Policy Number: 0014-MFM
Guideline to lower cesarean delivery rates	Effective: April 15, 2014

(Appendix 2 is modified from American College of Obstetricians and Gynecologists; Society for Maternal-Fetal Medicine. Obstetric care consensus no. 1: safe prevention of the primary cesarean delivery. Obstet Gynecol 2014;123:693–711.)

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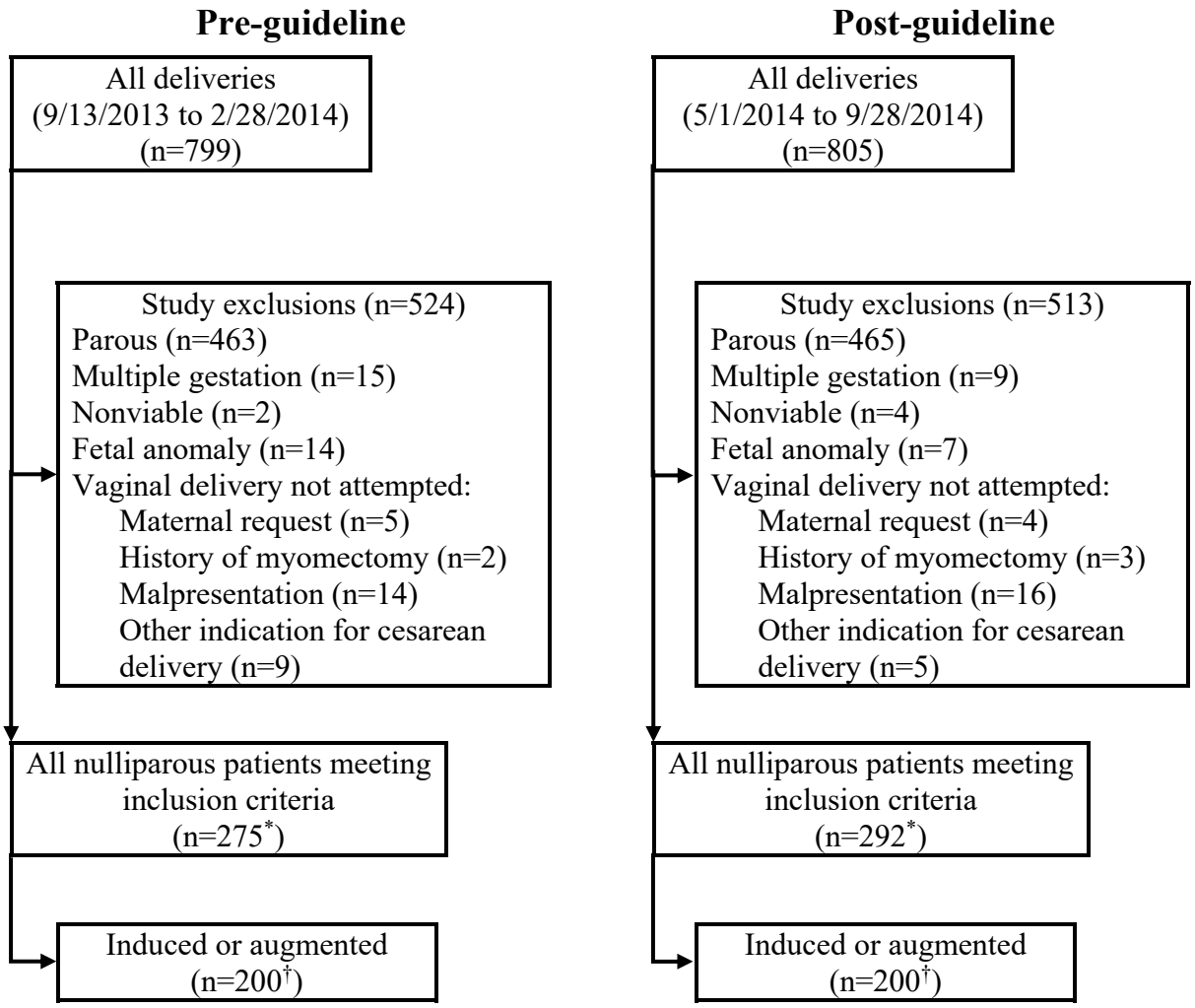
Appendix 3. Selection of patient population



*Cohort for secondary outcomes.
†Cohort for primary outcome.

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Appendix 4. Baseline Characteristics of Induced and Augmented Patients

Characteristic	Preguideline n= 200	Postguideline n= 200	P-value
Age (y)	26.9 (±5.6)	27.1 (±5.3)	.84
BMI (kg/m^2)	25.4 (22.1-30.0)	25.5 (22.0-30.0)	.92
Gestational age (wk)	39.7 (38.6-40.6)	39.7 (38.3-40.7)	.84
< 34 wk	1 (0.5%)	2 (1.0%)	1.00
Infant weight (g)	3265 (±525)	3277 (±583)	.83
Race or ethnicity			
Black	14 (7.0%)	14 (7.0%)	.79
Hispanic	17 (8.5%)	16 (8.0%)	
Other	16 (8.0%)	22 (11.0%)	
Caucasian	153 (76.5%)	148 (74.0%)	
Comorbidities			
Poly or oligohydramnios	9 (4.5%)	10 (5.0%)	1.00
Hypertensive disease	56 (28.0%)	67 (33.5%)	.28
Diabetes	12 (6.0%)	8 (4.0%)	.49
Fetal growth restriction	13 (6.5%)	17 (8.5%)	.57
Labor characteristics			
Induced with intact membranes	116 (58.0%)	121 (60.5%)	.68
Admitted with ruptured membranes	63 (31.5%)	56 (28.0%)	.51
Dilatation (cm)*	2.0 (1.0-3.0)	1.8 (1.0-3.0)	.51
Effacement (%)*	50.0 (50.0-75.0)	50.0 (50.0-80.0)	.64
Labor interventions			
Magnesium for seizure prophylaxis	19 (9.5%)	29 (14.5%)	.17
Epidural	166 (83.0%)	171 (85.5%)	.58
Cervical ripening	71 (35.5%)	87 (43.5%)	.12
Fetal scalp electrode	70 (35.0%)	73 (36.5%)	.83
Intrauterine pressure catheter	23 (11.5%)	17 (8.5%)	.40
Amnioinfusion	7 (3.5%)	3 (1.5%)	.34

BMI, body mass index.
Data are n (%), median (interquartile range), or mean±SD.
*Cervical exam at admission.

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Appendix 5. Route of Delivery Relative to Guideline Implementation for Induced and Augmented Patients

Delivery method	Pre-guideline n= 200	Post-guideline n= 200	OR (95% CI)	P-value
Cesarean	71 (35.5%)	49 (24.5%)	0.59 (0.38-0.91)	.022
Indication*				
Non-reassuring fetal heart tones	24 (12.0%)	22 (11.0%)	0.91 (0.49-1.68)	.875
Labor arrest	55 (27.5%)	35 (17.5%)	0.56 (0.35-0.9)	.023
Maternal request or condition	4 (2.0%)	3 (1.5%)	0.75 (0.11-4.48)	1.00
Operative vaginal	11 (5.5%)	18 (9.0%)	1.7 (0.78-3.7)	.247

OR, odds ratio; CI, confidence interval.

*Single cesarean deliveries may be categorized as having multiple indications.

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