OBSTETRICS

Induction of labor at 39 weeks of gestation versus expectant management for low-risk nulliparous women: a cost-effectiveness analysis

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BACKGROUND: A large, recent multicenter trial found that induction of labor at 39 weeks for low-risk nulliparous women was not associated with an increased risk of cesarean delivery or adverse neonatal outcomes.

OBJECTIVE: We sought to examine the cost-effectiveness and outcomes associated with induction of labor at 39 weeks vs expectant management for low-risk nulliparous women in the United States.

STUDY DESIGN: A cost-effectiveness model using TreeAge software was designed to compare outcomes in women who were induced at 39 weeks vs expectantly managed. We used a theoretical cohort of 1.6 million women, the approximate number of nulliparous term births in the United States annually that are considered low risk. Outcomes included mode of delivery, hypertensive disorders of pregnancy, macrosomia, stillbirth, permanent brachial plexus injury, and neonatal death, in addition to cost and quality-adjusted life years for both the woman and neonate. Model inputs were derived from the literature, and a cost-effectiveness threshold was set at $100,000/quality-adjusted life years.

RESULTS: In our theoretical cohort of 1.6 million women, induction of labor resulted in 54,498 fewer cesarean deliveries and 79,152 fewer cases of hypertensive disorders of pregnancy. We also found that induction of labor resulted in 795 fewer cases of stillbirth and 11 fewer neonatal deaths, despite 86 additional cases of brachial plexus injury. Induction of labor resulted in increased costs but increased quality-adjusted life years with an incremental cost-effectiveness ratio of $87,691.91 per quality-adjusted life year. In sensitivity analysis, if the cost of induction of labor was increased by $180, elective induction would no longer be cost effective. Similarly, we found that if the rate of cesarean delivery was the same in both strategies, elective induction of labor at 39 weeks would not be a cost-effective strategy. In probabilistic sensitivity analysis via Monte Carlo simulation, we found that induction of labor was cost effective only 65% of the time.

CONCLUSION: In our theoretical cohort, induction of labor in nulliparous term women at 39 weeks of gestation resulted in improved outcomes but increased costs. The incremental cost-effectiveness ratio was marginally cost effective but would lead to an additional 2 billion dollars of healthcare costs. Whether individual clinicians and healthcare systems offer routine induction of labor at 39 weeks will need to depend on local capacity, careful evaluation and allocation of healthcare resources, and patient preferences.

KEY WORDS: cesarean delivery, decision analysis, healthcare resources, induction of labor, low-risk nulliparous women, mode of delivery, obstetric outcomes

Induction of labor is a commonly used intervention for initiating labor before the spontaneous onset of labor for a range of medical indications.[1] In the United States, the percentage of full-term, singleton pregnancies ending with induction of labor increased from 10% in 1990 to more than 20% in 2010.[2] Much of the observed increase is attributable to elective induction of labor, or induction of labor performed without medical indication.[3]

A major concern about elective induction of labor has been that it will increase the risk of cesarean delivery. Yet, studies that demonstrated the increased risk of cesarean compared women undergoing induction of labor with women in spontaneous labor.[4] However, the appropriate comparison group for elective induction of labor is expectant management of pregnancy because expectant management leads to pregnancies at a greater gestational age. Although some women will go into labor spontaneously, others will require induction of labor for an indication such as preeclampsia, oligohydramnios, fetal growth restriction, or late-term or post-term pregnancy.[4]

Several retrospective cohort studies that compared induction of labor to expectant management using the appropriate comparison group did not find an increased risk of cesarean and, in some cases, actually found a decreased risk of cesarean.[1,5] Similarly, randomized trials at 41 weeks of gestation and beyond as compared with expectant management also demonstrated a decreased risk of cesarean delivery.[6-14] Furthermore, a large, recent multicenter trial, the ARRIVE (A Randomized Trial of Induction Versus Expectant Management) Trial, conducted by the Maternal-Fetal Medicine Network, which randomized women to elective induction of labor at 39 weeks' gestation vs expectant management up to 41 weeks' gestation, found a reduction in cesareans with no change in neonatal outcomes.[15]

Although the ARRIVE Trial demonstrated potential benefits of routine induction of labor at 39 weeks' gestation, there are a number of factors that deserve consideration before routine adoption occurs. One of these is the economic impact and cost-effectiveness of elective induction of labor at 39 weeks' gestation. Therefore, we sought to investigate the cost-effectiveness of induction of labor at 39 weeks of gestation

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AJOG at a Glance

Why was the study conducted?
This study found that induction of labor for low-risk, nulliparous women at 39 weeks of gestation is cost-effective with our baseline model inputs, resulting in better outcomes yet greater costs, with an incremental cost-effectiveness ratio of $87,692 per QALY, which is below the commonly used threshold of $100,000/QALY.

Key findings
Small changes in multiple model inputs were highly impactful to the cost-effectiveness of the model, leading to elective induction to be cost effective only 65% of the time.

What does this add to what is known?
As costs and pregnancy outcomes vary widely across the United States, these findings suggest the cost-effectiveness may vary based on institutional policies and patient populations.

for all low-risk, nulliparous women in the United States compared with expectant management.

Materials and Methods
We created a decision-analytic model using TreeAge Pro software (2018 version; TreeAge Software, Inc, Williamstown, MA) to assess the cost-effectiveness of universal induction of labor at 39 weeks of gestation for low-risk nulliparous women compared with expectant management. We used a theoretical cohort of 1.6 million women, the approximate number of nulliparous term births in the United States annually that are considered low risk.[16] Using data from the 2016 National Vital Statistics, there were approximately 3.5 million term births. We assumed that approximately 10% of these births were high-risk, and therefore, excluded from this study. Of the remaining 3.2 million low-risk births, we assumed one half were to nulliparous women, which resulted in a final theoretical cohort of 1.6 million women. No human subjects were involved in the development of this model; therefore, this study was exempt from institutional review board approval.

We derived all probabilities from literature searches in PubMed (Table 1). In our model, the initial decision node stratified women into 2 main strategies, (1) universal elective induction of labor at 39 weeks and (2) expectant management (Figure 1). Elective induction of labor was defined as induction for no medical indication.[15] Expectant management was defined as routine pregnancy care until women go into spontaneous labor or require induction of labor for an indication such as hypertensive disorders of pregnancy or late-term or post-term pregnancy. Maternal outcomes included hypertensive disorders of pregnancy, including gestational hypertension and preeclampsia, and mode of delivery, for each of which the incidence was derived from the ARRIVE Trial.[15] It was assumed that all women would be induced at 41 weeks if they had not gone into spontaneous labor nor otherwise delivered by then.[17]

We derived probabilities for each of the neonatal outcomes from large US-based cohort studies. The incidence of stillbirth was determined from a population cohort study.[18] The incidence of neonatal death in the setting of vaginal and cesarean deliveries were derived from Centers for Disease Control and Prevention delivery data.[19] Macrosomia (>4000 g birth weight) incidence was determined by its relation to gestational age and estimated to be 11% at 39 weeks of gestation and increase to 12% at 40 and 41 weeks of gestation.[1] Shoulder dystocia was reported as 0.03 and 0.007, in accordance with its incidence in the setting of macrosomia and no macrosomia, respectively.[20,21] The probability of brachial plexus injury in the setting of shoulder dystocia was estimated to be 0.26.[20,21]

We adjusted costs in parallel with inflation of medical costs to 2018 dollars using the medical component of the Consumer Price Index.[22] A societal perspective was assumed, meaning that all costs, not charges, to society were considered, regardless of the payer, and were considered over the lifetimes of the woman and neonate.[23] We obtained the costs of clinic visits and triage visits from prior cost-effectiveness analyses, which were estimated to be $136.39 for a clinic visit and $215.47 for a visit to triage.[24,25] The cost of each was multiplied by the proportions of women that used each resource in the ARRIVE Trial; 32.4% in the induction of labor group and 68.4% in the expectant management group attended at least 1 office visit, and 16.2% in the induction of labor group and 44.3% in the expectant management group visited triage at least once.[26] We obtained costs of vaginal delivery and cesarean delivery from a study comparing the cost of cesarean delivery with the cost of vaginal delivery.[27]

The cost of induction of labor was derived from a California cohort of singleton, non-anomalous deliveries from 2007 to 2011 using birth registry and hospital discharge data. We estimated this cost by using the mean cost of induction of labor among nulliparous women with a singleton, non-breech presentation delivering between 39 0/7 weeks and 40 6/7 weeks of gestation and stratified by mode of delivery. This source was used for our primary estimate so that we could factor in the exact gestational age, delivering between 39 0/7 weeks and 40 6/7 weeks of gestation, and maternal characteristics, such as nulliparity, of our theoretical cohort. In addition, for sensitivity analysis, we assessed for a change in cost effectiveness if we used a different estimate for the cost of induction of labor, which we derived from the same study that estimated our costs of vaginal and cesarean delivery.[27]

TABLE 1
Decision analytic model inputs for the cost-effectiveness of induction of labor at 39 weeks of gestation for low-risk nulliparous women compared with expectant management

Variable	Value	Range considered in sensitivity analysis	Reference
Probabilities			
Probability of cesarean delivery			15
Induction of labor	0.19	0.1—0.40	
Expectant management	0.22	0.1—0.40	
Probability of hypertensive disorders of pregnancy			15
Induction of labor	0.09	0.05—0.2	
Expectant management	0.14	0.05—0.2	
Probability of spontaneous labor			1
39 0/7—39 6/7 weeks	0.58	0.5—0.8	
40 0/7—40 6/7 weeks	0.69	0.5—0.8	
Probability of stillbirth			18
39 0/7—39 6/7 weeks	0.00035	0.0001—0.001	
40 0/7—40 6/7 weeks	0.00035		
Probability of neonatal death, vaginal delivery			19
39 0/7—39 6/7 weeks	0.0009	0.0001—0.0015	
40 0/7—40 6/7 weeks	0.0009	0.0001—0.0015	
≥41 weeks	0.0009	0.0001—0.0015	
Probability of neonatal death, cesarean delivery			19
39 0/7—39 6/7 weeks	0.0006	0.0001—0.0015	
40 0/7—40 6/7 weeks	0.0007	0.0001—0.0015	
≥41 weeks	0.0008	0.0001—0.0015	
Probability of macrosomia			1
39 0/7—39 6/7 weeks	0.11	0.05—0.15	
40 0/7—40 6/7 weeks	0.12	0.05—0.15	
≥41 weeks	0.12	0.05—0.15	
Probability of shoulder dystocia, macrosomia	0.03	0.01—0.05	20
Probability of shoulder dystocia	0.007	0.001—0.015	21
Probability of brachial plexus injury, shoulder dystocia	0.26	0.2—0.35	21
Costs, 2018 USD			
Induction of labor	$1979.87	$1000-$3000	See Methods section
Office visit	$136.39	$100-$200	24
Triage visit	$215.47	$150-$300	25
Vaginal delivery	$8707.70	$5000-$20,000	27
Cesarean delivery	$13,390.51	$5000-$20,000	27
Hypertensive disorders of pregnancy	$3650.18	$2000-$5000	28
Stillbirth	$9718.44	$6000-$12,000	33
Neonatal death	$105,599.77	$80,000-$130,000	34
Brachial plexus injury	$25,338.95	$20,000-$30,000	29

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TABLE 1
Decision analytic model inputs for the cost-effectiveness of induction of labor at 39 weeks of gestation for low-risk nulliparous women compared with expectant management *(continued)*

Variable	Value	Range considered in sensitivity analysis	Reference
Utilities and life expectancies			
Cesarean delivery	0.996	0.98—1.0	31
Induction of labor	0.996	0.98—1.0	See Methods Section
Stillbirth			35
Maternal perspective	0.92	0.86—0.96	
Neonatal death			36
Maternal perspective	0.76	0.7—0.8	
Brachial plexus injury			35
maternal perspective	0.87	0.8—0.9	
neonatal perspective	0.87	0.8—0.9	
Woman life expectancy following childbirth	56.2 y	50—60	32
Healthy neonate life expectancy	78.8 y	75—85	32

USD, US dollars.

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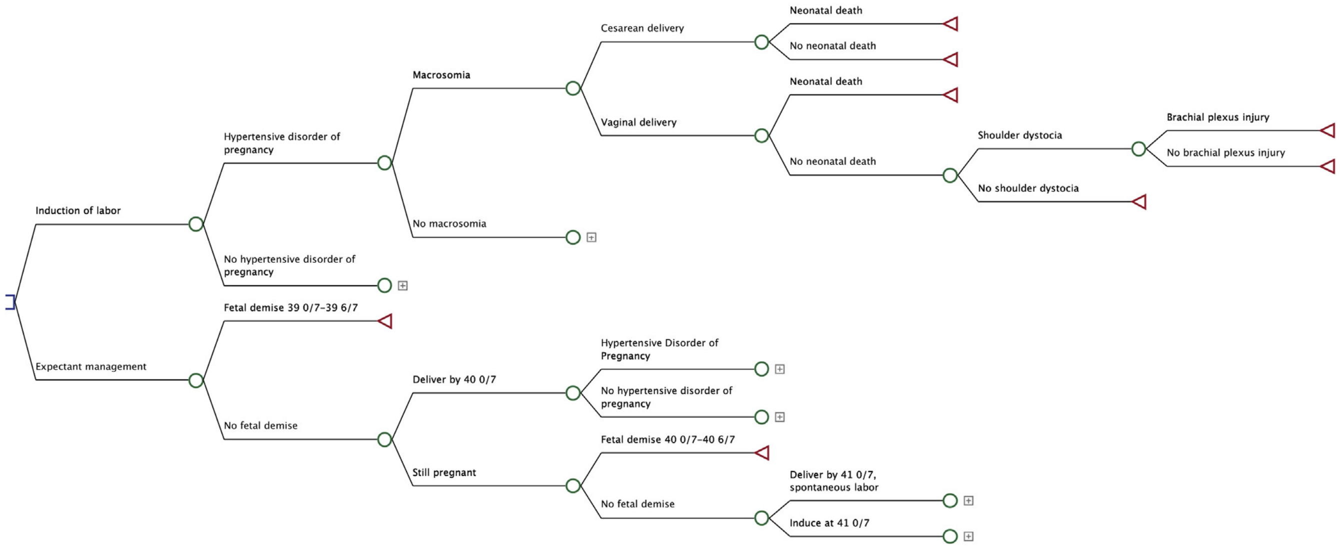
The cost of managing hypertensive disorders of pregnancy was estimated from a prior cost-benefit analysis investigating an intervention for preeclampsia.[28] The cost of brachial plexus injury was derived from a prior economic analysis.[29,30]

We considered quality-adjusted life years (QALYs) from the perspectives of the woman and the neonate in our analysis. Utilities are a proxy for quality of life dependent on each outcome, which are applied to life expectancy to generate QALYs. QALYs were estimated by applying utilities found in the literature to life expectancy, discounted at a rate of 3% in accordance with the Panel on Cost-Effectiveness in Health Medicine recommendations.[23] A utility of 1 was used when a woman had a spontaneous vaginal delivery and no adverse

FIGURE 1
Tree schematic



All branches not terminating in a triangle are collapsed to facilitate display and are the same as branches already open.

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TABLE 2

Maternal and neonatal outcomes in a theoretical cohort of 1.6 million low-risk nulliparous women undergoing induction of labor at 39 weeks of gestation

	Induction of labor	Expectant management	Difference
Cesarean deliveries	297,328	351,826	−54,498
Hypertensive disorder of pregnancy	144,736	223,888	−79,152
Macrosomia	169,600	181,574	−11,974
Stillbirth	0	795	−795
Permanent brachial plexus injury	3200	3114	+86
Neonatal death	1331	1342	−11
Cost (in thousands, USD)	$19,368,940	$17,331,542	+$2,037,398
Effectiveness (in thousands, QALYs)	91,242	91,219	+23
ICER	$87,692/QALY		

ICER, incremental cost effectiveness ratio; *QALY*, quality-adjusted life year; *USD*, US dollars.

The incremental differences between induction of labor and expectant management were used to estimate the ICER. This ICER was then compared with a cost-effectiveness threshold of $100,000 per QALY to ascertain whether it was cost effective.

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outcomes for her or the neonate occurred. A utility of 0.996 was used for women who had a cesarean delivery; this utility was applied for the estimated remaining years of fertility for the woman due to the impact of a cesarean delivery on future pregnancies.[31] A utility of 0.996 was also used for induction of labor and applied for 1 year, to estimate the woman's decrement in preferences with having a medical intervention during labor recognizing that such preferences likely vary between individuals. The life expectancy for women following the birth of her first child was assumed to be 56.2 years, which was calculated from subtracting the average age of first childbirth from the current estimated life expectancy of a woman.[16,32] The life expectancy for a healthy neonate was 78.8 years.[32]

We calculated the total costs and QALYs to determine the incremental cost-effectiveness ratio (ICER) of universal induction of labor at 39 weeks of gestation, which is the cost of the intervention per additional QALY gained. The ICER was calculated by dividing the difference in cost between the 2 interventions by the difference in QALYs. We considered an ICER of $100,000/QALY or less to be cost-effective, based on the commonly used standard.[23]

Sensitivity analysis

We performed one-way sensitivity analyses on all probabilities, costs, and utilities. A one-way sensitivity analysis is a method of varying 1 model input while holding the others constant to visualize the effect of changing that model input on the outcomes of the model. We first performed a tornado analysis, a method of performing one-way sensitivity analyses on all variables simultaneously, to determine which variables had the most influence on the ICER of the model. We then conducted more focused one-way and two-way analyses on more impactful model inputs.

Furthermore, we performed a probabilistic sensitivity analysis via Monte Carlo simulation to test the robustness of the results in the setting of simultaneous changes in probability, cost, and utility model inputs. A probabilistic sensitivity analysis involves sampling each model input for a value within its distribution and runs the model with those new values to determine the cost effectiveness; we ran the simulation 1000 times. For probability and utility inputs, a beta distribution was used because standard Normal distributions violate assumptions about probability, as the distributions have infinitely long tails falling outside of the interval from 0 to 1. The beta distribution can approximate the Normal distribution and is commonly used for such Monte Carlo simulations. Specifically, it has the feature of maintaining the same mean as the Normal distribution, but all values of the distribution stay between 0 and 1. We calculated the standard deviation of probabilities and utilities using this formula:

$$\begin{aligned} \textit{Standard deviation} &= \sqrt{\frac{p \times (1-p)}{n}} \\ p &= \textit{probability} \\ n &= \textit{sample size} \end{aligned}$$

For cost inputs, a gamma distribution was used, which is a distribution with a right skew to account for outliers in the upper cost ranges. Monte Carlo simulations produce the proportion of the time that one sample of model inputs is cost effective; we reported these and produced cost vs effectiveness graphs with 95% confidence ellipses.

Results

Baseline model

In our theoretical cohort of 1.6 million women, induction of labor for all women resulted in 54,498 fewer cesarean deliveries and 79,152 fewer cases of hypertensive disorders of pregnancy than expectant management (Table 2). We also found that induction of labor resulted in 795 fewer cases of stillbirth and 11 fewer neonatal deaths, despite 86 additional cases of brachial plexus injury due to the increased number of vaginal deliveries in the induction of labor strategy. Induction of labor as compared with expectant management resulted in increased costs but increased QALYs with an ICER of $87,692 per QALY. Compared with the cost-effectiveness threshold of $100,000 per QALY, this would be considered marginally cost effective.

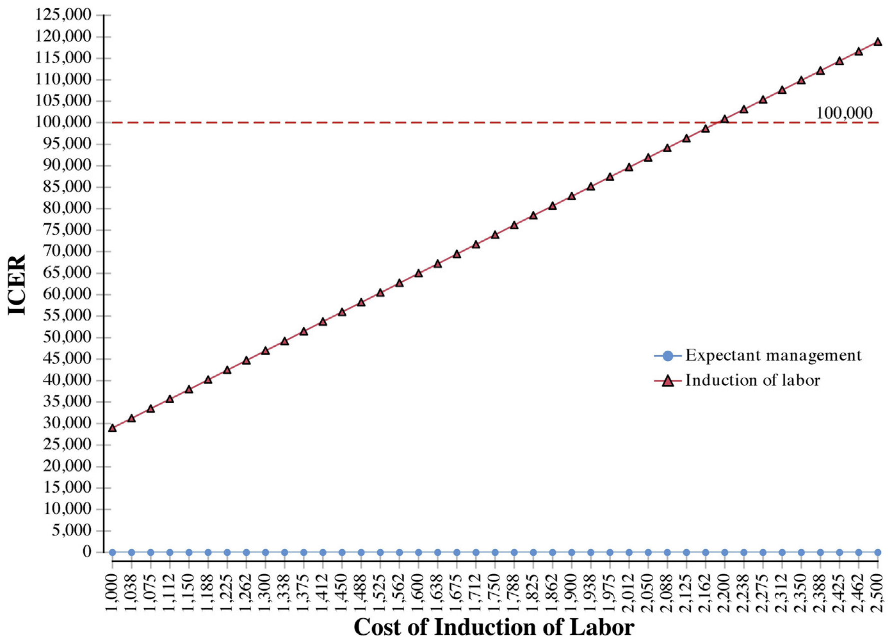
Sensitivity analysis

As demonstrated by Figure 2, the cost of induction of labor was important to the model, as when the baseline estimate ($1980) was increased by $180, the cost-effectiveness of elective induction of labor changed from cost effective to not cost effective. However, when the cost estimate of $1493 was used for the cost of induction of labor, the ICER decreased to $58,515 per QALY. The bivariate analyses assessing the costs of cesarean and vaginal delivery and the rates of cesarean delivery among induction of labor vs expectant management demonstrated that small relative changes of these inputs led the ICER to move above the cost-effectiveness threshold of $100,000 per QALY and therefore, would lead elective induction to not be cost effective over such ranges of these inputs (Figure 3, A and B).

In another approach to sensitivity analysis, we looked at the impact if the rate of cesarean delivery was equal among induction of labor and expectant management. In that setting, induction of labor was no longer cost effective. For example, if the rate of cesarean delivery was 22% in both strategies, the ICER would increase to $112,590, which is over the cost-effectiveness threshold of $100,000 per QALY. Furthermore, the bivariate analysis of the rate of cesarean demonstrates that this holds true over every rate considered in sensitivity analysis.

The tornado analysis demonstrated the overall number of variables for which small changes could affect the cost-effectiveness of the model when varied in sensitivity analysis; as evidenced by this analysis, the rates of hypertensive disorders of pregnancy and stillbirth were also highly important to the model (Supplemental Figure 1). In the setting of a policy for induction of labor, we chose to assume that undergoing induction of labor would not be a choice for women, rather an imposed intervention. We performed a sensitivity analysis for the utility of induction of labor and found that varying it up to 1 or for less time had a negligible effect on the cost-effectiveness of the model. Lastly, when we performed multivariate sensitivity analysis, induction of labor was cost-effective in 65% of scenarios (Figure 4); this means that when variability was incorporated into each model input and the cost-effectiveness was assessed, the induction of labor strategy was the cost-effective strategy in the majority of cases, but less than 95% of the time.

FIGURE 2
Univariate sensitivity analysis



The *vertical axis* displays the ICER, and the *horizontal axis* displays the cost of induction of labor (2018 USD). This figure demonstrates that induction of labor at 39 weeks of gestation is the cost-effective strategy up to $2160, at a willingness-to-pay threshold of $100,000 per quality-adjusted life year (baseline estimate: $1980).

ICER, incremental cost-effectiveness ratio; *USD*, US dollars.

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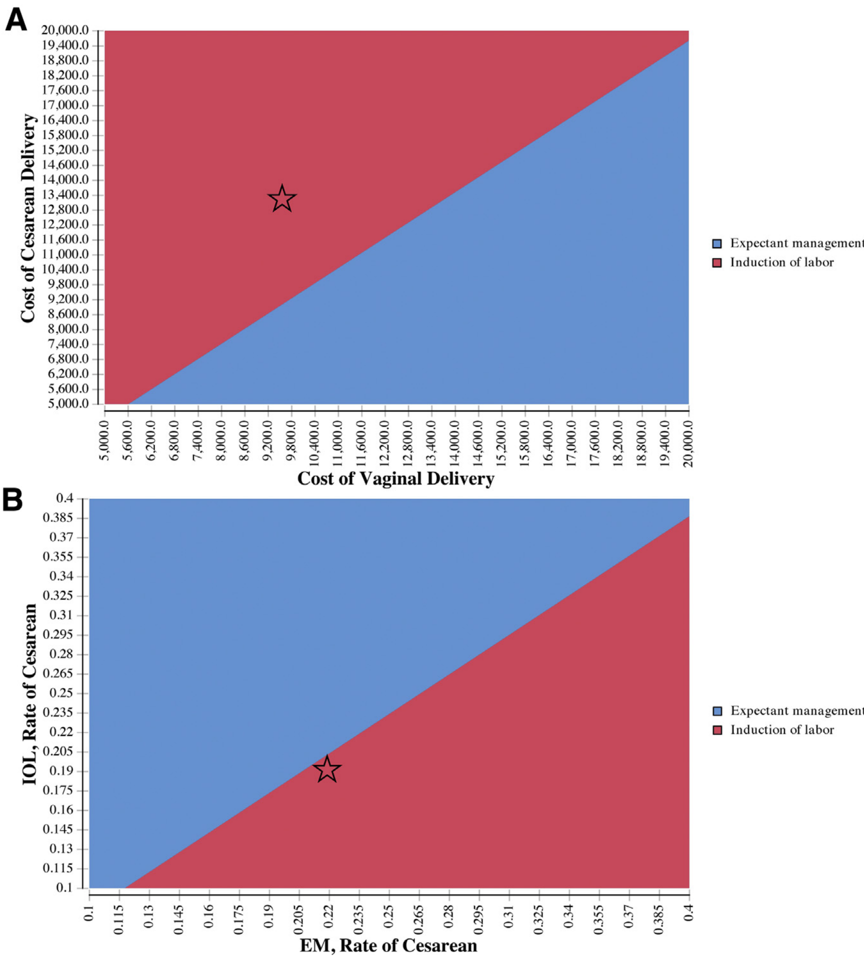
Comment

Among a theoretical cohort of 1.6 million women at 39 weeks of gestation, induction of labor improved maternal outcomes as well as most neonatal outcomes. Using our baseline estimates, the ICER was $87,692 per QALY, which was slightly lower than a commonly used cost-effectiveness threshold. Across the theoretical cohort, this would result in an additional 2 billion dollars of healthcare spending per year in the United States. Our study found that induction of labor was cost-effective in 65% of scenarios at the willingness-to-pay threshold of $100,000/QALY when uncertainty in our model inputs was incorporated. This suggests that we cannot be particularly certain regarding the cost effectiveness of

FIGURE 3
Bivariate sensitivity analysis



A, The *vertical axis* displays the cost of a vaginal delivery, and the *horizontal axis* displays the cost of a cesarean delivery (2018 USD). The area in *blue* demonstrates the values at which expectant management is the cost-effective strategy, whereas the area in *red* demonstrates the values at which induction of labor is cost-effective at a willingness-to-pay threshold of $100,000 per quality-adjusted life year. The *black star* represents the baseline model inputs for each cost. **B,** Bivariate sensitivity analysis. The *vertical axis* displays the rate of cesarean delivery with expectant management, and the *horizontal axis* displays the rate of cesarean delivery with induction of labor. The area in *blue* demonstrates the values at which expectant management is the cost-effective strategy, whereas the area in *red* demonstrates the values at which induction of labor is cost-effective at a willingness-to-pay threshold of $100,000 per quality-adjusted life year. The *black star* represents the baseline model inputs for each rate.

EM, expectant management; *IOL*, induction of labor; *USD*, US dollars.

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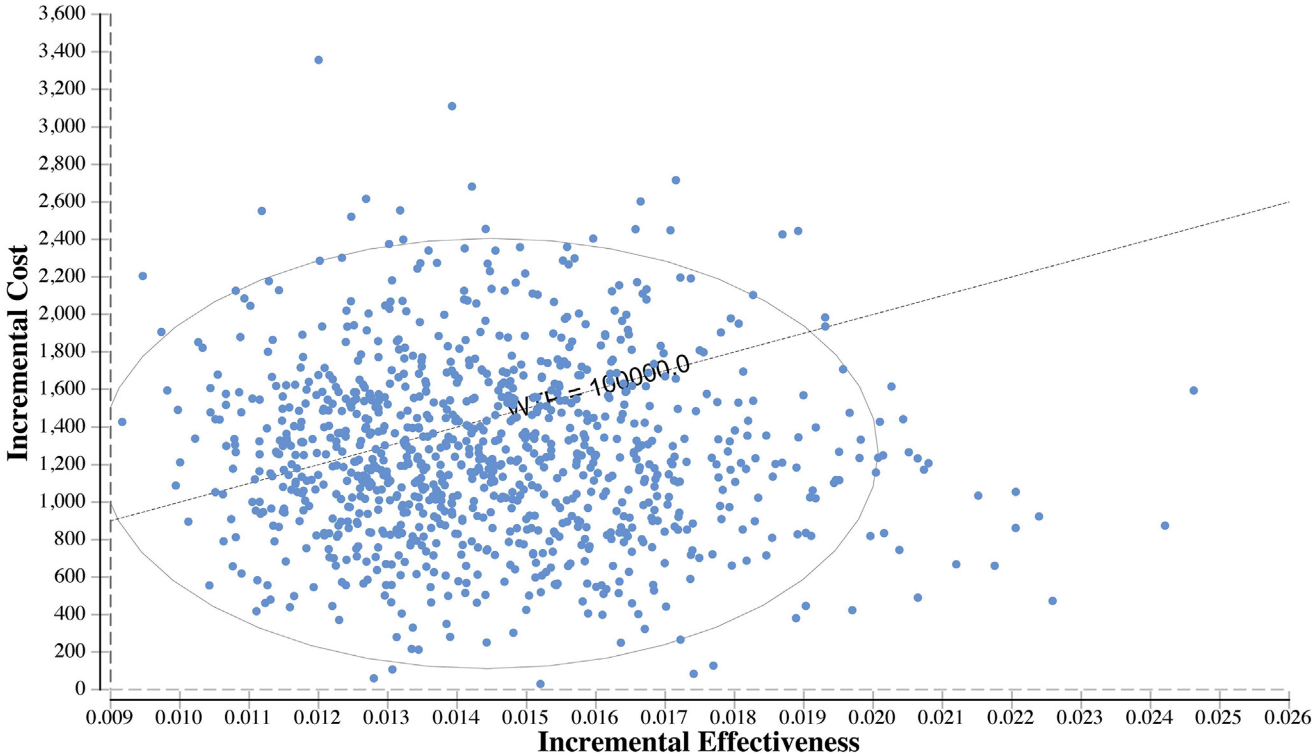
elective induction of labor at 39 weeks' gestation without greater certainty regarding our model inputs. In particular, the cost of induction of labor easily changed the cost-effectiveness ratio, an input with poor certainty that requires further research.

Of note, sensitivity analyses demonstrated the susceptibility of the model to variability in model inputs. Small changes in the cost of induction of labor, vaginal delivery and cesarean delivery, in addition to the rates of cesarean delivery and hypertensive disorders of pregnancy, were highly impactful to the model. As these factors vary widely across the United States, this demonstrates that these findings suggest the cost-effectiveness may vary based on institutional policies and patient populations.

The improvement in overall neonatal outcomes was expected as the risk of macrosomia and shoulder dystocia increase with increasing gestational age. Furthermore, the improvement in maternal outcomes is expected due to the lower rates of cesarean deliveries and lower rate of hypertensive disorders of pregnancy, which are intrinsically reduced by the reduced gestational age. Although this model does not account for the long-term consequences of cesarean deliveries, there are many known risks to cesarean delivery, including adverse impacts on subsequent pregnancies such as placenta accreta, which are important to consider in a nulliparous population. Therefore, this study may underestimate the benefit of a reduction in cesarean deliveries. The improvement in both maternal and neonatal outcomes are clinically relevant, as they are highly impactful to women, their families, and the healthcare system.

Despite these findings, our study was not without limitations; decision analytic models are limited by their model inputs. Although most probabilities were obtained from large, observational studies, some were obtained from clinically relevant trials with wider confidence intervals. The ARRIVE Trial found important differences in the rates of cesarean delivery and hypertensive disorders of pregnancy in participants, so we chose to use that data to inform our study. Upon subject to sensitivity analysis, variation in these inputs affected the cost-effectiveness of the model, demonstrating the importance of determining more precise estimates for these parameters in future research. Although the data provided by clinical trials can inform practice, it cannot determine the best care for all individual patients. Furthermore, the most impactful model inputs for the cost-effectiveness of the model were the

FIGURE 4
Multivariate sensitivity analysis



This is a Monte Carlo simulation of 1000 samples. The *dashed line* indicates a willingness-to-pay threshold of $100,000 per quality-adjusted life year. Each *blue dot* represents the results of a single outcome of the simulation, and the *ellipse* represents the 95% confidence ellipse of outcomes. Induction of labor at 39 weeks of gestation was the cost-effective strategy in 65% of samples.

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cost estimates, for which literature is highly variable and limited.

In addition, we could not incorporate all downstream impacts of the model, often because our understanding of the causal impact of a specific diagnosis is not well understood. For example, there are associations between diagnoses of preeclampsia and downstream risk of maternal cardiac disease. However, it is unclear how this causally related to the diagnosis vs the underlying pathophysiology of the pregnancy which may not be changed by an induction 1–2 weeks earlier. An additional limitation in our study was our inability to incorporate systems factors from the increased time women would be admitted to labor units and how that might impact the ability to care for women due to crowding. More patient time in the hospital would most likely necessitate changes in rooming and staffing, which were not captured by this model. Furthermore, many women seek to limit intervention during labor, so a policy of induction of labor would have societal implications that were unincorporated in this model, although such individuals could simply decline induction of labor and our model's probabilistic results would still apply to those interested in an elective induction of labor. Lastly, the assumption that all women would be induced at 41 weeks is not representative of reality, and is therefore a limitation of the model. However, given that a previous study demonstrated that it would be cost effective to induce all women by 41 weeks' gestation, it is conservative to make this assumption.[33]

In this context, induction of labor is being used to prevent disease that occurs with increasing gestational age. Although this is not the right choice for every patient, it may be a cost-effective solution when maternal and neonatal outcomes are considered. Because this is a medical intervention, it should not obviate shared-decision making; decisions about labor should be made between a woman and her healthcare provider. In addition, health system approaches to offering and managing elective induction of labor need to include careful considerations about how the impact of crowding and scheduling may influence care for all pregnant women and their infants. ■

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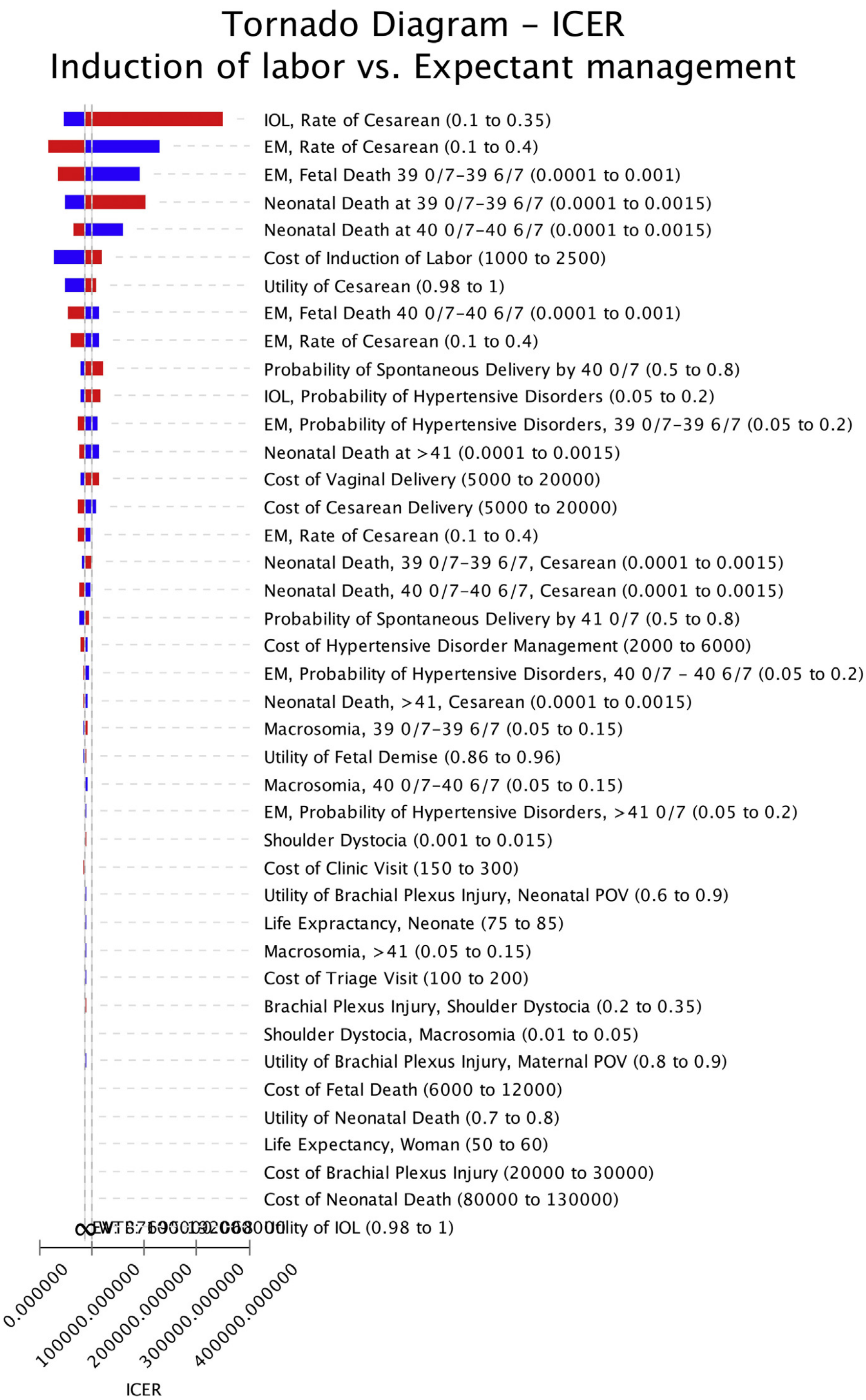
SUPPLEMENTAL FIGURE 1
Tornado analysis



The impact of varying each model input on the cost-effectiveness of the model. The *bars* represent the range of ICER values when each model input is varied. *Red* represents values at which expectant management is cost-effective and *blue* represents values at which induction of labor is cost effective.

EM, expectant management; *ICER*, incremental cost-effectiveness ratio. *IOL*, induction of labor; *POV*, point of view.

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