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Learning Objectives
• Offering women that require labor induction with an unfavorable cervix and who have a low-risk profile the opportunity to have cervical ripening outside of the hospital (outpatient) is not only well received by the women but may potentially save up to US$689 per delivery and 2.4 hours of time in the hospital.
• Reducing childbirth costs and time in the hospital can allow more women to undergo elective induction of labor to decrease the risk of a cesarean section.
• Outpatient cervical ripening could also allow for a decrease in demand on both nursing time and overall hospital labor & delivery (L & D) admission time.

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Elective IOL at 39 weeks may significantly decrease cesarean section rates in comparison to expectant management.\textsuperscript{1,2,3}

Increasing the number of women in the delivery unit for IOL, however, might pose a considerable burden on hospital staff and resources.

Cervical ripening using a synthetic hygroscopic cervical dilator, indicated for use for cervical ripening prior to IOL and with a safety profile not requiring neonatal monitoring, may facilitate outpatient ripening.

Following guidance from the International Society for Pharmacoeconomics and Outcomes Research, an economic cost-consequence model from a hospital perspective, with a time horizon from admission for IOL to post-delivery discharge, was developed to compare two scenarios:

1. Standard of care: cervical ripening is inpatient only.
2. A mix of inpatient vaginal prostaglandin (PGE) \(\text{PGE}\), inpatient single-balloon catheter \(\text{PGE}\) and outpatient synthetic hygroscopic cervical dilator \(\text{PGE}\) for cervical ripening.

PGE

\begin{tabular}{c|c|c|c}
\hline
Scenario & 1 & vs & 2 \\
\hline
STANDARD OF CARE & & & \\
\hline
PGE & 79.0\%* & & 46.3\%* \\
PGE & 21.0\%* & & 12.3\%* \\
PGE & 0.0\%* & & 41.4\%* \\
\hline
OUTPATIENT & & & \\
\hline
Cervical ripening is inpatients only (IP-only) & & & \\
Mix of inpatients and outpatients as expected to occur in practice (OP-select) & & & \\
\hline
\end{tabular}

• The model uses decision trees to model the induction to delivery care pathway (right).
• Outcomes are reported as the average over all women assessed, comparing OP-select to IP-only strategies.
• Outcomes can be applied to a population of any size >100 women.
• The robustness of model outcomes were tested using a probabilistic multivariate sensitivity analysis, testing 2,000 sets of feasible parameter input variations.

1. Pregnant woman with unfavorable cervix is indicated for induction of labor.
2. Cervical ripening either
   • Inpatient vaginal PGE2
   • Inpatient single-balloon catheter.
   • Outpatient synthetic hygroscopic cervical dilator.
3. Cervical status
   if unfavorable, woman receives a 2nd attempt of cervical ripening.
4. Labor
   Spontaneous or oxytocin augmented.
5. Delivery
   Cesarean section or natural birth.
METHODOLOGY II
MODEL INPUTS & POPULATION

- Model inputs were sourced from a structured review of peer-reviewed articles in PubMed.
- Most source articles are from large US databases, randomized controlled trials, or meta-analyses.
- Women categorized as having a high-risk pregnancy were not eligible for outpatient ripening in the OP-select scenario.

### KEY CLINICAL INPUTS

| Inpatient vs outpatient cervical ripening | RR 0.6 [0.5–0.9]4 |
| Cesarean sections | 5.5 hours [2.0–9.0]5 |
| L&D unit time saved | Differing cesarean section rates for |
| Primiparous (primary) | 25.5%2 RR** 0.7 [0.3–1.5]6,7 |
| Multiparous (primary) | 8.1%2 RR** 1.0 [0.3–2.9]6,7 |
| VBAC* | 13.3%8 RR** 1.1 [0.7–1.6]9 |

### KEY COST INPUTS (2020 US $)

| Cesarean delivery*** | $18,13210 |
| Vaginal delivery*** | $12,87510 |
| L&D unit per hour | $13311 |

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3 Assumption from clinical practice;
5 Dong S, et al. BMC Pregnancy Childbirth 20, 1–10 (2020);
8 Otisman MK, et al. NCHS Data Brief. 359:1–8 (2020);
RESULTS

• Cost savings were up to US$689 per woman when implementing the OP-select strategy.
• Women were predicted to spend 1.48 h less time in the labor and delivery unit and 0.91 h less in the postpartum recovery unit.
• The cesarean section rate was decreased by 3.78 percentage points (23.28% decreased to 19.50%).
• Probabilistic multivariate sensitivity analysis was performed to ascertain the robustness of results.
  • Testing 2,000 feasible scenarios, hospital costs and the cesarean section rate were reduced in 91% of all instances.

Conclusion
• An outpatient strategy for cervical ripening reduces costs, time spent in hospital, and cesarean sections.
• Enabling low-risk women to undergo cervical ripening out of the hospital may allow nurses to focus more attention on those women requiring additional care.

Total cost saving per woman

More VBACs per 100 TOLACs

Fewer cesarean sections per 100 women

Shorter hospital stay per woman

VBAC—vaginal births after cesarean
TOLAC—trial of labor after cesarean