

“Elective Induction of Labor” (1955), by Edward Bishop ^[1]

By: Abboud, Carolina J. Keywords: [Labor](#) ^[2] [Childbirth](#) ^[3]

In 1955, obstetrician Edward Bishop, a physician specializing in childbirth, published the article "Elective Induction of Labor," in which he proposed the best conditions for pregnant women to elect to induce, or begin, labor. Elective [induction](#) ^[4] of labor requires an obstetrician to administer a drug to help a pregnant woman to start her contractions, and to rupture the fluid-filled sac surrounding the [fetus](#) ^[5] called the [amniotic sac](#) ^[6]. In the early 1950s, Bishop analyzed the results of 1,000 elective inductions and discovered that some pregnant women had faster and easier deliveries with induced labor than other pregnant women. In "Elective Induction of Labor," Bishop describes the characteristics an obstetrician can look for in a pregnant woman to determine if she can safely undergo an elective [induction](#) ^[4], metrics still used into the twenty-first century to determine whether or not to pursue elective inductions.

In the 1950s, maternal mortality in the US during childbirth had fallen due to factors such as increasing [regulation](#) ^[7] of childbirth in hospitals, antibiotics for infections, and blood transfusions for excessive blood loss. Most women gave birth in hospitals rather than in their homes with a midwife. But in hospitals, obstetricians administered pain-relieving drugs to women without consulting them and did not allow women's husbands or family members in the delivery room. According to historian Judith Walzer Leavitt, by the late 1950s, women began seeking more control over their childbirth processes. Requesting an elective [induction](#) ^[4] enabled women to decide when and where to give birth and which obstetrician to assist her in labor. Bishop's criteria for determining when to schedule those inductions assisted in that effort and ensured that elective inductions were administered safely.

During the process of researching and writing the article "Elective Induction of Labor," Bishop worked as an obstetrician at Pennsylvania Hospital in Philadelphia, Pennsylvania. He was also a professor and researcher in the obstetrics department at the [University of Pennsylvania](#) ^[8] in Philadelphia, Pennsylvania. The study "Elective Induction of Labor" featured data that Bishop collected from Pennsylvania Hospital between December of 1951 to September of 1954. During those three years, Bishop collected six forms of data for each elective [induction](#) ^[4] that took place. He reports his results in six different sections that correspond to the six different kinds of collected data, and ends the article with recommendations for when it is appropriate to induce labor in pregnant women.

In the introduction of "Elective Induction of Labor," Bishop discusses how the staff of the obstetrics and gynecology department of Pennsylvania Hospital began to study elective inductions in 1950. At the time, obstetricians at Pennsylvania Hospital developed their own methods for delivering infants. Regarding labor [induction](#) ^[4], obstetricians used only two techniques. In the first method, an obstetrician administered a drug, called pitocin, to the pregnant woman to initiate her contractions. Pitocin is a synthetic form of oxytocin, a [hormone](#) ^[9] that stimulates both uterine contractions during labor and milk production in a woman's breasts after she gives birth. Then the obstetrician ruptured the fluid-filled sac ([amniotic sac](#) ^[6]) surrounding the [fetus](#) ^[5].

The second method reversed those two steps. The obstetrician first ruptured the sac and then administered the pitocin to start the woman's contractions. In both methods, the obstetricians at Pennsylvania Hospital standardized the administered amount of pitocin as thirty drops of the diluted drug every minute. According to Bishop, the purpose of his study was to analyze the variation in patients who received elective inductions and determine which patients had the best results.

Following the introduction, Bishop discusses the parameters of his study. Between December 1951 and 24 September 1954, obstetricians performed 1,000 elective inductions at Pennsylvania Hospital, or 11.4 percent of all the births at the hospital in that time period. In his study, Bishop did not include inductions performed due to medical emergencies, such as signs of distress in the women or fetuses. Instead, Bishop included only those deliveries for which the obstetrician evaluated the patient and deemed an elective [induction](#) ^[4] appropriate.

To admit a pregnant woman to the hospital for delivery, obstetricians first evaluated the woman to determine whether or not she was ready to give birth. They examined the narrow passage at the bottom of the pregnant woman's [uterus](#) ^[10], called the [cervix](#) ^[11], to measure the width of its dilation. If the obstetrician deemed the pregnant woman's cervical condition to be close to the conditions required for a vaginal birth, she could schedule her [induction](#) ^[4] at a time convenient for both her and her obstetrician. According to Bishop, scheduling is the main benefit of an elective [induction](#) ^[4]. A pregnant woman can choose when to deliver her infant, and her own obstetrician can plan to be present for the birth.

Once the woman entered the hospital, the obstetrician chose one of two techniques to induce her labor. The first technique was to puncture the fluid-filled sac and then administer pitocin to stimulate contractions, while the second reversed the sequence of

events. Bishop reports that both methods produced similar results.

After analyzing the data that he collected during the three-year period, Bishop presented the results of the study in six sections, followed by his conclusions. The sections addressed the duration of the women's labor, the criteria used to select women for inductions, the effectiveness of the criteria, the method by which deliveries occurred, and two sections describing maternal and fetal complications resulting from elective inductions. For the study, Bishop defines labor as the time between the start of [induction](#)^[4] to the moment after the infant is born and the pregnant woman passes the [placenta](#)^[12], the organ that nourished the infant in the [uterus](#)^[10].

Bishop chose a four-hour period as the optimal duration of labor, and based on his analysis, presents the criteria for inducing women to give birth within four hours. The criteria includes a dilated, or widened, [cervix](#)^[11] to at least three centimeters in diameter, a thinned [cervix](#)^[11] membrane to enable the [fetus](#)^[5] to pass through, and the alignment of the [fetus](#)^[5]'s head between the woman's pelvic bones. Bishop notes other criteria to determine whether or not a pregnant woman should undergo an [induction](#)^[4], such as the size of the [fetus](#)^[5] and history of the woman's previous labors.

To determine whether the criteria indicated a labor that was shorter than four hours, Bishop compared the set of pregnant women who met those criteria in the study to those who did not. The women who met the criteria had average labors of 3.2 hours. Eighty percent delivered in less than four hours, and all of the pregnant women who met Bishop's criteria delivered in less than eight hours, which was double the length of Bishop's optimal four-hour labor. Those who did not meet Bishop's criteria had on average a labor of 4.7 hours, and eleven percent had a labor of over eight hours.

Based on those results, Bishop concludes that labor should only be induced if the pregnant woman meets his prescribed criteria, to have shorter labors and reduce risks of complications that come with long labor. Bishop found that women giving birth for the first time had longer labors overall, and he recommends that women giving birth for the first time should not induce labor. He notes that doing so increases the risks of delivery without providing the benefit of an easier, shorter labor.

Of the 1,000 elective inductions performed, 2.6 percent of pregnant women experienced a complication. Those women either bled heavily after giving birth or the neonate experienced a premature separation from the [placenta](#)^[12], which can cause oxygen or nutrient deprivation as well as large amounts of bleeding. Despite the low percentages, Bishop states that both complications could be related to the [induction](#)^[4] of labor. On the fetal side, obstetricians observed complications in 6.2 percent of cases. The complications varied from suffocation of the neonate to premature births and death. The deaths, Bishop states in the article, occurred when obstetricians did not select patients with the guidelines Bishop suggests.

Bishop finishes "Elective Induction of Labor" with a list of his four conclusions. First, if obstetricians select patients according to Bishop's criteria, administering pitocin and rupturing the [amniotic sac](#)^[6] is an effective form of elective [induction](#)^[4]. Second, Bishop restates his criteria: the pregnant woman's [cervix](#)^[11] should be dilated to at least three centimeters, the [cervix](#)^[11] membrane thinned at least sixty percent, and the [fetus](#)^[5]'s head should be centered between the pelvic bones and ready to slide down the birth canal. Additionally, the procedure works best with women who have given birth before. Third, Bishop reminds readers that inducing labor in a patient who does not meet those criteria might be successful, but the duration of labor is likely to increase as a result. Lastly, Bishop reiterates that elective [induction](#)^[4] of labor is acceptable when limited to those patients that meet his suggested criteria.

In 1955, the journal *Obstetrics & Gynecology* published "Elective Induction of Labor." In 1964, Bishop published another article about a scoring system he developed to help obstetricians quickly determine if a woman should be considered for an induced labor. In the article, "Pelvic Scoring for Elective Induction," Bishop relied on the data that he analyzed in "Elective Induction of Labor" and detailed the scoring system. Into the twenty-first century, physicians used the scoring system, known as the Bishop Score, to determine if a pregnant woman is ready to give birth.

Sources

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