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Best Practices in Second Stage Labor Care: Maternal Bearing Down and Positioning

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BEST PRACTICES IN SECOND STAGE LABOR CARE: MATERNAL BEARING DOWN AND POSITIONING

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ABSTRACT

Despite evidence of adverse fetal and maternal outcomes from the use of sustained Valsalva bearing down efforts, current second-stage care practices are still characterized by uniform directions to “push” forcefully upon complete dilatation of the cervix while the woman is in a supine position. Directed pushing might slightly shorten the duration of second stage labor, but can also contribute to deoxygenation of the fetus; cause damage to urinary, pelvic, and perineal structures; and challenge a woman’s confidence in her body. Research on the second stage of labor care is reviewed, with a focus on recent literature on maternal bearing down efforts, the “laboring down” approach to care, second-stage duration, and maternal position. Clinicians can apply the scientific evidence regarding the detrimental effects of sustained Valsalva bearing down efforts and supine positioning by individualizing second stage labor care and supporting women’s involuntary bearing down sensations that can serve to guide her behaviors.

KEYWORDS

bearing-down efforts; childbirth; expulsive phase; laboring down; position for childbirth; second-stage pushing

INTRODUCTION

In the United States, cesarean births are performed during the second stage of labor at a rate higher than noted in other countries.¹ Second-stage care practices can have an adverse impact

on fetal oxygenation, pelvic floor dysfunction, urinary or fecal incontinence, and sexual dysfunction, as well as cesarean birth rates. Evidence-based second-stage management approaches might lead to a reduction in cesareans and operative vaginal births and improve maternal pelvic floor outcomes. This article contains an update of the current literature concerning second stage labor management. Specifically, closed versus open glottis pushing and delayed versus immediate pushing are addressed. Current literature concerning maternal positions, limits on second stage duration, and laboring down will also be reviewed. Implications for applying this evidence in [clinical practice](#) as well as further research that is needed will be addressed.

BACKGROUND: SPONTANEOUS PUSHING EFFORTS

Care provider directions to laboring women to bear down with each contraction immediately upon complete dilatation of the cervix continue to be common during the management of the second stage of labor.^{2, 3, 4, 5} The use of sustained Valsalva bearing down efforts results in adverse fetal acidemia or deoxygenation,^{6, 7, 8, 9} fatigue,¹⁰ more perineal tears,¹¹ and decreased urogynecologic function, including decreased bladder capacity and an increase in the incidence of urodynamic stress incontinence postpartum.^{12, 13} Directed pushing might also challenge a woman's confidence in her body.¹⁴

The spontaneous bearing down efforts that women experience in the second stage of labor when not directed to push in a certain way have been observed and studied.^{8, 15, 16, 17} Women push an average duration of 5 seconds, followed by several breaths for approximately 2 seconds each, and push approximately 3 to 5 times per contraction. Further, women generally wait for the contraction to build to a threshold uterine pressure (initially at least 30 mm Hg^{8, 15}) before beginning to push. They bear down with varying intensity, and often do not bear down with each contraction.^{8, 15, 17} A deep cleansing breath at the beginning of the contraction before the commencement of bearing down, often included in directions to women about how to push, is not seen in undirected physiologic pushing behavior.^{15, 17} Instead, spontaneous bearing down efforts begin at a resting respiratory volume,¹⁸ are generally accompanied by a release of air, and become progressively more forceful with fetal descent.¹⁵ Bearing down efforts early in the second stage occur at the peak of contractions and are of low amplitude.¹⁵ As second stage progresses, the frequency and force of bearing down efforts per contraction increase. A pattern in the progression of second stage has been observed when women have not been arbitrarily directed to push upon achieving complete dilatation.¹⁹ The biphasic nature of the second stage has been documented by European investigators. They have described an early (latent) phase of second stage during passive fetal descent and an "active" ("final"²⁰) stage called the "pressperiode,"²¹ characterized by more forceful pushing when the fetal head is on the perineum.

Recognition of the pattern of progression of normal second stage is an essential prerequisite to eliminate arbitrary direction to women to begin pushing upon complete dilatation of the cervix. It is also vital to recognize the importance of women's involuntary urges to bear down and the abilities they have to push effectively and spontaneously, with caregiver support rather than direction.

SUSTAINED VALSALVA VERSUS SPONTANEOUS PUSHING EFFORTS

Recent clinical trials indicate that the use of spontaneous or involuntary pushing prevents fetal hypoxic effects⁹ that are associated with sustained strenuous pushing, deleterious urinary¹³ and perineal trauma,¹¹ and without risk of adverse maternal, fetal, or neonatal outcomes.¹²

EFFECT ON THE FETUS

Research findings consistently indicate that sustained strenuous bearing down efforts maintained longer than 5 to 6 seconds results in alterations in maternal and fetal hemodynamics. Specifically, sustained bearing down efforts result in lower maternal blood pressure and placental blood flow, lower fetal pH and PO₂, higher PCO₂, more frequent occurrence of nonreassuring [fetal heart rate](#) (FHR) patterns, delayed recovery of FHR decelerations and subsequent newborn acidemia, and lower Apgar scores.^{6, 7, 8, 9}

EFFECT ON THE PELVIC FLOOR

Sustained strenuous bearing down efforts can cause structural and/or neurologic injury to the pelvic floor.^{3, 11, 18} It has been proposed that when strenuous bearing down efforts are instituted before the urge to push occurs, this early pushing causes part of the vaginal wall, bladder, and support structures to be forced down in front of the fetal head, not only obstructing fetal descent but possibly contributing to the development of urinary stress incontinence. Bloom et al.^{12, 13} recently published urodynamic outcomes of 320 low risk, nulliparas between 36 and 41 weeks' gestation, who were in labor without analgesia. The women were randomized to coached (N = 163) or uncoached (N = 157) pushing. Women in both groups were cared for by [certified nurse-midwives](#) (CNMs) and positioned with the head of the bed up 30 degrees at the onset of the second stage (as defined by complete cervical dilatation). Women in the coached pushing group were instructed to bear down during the peak of the contraction for 10 seconds. The uncoached pushing group was told to "do what comes naturally" in whichever position the women felt comfortable. A comparison of maternal (mode of delivery and perineal condition) and immediate neonatal birth outcomes (Apgar score, arterial cord pH, and need for resuscitation) between the two groups failed to reveal significant differences except for significant alterations in urodynamic testing that were reported by Schaffer et al.¹³ in a separate article. The pelvic floor and urogynecologic outcomes of a subgroup (67 coached, 61 uncoached) of the larger study were examined. All of the 128 subjects underwent testing for urodynamics and pelvic floor structure and functioning at 3 months postpartum.¹³ The practice of coached, sustained pushing during the second stage of labor resulted in decreased bladder capacity (427 mL vs. 482 mL; $P = .051$) and decreased initial urge to void (160 mL vs. 202 mL; $P = .25$), a two-fold increase in detrusor overactivity (16% vs. 8%; $P = .17$), and a nonsignificant trend towards stress incontinence (16% vs. 12%; $P = .42$). Subjects in the coached group experienced an average 13-minute shortening of the second stage. The authors concluded that coached pushing offers only the slight advantage of shortening the second stage, at the risk of long-term deleterious urodynamic and pelvic floor outcomes. These recent findings of Bloom and Schaffer et al.,^{12, 13} as well as the earlier reports of Yeates and Roberts¹⁸ and Sampsel and Hines¹¹—who compared perineal outcomes

between women who used strenuous, directed pushing or pushed in response to their involuntary urges—all indicated that the practice of routine sustained strenuous bearing down during the second stage of labor increases pressure on the pelvic floor, which is associated with adverse pelvic floor and perineal outcomes.

MATERNAL EFFECTS

In addition to maternal and newborn birth outcomes, use of sustained strenuous bearing down results in maternal stress, lactic acidosis, and fatigue. More recently, increased maternal and fetal levels of lactate have been associated with: 1) longer maternal pushing time,^{22, 23} 2) dysfunctional labor,²⁴ and 3) myometrial lactic acidosis.²⁴ With diminished uterine contractility, the need for oxytocin augmentation and epidural anesthesia increases, followed by a greater likelihood of operative vaginal delivery and the associated risk of maternal pelvic and perineal and fetal trauma. As women become fatigued, the likelihood of operative vaginal delivery increases.^{10, 25, 26} Therefore there can be a disruption in labor progress from lactic acidosis that occurs during sustained strenuous pushing, resulting in maternal fatigue and the need for interventions to sustain labor progress and achieve birth.

Coached non-Valsalva bearing down techniques that have been described and studied as alternatives to sustained bearing down include “exhale”²⁷ and “mini”²⁸ pushing. Although these techniques prevent the consequences of sustained Valsalva pushing, none has served to fully replace it in contemporary practice because they still impose external direction upon the woman’s bearing down efforts that may not be in synchrony with her internal involuntary urges to push.

Support of the woman’s spontaneous pushing efforts is an appropriate, evidence-based approach to care that avoids the adverse outcomes of sustained strenuous pushing.^{11, 13, 18, 29} In the absence of some difficulty in the laboring woman’s ability to push effectively, women should primarily be supported in their involuntary pushing efforts and not directed by the caregiver. In response to the potential need for more explicit information about how to support women with involuntary bearing down, Sampsel et al.³⁰ addressed the communication strategies that facilitate maternal involuntary bearing down efforts and that are supportive and encouraging of spontaneous pushing. These researchers conducted a secondary analysis of videotaped births of 20 primigravidas. Their analysis documented the positive responses of laboring women as well as the absence of adverse effects on the duration of second stage or active pushing associated with spontaneous pushing. Their report includes helpful examples of communication phrases, such as “You’re doing well,” and giving encouraging information, such as, “You’re moving the baby down,” and “You’re probably feeling a lot of burning and stretching.” Offering this information and encouragement as the woman was experiencing the urge to push with forceful contractions was more helpful than arbitrary direction when the caregiver noted the occurrence of a contraction.

IMMEDIATE VERSUS DELAYED PUSHING

Not all women experience an urge to bear down upon complete dilatation of the cervix. The involuntary urge to push can occur slightly before or after complete [cervical dilatation](#) when the presenting part is at an advanced station.¹⁵

“Laboring down” was first suggested by Maresh³¹ as a means of protecting the pelvic floor by allowing passive descent of the fetal head in women who were experiencing the second stage of labor with epidural anesthesia. Although the causal role of epidurals in influencing fetal position and the duration of labor is disputed, there is an association between the use of epidural analgesia and a longer length of second-stage labor as well as an increased incidence of operative delivery.³² The action of an epidural to block both sensory and motor nerve pathways results in perineal muscle relaxation, a possible delay or failure of fetal head internal rotation, reduced perception of the urge to push, and reduced efficiency of bearing down efforts, all of which result in a longer duration of the second stage of labor and the need for operative delivery.^{33, 34} When using the laboring down approach, women who reach complete dilatation are not instructed to begin bearing down immediately; instead, they are encouraged to rest until they perceive an urge to bear down or the fetal head becomes visible at the vaginal introitus.^{10, 34, 35}

The maternal and fetal outcomes of laboring down have been studied in a meta-analysis that included nine randomized controlled trials.³⁵ Individual trial outcomes of delayed pushing included longer second stage duration, fewer FHR decelerations, improved perineal outcomes, fewer lacerations (RR, 0.90; [95% CI](#), 0.70–1.17), and fewer [episiotomies](#) (RR, 0.97; 95% CI, 0.88–1.06), diminished fatigue in primigravidas,¹⁰ and less time spent actively bearing down. The main benefits were less perineal damage for the women and, in the Hansen trial,¹⁰ less fatigue for the nulliparous women. The meta-analysis revealed that the duration of second stage was lengthened by an average of 58 minutes. The time spent pushing was shorter in all of the groups who delayed until a strong urge occurred. The shorter period of active pushing was statistically significant in three of nine randomized, controlled trials but it was nonsignificant in the larger meta-analysis. There was a nonsignificant decrease in the overall incidence of cesarean births and a nonsignificant reduction in second stage cesareans, but a significant increase in spontaneous vaginal births (RR, 1.22; 95% CI, 1.05–1.42). More significant in this meta-analysis was the overall 31% reduction in rotational or mid-pelvic instrument deliveries (RR, 0.79; 95% CI, 0.55–0.95). No other differences between early versus delayed pushing groups reached statistical significance in the meta-analysis, including newborn outcomes, Apgar scores, cord [blood gases](#), or neonatal intensive care unit admissions. Most importantly, no adverse outcomes were reported with the use of laboring down even with the prolongation of the passive phase of the second stage.

In the multi-site Pushing Early or Pushing Late with Epidural clinical trial (PEOPLE), Petrou et al.³⁶ evaluated the cost-effectiveness of delayed pushing and found that although the laboring down approach significantly reduced the incidence of difficult delivery (RR, 0.79; 95% CI, 0.66–0.95), especially rotational and mid-forceps, it was also associated with an increase in intrapartum and postnatal costs. The delayed pushing group required more clinical resources,

such as nursing care, epidural boluses, oxytocin infusion, and other consumables. The cesarean deliveries and difficult deliveries required by the early pushing group required a different kind of resources, such as a [pediatrician](#) in the operating room, but the overall all costs of extended labor care for the delayed pushing group increased the cost by \$68.

Delay in maternal bearing down has advantages for the fetus. There is evidence that there is less of a decline in fetal/newborn pH when maternal pushing efforts are delayed until there is a strong maternal urge or the head is visible at the introitus.²⁰ Piquard et al.²⁰ documented that the decline in fetal pH and increases in PCO₂ and lactic acid measured from fetal scalp blood samples did not occur after complete dilatation until the women began involuntary bearing down. There was no decline or change in the fetal [blood gas](#) values during the early portion of second stage prior to maternal pushing efforts.

A recent clinical trial by Simpson and James⁹ included the measurement of fetal oxygen saturation FSpO₂ throughout second stage using a fetal [oximeter](#) probe. They randomized 45 healthy women with singleton vertex pregnancies who were admitted for induction of labor to closed glottis (Valsalva) immediate pushing at complete dilation or open-glottis delayed pushing when the participant felt an urge to push. All participants were gestational age >37 weeks' gestation, and had adequate pain relief via epidural analgesia at the onset of the second stage. The women in the closed glottis early pushing group had more episodes of fetal oxygen desaturation (FSpO₂ < 30% > 2 min) compared to the women in the open-glottis delayed group (mean 7.9 events vs. 2.7 events, respectively; *P* = .02).⁹ These results are consistent with the earlier report by Piquard²⁰ and studies that have documented the hypoxic effects of sustained strenuous bearing down efforts based on cord blood gases and FHR patterns.

DURATION OF SECOND STAGE

The adoption of delayed pushing or laboring down has raised new questions about the duration of the second stage of labor. The American College of Obstetricians and Gynecologists³⁷ (ACOG) currently recommends that the duration of second stage not exceed 2 hours for a primiparae and 1 hour for a multipara without an epidural and not exceed 3 hours or 2 hours for a primiparae or multipara, respectively, with an epidural. However, there have been several large cohort studies over the past 10 years that document the lack of association between adverse infant outcomes and the duration of second stage.^{38, 39} Zhang³⁹ noted that nulliparas can take up to 3 hours for the fetus to descend from +1 station to +3 station (-3 to +3 scale of descent), and then require an additional 30 minutes before the birth occurs. As indicated above, the critical factor impacting fetal and maternal outcomes is duration of active bearing down rather than duration of the second stage.^{9, 13, 20, 35} The duration of the second stage, from complete [cervical dilatation](#) to birth, needs to be differentiated from the period of active pushing. As mentioned above, there is a time interval between the diagnosis of complete cervical dilatation and the beginning of active pushing, the period of delay or waiting for an involuntary urge to occur. Thus, the duration of the second stage is not necessarily represented by a single time period if one considers outcomes that are associated with the occurrence or quality of maternal pushing efforts, that is, active pushing.

The randomized trials^{9, 35} and other studies^{31, 40} of delayed pushing, all with women with epidural analgesia, have allowed delay intervals from 60 minutes,³⁵ 90 minutes,⁴¹ 2 hours^{9, 40} to 3 hours,⁴² or when the fetal head became visible at the introitus. Hansen¹⁰ allowed a 1-hour delay before active pushing for multiparas and 2 hours for nulliparas. The duration of active pushing in most of the studies was limited to 60 minutes,³⁵ but ranged from an allowance of 35 minutes⁴⁰ to 2 hours.⁴² Overall, the duration of the second stage was longer in the delayed pushing groups, reflecting the longer passive period and the shortening of active bearing down when delayed pushing is used. Despite these findings, there are no clear parameters for optimal periods of delay before bearing down or active pushing.

Other aspects of the second stage that have not been consistently addressed in considering the period of delay before encouraging active pushing are fetal position and station. While these parameters are sometimes provided in the descriptive data of a clinical trial, and they are the key criteria for assessing second stage progress in a second-stage partogram,⁴³ they have not been used in deciding when the women should start pushing. It has been recognized that fetal station is associated not only with the urge to push (Ferguson's reflex) but that lower fetal station (at least +2) is associated with more effective bearing down.⁵ The large multicenter, randomized, controlled trial by Fraser et al.^{42, 44} documented that the women who benefit most from delayed pushing are those whose fetal station was higher than a +2 at complete dilatation. Fetal malposition, particularly occiput posterior, is also associated with adverse maternal and perinatal outcomes.^{33, 44, 45} Women whose fetuses are transverse or posterior might also benefit from delayed pushing, thereby allowing for fetal head rotation.^{33, 44, 46} The positional strategies that might facilitate anterior rotation merit consideration during the early phase of the second stage before directing a parturient in active pushing.

MATERNAL POSITIONS

Maternal positions used by and recommended for laboring women are an essential component of the process of second-stage labor care. Although most women in the United States continue to experience the second stage in the lithotomy position, use of the supine position is associated with negative maternal, fetal, and neonatal hemodynamic outcomes.^{29, 47} Even in nonprescriptive environments there appears to be a cultural preference to give birth in bed.¹⁶ Despite the persistence of the use of recumbent positions for birth, the evidence supports the merit of upright positions. Although the quality of 20 trials in the 2004 Cochrane analysis of position in the second stage of labor for women without epidural anesthesia is variable, upright positions were associated with a slight reduction in second stage duration (4.28 min; [95% CI, 2.93–5.63 min](#)), a small reduction in assisted deliveries (RR, 0.80; 95% CI, 0.69–0.92), a reduction in [episiotomies](#) (RR, 0.83; 95% CI, 0.75–0.92), an increase in second-degree perineal tears (RR, 1.63; 95% CI, 1.29–2.05), fewer abnormal FHR patterns (RR, 0.31; 95% CI, 0.08–0.98), and less severe pain (RR, 0.73; 95% CI, 0.60–0.90).⁴⁷ For women with epidural anesthesia, the use of upright positions was associated with significantly less maternal pain, fewer operative vaginal and cesareans births, and a reduction in second stage duration.⁴⁸

Postural changes have been suggested as an intervention to rectify asynclitism or malposition of the fetal head.⁴⁹ Position change has also been recommended as a potential way to prevent

lumbosacral spine and lower extremity nerve injuries associated with sustained strenuous bearing down for women who have epidural analgesia.⁴ The prolonged use of a dorsal position with exaggerated flexion of the legs was associated with these postpartum neurologic injuries.⁴ Thus, change of position, the avoidance of prolonged use of supine position, or exaggerated flexion of the legs as well as the use of upright positions have been used to prevent adverse maternal and fetal outcomes. When maternal preference or satisfaction has been considered, women indicate that they prefer the position they used, recumbent or upright, and in which they are the most comfortable.⁴⁸

DISCUSSION

Previous reviews^{51, 52} of second-stage labor have stressed the adverse effects of sustained strenuous pushing and recumbent positions. In addition the progression of second stage in phases was proposed as the basis for making decisions about interventions, including direction or encouragement to women to push.⁵² This review of current research has provided further evidence that supports spontaneous bearing down to improve maternal and fetal birth outcomes rather than arbitrary direction to push upon [cervical dilatation](#). The consideration of maternal urodynamic¹³ and perineal outcomes¹¹ and fetal oxygenation⁹ using new or additional measures has yielded evidence that is not only consistent with earlier research advocating the support of involuntary maternal efforts^{7, 11, 15, 17, 18} but also supports the laboring down approach. Delaying direction in pushing until the woman has an involuntary urge or the fetal head is visible on the perineum has been shown to reduce the incidence of forceps-assisted births by a third, lessens the need for a cesarean birth, and shortens the active bearing down phase of the second stage. These benefits are especially evident for women with epidural analgesia and whose fetus is higher than a +2 station when complete dilatation is detected. However, there is not explicit, published, evidence of the benefits of delayed pushing for women without an epidural. The evidence presented supports that unanesthetized women would also benefit from strategies that would shorten the phase of active pushing.

Anecdotally, bedside providers have occasionally delayed the identification of “second stage” until the woman exhibited an urge to push in order to avoid the imposition of arbitrary time limits for the duration. They essentially reconceptualize second stage as being accompanied by bearing down.⁵³ Time spent in the phase of active bearing down is the more critical time interval than the total duration of the second stage in regards to the decline in fetal pH (the development of hypoxia and acidosis²⁰ and the occurrence of maternal perineal or denervation injury).³ However, failure to identify or acknowledge complete cervical dilatation might result in a delay in recognizing failure of descent in the second stage and delay necessary intervention. An approach where passive descent is supported until obstetric conditions (advancing station and anterior fetal rotation) are optimal for further descent, and where the duration of the phase of active pushing is shortened by encouraging effective maternal bearing down is consistent with the evidence presented. This involves awaiting an involuntary urge to push and considering fetal position and station before directing a woman to push. The clinical questions should be “What station is the presenting part and does she have an urge to push?” and, in

reference to duration, “How long has she been pushing effectively?” rather than “How long has she been complete?”

RECOMMENDATIONS FOR RESEARCH

Laboring women are offered instrumental vaginal birth or cesareans when the total duration of the second stage of labor duration exceeds specified time limits. More study of the average duration and biologic parameters specific to the passive and active phases of second stage is needed. Specifically, the optimal “delay” between complete dilatation and the encouragement of active bearing down has yet to be determined. This might serve to establish more useful criteria for intervention that would not be based on total second-stage duration alone, but rather on the duration of active pushing. Translational research might provide the means to discontinue uniform instructions to use sustained Valsalva pushing. Future research needs to address delayed pushing for women with and without anesthesia, identify the indicators that could serve to guide caregivers in deciding when to offer direction in pushing, and inform the use of maternal positioning and other strategies that might facilitate second stage progress. Finally, longitudinal outcome studies are needed to determine the impact sustained strenuous bearing down has on genital prolapse later in life.

Maternal position for birth remains a topic of continued research, particularly for women with epidural analgesia for whom position change is more difficult. The meta-analyses of second stage position for women with and without an epidural identified many benefits for upright position, including a shortened second stage duration, fewer operative vaginal deliveries, and less maternal pain and perineal damage from [episiotomy](#) and forceps births.^{47, 48} Lumbosacral spine and lower extremity nerve injuries have been identified a result of the use of exaggerated dorsal position where the legs are flexed for a prolonged periods.⁴ These injuries might be avoided by encouraging position changes. Further research is needed addressing ways to assist women with effective epidurals to push effectively and avoid injury.

Laboring women most often assume the position the care provider recommends to them.^{50, 54} Thus, clinicians play a significant role in translating research findings into practice and preventing adverse birth outcomes. It has been noted that research findings about maternal positioning and bearing down have not yet been fully implemented in maternity care settings, even when a multicenter research utilization protocol was initiated.^{55, 56} The contemporary emphasis on safe care practices might influence a review of best practices and avoidance of approaches to care that incur adverse outcomes, such as discouraging prolonged breath holding with bearing down and allowing a delay in directing women with an epidural to push until the urge to push is felt (for up to 2 hours for nulliparous women and up to 1 hour for multiparous women).^{10, 56} Sampsel et al.³⁰ speculated that labor nurses might not know how to offer supportive care and provided examples of the language and strategies that can be used as an alternative to uniform directions to use sustained Valsalva pushing. They also found that women in labor changed their position more often when the caregiver encouraged spontaneous pushing. Therefore, encouraging women to respond to their involuntary urge to push and to achieve comfort might enable favorable positional variation.

The autonomy of the attending [midwife](#) also appears to impact the context and management of the second stage of labor. Thomson¹⁷ found that more assertive midwives were the most successful in achieving maternal position changes that improved the effectiveness of bearing down efforts. Increased autonomy in midwifery practice was also associated with use of non-lithotomy maternal positions.⁵⁴ While there is a paucity of research in this area, optimal second stage progression, improved outcomes, and practitioner autonomy appear to be inextricably linked.

In addition to supportive communication, the guidelines listed above will serve to modify provider and client approaches and promote the transition of this evidence into practice.

KEY POINTS FOR MANAGEMENT OF THE SECOND STAGE OF LABOR

- Bearing down should be delayed until the urge to push is felt, especially for women with an epidural.³⁵
- Prolonging the early, passive, phase of second stage carries no risk to the mother or fetus.^{12, 17, 20}
- Shortening the phase of active pushing and avoiding breath-holding to minimize hypoxic stress for the fetus^{9, 20} and pelvic or perineal damage for the woman.^{3, 11, 13, 18}
- Bearing down efforts maintained for less than 6 seconds appear to be safe for the fetus.^{8, 15}
- If periods of fetal bradycardia occur, Valsalva-type bearing down efforts can produce more harm than benefit to an already compromised fetus.^{6, 9}
- Women should be discouraged from prolonged breath holding.⁹
- When maternal preference or satisfaction has been considered women prefer being upright because of comfort.^{47, 57}
- An environment where women feel free to choose positions that provide comfort might also facilitate labor progress.

CONCLUSION

Ideally, management of the second stage of labor is determined by the laboring woman herself; however, care practices are ultimately guided by or negotiated with the provider and intrapartum nurses. The impact [midwives](#) have on second-stage care is a function of their philosophy, beliefs, and behaviors, as well as their physical proximity to the laboring woman.⁵⁷ Tailoring second-stage labor practice to meet the needs of individual women and to follow their own intuitive pattern of behavior is superior to following a blueprint of arbitrary care. When women identify, respond to, and are supported in their own pattern of bearing down in self-selected non-lithotomy positions, optimal fetal, maternal, and neonatal outcomes might result. Midwives who remain present during active labor can help prepare women and the environment for physiologic management of the second stage. Further, midwives balance their own knowledge, beliefs, and intuitions while limiting unnecessary interference. They respond to the individual woman's needs at a time of intense physical sensations and heightened

emotional vulnerability. The application of scientific evidence at each birth is an avenue for change. Broader transformation is needed so that every woman giving birth has an opportunity to experience second-stage management that is not only evidence-based but also individualized to her personalized needs. Placing women at the center of second-stage management is congruent with the evidence and the hallmarks of midwifery practice.

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