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CHILDBIRTH THROUGH TIME

A collection of essays by Quinn Rathkamp

WWU Honors Capstone Project (Submitted Spring 2017)

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Dear Reader,

The following is a series of research essays I wrote on childbirth between January 2016 and May 2017 at Kenyon College and Western Washington University. Because I wrote parts one, two, and three for different classes, I have not attempted to connect their themes. Nevertheless, I would like them to be laid to rest in one document because of their shared subject. Parts three and four, however, are interrelated and should, ideally, be read in sequence. Part four is a more informal discussion of the current state of US childbirth. Together, parts three and four form the heart of my capstone project and were completed between January and June 2017 under the patient and helpful guidance of Dr. Johann Neem. Thanks also to Bruce Kinzer and Christine Johnston for your advice and encouragement; to Dr. Scott Linneman for approving this project; to my mom for sharing her stories with me at a young age; and to Dylan, Meera, Willa, Hazel, Nell, Maya, Kate, Evan, Karen, Caroline, and Eric for editing portions of my papers, for listening to me process my ideas, for asking questions, and/or for insisting that everything was going to work out.

I have loved this journey. It has drawn me closer to family members and friends and has taught me about religion and science and culture and art and a dozen other subjects. I encourage you to share your own stories and ideas of childbirth and ask for those of others. And to read this series of essays.

Enjoy,
Quinn Rathkamp

Professor Christine Johnston

History of Ancient Mesopotamia (Western Washington University)

Part I

Pervasive Practices and Divergent Cultural Traditions Surrounding Childbirth in Ancient Egypt and Ancient Mesopotamia

In the ancient Near East, cultures and traditions collided on a regular basis. Makers of monumental architecture in Egypt constructed drastically different structures from those found in ancient Babylon or Israel. Tombs held different objects, economies produced different goods, servants were set to different tasks and ate different foods: Near Eastern cultures diverged from one another in a wide variety of ways. It is, thus, important to underscore cultural similarities where they can be found. Practical materials and rituals employed during childbirth were strikingly similar throughout ancient Egypt and the Near East. However, the spiritual rituals, metaphors, and social significance of childbirth varied drastically, especially between the world of ancient Egypt and that of the Hebrew Bible. These spiritual and social differences are especially apparent in the way that the experience of childbirth was recorded.

Shared Birth Practices in Egypt, Ancient Mesopotamia, and The Levant

The use of bricks during and after births was ubiquitous throughout the ancient Near East. Women would place their feet or knees on a set of specially designated birth bricks and squat in a position that allowed gravity to aid in the delivery of the baby. The bricks served a practical purpose, and, in the case of Egypt, a spiritual one as well. By elevating the mothers, midwives were given slightly more room to attend to the delivery. Birth bricks are attested to in a Neo-Assyrian letter, a Sumerian personal name, the book of Exodus, an Egyptian stele, the

Westcar Papyrus, and by an actual birth brick recovered from a home near the mortuary complex of King Senwosret III.¹ Additionally, women in both ancient Egypt and ancient Israel underwent a period of rest and purification after giving birth. In the Westcar Papyrus, Reddetet goes through a fourteen day purification period after the birth of her three sons.² Carolyn Graves-Brown asserts that this practice was ubiquitous within Egyptian culture.³ Leviticus 12 outlines specific instructions for women's purification, both by a period of seclusion and through sacrifice.⁴ Lastly, almost every source on the subject of ancient Near Eastern Childbirth highlights the presence and importance of midwives in the process. In both regions, female family members and close family friends attended the birth and either acted as midwives themselves or else assisted the midwife in her duties.

¹ There has been some debate about how to translate the word 'obnayim' from the Bible. Most scholars conclude that it indicates either two bricks or two stones. Skimming over the extensive research done on birth bricks causes me physical and emotional pain, but I simply don't have the space explore the topic here. An essay for another day, perhaps! Kevin McGeough, "Birth Bricks, Potter's Wheels, and Exodus 1,16," *Biblica* 87, no. 3 (2006): 305-18. <http://www.jstor.org/stable/42614685>, 305, 314-316.

² Carolyn Graves-Brown, *Dancing for Hathor: Women in Ancient Egypt*, London: Continuum, 2010, 64.

³ *Ibid.* 62.

⁴ *ESV Global Study Bible: English Standard Version* (Wheaton, IL: Crossway, 2012), 70. Eran Viesel, "The Influence of Realia on Biblical Depictions of Childbirth." *Vetus Testamentum* 61, no. 4 (2011): 685-89. Accessed November 13, 2016. doi:10.1163/156853311x560790, 688.



Figure 1. Reconstruction of the underside of the Abydos Brick (Wegner).

Gender Relations and the Documentation of Birth in Egypt and Mesopotamia

Despite the abundance of similarities in the general practices of childbirth, primary sources indicate that the spiritual rituals and societal beliefs and attitudes surrounding childbirth were diverse. One of the best sources documenting attitudes and spirituality associated with childbirth is the Hebrew Bible itself. Contrasting the books of the Bible with various Egyptian papyri and collected archeological material reveals that men's involvement in the birth process differed between the cultures of ancient Egypt and Israel. While women played the primary role as caretakers and midwives in both regions, the male authors of the books of the Old Testament demonstrate that, in general, they were more removed from the process of childbirth than Egyptian men.⁵

There are three key passages of the Hebrew Bible that describe childbirth in ways that are incongruous with the reality of the process of human labor and delivery. The first two passages

⁵ Ibid.

describe infants emerging from the womb hands first: Genesis 25:24-26 describes the birth of Esau and Jacob by Rebecca. “When her days to give birth were completed, behold, there were twins in her womb. The first came out red, all his body like a hairy cloak, so they called his name Esau. Afterward his brother came out with his hand holding Esau's heels, so his name was called Jacob.”⁶ While the emergence of Esau is not described in detail, Jacob’s birth position is clear; if he held onto the heel of his brother, either his hands were delivered first, or his hand(s) were delivered along with his head, with his arm(s) pressed against his ears.

The second passage, Gen 38:27-29, describes a similar birth position during the delivery of Zerah and Perez by Tamar. The author writes, “when the time of her labor came, there were twins in her womb. And when she was in labor, one put out a hand, and the midwife took and tied a scarlet thread on his hand, saying, ‘This one came out first.’ But as he drew back his hand, behold, his brother came out.”⁷ Thus, the author indicates that Zerah had been preparing to emerge from the womb hand(s)-first before he changed his mind. In both Gen 25 and Gen 38, the author carries on narrating the story without any note that something unusual has just taken place in the story. Thus, the narrator indicates that this is the natural way for babies to be born. However, aside from the births of Zerah and Jacob, no other instance has ever been recorded (to the knowledge of Viesel) in which the baby’s hand emerged first.⁸ If one assumes that the many recorded births in the history of the world constitute a general rule, then it is reasonable to assume that, barring divine intervention, it was highly unlikely that either Zerah or Jacob was actually born hands-first. It is likely that the authors of the Hebrew Bible assumed that the process of the birth of cattle and sheep—during which the hooves of the offspring’s forelegs

⁶ *ESV Global Study Bible: English Standard Version* (Wheaton, IL: Crossway, 2012), 70.

⁷ *Ibid.*, 88.

⁸ Viesel, “The Influence of Realia,” 687.

emerge from the womb first—did not differ from that of human babies. After all, human hands are the logical equivalent of the hooves of the forelegs of calves and lamb.⁹

The third piece of evidence that demonstrates Biblical men's unfamiliarity with the actual process of birth comes from Jeremiah 30:6, which describes the actions of cowering men: "I see every man with his hands on his loins, like a woman in labor."¹⁰ Viesel explains that the author of this passage "knows that men tend to grab their organ when it is hurt or injured, and he projects this action onto the birthing woman, supposing that a woman in labor will place her hands on her loins...to ease the pain."¹¹ In reality, this action is uncommon of women in labor. Because these passages demonstrate men's ignorance in the arena of labor and delivery, Viesel argues that men (customarily) never saw women giving birth, but instead projected their own experiences, both physiologically and as shepherds and farmers, onto the experience of women's labor and human childbirth. If men in the Biblical world had witnessed labor and childbirth or communicated about the process with women, it is unlikely that they would have erroneously postulated that babies could be born hands-first or that women grab their "loins" during birth instead of their backs, hips, and the hands of those around them. Jennie Ebeling reiterates that in the world of the Old Testament, childbirth "was almost assuredly outside the realm of most men's experiences, and was not an event that required the intervention of more established medical practitioners, even when they existed."¹²

This lack of knowledge on the part of men may be one of the primary reasons that there is more evidence of ancient Egyptian childbirth than there is of childbirth in the area around Israel.

⁹ Ibid.

¹⁰ *ESV Global Study Bible*, 1033.

¹¹ Viesel, "The Influence of Realia," 688.

¹² Jennie Ebeling, *Women's Lives in Biblical times*. (London: T & T Clark, 2010. Accessed November 13, 2016), Ebrary, 98.

Examples of men's minimal—but noteworthy—involvement in ancient Egyptian childbirth can be found in three papyri discovered by archeologists. The Kahun Gynecological Papyrus was written around 1825 BC, presumably by a male physician. The document showed many signs of extensive wear; the owner must have used and handled the papyrus frequently, for the material has been patched and re-traced in various areas. The papyrus features 34 paragraphs, each of which presents the conditions, the causes, and the recommended treatment for a variety of specific maladies common to Egyptian women. For example, one paragraph reads,

Examination of a woman aching in her teeth and molars to the point that she cannot [...] her mouth

You should say of it 'it is toothache of the womb'.

You should treat it then by fumigating her with incense and oil in 1 jar

Pour over her [...] the urine of an ass that has created it's like the day it passed it.¹³

Most of the passages deal with pains or diseases that have little to do with women's reproductive organs (by modern standards), and almost every passage attributes the issue at hand to “discharges,” “passions” or “fits” of the “womb.” The way in which a neck ache could be caused by “discharges of the womb in her eyes” defies logic. By attributing every medical issue that plagued women to some abnormality of the uterus, the author demonstrated that Egyptian men believed that a woman's reproductive organs entirely distinguished the female body from the male body. Other passages focus on contraception methods, and, thankfully, the last two passages provide recommendations for aiding women struggling with labor: “Preventing acute [labor] pains of a woman” involves (somehow) ground beans and the woman's molars, and a

¹³ "Kahun Medical Papyrus," Kahun Medical Papyrus, 2000, , accessed December 05, 2016, <http://www.ucl.ac.uk/museums-static/digitalegypt/med/birthpapyrus.html>.

destroyed section of the document gives treatment recommendations or “a woman [who] waters in difficulty.” Assuming that the document was written by a male physician, all of these passages papyrus indicate that some men were involved in women’s reproductive health and witnessed or aided in childbirth and labor. At the very least, some Egyptian men knew enough about the realities of labor in order to describe them with some accuracy, which is more than can be said for the authors of the books of Genesis and Jerimiah.

One may apply that same argument to the presence of advice related to labor and childbirth to the Ebers Papyrus. While it is quite difficult to access a full copy of Carl Von Klein’s English translation of the document, he published a short teaser of the Papyrus’ contents in 1905 called *The Medical Features of The Papyrus Ebers*. In it, Von Klein explains that the Papyrus was completed in 1552 BCE and that the Ebers Papyrus known to modern scholars was—most likely—a compilation of other medical papyri at the time or a revised version of a previous medical text. Thus, the medical information within the Ebers Papyrus probably originated from between the 16th and 18th dynasties. Von Klein’s *Medical Features* also promises chapters on both “Diseases of the Female Genitals” and on pregnancy and childbirth. Subtitles within the childbirth chapter include "methods to induce abortion, to prevent abortion, to replace a prolapsed uterus, to deliver a woman, to perform version during delivery, to deliver the placenta, to restore the vagina to its normal condition, to prevent the retention of urine, and to stop hemorrhage."¹⁴

With the contents of the Ebers Papyrus in mind, one must take an aside and consider by whom the document was written and for which audience it was intended. There is very little

¹⁴ Carl Von Klein, "Full Text of "The Medical Features of the Papyrus Ebers"" Full Text of "The Medical Features of the Papyrus Ebers" , accessed December 05, 2016, https://archive.org/stream/cu31924000900849/cu31924000900849_djvu.txt.

evidence of ancient Egyptian women's writing and reading ability. Carolyn Graves-Brown argues that few women were trained to become scribes, even in the elite spheres of society.¹⁵ Although evidence exists of letters sent by women, Graves-Brown argues that these were possibly actually transcribed by men. She does stipulate that female merchants and women running large households would have, perhaps, some reading ability.¹⁶ Given this information, is unlikely that they would have been able to decipher the text of the Ebers Papyrus, and it is even more unlikely that they would have been able to write it. Lastly, while the stele of Lady Peshet names its subject as the "female overseer of female physicians," there is no other evidence of other female physicians until the Ptolemaic Period.¹⁷ Thus, the Ebers and Kahun Gynecological Papyri were most likely written by men for an audience of other men, indicating that some ancient Egyptian men *did* have detailed knowledge about the process of delivery and childbirth.¹⁸

Lastly, in the Westcar Papyrus, Re sends Khnum, a male deity, to attend the labor and delivery of Reddedet (along with four female deities).¹⁹ He brings a birth bricks for the suffering mother, is welcomed into the room in which Reddedet is laboring by her husband, Reusre, and proceeds to "breathe life" into each of the three newborns.²⁰ Both Reusre's proximity to the scene of birth and Khnum's active participation in the delivery indicate a level of male involvement unparalleled by any Ancient Mesopotamian source.

Perhaps male medical professionals and other men in Ancient Mesopotamia did know about and aid in births, but because there is so little evidence, historians assume that they did not

¹⁵ Carolyn Graves-Brown, *Dancing for Hathor: Women in Ancient Egypt*, London: Continuum, 2010, 52.

¹⁶ *Ibid.*, 53.

¹⁷ *Ibid.*, 82.

¹⁸ If, by chance, either of the papyri were written by women, the audience would still have been male, indicating that men still were receiving detailed knowledge about childbirth.

¹⁹ "Papyrus Westcar," Rosmorduc, June 09, 2009, accessed December 2, 2016, <http://rhubarnhart.net/westcar-nederhof.pdf>, 42-44.

²⁰ McGeough, "Birth Bricks," 310-311.

play a role in the world of obstetrics. In fact, this very lack of evidence may be attributed to the fact that men never participated in births and that women never communicated the details of them to men. If men were doing most of the writing in Biblical culture and men didn't know about birth, they would not leave behind any written evidence conveying their knowledge.²¹ By contrast, not only did (at least) one Egyptian male god participate in some deliveries himself, but some Egyptian men (like Reusre) were allowed to stay in the same vicinity as their laboring wives. Finally, we know that male doctors in Egypt occasionally either directly assisted in deliveries or else disseminated medical advice to women in labor and their other female attendants.²² Thus, one may conclude that a crucial difference between the culture of childbirth of ancient Israel and that of ancient Egypt lies in the realm of gender relations. It is probable that in Egyptian culture, men were not entirely barred from the scene of birth as they were in the culture described in the Hebrew Bible. Therefore, few men in ancient Israel ever became acquainted with the process of childbirth while at least some ancient Egyptian men were privy to the both the gory details of amniotic fluid and to the fact that tiny heads and butts make their way into the world before hands do.

²¹ The lack of evidence may also be attributed to the more restrictive time frame and regional limits that I have applied to Ancient Mesopotamia as opposed to Ancient Egypt. It could also be attributed to the fact that Egypt had (arguably) a more prolific culture of writing than Ancient Mesopotamia. But, hey, when it comes to analyzing ancient sources, I am hoping that it is acceptable to just go with what you can find.

²² I think that here is a good place to pause and point out a small conundrum posed by the Ebers and Kahun Papyri. Both of them include obstetric information in the form of recommendations (i.e., if problem *x* presents itself, then you should solve it by doing *y*). If we presume a male audience, it would be logical to conclude that male general practitioners occasionally, or even regularly, aided in difficult births. However, this logic is nullified by the complete and utter lack of other evidence of men aiding in childbirth or delivering babies. This begs the question, how did the authors and audiences of the papyri use this information? Did they advise female midwives? Did they shout suggestions from across the house as women struggled to deliver babies and save dying mothers in the back room? Despite our lack of understanding on the practical purposes of the papyri, my argument still stands; for one reason or another, some men, even though they may have been a select few, were familiar with childbirth and the basics of post-partum care. I will also note that all three medical papyri devote only small sections to childbirth. Even the author of the Kahun Genealogical Papyrus focused the vast majority of his text on the conditions of women who were not pregnant or were pregnant but not in labor. I think that this indicates that the exposure of male physicians had pregnant women was fairly limited in scope.



Figure 2. Relief Scene of childbirth from Dendera, Cairo Museum (Wegner)

It is also important to factor in the role of women while considering the prevalence of childbirth sources in Egypt. Not only were men slightly more involved in the childbirth process, but Egyptian women themselves created and shared artifacts (like birth/tomb bricks and wands), ritual songs (like the various chants on different papyri), and even architecture and relief sculpture (like Dendera).²³

²³ A great example of this comes from the Papyrus Leiden, which features the following spell: "Rejoicing, rejoicing in heaven, birth giving is accelerated. Come to me Hathor my lady in my pavilion, in my happy hour... Open for me. I am the one whose offering is large, the builder who built the pylon for Hathor, lady of Dendera, who lifts up in order that she may give birth. It is Hathor the lady of Dendera who is giving birth." Wegner, *Archaism and Innovation*, 458.

Contrasting Metaphor and Symbolism Egypt and the Levant

Aside from differences in men's level of exposure to childbirth, ancient Egypt and ancient Mesopotamia also associated differing metaphors with the process. In Egypt, the materials and symbols featured in the magical objects employed during births were also featured in tombs and in association with death. For example, archeologists discovered four systematically arranged bricks (of the same style as traditional birth bricks) at the respective burial sites of Tutankhamun, Amenhotep II, and Thutmose IV.²⁴ In most other eighteenth-dynasty royal tombs, niches for these bricks remain in place (although the bricks themselves are rarely found intact).²⁵ Additionally, symbols of two Meskhenet birth bricks are featured in the Book of the Dead above the scales of judgment that determine the fate of Thoth in the Book of the Dead. Ann Roth and Catharine Roehrig suggest that Meskhenet bricks that appear in judgement scenes like the one in the Book of the Dead indicate that "the social position into which a person was born, decreed at birth and attested by the presence of a birth brick personifying the divinities connected with fate, was taken into consideration by the judges in determining whether sufficient good deeds had been done to justify admission to the afterlife."²⁶ Other scholars draw attention to the ancient Egyptians' beliefs that linked death with regeneration or rebirth. Hathor, one of the most important Egyptian goddesses of childbirth, is featured in passages of the Coffin Texts as the "Lady of the Sky." In these passages and in other traditions, Re, a young sun-god, regenerates through Hathor. Re passes between Hathor in the form of two trees; these very trees appear on the backside of the Abydos

²⁴ Ann Macy Roth and Catharine H. Roehrig, "Magical Bricks and the Bricks of Birth," *The Journal of Egyptian Archaeology* 88 (2002): 121-39. doi:10.2307/3822340. 122-123.

²⁵ *Ibid.*, 124.

²⁶ *Ibid.*, 137.

birth brick on either side of the new mother and baby.²⁷ Thus, it is clear that themes of childbirth played an important role in a variety of Ancient Egyptian traditions involving death and rebirth.

This connection was entirely absent in ancient Mesopotamia. Instead, birth is often associated with ocean travel, or with the movement of snakes.²⁸ One Assyrian elegy reads, "Why are you adrift, like a boat, in the midst of the river, your thwarts in pieces, your mooring rope cut? The day I bore the fruit, how happy I was, Happy was I, happy my husband."²⁹ A prayer to the deities Ea, Samas, and Marduk states: "My father created me, mother gave birth to me. They strove and like a snake I came forth from darkness and saw you, Samas."³⁰ Metaphors involving childbirth also pervade the Hebrew Bible. Images of women suffering from the painful "pangs" of childbirth pervade the prophetic books, and a variety of scholars have contemplated the purposes of these images. Tarja Philip argues that a selection of these images are meant to signal that God may appear in the form of a woman giving birth.³¹ Amy Kalmanofsky argues that these images symbolize "the physical and emotional experience of

²⁷ David P. Silverman, William Kelly. Simpson, and Josef W. Wegner, *Archaism and Innovation: Studies in the Culture of Middle Kingdom Egypt* (New Haven: Department of Near Eastern Languages and Civilizations, Yale University, 2009), 460.

²⁸ Claudia Bergmann, *Childbirth as a Metaphor for Crisis: Evidence from the Ancient Near East, the Hebrew Bible, and IQH XI, 1-18*. Berlin: W. De Gruyter, 2008, 1.

²⁹ *Ibid.*, 12.

³⁰ *Ibid.*, 13.

³¹ One may draw a parallel here to an important feature of the Abydos painted brick. The mother and her attendants have blue hair that matches the blue hair of the two Hathor heads on either side of the scene (refer to Figure 1). Blue was a color that symbolized divinity. Thus, among other sources that claim that midwives were inhabited by goddesses during deliveries, the brick suggests that some Egyptian women believed that—through some kind of "magical metastasis"—Hathor inhabited women in labor. We can also see this the excerpt from the Papyrus Leiden, "It is Hathor the lady of Dendera who is giving birth." You can't get more explicit than that, huh? Wegner, *Archaism and Innovation*, 456, 458.

Israel awaiting the Babylonian conquest and [convey] the irony and futility of Israel's situation.”³²

Both Kalmonofsky and Claudia Bergmann bring attention to the many instances in which warriors or soldiers are likened to women in labor. In the Books of Isaiah (13:6-8, 21:3-4), Jerimiah (4:31, 6:22-14, 13:21, 49:23-24, 50:43), and Micah (4:9), the authors write that vulnerable or suffering men and entire cities (like Damascus) experience “agony like a woman in childbirth,” and “pangs like a woman in travail.”³³ Isaiah 41:14 brings special attention to the screams of a woman in labor, which, as previously discussed, were probably the vehicle for most of the men’s exposure to the process.³⁴ In any case, these metaphors highlight that, like a woman suffering through labor, all men would undergo hardship, distress, and sacrifice before receiving gratification and liberation (in the form of a child, of a military victory, or of admittance into heaven).³⁵ These metaphors also underline the helplessness of mortals in the face of God; Kalmonofsky writes, “Just as a woman must submit to the pain and terror of childbirth, so too must the vanquished submit to their fate.”³⁶ Lastly, these images may have been intended to convey the intense “shame of Israel’s demise;” if men participate in the feminine acts of trembling and screaming, they irreparably damage their masculinity.³⁷

³² Tarja Philip, *Menstruation and Childbirth in the Bible: Fertility and Impurity*, (New York: P. Lang, 2006) 101. Amy Kalmanofsky, "Israel's Baby: The Horror of Childbirth in the Biblical Prophets," *Biblical Interpretation* 16, no. 1 (2008): , accessed December 1, 2016, doi:10.1163/156851507x194279, 61.

³³ *ESV Global Study Bible: English Standard Version* (Wheaton, IL: Crossway, 2012).

³⁴ *Ibid.*, 959.

³⁵ Bergmann, *Childbirth as a Metaphor for Crisis*, 99.

³⁶ Kalmanofsky, “Israel’s Baby,” 67.

³⁷ This shame is expressed in Jeremiah 4:30-31. “For I heard a cry as of a woman in labor, The anguish as of one giving birth to her first child, The cry of the daughter of Zion gasping for breath, Stretching out her hands, saying, ‘Ah, woe is me, for I faint before murderers.’” "Jeremiah 4:31." Bible Hub. Accessed December 02, 2016. <http://biblehub.com/jeremiah/4-31.htm>. Bergmann, *Childbirth as a Metaphor for Crisis*, 74.

Conclusion

Women throughout the ancient Near East stood and knelt on birth bricks, stones, and stools during their labors; they were usually attended by midwives and female family members; most women delivered their afterbirth into a hole in the ground and buried it; and most women underwent a significant period of secluded rest and purification afterwards. These culturally practical similarities are countered by the contrasting gender relations and spiritual metaphors that ancient Egyptians and Mesopotamians associated with childbirth. Egyptian men were allowed slightly more access to the realm of labor and delivery than their Israelite counterparts, which may explain the lack of sources available on childbirth practices in that region. And while the Egyptians linked childbirth with death and rebirth through the goddess Hathor and through Meskhenet's birth bricks, Mesopotamians linked childbirth with ocean travel, snakes, and the vulnerability of men during military conflict. This evidence illustrates that despite both societies' beliefs that childbirth was an extremely private and impure process, childbirth still played a prominent role in shaping societies' cultural understandings of more public and masculine elements of society like death and spiritual enlightenment.

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Professor Bruce Kinzer

Victorian Culture and Society (Kenyon College)

Part II

The Effects of Bacteriology and Pharmacology on Nineteenth Century Maternal Mortality

Rates

In the late 19th century, a series of medical advances were introduced to the highest echelons of the scientific and obstetric communities. However, from the 1850s through the 1930s, the implementation of antiseptic practices, anesthesia, and improved hemorrhage care in Britain occurred at an agonizingly slow pace due to long-running inadequacies in obstetric education. Eventually, as awareness of bacteriological and pharmacological knowledge spread from birth attendant to birth attendant, maternal deaths related to puerperal fever, shock, and hemorrhage decreased. However, recorded maternal mortality *rates* during this period remained essentially stagnant. This contradiction is due, in part, to the greater accuracy with which increasingly informed midwives, general practitioners, and obstetricians reported maternal deaths. In a sense, improvements in education respecting maternal care led to decreases in maternal death, but also to increases in maternal deaths reported.

Puerperal Fever and Antisepsis

Before the historical trifecta of Ignaz Semmelweis, Louis Pasteur, and Joseph Lister tackled puerperal fever with their soaps and acids, puerperal fever, also known as sepsis, caused approximately 80 percent of maternal deaths during epidemics. Puerperal fever did not

discriminate between “the strong and the weak, the robust and the delicate, the old and the young, the married and the single,” or the finely and the drably dressed.³⁸

Puerperal fever was not, in fact, a fever at all but a disease caused by infection. In most cases the bacteria *streptococcus pyogenes* entered the uterine cavity by means of the hands of doctors and midwives attending the mother.³⁹ The infection appeared first in the uterine wall, and often progressed into the peritoneal cavity and eventually into the bloodstream, causing septicemia.⁴⁰ The disease inflicted pain “so excruciating that the miserable patients described their torture to be as great, or greater than, what they suffered during labor.”⁴¹

Puerperal fever prospered at the site of home births but positively flourished in the cramped wards of maternity hospitals, called lying-in hospitals, that primarily served poorer mothers in search of privacy and shelter.⁴² “Epidemics” in these hospitals were known to wipe out entire patient populations, and obstetricians and midwives alike floundered in their efforts to halt the devastation. However, in the 1840s, Semmelweis discovered that if a birth attendant washed his or her hands and changed clothes after performing post-mortems on deceased patients, patients would be less likely to die of puerperal fever. His proposal, while admittedly scientifically flawed, was largely ignored by the British obstetric community; many denied the possibility that doctors and midwives caused their patients to contract the disease. Semmelweis maintained that “morbid matter” was brought to the site of the uterus by birth attendants who had come in contact with the dead. However, he decisively excluded the possibility that a birth attendant could carry the disease from one live patient to another. Nonetheless, he strictly

³⁸ Antisepsis is the form of antiseptic practice adapted to prevent sepsis (puerperal fever).

³⁸ Quoted in Irvine Loudon, *Childbed Fever* (New York: Garland Publishing, 1995), 135.

³⁹ Irvine Loudon, *Death in Childbirth*, (Oxford: Clarendon Press, 1992).

⁴⁰ The peritoneum is the membrane which lines the abdominal cavity and covers abdominal organs. Loudon, *Childbed Fever*, xxix.

⁴¹ Loudon, *Death in Childbirth*, 56.

⁴² *Ibid.*, 195.

compelled his staff to regularly clean themselves with chlorinated lime, and this led to the eradication of sepsis in Viennese maternity hospitals in the 1850s and 1860s.⁴³

During this time, the contagion theory (that practitioners could spread the disease) pattered around Britain with help from James Young Simpson and Oliver Wendell (both had read Semmelweis), but it continually failed to make an imprint on the London Obstetrical Society or most elite obstetricians.⁴⁴ Evidence of sustained confusion over the disease's causation and prevention can be found in C.M. Miller's article and J. Pidduck's letter to the Editor in *The Lancet*. In 1848, C.M. Miller, an M.D, echoed many other practitioners by recommending leeching, regular doses of opium, and constant linseed or bran poultices for diseased patients.⁴⁵ In 1857, Pidduck, also an M.D., acknowledged the frustrating nature of the medical community's unsuccessful but perpetual search for a cure and proposed that doctors focus, instead, on preventative measures. In order to halt the spread of the disease, he recommended that medical practitioners go for "a mile's brisk walk" in between patients in order to "[throw] off the infection by the breath and surface of the body and from the clothes." He also implored practitioners to stop washing their hands with soap and instead wash them with "scalded bran."⁴⁶

However, after the publication of Louis Pasteur's *Germ Theory and its Applications to Medicine* (1879) and Joseph Lister's *On the Antiseptic Principle of the Practice of Surgery* (1867), discussion of the possible validity of contagion theory began in earnest. Pasteur believed that "by taking measures opposing the production of these common parasitic organisms,

⁴³ Loudon, *Death in Childbirth*, 66.

⁴⁴ For the sake of simplicity, from this point forward, I will refer to the collective bodies of practicing obstetricians, general practitioners, and midwives simply as "practitioners."

⁴⁵ C.M. Miller, "On the Treatment of Puerperal Fever," *The Lancet* 52, no. 1305 (1848): 262, doi:10.1016/S0140-6736(02)39768-X.

⁴⁶ J. Pidduck, "Puerperal Fever--Prevention of Infection" *The Lancet* 69, no. 1740 (1857): 22, doi:DOI: 10.1016/S0140-6736(02)56770-2.

recovery would usually occur [post-birth] ... The antiseptic method I believe likely to be sovereign in the vast majority of cases. It seems to me that immediately after confinement the application of antiseptics should be begun."⁴⁷ This "application of antiseptics," of course, refers to that process developed and written about by Lister, which instructed that carbolic and boric acid be used to sanitize the instruments and attendants that surrounded and interacted with the mother.⁴⁸

Resistance to Pasteur and Lister came from scientists and doctors the world over, and this resistance aided in the delay of the implementation of antisepsis.⁴⁹ Theorists like Pasteur and Lister believed that, in some way or another, the disease was introduced to the mother by an external source. The threefold objections to this theory revealed the vehemence with which practitioners desired to reject personal responsibility for such a fatal and widespread disease. At the time of Pasteur's proposal, many obstetricians believed in the endogenous theory, which contended that a woman carried the disease within her and that childbirth somehow 'activated' the disease.⁵⁰ Endogenous theorists attributed puerperal fever's especially strong presence in hospitals to the idea that in hospitals "the poison would be 'more active in proportion to the concentration of their [parturient women] excretions or exhalations, and consequently in proportion to their number cohabiting in a given number of feet."⁵¹ In other words, doctors believed that women were more likely to become diseased in hospitals because they were around other women who also had the poison inside them. Others believed that a woman was predisposed to puerperal fever if she had had a difficult pregnancy, for pregnancy supposedly

⁴⁷ Louis Pasteur and Joseph Lister, *Germ Theory and Its Applications to Medicine*, (Amherst, NY: Prometheus Books, 1996), 128.

⁴⁸ Loudon, *Death in Childbirth*, 204.

⁴⁹ Antisepsis is the form of antiseptic practice adapted to prevent sepsis (puerperal fever).

⁵⁰ Irvine Loudon, introduction to *Louis Pasteur and Puerperal Fever in Childbed Fever: A Documentary History*, ed. Irvine Loudon (New York: Garland Publishing, 1995), xxx.

⁵¹ *Ibid.*, xlii.

“placed great strains on the circulation, altered the composition of the blood, and had unfavorable effects on the nervous system.”⁵² Lastly, faulty pipes and sewer gas were thought to be common triggers of activation. Some obstetricians still inspected homes for defective drains as late as the 1890s.⁵³ Additionally, the endogenous theory prompted practitioners to douche mothers with harmful antiseptics (sometimes mercury-based) that, in fact, increased the likelihood of infection and blood poisoning and injured the vaginal environment.⁵⁴

In 1869, Evory Kennedy published an essay recommending that maternity wards be shut down in order to eliminate the “atmosphere” as a cause of the disease.⁵⁵ At the same time, Kennedy encouraged “local depletion” through leeching as a treatment for the disease, and, in 1874, A.B. Steele argued that it appeared “impossible...to resist the conclusion that women who are confined in a hospital incur a much greater risk than those who are delivered at their own homes” and, thus, condemned the unethical nature of maintaining these hospitals, even for the poor.⁵⁶ Finally, in 1875, the London Obstetrical Society met in hopes of coming to a consensus; instead, members walked away with varying theories of endogenous causation.⁵⁷ Given this atmosphere of confusion, one might assume that attendees of Pasteur’s presentation to the Paris Academy of Medicine in 1879 would exalt his theory as the saving grace of the medical and obstetric communities. Instead, acceptance came begrudgingly over the period of the following three decades. Irvine Loudon writes that, in addition to the desire to shield practitioners from blame, obstetricians felt “reluctance to accept the germ theory” because “the theory that a

⁵² Ibid., xliii.

⁵³ Ibid., xlii.

⁵⁴ Ibid., xxx.

⁵⁵ Evory Kennedy, “Zymotic Diseases, as More Especially Illustrated by Puerperal Fever,” in *Childbed Fever: A Documentary History*, ed. Irvine Loudon (New York: Garland Publishing, 1995), 97.

⁵⁶ A.B. Steele. “Maternity Hospitals, and Their Mortality,” in *Childbed Fever: A Documentary History*, ed. Irvine Loudon (New York: Garland Publishing, 1995), 104.

⁵⁷ Loudon, *Childbed Fever*, 1.

‘microbe en chaplet’ was the sole cause of puerperal fever seemed too crude, too simple, to explain such a complex disease as puerperal fever.”⁵⁸ In the context of the times, objections to germ theory, led by Jacques-Francois-Edouard Hervieux, appeared fairly reasonable: if the microbe was “ubiquitous” then why did only some but not all women catch puerperal fever? Why was it more common in hospitals than in homes? The idea of a microbe seemed vague: Hervieux supposedly reacted to Pasteur’s presentation by rejecting the idea that something invisible could be so deadly and by asking, jokingly, what the so-called microbe looked like. Pasteur responded by drawing a series of circles on a chalkboard, but his audience remained unconvinced.⁵⁹

By 1888, most top obstetricians acknowledged bacterial infection as the primary cause of puerperal fever, though even the most progressive obstetricians, such as Charles James Cullingworth, still believed in the theory of multiple causation. Listerian antisepsis proved effective in multiple hospital environments, but the presence of antisepsis in a few hospitals was not strong enough to dent the mortality rates from puerperal fever. This implies that a great majority of practitioners did not use antisepsis or else used it ineffectively.⁶⁰ As will be discussed later, stagnant rates of puerperal fever may also signify changes in the quality of recordkeeping, which obstetricians increasingly discussed in the 1890s. Overall, difficulties in the acceptance of antisepsis by the scientific community mirrored resistance to anesthesia and other life-saving medicines.

⁵⁸ Ibid., 111.

⁵⁹ Ibid., 110.

⁶⁰ Irvine Loudon introduction to Charles James Cullingworth, “Puerperal Fever, a Preventable Disease,” 1888 in *Childbed Fever Fever: A Documentary History*, ed. Irvine Loudon (New York: Garland Publishing, 1995), 131.

Pain, Shock, and Anesthesia

Before entering into a discussion of anesthesia and its relationship to maternal mortality and maternal care, it is necessary to understand the limitations of anesthesia's effects on maternal death and corresponding mortality data. With regards to women who died giving birth after especially difficult or complicated pregnancies, ill-trained practitioners often struggled to differentiate between deaths due to shock (that is, death due to lack of blood flow) and deaths due to hemorrhage, heart problems, infection, or damage to the nervous system.⁶¹ In many cases, hemorrhage, heart problems, and infection can trigger shock. Therefore, it is difficult to assess the extent to which ether and chloroform (drugs that worked to prevent shock), reduced maternal mortality. In some sense, historians must be content to accept the profound impact anesthesia had on the *experience* of labor and recovery.

Undoubtedly, the replacement of opiates by chloroform improved mothers' overall health and longevity.⁶² One must also acknowledge the indirect effects of anesthesia on maternal mortality. While the introduction of anesthesia did not result in widespread increases in caesarean sections (because surgeons in this period had yet to discover ways to prevent most patients from dying due to excessive bleeding of the uterus at the site of the incision), its presence eased and promoted important caesarean section experimentation and research.⁶³ Similarly, the presence of anesthesia allowed for the development of (otherwise agonizingly painful) forceps techniques: In 1848, a doctor wrote to *The Lancet* and reported on the revolutionary use of chloroform in cases of instrumental labor. He celebrated they way in which

⁶¹ Loudon, *Death in Childbirth*, 28.

⁶² Loudon, *Death in Childbirth*, 343.

⁶³ *Ibid.*, 345.

chloroform removed “resistance” to the forceps from the muscles surrounding the cervix and uterus and thus made the task of “turning” the baby much easier and safer than before.⁶⁴

Improved forceps techniques, along with C-sections, would go on to save many lives in later years, and, during this very period, these techniques (though still too rudimentary and dangerous for the normal population) saved the lives of rachitic women of the slums. These women grew up without sufficient exposure to sunlight and thus suffered from rickets due to vitamin D deficiencies. As a result, they had incredibly narrow pelvic openings (from 1.5 to 3 inches as opposed to the standard 4.5), which made delivery of the baby through the vaginal canal physically impossible.⁶⁵ One need only imagine the torturous methods used to remove babies in such difficult circumstances.⁶⁶ In Glasgow, the site of Britain’s worst rickets “epidemic,” Murdoch Cameron drew widespread attention in 1888 for performing a C-section on a 4-foot-tall rachitic patient.⁶⁷ Thus, while the direct effects of anesthesia on maternal mortality rates are obscured by the complexity of childbirth, its long-term benefits on maternal survival are substantial.

In 1846, an American dentist “discovered” the anesthetic powers of ether. By early 1847, news of this success had spread to James Young Simpson, a prominent Scottish obstetrician, who had, coincidentally, been an early advocate for the contagion theory of puerperal fever.⁶⁸ He began using ether on laboring mothers shortly thereafter. He became transfixed with the powers of anesthesia and held dinner parties at which he and his guests would serve as test subjects for various anesthetic drugs. At one such party, he awoke at the table and saw that everyone else was

⁶⁴ W. Wilton, "On the Use of Chloroform in Instrumental Labors," *The Lancet* 51, no. 1273 (1848): 96, doi:10.1016/S0140-6736(02)85975-X.

⁶⁵ *Ibid.*, 135, 346.

⁶⁶ *Ibid.*, 131.

⁶⁷ *Ibid.*, 136-137.

⁶⁸ *Ibid.*, 344.

unconscious. Supposedly, this experience enticed him to switch from the use of ether to the use of chloroform, a substance that could be given more quickly and was more pleasant to inhale than chloroform.⁶⁹ The benefits of anesthesia for laboring mothers were clear; Simpson quoted the Greek physician Galen and expressed the sentiments of many suffering mothers when he claimed that “pain is useless to the pained.”⁷⁰ However, opposition to anesthesia came from both religious and medical communities, and their opposition delayed the use of anesthesia on the majority of mothers in the mid and late nineteenth century.

The increasing presence of forceps, caesarean sections, and a variety of drugs in the world of obstetric research and development prompted a number of prominent obstetricians to reject interventionism and encourage more natural childbirth. Therefore, the introduction of anesthesia into the British midwifery and obstetric world met with a ready crowd of naysayers. William Tyler-Smith, an “influential London obstetrician,” wrote that “women will derive truer comfort and a greater measure of safety and freedom from unnecessary suffering from physiology, than from wild therapeutics, which in her hour of trial only offer a choice betwixt poison and pain.” In other words, “the nature and severity of the pain...did not justify incurring risks associated with anesthesia.”⁷¹

Anti-interventionists argued four main points, the first being that surgeons and obstetricians relied on the reactions of awake patients to guide their surgeries and procedures.⁷² In this light, the obliterating pain would put the patient at a greater risk for having deprived their practitioner of necessary responses. (In 1852, a debate over this point reached the pages of *The*

⁶⁹ Donald Caton. *What a Blessing She Had Chloroform: The Medical and Social Response to the Pain of Childbirth from 1800 to the Present* (New Haven: Yale University Press, 1999), 12.

⁷⁰ Donald Caton, *What a Blessing She Had Chloroform*, 16.

⁷¹ Quoted in *Ibid.*, 30.

⁷² *Ibid.*, 29-30.

Lancet; in response to those who argued that “the obstetrician required the aid of his patient’s feelings to enable him to apply his forceps correctly and safely,” Simpson sardonically responded “What... would be thought of Mr. Syme, if in trying the femoral artery, he required the patient to inform him whether or not he was including the nerve in the ligature?”⁷³) Secondly, some worried that pain was a necessary part of disease and, thus, required for healing. Simpson retorted that physicians had used opium and alcohol to reduce pain for centuries and that the inhalation of a pain-reducer was really no different than one consumed orally.⁷⁴ The third and fourth objections were more difficult for Simpson to refute. At the time of Simpson’s advocacy, it had not yet been established whether or not ether or chloroform was safe for mothers. Indeed, the switch from ether to chloroform increased the risk of fatality because it acted more quickly and was, initially, more difficult to dose properly.⁷⁵ Additionally, many correctly guessed that chloroform diminished essential uterine contractions, which slowed labor and increased the likelihood of postpartum.⁷⁶ In a 1918 report published on the effects of chloroform use, the investigator expressed concerns that “uterine inertia” caused “marked delay in labor.”⁷⁷ The year of the report demonstrates the extended period during which the safety of anesthesia remained a contentious topic of debate. Lastly, the effects of chloroform on women’s long-term health and organ function remained unknown during this period.⁷⁸

John Snow, a London physician, recognized these risks and criticized Simpson’s heavy-handed dosing. In contrast to Simpson’s practice of pouring liquid chloroform into a

⁷³ Quoted in "Should Chloroform Be Used in Instrumental Labor?" *The Lancet* 66, no. 1678 (1855): 383-85, doi:10.1016/S0140-6736(02)39368-1.

⁷⁴ *Ibid.*, 16-17.

⁷⁵ Loudon, *Death in Childbirth*, 344.

⁷⁶ The reasons for increased hemorrhage likelihood will be discussed in the next section. Caton, *What a Blessing She Had Chloroform*, 64.

⁷⁷ Joseph S. F. "Report on Twenty Cases at the General Lying-in Hospital, York Road, S.E." *Proceedings of the Royal Society of Medicine* 11 (1918): 29-33. US National Library of Medicine National Institutes of Health, 31.

⁷⁸ Loudon, *Death in Childbirth*, 345.

handkerchief and holding it over the nose and mouth of his patient until they were unresponsively unconscious, Snow, administered chloroform through a specially developed vaporizer that allowed for precise and measured dosing. Furthermore, he attempted to abolish the only worst of the pain without physically disabling his patients.⁷⁹ “So lightly were his patients anesthetized that most of them responded to commands and pushed appropriately during delivery of the child, even though they had little or no memory of labor pain.”⁸⁰ In this way, the diminution of contractions was temporary enough to avoid the risk of postpartum hemorrhage.⁸¹ Snow’s method later received the label “Anesthesia a la Reine,” for he successfully used it on Queen Victoria during her final deliveries. In one of his casebooks, he records her delivery and notes that after neatly expelling the placenta, she expressed “herself much gratified with the effect of the chloroform.”⁸² Snow’s “Anesthesia a la Reine” helped quiet the fears of many anesthesia dissidents, partly because it demonstrated the calculated control and conservatism with which anesthesia could be employed and partly because it was good enough for the Queen; by accepting anesthesia herself, Victoria began a trend of anesthesia among aristocratic women and popularized Snow’s methods over Simpson’s, much to the benefit of the practice and to women’s health. Despite this surge in popularity, anesthesia remained unavailable to most middle and working class mothers.⁸³

Lastly, the late 19th century saw the discovery of the role of the placenta in transferring contents of the mother’s blood to that of the baby’s, otherwise known as fetal transfer.⁸⁴ After a French physician observed in utero addiction to morphine and the baby’s subsequent withdrawal

⁷⁹ Caton, *What a Blessing She Had Chloroform*, 62.

⁸⁰ *Ibid.*, 63.

⁸¹ *Ibid.*, 64.

⁸² *Ibid.*, 55.

⁸³ Alison Nutall, “Maternity Charities, the Edinburgh Maternity Scheme and the Medicalisation of Childbirth, 1900-1925,” *Social History of Medicine* 24 no. 2 (2011): 370-88.

⁸⁴ Caton, *What a Blessing She Had Chloroform*, 77.

after birth, physicians became skeptical of chloroform's impact on babies.⁸⁵ In 1874, Paul Zweifel of Switzerland published conclusive proof that chloroform affected both babies and mothers, for he smelled the vapors of the drug on the baby's breath and observed babies of anesthetized mothers acting more sluggishly than their natural-born counterparts.⁸⁶

In response to all of these objections from medical professionals, Simpson argued that the risks of anesthesia were outweighed by its benefits to postpartum healing. As feeble evidence, he cited the impacts of anesthesia on surgery and amputation. Death resulting from "the amputation of the thigh decreased from 50 to 25 percent when patients were anesthetized." Simpson wrote that "the saving of human suffering implies the saving of human life. And what holds good in relation to surgery holds good in relation to midwifery."⁸⁷ While Simpson failed, in his lifetime, to substantiate this claim with conclusive data, his belief in the moral righteousness of relieving "human suffering" held its ground against a variety of religious dissenters whose objections further stalled the acceptance of anesthesia in the obstetric community.

In an era of varied religious fervor and evangelism, the proposed elimination of pain (in general and for the purpose of childbirth) was met with substantial resistance. Members of an array of religious communities believed that pain served God as a tool for punishment, guidance, purification, and redemption; in their eyes, the pain of illness and childbearing served as an important test of faith and endurance.⁸⁸ Many cited Genesis 3:16, in which God dictates to womankind, "In sorrow thou shalt bring forth children," as proof of God's desire for women to experience pain in childbirth.⁸⁹ Simpson retorted that pain resulted from anatomical processes

⁸⁵ Ibid., 76.

⁸⁶ Ibid., 79

⁸⁷ Quoted in Ibid., 17

⁸⁸ Ibid., 95, 96, 102.

⁸⁹ Loudon, *Death in Childbirth*, 343.

and not from divine wrath; that if the authors of the phrase had intended to imply pain, they would not have used the word “sorrow;” that God’s curses had included Adam, but that Christian society did not object to the development of transportation and machinery for their role in easing the burden of man’s physical labor; and that God had spared Adam the pain of having his rib removed by causing Adam to fall into a “deep sleep” during the extraction.⁹⁰ Samuel Ashwell, writing in the *Lancet*, countered that “the deep sleep of Adam took place before the introduction of pain into the world during his state of innocence.”⁹¹ Understandably, these religious debates were not resolved. As time wore on, however, improved midwifery education gradually caused a greater number of birth attendants to adopt the practice.

Developments in Hemorrhage Care: Improved Postpartum Placenta Management and Ergot

Much like the developments of antisepsis and chloroform administration, the introduction of prophylactic oral ergot and more judicious care in the third stage of labor (the expulsion of the placenta) was not quickly and heartily accepted by the majority of practitioners. But in contrast to the other two cases, improved hemorrhage care was not met by any active resistance. Instead, the primary obstacle to the dissemination of improved hemorrhage care information was the poor system of education for almost all practitioners.

From 1872-1876, William Farr, inspired by the lack of credible information on maternal mortality, collected substantial information on the subject and published the most thorough analysis of maternal mortality that Britain had yet seen. In this report, he concluded that although hemorrhage accounted for 22% of maternal deaths, hemorrhage could be easily prevented in

⁹⁰ Caton, *What a Blessing She Had Chloroform*, 106.

⁹¹ Quoted in *Ibid.*, 107.

most cases.⁹² Present-day examinations support his assertions, for the majority of practitioners exhibited extreme ignorance in their management of the third stage of labor.⁹³ In the majority of women, hemorrhage is avoided after the baby and placenta are expelled because the contraction of the uterus' crisscrossed muscle fibers clamps off exposed blood vessels. In cases of multiparity (mothers having already borne children), muscle fibers weakened by previous deliveries may cause insufficient postpartum contractions that leave blood vessels open.⁹⁴ With proper techniques and medicines, most cases of postpartum hemorrhage can be avoided. For example, healthy involution—the process of the uterus returning to its pre-pregnancy condition—could be prompted by the administration of prophylactic oral ergot. Proof of this success can be found in the case of a Scottish hospital: when the medicine was finally introduced in 1912, cases of death by hemorrhage reduced from 66 cases a year to 11.⁹⁵

At the time of Farr's study, however, the practice of pulling on the umbilical cord to drag out the placenta before it had been appropriately separated from the uterus (among other equally harmful practices) was common among midwives and general practitioners.⁹⁶ Had a greater number of practitioners been aware of the benefits of ergot and of appropriate techniques for the expulsion of the placenta, many deaths due to hemorrhage could have been avoided. At the time of Farr's call to action, however, the limited-to-nonexistent education and training for physicians and midwives meant that the task of building an adequately informed field of professionals would be a long and arduous process.

⁹² Loudon, *Death in Childbirth*, 97.

⁹³ Antenatal hemorrhages occurred only rarely.

⁹⁴ Loudon, *Death in Childbirth*, 99-101.

⁹⁵ Nutall, "Maternity Charities, the Edinburgh Maternity Scheme and the Medicalisation of Childbirth, 1900-1925."

⁹⁶ Loudon, *Death in Childbirth*, 99.

Obstetric and Midwifery Education: Obstacles to the Application of Antisepsis, Anesthesia, and Improved Hemorrhage Care

Up through the 1930s, advocates of improved obstetric education for physicians and midwives fought to establish institutions of learning, registration for midwives, and improved medical curricula in an environment that made such developments extremely difficult. In reality, those promoting the widespread availability of antiseptics and anesthesia faced an even more daunting obstacle in the absence of an obstetric educational system than in the resistance that came from medical (and religious) communities. Without a reliable education or registration system for the vast majority of practitioners, the dissemination of important information about improvements in maternal care remained impossible. The London Obstetrical Society served as the only institution in England and Wales that recognized “obstetrics as a branch of medicine,” and because none of the society’s members actually attended deliveries, there existed a wide gap between the Society’s obstetricians and general obstetric practice.⁹⁷ The medical community “saw obstetrics as a messy and unscientific activity divided between ignorant, illiterate, unskilled, untrained midwives and the lowest level of medical men, the general practitioners.”⁹⁸ Thus, while required qualifications for physicians came into being through the Medical Registration Acts of 1858 and 1886, midwifery qualifications remained nonexistent.⁹⁹

Midwives delivered working class women and competed with GPs for deliveries of the middle classes. (GPs, therefore, actively fought against improved training for midwives, which would put midwives in even greater competition for middle-class deliveries.) Many of these

⁹⁷ Ibid., 172.

⁹⁸ Ibid., 173.

⁹⁹ Anne Borsay, *Nursing and Midwifery in Britain Since 1700* (Houndmill, Basingstroke, Hampshire: Palgrave Macmillan), 2012, 134.

midwives worked informally or part-time, occasionally tending to neighbors and relatives.¹⁰⁰

Others worked full time. With the exception of a few institutionalized clinics in Scotland, most midwives worked independently. In 1864, Florence Nightingale recognized the faults in the existing system of midwifery and founded the Ladies' Medical College at the King's College Hospital for midwifery training. She maintained that midwives should be required to train for two years before entering the professional world, but her ideas were deemed radical and her institution closed in 1872.¹⁰¹ Although Nightingale failed in her immediate attempt, her endeavor sparked a series of similar attempts to establish institutionalized midwifery education, examination, and registration.

In 1881 a group of upper-class women decided to apply their philanthropic resources to the cause of maternal mortality; subsequently, they founded the Matron's Aid (which would later become the Royal College of Midwives). This group advocated for the formal registration of midwives and even developed their own system of registration. In addition, they petitioned parliament for the regulation of midwifery, and their efforts (along with the efforts of many others) were rewarded in 1902 with the Midwives Act.¹⁰² However, their work and the Act were met with considerable opposition from general practitioners and other medical doctors. These doctors correctly predicted that more competent and qualified midwives would begin taking cases that GPs would have otherwise attended.¹⁰³ Their worries were not unfounded. After the Act was passed, in Oxford City, a man identified as Dr. Rivers reported that instead of attending eighty to ninety deliveries a year as he had before the Act, he was now (in 1910) attending only

¹⁰⁰ Loudon, *Death in Childbirth*, 177.

¹⁰¹ Additionally, her training wards were not exempt from deadly epidemics of puerperal fever, which undoubtedly hurried the closure of the College. Borsay, *Nursing and Midwifery*, 134. Florence Nightingale and Lynn McDonald. *Florence Nightingale on Women, Medicine, Midwifery and Prostitution*, (Waterloo, ON: Wilfrid Laurier University Press), 2005. 141.

¹⁰² Borsay, *Nursing and Midwifery*, 137.

¹⁰³ *Ibid.*, 138.

twenty.¹⁰⁴ The statistics of GPs in Derbyshire mirrored those in Oxford City; there, the percentage of registered births attended by doctors dropped from 42.4 percent to 25.1 percent while midwives increased their attended cases from 56.6 percent to 74.9 percent.¹⁰⁵

In any case, the proposal of the Midwives Bill prompted an onslaught of resistance. Many fearful doctors published their recommendations in medical journals before the Bill was passed by Parliament, and one such physician, Lovell Drage, wrote a letter to the Editor of *The Lancet* and, in a demonstration of desperation, cited high rates of infanticide among poor women and argued that the Bill should not be passed because it would “render it more easy for those mothers who desire the death of their children to have the deaths procured with less chance of discovery, subsequent inquiry, and perhaps punishment [sic].”¹⁰⁶ He concludes, “it appears to me that the Bill in its present condition is one which contains elements of great danger.” However, despite resistance from Lovell Drage and other general practitioners, Parliament passed the Bill.

The Midwives Act of 1902 marked a key moment in the development of midwifery regulation by creating the Central Midwives Board to supervise the field and delegate administrative tasks to “local supervising authorities.” The Act systemized reliable midwifery registration and banned untrained and unexamined midwives from practicing.¹⁰⁷ Younger women of slightly higher socioeconomic backgrounds replaced more elderly, traditional midwives who failed the Act’s required exams, and many traditional midwives resisted, unsuccessfully, the implementation of the Act. As the Act’s mandates (very) slowly became realities, the “outcomes of mothers and infants” improved accordingly. Eventually, consistent

¹⁰⁴ Loudon, *Childbed Fever*, 208.

¹⁰⁵ *Ibid.*, 209.

¹⁰⁶ Lovell Drage, “The Midwives Bill, 1902,” *The Lancet* 159, no. 4105 (1902): 1278-279, doi:10.1016/S0140-6736(01)83713-2.

¹⁰⁷ “The Midwives Act.” *British Medical Journal* 2, no. 2278 (1902): 461-72. Accessed February 11, 2016. US National Library of Medicine National Institutes of Health.

pressure for increased practice standardization and improved implementation of obstetric knowledge would culminate in the establishment of the National Health Service midwife regulations in 1948.¹⁰⁸

Obstetric and Midwifery Education: Increased Accuracy of Recordkeeping

The incremental steps towards the professionalization of obstetrics and midwifery improved medical practice of maternal care and also resulted in more accurate vital recordkeeping. The trend of improved education helped overcome a long list of recordkeeping obstacles. In 1888, Charles James Cullingworth, a London obstetrician, identified the issue: “A great many deaths from childbirth are not returned as such, but appear under entirely different headings.”¹⁰⁹ Cullingworth recognized the lack of ethics and precision as key obstacles to accurate registration. Especially in cases of puerperal fever, practitioners felt reluctant to report the true cause of death, for although the theory of contagion had yet to pervade obstetric (or public) thought, linking one’s name to a death from puerperal fever could injure one’s professional reputation.¹¹⁰ This preoccupation with reputation pervades discussion of puerperal fever in *The Lancet*: In 1848, C.M. Miller, after recommending a series of cures, advised his colleagues to pay “extra attention” to their patients because “all of us [know] too well what the public opinion is respecting a person lost in childbed.”¹¹¹ Thus, many practitioners would falsely report deaths as being unrelated to childbirth or, at least, to puerperal fever. And, in addition to the obstacles of multiple causation (e.g. hemorrhage and shock), inconsistent classifications of maternal death pervade the records. For example, throughout the 19th century, puerperal fever

¹⁰⁸ Borsay, *Nursing and Midwifery*, 140.

¹⁰⁹ Quoted in Loudon, *Childbed Fever*, 133.

¹¹⁰ Loudon, *Death in Childbirth*, 34.

¹¹¹ Miller, "On the Treatment of Puerperal Fever," *The Lancet*.

was recorded under a wide variety of different titles and was not always linked to childbirth on death certificates.¹¹² Different practitioners believed deaths occurring four weeks after labor could not be related to childbirth while others considered the cutoff point to be six months.¹¹³ As time wore on, government officials (like William Farr) and newly-founded obstetric education institutions increased their attention to these classification irregularities and helped implement standardized reporting.

Conclusion

The gradually improved regulation and education of birth attendants caused increases in the accuracy of vital reporting and, thus, in the number of maternal deaths reported overall. At the same time, these institutional improvements caused increases in the implementation of antisepsis, anesthesia, and better postpartum hemorrhage care. Because the improvements in reporting and care occurred at similar rates, the relatively stagnant maternal mortality rates from the 1890s through the 1920s no longer appear quite so puzzling. Despite these assumptions of progress, we must also acknowledge that endogenous theorists and other skeptics actively resisted the dissemination of Pasteur's antisepsis into standard obstetric practice and thus delayed and diminished potential reductions in maternal mortality rates in the late nineteenth century. Likewise, this era saw wary medical skeptics and Christian theologians muffle the arguments of John Snow, James Young Simpson, and other proponents of anesthesia. As a result of these forces that resisted the acceptance of anesthesia and the study of bacteriology, *and* as a result of a shortage of platforms for the teaching, these improvements in maternal care were introduced to

¹¹² Ibid., 28.

¹¹³ Ibid., 21.

only a small (but increasing) proportion of the British population in the late nineteenth and early twentieth centuries.

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Part III

The Impact of Medical Institutions on Maternal Mortality Rates in the Early 20th Century

United States

Amidst the chaotic and painful aftermath of the Civil War, the stress of economic panics, and the smog of growing cities in the late 1800s, mothers, midwives, and physicians had a reason to celebrate. Between the 1860s and the 1890s, four paradigm-shattering developments had been made in the world of childbirth. Ether and chloroform were discovered to have anesthetic properties that could partially or completely diminish a laboring woman's pain; streptococcus bacteria were revealed as the cause of the previously mysterious and highly fatal puerperal fever (also known as sepsis); Joseph Lister and Louis Pasteur discovered a set of methods, called antiseptics, that could banish the loathed streptococci from the birth chamber and thus prevent the infection of mothers; and oral ergot displayed incredible promise in the prevention of postpartum hemorrhage. Because sepsis and postpartum hemorrhages caused most childbirth-related deaths, these developments had the potential to save many lives in the late 19th and early 20th centuries. Unfortunately, records from this period show a steady and occasionally increasing rate of maternal mortality; information on these developments did not reach many birth attendants and those who did receive the information naïvely (or carelessly) implemented the developments incorrectly and to ill effect.

Maternal mortality rates (MMRs) were stagnant throughout the 1920s despite these developments and despite the fact that, in the half-century prior to 1929, childbirth had become

increasingly medicalized.¹¹⁴ Each year, more and more babies were delivered by members of the burgeoning medical community and women increasingly sought out hospitals as a place of birth.¹¹⁵ If one were to be delivered by a randomly selected midwife, a general practitioner, or a specialist obstetrician during this period, one's chances of survival were roughly the same.

However, the increasing medicalization of childbirth eventually resulted in the consolidation of systematic obstetric institutions and networks, especially through hospitals and medical schools. This consolidation allowed new and old discoveries in childbirth practice to be implemented with minimal delay by many specialist obstetricians. By the 1930s, obstetric institutions had been adequately strengthened and developed; accordingly, information on life-saving information and developments in obstetric practice finally came to the fore and effectively diffused throughout the community. This resulted in the long-awaited and swift drop in maternal mortality rates in the 1930s and 1940s. Without the development of these institutions, the potential life-saving capacity of new techniques and medicines, like sulfa drugs and blood transfusions, would have gone unrealized in the same way that the potential of antiseptics and forceps had gone unrealized in the nineteenth and early twentieth centuries.

Debate: The Motivations and Motivators Behind Medicalization

Addressing maternal mortality rates (or MMRs) in the first half of the twentieth century requires the acknowledgment of a variety of ongoing debates within the community of historians studying American childbirth. Almost all of these debates share a fundamental undercurrent;

¹¹⁴ In fact, between 1915 and 1929, maternal mortality increased from 60.8 to 69.5 deaths per 10,00 live births! Irvine Loudon, *Death in childbirth: an international study of maternal care and maternal mortality, 1800-1950* (Oxford: Clarendon Press, 2001), 366. *Maternal mortality rates: Unites States expanding birth-registration area, 1915-1941*, report, United States Children's Bureau. White House Conference on Child Health and Protection, *Fetal, newborn and maternal Morbidity and mortality*, comp. Fred Adair (New York: Appleton-Century Co., 1933), 215.

¹¹⁵ Loudon, *Death in childbirth*, 299.

historians have yet to collectively conclude whether the medicalization of childbirth—that is, the transition of childbirth from a home to a hospital setting, the increasing popularity of male obstetricians, and the implementation of various interventionist practices—objectively improved mothers’ safety. Historians also debate the causes and motivations of the medicalization of childbirth in the late nineteenth and early twentieth centuries.

Pamela S. Eakins, Pamela S. Summey, Janet Carlisle Bogdan, Diana Scully, and Margarete Sandelowski assert that male physicians had been unwelcome in the realm of childbirth before they convinced women that birth was unnatural and dangerous. Sandelowski writes that by “emphasizing how capricious and even lethal nature could be if left to ‘her’ own devices in the lying-in chamber as well as the ineffectiveness of the modern woman in coping with natural labor--physicians successfully convinced the American public by the end of the 1930s how superior obstetrics was to midwifery.”¹¹⁶ Summey echoes this stance: “doctors present birth as a situation of uncertainty. Emphasis on the uncertain aspects of childbirth rather than its lawful and routine aspects allows doctors considerable autonomy in their decision making.”¹¹⁷

These statements reflect two key ideas. First, they implicitly and explicitly support an idealized classification of ‘natural’ birth as generally safe and “routine.” Judith Leavitt challenges this classification; centuries of women had given birth ‘naturally,’ but had done so during a long era of high maternal mortality risk. “Natural” childbirth did not necessarily equate to “complication- or risk-free” childbirth. Between 1975 and 1982, members of the Faith Assembly in Indiana refused all medical care and births took place in homes with no formal

¹¹⁶ Margarete Sandelowski, *Pain, pleasure, and American childbirth: from the twilight sleep to the read method, 1914-1960* (Westport, CT: Greenwood Press, 1984), 37.

¹¹⁷ Pamela Eakins, *The American way of birth* (Philadelphia: Temple University Press, 1986), 174-175.

assistance. Their maternal mortality rates during this period were 92 times higher than the remainder of Indiana. These statistics negate the idea that "childbirth is a normal process which has been unnecessarily 'medicalized.'" Irvine Loudon cites this data to support her refutation of those claiming "that for modern healthy women, natural childbirth without any medical assistance whatsoever would, with very rare exceptions, be perfectly safe."¹¹⁸

Second, Sandelowski and Summey's statements assume that physicians drove the transition to increased medicalization and negate the role that women played in promoting and demanding changes in childbirth practices and culture. In 1877, Josephine Preston Peabody wrote that labor was "the nethermost hell of bodily pain and mental blankness...For I am wiser...for this knowledge of the almost inconceivable agony...I can never forget—or explain—that apocalyptic hugeness of the thing...I have crossed the abyss."¹¹⁹ Surely, women did not need to be "convinced" by physicians of the difficulty of labor or "presented" with the notion that childbirth itself was a risk; countless generations of women had experienced and witnessed fear, suffering, and death in the many years prior to the arrival of physicians in the birth room. Women prepared their partners and other children for the possibility of their death every time they conceived, and many "spent considerable time worrying" for their families and for themselves.¹²⁰ Thus, Leavitt illustrates the unpleasantness of pre-medicalized birth. She asserts that the pain, danger, and unpredictability of labor caused mothers, midwives, and physicians alike to loathe their own lack of control.¹²¹ In this light, Leavitt contends that women helped precipitate the transition towards increased medicalization. "Women overturned millennia of all-

¹¹⁸ Loudon, *Death in childbirth*, 397.

¹¹⁹ Judith Walzer Leavitt, *Brought to bed: childbearing in America, 1750 to 1950* (New York: Oxford University Press, 1986), 33.

¹²⁰ *Ibid.*, 20.

¹²¹ *Ibid.*, 21.

female tradition and invited men into their birthing rooms because they believed that male physicians offered additional security against the potential dangers of childbirth. By their acknowledgment of physician superiority, women changed the fashions of childbearing.”¹²²

The trend towards male birth attendants began in the homes of wealthy and upper-middle-class urban women. Leavitt asserts that they evangelized the benefit of physicians, especially because physicians, not midwives, had the anesthetic power to reduce or eliminate a woman’s pain during labor after the mid-1800s.¹²³ Additionally, she argues that women were “mystified” by “the possibilities of scientific obstetrics” and, “like the rest of the population, were determined to join the march of medical progress.”¹²⁴ This argument not only places the responsibility for the transition on the shoulders of women but also on the entire nation’s attraction to medicine in general. GPs offered the services of forceps and a wider variety of drugs, and many mothers and midwives believed that the skills and tools of a GP could benefit them in cases of difficult labors or complications of delivery. Lastly, Leavitt notes that by the 1920s and 30s, societal structures were no longer conducive to “social” births in which women labored in their own homes surrounded by female family members and friends. Women lived farther away those who had previously attended them, and without the support of women to care for them and their families during childbirth, women welcomed the opportunity to give birth in hospital.¹²⁵ In 1936, Hallie Nelson, a woman pregnant with her fifth child, revealed the acute “physical and psychological isolation” that caused many women to direct their attention towards hospitals: She writes, “We had been at wit’s ends to find a woman to take care of me and the baby and to take care of the children...the Clines’ had left the hills...my sister Beulah was not

¹²² Ibid., 39.

¹²³ Ibid., 41.

¹²⁴ Ibid., 175.

¹²⁵ Ibid., 176.

available...[and] the other neighbors had children of their own to care for.” Leavitt thus counters Eakins’ proposal that physicians used intimidation to cajole women into hospital births and instead suggests that women desired births away from home in response to changes in societal structure.¹²⁶

Eakins, Scully, and their associates instead draw attention to the ways in which physicians may have been motivated to promote their own involvement. One of the primary arguments they present is that doctors desired more business (more customers) and thus “encroached” upon the world of childbirth to steal away midwifery patients.¹²⁷ Eakins and Leavitt differ in their interpretations of the doctor’s true intentions: The Eakins camp argues that doctors employed aggressive tactics like standardized forceps use and heavy anesthesia in order to present a deceptively helpful front even while they were conscious of their actions’ deleterious effect on women. From Eakins’ standpoint, physicians in the late nineteenth and early twentieth centuries knowingly put women at risk for the sake of economic and social gain. These doctors, Summey claims, sinisterly cared more about “their dominance over both other practitioners and birthing women” than about women’s lives.¹²⁸ According to Summey, they invented the ‘midwife problem’—that is, the idea that midwives put women at risk due to their lack of formal training—for the purpose of “professional dominance over colleagues.”¹²⁹ On the other hand,

¹²⁶ Ibid.

¹²⁷ Eakins, *American Way*, 48.

¹²⁸ Ibid., 175.

¹²⁹ The “midwife problem” was extensively discussed by J. Whitridge Williams in his Journal of the American Medical Association Article, *Medical Education and the Midwife Problem in the United States*. Here, he admitted that “the average practitioner, through his lack of preparation of the practice of obstetrics, may do his patient as much harm as the much-maligned midwife.” But differences in gender and medical institutions led Williams to the conclusion that while the practices of physicians were salvageable, those of midwives were not. In fact, one physician even proposed that midwives prevented the success of physicians, for if women went to midwives, “student doctors would have no one on whom to practice.” These positions were formalized in 1912 with the publication of the Flexner report, which recommended that “a campaign be mounted to “drive midwives out of the maternity field and promote obstetric physicians, raising obstetrical fees so the field would attract able. J. Whitridge Williams, “Medical Education And The Midwife Problem In The United States,” *Journal of the American Medical Association* LVIII, no. 1 (January 06, 1912): accessed February 18, 2017, doi:10.1001/jama.1912.04260010003001.;

Leavitt highlights the more altruistic attitude of physicians. She argues that many doctors fundamentally believed that their interventions made childbirth safer and more pleasant for women (and babies). Forceps application had saved lives and most women enthusiastically welcomed the administration of ether and chloroform. In the end, it seems likely that physicians' advocacy of their involvement stemmed from *both* selfish and selfless motives and that physicians' desire for medicalized childbirth was matched, at least in part, by mothers.¹³⁰

These debates inspire a host of questions, and the perspectives of both sides of the historical argument should be considered in an attempt to determine the impacts of late 19th- and early 20th-century medicalization. Both Leavitt and Eakins agree that the interventionist approaches of pre-1920s physicians did little, if anything, to curb high rates of maternal mortality. Both birth attendants and mothers falsely equated medicine with safety: In 1900, 50 percent of births in the United States took place in the hands of midwives, and in 1935, that number had shrunk to 12.5 percent.¹³¹ Meanwhile, in 1900, about 43 out of every 10,000 births resulted in maternal death, while in 1925, that figure had grown to a whopping 58.¹³²

However, the perspective of the Eakins camp negates the idea that later physicians, (i.e., those in the mid 20th century) *did* have the potential to reduce MMRs. In other words, she paints physicians from the 1850s and the 1950s with the same condemning brush; she describes J.

Margot Edwards and Mary Waldorf, *Reclaiming birth: history and heroines of American childbirth reform* (Trumansburg, NY: Crossing Press, 1984), 153.; Eakins, *The American Way*, 180.

¹³⁰ Physicians were also motivated to encourage hospital births because hospital births allowed doctors to treat patients with more efficiency. They cut down on travel time and could attend more births in a shorter amount of time, while also gaining power over their patients by interacting with them on their home turf. At home, doctors often had to defer to family members and other women; at the hospitals, women accepted doctors' authority more readily. Additionally, hospitals provided a centralized location for more complicated equipment, like X-ray machines, that would not have been available to them in women's homes. Richard W. Wertz and Dorothy C. Wertz, *Lying-in: A History of Childbirth in America* (Yale University Press, 1989), 144.

¹³¹ Loudon, *Death in Childbirth*, 298.

¹³² These numbers are taken from Leavitt. The exact statistics given by different prominent scholars on the subject differ, but the general trends are the same. Fantastic graphs showing these trends are available on page 162 of Wertz and Wertz, and page 366 of Loudon. Leavitt, *Brought to Bed*, 184.

Marion Sims, a specialist known for popularizing intervention and for surgically experimenting on seven captive and anesthetized slave women, as “a prototype of the modern women's doctor.”¹³³ Eakins and others fail to acknowledge that physician knowledge and capability expanded in the twentieth century and increased women’s chances of surviving childbirth. While the percentage of hospital births continued to swell between 1930 and 1950, the MMR dropped from 58 per 10,000 births to 8.¹³⁴ The abruptness of the change in MMRs that began in 1929 is largely unaccounted for by both Eakins and Leavitt. On one hand, Eakins ignores (or simply refuses to accept) the decrease. Nancy Schrom Dye, of the Eakins perspective, writes “maternal mortality rates did not decline significantly until the late 1930s. Its decline had nothing to do with hospitalization or surgical intervention.”¹³⁵ On the other hand, Leavitt, Loudon, and other scholars *do* acknowledge the decreasing rates, but do not draw attention to or identify a specific reason for the suddenness with which they fell.

Both Eakins and Leavitt ignore the fact that even though obstetricians prior to 1920 may have had little effect on MMRs, their presence in the birthing rooms across America in the 1920s set the stage for the implementation of truly life-saving developments in obstetric medicine. We should explore the possibility that the development of the systematic structure of the obstetric community, which allowed for the efficient dissemination of new information (especially when compared to the midwifery community), worked in conjunction with the influence physicians had already gained in the realm of childbirth prior to the 1920s. It seems possible that the combination of these unique circumstances helped to bring about the effective implementation of medical developments in the 1930s and 40s and, thus, served to reduce MMRs to record lows

¹³³ Eakins, *American Way*, 50.

¹³⁴ Leavitt, *Brought to Bed*, 184.

¹³⁵ Eakins, *American Way*, 41.

during that period. Luckily, possible answers to these questions can be found in governmental records of MMRs and hospitals, journal articles written by early 20th-century physicians, and a wide array of other secondary analyses of childbirth during this period.

The Negative Repercussions of Medicalization in the 19th and Early 20th Centuries

Maternal mortality rates did not begin to steadily drop until 1929, so trends towards medicalization that occurred in the early twentieth century were driven by women and doctors' blind faith in the medical system.¹³⁶ They asserted, without substantiation, that the walls of a hospital and the hands of a specialist were surrounded by an aura of safety. In fact, the opposite was true. Increases in medicalization became synonymous with increases in intervention, and unnecessary or poorly executed procedures and operations endangered the lives of many mothers.

In 1933, the White House committee on maternal mortality cemented this stance and wrote that "all advances in medical knowledge have been lost to the parturient woman through too great a recourse to instrumental delivery."¹³⁷ General practitioners and emerging specialist obstetricians did not often communicate with one another; the size of the country, Irvine Loudon explains, meant that general practitioners were "cut off from hospitals, colleagues, and all knowledge of medical advances unless they were assiduous readers of medical journals." The fact that "a much larger proportion of the American population than the European lived in remote rural areas" meant that the obstetric field could not rely on the physical proximity of practitioners for the spread of information.¹³⁸ Because of physicians' tendency to intervene and

¹³⁶ Loudon, *Death in Childbirth*, 366.

¹³⁷ White House Conference, *Fetal, newborn and maternal Morbidity and mortality*, 18.

¹³⁸ Loudon, *Death in Childbirth*, 275.

operate during childbirth, Loudon asserts that the “[careful and consistent management of pregnancy and labor by a trained birth-attendant] was a rarer commodity in the USA than it was in Britain.”¹³⁹ This problem was exacerbated by physicians’ ignorance or carelessness in applying antisepsis.¹⁴⁰ When physicians performed normal deliveries, let alone an operative procedures, without taking the steps to prevent infection, they put mothers at a great risk for puerperal fever. The ramifications of ignorant physicians were manifold.

For one, the implementation of forceps had the potential to save lives (for example, the life of this author and her mother), but the frequent and cavalier nature of their use in the late 1800s and early 1900s most likely resulted in more lives lost than lives saved.¹⁴¹ The application of forceps introduced the risk of rupturing uterine tissue (and thus introducing a new possible site of infection).¹⁴² Additionally, the ungloved or unwashed hands of birth attendants and poorly sanitized forceps delivered bacteria directly to the uterus—an vulnerable area that was already susceptible to infection.¹⁴³ Even more dangerous than the overuse of forceps were regular episiotomies—wide, lateral incisions made in the perineum to preemptively prevent the tissue from tearing. In 1921, DeLee recommended the universal employment of this procedure (along with regular forceps application).¹⁴⁴ In addition to increasing the risk of infection, episiotomies increased the risk of hemorrhage.¹⁴⁵ In hospitals, some physicians and specialists also felt

¹³⁹ Ibid., 279.

¹⁴⁰ Eakins, *American Way*, 56. Wertz and Wertz, *Lying-in*, 127.

¹⁴¹ Loudon, *Death in Childbirth*, 283.

¹⁴² The danger of uterine perforation was especially prevalent in the late 1800s, when general practitioners often attempted forceps delivery by feel in order to preserve the modesty of the mother; the taboo of a man touching a woman’s genitals resulted in the common practice of physicians covering their patients with sheets and attempting to perform forceps delivery while literally looking at anything but the sight of the operation. As the presence of men in the birth room became more socially acceptable and physicians felt comfortable looking at the vulva, forceps deliveries became slightly safer. Leavitt, *Brought to Bed*, 46.

¹⁴³ Ibid. 51-52.

¹⁴⁴ Loudon, *Death in Childbirth*, 353.

¹⁴⁵ Leavitt, *Brought to Bed*, 179.

confident performing cesarean sections, and these operations became standardized throughout the United States. In 1922, one obstetrician lamented that "any man who has hospital privileges, regardless of his surgical training, [can] do any operation short of cesarean section."¹⁴⁶ In Britain, if a birth took place in a hospital in the early 1900s, it was almost always attended by an obstetric specialist. In the US, however, the line between GPs who worked in hospitals and obstetrics specialists was fuzzy.¹⁴⁷ In any case, no matter who performed a cesarean section during this time, the risks of the operation were greatly amplified due to the location of the incision near the upper abdomen.¹⁴⁸

The last and most universal of the common interventions in the early twentieth century was the administration of high doses of anesthesia. While less acute than the dangers of the aforementioned interventions, physicians administered anesthesia to a larger percentage of laboring women.¹⁴⁹ The methods used for chloroform and ether dosing were inexact, and overdoses could be fatal. Pulses slowed to precarious lows and contractions became less powerful, resulting in longer labors with slower or even halted progress. Without a conscious or fully responsive mother, birth attendants could not accurately assess the mother's condition or the progress of labor, and they could not make completely well-informed decisions.¹⁵⁰ Perhaps even more harmful than the direct effects of anesthesia were the practical changes in medicine that anesthesia prompted. Without patients' responses to contend with, doctors felt fewer reservations about performing invasive procedures and, thus, put more mothers in peril.

¹⁴⁶ Loudon, *Death in Childbirth*, 290.

¹⁴⁷ *Ibid.*, 291.

¹⁴⁸ Harold Speert, *Obstetrics and gynecology in America: a history* (Chicago, IL: American College of Obstetricians and Gynecologists, 1980), 155.

¹⁴⁹ Leavitt, *Brought to Bed*, 41.

¹⁵⁰ Loudon, *Death in Childbirth*, 343-345.

The success of many of these procedures depended not only on the conservatism with which they were employed but also on the pervasive knowledge of the importance of antisepsis and of the correct methods of its application. Therefore, physicians' lack of understanding of anti- and asepsis prior to the 1930s exacerbated the deleterious effects of frequent, excessive interventions.¹⁵¹ However, despite a lack of evidence that these procedures improved mothers' chances of survival prior to 1929, doctors performed, popularized, and preached them for two key reasons. First, male physicians increasingly viewed birth as a pathology or disease.¹⁵² In the late 1800s, midwives and mothers often sought the help of doctors in the late stages of labor when complications arose. From the outset of male involvement in birth, physicians' exposure to childbirth was limited to the direst and most complicated of circumstances. Perhaps, for this reason, doctors extrapolated the experiences of the tortured women they helped in difficult labors to all childbearing women. In any case, going into the twentieth century, doctors distanced themselves from the centuries-old tradition that held that childbirth was a natural process that usually occurred smoothly. Instead, they popularized the belief that a "natural" childbirth was almost always marred by some type of emergency in need of a doctor's attention.¹⁵³

Eventually, these attitudes resulted in the common practice of treating the complications of labor before they actually presented themselves. The writings of Joseph DeLee, from 1915 and 1921, reflect this pattern. In both his textbook, *The Principles and Practice of Obstetrics* and an article published in the *American Journal of Obstetrics and Gynecology*, DeLee advocates for the regular implementation of "the prophylactic forceps operation" in which "the routine delivery of the child" is performed by inducing labor through the administration of ergot, the

¹⁵¹ Ibid., 295.

¹⁵² Eakins 85. Wertz 141

¹⁵³ Leavitt, *Brought to Bed*, 179.; Sandelowski, *Pain, pleasure, and American childbirth*, 39.; Joseph DeLee, *The Principles and Practice of Obstetrics*, 2nd ed. (Philadelphia: W.B. Saunders Company, 1915), v.

administration of morphine and scopolamine after the cervix had dilated two to three centimeters, the administration of ether during the second stage of labor, the performance of a wide lateral episiotomy, delivery by forceps, and the “early expression” of the placenta.¹⁵⁴ His attitudes towards childbirth as a pathology are clearly reflected in his claim that the “treatment” of labor must be done by “relieving pain, supplementing and anticipating the efforts of Nature...and preventing...damage.”¹⁵⁵

Aside from physicians’ beliefs in the pathology of childbirth, doctors popularized widespread intervention because the performance of invasive procedures affirmed and strengthened men’s role in childbirth and the profession of obstetrics. While their claims to providing better care to mothers were unfounded, the measures they took to increase their influence over American childbirth helped to lay the foundation of what would later become more efficient, beneficial obstetric institutions. In a way, physicians laid their professional ‘foundation’ by performing unnecessary, dangerous, and invasive obstetric procedures. Physicians usually had no more (and sometimes less) knowledge about childbirth than their female predecessors. However, general practitioners’ access to anesthesia and forceps in the late 1800s and early 1900s differentiated them from midwives. Thus, physicians seeking to establish a place in the birthing room felt pressure to distinguish themselves from midwives through the

¹⁵⁴ DeLee’s advocacy of early placenta delivery not only endangered women, but was also somewhat ironic. In general, it is normal for a woman to take up to forty-five minutes to deliver the placenta. Attempting to push or pull the placenta out manually puts the mother at a great risk for postpartum hemorrhage because the fiber-like weft of the uterine wall must tighten to cut off the blood supply to the placenta. The closed-off blood vessel allows the placenta to safely detach from the wall and descend. Prematurely expelling the placenta before the uterine walls have adequately contracted leaves a significant and dangerous open wound that can cause massive amounts of blood loss. The irony of DeLee’s suggestion comes from the fact that many general physicians and specialists in the late nineteenth century cited some midwives’ practice of pulling on the umbilical cord to remove the placenta as evidence of the danger they posed women and their unsuitability for delivery. DeLee’s recommendation that the placenta be “grasped” and “pushed” out of the uterus after a contraction introduced a greater risk of hemorrhage than if the woman had been left to deliver the placenta independently. DeLee, *Principles and Practice of Obstetrics*, 319-320. Loudon, *Death in Childbirth*, 58.

¹⁵⁵ Joseph B. DeLee, "The prophylactic forceps operation," *American Journal of Obstetrics and Gynecology* 187, no. 1 (1920): accessed February 18, 2017, doi:10.1067/mob.2002.123205.

application of their tools. If they delivered mothers without interfering, why would mothers choose doctors over midwives? General practitioners and obstetricians charged exorbitant fees in comparison with midwives and many felt that they needed to “do” something to justify this price difference. Obstetricians not only expressed apprehension about the reasons for their employment by mothers but also about their standing within the larger medical community.

Compared with other fields such as surgery or internal medicine, the field of obstetrics throughout the 18th and early 19th centuries had a poor reputation and little clout.¹⁵⁶ Societal taboos surrounding childbirth and women’s reproductive organs delayed the specialization and expansion of the obstetric field. In the 1920s, while surgeons were debating the minutiae of operative practice, obstetricians and educators were separated by “unbridgeable” ideological gaps. Disagreements about fundamental elements of obstetric practice, like the disagreement between DeLee and Williams, made the embarrassingly tumultuous nature of the field highly visible to other medical specialists. Loudon explains that because of these differences, “obstetrics was often derided by other specialists as an emotional and un-scientific subject.”¹⁵⁷ Some specialist obstetricians, like DeLee, were self-conscious about the legitimacy of their profession and performed surgeries and employed more invasive techniques in hopes of earning the respect of specialists in other fields. Irvine Loudon asserts that “one of the least attractive aspects of American obstetrics was the way that...the perceived need to validate obstetrics as a surgical specialty [was] used so blatantly as an indication for obstetric interference when the risks involved were, or should have been, well known.”¹⁵⁸ In a way, their efforts would eventually succeed, and the attention that the obstetric field received from the rest of the medical

¹⁵⁶ Loudon, *Death in Childbirth*, 394.

¹⁵⁷ Williams, while in the minority, criticized DeLee’s tendencies towards invasive procedure and preached conservatism. Loudon, *Death in Childbirth*, 352.

¹⁵⁸ *Ibid.*, 394.

community would play a crucial role in standardizing safer obstetric practices. Prior to the 1930s, however, women were paying the price for obstetricians' injured egos. Unfortunately, disagreements among leaders of the obstetric world not only prompted increases in interventions, but also resulted in variable obstetric curricula at medical schools throughout the country.

Many obstetric and medical professionals acknowledged the poor quality of education and training given to specialist obstetricians throughout the early twentieth century. Leavitt writes that while "leaders of academic obstetrics...were not the perpetrators of forceps excessiveness," students were not trained to use them with caution. While "physicians' obstetrics courses taught them the theoretical basis of their craft, and their apprenticeships gave them tools with which to effect a successful birth [sic]...nowhere did they receive clear guidelines for the practical application of their knowledge." Leaders in the obstetric field knew that many sepsis-related deaths of the era should have (and could have) been prevented by properly training medical and obstetric students.

The famed Flexner report provides ample firsthand evidence of the ineptitude of medical schools in training obstetricians. In 1910, Abraham Flexner published a report that concluded that, in terms of quality, American medical schools were deplorable. To the embarrassment of the obstetric field, he wrote: "the very worst showing is made in the matter of obstetrics."¹⁵⁹ He lamented that medical schools provided poor instruction on the handling of normal labor and that schools emphasized operative obstetrics and disregarded the importance of conservatism.¹⁶⁰ In 1911, J. Whitridge Williams' seconded Flexner's arguments and wrote "a railing indictment of the average practitioner and of [the] methods of instruction" at Johns Hopkins' obstetric

¹⁵⁹ Ibid., 296.

¹⁶⁰ Edwards and Waldorf, *Reclaiming Birth*, 153.

education program.¹⁶¹ While Flexner did not include Johns Hopkins on his long list of unsalvageable schools for which he recommended closure, he did indicate that a majority of all the medical schools in the United States were “defective” due to “low admission standards, poor laboratory facilities, and minimal exposure to clinical material.” Flexner concluded that “medical education at the turn of the century was a for-profit enterprise that was producing a surplus of poorly trained physicians.”¹⁶²

Two dangerous ramifications sprouted from the underdeveloped obstetric profession and poor obstetric education in the first two to three decades of the twentieth century. First, as discussed previously, doctors inadequately or improperly implemented antisepsis and performed excessive cesarean sections, versions, forceps applications, and episiotomies. Secondly, information on new developments and technical improvements in obstetrics that were being made and implemented in Europe was not being disseminated throughout the United States during this period.¹⁶³ This second point is crucial to historians’ understanding of sustained MMRs at this time; medicine was not failing obstetricians—obstetric institutions were failing mothers. In other words, had the obstetric community obtained the capacity and the insight to standardize the implementation of well-researched birth practices that had successfully lowered MMRs elsewhere, MMRs in the United States would likely have fallen earlier and more steadily.¹⁶⁴ The story of the short-lived and uncelebrated success of the Kentucky Frontier Nursing Service (KFNS) demonstrates the way in which developments in maternal care were

¹⁶¹ Quoted in Wertz and Wertz, *Lying-in*, 146.

¹⁶² Thomas Duffy, “The Flexner Report--100 Years Later,” *Yale Journal of Biology and Medicine* 84, no. 3 (September 2011): accessed February 19, 2017, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3178858/>.

¹⁶³ Meigs, *Maternal Mortality*, 7.

¹⁶⁴ *Ibid.*

detrimentally ignored by obstetric institutions. In a way, the success of the practitioners in the KFNS serves as a quintessential foil for the incompetence of pre-1930s obstetricians.

The. In 1918, Mary Breckinridge, a Kentuckian and a former employee of the Children's Bureau, worked in post-World War I French hospitals alongside French and British nurses. Of her co-workers from Britain, who had been trained as both nurses and midwives, she remarked "it grew upon me that nurse-midwifery was the logical response to the needs of the young child in rural America."¹⁶⁵ Inspired by the capability of her peers, Breckinridge sought obstetric training in England. After her certification and a period of study of rural nurse-midwifery in Scotland, she returned to the Kentucky to establish the Frontier Nursing Service. All thirty KFNS nurse-midwives held the certificate of the English Midwives' Board, and they collectively "covered...a total of 700 square miles of territory, travelling on horseback with two pairs of saddle-bags...and also a lantern," because, wrote one midwife, "very few of our homes have a light other than the open fire."¹⁶⁶

Breckenridge's nurse-midwives had an astonishing impact on MMRs in the area, thanks to their own skill and conservatism. Between 1925 and 1937, the MMR for the KFNS hovered around 6.6 deaths per 10,000 births. During the same time period, the MMR of "white women delivered in hospitals by physicians" in Lexington, Kentucky ranged from 80-90 deaths per 10,000 births.¹⁶⁷ The fact that the KFNS greatly reduced MMRs in a poor population indicated to observers that high rates of maternal death in were not primarily a result of malnutrition or generally poor health, but instead of physicians' lack of skill and prudence. Additionally, one of the most pertinent aspects of the service was the nurse-midwives' aversion to intervention.

¹⁶⁵ Loudon, *Death in Childbirth*, 318.

¹⁶⁶ Quoted in *Ibid.*, 319.

¹⁶⁷ *Ibid.*

Loudon writes, “in the period 1925-37, the period of the first 3,000 deliveries, physicians were called in to perform Cesarean section on six occasions, and forceps were used fourteen times—a forceps rate of less than 1 per cent.” Compared to intervention rates at hospitals during this period, this rate was staggeringly low.¹⁶⁸ By drastically reduced regional MMRs without relying on high-tech medical facilities or extensive intervention, the KFNS indicated that hospitalization and operative obstetrics were not the most efficient strategies for increasing mothers’ safety.

However, “very few appreciated the momentous implications” of the accomplishments of the KFNS. Aside from one statistician’s brief remarks on the potential implications of the KFNS, only one article, written by George Kosmak, appeared in the *Journal of the American Medical Association* which detailed the benefits of the KFNS model.¹⁶⁹ By ignoring the effectiveness of the strategies employed by the KFNS, the obstetric community in the United States demonstrated that any national changes in MMRs would not be made by grassroots midwives but would instead be dictated by the medicalized obstetric world. On one hand, obstetric specialists and educators were so convinced of the necessities of hospitalization and intervention, that, despite statistics that contradicted their beliefs, they dismissed and ignored the achievements of the KNFS offhand (based on old standing biases against midwives) and plowed ahead with their attempts to reduce MMRs through surgery and industry.¹⁷⁰ On the other hand, one must acknowledge that underdeveloped medical and obstetric institutions were incapable of widely distributing information about the Service to medical professionals for the same reason that they were incapable of distributing information on proper aseptic techniques. In 1926, a sustained

¹⁶⁸ Ibid.

¹⁶⁹ Kosmak was the editor of the *American Journal of Obstetrics and Gynecology* in the early 20th century. Loudon, *Death in Childbirth*, 321.

¹⁷⁰ Eventually, these attempts would succeed, but it is important to note that by ignoring the childbirth technique alternatives demonstrated by the KFNS, decreases in the MMRs in the US were delayed.

lack of communication between practitioners had dangerous repercussions: The impact of operative conservatism implemented by the KFNS was ignored and the safer methods of the nurse-midwives' deliveries were not emulated by physicians; professors of obstetrics still taught vastly different techniques; and physicians served mothers with varying standards of care. Fragmented US obstetric institutions had yet to achieve the ability to uniformly or effectively enforce higher standards of care—including those that had been perfected by the KFNS.

Physicians had defeated midwives and specialists were in the process of routing out general practitioners. However, the threat of death in childbirth persisted because interventions were carried out excessively and with little attention to antisepsis and to other life-saving developments that had been made in other countries (and rural Kentucky). Thus, despite *and because of* transitions towards medicalization that took place before the 1930s, maternal mortality rates remained high and, in some areas, even increased.¹⁷¹

The Positive Repercussions of the Trend Toward Medicalization in the 1930s and 1940s

By the mid-1920s, these sustained rates of maternal mortality captured the attention of obstetric leaders and government officials; with recent data collection improvements underway and with midwives almost entirely removed from the realm of childbirth, these rates could no longer be dismissed as a statistical fluke nor as a result of the incompetence of women. The result? A series of three prominent, critical governmental reports and the subsequent consolidation of obstetric institutions.

Educated middle-class women in the late nineteenth and very early twentieth centuries had begun a trend of philanthropy centered around women and children. They advocated

¹⁷¹ Ibid., 366.

successfully for greater attention and improved care for mothers and children: not only helping found the famous Hull House in Chicago but also persuading Theodore Roosevelt to hold a conference on the plights of women and children, which led to the establishment of the Children's Bureau in 1912.¹⁷² The Children's Bureau helped establish birth registration areas in 1915 (which improved data collection on maternal mortality) and, more importantly, crafted the Maternal and Infancy Act (also known as the Sheppard-Towner Act) in 1922, which "allowed federal funds to be provided for advice to expectant mothers, but not for clinical care."¹⁷³ Thus, when the federal government became aware of unrelentingly high MMRs, they turned to the Children's Bureau with instructions to study the phenomenon of maternal mortality.

In turn, the Children's Bureau commissioned two especially prominent reports. The first was written by Grace Meigs in 1917. Her assessment of MMRs popularized the issues of maternal death in the US, the failings of the US obstetric systems compared to other countries, and the theory that physicians had hurt, rather than helped, the cause of mothers' safety. Her tone reflects some of the bafflement and frustration held by many in the face of high MMRs:

In 1913 in this country at least 15,000 women, it is estimated, died from conditions caused by childbirth; about 7,000 of these died from childbed fever, a disease proved to be almost entirely preventable, and the remaining 8,000 from diseases now known to be to a great extent preventable or curable. Physicians and statisticians agree that these figures are a great underestimate... Only 2 of a group of 15 important foreign countries show higher rates from this cause... The rates of

¹⁷² Ibid., 277.

¹⁷³ Ibid., 278.

3 countries, Sweden, Norway, and Italy, which are notably low, show that low rates for these diseases are attainable.¹⁷⁴

She briefly notes that, unlike the United States, many countries, including England, Wales, and Ireland, saw decreases in MMRs between 1900 and 1913. Additionally, she draws attention to the fact that mortality rates from other infectious diseases in the US had been greatly reduced in recent years; by doing so, she isolates the role of the obstetric field from other medical specialties in perpetuating maternal mortality. She concludes that “the low standards” reflected by MMRs “result chiefly from...general ignorance of the dangers connected with childbirth and of the need for proper hygiene and skilled care in order to prevent [maternal death].”¹⁷⁵ In this statement, she breaks with the tradition of blaming mothers and midwives for maternal death and instead places the burden on the shoulders of physicians and obstetric specialists. She calls for the development of better practices and institutions within the obstetric community and attempts to mobilize women to bring about change: “if women demand better care,” she writes, “physicians will provide it, [and] medical colleges will furnish better training in obstetrics.”¹⁷⁶ With the help of the reports that followed hers, which reiterated and expanded on her assertions, her prediction would prove correct.

In 1926, Robert Morse Woodbury published, per the request of the Children’s Bureau, a report entitled *Maternal Mortality: The Risk of Death in Childbirth and from all Diseases Caused by Pregnancy and Confinement*. In it, Woodbury further developed the theories of Meigs and “extended [her] analysis with much greater statistical sophistication.”¹⁷⁷ In a review of the

¹⁷⁴ Grace Meigs, *Maternal mortality from all conditions connected with childbirth in the U.S* (Washington: U.S. Children's Bureau, 1917), accessed February 19, 2017, Babel Hathi Trust, 7.

¹⁷⁵ *Ibid.*

¹⁷⁶ *Ibid.*, 8.

¹⁷⁷ Loudon, *Death in Childbirth*, 280.

report by the Department of Maternal Welfare, Fred Adair noted that, through the report, both Woodbury and the Children's Bureau indicated "the necessary emphasis during the coming decade in the effort to reduce deaths among both babies and mothers."¹⁷⁸ Through these reports, the Children's Bureau flexed its political muscle and demonstrated the longevity of its commitment to improving obstetric care for women. Their efforts were rewarded by the increased attention given to the issue by the rest of the federal government and obstetricians.

President Herbert Hoover undoubtedly felt the pressures of the Children's Bureau and the Meigs and Woodbury reports and convened a "conference on child health and protection." He commissioned the third and most momentous report, *Fetal, Newborn, and Maternal Morbidity and Mortality*.¹⁷⁹ The historical importance of the 1933 report was two sided. First, the report officially laid out instructions on *how* to improve obstetric care. Unlike the Meigs and Woodbury reports, the White House committee outlined a series of suggested changes in obstetric practice. The authors of the report recommend that "a warning should be disseminated that compliance with the insistent demand made by women for shorter and more comfortable labors inevitably implies risks both for mother and baby," and that "interference with pregnancy or labor should be limited to well defined indications."¹⁸⁰ For reasons discussed previously, the reduction in incidents of excessive interference (which physicians often undertook in an effort to shorten labor or make it "more comfortable") had the potential to greatly reduce deaths due to puerperal

¹⁷⁸ F.I. Adair, "Maternal mortality: The risk of death in childbirth from all diseases caused by pregnancy and confinement," *American Journal of Obstetrics and Gynecology* 13, no. 1 (1927): accessed February 16, 2017, doi:10.1016/s0002-9378(27)90128-8.

¹⁷⁹ Loudon, *Death in Childbirth*, 358.

¹⁸⁰ The first recommendation conspicuously ignores the role that physicians played in speeding up births and unfairly blames women for the trend towards hurried labors. (EVIDENCE) Despite this incomplete characterization of the motivators of dangerous, rushed, and painless labor, their recommendation is a critical one. Fred Adair, comp., *Fetal, newborn and maternal Morbidity and mortality* (New York: Appleton-Century Co., 1933) 22.

fever and hemorrhaging and to improve mothers' chances of recovering from childbirth without other complications.¹⁸¹

The report also provides evidence that institutions themselves were changing *and*, as a result, that childbirth practices were changing as well. All committee members (authors of the report) were professors or associate professors at medical schools throughout the country. They served as ambassadors of the University of Chicago, Northwestern University (both in Illinois), Washington University (in Missouri), Western Reserve University (in Ohio), the University of Minnesota, Marquette University (in Wisconsin), the University of Wisconsin, Columbia University (in New York), the University of California, Emory University (in Georgia), the State University of Iowa, the University of Tennessee, the University of Maryland, Johns Hopkins University (also in Maryland), and Tulane University (in Louisiana).¹⁸² Never had members of the obstetric community from such a diverse array of geographical regions come together to communicate and discuss obstetric practice. Impressively, Fred Adair, the committee chair, succeeded in coalescing the group, and the group itself succeeded in creating a work which standardized more conservative childbirth practices. These accomplishments reflect the growth and increased interconnectedness that had developed within the obstetric community in the late 1920s. Unlike the unheeded and scattered warnings that had been given by J. Whitridge Williams in the 1910s, the conference produced a veritable army of anti-interference evangelists. Indeed,

¹⁸¹ Richard and Dorothy Wertz also outline the importance of The New York Academy of Medicine study on *Maternal Mortality in New York City*. The study condemned birth attendants and claimed that two-thirds of deaths were preventable and that, of these deaths, sixty percent were due to “lack of judgement, lack of skill, or carelessness” and “careless enforcement of aseptic standards in hospitals.” Authors of the study blamed the incompetence of birth attendants on “insufficient training.” The New York study echoed the ideas of Meigs and mirrored those of the White House committee. The findings of the report were equally as crucial as those of the White House committee, but because the report circulated mainly within New York and its statistics did not cover the expansive geographic area of the White House report, its impact was less paradigm-shattering than its White House counterpart. Wertz and Wertz, *Lying-in*, 161.

¹⁸² White House Conference, *Fetal, newborn and maternal Morbidity and mortality*, xi-xiii.

committee members brought the report and its accompanying suggestions back to medical schools from coast to coast in a coordinated effort to improve medical school curriculum and the practices of obstetricians.

Implications of Medicalization—Institutions Beget Better Institutions

By the 1930s, the medicalization of childbirth that had developed earlier in the century finally resulted in consolidated obstetric institutions that facilitated the diffusion of information and discussion between obstetric educators and practitioners. As discussed by Children’s Bureau and the White house committee, one of the critical obstacles in improving standards of obstetric care was the deplorable quality of medical schools. Not only did facilities lack adequate labs and materials, but obstetric curricula usually relied on theoretical knowledge; obstetrician after obstetrician entered the field without significant practical experience. This was compounded by the fact that there was no consensus or standardization within the fragmented obstetric community about proper delivery methods and techniques. Luckily, the 1910s, 20s and 30s a couple of institutional developments fomented the improvement of obstetric education.

In a broad sense, obstetric programs improved because the quality of all medical schools increased during this period. General improvements were due, in part, to the condemnations of the Flexner report—he had, after all, labeled a majority of American medical schools, “unsalvageable.”¹⁸³ Additionally, however, “state licensing boards and other authorities gradually altered the economics of medical education for students and schools alike.” States, per the recommendations of leading physicians, increasingly required greater amounts of pre-medical school education and longer periods of training, which, in turn, increased the

¹⁸³ Duffy, "The Flexner Report--100 Years Later."

opportunity cost of attendance and reduced the number of young men entering medical schools.¹⁸⁴ Flexner's report had alerted many state boards to the issue of decrepit or non-existent "laboratories, libraries, and clinical facilities." Staggering and ill-equipped medical schools that could not overcome the loss of income due to lower enrollment, therefore, could not afford to meet requirements for improved facilities; they subsequently closed.¹⁸⁵ In this 'survival of the fittest' scenario, the strongest, highest-quality schools flourished, and many began to receive funding from foundations like the Rockefeller General Education Board.¹⁸⁶ More selective medical schools required longer periods of practical training which "helped to instill common values and beliefs among doctors." "Increased... homogeneity and cohesiveness" of the medical profession in general "discouraged sectarian divisions" that had been so prevalent in the obstetric world.¹⁸⁷

While these developments played a crucial role in improving medical education in general, the quality of slightly amended obstetric programs at medical schools still lagged behind the programs of other specialties. The Meigs and White House reports helped draw attention to unflagging MMRs and inspired Philip F. Williams, G.W. Kosmak, and many others to propose "that the reduction of maternal mortality required the investigation of each maternal death, assessment of responsibility of the parties involved, and a judgement of preventability." Maternal mortality committees throughout the country took these tasks in hand.¹⁸⁸ In a way, the

¹⁸⁴ In 1911, entry into most medical schools required no more than a high school diploma; in the 1930s, this was no longer the case, and some medical schools even required some college coursework prior to admission. Wertz and Wertz, *Lying-in*, 146.

¹⁸⁵ Paul Starr, *The social transformation of American medicine* (New York: Basic Books, Inc., 1982), 118.

¹⁸⁶ *Ibid.*, 121.

¹⁸⁷ *Ibid.*, 123.

¹⁸⁸ In addition to local and state-based committees like the Philadelphia County Medical Society's Maternal Welfare Committee, some investigations were conducted from a broader perspective, like the committee on Public Health Realitions of the New York Academy of Medicine (around 1917), the National Committee on Maternal Welfare (est. 1920), the "Maternal Mortality Study...of the Pacific Coast (around 1935). Jose G. Marmol, Alan Scriggins, and

committees' criticism alone was enough to generate some change in medical school curricula and hospital practices. At the Philadelphia General Hospital, each maternal death was thoroughly investigated by the Philadelphia County Medical Society Maternal Welfare Committee. Significantly, the committee assigned responsibility for the deaths to individuals, thereby bringing a level of accountability to obstetricians that had previously been entirely absent. Philip F. Williams presided over these investigations and organized "open meetings" at the hospital during which cases were reviewed and physicians "had to reply to the questions and criticisms that were raised" by an audience of visiting physicians, residents, and interns. "no errors...were overlooked. Disregard of standing orders were queried, accuracy of judgement was questioned, errors in technique were discussed."¹⁸⁹ Williams' belief that the examination of maternal death could reduce its likelihood proved to be correct. In response to the committee's investigations, Philadelphia hospitals "modified the regulations of their maternity divisions" to "prevent unnecessary obstetric operations [and the] injudicious use of drugs." The investigation of the committee also prompted hospitals to restrict obstetric caregiving to specialist obstetricians and prevent general practitioners from attending deliveries.¹⁹⁰

Thankfully, the actions and achievements of the Philadelphia Maternal Welfare Committee were mimicked throughout the country by other medical societies. These committees directly contributed "material...for use in teaching medical students and hospital staff," that emphasized prenatal care and operative conservatism. Harold Speert attributes the sustained reduction in maternal mortality rates throughout the country to the vigilance and pressure

Rudolf M. Vollman, "History of the Maternal Mortality Study Committees in the United States," *Obstetrics & Gynecology* 34, no. 1 (July 1969): , accessed February 20, 2017, 123-124.

¹⁸⁹ Quoted in *Ibid.*, 124.

¹⁹⁰ *Ibid.*, 125.

provided by these types of committees.¹⁹¹ In the 1930s, maternal mortality committees could be found in ten states and the District of Colombia. As the impact of these committees on maternal mortality drew attention from obstetricians and health workers around the country, other states joined in the parade. By 1950, nearly half of states had established active committees to scrutinize and critique obstetric education, practices, and maternal death.¹⁹²

In addition to providing feedback and educational material to medical schools and hospitals, the committees' recommendations and scrutiny awoke a sense of self-consciousness and embarrassment among obstetricians, which spurred an array of institutional improvements in obstetric programs.¹⁹³ William Rothstein, a scholar on the history of American medical schools, noted that the obstetric programs at medical schools increasingly involved hospital residencies that gave students more practical experience, and the American Medical Association established "educational standards for internship programs."¹⁹⁴ Medical schools developed obstetric departments (that had previously lagged behind surgical or pediatric departments) by increasingly appointing full-time faculty members, establishing more outpatient obstetric services, and forging associations between obstetrics courses and hospitals.¹⁹⁵ Flexner's dream of a nation filled with "full time system" medical schools gradually became a reality.¹⁹⁶ In arrangements that brought practicing obstetricians up to speed on developments in the field (such as trends away from intervention) and that allowed students to receive practical supervision, "some medical schools paid hospitals for teaching, while other hospitals reimbursed medical

¹⁹¹ Speert, *Obstetrics*, 148.

¹⁹² *Ibid.*; Marmol et. al., *Maternal Mortality Study Committees*, 126.

¹⁹³ *Ibid.*, 123.

¹⁹⁴ William G. Rothstein, *American medical schools and the practice of medicine: a history* (New York u.a.: Oxford Univ. Press, 1987), accessed February 19, 2017, 135-137.

¹⁹⁵ *Ibid.*, 169, 172, 176.

¹⁹⁶ In the "full time system" schools employed full-time professors. Duffy, "The Flexner Report--100 Years Later."

schools for the patient care provided by...faculty members."¹⁹⁷ In keeping with the demands of medical students and the encouragements of the medical profession in general, the University of Pennsylvania School of Medicine established "a bedside teaching program specifically conducted by appointed clinical faculty." This type of system gradually came to be considered as a "necessary ingredient" of medical education.¹⁹⁸

The rise in quality standards of medical schools was mirrored by the general expansion and strengthening of the hospital system. In 1922, J.B. Cutter noted that "universal interest [was] rapidly growing in all parts of the United States, in the upbuilding and expansion of the modern hospital [sic]."¹⁹⁹ The transition towards standardized hospital births was accelerated by WWII's Emergency Maternity and Infant Care Program and the 1945 Children's Bureau recommendation that the "national goal should be 'the delivery of all women in good hospitals under the care of competent physicians.'"²⁰⁰ Women increasingly chose hospital births, and their demand was met with an expanding supply of hospitals that were better equipped, more efficient, and more interconnected than ever before.²⁰¹ "The number of hospitals in the United States increased from 178 in 1873 to 4,300 in 1909. In 1946, at the close of WWII, there were 6,000 American hospitals."²⁰² In the 1930s, a vast majority of births occurred in hospitals and in the hands of

¹⁹⁷ Rothstein, *American Medical Schools*, 176.

¹⁹⁸ "School of Medicine: A Brief History," School of Medicine: A Brief History, University of Pennsylvania University Archives, 2013, accessed February 19, 2017, <http://www.archives.upenn.edu/histy/features/schools/med.html>.

¹⁹⁹ J. B. Cutter, "Early Hospital History in the United States," *California State Journal of Medicine* 20, no. 8 (August 1922): accessed February 19, 2017,

²⁰⁰ Loudon, *Death in Childbirth*, 283.

²⁰¹ Even hospital architecture played a role hospitals' abilities to serve patients. "By the 1920s, the era of the big high-rise hospital was at hand [which] seemed to transform the hospital into a recovery factory." Guenter B. Risse, *Mending bodies, saving souls: a history of hospitals* (New York: Oxford University Press, 2011), accessed March 3, 2017, 470.

²⁰² Harry A. Sultz and Kristina M. Young, *Health care USA: understanding its organization and delivery* (Burlington, MA: Jones and Bartlett Learning, 2014).

obstetricians.²⁰³ The prevalence of hospitals meant that new obstetricians could learn through observation and under close supervision, instead of through blind trial and error; improved and more numerous hospitals expedited the proliferation of better-trained caregivers. Hospitals had also developed defined hierarchies featuring boards of trustees of directors and professional medical staff, and these hierarchies helped facilitate communication between doctors (within hospitals and between hospitals) which aided in the standardization of obstetric practice.²⁰⁴

The developments and expansions in medical schools' obstetric programs and in hospitals in the late 1920s and 1930s created a new generation of specialist obstetricians with life-saving childbirth practices. These institutions brought existing and new practitioners alike into their network of information-sharing. Thus, educators and specialists in the field of obstetrics throughout the 1930s and 40s finally began to correctly and efficiently apply the technical and procedural developments that had been made in the late nineteenth century. While there is some debate about whether incidences of operative intervention were lowered, antiseptic procedures became standardized.

The increasing unification of obstetric education and hospitals allowed for the widespread and expedient implementation of three key life-saving medical developments that had been made throughout the 1930s and 40s. Joseph DeLee and Alfred Beck determined that cesarean section incisions made at a lower part of the uterus (farther away from the fundus) would put the mother at less risk of hemorrhage. They advocated for this shift in technique and for the "dissection of the peritoneum from the upper flap of the lower uterine segment as well as

²⁰³ Melissa Thomasson and Jaret Treber, "From Home to Hospital: The Evolution of Childbirth in the United States, 1927-1940," *National Bureau of Economic Research Working Paper Series*, October 2004, doi:10.3386/w10873, 38.

²⁰⁴ Risse, *Mending Bodies*, 469-470.

the bladder from the lower flap, to permit and overlapping peritoneal closure.”²⁰⁵ These strategies lowered the incidence of puerperal sepsis. They also helped ensure that the uterus would not rupture during the pregnancies the mothers might experience later. Additionally, the proliferation of hospital blood banks that occurred between 1936 and 1945, along with techniques for blood typing and transfusion, greatly aided in the reduction of deaths due to postpartum hemorrhage.²⁰⁶ Without the development and expansion of the influence of hospitals (and the trend away from home births and towards hospitals) earlier in the century these developments could not have been made. Lastly, and most importantly, the discovery and growing availability of sulfonamides and antibiotics saved the lives of many women at risk of infection and puerperal fever.²⁰⁷ C.C. Dauer, a historian of medicines, asserts that “if the death rates of all streptococcal infections (streptococcal sore throat, scarlet fever, septicemia, and puerperal sepsis had declined after 1937 only at the same rate as in the preceding fifteen years, approximately...76,000 more mothers would have died as a result of puerperal sepsis.” Antibiotics allowed specialists to perform cesarean sections and forceps deliveries with more confidence in their ability to combat sepsis.²⁰⁸

²⁰⁵ Harold Speert, *Obstetrics and gynecology in America: a history* (Chicago, IL: American College of Obstetricians and Gynecologists, 1980).

²⁰⁶ Wertz and Wertz, *Lying-in*, 127, 164.

²⁰⁷ While this may have at first emboldened doctors to perform more unnecessary procedures, sulfa drugs and antibiotics were so powerful that their beneficial effects would have outweighed the harmful effects of interference. Eventually, the overall trend towards less invasive deliveries coincided with these drugs to produce the sharp drop we see in MMRs in 1929 and 1936. Additionally, historians should note that throughout the 1930s and 40s, penicillin availability greatly increased. Shortages were solved as production of penicillin became more streamlined. In 1943, a new strain of *Penicillium chrysogenum* was discovered that had a potency 100 times that of the original version and could be produced in massive quantities through the "deep tank fermentation method" instead of in many small containers. More universal availability of the drug helped lower rates of infection and prevent maternal mortality. Thomasson and Treber, "From Home to Hospital", 22; John E. McKeen, *The impact of antibiotics on medicine and society*, ed. Iago Gladston (New York: International University Press, 1958).

²⁰⁸ C.C. Dauer, *The impact of antibiotics on medicine and society*, ed. Iago Gladston (New York: International University Press, 1958).

In many ways, the potential benefits of the discovery of antiseptics to lower MMRs mirrored the potential of the discovery of sulfa drugs and penicillin. However, the disarray within the realm of American childbirth in the late 1800s meant that the benefits of antiseptics went unrealized for nearly half a century. Had the developments within the field of obstetrics that occurred in the early 1900s not been made (i.e. the transfer of power from midwives to specialists, the movement of births from home to hospital, the expansion and improvement of hospitals and medical schools) the discoveries of sulfa drugs and penicillin would have most likely done little to lower MMRs. The successful role they played in lowering MMRs in the 1930s and 40s relied on improved communication and information networks that had been developed as a result of medicalization of childbirth.²⁰⁹

Conclusion

Developments in medical schools and hospitals triggered the creation of increasing regulations and regulating institutions within the obstetric community in what would become a cycle of scrutiny, criticism, and improvement in practices. State agencies and leading obstetricians worked symbiotically to build on the progress that had already been made by medical schools and hospitals. In an effort to follow the guidelines laid out by committees, states held medical schools and hospitals to higher standards while obstetricians increasingly pushed states to require licensing and certification for obstetric practitioners and obstetric programs in medical schools. In 1926, the diversity in state licensing requirements received Woodbury's condemnation, and in the following decade, nationwide organizations arose to implement more

²⁰⁹ One should also acknowledge that the demise of the American midwife's role in childbirth occurred, in part, because midwives never developed institutional structures that extended beyond local groups. The scattered and diverse nature of midwife practices in the late 1800s was un conducive to standardizing childbirth practices or uniformly sharing information on antiseptics and other important developments in childbirth practices.

universal standards.²¹⁰ State licensing boards began to require college work of medical school attendees and some boards joined together to create the Federation of State Medical Boards. Eventually, the American Medical Association became an authoritative agency in the accreditation of medical schools.²¹¹ The AMA also provided a systematic structure for state maternal mortality committees in the 1950s, going so far as to publish a guide on the intricacies of conducting maternal death studies.²¹² This last development demonstrates the way in which obstetric institutions had become tri-layered: Not only did medical schools and hospitals provide obstetric services, but maternal mortality committees oversaw the practices of schools and hospitals, *and*, in turn, the AMA oversaw the investigations of the committees.

The icing on the regulatory cake was applied in 1930: The American Board of Obstetrics and Gynecology was established “to provide hospitals with criteria by which to judge the capabilities of staff members and of general practitioners.”²¹³ The scope of general medical knowledge had expanded, and physicians increasingly sought specialization in a particular field.²¹⁴ The Board “excluded doctors who did not limit their practice 100 percent to women.” By completely excluding general practitioners and other specialists who had poor obstetric training and attempted to dabble in deliveries, these obstetricians sought to permanently elevate and universalize the standards of care provided by physicians.²¹⁵ In *The Social Transformation of*

²¹⁰ Robert Morse Woodbury, *Maternal mortality: the risk of death in childbirth and from all diseases caused by pregnancy and confinement* (Washington: Government Printing Office, 1926), 75.

²¹¹ Starr, *Social Transformation*, 120-121.

²¹² Marmol et. al., *Maternal Mortality Study Committees*, 133.

²¹³ Wertz and Wertz, *Lying-in*, 160.

²¹⁴ Thomasson et. al., *From Home to Hospital*, 12.

²¹⁵ In the early 1930s in a small-town hospital in Pontiac, Michigan, only eight out of the ninety-one doctors who delivered babies were listed as OB/GYNs in the American Medical Association directory. “Many [physicians] delivered so few babies that they combined inexperience with carelessness and over-ambition...Forty-three of the eighty-one deaths studied were associated with an operative procedure which was judged to be unnecessary...” Thus, the establishment and growing strength of the Board and its quest to banish non-specialists from the birthing room had great power to reduce unnecessary deaths like those that occurred in Pontiac. Loudon, *Death in Childbirth*, 362-363. Starr, *Social Transformation*, 357.

American Medicine, Paul Starr asserts that this transition marked an important trend in all fields of medicine towards a greater “division of labor” in which specialties gained prominence over those who attempted to multitask.²¹⁶

In this way, the early efforts to consolidate and universalize obstetrics networks through the establishment of institutions like medical schools and hospitals begot more institutions that aided in the process of reducing MMRs. Although this process may have been arduous, the early medicalization of childbirth (despite its ironically harmful effects), set the stage for the establishment of nationwide communication between obstetricians which, in turn, prompted the establishment of institutions (the AMA, the Board of Obstetrics and Gynecology, new maternal mortality committees, etc.) to regulate other institutions (medical schools and hospitals). The more interconnected obstetricians became, the more they realized their capacity to self-criticize and improve practices and standards of care. As difficult as it is to admit, in a way, maternal safety had to get worse before it could get better. While doctors in birthing rooms prior to the 1930s caused many avoidable deaths, their presence eventually resulted in their own interconnectedness and capacity for self-criticism, which repeatedly catalyzed the reduction of national MMRs. After maternal mortality committees and other factors prompted the improvement of obstetric education in medical schools and hospitals, the percentage of specialist birth attendants increased. Due to the institutional improvements that had taken place, these obstetricians were better educated than their predecessors and saved lives by putting into practice developments in obstetric care—developments like the trend toward operative conservatism and the usage of sulfa drugs. Between 1900 and 1926, the MMR in the US hovered about 65 deaths

²¹⁶ Starr, *Social Transformation*, 225.

per 10,000 live births. Because of institutional developments that took place during that time, the US MMR victoriously dropped to under 10 deaths per 10,000 live births by 1950.²¹⁷

Today, as government officials and medical leaders grapple with the fact that US maternal mortality rates are once again significantly higher than those of comparable countries, it may be edifying to examine how institutional changes may curb avoidable maternal death and once again reverse the trend in rising MMRs.

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²¹⁷ Loudon, *Death in Childbirth*, 366.

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Professor Neem

Honors Capstone

Part IV

An Addendum: Maintaining the Tension between Statistical Safety and Cultural Comfort in US Childbirth

Currently, maternal and neonatal mortality rates in the United States greatly exceed those of other rich countries.²¹⁸ At an average rate of 5.8 infant deaths per 1,000 live births, the US infant mortality rate is higher than that of Guam, Latvia, Cuba, Portugal, the UK, Slovenia, Malta, Israel, and Bermuda (along with 47 other countries).²¹⁹ At an average rate of 14 maternal deaths per 100,000 births, the United States has a maternal mortality rate that is about 3 times higher than Spain, Poland, Norway, Italy, Iceland, Belarus, and Finland.²²⁰ Since the 1980s, almost all countries in the world have gradually and consistently reduced their maternal mortality rates every year. Between 1990 and 2008, the global maternal mortality rate fell from 320 deaths per 100,000 births to 251 deaths per 100,000 births. Almost all “rich countries” have seen either stagnant or reduced MMRs since 1990. Unfortunately, according to research conducted by the Institution for Health Metrics and Evaluation at the University of Washington, MMRs in the US increased by about 9 deaths per 100,000 between 1990 and 2010.²²¹ In another

²¹⁸ Throughout this paper, I will use neonatal mortality as the primary metric for measuring infant safety at birth. The neonatal mortality rate indicates the number of infant deaths that occurred per 1,000 live births in the first 28 days of life. Infant mortality rates, on the other hand, indicate the number of infant deaths that occurred per 1,000 live births in the first year of life. While studying infant mortality is a worthy pursuit, neonatal mortality more accurately reflects conditions of childbirth (and maternal health) than infant mortality rates because of its shorter time range. Additionally, while perinatal mortality rates (PMRs) reflect conditions of childbirth and maternal health even more accurately than neonatal mortality rates (PMRs indicate the number of deaths occurring during the late gestation and the early neonatal stages), information on perinatal mortality rates is scarce.

²¹⁹ "Country Comparison: Infant Mortality Rate," The World Factbook, accessed May 02, 2017, <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2091rank.html>.

²²⁰ "Field Listing: Maternal Mortality Rate," The World Factbook, accessed May 02, 2017, <https://www.cia.gov/library/publications/the-world-factbook/fields/2223.html>.

²²¹ "Health-related SDGs," Data Visualizations, accessed May 02, 2017, <https://vizhub.healthdata.org/sdg/>.

study, published in the American Journal of Obstetrics and Gynecology, researchers estimated that the MMR in 48 states and Washington D.C. had risen by 26.6% between 2000 and 2014.²²² While US neonatal mortality rates (NMRs) have been steadily declining, they are still significantly higher than other developed countries.

But why? From these numbers, it would be easy to assume that obstetric care in the US is of lower quality than countries with lower MMRs and NMRs. Finger pointing abounds as mothers, midwives, nurses, and physicians scramble to explain away the embarrassing statistics. However, a consensus has emerged in the US medical community; pre-existing medical conditions play a significant role in increasing MMRs. In September of 2016, the New York Times published an article that claimed, “the increase [in maternal mortality rates] in recent years has been driven by heart problems and other chronic medical conditions, like diabetes.”

Indeed, rises in MMRs are matched by even more drastic rises in the prevalence of diabetes and obesity in the United States. Between 1996 and 2013, the percentage of the US population with diabetes rose from 2.89% to 7.13%.²²³ While diabetes (either pre-existing or gestational) increases risks for the pregnant woman, the condition is more clearly linked to higher rates of fetal and neonatal complications, including death.²²⁴ Rates of obesity are growing more modestly than rates of diabetes, but current rates of women’s obesity in the US far exceed other wealthy nations with lower MMRs.²²⁵ While the US women’s obesity rate lies at about

²²² M. F. MacDorman et al., "Recent Increases in the U.S. Maternal Mortality Rate: Disentangling Trends From Measurement Issues," *Obstetrics and gynecology.*, September 2016, accessed May 02, 2017, <https://www.ncbi.nlm.nih.gov/pubmed/27500333>.

²²³ "Long-term Trends in Diabetes," Centers for Disease Control and Prevention, April 2016, accessed May 2, 2017, https://www.cdc.gov/diabetes/statistics/slides/long_term_trends.pdf.

²²⁴ Carlos Antonio Negrato, Rosiane Mattar, and Marilia B. Gomes, "Adverse pregnancy outcomes in women with diabetes," *Diabetology & Metabolic Syndrome*, September 11, 2012, accessed May 02, 2017, <https://dmsjournal.biomedcentral.com/articles/10.1186/1758-5996-4-41>.

²²⁵ "Overweight & Obesity Statistics | NIDDK," National Institutes of Health, accessed May 02, 2017, <https://www.niddk.nih.gov/health-information/health-statistics/overweight-obesity>.

40% of the population, no country in Western Europe, apart from the UK, has an obesity rate that exceeds 24%.²²⁶ In a study of 280,000 births in London, researchers found higher rates of maternal and infant health complications in obese women (than in women of normal weight, i.e. a body mass index between 20 and 24.9). Obese women experienced higher rates of pre-eclampsia, post-partum hemorrhage, and intrauterine death.²²⁷

With these findings in mind, the correlation between higher MMRs in the US and higher rates of chronic illness seem plausible, if not probable. But can the medical community be sure that high rates of maternal and neonatal mortality result exclusively from pre-existing health issues? Does this correlation absolve the medical community from its responsibility to improve maternal outcomes through institutional changes in obstetric care? No. It seems likely that higher standards of care could also contribute to lower mortality rates; in addition to a correlation between high rates of chronic health problems and high MMRs and NMRs, a correlation exists between high rates of cesarean section and high MMRs and NMRs.²²⁸ And while the safety of mother and baby take precedence in the minds of all parties involved in the birth process, many people maintain that the happiness and emotional health of women and families also deserve the

²²⁶ The Scotland, 30% of women are obese. "Obesity Prevalence Worldwide: Women," World Obesity Federation, 2015, accessed May 02, 2017, <http://www.worldobesity.org/resources/world-map-obesity/#country=POL>.

²²⁷ N.J. Sebire et al., "Maternal obesity and pregnancy outcome: a study of 287 213 pregnancies in London," *International Journal of Obesity* 25 (2001): accessed May 2, 2017, <http://search.proquest.com/openview/8c2822310dc3d2450eecd7460a811cd8/1?pq-origsite=gscholar&cbl=38864>.

²²⁸ The World Health Organization and the American Medical Association agree that the US cesarean section rate (about 30% of all US births involve cesarean sections) is higher than ideal. The WHO claims that countries should aim for cesarean section rates of 10-15%, while the AMA claims that a rate of 19% would be ideal. These statistics suggest that one- to two-thirds of cesarean sections performed in the US are unnecessary. The WHO maintains that, "As with any surgery, caesarean sections are associated with short and long term risk [*sic*] which can extend many years beyond the current delivery and affect the health of the woman, her child, and future pregnancies." According to the AMA, "national cesarean delivery rates of up to approximately 19 per 100 live births were associated with lower maternal or neonatal mortality among WHO member states." "Relationship Between Cesarean Delivery Rate and Maternal and Neonatal Mortality," *Journal of the American Medical Association* 314, no. 21 (December 1, 2015): accessed May 9, 2017, doi:10.1001/jama.2015.15553.; Human Reproduction Programme, "WHO Statement on Caesarean Section Rates," accessed May 9, 2017, http://apps.who.int/iris/bitstream/10665/161442/1/WHO_RHR_15.02_eng.pdf?ua=1.

attention of caregivers. So, how do we reduce intervention rates (and, by extension, MMRs) and increase maternal satisfaction with the American birth experience?

Changing Philosophies to Close the Mortality Gap

The heart of this process must involve a change in the philosophy of childbirth in US culture. Women are more likely to seek interventions and caregivers are more likely to provide (or insist on) interventions if they conceptualize labor and birth as a pathology or disease. As discussed, the popularization of the pathology of childbirth fueled increased medicalization in the 19th and 20th centuries and replaced the dominant conception of childbirth as natural—a conception that had previously dominated most cultures. This belief in the pathology of childbirth has historically resulted in lowered MMRs. However, these successes can be improved upon by reintroducing the theory of the normalcy of childbirth to women and caregivers across the country. Unfortunately, lay midwives, nurse-midwives, and obstetricians have not come to an agreement on the way to institute change nor on the extent to which changes should be made. As discussed, lay midwives and medical professionals constitute the two main schools of thought on the issue.

Proponents of home birth advocate for a complete rearrangement of birth institutions. In their ideal world, a vast majority of births would take place at home while high-risk women and emergency situations would be attended to by obstetricians. Historically, home births gained popularity in the 1970s; the second wave women's movement prompted many women to reexamine institutions and systems dominated by men, including America's system of childbirth (which was largely centered around male doctors in a hospital setting). One woman wrote, "I came to the decision to have a home birth...from the women's movement of the 1970s, which

made us all critical of the ways that major institutions of our society treated women.”²²⁹ These women felt frustrated with a lack of control over their own birth processes and began to question the hospitals’ standard practices: routine episiotomies, routine enemas, the mandated shaving of pubic hair, physical isolation, and heavy-handed administration of contraction-reducing and pain-relieving drugs. Some women argued that home births were the answer to their lack of autonomy and control in the hospital. They founded organizations such as the “Association for Childbirth at Home, the Home Oriented Maternity Experience, Homebirth Inc., and the National Association of Parents and Professionals for Safe Alternatives in Childbirth.”²³⁰ These organizations and other early advocates helped popularize OOH midwife-attended births; by 2012, 1.36% of births occurred outside of hospitals. Significantly, “out-of-hospital births comprised 3%–6% of births in Alaska, Idaho, Montana, Oregon, Pennsylvania, and Washington.”²³¹

Why Out-of-Hospital Birth?

Today, women are choosing to give birth outside of hospitals for the same fundamental reasons that women chose to in the 1970s; autonomy and control of their birth experiences. Oftentimes, women make their choice based on a combination of two basic motivators. For one, they feel an aversion to hospitals. In *The Business of Being Born*, a documentary about the home birth movement, one woman admonished the tendency for hospitals to treat all labors as emergency situations: "A woman doesn't need to be rescued. It's not the place for a knight in

²²⁹ Wendy Simonds, Barbara Katz Rothman, and Bari Meltzer Norman, *Laboring on: birth in transition in the United States* (Taylor & Francis Inc, 2004) xii.

²³⁰ Judy Barrett Litoff, *American midwives: 1860 to the present* (Westport: Greenwood, 1978), 144.

²³¹ M.F. MacDorman, T.J. Matthews, and Eugene Declercq, "Trends in Out-of-Hospital Births in the United States, 1990–2012," Centers for Disease Control and Prevention, 2014, accessed May 2, 2017, <https://www.cdc.gov/nchs/data/databriefs/db144.pdf>.

shining armor. It's for her to face her darkest moment so that she can lay claim to her victory after she's done it."²³² In an article in the Huffington Post, one home-birth proponent described the reasoning behind her choice:

I hate (seriously loathe) hospitals. I spent the first 18 weeks of my first pregnancy receiving care at a hospital...I left my first appointment in tears. There was a serious lack of respect for my wishes, the environment was sterile and the doctors and midwives I met with were never very friendly and always rushed me through my appointments — my longest lasted a mere 12 minutes. I always checked in and left my appointments in a state of anxiousness and never felt truly “safe” at the hospital.²³³

In addition to feeling pushed away by hospitals, women feel drawn to the comforts and freedoms afforded by OOH birth. On one personal blog, a woman echoed the voices of many fellow home-birth proponents by writing,

I am drawn to the midwifery model of care because it feels normal and natural. I like that a typical midwife prenatal visit lasts 60 minutes (as opposed to the typical 6 minute OB prenatal visit) and does not feel rushed. I like that I am getting to know the woman who will be there for my labor and birth and that she will gain my trust so that I feel comfortable with her while laboring and birthing... Midwifery empowers women and their families with the experience of birth.²³⁴

²³² *The Business of Being Born*, dir. Abby Epstein, perf. Mary Helen Ayres, Julia Barnett, Sylvie Blaustein (United States: Barranca Productions, 2008), accessed May 2, 2017, Netflix.

²³³ Lauren Hartmann, "8 Reasons Why I'm Choosing to Have a Home Birth," The Huffington Post, January 24, 2014, accessed May 02, 2017, http://www.huffingtonpost.com/babblecom/8-reasons-why-im-choosing-to-have-a-home-birth_b_4468907.html.

²³⁴ Amy, "Planning for a homebirth," Crunchy Domestic Goddess, July 27, 2006, accessed May 02, 2017, <http://crunchydomesticgoddess.com/2006/07/27/planning-for-a-homebirth/>.

A growing number of Evangelical Christian women have been choosing home birth for spiritual reasons. Midwives and mothers may believe that God leads the birth process and will communicate His will through the laboring woman. Some also believe that “God speaks to fathers during birth,” and can, therefore, help guide midwives and mothers.²³⁵ On one Christian blog, a mother expressed her desire to give birth at home because she wanted to integrate prayer into her birth experience: “I prayed through each and every contraction and through each push. I believe God is bigger and can do anything. He definitely helped me through my labor.”²³⁶ One popular book, *How to Give Birth in the Presence of the Lord*, describes “how to have a beautiful pregnancy—naturally—through the power of Holy Spirit.” Still, other women describe a desire for greater privacy and modesty during birth (i.e. birth is a “sacred event” that should exclude strangers). Most fundamentally, however, these women believe that God intends for women to give birth naturally and that God aids in the manifestation of His intention.²³⁷

Regardless of their religious background, women choosing to give birth at home or at a birthing center (as opposed to a hospital) believe that doing so will result in increased comfort, fulfillment, and a “healthier” birth. In the cases of comfort and fulfillment, their argument is difficult to refute. At home or in a birthing center, women are more likely to be able to wear their own clothes, eat and drink what they want, have support from more family members and friends (if they so choose), move where and when they want, and give birth in the way that they imagine. Frequently, these women plan to give birth without receiving anesthesia or Pitocin, and women giving birth at home are much more likely to succeed in avoiding these interventions.

²³⁵ Charmaine Callan, "Midwifery Program," Christian Heritage Academy of Midwifery, 2017, accessed May 02, 2017, <http://christianheritagemidwifery.org/midwifery-program/#>.

²³⁶ "Home births and Christianity," BabyCenter Community, August 19, 2012, accessed May 02, 2017, https://community.babycenter.com/post/a35788249/ot_home_births_and_christianity.

²³⁷ "Religious reasons for choosing homebirth?," Mothering Forums, January 01, 1970, accessed May 02, 2017, <http://www.mothering.com/forum/13-spirituality/424761-religious-reasons-choosing-homebirth.html>.

Women giving birth in settings other than hospitals report higher levels of satisfaction than those who undergo hospital births.²³⁸ Almost all proponents of OOH birth claim that they are as safe as, or safer than, hospital births. Their argument is logical: if higher rates of intervention are associated with greater risks, then reducing intervention in a non-hospital setting should improve the safety of mother and baby.

The Effect of Birth Setting on Neonatal Mortality

However, numerous studies negate these claims.²³⁹ In Oregon in 2012, neonatal mortality rates for out-of-hospital births attended by lay (or direct-entry) midwives were 6-8 times higher than rates for in-hospital births.²⁴⁰ In a study of 1,237,129 births (that occurred from 2000 to 2004), researchers found that “in-home certified nurse midwife deliveries” had neonatal mortality rates twice as high as “in-hospital certified nurse midwife attended deliveries.” The study also showed “in-home ‘other’ midwife deliveries had NMRs more than three times as high as those attended by certified nurse midwives in hospitals.”²⁴¹ Another study of US births that took place between 2006 and 2009 found that “the excess total neonatal mortality for midwife

²³⁸ Holly Powell Kennedy, *Birth Models that Work*, ed. Robbie E. Davis-Floyd, Lesley Barclay, and Betty-Anne Daviss (Berkeley and Los Angeles, CA: University of California Press, 2009), 427.

²³⁹ Some out-of-hospital birth advocates point out low maternal and infant mortality rates in countries that have high rates of midwifery. They argue that these rates indicate that 1) births attended by midwives are safer than those attended by doctors and 2) that if more women chose midwife-based births in the United States, that MMRs and NMRs would decrease. *The Business of Being Born*, 2008.

²⁴⁰ Judith Rooks, "Committee Meeting Document 8585," Oregon Legislative Information, 2012, accessed May 2, 2017, <https://olis.leg.state.or.us/liz/2013R1/Downloads/CommitteeMeetingDocument/8585>.

²⁴¹ These researchers also claim that "it was apparent that the pregnancies with the more significant risk factors, for example, diabetes, pregnancy-induced hypertension, abruptio placenta, fetal distress, and ‘other’ complications, were delivered in the hospital." Legally, out-of-hospital midwives must deny all “high-risk” cases, so hospitals take on a disproportionate percentage of high-risk cases that inherently increase the likelihood of neonatal death. This means that statistics on neonatal mortality do not accurately reflect the NMR for low-risk women with the legal ability to choose between in hospital and out-of-hospital birth. This discrepancy was not factored in to any available studies that compared NMRs based on birth setting.

M. H. Malloy, "Infant outcomes of certified nurse midwife attended home births: United States 2000 to 2004," *Journal of Perinatology* 30, no. 9 (2010): accessed May 2, 2017, doi:10.1038/jp.2010.12.

home births compared with midwife hospital births was 9.32 per 10,000 births, and the excess early neonatal mortality was 7.89 per 10,000 births.” For primiparous births, mortality rates were even higher.²⁴² Researchers believe that despite lower rates of intervention, OOH births increase safety risks due to the lack of emergency technology in homes and OOH birth centers. In emergency situations, especially those that involve perinatal infants, the time it takes to transport the infant from home to hospital is crucial.²⁴³

In addition to the issue of transportation and delayed emergency care, some doctors and scholars claim that midwives attending out-of-hospital births provide lower quality care than in-hospital doctors. The root of this argument stems from certification practices for “direct-entry midwives,” or midwives entering the profession without a background in nursing. While the American College of Nurse-Midwives requires certified nurse-midwives (CNMs) to hold a baccalaureate degree and complete extensive clinical training in nursing and nurse-midwifery, the North American Registry of Midwives allows certified professional midwives (CPMs, a.k.a. “lay midwives,” “direct-entry midwives,” or “‘other’ midwives”) to qualify for certification through a variety of different paths that do not involve extensive formal education.²⁴⁴ And while CNMs perform more than 90% of all midwife-attended births, they primarily work exclusively in hospitals; in 2014, 94.2% of CNM-attended births occurred in hospitals.²⁴⁵ CPMs (who are legally prohibited from delivering babies in hospitals), therefore, attend most OOH births. With

²⁴² Amos Grünebaum et al., “Early and total neonatal mortality in relation to birth setting in the United States, 2006-2009,” *American Journal of Obstetrics and Gynecology* 211, no. 4 (October 2014): accessed May 2, 2017, doi:10.1016/j.ajog.2014.03.047.

²⁴³ For mothers, the distance between the birth facility and the hospital is less threatening. In the immediate postpartum period, women may suffer a variety of complications (most often, postpartum hemorrhage), but women are less likely to be terminally effected by the time it takes to transport them to the hospital.

²⁴⁴ According to the American College of Nurse Midwives, “Approximately 82% of CNMs have a master’s degree, [and] as of 2010, a graduate degree is required for entry to midwifery practice as a CNM.” “Essential Facts about Midwives.” American College of Nurse-Midwives. February 2016. Accessed May 02, 2017. <http://www.midwife.org/Essential-Facts-about-Midwives>; Kennedy, *Birth Models that Work*, 417.

²⁴⁵ “Essential Facts about Midwives.” <http://www.midwife.org/Essential-Facts-about-Midwives>.

these statistics in mind, there is a plausible correlation between higher OOH neonatal mortality rates and the quality of care provided by CPMs. No matter the cause of increased NMRs, evidence suggests that home births, especially those attended to by CPMs, pose risks to new infants that would otherwise be mitigated in a hospital setting. Thus, despite lower rates of intervention associated with home birth, increasing the prevalence of home births in the United States would result in higher national NMRs.

If OOH births are not the answer, what is? How can we lower intervention rates (in order to increase maternal and neonatal safety) while simultaneously increasing women's happiness and sense of satisfaction? Will women in America be forced to choose between having a risky yet comfy OOH birth and a having an uncomfortable but statistically safer birth? Some advocates of wide-spread systematic shifts towards home-birth would answer, "yes," but they fail to see the potential for institutional change.

By 1977, most home birth proponents believed that "individuals trained to deliver babies in hospitals do not necessarily make the best home birth attendants."²⁴⁶ For the most ardent proponents, this argument remains crucial to the success of the movement. In *Laboring On*, Wendy Simonds, Barbara Katz Rothman, and Bari Meltzer Norman argue that there are two (and only two) models of childbirth. One which involves a lay midwife and a birth that takes place at home or at an out-of-hospital birth center, and another that takes place in a hospital under the overbearing eyes of nurse-midwives and obstetricians. Simonds, Rothman, and Norman, like many others, believe that these two models are entirely incompatible. They believe that birth should be a non-medical event and that "hospitals are settings where medicine sets the rules," no matter who is providing care.²⁴⁷ Nurse-midwives, they argue, are incapable of setting aside their

²⁴⁶ Litoff, *American midwives: 1860 to the present*, 143.

²⁴⁷ Simonds et. al., *Laboring on*, (Taylor & Francis Inc, 2004) xx.

medical-background and philosophy of pathology and are, therefore, incapable of successfully guiding women through ‘natural’ labor. Simonds, Rothman, and Norman believe that the hospital, as an institution, is so “[unreceptive] to change” that bringing midwives into the hospital setting would be no more impactful than “putting up floral wallpaper” in the maternity ward.²⁴⁸

Fortunately, all hope is not lost. Hospitals have proven themselves to be more receptive to change than Simonds, Rothman, and Norman contend. Since the 1970s, many hospitals have adopted more lenient policies on the presence of family members and friends, and have allowed women more time with their babies immediately after delivery. Most notably, hospitals have been increasingly receptive to the presence and authority of CNMs. For example, at St. Joseph’s Hospital in Bellingham, Washington, women may choose to receive primary care from either an OB/GYN or from a CNM.²⁴⁹ Some hospitals allow midwives to remain at births without the presence of an OB/GYN, and trust that midwives will call for help if needed. Others, however, require CNMs to be actively monitored by physicians.²⁵⁰

A Way Forward: Certified Nurse Midwives and Bringing Home to the Hospital

Despite these modifications, high incidences of cesarean sections and negative feedback from women indicate the necessity of change in hospitals on an institutional level. In an ideal world, women would feel autonomous and respected in a setting that offered emergency services and equipment. This ideal (including significantly lower levels of intervention and higher levels

²⁴⁸ Simonds et. al., 2004, xxv.

²⁴⁹ "Find a Provider," PeaceHealth Childbirth Center, May 27, 2016, accessed May 03, 2017, <https://www.peacehealth.org/st-joseph/services/womens-and-childrens-services/childbirth-center/Pages/Find-a-Provider>.

²⁵⁰ Kennedy, *Birth Models that Work*, 425.

of women's satisfaction) could be achieved by hospitals if they adapted their spaces and rules to mimic OOH births and encouraged CNMs to attend all low-risk births. The number of CNM-attended births has doubled since 1991 (from 4.1% to 8.2% of all births), which has prompted the examination of CNM birth outcomes. In a paradigm-shattering (but widely ignored) 1997 study, researchers concluded that,

after controlling for social and medical risk factors, the risk of experiencing an infant death was 19% lower for certified nurse midwife attended than for physician attended births, the risk of neonatal mortality was 33% lower, and the risk of delivering a low birthweight infant 31% lower. Mean birthweight was 37 grams heavier for the certified nurse midwife attended than for physician attended births.²⁵¹

Certified nurse-midwives have the potential to effectively connect the philosophy of OOH birth to the reality of unforeseen emergencies. One certified nurse midwife (originally trained at the Kentucky Frontier Nursing Service) wrote that CNMs are capable of “balancing [the] alternative view of birth with the dominant one” and providing the best clinical care possible. They can do this, she contends, by positioning themselves “within health care settings as respected providers.”²⁵² CNMs approach birth with more training and (arguably) more skill than CPMs, but maintain their commitment to helping women experience empowering births as naturally as they desire.

The Mount Sinai West Obstetric Service in New York has lead the charge in reimagining the hospital as an institution of birth. In 1996, they established a Birthing Center just one floor

²⁵¹ M. F. MacDorman and G. K. Singh, "Midwifery care, social and medical risk factors, and birth outcomes in the USA," *Journal of Epidemiology & Community Health* 52, no. 5 (1998): accessed May 2, 2017, doi:10.1136/jech.52.5.310.

²⁵² Kennedy, *Birth Models that Work*, 418.

below their traditional delivery suite and operating rooms. According to the hospital's website, "the Birthing Center has offered all the freedom and comfort of a home birth, while ensuring that total medical support is standing by... The birthing center rooms are homelike... Here, you may manage your own labor in the way that helps you most."²⁵³ Women may choose to be attended by an OB/GYN or by a CNM of their choice (either from a list of faculty midwives or from an independent midwife or midwife group). A woman's caregiver may remain with the laboring mother for the duration of the birth and the hospital does not restrict the number or type of visitors a woman may receive. Women may spend time praying or with spiritual guides, walking, in an in-room Jacuzzi, or in bed, and are free to eat, drink, and wear what they please.²⁵⁴

In 1977, two midwives, Barbara Brennan and Joan Rattner, proposed that "hospitals, because of the new demands of women who want childbirth returned to them, must change." They clairvoyantly envisioned the benefits of the Mount Sinai model and believed that the multi-faceted benefits to childbirth could be realized by bringing the home into the hospital instead of attempting to bring the hospital into the home. However, while Mount Sinai has clearly demonstrated the safety and viability of the 'homelike hospital' model, many hospitals reject this model in favor of more traditional, structured, and physician-led childbirth. So how might unsatisfied women, afraid of hospitals' high rates of intervention and general unpleasantness, affect change in their own regional hospitals? By demanding change and rewarding more homelike hospital birthing centers with their business. Brennan points out that hospitals that had

²⁵³ "Birthing Center," Obstetrics and Gynecology at Mount Sinai St. Luke's and Mount Sinai West, accessed May 02, 2017, <http://www.nywomenshealth.com/birthing-center-st-lukes-hospital-new-york.htm>.

²⁵⁴ Ibid.; *The Business of Being Born*, 2008.

made homelike adaptations to their facilities and relaxed birthing center rules were “busier” than those that had maintained their “sterile and scientific” traditions.²⁵⁵

For example, the Swedish Medical Center in Seattle, Washington, has adapted its rooms to be more relaxing and homelike than previous models: all rooms are private and feature “Jacuzzi tubs, birthing balls, squatting bars, music systems, Wi-Fi, and most everything else to make your delivery as stress-free as possible.” These modifications have, apparently, paid off. Swedish is the most popular hospital for childbirth in Seattle and more women choose to give birth at Swedish than at any other hospital in the state.²⁵⁶ Brennan argues that other hospitals will respond to the success of their competitors by making similar adaptations.

Luckily, the future of nurse-midwifery looks bright. Between 1992 and 2000, the number of CNMs dramatically increased in every state and practitioners in the profession were “permitted to perform more procedures and were permitted to work with less direct supervision from physicians.”²⁵⁷ One study also noted that a positive correlation between the number of physicians per capita and the number of CNMs per capita, which indicates that CNMs “supplement or support physicians rather than substitute for or supplant them.”²⁵⁸

By bringing the “home” into the hospital and by affirming and bolstering the role of certified nurse-midwives in-hospital birth centers, hospitals have the opportunity to sustain profits, regain women’s trust and respect, and reduce rates of unnecessary and risky surgical interventions. While these adjustments may not entirely close the gap between US maternal and

²⁵⁵ Barbara Brennan and John Rattner. Heilman, *The complete book of midwifery: a modern woman's guide to a hospital alternative in childbirth* (New York: E.P Dutton and Co., 1977), 50.

²⁵⁶ “Swedish First Hill Birth Center,” Swedish First Hill Birth Center, 2017, accessed May 02, 2017, <http://www.swedish.org/locations/first-hill-birth-center>.

²⁵⁷ *A Comparison of Changes in the Professional Practice of Nurse Practitioners, Physician Assistants, and Certified Nurse Midwives: 1992 and 2000*, report, 2000, accessed May 17, 2017, <https://permanent.access.gpo.gov/gpo6902/scope1992-2000.pdf>, vi.

²⁵⁸ *Ibid.*, vii.

neonatal mortality rates and those of other countries—due to the dominant prevalence of chronic diseases like obesity and diabetes—they do have the potential to save a significant number of lives and improve women’s and families’ experiences of birth.

An Aside: Impediments to Changing the Paradigms of Hospital Birth

However, a number of characteristics of the US healthcare system currently (and will continue to) impede and delay changes in hospital childbirth practice. Several of these impediments and delays result from the fact that most hospitals operate as for-profit businesses. The extensive privatization of hospital care accompanied the medicalization of childbirth and its shift into hospitals. Guenter Risse noted that in the 1920s, hospitals became businesses. Through private investment money became available in the medical field to pay for new developments in procedures and to incentivize the advancement of the medical professions. The charitable medical institutions (that had dominated the medical realm prior to this transition) had not incentivized or funded progress in the same way.²⁵⁹ "By the 1920s, the era of the big high-rise hospital was at hand, pioneered in the United States... The importance of efficiency seemed to transform the hospital into a recovery factory."²⁶⁰ Furthermore, Nancy Tomes, author of *Remaking the American Patient*, argues that the US is currently experiencing an era of “shopping mall” or “free enterprise” medicine.²⁶¹ She argues that the “culture of American medicine has nurtured a very... procedure oriented style of practice.” This leads to the “doctor’s dilemma,” a

²⁵⁹ Guenter B. Risse, *Mending bodies, saving souls: a history of hospitals* (New York: Oxford University Press, 2011), accessed March 3, 2017, 471.

²⁶⁰ *Ibid.*, 470.

²⁶¹ Nancy Tomes, *Remaking the American patient: how Madison Avenue and modern medicine turned patients into consumers* (Chapel Hill, NC: University of North Carolina Press, 2016), 7.

term that encapsulates “the temptation to overtreat and overcharge patients to make more money.”²⁶²

The “doctor’s dilemma” undoubtedly applies to obstetricians and hospital birthing institutions: Obstetricians have a financial incentive to recommend the administration of tests, epidurals, Pitocin, cesarean sections, and episiotomies. This incentive contributes, of course, to high rates of intervention but also to high birth costs; more frequent and expensive treatments correlate with bigger profits. Women giving birth vaginally pay an average of \$30,000 for a hospital birth, while women receiving cesarean sections pay around \$50,000.²⁶³ One critic argues that the economic structure of current obstetric institutions “encourages more expensive care, rather than care that is good for the mother.”²⁶⁴ (Of course, high rates of intervention in hospital births do not entirely account for the fact that US births cost two to three times higher than hospital births in almost all other countries; other factors are also at work.) Intuitively, this system also incentivizes hospitals to employ highly trained specialists, whose services cost more, over CNMs. The fundamental, for-profit nature of hospitals and physicians in the US is unlikely to change in the near future, and will continue to hinder efforts to reduce incidences of surgical intervention.

The same world of “free enterprise” medicine that prompts doctors to overtreat laboring women also empowers women to serve as critical consumers of medical services. The privatized nature of most obstetric practices allows women to choose hospitals and providers for

²⁶² Ibid., 9-10.

²⁶³ Mariko Oi, "How much do women around the world pay to give birth?," BBC News, February 13, 2015, , accessed May 20, 2017, <http://www.bbc.com/news/business-31052665>.

²⁶⁴ Elisabeth Rosenthal, "American Way of Birth, Costliest in the World," The New York Times, June 30, 2013, , accessed May 24, 2017, <http://www.nytimes.com/2013/07/01/health/american-way-of-birth-costliest-in-the-world.html?pagewanted=all>.

themselves. However, the increasingly consumeristic nature of patients has been positively correlated with the frequency of malpractice suits.²⁶⁵

The increasingly litigious attitudes of American healthcare consumers have, arguably, debilitated efforts of both obstetricians and CNMs to provide—in their view—the highest standards of care. For CNMs, the legal and economic burdens associated with operating a practice have increased in the past few decades. For example, “in the state of Washington, the average liability insurance premiums for CNMs increased from \$5948 in 2002 to \$10,952 in 2004, up by 84%.” Additionally, in 1982, only 5% of Michigan nurse-midwives had ever been sued, while “35.2% of practicing Michigan CNMs had been named as defendants in medical malpractice claims by 2006,” with 15.5% having “made malpractice payments of \$30,000 or higher.” While some may argue that these trends exist due to lowered standards of care provided by CNMs, this explanation does not factor in the overall increase in malpractice suits that have been brought forward in all medical fields.²⁶⁶ Furthermore, in one study, 70% of Michigan CNMs surveyed “reported liability concerns as having a negative impact on their clinical decision making.” This information indicates that the threats associated with patient dissatisfaction (legal and financial repercussions) may, in fact, reduce the quality of care provided by CNMs rather than increase it—at least to some extent. Many CNMs reported their dissatisfaction with having “to increase the number of patients they saw to increase practice revenue.” Understandably, they argued that, summarily, these changes “undermined” their ability to enact traditional midwifery values; seeing more patients prevented them from spending unrushed time with laboring mothers and “triggered practice of a more defensive posture.” In a profession that crucially prioritizes a lack of intervention, liability fears often cause CNMs to

²⁶⁵ Ibid.

²⁶⁶ Tomes, *Remaking the American patient*, 401.

compromise their beliefs in a noninterventionist approach and prompt the prescription of unnecessary tests or procedures that carry their own risks.²⁶⁷

Obstetricians must also reckon with the implications of high malpractice premiums and have, as a result, taken the practice of “defensive medicine” to the extreme.²⁶⁸ Because some insurance companies levy surcharges on physicians who work with midwives, physicians are financially deterred from welcoming CNMs into their practices.²⁶⁹ Additionally, litigious patients have pressured obstetricians to perform unnecessary and occasionally harmful procedures. Obstetricians face the highest liability insurance premiums and malpractice risks of any other medical specialty, and fearing that they will be blamed for mishandling a complication (even if that complication had been caused by a hospital procedure), obstetricians attempt to protect themselves by using every tool available in their medical toolbox.²⁷⁰ One obstetrician claimed, “The underlying problem, is, of course, litigation... They can never fault you if you just section them.”²⁷¹ While the privatized nature of obstetric care and the litigiousness of medical consumers have obstructed the path to de-pathologized and safer birth, the recent growth in the popularity of CNMs indicates that these hurdles are not insurmountable.

Final Note: On Maintaining the Tension Between Empirical Data and Cultural Relativism

With all of this in mind, it is important to remember that numbers don’t mean everything; the social and historical contexts of childbirth vary by region, class, culture, and surrounding institutions. These contexts will always determine how societies and individuals approach the

²⁶⁷ Xiao Xu et al., “Malpractice Liability Burden in Midwifery: A Survey of Michigan Certified Nurse-Midwives,” *Journal of Midwifery & Women’s Health* 53, no. 1 (Jan. & Feb. 2008): accessed May 18, 2017, doi:10.1016/j.jmwh.2007.10.003.

²⁶⁸ Tomes, *Remaking the American patient*.

²⁶⁹ Ibid.

²⁷⁰ Rosenthal, “American Way of Birth, Costliest in the World.”;

²⁷¹ *The Business of Being Born*, 2008.

subject of childbirth. When it comes to choosing a birth environment and deciding on an intended strategy of labor and delivery, personal background, culture, and socioeconomic standing play major roles.

In many cases, the strength of OOH birth institutions in a region correlates closely with a region's social history. For example, the histories of Alaska and Washington State may explain the particularly high number of birth centers and direct entry midwives operating there.

Arguably, Alaska and Washington have, historically, had more prominent feminist and socially liberal populations than Mississippi and Alabama.²⁷² These histories may indicate why Mississippi and Alabama have zero birth centers while Alaska and Washington twenty-nine birth centers (combined).²⁷³ Cyclically, the social and cultural histories that support OOH births have resulted in the emergence of institutions (i.e. birth centers) that, in turn, sustain and strengthen the normalization of OOH birth within a culture. That is, in cities and towns that have birth centers, OOH birth becomes more accessible and, oftentimes, more popular. In many ways, this process parallels the rise of hospitals' popularity in the early 1900s.

²⁷² Both Alaska and Washington gave full voting rights to women before the ratification of the 19th amendment and have both legalized marijuana. Without quantitative evidence to back up my argument, I would venture to say that the emphasis on "toughness" and independence in Alaskan culture (perhaps a result of many years of battling a rugged and more isolated environment) has contributed to these rulings and to the popularity of home births in the state. Progressivism and the popularity of feminism and women's rights, while difficult to quantify, characterize a large portion of Washington's population and have, perhaps, contributed to the popularity of home births in that state. Meanwhile, Alabama and Mississippi are not characterized by especially progressive histories. A resistance to women's suffrage is evidenced by the fact that women did not gain the vote before the ratification of the 19th amendment. Additionally, these states are not generally considered to be hubs for progressivism, feminism, or gender equality. Please note: these claims are generalized. My main point here is that the social and cultural histories of various regions have affected the popularity or unpopularity of OOH births *and* that institutions (i.e. birth centers) have emerged in response to the popularity of OOH births. "States grant women the right to vote," National Constitution Center: Centuries of Citizenship, 2006, accessed May 10, 2017, https://constitutioncenter.org/timeline/html/cw08_12159.html.; "Marijuana Is Officially Legal In Alaska," *The Huffington Post*, February 24, 2015, accessed May 9, 2017, http://www.huffingtonpost.com/2015/02/24/alaska-marijuana-legal_n_6738328.html.

²⁷³ Combined population of Mississippi and Alabama: 7.85 million. Combined population of Washington and Alaska: 7.9 million. "State Fact Sheets," Advocacy, accessed May 10, 2017, <http://www.midwife.org/State-Fact-Sheets>.

Ironically, both the popularization of medicalized (and hospitalized) childbirth and the more recent popularization of OOH birth have gone against the grain of empirical safety: Women in the 1920s flocked to hospitals despite the increased dangers posed by drug- and incision-happy physicians, and women in the past 20 years have been heading back home despite the increased dangers associated with OOH birth (especially the lack of immediate access to life-saving emergency technology). Childbirth would not have been medicalized if women and doctors had simply looked at the damning statistical evidence against medicalized birth and decided that hospital births had no place in American society. If this had happened, MMRs and NMRs would never have fallen to their contemporary rates. Similarly, incidences of OOH birth have risen despite the statistical evidence against it. Perhaps lay midwives and CNMs unknowingly hold the keys to a new era of safer and more rewarding childbirth.

Growing disdain and mistrust for doctors and dominant medical institutions have real implications for national health. If hospitals and doctors alienate and lose the respect of their patients, then the very patients they purported to help will avoid their services. And unfortunately, medical professionals cannot save lives that have not been entrusted into their care. Most doctors claim to prioritize the physical safety of their patients; however, when medical institutions ward off potential patients by breaking or failing to earn patients' trust, then the responsibility for both the negative and positive physical outcomes of these patients lies, indirectly, with the medical institutions themselves. Living up to the Hippocratic Oath ("I will follow that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous.") requires medical professionals and the institutions they constitute to acknowledge the harmful effects of

disempowering and deterring pregnant mothers and potential patients.²⁷⁴ For this reason, and many others, those seeking to improve both the safety and the experience of birth (in the USA or elsewhere) will be unable to achieve their goals if they yield to either complete relativism or complete absolutism. The tension between science and custom, data and emotion, must remain in contention in order for meaningful progress to be made.

In reality, every human engages with this tension on a regular basis. Each day we take a hundred risks that increase our likelihood of early death: we go skiing without a helmet (we go skiing at all!) we drive cars (oftentimes over the speed limit), we eat refined sugars and trans fats and tuna that has been stuffed to the gills with mercury, we move to regions with high earthquake potential, we start fires in our homes, we mountain bike and rock climb and kayak and shake hands with people who could potentially give us the flu! We act in these ways although (and, perhaps, because) the actions themselves increase our risk of death—they bring us joy and companionship and fulfillment and convenience and myriad other benefits that we balance with a desire for self-preservation. If humans cared exclusively about statistics on health and safety, then (hyperbolically) our lives would be spent eating kale and sauce-less chicken in padded basement rooms. Therefore, we approach each day with the knowledge that what we may gain in statistical safety we may lose in color and vivacity—we constantly weigh our options and allow culture and our personal characters to influence the risks that we do or do not take. If we conceptualize a woman's decision to give birth in this light, then doctors and midwives alike must better understand and respect why some women might choose to either forgo the comforts of home or the security of the hospital.

²⁷⁴ Robert H. Shmerling, MD, "First, do no harm," Harvard Health Blog, October 14, 2015, accessed May 17, 2017, <http://www.health.harvard.edu/blog/first-do-no-harm-201510138421>.

When it comes down to brass tacks—that is, a pregnant woman’s decisions about where and how to manage her own childbirth experience—it is unlikely that she will spend a year of supervised undergraduate research trying to evaluate the statistical safety of each birth opportunity. Instead, she reckons with the implicit tensions between perceived statistical safety and cultural beliefs. She is apt to listen to the opinions and feelings of her friends and family and attempt to decide in whom to place her trust in light of the biased recommendations of either a doctor or a midwife. She will weigh her own desires, values, and understanding of the reliability of different institutions. Her perception of childbirth, like women in Ancient Egypt, Victorian Britain, and the 1940s United States, has been shaped by science, popular culture, politics, and religion in obscure and myriad ways that transcend the inflexibility of maternal and neonatal mortality rates.

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