University Honors Program

Capstone Approval Page

Capstone Title (print or type)

The Evolution of Childbirth: A View Over Three Centuries

Student Name (print or type) __Kelsei Fager________________

Faculty Supervisor (print or type) ___Karen Brandt______________

Faculty Approval Signature _____________________________

Department of (print or type) _______Nursing______________

Date of Approval (print or type) 11-08-11
START (100-200 WORDS):

Childbirth is an ever evolving event that has changed dramatically over time and continues to make rapid changes even today. This work explores three centuries of childbirth, attempting to recreate the experience of each time period for the reader. My research focused on three main research questions: What changes have there been in pain management techniques for labor and delivery over the last three centuries? In what ways have birthing methods changed since the 18th century? How have the technology and instruments related to childbirth improved since the 1700's? The methodology of this study was a systematic review of historical literature from the 1700's to 1900's using mainly secondary sources. This project is significant because it is important to be knowledgeable of history in order to avoid mistakes made in the past. It is also important to use knowledge from the past to continue to improve outcomes in the future, and prevent history from repeating itself. The conclusion from this work is that women lost the power of childbirth with the medicalization of the event. However, with the help of midwives, women have the ability to gain back control of birthing babies to their rightful owners.
The Evolution of Childbirth: A View Over Three Centuries

The experience of childbirth for women in modern times is a very different picture from the experience even as little as 50 years ago and even more so from 200 years ago. Childbirth has changed drastically from the eighteenth century to the twentieth century. These changes occurred most drastically in the areas of place of birth, interventions in the birth process, and birth attendants. Throughout most of history, birth has been perceived as a gruesome, dangerous, and feared event in the woman’s life. It often signaled their possible impending death or permanent disability. Having children in the present day is mostly a time of joy and happiness for a family with very little risk of the maternal or fetal death and complications that plagued mankind’s past.

The event was once surrounded by excruciating pain and suffering, but now is a time of comfort and relaxation. In times past, family and friends used to assist the laboring woman in the life changing event in the comfort of her own home and bed. Now doctors and medical personnel aid the woman in her labor and delivery and it is a medical experience rather than solely a social or religious one. The goal of this research is to reconstruct a picture of what it was like to reproduce in the past few centuries with a focus on three main areas including: Changes in pain management techniques; differences in birthing methods; and improvements in technology and instruments related to childbirth. Society always has, and always will, depend on childbirth to flourish; therefore it is important that women and healthcare providers alike are educated on the foundation of today’s practices and of where mistakes were made in the past to promote the best possible outcomes for the future.
THE EVOLUTION OF CHILDBIRTH

1700’s

In the 18th century the majority of the female’s adult life was spent birthing and raising children. Life expectancies were short and the woman’s role in society was that of procreation and homemaking. Women were often married by the age of 22 and began having children within two years. Many women continued having children as long as they were physically able because more help was needed in sustaining the family through farming and other laborious activities. “A woman’s last child and first grandchild might be of the same age; she and her daughter might give birth in the same year. There was no lengthy period of a woman’s life without the presence of children in the home” (Wertz & Wertz, 1989, p 3).

An interesting fact about the fertility trends of this time period is that the months that conception was the lowest were the months of September and October, which was the time that people were often gathering harvest. There were major peaks in conception during the winter months and especially in April, May, and June. These were thought to correlate with work demands and nutritional disparities (Wertz & Wertz, 1989). During this time period, women did not see child birth as a time of joy and happiness. It was often believed that “conception meant your death has entered into you”, and that “a possible death sentence came with every pregnancy” (Leavitt, 1986 p.21). There is evidence of women’s fears referenced in diaries found from the time all referring to their possible impending death Even though women considered each infant as the possibility of being the seed of their own destruction, it was understood that survival depended on it.
Not only did women fear possible death related to childbirth, but they were scared of the disturbing debilitations related to birth. “The worst of these problems were the vesicovaginal and rectovaginal fistulas (holes between the vagina and either the bladder or the rectum caused by the violence of childbirth or by instrumental damage), which brought incontinence and constant irritation” (Leavitt, 1986, p. 28). There were also frequent perineal tears (tears from the vagina to the anus) which were often left un-sutured, slowing recovery and causing great discomfort; and prolapsed uteri (where the uterus falls downwards or sometimes even out through the vaginal opening) (Leavitt, 1986).

The women of the 18th century followed the model of “social childbirth”. The method of social childbirth involves women helping other women during their deliveries. The women involved in these births were relatives and female friends that came for aid in a time of need. Their purpose was to be supportive and provide comfort for the birthing woman (Wertz & Wertz, 1989). This method was brought to the new world when the English settled in American colonies where it continued for over 150 years. However, birth in the new world did have its differences from its origins in England. The settlers found less crowding and more food here so people stayed healthier and, in turn, began to have more successful births.

“Eighteenth-century ‘social childbirth’, illustrating women in attendance at this multiple birth ushering the father to see the new babies. [Finney, 1937]
This method of childbirth was important for women at this time because of the expectations put on women. They had households to run, children to tend to, and chores to fulfill. If women were to continue these practices through the last period of pregnancy into labor and the postpartum period, it would likely kill them from exhaustion. These supportive “social” women assisted the laboring woman during this period and allowed her to “lie-in”. The new mother would stay in bed and recover for weeks to over a month if necessary, while others took over her usual responsibilities. These women were not paid for their help, but expected reciprocity when it became their turn to “lie-in”. These women also brought more than just simple support in their social assistance. Many had knowledge from their own births or knowledge from past attended births. This was also helpful for women to prepare for their own future labor and delivery process. After recovery, the woman would often give back to her helpers by providing a large feast to show her appreciation.

Female friends and relatives were often not the only attendees of these deliveries during this period. It was common for people known as Midwives to assist in the birth of a child. The term Midwife, which literally means “with-woman”, was used to represent an individual that was often not formally trained or licensed, but gained their knowledge from attending many child births. The initial Midwives were always women who had often gone past the age of childbearing themselves, which made them able to attend the often time consuming births without neglecting their own responsibilities. In fact, medical historians have called the years before 1750 “the age of the midwife”, for doctors were few (Wertz & Wertz, 1989, p. 6). Men did not attend births during this time since it was not considered decent and proper for them to view the female genitalia.
Since Midwives did not require any special educational requirements, there was little in the way of formal regulation in Colonial America. These individuals were mainly regulated by religion and eventually by the government. Some colonies, such as New York and Virginia, began to require licensing in the early 1700's. These licenses made the midwife something of a “servant of the state, a keeper of social and civil order” (Wertz & Wertz, 1989, p. 7). Some colonies actually provided housing and salary for midwives. These women were trusted to be knowledgeable and reliable agents. This meant that these women were expected to offer a trustworthy testimony if ever needed in court such as for instances of bastardry or for a baby being born from a cheating woman.

Since most women in this period were giving birth in their homes and bedrooms, the midwives looked for methods to ease the delivery process. The usual process took place in the woman’s bed, but the use of devices called birthing chairs became common. These chairs had a cut out seat that would allow the mother to give birth and the midwife to catch the baby from below, while the woman still kept on her long skirt to protect her modesty. They were also thought to move around and use many positions to help the labor progress (Wertz & Wertz, 1989).

"Three Versions of the obstetrical stool" (Wertz & Wertz, 1989 p. 14).
Midwives in this time period also developed many interesting different interventions, "medications" and instruments, though they most often followed the non-interventionist supporting role in birth. They would examine the cervix, while sometimes manually stretching it, promoted walking around, and sometimes would manually express the placenta (Leavitt, 1986). Midwives often used goose fat or other lubricants to grease the birth canal and aid in stretching. Alcoholic beverages were used to ease pain and cause relaxation. Other treatments included the placing of a warm cloth on the abdomen to help dilate the woman and the use of enemas. If faced with a difficult birth, a midwife may use snuff or white hellebore to make the woman sneeze to dislodge the baby (Wertz & Wertz, 1989).

One of the most prominent Puritan ministers and scholars of this era was a man by the name of Cotton Mather. Mather was not a doctor, but followed and advocated their practice to assist him in his conquest to rid the colonies of the practices of witchcraft. He is probably best known for his research which influenced the use of inoculations to combat the spread of smallpox. This idea was widely rejected by many physicians when first proposed, but proved to be successful gaining acceptance and even notoriety. Mather later developed "prescriptions" for pregnant women including Laudanum and Saffron mixed with water to help with child bed fever, a tea of Tansey to prevent miscarriage, or a "Labour Powder" which was made up of "Date-stone, Amber, Saffron, and Cummin-Seeds" (Wertz & Wertz, 1989, p. 15). It was eventually found that none of these did what they claimed to do and Tansy was actually used later on to produce an abortion rather than prevent it.

Midwives eventually also began to develop the use of other medicines and techniques to assist in the birthing process. Opium was used for pain relief and was sometimes used with belladonna (the plant in which atropine is derived) as an antispasmodic.
A fungal compound called Ergot also was used in helping to stimulate contractions (Leavitt, 1986). There are notes of midwives manipulating breech babies to a normal position and removing obstructions as well, but no record of how exactly they did this (Wertz & Wertz, 1989, p. 18).

After the 1750’s, birth methods began to change in the colonies. At that time, men were returning from their travels abroad from gaining a formal education. Since there were no medical schools or hospitals in the colonies, traveling abroad was the only way to gain any medical knowledge. These aspiring doctors were taught ways to treat women in birth that midwives had not yet learned. Since there were no formal labor and delivery physicians at that time, even in Europe, this knowledge related to women’s care and birthing was deemed the “New Midwifery”. Until this time, men in what would later become the United States were completely excluded from the birthing process, due to having no formal medical knowledge that could outweigh the morality violations of males being involved in the delivery of a child.

In Europe, the knowledge base was more significant, which is what attracted men from the colonies to travel in order to gain this information. The French began studying childbirth in the early sixteenth century in maternity wards for poor women. They studied the anatomy of the uterus and birth canal, therefore gaining knowledge of manipulations to help ease the passage of the baby. During this time they also came up with ways to measure birth canals to assist in predicting if fetal passage was possible or probable. They began to see birth as a mechanical process rather than the previous religious explanations (Wertz & Wertz, 1989).
Because of this new knowledge that spread throughout Europe, medical pioneers were able to begin to construct instruments to aid with deliveries. One of these instruments was forceps, which became popular with English doctors in the eighteenth century. Forceps allowed the user to manually pull the child out of the birth canal rather than wait for the mother to expel it. These tools were originally invented in the 1600’s, but were kept a secret. This was a dangerous instrument in this time period; there were many changes to be made to its design which was not perfected until the late 1800’s (Wertz & Wertz, 1989).

Along with the design problems of these new instruments came the secondary issue of when it was necessary and safe to use this device. “The medical issue was a complex and serious one. Unlike the ‘low’ forceps used today, so called because the fetus’’s head is low in the birth canal and already visible, many male attendants of this time were using ‘high’ or even ‘floating’ forceps, which were applied before the fetal head was engaged in the mother’s pelvis, or ‘mid’ forceps, when the head was engaged in the curve of the birth canal, but not yet visible” (Wertz & Wertz, 1989, p. 37).
These practices were very dangerous because they increased the chances of damage to the mother and child, infection, hemorrhage of the mother, and crushing the baby’s head. The use of forceps was not regulated nor based on clinical experience. There was also still no formal certification or schooling for male midwives or birthing doctors at this point, though they would often receive some sort of training from others that had practiced this previously.

*Various styles of forceps in modern use* [Wertz & Wertz, 1989 p. 36]

*Mid-forceps (left) and high forceps (right) as used by William Smellie in the eighteenth century.* [Wertz & Wertz, 1989 p. 37]
The introduction of male midwives and gadgets created competition with the natural practicing female midwives. The males began to feel it was necessary to set themselves apart by the use of the instruments, to shorten labor and gain better popularity than the female midwives, who often believed in a non instrumental tradition. This created the unnecessary use of forceps by male midwives. "Male birth attendants were popularly perceived as more educated and able than their woman counterparts, largely on the basis of custom, and gradually became the preferred attendants at middle and upper-class births" (Wertz & Wertz, 1989, p. 44).

The trend toward labor and delivery specialization spread to formally educated physicians as well. Women eagerly invited the advent of specialized training for physicians and welcomed them into the childbirth picture largely because of the fear of childbirth and their ongoing search for a safer and less painful experience. Doctors were thought to know more about the birth process than either gender of midwives and also expected to know what to do if something went wrong, therefore offering additional security. Most saw physicians as superior and believed that they all received education that was then denied to women, though most American physicians did not actually have this education (Leavitt, 1986). Because doctors were still often low in numbers, they shared the job with the trained midwives until the early 1800's.
They often left the trained midwives to attend to the normal births and they would be called in for the problematic ones. Physician attended births were often also only possible for the wealthy urban women who could afford it, and the poor continued to be seen by midwives regardless of circumstances (Wertz & Wertz, 1989).

One of the first and most prominent physicians to practice labor and delivery medicine in this country was William Shippen of Pennsylvania. He attended the University of Edinburgh in London where he received his Doctor of Medicine and brought his knowledge back to the colonies in 1761. After practicing in the field of women’s medicine and becoming a pioneer in the field of child birth, he became an instructor of Midwifery. He offered lectures involving specialized anatomy lessons of the uterus, at first to males and females, but then limited them only to males. In 1799, it was recorded Shippen dealt with problematic labors by bleeding out the woman, giving opium and using forceps. For this reason, women wanted him and physicians in general to attend their births because of the belief that they could provide relief of difficult births (Leavitt, 1986). These occurrences marked the beginning of a new era and the end of the traditional women midwives and their role in childbirth.
In the 1800’s, childbirth continued to slowly evolve towards what it is today. The trends continued with the entrance of men and exit of women in labor and delivery. The colonies had gained independence and became the United States, but formal medical education in this country was still in its infancy. Those who founded schools looked to support the growing trend of training doctors and women often could not afford the fees these types of institutions charged or were not welcome. Government assistance did not exist with respect to funding for medical education for either gender.

Another barrier was that women seemed uninterested in joining this system or even in the organization of the practice of midwifery into a medical science. Childbirth therefore, became quite disorganized during the transitional nineteenth century. During this time, there were various degrees of training and experience in the field. Practitioners ranged from doctors trained abroad, to those educated in new American medical schools, to the traditional type of midwife. Women had a wide array of options to choose from at this time but the only persistent trend was that women were slowly exiting the practice of midwifery. The reasons for their departure were likely due to the growing use of interventions and less dependence on nature. This meant that these skills were needed to be mastered and women were viewed as unable to do so.

Meanwhile, a woman’s place in society began to be questioned and the thought of mixing women and medicine was beginning to become unthinkable by some. Midwives also seemed to have the inability to organize themselves as a profession making them easy competition for the increasingly organized doctors. Lastly, the preference of upper and middle class women began to shift towards increased intervention in childbirth.
These groups believed that the intervention technique was superior and promised them more safety. However, the exit of the upper and middle class did not cause midwifery to cease from existence completely. It was still popular among poor, rural, and ethnic or immigrant women where other women were still often present at births for purposes of support (Wertz & Wertz, 1989).

Not all practitioners embraced the idea that tools and chemical interventions were the best way to deliver a baby. Some doctors became root and herb doctors or followed the homeopathic route encouraging extremely small doses of drugs, fresh air, proper rest, diet, and washing. Some also believe in hydrotherapy by promoting the drinking of mineral water and taking cold baths (Wertz & Wertz, 1989).

Over time, the organized physician groups began to attack Midwives through anonymous publications. Many of these publications claimed that women were unable to handle attending birth because, during their menstruation, they were temporarily insane and were “more prone than men to commit any unusual or outrageous act” (Wertz & Wertz, 1989, p. 57). They were also accused of “unsexing” themselves and becoming less of a lady if they were to gain the knowledge and skill it took to be a midwife. It was nearly impossible for any woman to apply and be admitted to a medical school because of these beliefs, prompting the establishment of all female schools, beginning around 1848 (Wertz & Wertz, 1989, p. 60). The lack of ability of women to enter this field also created the formulation of more nursing schools and women entering that field instead, much under the influence of Florence Nightingale (Wertz & Wertz, 1989, p. 62).
Many different types of doctors began to arise and develop in the 1800’s. This was largely because of the lack of state licensure laws or restrictions and regulations of medical schools in the United States. Men could receive elite education by the men who were writing the textbooks of the time or they could attend a profit based school for a few months where they were exposed to book learning and lectures. However, neither was mandated to receive practical or clinical training in the fields. Both were believed to have the same knowledge and expertise so all were all calling themselves doctors. Even the education of the elite, which required two to three years of study, was unsatisfactory in teaching the doctors to actually treat their first patients. Many claimed to still be completely ignorant upon graduation and just became lucky with their first cases. This lack of regulation of schools and education continued into the 1900’s.

In the mid 1800’s, discussions began to create a different name for men in the field than a midwife to further separate and distinguish themselves from their female counterparts. After many different suggestions such as mid-man, man-midwife and even androboethogynist, the term obstetrician arose out of the medical community in England. This comes from the latin meaning of “to stand before” (Wertz & Wertz, 1989, p. 66). The term obstetrician slowly gained momentum as the name for the doctors that were gradually taking over the birthing process. Though the trending towards the doctors was obvious, it is important to note that the majority of deliveries still took place in the woman’s home. Often times the only women who delivered in hospitals were the poor or unmarried and these women often were used for training and experiments (Wertz & Wertz, 1989).
As childbirth transitioned from the female midwife to the male physician, it created a host of social issues and barriers. It was improper for women to expose any sexual or physical features that would cast a shameful light on pregnancy since it was an obvious product of sexual intercourse. For this reason, women would often hide during their pregnancies creating the term “confinement” used in relation to pregnancy. The idea of men entering the labor room presented a problem due to the extreme amount of modesty in women. Women felt it inappropriate for male doctors to see them without clothes or to view their genitalia. Therefore, doctors were forced to perform exams by touch alone under their long skirts. This was also the time when the lithotomy position became popular, which consisted of the woman laying on her back with her legs apart because it provided the easiest way for doctors to access the birth canal under the dress without exposure or eye contact.

"Vertical touching, a physician doing a pelvic examination without looking at the woman’s genitals". [MayGrier, 1834]

Such social barriers were a main reason for the lack of clinical teaching and observation for students. It was believed that students could just as well learn from watching the deliveries of barnyard animals, so clinical observations on humans were not conducted.
It was eventually worked out that doctors would bargain with the poor women in hospitals to let them be exposed in exchange for medical treatment. This helped slowly introduce the concept to others over time (Wertz & Wertz, 1989).

Because of the lack of regulation and clinical training, each doctor had to develop their own knowledge of what each birth required by trial and error. They were often urged or expected to “perform” and use their instruments or medicine in order to establish their superiority and their ability, resulting in prolific use of unnecessary intervention. Some doctors still believed that non-interference and nature was the way to go, and were taught so, but in times of confusion and because of lack of training to the contrary, turned to the instruments anyways (Wertz & Wertz, 1989).

Forceps continued to be a problem into the 19th century. The increasing use also caused a parallel increase in lacerations through the century as well, as they continued to be misused and overused. There were many new types of variations of tools being introduced such as long, short, curved, straight, mechanical and axis traction forceps. “This lack of uniformity proves the non-existence of a scientific basis, said one physician who tried to introduce more precise and absolute laws for use” (Leavitt, 1986, p. 50). In this century, the use of forceps became “fashionable” to laboring women. Over time though, some doctors began to attempt to try and make the use of forceps safer. An article in the Journal of the American Medical Association focused on the use of forceps only after the patient became fully dilated, and suggested that it become a crucial practice, except in rare unusual circumstances (Leavitt, 1986).
In the early 1800's another instrument called the speculum was refined and would allow a full visual inspection of the cervix and vaginal canal. This allowed for earlier detection of abnormalities, but in 1851, the American Medical Association advised against its use because the exposure may be embarrassing to women (Wertz & Wertz, 1989, p. 90).

As a result of the increasing use of instruments and lack of regulation and education relating to child birth, a growing occurrence of puerperal fever was being seen at increasing rates in the nineteenth century, mostly between the years of 1840-1890. This was known as "the greatest tragedy for maternity during the nineteenth century" (Wertz & Wertz, 1989, p. 119). Child birth often created wounds to the perineum, vagina, and cervix while leaving the uterus itself exposed to the elements, thus posing a perfect breeding ground for bacteria. Many times the bacteria being presented into the woman were from the doctor's hands himself or instruments used during delivery. Because of the lack of sterile procedures, or knowledge of them, bacteria were often transmitted by doctors from one woman to another or even from autopsy matter. For many years doctors argued over the source of the infection and frequently denied that the doctors themselves could have anything to do with it.
Doctors had many theories on the cause of the fever, but because they were unable to identify an exact cause, they were not able to prevent or control the fever. A controversial practice some doctors used to prevent the fever was a vaginal chloral douche, which was an "injection of antiseptics into the vagina before and after delivery" (Leavitt, 1986, p. 158). It was thought to get rid of any infectious agents present. This method was found to be dangerous and increased the rates of septicemia. This continued to be a problem until the 1930’s when sulfa and penicillin became an available method to treat infections (Wertz & Wertz, 1989, p.127).

Another problem that continued throughout the 1800’s was the problem of birth related disabilities. Lacerations, fistulas and uterine prolapse were still a quandary that plagued women and doctors. One doctor claimed, “The widespread mutilation is so common that we scarcely find a normal perineum after childbirth” (Leavitt, 1986, p. 29). These debilitations caused endless suffering in women and often confined them to their homes. The increase of these problems in the last half of the century was also due to the increased use of instruments in labor, especially the forceps. Because of the increase of incidence though, there was eventually an increase in technology for repairing these problems. In the middle of the century, Dr. J. Marion Sim’s began providing a repair operation for fistulas to a selection of lucky women. Pessaries were also being invented and used in this time period, for treatment of uterine prolapse. Pessaries were mechanical support systems that were inserted into the vagina to support the uterus, sometimes attached to a belt, or consisted of a sort of belt with a long insert that pushed and held the uterus up inside of them. These often caused painful pelvic inflammation and possibly ulceration. While thought to be of help, they actually caused more problems in the women (Leavitt, 1986).
"Pessaries were used to support prolapsed uteri, not as birth-control devices. The tails were attached to the wearer's belt. [Wertz & Wertz, 1989 p. 102]"

"Over 200 devices for the treatment of uterine displacement were marketed in the nineteenth-century America. [Wertz & Wertz, 1989 p. 103]"

"A selection of nineteenth-century pessaries, used internally to support a prolapsed uterus." [Gardner, 1865]

With the emerging technology of the 1800's, came the introduction of new drugs and additional treatments for assorted conditions associated with childbirth. One such treatment was the use of a fungus called Ergot that is found on rye and other stored grains. "Ergot is a powerful natural drug that stimulates uterine muscles when given orally; it causes powerful and unremitting contractions" (Wertz & Wertz, 1989 p. 65-66). Doctors looked at it as a way to save time and help long labors. It also is useful in expelling the placenta and contracting the uterus.
The drug was thought to have no side effects, but common practice was that it only be used after the fetus was ready and in position for delivery because of its immediate action. There was also no known antidote for the drug, which means if the fetus would not expel, the uterus could contract itself and collapse around the baby, causing a rupture of the uterus and death of the child. Because of this there was question of the danger of its use without available antidote and it was decided it should only be used after the fetus was born to eject the placenta or help prevent hemorrhage (Wertz & Wertz, 1989).

Another remedy becoming popular was bloodletting or venesection. This was used for many symptoms and was used if a birth seemed “unusual” to a doctor. “Physicians believed that venesection could relieve pain, accelerate labor, soften a rigid cervix, ease podalic version, and reduce inflammation. Some doctors even bled patients who were hemorrhaging using the logic that further reducing circulation would produce blood clotting and stop the hemorrhage” (Leavitt, 1986, p. 44). A doctor would “place the woman in a chair, open a vein in her arm, and allow her to bleed until she fainted. Some doctors bled women to unconsciousness to counter delivery pains” (Wertz & Wertz, 1989, p. 68). Bloodletting may also even be used in instances of fever. Along with the practice of bloodletting was the application of leeches to draw blood from an area. They were used for headaches, vaginal pain or even a distended abdomen (Wertz & Wertz, 1989).

Calomel was another up and coming therapy, which was a chloride of mercury. It was used as an emetic, as it irritated the intestine and caused purging. Calomel may be administered in cases of puerperal fever, to reduce swelling, or to cure convulsions. Opium was required as an antidote for the calomel. There is record of a convulsing woman, in 1833 who received a frightening combination of the practices.
Doctors continuously switched between bleeding her and purging her for two days while also administering ergot at the end. In the end they removed two-fifths of her blood over two days. She lived but bore a still born child (Wertz & Wertz, 1989).

Opium, or laudanum, use was also very popular among physicians in the 19th century. It was used for cases of prolonged labor and was thought to accelerate cervical dilation and ease suffering. Cathartics (laxatives) were used to open the bowels and believed to speed delivery along with infusions of tobacco which were used for cervical dilation as well. Physicians also began to manually break the water to encourage labor. “In cases of extreme need, physicians could surgically separate the pubic bones to facilitate passage of the fetus’s head or they could introduce the crochet, the instrument used for fetal dismemberment and extraction” (Leavitt, 1986, p. 44). Fetal dismemberment was sometimes used when the fetal head became obstructed in the pelvis. Forceps, which continued to be popular in the 1800’s, often saved these fetus’ lives and assisted in removing the impacted child.

“The performance of a craniotomy. First the skull of the fetus is perforated and then the cranial contents are removed.” [MayGrier, 1834]
THE EVOLUTION OF CHILDBIRTH

One of the biggest improvements in problematic childbirth technology was the development of the successful Cesarean section. This was not a new operation, but was nearly always fatal before this time. In 1882, a German man named Max Sanger learned that by using aseptic techniques and sewing the uterine wall and abdomen with silk thread he could increase the success rate to 80 percent in operations. This made it possible for women with deformed pelvises to deliver babies. Americans slowly caught on to when and how to perform the operations and successfully completed the first C-section in Boston in 1894. This is the man who also began the practice of “Once a Caesarean always a Caesarean” rule (Wertz & Wertz, 1989).

Another great improvement of this century was the discovery of the stethoscope. The stethoscope was discovered in 1819 and was first used in 1822 to hear fetal heart tones through the abdomen of pregnant women. This would allow doctors to regularly assess the well-being of the fetus throughout pregnancy and during delivery. This further created a medical backdrop for the process and gave physicians another device to bring credibility to their process.

Pain was a popular subject in the 1800’s, especially in the latter half. It was even thought to be a reason for the decreased number of births and fertility in the time period, along with fear for women’s health. Pain in childbirth, and in general, was considered a “feminine” trait but also somewhat unnatural, because not all women suffered during childbirth. It is said that “tight corsets, lack of exercise, airless rooms, late hours, and sexual overindulgence” were to blame for increasing rates of pain in upper class women (Wertz & Wertz, 1989, p. 114). Because of the growing issue with labor pain, there were great improvements in the technology of labor pain management in the nineteenth century. Around the 1840’s, doctors began experimenting with the “new anesthesias”, chloroform and ether, to relieve birth pain.
There was religious question in the use of pain management in birth, as it was thought as a religious curse upon women to help induce motherly love and also was due to Eve’s curse. In 1853 though, much of this questioning was silenced, as Queen Victoria herself decided to use chloroform for her delivery (Wertz & Wertz, 1989, p. 117).

"The chloroform mask was introduced in the mid-nineteenth century to alleviate the pains of labor" [Wertz & Wertz, 1989 p. 116]

Many doctors were cautious of their use of anesthesia though, as they thought it may cause women to be more sexually active and show less control over her actions, and because of the uncertainty of the safety of usage. Another reason was because of the uncertainty of when and how to use these substances (Wertz & Wertz, 1989). Doctors often just guessed how much to use, as no standards of procedure guided the dosages or administration. Some doctors used a cloth with the substance applied to it and covered the mouth while gradually adding more with each contraction. Other doctors stuffed a cloth in a cup and soaked the cloth with chloroform and had the woman’s lady friends administer the substance. Once the inhaler form was invented there was argument as to which method was better (Leavitt, 1986). For these reasons, many doctors would elect to use it only for first time deliveries or to dull the pain before the delivery of the head, not to cause unconsciousness.
Other times they would use it when having to insert their hand to turn a fetus or when using an instrument and many only used it when the birthing mother insisted. It was later found that chloroform, along with ether, increased the possibility of hemorrhage, could lead to prolonged labor because of decreased uterine contractions, and could cause breathing problems for the newborn (Wertz & Wertz, 1989).

Some alternative pain methods mentioned were the fruit diet and the water cure. The fruit diet’s goal was to produce a fetus with small flexible bones, as they thought they were removing the substances that formed bone. The water cure required fresh air, long walks, and frequent uses of cold water in baths and for drinking. Regardless of all of the new possibilities for pain management, many doctors were still skeptical on pain relief in labor. As we entered the 20th century, this left women searching for ways to rid them of pain completely (Wertz & Wertz, 1989). “Medicine may have improved comfort levels and may have rescued some women from complicated labors, but it did not, on the whole, increase women’s chances of survival in the nineteenth century” (Leavitt, 1986, p. 57).

During most of the 1800’s women were still mainly delivering children at home. However, towards the end of the century, hospital births began to become more of an option for women. While hospitals had once been only for the poor, by the 1880’s they were also chosen for more difficult births as well since obstetricians were developing new medical skills to combat these problems (Wertz & Wertz, 1989, p. 132).
1900’s

The 20th century marked the transformation of the traditional methods of women birthing in the comforts of their home, to women birthing in the hospital setting. In the beginning of the century, less than five percent of women delivered in hospitals (Wertz & Wertz, 1989). These numbers grew quickly and “by 1940, 55 percent of America’s births took place within hospitals; by 1950, hospital births had increased to 88 percent of the total; and by 1960, outside of some isolated rural areas, it was almost unheard of for American women to deliver their babies at home” (Leavitt, 1986, p. 171).

![Estimated Percentages of Births Taking Place in Hospitals, 1930-1970](Diagram)


This transformation was largely due to the fact that doctors were realizing hospital birthing was more efficient and safer than home birth. It was able to combine the old rituals of social childbirth and moral care with the new skills that made birthing safer and more comfortable (Wertz & Wertz, 1989). It was also due to the fact that doctors were yearning for more control over the births they attended.
Doctors wanted to be able to exercise their own professional judgment in their practice without being interfered by friends, family and birthing women (Leavitt, 1986). Women had their own reasoning for wishing for a hospital birth, as they believed it was safer than home birth. Although, at this time there was no actual science that proved this was indeed safer, women still were intrigued by the growing medical knowledge and wanted to experience it for themselves. Another large factor was the inability of the traditional woman’s network to meet the demands of childbirth (Leavitt, 1986). The time of social childbirth had long passed, as women had begun to enter the work force due to the industrial revolution and the price of home help was much too high (Wertz & Wertz, 1989).


Another reason for movement of delivery from home to the hospital was a matter of convenience for the doctor. Hospitals were beginning to establish blood banks and transfusion techniques, and x-rays of the pelvis were helping to detect problems ahead of time. Rather than traveling from house to house lugging his equipment, which was time consuming; he would keep everything in one common place. He was also unable to practice at his full potential outside of a hospital, as it was impossible to carry around new medical items such as diagnostic machines, anesthesia, drugs, and sterilizing materials.

Further appeal for a hospital delivery was due to the fact that doctors and nurses were available day and night with access to the new special equipment available such as “x-ray machines, laboratories, blood banks and transfusion equipment” (Wertz & Wertz, 1989, p. 156). Hospitals also offered the comfort of newborn care and safety with “incubator rooms” and “resuscitative techniques” to help reduce the rates of fetal death and tragedy. Women often stayed and recovered at the hospital after delivery for a few weeks (Wertz & Wertz, 1989). Centralizing patient care also led to a regular supply of patients in which doctors could use to train students. This would help the organization of knowledge and education in childbirth (Wertz & Wertz, 1989).

The new location of child birth was not without the accompaniment of additional problems. One of these problems was the enhanced presence of puerperal fever. The movement of birth to one location also made transferring of bacteria more centralized and also made the perfect environment for breeding hardier strains of bacteria. To combat this, doctors began to require that wards were aired and washed with carbolic acid regularly. Nurses were required to bathe and change their clothes on a schedule. It also became routine to clean the patient upon arrival and to remove all personal items.
They were often given an enema, because they thought a possible bowel movement could be the source of the fever, along with emetics to purge the stomach of the patient. Some hospitals even required a vaginal douche of “bichloride of mercury” (Wertz & Wertz, 1989).

Patients in hospitals were often discriminated against based on their economic status and level of cooperation. If patients were loud, asked too many questions, or “refused to obey orders” they were often treated more roughly and it affected their medical treatment. For instance, it was assumed that certain races or ethnicities made more noise, but had less pain than others so they were given less anesthesia.

There are also many horror stories from this time period regarding the cruel treatment of women in hospitals. They were yelled at and called names by nurses, left forgotten in rooms for hours, and threatened with physical violence by hospital staff. Some were strapped down in restraints for most of the delivery and were punished for trying to move. It was around this time that women found hospital births to be an unpleasant and alienating experience, much unlike the belief in the beginning of the century, of safety and comfort. Women began being treated as an assembly line with interventions, and were given no choices in the matters. They were also isolated the whole time from family and friends. This marked another change in the view of childbirth and the practices involved (Wertz & Wertz, 1989).

Another problem with hospital births was the increasing cost with the new technologies associated with these deliveries. Very few health plans covered maternity so it was an out of pocket expense. Hospital birth “could take from 25 percent to 35 percent of a middle-income man’s yearly salary” (Wertz & Wertz, 1989, p. 158). This was also thought to be a reason for the decline in conceptions around this time.
The increasing price was supposed to be worth it for safer care, but safer care could not always be guaranteed. This is because there was still no regulation of education and qualifications of doctors. In fact, infant deaths from birth injury had increased by 40-50 percent between 1915-1930 (Wertz & Wertz, 1989, p. 161).

During this century there was also a major shift in the sociological view of women and pregnancy. Rather than being “confined” by a pregnancy women began to embrace and revere it. Maternity clothes assisted in this transformation, making it possible for women to continue their social activities during pregnancy. Bottle feeding also became popular for women in this century making women with new children less confined since nursing in public was not yet acceptable. There were issues with this at first, as many infants died before the sterilization of bottles was practiced (Wertz & Wertz, 1989).

Lane Bryant advertisement for maternity clothing. [Wertz & Wertz, 1989 p. 149]
At the turn of the 20th century, training and education had greatly improved, but most medical schools were still not accredited by the American Medical Association and only required a high school degree to enter. Many medical schools were still owned and ran by doctors for profit and offered classes taught by incompetent instructors with no experience that taught solely from textbooks (Wertz & Wertz, 1989). The striking increase in infant mortality associated with birth became the beginning of a reform in physician education and qualification. Hospitals began to require doctors to pass certain exams before being able to practice and a hierarchy was being formed within the hospital (Wertz & Wertz, 1989).

The outcry for improvements in physician education and certification was also echoed by demands for better methods of things such as pain management. The practice of “Twilight Sleep” originally introduced in Germany, was a huge topic for American women. Women fought for its acceptance in America, as a few American doctors had tried it around 1900, but rejected its safety and reliability. Women traveled to Germany just to experience this type of delivery and returned to America to begin campaigning for its usage. This “Twilight Sleep” involved “injecting the woman with morphine at the beginning of labor and then giving her a dose of an amnesiac drug, called Scopolamine, which caused her to forget what was happening, and continue giving her timed injections; once the fetus entered the birth canal, the doctor gave ether or chloroform to relive the pain caused by the birth of the head” (Wertz & Wertz, 1989, p. 150).
The doctors often performed two tests to determine the effectiveness of the drugs after they were administered. First they used the “calling test”, which consisted of the doctor trying to address the patient in a loud voice. They also used the “incoordination test” which was passed if the patient’s movements were uncoordinated (Leavitt, 1986). Once the patient passed these tests and were under the influence of Scopolamine they were placed into a bed, specially designed for the treatment. It resembled a crib and was meant to contain her during possible violent movement. Women began promoting the usage of the new technique by making and distributing films and brochures on the matter. These women were successful, as doctors and hospitals began to consider the technique as safe and useful and it began to be known as “maternity’s miracle”. A hospital in Boston used it in all deliveries by 1938. This, in turn, attracted even more women to the idea of a hospital birth (Wertz & Wertz, 1989).
Another leap in pain management of this era was the spinal anesthesia, which allowed the woman to be conscious, but numbed from the waist down. This began to be developed around 1942 and continued to evolve. However, this caused the problem of an inability to push and created an increase in the use of forceps again, along with some of its related complications. Because of these issues, the technique was further refined from a spinal block, to an epidural block.

The epidural did not become widely available until the 60’s and 70’s but quickly became a common occurrence. As of 1997 it was thought that epidurals were used for between 21-50 percent of deliveries (Andersen, 2004). The epidural blocks pain and essentially numbs the patient from the abdomen down, while still allowing them to be conscious and able to feel “pressure sensation” and able to push for the delivery. However, it also posed additional problems for the laboring patient such a significant drop in blood pressure and a slowing of the labor process. This created new requirements such as continuous monitoring, large amounts of IV fluids to keep the pressure elevated and the use of drugs such as Pitocin to help augment contractions and speed up delivery. Epidurals also created the need to insert a catheter for urination once administered because of the inability to ambulate.
Therefore, it created the increased risk for infection in the urinary tract along with the entrance site of the epidural. In some cases, it also raised the risk for a need for a cesarean section (Klein, 2011).

By mid 1900's the great improvements in overall birth success were also attributable to the treatment of pre-existing dangerous conditions in pregnant women such as eclampsia. Over time, doctors began making a connection between weight gain and eclampsia. They still were not aware of all of the details, but began putting weight restrictions on women to prevent the occurrence (Wertz & Wertz, 1989). Doctors learned it could be prevented by treating women showing symptoms of eclampsia with rest, diet and drugs. In addition, they were able to measure her blood pressure and test the urine for albumin, which they found to be a positive diagnosis for the presence of eclampsia.

There were also new techniques for diagnosing syphilis and gonorrhea in women, and doctors were realizing the connection between adult blindness and gonorrhea. In response to this, they developed the preventative intervention of administering silver nitrate drops into all babies' eyes immediately after birth (Wertz & Wertz, 1989).

This era was also known for the invention of what was once thought of as the “miracle drug” or the antibiotic. The discovery began with a British scientist named Alexander Fleming who accidently came across a mold that killed the bacteria in one of his petri dishes. He then spent the next twenty years studying and focusing on this finding and came to name it Penicillin from the Penicillium mold that created it. Eventually, drug companies began producing the drug and it became available in the mid to late 1940's for the general public to use.
Penicillin was used to treat a wide variety of bacteria and significantly improved infant and mother mortality rates after its introduction. Since this finding many other antibiotics have been produced and are available for treatments.

Pitocin was yet another addition to the interventions used in the late 1900’s for labor. It is one of the most commonly used drugs during labors today and is used in up to 60 percent of cases. “Pitocin is a synthetic form of oxytocin, the natural hormone that stimulates the onset of labor” (Stillerman, 2006). It is given to women to either induce labor or to assist with labor contractions. It was first synthesized in 1953 and began being clinically used two years later. It is somewhat similar to ergot in its actions of assistance in expulsion of the fetus. When given pitocin, the woman is connected to a constant IV drip of the substance. It also requires the woman to have continuous fetal monitoring and sometimes oxygen, because fetal distress is more common with use. Pitocin also increases the pain of labor and contractions making women more likely to require pain medications that potentially slow labor in return. Other side effects include: rupture of the uterus, lacerations of the cervix, retained placenta, fetal asphyxia, physical injury and neonatal hypoxia (Stillerman, 2006).

Ultrasound technology, which was originally used to detect submarines for WWII, became popular for imaging fetuses around 1957. The full bladder substituted for the sea water in these early ultrasound practices. One question on the use of ultrasounds is the lack of any large scale trials performed on the safety of them. It is unknown if ultrasounds increase any risks for children in the future, such as was found out for DES (a drug commonly used between the 40’s and 80’s).
This was not found out till many years after the drug use, after the child was grown, which causes a fear for the use of ultrasound technology without long term trials (Wertz & Wertz, 1989).

After all the trending toward pain management and medical intervention into birth, women began to wish again, for a more “natural” childbirth experience towards the 1960’s and 1970’s. This was very popular among educated and middle class women and was also thought to be linked with the women’s liberation movement. They began to question the interventions and safety with a desire for personal control over the event. These women also were stressing the importance of being awake and being able to experience the event. For a while, the doctor’s answer to this was the spinal anesthesia, but eventually women wanted more. Women now wanted to feel everything, which was the exact opposite of the needs earlier in the century.

The natural child birth movement led to the creation of a series of techniques, called Lamaze, that were thought to have been created by a doctor as a natural way to manage pain during child birth. The practice of Lamaze consisted of educating women in the process of childbirth, teaching exercises that help strengthen the muscles used in the process of bearing down, and practicing breathing techniques that ensured adequate oxygenation throughout the body. This was all thought to help reduce the levels of pain for women by blocking the pain signals from the uterus and to make it easier for them to have natural deliveries. Many doctors disliked these requests for natural childbirth, as it took the control away from the doctor and also took more of the doctor and staff’s time. They believed unless they were being paid more for the extra attention they had to provide, that they were not interested in the practice (Wertz & Wertz, 1989).
By the 1970’s doctors were becoming more willing to allow a “natural” childbirth, largely because of their control over the situation. They were allowing the women to practice Lamaze but still often using the same interventions. This was known as the “American natural childbirth”. The only interventions that would not be considered natural were C-sections and Twilight Sleep, during this time. A natural childbirth was a matter of opinion and there was much disagreement on what was considered natural (Wertz & Wertz, 1989). This is also the time that doctors started allowing men access to the birth scene.

The 1970’s marked another serious jump in technologic advancement for pregnancy and childbirth. Fetal heart monitors began showing up around this time. Methods for fetal heart monitoring include external devices or internal devices placed directly on the baby’s head. Trials performed on the topic of fetal heart monitors show that monitoring increases the need for forceps and C-sections, because of the inability to move around when hooked up, and that most of the babies delivered by C-section because of fetal distress, were in fact not distressed at birth. By the time this was established though, it was too late, women already expected to have fetal monitors and it was thought may sue if not offered (Wertz & Wertz, 1989).

Another change around this time was the increase in the number of C-sections performed. This was greatly because of the belief, "once a C-section always a C-section", the increasing use of fetal monitors and their predicting fetal distress, and prolonged labors (which were against hospital policy). This caused a movement around 1988 pushing for VBAC (vaginal birth after C-section) support. This practice often goes ignored though, because of the fear of potential malpractice suits and possible uterine rupture (Wertz & Wertz, 1989).

There were also many improvements in screening and testing techniques towards the end of the century. This included tests to determine gender, tests to diagnose genetic or chromosomal problems or complications, and tests to predict neural tube defects etc. One test, called the Chorionic Vilus Sampling test, allows for gender testing and DNA analysis to detect abnormalities within the first trimester of pregnancy. It involves inserting a needle into the chorion and extracting material. Another mentionable test is the amniocentesis, which is most commonly performed in the second trimester. This involves extracting samples of amniotic fluid from the mother for testing. The earliest records of attempts to tap into the amniotic fluid were in the late 1800’s.

These tests can diagnose genetic diseases and neural tube defects in the fetus. They can also determine the sex from this test as well (Woo, 2002). A few other tests becoming popular were the maternal serum alpha-fetoprotein screening, cordocentesis, and the triple screen test, among many others which all focused on the same basic screening topics (American Pregnancy Association, 2011).
Around the time all of these tests began development another very important test was about to hit the market after many years of studying. This was the at home pregnancy test based on the hCG hormone. This test meant earlier pregnancy detection and the ability to do so in the privacy of your home. In 1976 “FDA approval was sought by Warner-Chilcott for E.P.T, the ‘Early Pregnancy Test’ later known as the ‘Error Proof Test’”. E.P.T was the first test to hit the American market in 1978 and techniques including earlier detection have been improving ever since (The History of the Pregnancy Test Kit, 2003).

The late 1900’s marked great strides in technology for those unable to get pregnant or with fertility issues. In-Vitro Fertilization (IVF) opened up a whole new world for childbirth. Those previously given no hope to conceive were now given the possibility to do so. Research on this technique dates back as early as 1890. This technique involves extracting eggs and sperm from the donors and fertilizing the egg outside of the womb. The fertilized egg(s) are then inserted into the uterus, which is often prepared with certain hormones to prepare it for the best possibility of attaching and producing a fetus. The first IVF pregnancy was reported in 1973 and the first ever IVF birth was documented in 1978 (“The History of IVF”, 2011).

Also related to fertility management, was the birth control pill, yet another miraculous invention of the 20th century. Prior to the birth control pill, the condom was a popular method of birth control. Other methods popular prior to the 20th century were douching syringes, vaginal sponges, diaphragms and cervical caps. The “rhythm method” was also used and involved the practice of only having intercourse during the times that a woman was least able to get pregnant. Doctors originally believed this time was the middle of the month, which actually turns out to be the best time to get pregnant.
In 1960 the breakthrough came, and “the Searle drug company received FDA approval for Enovid, the first birth control pill”. It was found though, to have terrible side effects, including life-threatening blood clots, because the original dose was found to be ten times too high (DeNoon, 2003). Much progress has been made with birth control methods since, including lower dose birth control pills, birth control shots, intravaginal rings, patches, morning after pills and hormone-less devices inserted into the uterus itself.

Conclusion

The birth process has changed drastically over the last three centuries and women have played a key role in the decision-making in regards to the changes over time. The needs and desires of society drive the researchers to devise new techniques to serve the people. It is important that women continue to be active decision makers by more thoroughly educating themselves on all aspects of childbirth in order to make more personal decisions and take back the power in this life-changing event. Midwives have already began to make a comeback towards the end of this century and the “natural childbirth” movement has begun demanding less interventions and medications. The medical community today shakes their heads at the thought of venesection, leeches and chloroform, but in 100 years will they be doing the same about pumping every laboring woman with pitocin, the use of fetal heart monitors, and the extremely high C-section rate that we see today?
Despite our continual technological medical advances, childbirth remains an organic and sociological event in our society. After 300 years of medical progress, there are women who insist on having children the same way they did in the 1700’s or before. The public’s desire for interventions varies and will likely continue to fluctuate between both extremes as we evolve as a community throughout our future.
References


