BALANCING COST, HEALTHCARE QUALITY, AND ADVANCED MEDICAL TECHNOLOGY IN PREGNANCY, LABOR AND DELIVERY

BY

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The field of bioethics gained both social and political recognition in the 1970s as a result of increasing medical technologies throughout the 1960s. The American Board of Obstetrics and Gynecology was founded in 1927. This led to the first appreciation of obstetrics and gynecology as a specialty within the United States healthcare system. Technological advances in medicine have contributed to soaring costs within the field of obstetrics and prenatal care. These rising costs of American births have led to patient concerns over costs of pregnancy, including prenatal care, labor and delivery. As a society, we have to determine what can be done to contain these costs, but still be able to provide optimal care for the mother and unborn child throughout the entire course of pregnancy. Even though technology has helped to increase successful deliveries and maternal and fetal outcomes, it does give rise to several ethical issues involving policies and priorities within reproductive health. Not all medical technology has led to positive outcomes, as it is not always used appropriately, and can be associated with increased cost and decreased availability.

This thesis begins with a historical overview of pregnancy and labor within the United States of America including the increasing use of assisted reproductive technologies, as well as looking at prenatal care today. The second chapter describes prenatal care in Germany. The third chapter explores the Indian healthcare system in regard to prenatal care. Looking at the healthcare systems of Germany and India will allow me to determine which practices of those countries could potentially benefit the
United States’ healthcare system to help lower cost in terms of maternity care. This thesis concludes with a summary and recommendations to reduce costs regarding prenatal care within the United States. This is an important ethical issue as not everyone is able to afford the highest quality prenatal care and many patients are left with medical bills that they are simply unable to pay.
INTRODUCTION

The idea for this thesis was created in part after an internship I completed throughout the summer of 2013, working under Dr. Margaret Lee OB/GYN. Throughout my time spent working with Dr. Lee, I fell in love with the field of obstetrics and gynecology; specifically the aspect of pregnancy involving the overall cost of prenatal care, labor and delivery. After completing my Bachelor of Science in biology from Elon University, I enrolled in Wake Forest University’s Masters of Arts in Bioethics to begin my journey in the field of bioethics. Throughout my internship and time here at Wake Forest University, I was shocked to learn how the United States in a sense over-medicalizes pregnancy. Patients tend to have unrealistic expectations from their healthcare providers and in return, healthcare providers feel the need to meet these somewhat unreasonable expectations, all in which drive up the skyrocketing cost of prenatal care. The unaffordable cost of prenatal care for some can result in health disparities in prenatal care, solely based on cost. The use of medical technology is not always beneficial and in fact there are times in which less technology could provide the same outcomes. In order to address these financial burdens of American pregnancies I recommend several ways to decrease the cost of pregnancy within the United States after comparing the cost of pregnancy in Germany as well as India. I use Germany and India as two examples of countries whose healthcare systems lie on either side of the spectrum in comparison to the United States. On one end, there is Germany, a country that spends nearly as much money on healthcare as the United States does. On the other end of the
spectrum, there is India; a society where the caste system exists and translates into their healthcare seeking and delivery practices. An individual’s rank in the caste system often reflects her health, including genetics and early environment, as well as her health opportunities due of lack of social mobility (Kowal and Afshar, 2015). The caste system may act as a barrier, which physically limits one’s ability to seek medical treatment when needed. Using these considerably different countries will help provide insights about the United States’ spending practices regarding maternity care.

The purpose of this thesis is to bring attention to the financial burdens pregnant American patients are enduring due to medical technology, to compare healthcare systems in Germany and India in regard to pregnancy, and to make specific recommendations in hopes of reducing future costs of prenatal care within the U.S. The costs patients incur can be broken down into three categories: prenatal care, labor and delivery, and assisted reproductive technologies. This thesis also looks at seeking improvements in prevention, treatment, and birth outcomes for both pregnant women and newborns, while trying to ensure that cost and medical technologies do not become too advanced and used in ways that are not efficient for the healthcare system and the patient. Looking at the costs of pregnancy throughout the stages of gestation, I suggest future steps the United States can take and practices the country can adapt from Germany and India, such as a more extensive use of midwives, in order to reduce the cost of prenatal care and further develop as a more affordable healthcare prevention measure for everyone.

The topics explored in this thesis are discussed through a bioethics lens. The field of biomedical ethics is interdisciplinary as it is one field of study that involves several
disciplines. One can take a normative ethics approach toward answering prenatal care questions in asking questions such as, “What ought to be done about the cost of prenatal care?” “What ought not to be done?” “Who should be the people to decide this?” (Sulmasy and Sugarman, 2001). These thought-provoking questions can be dated back to centuries ago, to the times of Hippocrates. As the Hippocratic Oath, the oath taken by physicians upon medical school graduation to uphold ethical standards, states, “With regard to healing the sick, I will devise and order for them the best diet, according to my judgment and means; and I will take care that they suffer no hurt or damage” (Oath of Hippocrates). However, protecting against all physical hurt and damage can create significant financial burdens.

Beauchamp and Childress are known as the fathers of the biomedical ethics revolution, which began in the 1970s and led to the early 1980s. Together they created a framework of principles for biomedical ethics. The framework of principles consists of respect for autonomy, non-maleficence, beneficence, and justice. Respect for autonomy emphasizes the importance of individual freedom and choice. Non-maleficence suggests, “above all, do no harm.” This principle entails that basic rules in common morality are the requirements to avoid causing harm, such as do not kill, do not cause pain, do not disable, do not deprive of pleasure, do not cheat, and do not break promises. Third, beneficence requires physicians to remove all harms and to further the benefit of the patient. Lastly, justice entails that each person in society has been treated justly if they have been treated according to what is fair, due, or owed (Beauchamp and Childress, 2009).
In terms of prenatal care, a patient’s autonomy can be respected on a basic level when she chooses her obstetrician, decides whether she wants to find out the sex of her fetus, or even when she schedules her prenatal appointments at her convenience. On a deeper level, her autonomy can be further expressed when she either forgoes or decides to go through with fetal genetic testing, or decides to have a cesarean section as opposed to a vaginal birth. Non-maleficence certainly applies to both the physician as well as the mother. The physician is caring for both the mother and the fetus, and the mother is not only responsible for her own health, but also for the health of her unborn child. To uphold this principle, the physician should keep in mind not to go overboard in terms of fetal genetic testing as it may cause more harm than good, which will be discussed later in this thesis. Prenatal care as a medical specialty upholds the principle of beneficence as the physician seeks to benefit both patients: the mother and her unborn child. Prenatal care has a goal of having positive birth outcomes, keeping the mother healthy until birth as well as post-partum. Secondary prevention measures can be seen as a way of removing future harms and will be discussed in detail later. Lastly, the cost of prenatal care, labor and delivery, and assisted reproductive technology raises concerns about the principle of justice. The cost of this care too often acts as a financial barrier for patients, especially for assisted reproductive technologies.

The first chapter of this thesis begins with various definitions of prenatal care provided by the World Health Organization (WHO) and The American College of Obstetricians and Gynecologists (ACOG). The chapter then takes a historical view of the role and use of prenatal care within the United States. The history and roles of midwives are examined as they became more popular, beginning in the late 1600s as an expansion
of European practices. Prenatal care today is further studied, as obstetrics and
gynecology have become specialized fields within medicine. Several factors contributing
to the cost of pregnancy are also addressed. Lastly, the chapter concludes with two case
examples looking at some of the consequences of over medicalization and further
developments in reproductive technology.

Chapter II takes a look at Germany and its healthcare system and how this
country regards pregnancy. Germany’s healthcare system is drastically different from
India’s, perhaps more comparable to that of the United States.’ This chapter begins with
an overview of the country’s healthcare system as a whole and looks at its sickness funds,
mandatory public health insurance, private health insurance, and supplementary private
health insurance. Germany has very extensive prenatal care, which is state funded if a
patient is unable to pay. Further, a prominent midwife culture exists beyond the birthing
process. The state assists in finding patients a midwife and aids in payment. In this
chapter I discuss the Cost Containment Act of 1977, which set up guidelines for
physician fees, hospital rates, prices of pharmaceuticals, and other supplies to control the
cost of spending on healthcare as Germany ranked second highest in spending on
healthcare. The chapter concludes with a case example of the recently pregnant 65-year-
old mother of 13 who gave birth to quadruplets.

Chapter III discusses the healthcare system of India in regard to prenatal care. I
chose to research this country after a month long study abroad trip in 2012 which focused
on the business and culture the Indo Gulf. As I was overjoyed with India’s architecture
and lifestyle, one particular event truly stood out to me. The last day before we left to
come home, I ended up in the hospital. On the verge of passing out, I was escorted from
the Deloitte office in Mumbai and brought to the nearby private hospital. It turned out I was extremely dehydrated and needed to drink some water. I was at the hospital for only a few minutes until a doctor and couple of nurses began to help me out. Throughout my hour and a half hospital stay I was given intravenous saline, and sugar pills, all for $4.00 USD in which Deloitte offered to pay. How was all of that possible?

Within large, better-developed cities of India, the quality of prenatal care is greater than that of rural parts of the country; however, India contributes to a high percentage of cesarean sections. There is a slow movement toward all natural births, which include the use of midwives to decrease the high rate of maternal mortality. Additionally, the Maternal Health Program, a government funded program which aims toward reducing maternal mortality, is discussed. This chapter ends with a case analysis of the Maternal Health Program to explore its efficacy.

Chapter IV discusses suggestions, recommendations and conclusions to reduce costs of prenatal care within the United States. After looking at the empirical evidence provided in chapter I, I strongly believe that this field of medicine lacks the attention it deserves when it comes to addressing financial and ethical issues. I outline five key recommendations that should be implemented by healthcare providers as well as state legislators. I propose that by forgoing unnecessary medical testing and reverting to traditional prenatal care and birthing methods, such as more extensive use of midwifery, pregnant women, fetuses and newborns will not be medically disadvantaged and could potentially be better off, and significant patient financial costs could be reduced in the United States as a result. By these forces working together, I believe that in due time, this significant problem can be considerably reduced.
The purpose of this chapter is to provide an overview and brief history of prenatal care within the United States. First, I describe standards of prenatal care promulgated by various professional organizations. Next, I discuss the role and effectiveness of prenatal care. I also explore the history and role of midwives, and discuss prenatal care today. In the latter half of the chapter I discuss several contributing factors to the cost of pregnancy, including the use of assisted reproductive technologies. I conclude with two case examples regarding the cost of pregnancy in the United States and their ethical implications.

History of prenatal care

A lengthy history of prenatal care exists within the United States. Several definitions of pregnancy and prenatal care are present among different organizations. The World Health Organization (WHO), describes pregnancy as:

The nine months or so for which a woman carries a developing embryo and fetus in her womb – is for most women a time of great happiness and fulfillment. However, during pregnancy, both the woman and her developing child face various health
risks. For this reason, it is important that all pregnancies should be monitored by skilled care providers.

The idea of giving birth in the United States is embedded with the notion that highly medicalized prenatal care is critical not only for the fetus, but for the mother as well, as she welcomes her newborn into the world. Kukla and Wayne describe medicalized pregnancy as “interpreting pregnancy itself as a disruption to health that necessarily requires expert medical intervention and thinking of pregnancy as primarily about health and illness” (Kukla and Wayne, 2011, p. 2). Within preventive services, prenatal care is the most used in the United States (Moos, 2006). The medicalization of pregnancy does come with both benefits and burdens; it is essential to balance those benefits and burdens to ensure a safe and healthy pregnancy for the mother and unborn child. Few OB/GYNs would agree that over-medicalizing pregnancy promotes favorable outcomes for both the mother and newborn. However, many might agree that the medicalization of pregnancy has significantly decreased several risks, including death from placenta previa (Kukla and Wayne, 2011).

Even though there are movements toward making prenatal care more accessible to everyone, its impact and primary purpose are debatable. Do data show that prenatal care prevents congenital abnormalities, pregnancy-induced hypertension, prematurity, prenatal deaths, or even maternal deaths? Does a dose-response relationship exist, where more prenatal care provided yields a preferred birth outcome? Is there reason to question current prenatal care, or should we accept it as a good standard of care?

A Scottish physician, J.W. Ballantyne, is known as the father of prenatal care, as
he concluded that prevention must occur throughout the course of pregnancy, not just post-partum as previously determined (Moos, 2006). He observed that most care was provided by physicians throughout labor and delivery, and that this care did not do much to reduce mortality and morbidity resulting from congenital abnormalities, fetal diseases, and multiple births. Dr. Ballantyne further concluded that maternal consumption of and exposure to alcohol, nicotine, lead, and infectious diseases such as syphilis and tuberculosis posed major threats to the fetus. Once he observed these external threats, he began promoting certain prenatal treatments in hopes of significantly improving pregnancy outcomes.

Specifically, Dr. Ballantyne suggested rest and general hygiene for all women throughout pregnancy. Additionally, he recommended the induction of premature labor for women who had had a previous stillbirth due to a large fetal size (Reiss, 1999). He ultimately determined that prenatal care would vary amongst all patients and would depend on the development of medical technology and the accuracy of the diagnostic techniques (Reiss, 1999).

Dr. Ballantyne’s interest in prenatal care quickly influenced medicine in the United States by the year 1907. By this time New York City hospitals were offering prenatal care to pregnant women no earlier than the beginning of the third trimester of pregnancy. Just thirteen years later by 1920, prenatal care was widely expanded to care for women earlier in gestation and to see patients on a much more regular basis. This was accomplished through the Maternity Center Association (MCA). Nurses saw pregnant women in their homes every two weeks or so until the seventh month of gestation; after this time, they were seen weekly until they had given birth. At these
home visits, nurses would look for signs of fetal distress, check the patient’s blood pressure and urine, check the fetus’ heartbeat, discuss the patient’s diet, hygiene, exercise habits, and prepare for the newborn to arrive (Moos, 2006). Throughout the early 1920s there was great debate as to whose job it was to take care of pregnant women. The MCA advisors believed that public health nurses carried the duty and that the nurses would be able to teach the soon-to-be moms about nursing care and give them the advice they would need. However, medical doctors saw this issue differently as they believed they were the ones who ought to hold the responsibility of looking after these patients, and take control over the public health nurses (Moos, 2006).

The first basic framework for the approach to prenatal care was set by 1929. The first obstetric visit is scheduled just before sixteen weeks of gestation with follow up visits at twenty-four weeks, then every two weeks beginning at twenty-eight weeks, and weekly visits beginning at thirty-six weeks (Moos, 2006). The same measures were taken at these visits that were taken at the home visits with the public health nurses.

The Expert Panel on the Content of Prenatal Care commissioned by the U.S. National Institutes of Health in 1989 identified areas within prenatal care that were strong and should continue to be practiced, as well as the areas that should be discarded or revised for more beneficial use. The outcome of this evaluation was the NIH Report, *Caring for our Future: The Content of Prenatal Care*, (National Institutes of Health, 1989). This comprehensive list sparked major debate in pediatrics, obstetrics, and gynecology. Perhaps the most controversial recommendation was to consider reducing the number of prenatal visits for low risk patients from the previously mentioned ACOG schedule of fourteen visits to eight visits. The panel suggested a “preconception” visit,
followed by visits at six to eight weeks of gestation, twenty-four to twenty-eight weeks, thirty-two, thirty-six, thirty-eight weeks, and then weekly until birth. It is important to keep in mind that the panel did not recommend that prenatal care be abolished altogether, but that it should be improved early on in gestation; specifically emphasizing the preconception period as well as the psychological aspects of bearing of a child, and focusing on primary prevention prenatal care needs (National Institutes of Health, 1989).

Since the 1989 recommendation was submitted, studies have been published on the frequencies and outcomes of prenatal visits. It was found that a reduction in the number of prenatal doctor’s visits could be implemented without an increase in any of the negative maternal and fetal outcomes that were reviewed. The studies also noted that women from developed countries might not be comfortable with reduced prenatal visits and that their expectations of medical care might be higher (National Institutes of Health, 1989).

Throughout the 1990s the question resurfaced over the relationship between prenatal care and the prevention of premature birth. Was prenatal care truly decreasing premature birth rates? Medical doctors and researchers determined that prenatal care alone was not an effective measure in decreasing premature births. This question sparked several studies on the topic. The expected results were to be somewhat of a dose-response relationship, such that increased prenatal visits indicated improved birth outcomes, including full term babies that were of healthy weight. However, the majority of the results of these studies showed that an increased number of prenatal visits did not necessarily produce increased birth weights of newborns. Women who do receive prenatal care early on are more likely to have healthier babies than those who do not, due
to the fact they have access to this care through social and economical means.

As of 2007, The American College of Obstetricians and Gynecologists has published updated guidelines that these visits occur monthly before 28 weeks of gestation, followed by visits every two weeks between 28 and 36 weeks, and then weekly until birth, (ACOG, 2007). The first prenatal visit will include a complete physical exam as well as medical history. Risks will be discussed involving drug and tobacco use. Additionally, physicians will encourage pregnant women to enroll in prenatal classes and practice healthy lifestyles throughout their pregnancy. Several routine tests will also be performed including blood type screening, platelet count, hepatitis B, syphilis, chlamydia, screening for gestational diabetes, HIV testing, cervical cancer screening, and a urine dip for protein and glucose evaluations. Further prenatal fetal genetic tests are required to be offered by the obstetrician. These include aneuploidy, cystic fibrosis for all patients, hemoglobinopathy for patients of African, Southeast Asian, and Mediterranean descent, and Tay-Sachs for patients of Ashkenazi Jewish decent (ACOG, 2007). This scheduled visit approach assumes that every pregnant woman will benefit from these routine medical visits. According to ACOG, the standard for low risk pregnancies is fourteen prenatal visits (ACOG, 2007).

The CDC has updated its recommendation for the Tdap vaccination during pregnancy indicating it is necessary between 28 and 36 weeks of gestation. This vaccination will be administered to protect against life-threatening diseases including tetanus, diphtheria, and pertussis (CDC, 2013). Throughout these weeks of gestation, repeated STD testing will be performed. Between 36 weeks and birth, ultrasounds will
be performed to view the fetus’ position in the womb, and labor education will be discussed, along with postpartum contraception (ACOG, 2007).

In past times, the main focus of prenatal care was worry over eclampsia, or seizures in a pregnant woman that are not related to an existing brain condition. As time went on, more concerns were added to the list. Post World War II, infant mortality was a major concern, and even more recently, reducing premature birth and reducing low birth weight were listed as prenatal concerns. It has been shown that those women who receive earlier prenatal care have favorable birth outcomes; therefore, increased efforts have been made to improve early access to prenatal care to more women to hopefully decrease premature births, as well as eliminate the costly effects of prematurity.

Even though infant mortality did significantly decrease throughout the 20th century, researchers believe that it cannot be directly correlated to medical advances in prenatal care. They attribute the decreased mortality to improved sanitation, antibiotics, transfusion therapies, and neonatal intensive care units. Some medical professionals conclude that we are saving more low birth weight newborns rather than delaying birth to allow the baby to grow more and achieve a higher birth weight (Moos, 2006).

According to the Maternal and Child Health Bureau, ten years ago the United States ranked 28th among other industrialized nations in infant mortality. For example, “Sweden, Japan and Hong Kong had infant mortality rates half that of the United States” (Moos, 2006, p. 279). Infant mortality rates show “differences in the health status of women before and during pregnancy as well as the quality and accessibility of primary care for pregnant women and their infants” (Moos, 2006, p. 279). The prenatal care standard schedule in the U.S. is more intensive than that of most countries, yet somehow
the infant mortality rate is extremely high.

It is a critical time in the healthcare sector to determine what can be done on the prevention front in terms of prenatal care. An effective prenatal care system must benefit soon-to-be mothers, newborns, and their families. What opportunities and limitations of prenatal care exist? In a book entitled *Expecting trouble: What expectant parents should know about prenatal care in America*, Strong stated:

> “The objective of prenatal care is essentially the same throughout the industrialized world. Yet, it is in the United States, where care is provided with such high-tech flourish, that pregnancy outcomes are among the worst. We spend more for it, provide more of it, and have intensified it more than any nation on earth. In return, our prematurity, low-birth weight and very low-birth weight rates have accelerated” (p. 188).

Of course standardized prenatal care is advantageous to both the mother and the fetus. Morbidity and mortality rates would clearly not decrease without it. Both primary and secondary prevention measures can be achieved through prenatal care. Primary prevention is designed to prevent a disease or condition from initially occurring (Centers for Disease Control and Prevention, 2013). Secondary prevention focuses on identifying a disease at its earliest stage and attempts to reduce the impact of the disease on the human body (Centers for Disease Control and Prevention, 2013). Several secondary prevention measures can be achieved through prenatal care such as maternal antiviral drugs to decrease vertical transmission of HIV and Rhogam to prevent iso-immunization for potential future pregnancies.
Further examples of secondary prevention include measures taken to detect pregnancy-induced hypertension with a decrease in eclampsia, the determination of twin-to-twin transfusion syndrome with a timed delivery to optimize survival of both twins, detection of intrauterine growth retardation and follow ups to identity fetal distress to provide quick medical interventions, and the transfer of pregnant women to high-risk facilities so their newborns will be provided with optimal care upon birth (Moos, 2006). Technologies used to enable secondary prevention can include ultrasounds, genetic testing and oral glucose tolerance testing for gestational diabetes.

The advancements in medicine and medical technology have dramatically changed prenatal care and obstetrics. Dating back to ancient traditions, the initial birth attendants were all women. In primitive tribes, their mothers or other female family members often accompanied women in labor. Ancient Egyptian pictographs show women giving birth while sitting or squatting. Additionally, midwives and birthing stools are mentioned throughout the Old Testament of the Bible (Drife, 2002).

The history of obstetrics is closely linked with the history of midwifery. The ancient Greek physician Soranus of Ephesus described the process of labor and delivery and the steps that should be taken to make the mother feel the most comfortable. He directed that throughout labor the woman should remain in bed until delivery of the newborn could not wait any longer, and then she should be moved into a birthing chair. At this time, a midwife would sit across from her, coach her through the labor process and deliver the baby (Drife, 2002).

Prenatal care and obstetrics made significant technological advancements and by 1670 forceps were introduced to the labor process by French physician Hugh Chamberlen
(Drife, 2002). The Chamberlen forceps were sold to the French government and were designed with curves to fit around the newborn’s head. Technology further advanced with the development of asepsis and anesthesia in the 19th century. This allowed cesarean sections to be performed as an alternative to traditional vaginal births. The first successful cesarean section where the mother survived was in Ireland in 1738. The first successful operation in America was in 1827 (Drife, 2002). Further, antibiotics and other medications were developed to help mothers experience a safe and healthy pregnancy.

Prior to the 1750s within the United States, medicine was viewed as a form of witchcraft (Feldhusen, 2000). Throughout pregnancy women viewed birth not with joy and excitement, but rather with fear of death. Husbands did not attend births throughout Colonial times as it was considered indecent. Doctors were sparse and tended not to be well educated considering medicine was not well respected at the time. Doctors became more involved in birth as belief in witchcraft declined in the mid 1700s, and more urban middle class women shifted to using doctors throughout their pregnancies (Feldhusen, 2000).

This shift toward professionalism in medicine and trust in medical doctors came about from the formation of two kinds of medical hospitals in the late 1700s - early 1800s. Voluntary hospitals were first operated by local charities and nondenominational churches. Shortly thereafter, public hospitals were funded by the federal government, including The Pennsylvania Hospital in Philadelphia, which became the first general hospital in America to care for the sick (Feldhusen, 2000).

By the 1800s schooling was available in New York City for women who were interested in receiving a medical education in midwifery (Feldhusen, 2000).
Around the turn of the century into the late 1800s midwives were not in a position of power. Even though they were able to receive some schooling, they were not viewed as professionals and did not make much money. However, physicians were becoming wealthier and moving up into the middle and upper classes. Eventually by the 1900s physicians were involved in nearly half of the nation’s births, delivering upper and middle class babies, while midwives took care of women who could not afford a physician’s care. Shortly after World War II, Columbia-Presbyterian-Sloan Hospital in New York City became the first medical institution to employ nurse-midwives. From 1950 to 1970 the medical field grew from 1.2 million people to 3.9 million people, and the national health care expenditures grew to nearly $72 billion (7.3% of GDP) (Feldhusen, 2000). By 1970 a National Certification in nurse-midwifery educational program was in place and three branches of the United States military services began to train and use nurse-midwives. Also during this decade, birthing centers throughout the country were developed and used as alternatives for hospitals. However, tensions were still present between midwives and physicians (Feldhusen, 2000).

Prenatal Care Today

The field of obstetrics and gynecology today is an extremely specialized field within medicine. This specialty requires training throughout medical school, residencies, internships, and even fellowships. For many of these specialized providers, their salary comes from prenatal visits and deliveries, and can be dependent upon advances in medical technology. An alternative to using an obstetrician throughout labor and
delivery in a normal pregnancy is a midwife. There are various levels of practicing midwives in the United States, as some have more education than others, allowing their credibility to be higher.

There are still several barriers that prevent midwives from being as prominent in the workforce as they could be. Three types of credentialed, professional midwives exist in today’s society: certified midwives, certified nurse-midwives, and certified professional midwives. Most midwives in the United States enter midwifery education and training through special certifications to qualify the midwife for his or her midwife license. This can be accomplished through university degree or certificate programs. A certified midwife is one who obtains an American College of Nurse-Midwives certificate, while a certified nurse-midwife obtains both a nursing and American College of Nurse-Midwives degree. These midwives can hold a bachelor’s degree in any field and typically receive some level of graduate education. They are able to prescribe medications and perform medical examinations. Lastly, these midwives are able to practice in birthing centers as well as hospitals. Certified professional midwives are certified by the North American Registry of Midwives; this qualification allows this group to practice in and out of hospital settings, including the patient’s home. This classification of midwives can be nurses or certified nurse midwives before they become certified professional midwives. CPMs typically reduce their patient load, delivering anywhere from 3-6 newborns per month (American College of Nurse-Midwives, 2015).

Direct-entry midwives are not credentialed in the United States. A direct-entry midwife is one who is an independent practitioner and is self-educated through an internship, or has been educated independently through a midwifery school, college, or
university program. These midwives are educated in a field other than nursing and seek a basic certification as a licensed or registered midwife. Once they complete the basic certification process, they are immediately able to care for women and newborns in out-of-hospital settings, lending to their “direct-entry midwife” title, implying they do not practice prior to their basic certification. This group faces a lot of criticism today, primarily due to their lack of schooling and basic level of certification, as they are legally permitted to practice in some but not all states within the U.S. (American College of Nurse-Midwives, 2015).

Keeping up with the ACOG recommendations, the Women’s Health Department in the U.S. Department of Health and Human Services provides recommendations for women seeking prenatal care. They simply recommend that seeking early and regular prenatal care will increase positive birth outcomes for the newborn as well as maintain the health of the mother. The office persuades pregnant mothers to seek care by stating that “babies of mothers who do not get prenatal care are three times more likely to have a low birth weight and five times more likely to die than those born to mothers who do get care” (Office on Women’s Health, 2015).

Primary prevention measures are taken prior to pregnancy. It is recommended that females take 400 to 800 mcg of folic acid everyday for at least three months before they get pregnant. This will reduce the risk of birth defects that affect the brain and spine of the newborn. The Office also recommends cessation of drinking alcohol and smoking, as well as getting all preexisting medical conditions under control. Women are advised that after becoming pregnant, they should eat healthy fruits and vegetables, which include iron, but should avoid foods that have mercury including fish. Lastly,
pregnant women are advised to maintain a healthy weight by exercising frequently and to try to avoid illness (Office on Women’s Health, 2015).

Factors Contributing to the Cost of Pregnancy

The United States of America provides the world’s most expensive maternal health care. Several factors are included in driving this cost. Several studies have shown that both medical students and practicing physicians are unaware of the cost of testing they order and perform. Within medical education, it is a “critical responsibility of medical school and residency programs” (Cooke, 2010, p. 1255) to educate future physicians about the cost of what goes into the medical field, Dr. Molly Cooke, the direct of the Academy of Medical Educators claims. A 2011 survey conducted on behalf of the Association of American Medical Colleges, found that nearly 60% of medical schools in the United States and Canada include some content on health care costs, however the amount of time spent on this topic varies (Passiment et al., 2011). Additionally, a survey taken by teaching hospitals in 2011, which sponsor more than 2/3 of residency programs in the U.S., found that only 40% made sure that their residency programs included some material on health care costs (Miller et al., 2011). The challenge of determining which tests are necessary and which are not is complicated by the reality that the cost of testing – costs to patients and to the system – affects what is viewed as necessary.

In 1990 a study was conducted where the screens in which physicians ordered specific medical tests were altered. The study was conducted in an academic primary care medical practice. The experimental group of physicians ordered medical tests
through a computer screen that displayed the cost of each test and the total cost of the patient’s charges that day. The control group of physicians did not have any prices displayed on the computer screen while ordering tests. By the end of the study, the researchers concluded that displaying the cost of diagnostic tests significantly reduced the number of tests as well as the cost of tests ordered (Tierney et al., 1990). Although the study was conducted in an outpatient clinic on adult patients, if pregnant women were studied, there may be a reluctance to reduce costs considering two patients are involved: the mother and the unborn child; however if prices were still displayed on computer monitors today, or if physicians were made more aware of the cost of medical testing and communicated that to patients, health care costs could potentially decrease.

Another factor driving up the costs of maternity care is cesarean sections. In 2009 The American College of Obstetricians and Gynecologists reported that nearly 32.7% of all births were performed by cesarean section, the highest percentage of cesarean sections ever to be recorded within the United States (ACOG, 2013). This percentage accounts for 1.3 million births and costs the health care system approximately $15-16 billion annually (Resnik, 2006). The overall cesarean rate has increased significantly considering it was just 5.5% in the year 1970 (Resnik, 2006). As this number has increased over the years, there has been a strong movement to reduce the number of cesarean sections performed.

In response to the drastic increase in cesarean sections in recent years, The National Institute for Health and Care Excellence (NICE), in the United Kingdom, has recently published updated recommendations and guidelines as to when it is medically appropriate to perform this surgery. The extensive recommendations include breech presentation of
the fetus, placenta previa, and mother-to-child transmission of maternal infections including HIV. The guidelines surprisingly list maternal request for cesarean section but claim that alone is not a good enough reason for a physician to carry out the surgery. More medical reasons need to be present in order for the procedure to be performed, according to NICE. Cesarean sections should be performed if there is an immediate threat to the life of the woman or fetus. The report goes into further detail describing exact pain medications that should be made available to the mother during the surgery, as well as after care that should be provided (NICE, 2011).

An increased number of cesarean sections can be linked with an increased prevalence of type 2 diabetes in women as their babies can grow to become too large be born vaginally. Maternal chronic diseases, obesity, and health problems such as asthma can lead to increased cesarean sections as well. In these cases surgeries are performed to benefit the mother as well as the fetus. However, there are still many that are performed without sufficient medical indications, which helps to account for the skyrocketing prevalence. A study conducted in 2011 by the nonprofit U.S. Childbirth Connection concluded that 28% of women who delivered their firstborn through cesarean section did so because they felt pressured by their physicians (Declercq et al., 2013).

There are valid medical reasons to perform cesarean sections, but some physicians may simply prefer them to vaginal births even when they might not always be necessary. Physicians are often paid more for cesarean births and therefore are more likely to perform them. Additionally, OBGYNs are the second most commonly sued physicians in the country, following neurosurgeons (Yang et al., 2009). According to a 2008 study, nearly half of all obstetricians are sued at least once before they turn 40 years old.
(American Medical Association, 2010). Obstetricians who were surveyed in 2012 reported that they performed cesarean sections out of fear of being sued by their patients for poor birth outcomes (Klagholz and Strunk, 2012).

The rate of inducing labor has increased as fear of depleting oxygen levels could harm the fetus. In 2009 some hospitals in Utah stopped inducing labor prior to 39 weeks of gestation in women who have not previously given birth. As a result, cesarean section rates were nearly 30% lower than in facilities that had continued to induce labor under those circumstances (Oshiro et al., 2009).

Another factor driving up prenatal care costs is cesarean delivery upon maternal request. Cesarean delivery on maternal request is a prelabor cesarean delivery in the absence of any maternal or fetal indications (Committee on Obstetric Practice, 2013). It can further be defined as a procedure when a patient asks a physician to schedule an elective cesarean section on a date, which is convenient for her, before the onset of labor, and without being deemed medically necessary (Plante, 2006). It can be estimated that nearly 3% of all births in the U.S. are cesarean delivery on maternal request. Limited data are available on these procedures, as cesarean sections on maternal request have not been researched or tracked independently. Not much explanation has been given for this increase in cesarean sections, but some proposed arguments include that women are waiting until they get older to have children, and fear the medical risks of vaginal births. This argument does not hold because all age groups have seen an increase in cesarean sections within the United States. A second possible explanation for the growing cesarean sections is that women are sicker; this theory was disproved in a logistic regression model as “the increase in primary cesarean rate was accompanied by an
overall decline in medical risk profile” (Plante, 2006). This could suggest that the rate of increased cesarean sections is related to the behaviors of physicians, patients, and hospital practices.

Some women and physicians prefer cesarean sections based on the convenience factor, in which they are able to schedule childbirth at a time that is convenient for them. They are able to schedule time off work, have relatives come in from out of town, and arrange for their preferred physician to assist in the birthing process (Plante, 2006). Other patients are afraid of pain and vaginal deliveries, and fear that vaginal deliveries may adversely affect their future quality of life.

Potential benefits of cesarean sections include less risk of damage to the mother’s pelvic floor, lower risk of urinary or anal incontinence, lower risk of stillbirth, lower risk of birth trauma to newborn including intracranial hemorrhage and brachial plexus injury, and lower risk of ischemic encephalopathy to the newborn (Plante, 2006). However, it is important to note that not all cesarean sections are alike. Emergency cesarean sections performed during labor after something has gone wrong are more likely to have a worse outcome than a planned elective surgery (Plante, 2006).

As with any surgical procedure, there are associated risks. Injury to the maternal bowel, bladder, or pelvic vasculature is possible, along with increased risks of infection and even the chance of rehospitalization. The rate of rehospitalization with an elective cesarean section is double that of a vaginal delivery (ACOG, 2013 and Plante, 2006). A newborn is more likely to have higher rates of respiratory distress, need resuscitation, and be cared for in the neonatal intensive care unit if given birth by cesarean section on maternal request (ACOG, 2013; Plante, 2006).
The average length of stay in a hospital bed is more than twice as long for cesarean deliveries as for vaginal deliveries (Plante, 2006). Additionally, women are twice as likely to be readmitted to the hospital after a cesarean section than after a vaginal delivery, and they stay longer in the hospital when they return (Plante, 2006). Lengthy hospital stays and increased readmission rates both contribute to the cost of prenatal care.

As there are several factors contributing to the growing 32.7% cesarean section rate within the United States, efforts can be made by both patients and physicians to help reduce this rate. If chronic disease rates are decreased in mothers such as diabetes and obesity, this could lead to more vaginal births and fewer cesarean sections. Physicians could fully explain the risks and benefits of both cesarean sections and vaginal deliveries without trying to persuade their patients; labor does have associated risks as well as some related pain. Finally, if cesarean sections are needed for births, they should be reserved for emergencies, not for physician or maternal convenience. This will prevent lengthened hospital stays, and readmissions, and help to contain labor and delivery costs.

In addition to the previously mentioned factors leading to the increased prevalence of cesarean sections, there has been great debate over vaginal birth after cesarean section, VBAC. Prior to the 1970s, after a woman delivered by cesarean section, she had no choice but to deliver her future children by the same method, paying tribute to the saying “Once a cesarean, always a cesarean” (Bernard, 2005). Until 1996, women who had prior cesarean sections were offered a trial of labor; however, the number of VBACs has decreased, contributing to an overall increase in cesarean sections (Cunningham, 2010). A reason for this was a fear that the woman’s scarred uterus could rupture in future deliveries. As of recently, there is great interest in the possibility of
allowing women to deliver vaginally after previously giving birth by cesarean section; however, there are no randomized clinical trials comparing VBAC to vaginal births (Bernard, 2005). The little scientific data that pertains to VBAC is extremely flawed and has led to some poorly informed decisions. One endpoint of a clinical trial used was maternal mortality following a successful VBAC. In reality, the risk of maternal mortality from an unsuccessful VBAC is small, and exists where a trial of labor is attempted and failed, and an emergency cesarean section is needed. Additionally, data did not address infant mortality and morbidity with unsuccessful VBAC (Bernard, 2005). Lastly, the few studies that were done on VBAC were performed at major universities that had top of the line equipment and professional staff that were available 24 hours a day. The data have minimal relevance to smaller hospitals nationwide that are not equipped with the necessary surgical tools in case of emergencies due to VBAC (Bernard, 2005).

In 1999 ACOG took a second look at the VBAC controversy, as they noted an increase in uterine rupture associated with VBAC but they still did not make any recommendations for VBAC as the data are extremely limited. The only recommendation that was made was that clinicians should offer VBAC in situations where physicians were “readily available throughout active labor, capable of monitoring labor and performing an emergency cesarean delivery” (Bernard, 2005). Years later, by 2004, ACOG began disclosing the real dangers of VBAC as they arose, and discouraged physicians from it. It was found that women who attempt a trial of labor are twice as likely to have complications as those women who have a repeat cesarean section (Bernard, 2005). Further, their newborns are twice as likely to pass away, and if they do
survive, they are likely to face increased risk of permanent brain damage (Bernard, 2005). Additionally, 26.6% of patients who attempt a trial of labor will fail and not be able to have a vaginal delivery (Bernard, 2005). In these cases, maternal and fetal complications drastically increase; specifically, uterine rupture is 22% more likely to occur, and uterine separation along a previous scar is 15 times more likely (Bernard, 2005). Several other complications include hysterectomy, thromboembolic disease, endometriosis, and maternal death (Bernard, 2005).

There has obviously been great debate over VBAC, especially just within the past 30 years. If clinical research had been performed, and accurate data had been obtained, useful knowledge about VBAC would have been widespread, saving the health of mothers and fetuses, and lowering malpractice costs.

Another factor that contributes to the cost of pregnancy is assisted reproductive technology (ART), especially in vitro fertilization (IVF). IVF was first pioneered by a United Kingdom scientist and gynecologist Robert Edwards and Patrick Steptoe. The first successful IVF “test tube” baby was Louise Brown, born on July 25, 1978, who was actually conceived in a petri dish (Henig, 2006). Lesley and John Brown were unable to conceive after attempting to have a child for nine years. The couple was eventually referred to Dr. Steptoe who suggested a new technique of fertilization and re-implantation. Dr. Steptoe surgically removed an egg from Mrs. Brown’s ovaries on November 10, 1977, fertilized it with Mr. Brown’s sperm, and two days later, re-implanted the eight-cell embryo back into Mrs. Brown’s uterus (Henig, 2006). By mid-December, Dr. Steptoe confirmed that Mrs. Brown was finally pregnant. The media interest in this experimental procedure was indeed substantial. IVF had not been done
before and several reporters and tabloids offered the Brown family several thousand pounds for their story (Henig, 2006). IVF was first developed to overcome the problem of blocked fallopian tubes; however this technology has now been extended to homosexuals who would like to start families of their own, couples who cannot conceive due to other medical conditions, or for a variety of other reasons.

After the birth of Louise Brown, the use of assisted reproductive technologies to achieve fertility and the number of clinics providing these services increased in the United States. Women who undergo these fertility treatments are more likely to experience multiple births, as opposed to those who conceive naturally. Multiple births can lead to several complications for the mother and newborns including: preterm delivery, low birth weight newborns, and other pregnancy complications (Sunderam et al., 2013). These complications due to ARTs can indeed be costly to the patient. In 2010, for example, the average medical cost of a singleton newborn was estimated to be $9,329, where twins cost $20,318, and triplets $153,335 (Sunderam et al., 2013).

Additionally, the United States has one of the least regulated assisted reproduction industries among developed nations. Any use of technology that is available, will be utilized, as long as a patient is willing to pay for it. There are very few guidelines set indicating its appropriate use. A 2009 study investigated the economic impact of ARTs in selected developed countries, including the United States (Chambers et al., 2009). It was estimated that one round of IVF including hormone injections, egg retrieval, and embryo transfer, totaled an average cost of $12,513 in the U. S. (Chambers et al., 2009). Direct costs associated with ART include medical consultations, laboratory services, ultrasound scanning, hospital charges, counseling services, and administrative charges.
(Connolly et al., 2010). This cost can further be attributed to decreased availability, having to travel to specialized fertility clinics to receive treatments, no federal reimbursement for ART procedures or medications as of the year 2003, and as of 2009 only 5 states included IVF treatments in their health insurance policies (Chambers et al., 2009; Connolly et al., 2010).

The following cases discuss cost issues surrounding technology, the insufficient regulation of ARTs, and health coverage of maternity care.

Case examples

“American Way of Birth, Costliest in the World”

Several key issues involving maternity care are explored though a case example, “American Way of Birth, Costliest in the World,” which was published in 2013 in the New York Times (Rosenthal, 2013). The article follows a newlywed couple pregnant with their first child. The featured duo is your typical all American couple. They come from family oriented families, have stable jobs earning great salaries; however, their major concern throughout their pregnancy was the cost. How much was each test, each ultrasound, and each prenatal check up going to cost them? They had health insurance, however it did not cover maternity care. The couple went around from doctor to doctor and hospital to hospital, as if they were shopping for the cheapest price of maternity care; they were given ranges of $4,000 to $45,000. Physicians and administrators had absolutely no clue as to how much the total bill would be at the end of nine months (Rosenthal, 2013).
How is it that no one could estimate how much Mrs. Martin’s care would cost her? Not a single person had an explanation as to why there was an almost $40,000 difference to have a child. One could assume it would depend on the course of labor, depending on the necessity of a cesarean section or vaginal birth or various complications encountered throughout pregnancy. But still, how could that possibly account for a $40,000 discrepancy? No one knows the cost of health care, and better yet, no one can even estimate it. That is a problem.

As consumers of healthcare, we deserve to know the cost of the medical attention we receive. Yes we sign waivers to allow physicians to “do anything and everything” to benefit us and to keep us healthy, but at some point, the patient has to be made aware of the financial cost. That knowledge is owed to the patient.

Lastly, how is it possible to have health insurance without maternity coverage? As of 2012, only 12% of health insurance plans sold in the individual market offer maternity coverage. Often times this is insufficient because of waiting periods or deductibles that are as costly as labor and delivery. To help rectify this problem, beginning in 2014, The Affordable Care Act has required maternity care to be included in all insurance plans (Garrett et al., 2012). Something must be done to contain the cost of prenatal care. At some point, only the richest Americans are going to be able to afford it.

“Our Frozen Embryos Have a Right to Live”

A case that has been highly publicized recently involves actress Sofía Vergara and her ex fiancé, Nick Loeb in a custody battle over their frozen embryos they created together two years ago. This is an instance where costly, yet limited availability assisted
reproductive technology (ART) is used because the patients are able to afford it. This alone creates a lot of ethical, legal, and social policy problems that society will have to deal with because of the ways that ART has changed conception and impregnation. A New York Times article was written by Vergara’s ex-fiancé and published earlier this year in April (Loeb, 2015). The fate of the frozen embryos they created together remains unknown. Vergara would like the embryos to be “frozen indefinitely;” however, Loeb does not share that view. He states, “When we create embryos for the purpose of life, should we not define them as life, rather than as property?” He has offered to pay all expenses to carry the two female frozen embryos to term as well as expenses to raise them. He believes that keeping the eggs “frozen indefinitely” is “tantamount to killing them.” Loeb makes a pivotal point in his argument regarding gender roles in our society as he continues, “A woman is entitled to bring a pregnancy to term even if the man objects. Shouldn’t a man who is willing to take on all parental responsibilities be similarly entitled to bring his embryos to term even if the woman objects?”

This case in a sense falls on the other end of the spectrum where two individuals can clearly afford the advanced medical technology to achieve reproduction; however, we are seeing that this technology is not always used in the best circumstances and perhaps should not always be used when it is available. ART is a field that is largely unregulated in the U.S. at this time. If patients are able to afford the costly procedures, then they are able to seek all measures to achieve pregnancy regardless of the expense, and physicians are free to fulfill their requests. If regulations were to be developed, who should write them? What would they address? Perhaps there should be appropriateness criteria and price caps implemented for IVF and embryo transfer; perhaps insurance carriers should
be required to cover some portions of fertility treatments. This case raises significant ethical issues and it will be very interesting to see whether and how it (and other cases like it) might affect the future use of ART in the United States.
CHAPTER II

DISCUSSION OF THE GERMAN HEALTHCARE SYSTEM IN REGARD TO MATERNITY CARE

Overview of healthcare system

The ways in which developed countries throughout the world establish and finance healthcare systems vary considerably. Many healthcare systems are financed by the public sector; however, in several countries, including the United States, patients may have private health insurance (Wendt et al., 2009; Bodenheimer and Grumbach, 2002). Four modes of healthcare financing include: out-of-pocket payments, individual private insurance, employment-based private insurance, and government financing. Several countries, including Germany, finance their healthcare systems through employment-based private insurance that is government-mandated; however, Germany’s private health insurance is very different from what is most common in the United States. Even though Germany does deliver healthcare through private hospitals, the country still provides universal healthcare as it aims to ensure access for all of its citizens (Wendt et al., 2009; Bodenheimer and Grumbach, 2002).

Germany was the first country to mandate required health insurance (Wendt et al., 2009; Bodenheimer and Grumbach, 2002). An 1883 law required a
selection of employees and employers to make payments to sickness funds. This selected amount would be a percentage of each person’s salary. Sickness funds were intended to pay for the employees’ full medical expenses. In the early stages of these funds, only “industrial wage earners” who brought home less than $500 per year were included in these funds. As the program continued, it expanded its eligible population (Bodenheimer and Grumbach, 2002), and as of 2014, nearly 90% of the German population is covered by sickness funds (National Association of Statutory Health Insurance Funds (GKV-Spitzenverband), Germany, 2014). The majority of the population remains within the same sickness fund for their entire life; however, some switching of funds does take place. In 2002, Bodenheimer and Grumbach reported: “Forty percent of people (mostly blue-collar workers and their families) belong to funds organized by geographic area; 27% (for the most part the families of white-collar workers) are in nationally based ‘substitute’ funds; 12% are employees or dependents of employees who work in 700 companies that have their own sickness funds; and another 12% are in funds covering all workers in a particular craft” (Bodenheimer and Grumbach, 2002, p. 200).

Nearly 160 sickness funds in Germany exist, all of which are nonprofit (Khazan, 2014). All funds are required to cover a variety of medical treatments and preventive measures such as hospital visits, physician exams, prescription drugs, dental visits, and maternity care. It is illegal for sickness funds to exclude membership due to preexisting medical conditions or raise rates based on age (Busse and Rieseberg, 2004; Bodenheimer and Grumbach, 2002).
Under the public sickness funds, maternity benefits allow females with an employment contract to receive 100% of their net earnings (up to €13 a day from the sickness fund, with the remainder paid by their employer), during the previous three months prior to maternity leave, six weeks before and eight weeks after the expected due date of birth. For women who do not belong to sickness funds, federal states pay maternity benefits up to €210 total (U.S. Social Security Administration, 2014).

Germans are required to join sickness funds if they earn less than $40,000 per year. If employees do earn more than minimum amount required to join a sickness fund, then they can purchase private health insurance. However, once someone purchases private health insurance, s/he will never have the chance to buy into a sickness fund. The majority of higher earning employees will buy into sickness funds, but are not required to buy into the employer based sickness funds; they are allowed to buy into the of the 15 “national substitute funds” (Went et al., 2009; Bodenheimer and Grumbach, 2002). About 11% of Germans who earn over $40,000 buy private health insurance (National Association of Statutory Health Insurance Funds (GKV-Spitzenverband), Germany, 2014; Bodenheimer and Grumbach, 2002). One advantage private insurance offers is that it pays higher fees to physicians than sickness funds do. This makes private insurance policyholders seem more desirable to physicians and often times allows patients to receive preferential treatment when they seek medical care (Khazan, 2014; Iglehart, 1991). Germany finances their healthcare in such a way that no distinction can be made between people who pay for health insurance through
their employers, and the unemployed whose health insurance is paid for by the government. Instead of having all payments go towards a central government fund, all payments are put towards the public sickness funds (Khazan, 2014; Bodenheimer and Grumbach, 2002).

There is a vast separation between hospital-based physicians and those whose practices are office-based. Much as in the U.S., physicians typically stay in the bounds of their practice; office-based physicians often do not visit their patients during hospitalizations. Additionally, a referral from a primary care physician is needed to see specialists. In contrast to the U.S., the majority of German clinicians, 55%, are primary care physicians; while in the U.S. only 35% of physicians are generalists (Khazan, 2014; Bodenheimer and Grumbach, 2002).

Hospital-employed physicians are required to join “regional physicians’ associations” which are responsible for their salary. Each year, sickness funds pay a certain amount to each regional association, which then in turn pays their employee’s salaries. In order to stay within their allotted budget, physicians have reduced their fees they charge per service based on the amount of patients they see quarterly (Bodenheimer and Grumbach, 2002).

Cost Containment Act of 1977

Germany currently ranks thirteenth in the world, spending 11.3% of GDP on healthcare (Central Intelligence Agency, 2015). By the year 1975, the percentage of GDP spent on German healthcare rose from 5.1% to 7.8% (Central Intelligence Agency,
In order to prevent further healthcare spending, the German government implemented the Cost Containment Act of 1977. This act has created a Concerted Action group made up of physicians, sickness funds, employers, unions, and additional members of government (Brockmann and Schulz, 2014; Bodenheimer and Grumbach, 2002). This group meets twice each year and sets restrictions on hospital rates, prices of pharmaceuticals and additional supplies, and caps physician fees – the amount a physician can charge for any given service provided, and further, the amount of money that a physician can profit. Guidelines are further negotiated with the sickness funds, providers, and government officials. The Cost Containment Act has seen to be successful as health expenditures as a percentage of GDP decreased from 8.7% to 8.5% between 1985 and 1991 (Central Intelligence Agency 2015; Bodenheimer and Grumbach, 2002).

Unfortunately, the Cost Containment Act was not the answer to Germany’s healthcare crisis. Costs continued to soar in 1991 and by 1993 a new law had passed to restrict the budgets of sickness funds. The country allowed its citizens to freely choose a sickness fund, regardless of where he or she worked. The government believed this would allow Germans to shop around for and buy into the cheapest sickness fund, driving the cost of sickness funds down. This however did not go as planned, and people have remained within their sickness fund (Brockmann and Schulz, 2014; Bodenheimer and Grumbach, 2002).

_Prenatal Care Guidelines_
Germany became the first country in the world in 1979 to require ultrasound examinations as part of routine prenatal care (National Association of Statutory Health Insurance Funds (GKV-Spitzenverband), Germany, 2014; Merz et al., 2005). This technology is the most widely used obstetric screening technology as it provides the most useful information regarding the health of pregnant women as well as unborn fetuses. The first ultrasound typically occurred between 16 and 20 weeks of pregnancy and was used to determine gestational age, check for fetal anomalies, identify multiple fetuses, and estimate a due date. Major anomalies are defined as malformations that affect fetal viability and/or quality of life and necessitate intervention (WHO, 2015). An additional ultrasound took place between 32 and 36 weeks of pregnancy and looked for any issues involving the placenta, monitored fetal development, and determined amniotic fluid volume (Merz et al., 2005). These prenatal care guidelines were revised in 1995, as an additional ultrasound exam was added to the required screenings. The new guidelines suggested women receive ultrasounds at 10, 20, and 30 weeks of gestation, in order to earlier predict and treat fetal abnormalities. In contrast to the United States, physicians in Germany always perform ultrasound examinations. Ultrasound technicians simply do not exist as they do in the U.S. (Merz et al., 2005).

A “Mutterpass” is distributed to all pregnant women, which includes data from previous and current pregnancies such as laboratory tests, ultrasound results, current and previous medications, and additional clinical data. This booklet helps to standardize prenatal care amongst physicians and minimize the disconnect between clinical and ambulatory care. (Arabin and Visser, 2013).
The education of OB/GYN residents varies throughout Germany. There is no system of accreditation for future physicians and the expertise of the residents depends on the quality of the education that the training center provides. However, the German Board for Obstetrics and Gynecology recommends a logbook and documented supervision of the training period of the residents, although this supervision is known to rarely occur (Arabin and Visser, 2013). The lack of accountability among supervising physicians and residents accounts in part for the variability in clinical care provided by obstetricians and gynecologists in Germany.

Prominent midwife culture

A woman is able to give birth at one of three locations within Germany: the hospital, a birthing house, or at home with the help of a midwife. A hospital birth is very similar to a birthing situation in the United States. A patient will deliver a newborn either vaginally or by cesarean section, with or without pain medications, and leave the medical facility within a few days. Giving birth in a birthing house is halfway between giving birth in a hospital and giving birth at home. Birthing centers have a more relaxed atmosphere than that of a hospital but do not provide emergency services. Lastly, homebirths allow women to deliver their newborns in the comfort of their own home. A midwife is present to assist with the delivery but if the delivery does not go as planned, the mother may need to go to the hospital. All birthing options are covered by the government insurance, and the decision is left to the patient as to how she would like to deliver her child (Luyben and Wijnen, 2013).
The Midwifery Law of 1985 requires the presence of a midwife at all births throughout Germany, whether at home or in a hospital (Luyben and Wijnen, 2013). More than 16,600 members belong to the German Midwives Association, which is the largest midwife association in the world (Luyben and Wijnen, 2013). Certified midwives are able to work in hospitals, homes, or birthing centers. Typical midwifery education involves a three-year direct entry program, which is offered at a variety of universities. In 2009, the German parliament began to offer a four-year Bachelor of Science program at the University of Applied Sciences (UAS) for midwives. Since the launch of this program, several other universities began to offer two- and four-year midwife education programs. The UAS targets students who strive for higher education, as it offers Bachelor’s, Master’s and Doctorate degrees (Luyben and Wijnen, 2013).

Germany has one of the oldest midwifery histories in Europe (Blum et al., 2010 and Scheuermann, 1995). The development of its rules and regulations can be dated back to the 12th century. Four key aspects can be identified as part of its development: midwifery was used in urban and rural communities from the 12th-15th centuries, midwifery was formally recognized in the 16th century and became an independent profession in the 18th century, and finally, midwifery became a modern profession in the 19th century (Robilliard, 2010; Scheuermann, 1995). The first time midwifery was mentioned by government officials was in 1310 by the Reformation Council of Trier. Religious undertones were implied, as it was understood that midwives were not to deliver babies of unmarried women, as unmarried pregnant women were looked down upon in society. In fact, they were taken to trial post-partum as their actions had gone against the Catholic Church (Scheuermann, 1995). Throughout medieval times,
Germany employed midwives, as they tended to care for the poorer woman in the cities who could simply not afford childbirth.

The first midwifery code was written in 1452 in the city of Regensburg. This code described midwifery not only as a profession, but also as a profession standing equal to that of other jobs in medicine. Throughout medieval times, midwives experienced several conflicts with the church. Considering their profession dealt with concepts including conception, abortion, pregnancy, delivery care, gynecology, and pediatrics, much room was left for debate with clergy members (Robilliard, 2010 and Scheuermann, 1995). The Catholic Church enacted a midwifery code in 1573, in hopes of taking control over medical midwifery (Robilliard, 2010 and Scheuermann, 1995). The new Catholic midwifery code ensured that midwives attended Bible study and forced them to perform intrauterine baptisms. Over a century after the Frankfurt Code was established, the government established a new midwifery code in 1703. This code had several new requirements that a midwife must meet: she had to be able to read and write, be married or widowed, must have given birth previously, and must not support abortion (Robilliard, 2010; Scheuermann, 1995). This revision in the midwifery code formally recognized all midwives as independent, traditional workers; however, like other medical workers, they were not allowed to advertise their services. When difficult deliveries occurred, midwives were expected to call physicians in to assist them (Robilliard, 2010; Scheuermann, 1995).

Additional changes to the midwifery code were created in 1816 and 1841, when men were viewed as the dominant midwives, as opposed to upper class women. Also, midwives were to perform deliveries as taught by their male physicians. The last
modification was that midwives were to be younger than 25 years old, without children and educated in the sciences, taking anatomy and nursing classes (Robilliard, 2010; Scheuermann, 1995).

Post-Nazi Germany, midwives began to become more popular as the midwifery law of 1938 mandated that a midwife must be present at every birth, and further recognized midwifery as an independent profession (Robilliard, 2010; Scheuermann, 1995). Throughout the 1960s new standards for midwifery were introduced as midwifery education had changed. The six goals of the German Association of Midwives are as follows:

To negotiate for increasing the reimbursement for midwives in private practice.
To define the number of midwives needed in hospitals.
To collaborate in committees on midwifery in the European community.
To establish midwifery-based, complete prenatal and postnatal care in all of Germany.
To represent the midwifery profession among the population.
To collaborate with other professional associations in the health sciences in issues regarding general health and education (Luyben and Wijnen, 2013).

In order to accomplish these goals, midwife education initiatives throughout the country have included conferences and workshops to improve academic achievements. This began with the first research workshop in 1989 and workshops have continued annually (Luyben and Wijnen, 2013). Goals of the workshops focus on discussions involving midwives’ experiences throughout labor, criteria for out-of-hospital births,
models of midwifery care, and prenatal care guidelines in Germany (Luyben and Wijnen, 2013).

Even though Germany does devote a considerable percentage of GDP to healthcare, it appears as if their healthcare system is more efficient not only for the country, but for the patients as well. This is a result of the sickness funds, and extensive midwife practices. Germany does have more regulations in terms of the use of assisted reproductive technology, which will be illustrated with the following case.

*Case example*

A recent high profile medical case has sparked an interesting discussion regarding the appropriate use of medical technology. It was announced in early April 2015 that Annegret Raunigk, a 65-year-old grandmother, was 21 weeks pregnant, with quadruplets. Her motivation for becoming pregnant for the 14th time came after her youngest daughter asked for a younger brother or sister. At that time, Ms. Raungk was a single parent of 13 children, the youngest being 9-years-old, and had seven grandchildren (Roberts, 2015).

This pregnancy was achieved through hormone injections to ensure that Ms. Raungk’s womb could provide a nurturing environment for her embryos. Second, fertilized donor eggs were used to achieve pregnancy. However, it is illegal in Germany to fertilize donor eggs from another woman, under the Embryo Protection Act of 1990, so the eggs used were fertilized abroad and then implanted. After the embryos were fertilized and implanted through in vitro fertilization, she underwent close monitoring and eventually gave birth prematurely to quadruplets during her 26th week of pregnancy.
As of 2004, German public health insurance is legally obligated to pay for 50% IVF treatments, covering up to three rounds, as long as the couple is married and the woman is under 40 years of age; however, most private insurances will typically cover the entire cost, upholding the same age restrictions. Unmarried couples are responsible for paying the entire cost themselves, regardless of their insurance coverage (Schaefer, 2007).

The German Embryo Protection Act of 1990 states that the improper use of reproductive technology could result in up to three years of imprisonment for the physician (The German Embryo Protection Act, 1990). The misuse of reproductive technology includes “transfer[ring] into a woman an unfertilized egg cell produced by another woman… attempt[ing] within one treatment cycle, to transfer more than three embryos into a woman” (The German Embryo Protection Act, 1990).

It does appear that there has been a potential abuse of artificial reproductive technology in the past, and Germany has tried to prevent that abuse with the Embryo Protection Act. In the case of Ms. Raunigk, she would be fully financially responsible for in vitro fertilization, as she is unmarried and over 40-years of age. Due to technological advancements, the Embryo Protection Act has been seen as extremely outdated, even though it is only twenty-five years old. Some parts of the law no longer seem relevant in light of more recent technological advances. For instance, a prohibition against implanting more than three embryos at a time seems logical today. However, the law does not permit preimplantation genetic diagnosis, because at the time the law was created, this technology was not yet available. Perhaps instead of amending the outdated German Embryo Protection Act an entire revision of the act should be considered,
allowing it to be a useful guideline as the medical field continues to change (Benöhr-Laquer, 2011).
CHAPTER III

DISCUSSION OF THE INDIAN HEALTHCARE SYSTEM IN REGARD TO MATERNITY CARE

India is home to 1.2 billion people, where nearly $\frac{3}{4}$ of the population live in rural areas throughout the country. In size, it is just over 1/3 that of the United States (Central Intelligence Agency 2015). The very densely populated country only spends nearly 4% of GDP on healthcare and faces ever-increasing infant and maternal mortality rates. Each year approximately 56,000 women pass away either during childbirth or shortly thereafter. That is one woman every eight minutes, and accounts for 19% of total maternal deaths worldwide (Gogoi and Motihar, 2013). It is estimated that 70% of these deaths can be attributed to heavy bleeding (hemorrhage) and eclampsia (high blood pressure) and can be easily prevented (Gogoi and Motihar, 2013).

Within Indian society there is a great divide between the richer and poorer classes, especially when it comes to healthcare. Upper class citizens typically have health insurance and have access to private hospitals where they will give birth in upscale healthcare facilities. The less fortunate will elect at-home births with traditional birth attendants (TBAs) and occasionally use the public hospitals. The rich and poor divide resulting from the caste system is ever increasing and may be causing disparities in access to costly medical technology and prenatal care. However, this technology is not always used correctly and cost efficiently, leaving some patients with skyrocketing
medical bills that they are unable to pay. This chapter looks at these central ideas and the steps India’s government has taken to move forward in improving overall prenatal care and labor and delivery care.

India is responsible for the largest number of global maternal and fetal deaths (Gogoi and Motihar, 2013; Central Intelligence Agency 2015). The 2013 State of the World’s Mothers report, sponsored by Save the Children, ranked India 142^{nd} out of 176 countries as the maternal mortality rate was 190 deaths per 100,000 live births, and the infant mortality rate was 43.19 deaths per 1,000 live births (Save the Children, 2013). The criteria used for this report were maternal health, child well being, educational status, and economic and political status of the women within India. As maternal death rates have dropped nearly 70% over the past ten years, for every woman who passes away during childbirth, there are about 20 additional women who experience chronic, debilitating illnesses (Gogoi and Motihar, 2013).

Healthcare system

The healthcare system in India includes private hospitals, public hospitals, and specialized Ayurvedic hospitals, which offer traditional alternative Indian medicine. As in the United States, most major cities have private hospitals that provide a decent standard of care. Indian health insurance covers hospitalization and emergency room visits. All additional care must be paid for upfront, primarily in cash (Yip and Mahal, 2008). Although private health insurance is not mandatory, it is strongly recommended. As a matter of fact, only 10% of the population is covered by insurance. Several private
companies and banks offer health insurance packages, which cover hospital stays. Additionally, employers offer health insurance to their employees as part of their salary. A traditional Indian medical practice, Ayurveda, is typically not covered by private insurance. Some hospital stays may require an advance payment, and other visits may be reimbursed after the patient pays (Balarajan et al. 2011).

Government funded public hospitals only provide basic care and lack infrastructure. They are typically overcrowded and patients can experience long waiting times. These facilities are understaffed and typically rely on family members to care for the patient throughout the duration of the hospitalization. Lastly, even though the cost of medical care is much lower at these facilities, the quality of care is also much lower (Balarajan et al. 2011).

Private hospitals offer a higher standard of care that can be compared to that of the United States or European countries. These facilities are more technologically advanced in comparison to the public hospitals, and employ more qualified physicians (Yip and Mahal, 2008).

*Increasing maternal and fetal mortality rates*

The Indian states of Assam, Rajasthan, and Uttar Pradesh all have high maternal mortality rates greater than 300 deaths per 100,000 live births (Gogoi and Motihar, 2013). Assam is the state with the highest rate. The government of Assam has successfully managed to decrease the maternal death rate over the past several years; however, it still remains the highest in the country. This state struggles with difficult terrain and
difficulty accessing healthcare services, as the majority of the people reside along a river, Brahmaputra, which makes it extremely difficult to travel during the rainy season. Throughout the past decade a partnership has been created between the Government of Assam and civil society to run boat clinics in hopes of reaching the underserved community (Gogo and Motihar, 2013).

Additional social determinants contributing to increased maternal and fetal mortality rates include early age of marriage as well as early and repeated childbearing. Nearly 47% of females marry before the age of 18 (Gogo and Motihar, 2013). Earlier marriage in life allows women to become pregnant at younger ages. Additionally, about 1/3 of Indian women are malnourished and just over half are anemic. These malnourished bodies do not provide the means for good maternal and fetal outcomes (Gogo and Motihar, 2013).

*At home births vs. healthcare facilities*

Considering that India accounts for the most maternal and fetal deaths, the country’s primary goal entering the 21st century was to drastically reduce these rates by providing improved quality of healthcare and healthcare access; especially, to both women and unborn children throughout pregnancy, after delivery and to children throughout childhood, including the improvement of home-birthing practices. A 2008 study conducted by Iyengar et al. looked at common childbirth practices in rural Rajasthan, India. This study demonstrates how urgent basic healthcare is needed within a particular region of India. Additionally, the study addresses the difficulty in accessing
healthcare within rural India. It was found that the majority of the women interviewed preferred home births, although most teenagers preferred to give birth at a healthcare facility.

It is common in rural India for an older female relative to be present during at home births to give guidance and direction to the soon-to-be mother. If a physician is within the home, he or she is able to administer intramuscular oxytocin to allow the birthing process to continue quickly. Surprisingly, there is minimal monitoring of the fetal heart or maternal overall well-being. Care is limited to unhygienic vaginal examinations. After the baby is born, he or she is often left on the floor until the placenta is delivered. The umbilical cord is typically tied with twine and cut using a blade that is not always sanitary (Iyengar et al., 2008).

Rajasthani women who give birth at healthcare facilities have a different birthing experience. When women are in labor at high tech healthcare facilities, providers are able to administer oxytocin to speed up the birthing process. Similarly to at-home births, there is minimal monitoring of maternal-fetal well being as vaginal examinations are the only means of monitoring. After delivery, there is no rush to dry the newborn off or any urgency to be ready to resuscitate the newborn if needed. Families of newborns believe that breastfeeding should be delayed at least three days after birth, as that is when they believe breast milk is available to the newborn. The majority of mothers and newborns are even discharged without any effort to breastfeed at all (Iyengar et al., 2008).

In at-home births and at healthcare facilities, the majority of neonatal deaths occur within the first two to three days of life and can be attributed to the lack of breast feeding, improper bathing and clothing, and other illnesses and social factors that were previously
discussed (Iyengar et al., 2008). To reduce both maternal and fetal mortality rates, at home birthing practices and modern medicine must be coordinated to reach as many women as possible and deliver newborns in the safest manner.

When the Rajasthani research study participants were asked why they chose either at-home births or to deliver at healthcare facilities, their responses were a bit upsetting, as some participants had misconceptions about healthcare providers. The majority of respondents agreed that home births were better because the traditional birth attendants (TBAs) were competent and that fewer risks were associated with home births. Additionally, pregnant women admired the fact that TBAs used their hands and massaged the woman as they were in labor to help relieve pain. On the contrary, they viewed hospital workers completely differently, as using a hands-off approach by focusing on injecting medications. Lastly, women further appreciated TBAs for their ancillary care work, which included bathing the mother, massaging the mother, cleaning the house, and feeding the newborn for the first day (Iyengar et al., 2008).

Fundal pressure, the practice of using hands to apply pressure to the upper part of a woman’s uterus and downward towards the birth canal, in order to help deliver the newborn, is common in both birthing practices. When performed correctly, this practice can improve both maternal and fetal outcomes. This can be practiced in three different positions; the first with the TBA sitting behind the woman on the floor as her hands massage the woman’s abdomen, second with the TBA lying over the woman on the floor, and third which occurs at healthcare facilities; the TBA stands on a stool beside the woman as she lies on a table. It is advised that this pressure only be applied when the baby is on the verge of entering the world; however, it is commonly practiced in the
earlier hours of labor. Risks of improper pressure include uterine rupture, anal sphincter damage, and newborn fractures or even brain damage. Fundal pressure was observed throughout the research study and at times was so hard that the baby fell out onto the floor, followed by the delivery of the placenta (Iyengar et al., 2008).

Intramuscular oxytocin and valethamate bromide injections are commonly used in both home and healthcare facility deliveries to ensure that labor contractions occur with enough force to deliver the baby. Valethamate bromide is not mentioned in the WHO guidelines recommended for the management of childbirth. In India both TBAs and clinicians commonly administer these injections. There is no set standard that is currently followed as the number and frequency of injections given vary from patient to patient. The 2008 research study observed patients receiving anywhere from three to seven injections anywhere from minutes to hours apart (Iyengar et al., 2008).

The study concluded its findings with an observation that medical facilities discharged patients just a mere two hours after childbirth. No attempts were made to aid in breast-feeding, never mind allowing any rest for the mother. For mothers choosing home deliveries, providers left just minutes after the placenta was delivered and TBAs ranged from staying at the home for a few hours to a couple of days. Additionally, the cost of delivering the newborns at home, vaginally at healthcare facilities, and by cesarean sections were Rs 379 ($8 USD), Rs 1,336 – 2,419 ($30-54 USD), and Rs 11,146 ($248 USD) respectively (Iyengar et al., 2008).

Government implementations
The Indian government has made attempts to address the issues of maternal and neonatal health, especially in regard to issues involving transportation and access to healthcare services. A specific plan, the Janani Shishu Suraksha Karyakarm (JSSK), is a government-supported fund, which financially supports mothers to have a healthy pregnancy. The goal is to decrease maternal and fetal mortality rates and increase healthcare access, while spending the least amount of money necessary. This program provides free diagnostic tests and prescription drugs to pregnant women. The only catch is that these free services are provided in healthcare facilities. Over the past seven years, births in healthcare facilities have increased tenfold (Gogoi and Motihar, 2013). However, several medical, ethical, and financial questions arise from this major shift in birthing norms. Are all healthcare facilities equipped with the necessary medical technology for the rising births? Are all women being given access to healthcare facility births, are the poorest being left behind? Is this truly decreasing the ever-present maternal and fetal mortality rates; is the cost being justified?

An ambulance service, the Janani Express, was created in 2012 consisting of 1,098 ambulances in hopes of providing easier access to pregnant women and other patients seeking medical care (Sabde et al., 2014). The idea was a very good one, but implementation of this service varied throughout the country. Further issues of quality control exist in these healthcare facilities, especially in the labor and delivery rooms. There is an ongoing attempt to standardize a basic level of cleanliness and sanitation in these facilities. Additional hurdles the healthcare front faces are diminishing supplies of medications, equipment malfunctioning, inaccessible terrain, and religious and cultural
factors (Sabde et al., 2014). The country has a long way ago as it hopes to accomplish its goal of reducing maternal mortality to 109 per 100,000 live births, by the end of this year.

_Maternal Health Program_

In hopes of allowing lower class women to gain access to prenatal care, and bringing home births to medical facilities, the Indian government has established the Maternal Health Program as a movement toward reducing both maternal and fetal mortality. This government-funded program is a component of the Reproductive and Child Health (RCH) Program and has a goal of reducing maternal mortality to less than 100, per 100,000 live births. This program consists of prenatal appointments including weight and blood pressure checks, abdominal examinations, tetanus immunizations, iron and folic acid supplementations, and anemia management counseling services. Additionally, under this program, emergency obstetric care and 24-hour labor and delivery services at health facilities as well as abortion services will be provided. Other services that may be covered are prenatal diagnostic testing using ultrasound technology, amniocentesis, and chorionic villus sampling (Sidney et al., 2012).

As part of the Maternal Health Program, the government launched a Janani Suraksha Yojana (JSY) in 2003 to specifically work with expectant mothers and families who fall below the poverty line. The JSY is a cash transfer arrangement, which is used as an incentive for women ages 19 and older, having a maximum of two children, to give birth in a healthcare facility instead of a giving birth at home. The government believes that there is a significant advantage to giving birth in a healthcare facility and is willing to
make cash payments to provide an incentive (Lim et al., 2010). This arrangement provides the funding for lower class families to receive the prenatal care they need throughout pregnancy, receive the medical attention that is required during labor and delivery, and seek post-partum care from participating private-sector hospitals. As this program does sound like it has good intentions by providing an increased number of women with access to healthcare, one has to wonder: How effective is this program and is it reaching the maximum amount of women?

A 2014 Duke University study conducted by Mohanan et al. has investigated the efficacy of the Maternal Health Program thus far. Participating hospitals in the program are paid Rs 1600 per delivery ($30-$40 USD). As of 2012, nearly 800 private sector hospitals throughout India were participating in JSY and assisted in the payment of about 800,000 deliveries (Mohanan, 2014). Since the investment of nearly $25 million (USD equivalence), it appears as though the program has made little improvement in decreasing maternal and fetal deaths. The study was inconclusive as to why specifically the program was a failure but did list potential possibilities. The report claimed that hospitals were indeed providing families with free care but were also charging women for additional care that was beyond the scope of pregnancy. This led to increased debt for the patient, as well as the physician. Physicians did not support the program because they felt reimbursement amounts were not high enough to cover the cost of the services they were providing. Additionally, women believed that the free hospital care was not better than the care that they could receive at home and felt no need to travel to a hospital. Further, the travel expenses to and from the hospitals could be too costly and unaffordable by these women (Mohanan, 2014).
As of 2012, nearly 9% of all births in India were performed by cesarean sections, an increasing trend that is also seen within the United States (Sinha, 2012). This range does fall within the recommended level of 10-15% of births performed by cesarean section by WHO; however, varying parts of urban India have skyrocketing rates reaching nearly 50%. A study performed by the Indian Council of Medical Research School of Public Medicine reported a cesarean section increase from 31% to 51%, within private Mumbai hospitals (Sinha, 2012). This increase in the surgical procedure can be attributed to several reasons. Physicians and medical facilities have encouraged advanced technological medical care, which includes cesarean sections. Private hospitals are able to charge more for the procedures, ranging anywhere from Rs 5,000 (less than $100 USD) to Rs 40,000 ($650 USD). In situations where physicians need to pay off medical school debt, they are more likely to recommend costly cesarean sections. Cesarean sections are often times thought to be safer for the newborn; however that is not always the case. Additionally, patients wishes play a role in this ever-increasing number. Patients want to deliver on a specific date, and may not want to experience the natural pain of labor (Sinha, 2012). These patients tend to go to the physician with their own set of beliefs and biases and do not want to be told otherwise; a common mindset that is ever present in the United States. A 2012 study reported that India has the highest number of unwanted pregnancies, due to misconceptions regarding the use of contraceptives. Basic health concerns were the biggest reason for not using contraceptives, even though there is no evidence to back up these claims. Unwanted pregnancies could be avoided if Indian people saw past the myths and adopted uses of long term contraception such as
intrauterine devices (IUDs). If unwanted pregnancies were to be reduced, up to 60% of maternal and fetal deaths could be avoided (Kumar et al., 2012).

One major issue throughout the entire country is female feticide. Female feticide is the deliberate killing of a fetus in the womb, simply because it is female. A long history exists where males are seen as the dominant gender, as they are thought to be more powerful in society, earn more money throughout their careers, and are the preferred gender, as they do not have to pay dowries when they get married. It was very common in India to use ultrasound technology to determine the sex of the unborn fetus and then have selective abortions if the parents did not desire the gender. The Indian government implemented the Prenatal Diagnostic Techniques (PNDT) Act in 1996 to regulate the misuse of medical technologies for fetal sex determination and further selective abortions (Subramaniam and Selvaraj, 2009). This Act is under a program entitled “Save the Girl Child” which has several monitoring committees that are intended to oversee the use of medical technology; however, the actual monitoring role of the committees is unknown (Sumner, 2009).

The Indian government and healthcare officials have agreed that prenatal care is of utmost importance to the development of the unborn child. They recommend that the mother eat a healthy diet, exercise, obtain necessary immunizations, and attend all prenatal appointments (Ramakrishnan et al., 2012). The government further advocates for the newborn through its Constitution and Convention on the Rights of the Child (Sumner, 2009). Additionally, UNICEF has supported India in its Reproductive and Child Health Program, which stresses a new child health package (Sumner, 2009).
India has made substantial progress on the healthcare front, but most definitely has a long way to go to reduce maternal and fetal mortality rates. The government has to determine a way for the Maternal Health Program to be more cost effective and bridge the gap between the rich and poor citizens, making health care more affordable and accessible for all. More women need to be cared for and perhaps that does not mean bringing them into healthcare facilities. With proper personnel, home births may be just as safe healthcare facilities and even cheaper for the mother as well as the government. However, medical technology has to be used appropriately and efficiently for it to be effective for its patients. Once modern and traditional birthing practices are combined, India’s maternal and prenatal health care will be improved.
CHAPTER IV

RECOMMENDATIONS FOR FUTURE PRENATAL CARE, LABOR AND DELIVERY, AND THE USE OF ASSISTED REPRODUCTIVE TECHNOLOGY WITHIN THE UNITED STATES IN HOPE OF REDUCING COST

The overall goal of this chapter is to make recommendations for the future of prenatal care within the United States to reduce the medicalization of pregnancy to decrease costs yet still uphold a sufficient standard of care for pregnant women.

A significant challenge in ethics and policy, regardless of which country you reside in, is how to achieve a balance between treating pregnancy as a natural state and being ready to apply medical technology quickly and appropriately when it is needed. How does a country establish strong medical standards and how do healthcare workers provide safer and more effective prenatal care as maternal and fetal mortality rates decrease, all without excessively increased costs because of technological advancements?

Any major change will often times be resisted by culture within any home country. For example, when India attempted to implement Universal Health Coverage in 2010 (Reddy, 2015), it was not well received, and the country is still working on implementing a useful health insurance model. Different cultures all have different beliefs and societal norms, and it can be extremely difficult to modify or implement a new way of doing things; for example, changing the way people go about seeking prenatal care and labor and delivery care.
In order to improve the quality of prenatal healthcare while balancing cost within the United States, healthcare providers and policy makers will need to come together to benefit the greater good of society. Healthcare costs needs to be contained in order for everyone to have the same opportunity to receive some level of prenatal care. This inexpensive, basic level of prenatal care will hopefully significantly decrease future maternal and fetal morbidity and mortality rates. This common goal can be achieved through the following recommendations, which cover all three domains of maternity care: prenatal care, labor and delivery, and assisted reproductive technology.

**Increased access to prenatal care**

Physicians are in the medical field to practice their profession, as their way of earning their living and providing for their families. If they weren’t making money from their profession, they would not be practicing medicine. In a sense, this income, their salary, has to come from somewhere; whether it is from the hospital in which they’re employed or reimbursements from patient’s insurance companies. A fallback program is in place for patients who are unable to afford health insurance. Medicaid was signed into law in 1965 and now provides health coverage to upward of 60 million Americans who are unable to pay for healthcare. With the enactment of the Affordable Care Act in 2014, Medicaid eligibility has become more widespread, allowing more people to receive healthcare benefits. This state funded program finances nearly 40% of all births throughout America (Centers for Medicare and Medicaid Services, 2015). Medicaid coverage includes all prenatal care through labor and delivery, as well as sixty days post partum. Some physicians are reluctant to take on Medicaid patients, as the
reimbursement rates are low. Medicaid pays only 61% of what other insurance companies pay, and it is estimated to drop to 48% reimbursement within the next year (Matthews, 2015). Perhaps non-Medicaid patients are overpaying for their healthcare and potentially being exposed to multiple unnecessary tests and treatments. Or perhaps pregnant Medicaid patients are being undertreated simply because of their insurance coverage.

Recently the United States federal government has mandated that insurance plans must cover all prenatal care without requiring patients to pay any out of pocket fees, as it qualifies as preventive services. However, this prenatal care coverage does not include labor and delivery costs (U.S. Department of Health & Human Services, 2015). Insurance plans do cover prenatal care in accordance with ACOG’s recommendations of fourteen prenatal visits but do not always cover hospitalization involving vaginal births and cesarean sections (U.S. Department of Health and Human Services, 2015).

A 2010 study conducted by Truven Health Analytics concluded that insurance companies paid about $18,329 for vaginal births and $27,866 for cesarean sections. Insured patients were left to pay $2,244 for vaginal births and $2,699 for cesarean sections. These totals include all hospitalization costs related to maternity care. Additionally, the study found that hospitalization contributed between 81 and 86% of total maternity costs (Truven Health Analytics, 2013).

In terms of paying for cesarean sections, there is a big cost difference for insurance companies between cesarean sections and vaginal deliveries, but virtually no cost difference for patients who are insured. In order to keep elective cesarean sections to a minimum, insurance companies could potentially charge those patients more; however,
in doing so, it would be difficult to ensure that all patients pay fairly. For certain patients who really wanted a cesarean section, physicians could continue to argue that the procedure was medically necessary so that the patient would receive insurance coverage for the surgery. This insurance coverage variability further differentiates prenatal care costs, which are relatively uniform and almost universally covered by insurance, from labor and delivery costs and coverage, both of which can be unpredictable. With the recent change to maternity care coverage in the Affordable Care Act, increased insurance coverage for pregnant females should lower financial barriers to prenatal care.

*Increase VBAC research*

Insufficient research has been conducted on VBAC and imperfect recommendations can be made based on the information that is known. In order to explore VBAC further and study when it might be a safe birthing option for patients, the NIH has identified seven areas that should be investigated further (Cunningham, 2010):

- Need for a standardized and systematic use of definitions for short-term and long-term maternal and neonatal outcomes
- Understand reasons for persistent racial/ethnic, geographic, and socioeconomic differences in rates of trial of labor and VBAC compared with elective repeat cesarean sections
- Well-designed clinical studies on practice variation, provider type and setting, and intrapartum management, including induction methods
• Well-designed studies to identify and describe long-term maternal and perinatal biologic and psychosocial outcomes after VBAC, unsuccessful trial of labor, and elective repeat cesarean section

• Studies to fully understand the effects of VBAC, unsuccessful trial of labor, and elective repeat cesarean sections on breast feeding practices

• Studies to understand all the nonmedical factors that affect the availability and management of trial of labor and factors that restrict access to safe trial of labor

• Studies to develop interventions to reduce the huge barrier of the current medical/legal environment and threats of litigation and professional liability

By investigating these seven areas, more substantial data will be obtained, which will help physicians inform their patients on more appropriate birthing options. In the future, if VBAC does appear to be a successful birthing method, this practice could deter patients from seeking repeat cesarean sections and thus further decrease labor and delivery costs.

*Implement the more extensive use of midwives*

Adapting a more prominent midwife culture like that of Germany for low-risk pregnancies could help contain labor and delivery costs, especially within a hospital setting. As previously stated, the majority of prenatal costs are accumulated in hospital settings during labor and delivery. This could be significantly lowered with the help and
use of well-educated midwives. There is a concern that if something were to go wrong during labor and delivery in a homebirth setting, it would take too long to get to a hospital in an emergency, and there would not be enough time to save the fetus or the mother. Midwives could practice in birthing centers as long as they are adjacent to hospitals in case of emergencies. This would allow a more natural birth to occur, without the urgency of scheduled cesarean sections performed by physicians, driving up costs. Experienced midwives do a fine job of delivering newborns and making sure patients are comfortable. There is good reason why they are widely used throughout Europe. This idea is fully supported by Moos as this model of prenatal care, labor and delivery “is the normative approach for low-risk pregnancies in much of the world” (Moos, 2006).

American physicians may be apprehensive about this movement, as it could reduce patient demand for their services and lower their salaries.

If the U.S. were to adapt an education curriculum for midwifery like Germany has, it may become more popular and more accepted in our home country. For example, if four-year colleges and universities offered midwifery as a major or pre-professional path, like medicine, nursing, or dentistry, it would be easier for students to become more involved in midwifery education and further their career in that field. If colleges and universities adopted a midwifery curriculum, further professional training programs after college could be shorter and midwives could start working in the field sooner. This level of education would exceed the level of training direct-entry midwives have, which would further gain the trust and support of American patients. As of now, the United States has a complex and somewhat confusing midwifery education system that is not fully
understood by most people. Offering this field of study in undergraduate programs may allow a more proficient midwife culture to evolve in the future.

Several studies linking birthing and infant deaths compared birth outcomes and survival for infants delivered by physicians and certified nurse midwives. The outcomes of the studies indicated that the incidence of low birth weight was significantly lower for certified nurse midwife-attended births, after social and medical factors were controlled for (Moos, 2006). Differences in birth outcomes could be explained by physician and certified nurse midwife approaches to patient care, as physicians typically took on more difficult cases, and faced poorer outcomes. However, certified nurse midwives often cared for patients who faced greater socio-economic risk factors, such as minorities, adolescents, and women who were unmarried and were not well educated (Moos, 2006). This labor and delivery model promotes health, education, and disease prevention, as midwives are able to spend more time with their patients, in comparison to physicians. In addition, more time spent with patients discussing health education such as risk factors leading to gestational diabetes could also help lead to healthcare cost cuts in the future if the overall disease can be prevented. Accomplishing common midwifery goals that Germany has set out to achieve within its culture will help the United States adapt and implement the use of midwives faster and more effectively.

Appropriate use of genetic testing

It appears as though most genetic testing is done in the first and second trimesters of pregnancy, except for ultrasounds to monitor fetal growth and development. Patients
are not required to accept and take part in all genetic testing, but physicians are required to offer it. There is ongoing debate over the practice of amniocentesis and false positive results involving Down Syndrome, or Trisomy 21. This genetic disorder is a third copy of chromosome 21 in all cells, which leads to developmental delays and cannot be fixed while the mother is pregnant.

Amniocentesis can cost anywhere from $1,100 - $2,000 depending on insurance coverage and where one resides (Rubin, 2012). This costly procedure carries risks involving miscarriage and even a 5% false positive rate. A new technology that was launched in 2012 tests for genetic disorders using the mother’s blood, no amniocentesis required. This new genetic test costs $235-$500 depending on insurance coverage. It hasn’t been fully accepted in the medical community just yet as it is still relatively new, but with decreased false positive testing and quicker results, it may provide cheaper, faster, and more accurate prenatal diagnoses that Americans are craving (Sehnert et al., 2011). One supporter of the new genetic testing states, “My patients are the average New Yorkers, who want their answers yesterday” (Rubin, 2012, p. 4).

Once a physician has offered genetic testing at a prenatal visit, that invitation should remain open throughout the course of pregnancy, in connection with ACOG’s recommendations; however, physicians do not need to constantly remind their patients at every prenatal visit of the technology that is available, and further ask if they wish to use the technology available. This may lead to testing that is truly unnecessary that the patient may not feel she needs. ACOG should revise its prenatal genetic testing recommendations so that it is less likely that patients will feel pressured by repeat testing
offers from their physician. Unnecessary testing, potential false positives, and excessive medical costs may result from the current recommendations.

Appropriate use of assisted reproductive technology

The case examples of Sofia Vergara and Annegret Raunigk anchor the problem of high-cost prenatal care involving ARTs, specifically IVF and embryo implantation. It is no secret that extremely high costs are associated with these technological procedures, in hopes of conceiving a child and carrying a fetus to term. Not only do the initial costs -- totaling upwards of $12,000 for IVF and embryo transfer -- drive reproductive technology expenditures; in addition, other costs incurred with these procedures include the drugs and hormones needed in order to be able to safely conceive, carry, and deliver a healthy baby, the possibility of conceiving multiples, and the potential to deliver prematurely, especially if one is carrying multiples.

ARTs are stuck in the middle of a costly debate. On one hand, some families would love to be able to start families of their own, but are simply not able to afford these costly medical procedures. On the other hand, some families would not be possible without ARTs; for example, homosexual couples or single parents where no male or female partner is available; couples for whom a surrogate is needed; or couples with infertility issues. The high cost of this technology has led to significant family changes within the United States. Couples who were not able to previously conceive are now able to have children; however, the unaffordable price for some families has acted as a barrier to conception for some families.
One can debate whether or not reproduction is necessarily “better” if it naturally occurs or if it occurs with the help of technology. I argue that neither is necessarily “better,” but that what matters is the manner in which the technology is used and whether it is used appropriately or not; however, this discussion is beyond the scope of my thesis. It is enough to say that ARTs change our views of reproduction and raise difficult cost issues. ARTs are poorly regulated in the United States, and the implementation of guidelines and regulations should address what should count as appropriate uses of this technology and what should be regarded as abuses.

Conclusion

Prenatal care, labor and delivery, and assisted reproductive technologies all involve a justice concern. The cost of prenatal care is simply unaffordable for some American patients. Steps must be taken to reduce maternity costs and to provide access for all women, to ensure that these patients receive the medical attention that they deserve. This can be achieved in a manner that respects the patient’s autonomy but does not permit abuses. We should achieve a level of prenatal care that maintains beneficence to ensure the safety of the patient. We ought to be using and providing prenatal care services efficiently, not only on the behalf of the patient, but for the healthcare system as well. Using the recommendations I have provided, and adopting selected practices of Germany and India’s healthcare systems, will allow the United States to move forward in improving the overall quality of maternity care.
RESOURCES


spitzenverband.de/media/dokumente/english/GKV_GB2014_English_web_barrierefrei.pdf


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