PANHANDLE HEALTH

A QUARTERLY PUBLICATION OF THE POTTER-RANDALL COUNTY MEDICAL SOCIETY

SPRING 2025 | VOL 35 | NO.2

Maternal & Infant Health:
The First 1000 Days

with Guest Editor
Christine Garner, **PHD, RD, CLC**

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On The Cover: ***"For my Sweet Sister"*** by Emma Ambs

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Executive Director's Message

by Katt Massey, Executive Director

SCAN HERE
A quick survey that will help us improve your PHM experience!
Call Katt @ 806-355-6854 with any questions.

Hello PRCMS Members and Beyond,

I am coming upon my half-year mark here at Potter-Randall County Medical Society, and boy have these first few months been packed with learning, navigating, goal setting, and relationship building. I have enjoyed getting to know members and building community within the organization.

Last December, we held elections and, in January, installation of officers during our annual meeting. We are grateful to Amarillo National Bank who generously sponsors that event.

More events are under way. I am providing a QR code with a short survey on your relationship with PRCMS and Panhandle Health. We are working diligently to expand readership for the magazine and participation within our society.

On to "my" second issue: of Panhandle Health. One thing I have learned is how special this publication is. From the planning of the quarterly content to who's writing the articles, and the information within the articles - oh my! It's a well-organized machine with every issue having an all-star line-up.

As a mother who had two VERY different pregnancies and after-birth experiences, I am pumped about this issue. It's not just the topic, awesome guest editor, or the amazing cover art, but the content. Navigating those first 1000 days (and beyond) as a new mother is beautiful, messy, exhausting, frightening, exciting, isolating, nerve wracking, and then some, all rolled in to a ball of emotion served up with a side of hormones. (That list doesn't include my surprising Dr. Baker 2 weeks after my second delivery with a weird C-section "belly blister" that earned me another night of chocolate cake at BSA and a wound vac.)

With motherhood and parental structure looking different for every family, I hope something in this issue hits home. We're all doing the best we can with this "being a parent business," and the first 1000 days are crucial.

Don't forget: First Tuesdays at the Capitol during the legislative session and TexMed in San Antonio May 8-10.

Next quarter's issue will be Medicine and Artificial Intelligence; it's going to be a fun one, too.

Katt Massey

About The Artist on the cover

Bio: My name is Emma Ambs. I am an independent fine artist located in Amarillo, Texas. Art has always been with me, though this hobby morphed into a strong passion in my late teenage years. Whether it is commission work or my original pieces, the excitement I noticed on people's faces when viewing my work has fueled my love for what I do. The main goal has always been to make more art, and to use my craft to grow as an individual, while making it about others. I want to push others to use any art form as therapy, digging out emotion that can't be conveyed with words & examine their own mind from a new perspective. Art will forever be a driving force in my life & I will go wherever it takes me.

About the Piece: "For my Sweet Sister"
Mackenzie Rose gave birth to her daughter Jet Rose in November of 2023, her first child. Though the years before then, we shared rooms together, argued, made home movies, laughed and cried together. Each time we are together has a story to it. Each time we are together, it's a memory.

This specific memory is more recent; the day she became a mother. Without Mackenzie knowing, I snapped this photo once Jet was laid on her chest, and just as a nurse was about to step in front of the lens. I don't know how we captured it so quickly. But the power of Woman is so palpably extraordinary, I knew it was important to capture it again through a different lens; Art.

President's Message:

by Tetyana Vasylyeva, MD, PhD, FAAP

Spring is often seen as the season of new beginnings when life awakens after the stillness of winter. Trees sprout fresh leaves, flowers bloom, and animals emerge from hibernation. It's a season of renewal, growth, and possibility—a reminder that warmth and life return after every cold and barren period.

Spring also marks the arrival of International Women's Day, a significant event celebrated on March 8th each year. With a history spanning over a century, this day serves as a poignant reminder of the many challenges that continue to affect women's progress. It's a day that not only celebrates the remarkable achievements of women in various spheres but also serves as a powerful platform for advocating gender equality. Importantly, it recognizes the unique challenges that women face in balancing professional success with the responsibilities of motherhood.

For a woman, motherhood is often considered one of her most significant achievements and blessings. It's a journey that embodies unconditional love, strength, and selflessness. Mothers, through their nurturing, guidance, and support, play a pivotal role in shaping the future. Their influence extends beyond their own children, contributing to the fabric of society. Motherhood is not just about giving birth—it's about love, sacrifice, and endless dedication.

The Potter-Randall County Medical Society tirelessly advocates for women's health, especially maternal health. The topic that issue of Panhandle Health addresses an extremely important one for our region. According to the Maternal Vulnerability Index (Surgo Ventures, 2018), on a scale of 0 to 100, with 100 being the worst, Potter County is 81.8 (high), and Randall County is 39.4 (low). The rate of preterm birth (another measure of maternal health) in Potter is 11.4%, whereas the rate of preterm birth in Randall is 9.3%; the national preterm birth rate is 10.4% (March of Dimes, 2023). Moreover, of the pregnant women in Amarillo who accessed any prenatal care, 20% had fewer than five visits, as opposed to the recommended standard of 8 to 14 visits. The March of Dimes report also recognized many counties around Amarillo with limited maternity care (March of Dimes, 2023).

Maternal health is a priority for PRCMS and the Texas Medical Association. It's a collective responsibility that directly impacts the well-being of families, communities, and future generations. By ensuring comprehensive healthcare during pregnancy, childbirth, and the postpartum period, we can significantly reduce complications, enhance survival rates, and promote both physical and mental well-being. Key components of maternal health, such as access to quality prenatal care, safe childbirth practices, postnatal support for recovery and mental health, nutrition, and healthcare for both mother and baby, are crucial, and you will read about each of these in this issue. Investing in maternal health is not just an option--it's a necessity for a healthier and more equitable future.

Guest Editorial

The First Thousand Days: The Foundation for a Healthy Future

by Christine D. Garner, PhD, MS, RD, CLC

INTRODUCTION

The period from conception to a child's second birthday is known as "the first thousand days." This term, coined about 15 years ago, signifies a widely-recognized critical window for growth and development. During this time, the foundations for lifelong health, cognitive ability, and emotional well-being are established, and are shaped by genetic, environmental, and social factors. Research has demonstrated that adequate nutrition, healthcare, early stimulation, and a supportive environment during these early years significantly impact an individual's future health and potential (1). Additionally, maternal health during this period significantly affects both the infant's developmental trajectory and the mother's long-term risk of chronic disease. Thus, prioritizing the health of both mother and child during this period of development is crucial, both for individuals and for societies.

Brain development is particularly rapid during this phase, as children reach approximately 80% of adult brain volume by age three (2). Under the age of two, neural connections form at a remarkable rate; this allows for children to adapt to their immediate environments but also leaves them more vulnerable to environmental and social factors. Physically, the first thousand days set the trajectory for a child's growth and immune system development. Children who fall behind during this time struggle to catch up and exhibit long-term consequences physically and cognitively (3,4).

NUTRITION'S LONG-TERM IMPACT

Nutritional status during pregnancy and infancy is one of the most significant determinants of lifelong health. Rapid cell growth and proliferation require substantial nutrients. Adequate intake of nutrients before and during pregnancy promotes normal embryonic and fetal development, and can have positive long-term effects on health (5). Conversely, maternal malnutrition has been associated with increased risks of stillbirth, preterm birth, low birth weight, some congenital anomalies (e.g. neural tube defects), and impaired brain development (6-8). Key nutrients during pregnancy have substantial impact on long-term well-being, including iron, iodine, folate (folic acid), vitamin D, choline, and omega-3 fatty acids. Insufficiencies and deficiencies in these nutrients can lead to developmental and cognitive delays (iron, iodine, choline, omega-3s), neural tube defects (folate), and poor bone formation (vitamin D).

After birth, exclusive breastfeeding for the first six months is recommended by the American Academy of Pediatrics, as it provides optimal nutrition and immune protection (9). Support of the breastfeeding mother-infant pair is critical to their success, which has long-term positive health benefits for both the mother (e.g., decreased breast cancer and cardiovascular disease risk) and infant (e.g., decreased obesity risk) (10). Poor infant and early childhood nutrition can lead to stunted growth, which affects approximately 22% of children under five globally (11). Stunting is not simply an issue of height, but it is also linked to impaired cognitive development, reduced school performance, and lower economic productivity in adulthood (12).

HEALTHCARE AND DISEASE PREVENTION

Access to quality healthcare and interventions during the first thousand days is critical for improving health and promoting healthy development. Early and regular prenatal care facilitates prevention of complications through education and early identification of health problems. For example, existing maternal anemia or high blood pressure can be detected and treated early, thereby decreasing risk. Early and consistent prenatal care also allows for infections (e.g., syphilis) to be identified and treated appropriately, thereby decreasing risk of transfer to the infant, which can have debilitating long-term effects. Overall, timely (first trimester) and consistent prenatal care ensures safer births, healthier moms, and healthier infants.

Postnatal care for the mother-child dyad is equally important. The first twelve weeks after birth, now referred to as the "fourth trimester," is a time when mother and infant remain very vulnerable. Potential concerns in the mother are risk of hemorrhage, postpartum preeclampsia, and postpartum depression. Follow-up with care providers during this time is critical, although often minimized as the focus shifts to the newborn infant. During this time, infants are learning how to breastfeed (or bottle feed), and their physiology is adapting to the world outside of mom. Infant healthcare and growth monitoring often receive more attention than maternal care.

Another key aspect of healthcare is immunization, which protects against debilitating and life-threatening diseases. Immunizations of a mother before and during pregnancy are recommended to avoid exposure of the fetus and infant to infectious diseases, to which they are particularly vulnerable. For example the pertussis vaccine is recommended for pregnant women between 27 and 36

weeks' gestation to protect infants from early exposure to "whooping cough" which can be deadly (13). Immunizations against 16 potentially harmful diseases are recommended during infancy and before 2 years of age, including those against measles, polio, respiratory syncytial virus (RSV), tetanus and pertussis (14).

EARLY SOCIAL & ECONOMIC FACTORS

Beyond physical health, early social interactions and stimulation play a vital role in cognitive and emotional development. Secure infant attachment with parents or caregivers fosters a feeling of safety, emotional regulation and resilience, while neglect or chronic stress is associated with anxiety, depression, and behavioral challenges (15). Mother-infant interactions in the first 12 months broadly impact the infant's development. Language, cognitive and social development can be affected either positively or negatively based on the quality of interactions (16). Talking, reading, and playing with infants enhance language acquisition and problem-solving skills, setting a strong foundation for cognitive development and academic success (17).

Toxic stress in early childhood, characterized by prolonged activation of stress response systems without adequate adult support, can lead to disruptions in brain structure, resulting in long-term impairments in learning, behavior, and both physical and mental health (18). Chronic exposure to adversity can alter stress regulation mechanisms, increasing the risk of conditions such as anxiety, depression, cardiovascular disease, and metabolic disorders well into adulthood. Supportive caregiving and early interventions can mitigate these risks and promote healthy development.

Policy initiatives, such as nutritional support programs (e.g., WIC), prenatal and postpartum home-visiting programs (e.g., Nurse-Family Partnership) and early childhood education (Head Start and Early Head Start) have demonstrated success in improving child outcomes (19-21). Early investments that support maternal and child health lead to long-term benefits for economies and nations.

CONCLUSION

The first thousand days are crucial for determining lifelong health and development. In this issue of Panhandle Health, you will read about specific aspects—prenatal and postnatal, for both infant and mother—of the first thousand-day period. You will learn how proper nutrition, quality healthcare, early social interactions, and supportive environments can lay the foundation for cognitive and physical well-being. You will understand how ensuring maternal health, promoting breastfeeding, immunization, and reducing toxic stress can prevent long-term risks for mother and child, for the larger family unit, and for society at large.. Early interventions and policies supporting maternal and child health provide lasting benefits for families, communities, and economies. Investing in this critical window strengthens future generations and builds a healthier, more resilient society.

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Dr. Christine Garner joined TTUHSC as an Assistant Professor in the Department of Pediatrics and a researcher with the InfantRisk Center in 2020. Prior to joining faculty, she completed her doctoral training in Maternal and Child Nutrition at Cornell University, worked as a pediatric dietitian at the University of California San Francisco, and worked with UNICEF on a global Infant and Young Child Feeding project. Her research centers on the intersection of maternal and child health, particularly during the first 1000 days.

High-risk Pregnancies

by Shaun Wesley, MD, FACOG and Julia Magness, MD

High-risk pregnancies account for 10% of all pregnancies worldwide (1). These pregnancies not only demand increased medical attention but also place significant emotional, physical, and financial stress on expectant mothers and their families. Women with high-risk pregnancies face a myriad of challenges, from managing pre-existing health conditions to addressing new complications that may arise. These difficulties often heighten anxiety levels, escalate prenatal care costs, and increase the likelihood of adverse outcomes for both mother and baby, underscoring the critical need for comprehensive care and tailored support.

WHAT QUALIFIES AS A HIGH-RISK PREGNANCY?

A high-risk pregnancy involves a greater likelihood of complications affecting the mother, the fetus, or both. Numerous conditions exist that meet these criteria and cannot be adequately covered here. However, a list of common conditions includes:

- **Pregnancy-specific issues:** Gestational diabetes, preeclampsia, abnormal placentation (e.g. placenta previa), or recurrent pregnancy loss.

- **Maternal conditions:** Pregestational diabetes, hypertension, advanced maternal age, clotting disorders, infectious diseases, cancer, or cardiac conditions.

- **Fetal considerations:** Growth restriction, multiple gestations, congenital anomalies, genetic variations, or fetal anemia.

Understanding these factors allows healthcare providers to create personalized management plans. For instance, pre-pregnancy counseling for women with diabetes helps regulate blood sugar levels, reducing the risk of congenital anomalies and stillbirth. Similarly, advanced maternal age often necessitates counseling to discuss the increased risk of pregnancy-related diabetes and hypertension, as well as fetal chromosomal variations. Maternal-fetal medicine (MFM) specialists (also known as Perinatologists) are integral to managing these pregnancies. With three years of additional training after obstetrics and gynecology residency, they collaborate with general obstetricians and other specialists to ensure the best outcomes for the pregnancy.

WHY DOES THIS MATTER?

High-risk pregnancies significantly impact maternal and infant health by increasing the risk of morbidity and mortality. The World Health Organization defines maternal mortality as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes" (2). In 2022, the U.S. maternal mortality rate was 22.3 deaths per 100,000 live births, which is a 144% increase from 1999-2002 (2). Additionally, a report from the Center of Disease Control and Prevention found that over 80% of pregnancy-related deaths between 2017 and 2019 were preventable, with mental health conditions, hemorrhage, and cardiac complications identified as leading causes (3). While debate remains about the exact cause of this increased morbidity, the increase in chronic medical conditions and delayed childbearing has undoubtedly played a role.

Unaddressed maternal conditions increase the likelihood of intensive care unit (ICU) admissions for the mother, occurring in about 1.8 per 1,000 live births (around 6000 admissions) annually (4). ICU stays pose further risks to mothers and babies, particularly in cases involving multiple health conditions. Additionally, the stress and anxiety common in high-risk pregnancies can elevate stress hormones like cortisol, further complicating outcomes (1). Depending on the pregnancy challenges and complications presented, infants can also be negatively impacted. Potential adverse outcomes related to the infant include preterm labor, low birth weight, neurological damage, and neonatal death. Knowing that these pregnancies increase the risk of both maternal and infant morbidity and mortality, there is a need for increased surveillance throughout pregnancy. However, this heightened monitoring can introduce additional challenges for patients.

CHALLENGES IN HIGH-RISK PREGNANCIES

High-risk pregnancies require frequent medical appointments, advanced imaging, and detailed fetal monitoring, often creating significant physical, emotional, and financial burdens for patients. The intense demands of care can lead to feelings of powerlessness, particularly when women are excluded from decisions about their health. Research shows that satisfaction during high-risk pregnancies is strongly tied to whether care aligns with patients' preferences for involvement in decision-making (5). Additionally, socioeconomic factors play a significant role in shaping the experiences of women with high-risk pregnancies. Barriers such as limited transportation, obtaining child-

care, and financial constraints can delay or prevent access to timely care, exacerbating health disparities. These challenges highlight the importance of healthcare systems that are responsive to the individual needs of patients, particularly those from underserved communities (6).

Beyond the financial and logistical issues of high-risk pregnancies, emotional issues pose one of the greatest challenges. Women often report heightened anxiety and a profound sense of responsibility for their health and the well-being of their baby. How risk information is communicated, and the degree of involvement women feel they have in their care, can significantly influence their emotional state. Further, high-risk pregnancies carry increased risk of hospitalization for close fetal monitoring that can last for months, leading to increased emotional burden.

Supportive healthcare teams that offer clear explanations and invite active participation in care foster trust and reduce feelings of helplessness. Women benefit from integrated care that encompasses both physical and emotional dimensions. For instance, research has shown that clear communication about medical decisions and providing options for shared decision-making contribute to better outcomes and higher patient satisfaction (5). Conversely, some women prefer a passive role, relying on the expertise of their providers. Regardless of their preferred level of involvement, women report greater satisfaction when their preferences are respected (5, 6).

Support systems tailored to individual needs, including peer networks and flexible care delivery methods, such as telehealth, play an essential role in overcoming barriers to care (6). Furthermore, addressing psychological distress early through emotional support or counseling can improve both maternal well-being and neonatal outcomes. When healthcare providers prioritize patient-centered approaches and trust-building, women feel empowered to navigate the complexities of high-risk pregnancies.

MANAGING HIGH-RISK PREGNANCIES

High-risk pregnancies require a multidisciplinary approach involving obstetricians, MFMs, and other healthcare providers. A comprehensive strategy addresses all aspects of care, including preconception counseling, detailed fetal surveillance, and delivery planning. Each of these steps ensures that both maternal and fetal health are optimized, even in the face of complex medical challenges.

PRECONCEPTION/EARLY PREGNANCY COUNSELING

Preconception counseling is a cornerstone of high-risk pregnancy management. Early discussion about chronic conditions provides the opportunity to optimize the disease state and mitigate potential risks before conception. During these visits, MFMs evaluate pre-existing medical conditions, review medications, and provide tailored recommendations to enhance maternal health. Counseling also includes discussions about genetic risks, lifestyle modifications, and the importance of early prenatal care.

FETAL IMAGING & SURVEILLANCE

High-risk pregnancies may also require advanced fetal imaging (fetal echocardiography or MRI) and fetal surveillance using ultrasound and fetal heart rate monitoring. This is important to help monitor the development and wellbeing of the fetus throughout the high-risk pregnancy. Several advanced techniques are employed to detect and manage potential complications:

• **Fetal Echocardiograms:** This specialized ultrasound evaluates the fetal heart for structural anomalies and functional concerns. Fetal echocardiography is particularly valuable for detecting congenital heart defects early, allowing for appropriate interventions during pregnancy or immediately after birth.

• **Routine Ultrasounds:** Regular ultrasounds are essential for tracking fetal growth, assessing amniotic fluid levels, and evaluating overall fetal health. These assessments help identify conditions such as fetal growth restriction or oligohydramnios, enabling timely medical or surgical interventions.

• **Doppler Studies:** Doppler ultrasound provides important insights into fetoplacental blood flow. By assessing the flow through several large fetal arteries and veins, this technique helps identify placental insufficiency or other vascular issues that may compromise fetal well-being.

• **Non-Stress Tests (NST) and Biophysical Profiles (BPP)**: NSTs are a non-invasive method for assessing fetal well-being by monitoring the fetal heart rate over a set period of time to assess for normal heart rate patterns seen in fetuses with normal acid-base status. BPP expands upon the findings of the NST by combining it with ultrasound imaging to evaluate additional parameters, including fetal movement, muscle tone, breathing patterns, and amniotic fluid levels. These tools help assess the risk of stillbirth in high-risk pregnancies.

DELIVERY PLANNING

Individualized delivery planning is important for ensuring the safety of both mother and baby. Delivery plans are tailored based on maternal and fetal conditions, gestational age, and the presence of complications. For example, in cases of severe preeclampsia or placental insufficiency, early delivery may be necessary to prevent adverse outcomes. MFM specialists collaborate with obstetricians and neonatologists to determine the optimal timing and mode of delivery, balancing the risks of preterm birth with the need to protect maternal and fetal health. In some cases, advanced planning includes the coordination of specialized neonatal care for infants requiring immediate medical attention after birth. Rarely, cesarean

delivery or assistance during the pushing stage of labor with forceps or vacuum may be necessary to improve outcomes. This holistic approach supports the best possible outcomes for mothers and their babies.

CONCLUSION

High-risk pregnancies bring unique challenges, but, with the right care and support, positive outcomes are possible for both mothers and babies. By addressing physical health concerns alongside emotional well-being, healthcare providers can help women navigate these complex pregnancies with confidence and resilience. Clear communication, personalized care, and empowering patients to play an active role in their health decisions are essential steps in making this journey more manageable.

Equally important is recognizing and addressing barriers such as financial or logistical difficulties that can complicate access to care. Ongoing efforts to improve healthcare systems and expand resources for women with high-risk pregnancies will help ensure that every mother has the support she needs. Together, patients, families, and healthcare providers can work toward healthier outcomes and a smoother path to welcoming a new life.

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Dr. Shaun Wesley is a Maternal-Fetal Medicine specialist with a passion for high-risk obstetrics, ultrasonography, and medical education. He completed his OB/GYN residency and Maternal-Fetal Medicine fellowship at the University of Rochester and is dedicated to advancing resident education and research mentorship. Outside of medicine, he enjoys spending time with his wife and four sons, playing guitar, and exploring new technologies in education.

Dr. Julia Magness grew up in the Midwest and completed her undergraduate studies at the University of Iowa. She earned her medical degree from William Carey University College of Osteopathic Medicine and is currently a fourth year OBGYN resident at Texas Tech University Health Sciences Center in Amarillo. Dr. Magness will graduate in June 2025 and is excited to join Panhandle OBGYN in the fall, where she will begin her career in private practice.

Newborn Evaluation: Starting a Lifetime of Health, One Tiny Exam at a Time

by Rachel Anderson, MD & Karla Querales, MD

Few places in medicine rival the joy of the newborn nursery. The emergence of brand new life carries an odd blend of mystery and predictability. There is a profound sense of purpose for those privileged to work in this world. For pediatricians, the newborn nursery is a venue where vigilance pairs with a doctor's intuition, and the art of medicine feels so very tangible. How many times has a pediatrician's gut feeling—that hunch that something's not quite right—uncovered a serious condition in a newborn who appears perfectly healthy on the surface?

The moment a child emerges into the world is nothing short of extraordinary. Their physiology shifts rapidly, their immune systems are still learning to fend for themselves, and the respiratory and gastrointestinal systems begin their first test drives. It is a whirlwind of transitions, which is why a thorough evaluation is essential from the very beginning. The nursery is also where parents (and their adorable new roommates) have their first introduction to the medical world. This is the starting point for the physician-parent relationship which can either transform into a trusted relationship or lead to a missed connection with the medical system if not handled correctly.

THE GOLDEN HOUR

The newborn's first hour is pure gold. Skin-to-skin contact with the mother regulates heart rate, temperature, and stress while building the foundation for bonding and breast feeding. It is a "natural" process, but our job is only just beginning. With baby nestled on mom's chest, the delivery team scores the APGAR, and they ask themselves three crucial questions:

1. Is the baby term or preterm?
2. Does the baby have good muscle tone?
3. Is the baby breathing well?

If all the answers are "yes," we let nature do its thing. If not, we intervene swiftly, initiating resuscitation if needed. This fork in the road helps us determine if we need our colleagues from the NICU or if the baby can be monitored further by the general pediatrics team.

The APGAR score—an acronym every medical student can recite in their sleep—is our first structured assessment. It evaluates:

- Appearance (skin color)
- Pulse (heart rate)
- Grimace (reflex irritability)
- Activity (muscle tone)
- Respiration (breathing effort)

Scores range from 0 to 10. While it is not a crystal ball for long-term health, it is an excellent guide for immediate care. The one-minute score signifies how well the baby tolerated labor; the five-minute score signifies how well baby is tolerating our resuscitation measures.

EVALUATING RISK FACTORS:

Every mother-baby pair has its own unique set of risk factors that can give us clues about potential health concerns that may not be readily apparent. The list is extensive, but here are some common ones that we mull over:

1) First-time mothers (primigravidas): If this is mom's first baby, we'll provide extra education and closely monitor feeding and newborn care. Also, first- born babies are at higher risk for some interesting diseases such as pyloric stenosis and developmental hip dysplasia.

2) Gestational Diabetes: High blood sugar levels in the third trimester can lead to big babies, because glucose crosses the placenta while insulin (a larger molecule) does not. The baby makes extra insulin to compensate, but once they're born and the steady glucose supply stops, they can develop low blood sugar (hypoglycemia). These babies may be jittery, sweaty, or even have seizures, requiring immediate management. High insulin levels can also impact lung development, increasing the risk of respiratory distress. Other potential complications include polycythemia (high hemoglobin levels), an enlarged heart, and feeding difficulties.

3) Group B strep (GBS): If a mother tests positive for GBS late in pregnancy, she'll receive antibiotics during labor, which has significantly reduced neonatal sepsis rates. However, we still need to clue in more closely if there's prolonged rupture of membranes (>18 hours), maternal fever, or any signs that the baby isn't doing well. We need to act fast and assess for possible infection.

4) Late or limited prenatal care: When a mother hasn't had consistent prenatal visits, we need to be extra vigilant for congenital conditions that may have been missed on ultrasound. For instance, as many as 30% of congenital heart lesions are detected after delivery (some, such as transposition of the great vessels, are emergencies!). Conditions like Down syndrome may also go unnoticed without proper screening. Reasons for delayed care vary—insurance issues, not realizing they were pregnant, or socioeconomic

challenges—but drug use can also be a factor. If there's concern, we can screen the baby's urine for recent exposure or check meconium (that first sticky black stool) or umbilical cord samples for substances used earlier in pregnancy.

5) Breech Delivery: Babies who were breech in the third trimester have a higher risk of developmental hip dysplasia. They may need an ultrasound or X-ray after birth to check their hips.

6) Exposure to infections: Routine screenings during pregnancy check for infections like HIV, syphilis, rubella, and hepatitis B. Each of these requires specific interventions for the baby, depending on the results.

7) Blood type incompatibilities: If mom has blood type O or is Rh-negative, we'll check the baby's blood type to screen for any potential incompatibility issues.

PHYSICAL EXAMINATION: HEAD-TO-TOE

When we get our hands on that baby (after giving stable newborns plenty of time for bonding and feeding), this is where the rubber meets the road, and we perform a thorough physical exam, including:

- **Vital Signs:** Temperature, heart rate, respiratory rate, capillary refill, and oxygen saturation. (Fun fact: oxygen sat starts at ~60% in that first minute and climbs above 90% by five minutes—remember the mixing of deoxygenated blood!). All of these vital signs can vary wildly from adult numbers.

- **Head and Face:** Is there caput succedaneum (edema of the scalp), cephalohematoma (blood in the subperiosteal space), or—worst-case scenario—a subgaleal hemorrhage (life-threatening bleeding into the scalp)? Also, atypical facial features can be identified during the initial exam, which may warrant additional investigation for genetic syndromes.

- **Skin:** Jaundice, cyanosis, rashes, or birthmarks can signal more profound problems.

- **Cardiopulmonary:** Listening for murmurs or abnormal breath sounds. Because tiny hearts can be tricky due to the fast heart rate, it can be difficult to distinguish a serious murmur from benign.

- **Abdomen:** From the distended belly of intestinal obstruction (think intestinal atresia or meconium ileus) to the scaphoid abdomen of a diaphragmatic hernia, a general abdominal exam is essential. Hepatomegaly could signal heart failure from a congenital heart lesion or a glycogen storage disorder.

• **Extremities:** From extra digits to hip dysplasia (especially in breech babies), every joint and limb gets attention.

• **Genitalia:** The site of many anatomical abnormalities that may be easily overlooked.

• **Neurological:** Reflexes such as the startle reflex, grasp, and rooting tell us much about the baby's central nervous system. Subtle differences in tone or movement can be early clues to more significant problems in the brain or spinal cord.

FIRST HOUR INTERVENTIONS

Before the end of the first hour of life, several evidence-based interventions take place:

• **Vitamin K Prophylaxis:** A single shot of vitamin K (far more effective than the oral version) is a lifesaver, preventing vitamin K deficiency bleeding (VKDB), which can result in life-threatening intracranial or gastrointestinal hemorrhages. Since newborns are born with a sterile gut and rely largely on gut bacteria to produce vitamin K, they are naturally predisposed to VKDB without supplementation.

• **Erythromycin Ophthalmic Ointment** is applied to both eyes to prevent neonatal conjunctivitis and keep the little one safe from infections like gonorrhea.

• **Hepatitis B Vaccine:** Administered to protect against vertical and horizontal transmission of hepatitis B—critical for babies with mothers who are positive for or have an unknown status for the virus.

As some parents refuse these lifesaving measures, physicians must balance autonomy with the responsibility to advocate for their patient and educate the family. This parent discussion can be contentious and must be handled delicately. Although some parents remain fixed in their decision, I have found that an approach that combines a heartfelt conversation ("I absolutely have given all of these to my own children") and evidence- based education ("Vitamin K is a life-saving measure") leads to more reconsideration.

SCREENING TESTS: CATCHING HIDDEN CONDITIONS

Not all conditions are visible at birth, which is why universal screening tests are recommended:

• **Newborn Screening:** Screening for disorders like phenylketonuria and congenital hypothyroidism, with spinal muscular atrophy now added to Texas' screening list. Some states have introduced screening for conditions linked to Sudden Infant Death Syndrome (SIDS); with advancing research, we are hopeful that future screenings will cover even more conditions that have effective interventions.

• **Hearing Screening:** Detecting early hearing loss is essential so that interventions can happen promptly. If a newborn fails the initial hearing screen, we for congenital cytomegalovirus (CMV) infection, which is the most common cause of acquired hearing loss.

• **Congenital Cardiac Disease Screening (CCHD):** Pulse oximetry and blood pressure checks can spot hidden congenital heart defects before they lead to problems. A failed screen prompts an echocardiogram.

COMMON NEWBORN CONCERNS

These bundles of joy come with their fair share of potential challenges after admission into the nursery:

• **Respiratory Distress:** Signs like tachypnea, grunting, or nasal flaring may signal transient tachypnea of the newborn (retained amniotic fluid in the lungs), meconium aspiration, or more serious issues like sepsis, anatomical lung problems or congenital heart defects.

• **Neonatal Abstinence Syndrome:** Once the umbilical cord "fire hose" is shut off, some babies start withdrawing from substances their mother was taking during pregnancy. This can include anything from opioids and SSRIs, even to caffeine. I like to call it "leaky baby syndrome"—these little ones can have diarrhea, frequent spit-ups, watery eyes, a runny nose, sweating, jitteriness, and just overall fussiness. To gauge how severe the withdrawal is, we use a neonatal abstinence score, which helps determine if the baby needs treatment. Care can range from simple comfort measures—like swaddling and keeping a calm, low-stimulation environment—to IV medications like clonidine if symptoms are more severe. The goal is to keep these babies as comfortable as possible while they adjust to life outside the womb.

• **Jaundice:** Physiological jaundice is common due to an immature liver and quick red blood cell turnover. But beware of pathological jaundice (jaundice that appears in the first 24 hours or is associated with dangerously high bilirubin levels), risking complications like acute bilirubin encephalopathy and kernicterus (bilirubin deposition in the brain leading to long term problems).

• **Feeding and Weight Loss:** Newborns lose 5–10% of their birth weight in the first days due to diuresis (hot tub life has its costs!). Close monitoring ensures adequate nutrition and hydration.

PARENTAL EDUCATION

Empowering parents with knowledge is as vital to a baby's health as any exam. Topics to cover:

• **Feeding Tips:** How to recognize adequate nutrition and address any concerns, whether formula feeding or breast feeding.

• **Safe Sleep:** Teaching safe sleep practices to help prevent Sudden Infant Death Syndrome. Baby should be placed on back on a firm, flat, noninclined surface for every sleep with nothing else in the crib. Avoid overheating and smoke

exposure. A pacifier may also help protect baby although the mechanism is unclear. The AAP recommends against bed sharing but encourages room sharing for at least 6 months where possible.

• **Umbilical Cord Care:** Let the cord dry naturally—no need for alcohol or other treatments. Keep it clean, dry, and fold the diaper below it to avoid moisture. It will fall off on its own in 1–2 weeks. Watch for redness, swelling, or odor, which could signal infection.

• **Signs of Illness:** We discuss when to worry about fever, poor feeding, or lethargy.

• **Vitamin D Supplementation:** Both formula-fed and breastfed babies need 400 IU of vitamin D daily to support healthy bone development.

• Crying: Crying is a baby's main form of communication, but it can frustrate parents and, in rare cases, lead to harmful outcomes. Normalizing crying and discussing coping strategies can help reduce risks and prevent abuse.

DISCHARGE

A mother may physically be ready to be discharged a day after a vaginal delivery, but a newborn has to clear a long checklist before they can go home. Cue the tug-of-war with the hospital, which often pushes for early discharges. The American Academy of Pediatrics discharge criteria isn't a simple "they look fine" situation. There are guidelines that outlines when a baby may be discharged. Some of these criteria include stable vital signs for the past 12 hours, completing two successful feedings, jaundice assessments, evaluating the parents' ability to care for the baby, setting up a medical home with a follow-up appointment, and much more.

CONCLUSION

A newborn's first days are pivotal, filled with rapid physiological changes and emerging challenges. Through systematic evaluation and early intervention, healthcare providers ensure that each baby receives the healthiest start possible. By combining clinical vigilance with parental education, these first steps lay the foundation for lifelong health and well-being. And let's be honest, who doesn't cherish a job that comes with so many adorable co-workers?

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Developmental Surveillance and Screening in Young Children

by Angela Huang, MD

Most people know that childhood development generally proceeds along a fairly predictable course: children usually learn to walk around their first birthday, by age 3 children can usually jump and string together understandable sentences, etc. Tracing a child's developmental progression is an important part of well-child care in young children; this is where developmental surveillance and screening come in. Delays or failure to progress as expected can be markers, not only for developmental disabilities (such as autism-spectrum disorders), but for medical conditions as well. Since up to 1 in 6 children in the United States has a developmental disability, it is important that providers of longitudinal care for children track and document these stages. In this article, I will describe an organized approach to developmental surveillance and screening.

DEVELOPMENTAL SURVEILLANCE

Developmental surveillance is a process for recognizing children who may be at risk for developmental delays. It is separate from developmental screening, which is the use of standardized tools to identify children who may be at risk of developmental delay. Developmental surveillance is flexible, longitudinal, continuous, and cumulative. It is done at every well child check and consists of 6 components. These components are:

1) Eliciting and Attending to Parental Concerns
2) Maintaining a Developmental History
3) Making Accurate and Informed Observations About the Child
4) Identifying the Presence of Risks, Strengths, and Protective Factors
5) Documenting the Process and Findings
6) Sharing Opinions and Findings with Other Professionals

Eliciting and Attending to Parental Concerns

This includes asking about parents'/caregivers' concerns as well as reviewing the results of outside screenings or evaluations brought by parents. It is also important to note that the absence of parental or provider concerns does not eliminate the possibility of developmental delays.

Maintaining a Developmental History

Ask questions about changes parents have seen in their child's development since the last visit.

Making Accurate and Informed Observations About the Child

Perform a careful developmental and physical examination within the context of a health supervision visit. Observe for the attainment of age-appropriate developmental skills. A physical exam should also be performed which includes growth parameters, looking for dysmorphology, looking for neurocutaneous lesions, and performing a neurological exam.

Identifying Risks and Strengths and Protective Factors

Identifying risk factors begins with a thorough Medical History and Physical Exam. Prenatal and perinatal risk factors include alcohol / drug exposure, TORCH infections, preeclampsia, previous miscarriage / stillbirth, prematurity, Very Low Birth Weight, Intraventricular Hemorrhage, seizures, meningitis, and sepsis. Risk factors in the past medical history include chronic otitis media, lead exposure, chronic illness, vision / hearing deficits. Relevant factors in the developmental and behavioral history include developmental milestones, play skills, and sleep patterns. Psychosocial risk factors include lower parental educational level / income, single parent household, a high number of children in the home, parental mental health difficulties, history of abuse in the parent as a child, domestic violence, and frequent household moves. Four or more risk factors increases risk of developmental delays.

Protective factors include stable family income, higher parental education level, reasonable ability of the caregiver to understand and implement instructions, committed and emotionally supportive caregivers, opportunities to interact with other children, and a structured environment.

Documenting the Process and Findings

Medical records should document the outcome of all developmental surveillance and screening activities. Make note of specific actions taken or planned.

Sharing Opinions and Findings with Other Professionals

A wide range of other professionals may be engaged with a young child and their family. These include child care providers, preschool teachers, home visitors, and developmental therapists. Coordination of care and 2-way communication between the medical home and outside professional should be systematic and consistent.

DEVELOPMENTAL SCREENING

Developmental screening is systematic and standardized. It must involve the use of a standardized tool. Without screening, 70% of children with developmental disabilities are not identified. With screening, 70 – 80% of

children with developmental disabilities will be correctly identified. The American Academy of Pediatrics guidelines state that developmental screening should be performed at the 9 month, 18 month, and 30 month wellchild checks. Texas Health Steps (Texas Medicaid) requires that developmental screening be performed at the 9 month, 18 month, 2 year, 3 year, and 4 year wellchild checks. Types of screening tools include:

Parent Report Tools
Direct Screening Tools
Domain-Specific Tools

Parent Report Tools

Parent Report Tools include the PEDS (Parent Evaluation of Developmental Status) and Ages and Stages Questionnaire. These are also the two screening tools approved for use by Texas Health Steps.

The PEDS is a 10 – item questionnaire assessing parental concerns. It is for children age 0 to 8 years and is available in English, Spanish, Vietnamese, Somali, and Chinese. It is written at a 4th – 5th grade reading level. The Ages and Stages Questionnaire is a 30 – item questionnaire covering multiple areas of development. These include Communication, Gross and Fine Motor Skills, Problem-Solving, and Personal-Social Skills. There are 19 different questionnaires for ages 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 27, 30, 33, 36, 42, 48, 54, and 60 months. They are available in English and Spanish

Direct Screening Tools

The Denver Developmental Screening Test II (DDST- II) is a traditional example of a direct screening tool which can be used in primary care. It can be used for ages 0 to 6 years. The Denver covers multiple domains of development including Personal-Social, Fine Motor – Adaptive, Language, and Gross Motor. It is available in English and Spanish.

Domain-Specific Tools

The M-CHAT-R/F (Modified Checklist for Autism in Toddlers, Revised, with Follow-Up) is an example of a domain-specific tool. It is a 2-stage parent-report screening tool to assess risk for Autism Spectrum Disorder. The American Academy of Pediatrics recommends and Texas Health Steps requires that autism screening be performed at the 18 and 24 month well child checks.

WHAT NEXT?

When a child is suspected to of having a developmental disability, next steps include a medical diagnostic evaluation, early childhood services, and a developmental evaluation. A medical diagnostic evaluation involves obtaining a focused history and physical examination to identify any previously undetected medical conditions. It includes vision screening, an objective hearing evaluation, review of newborn screening, review of growth charts, obtaining updated environmental, medical, family, and social histories, and genetic testing (i.e. DNA microarray, Fragile X, FISH for specific syndromes). Neuroimaging (i.e., MRI) should be considered in the presence of an abnormal neurologic examination, microcephaly, macrocephaly, or other clinical indicators. An EEG may be included. Early Childhood Services include Early Intervention services for children ages 0 to 3 and preschool special education programs for children ages 3 to 5. A comprehensive developmental evaluation can be obtained through a referral to a developmental pediatrics provider.

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The InfantRisk Center: Leading the Way in Breastfeeding Medicine

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Mia cradled her six-month-old daughter, Lily, in her arms. Sleep had become elusive, her thoughts spiraling in the quiet hours of the night. Her cardiologist had prescribed medication, but when Mia asked if it was safe while breastfeeding, he hesitated. "I'm not sure," he admitted.

Mia knew breastfeeding supported her daughter's immune system and lowered her own risk of cancer. Determined to keep Lily safe, she hadn't started the medication but kept searching for answers.

Her OB-GYN was vague, "It's probably fine." Her pediatrician frowned. "Breastfeeding is best, but we want to keep Lily safe." The internet was harsher, labeling mothers like her as selfish.

Finally, a lactation consultant connected her to the InfantRisk Center helpline. The nurse explained the research behind the medication's safety in breast milk, how to advocate for herself with her doctors, where to find their mobile apps, and invited her to join in future research. For the first time in weeks, Mia felt hopeful. She started the medication, confident that both she and Lily could thrive.

The InfantRisk Center of Excellence (IRC) at Texas Tech University Sciences Center (TTUHSC) School of Medicine in Amarillo is a trusted name for mothers and healthcare providers worldwide, offering answers to the important question: Is this medication safe while breastfeeding? For over a decade, the IRC has combined research, education, and compassion to help families make confident, informed choices about maternal and infant health.

HOW DID THE INFANTRISK CENTER COME TO BE?

In the 1980s, neonatologists began recognizing how life-saving breast milk could be for pre-term infants, by showing that it was responsible for a 17-fold reduction in mortality risk from necrotizing enterocolitis—one of the top causes of death in these fragile babies. In Amarillo, Dr. Mubariz Naqvi and the TTUHSC neonatology team encouraged moms of pre-term infants to breastfeed to give their babies their best shot at survival.

When those breastfeeding moms needed medications that might be risky for their babies via milk, Dr. Naqvi turned to his office neighbor, Dr. Thomas Hale, a pharmacology professor in the pediatrics department. That simple question launched Dr. Hale into a new, super-specialized field: lactation pharmacology. With his background in pharmacy, toxicology, and research, he was ideally poised to search for answers that didn't yet exist. Dr. Hale set up a lab in Amarillo to test breast milk for medications, a task few people had the skill to do.

His work led to Hale's Medications & Mothers' Milk (1), the internationally renowned go-to manual for understanding the transfer of medications into breast milk. Now in its 21st edition, Dr. Hale's groundbreaking textbook is still the gold standard in lactational pharmacology, helping healthcare providers around the world make safer decisions for breastfeeding moms and their babies.

Dr. Hale's efforts were so successful that the demand for answers quickly grew beyond what he could manage on his own. By 2011, things had gotten so busy that even the university chancellor was getting calls from parents looking for Dr. Hale's help. That's when the **InfantRisk Center (IRC)** was created to meet this growing need.

Dr. Hale knew that, when moms and doctors didn't have access to clear, reliable research on medication safety, it often led to unnecessary fear, delayed treatments, and harmful outcomes for both moms and babies. The IRC's call center changed that. It gave parents and providers a place to turn for evidence-based answers—and, just as importantly, for reassurance. Even in today's digital world, people still value talking to a real person before "risking" their baby's health, which is why the call center remains such an important part of what the IRC does.

What started with grant funding and local donations grew into a leading resource for research, education, and support on drug safety during breastfeeding. Dr. Hale didn't stop there—he expanded the call center to serve parents and healthcare providers worldwide. To make this life-changing information even more accessible, the IRC also launched two easy-to-use mobile apps: **MommyMeds** for moms and **InfantRisk HCP** for healthcare providers. These apps give instant, evidence-based answers about medication safety, helping parents and providers make confident, informed decisions in real-time.

To date, the InfantRisk Center of Excellence is responsible for:

• **Groundbreaking Research:** The IRC **has published over 80 peer-reviewed studies.**

• **Answering Over 160,000 Calls** from parents and providers about medication safety during pregnancy and lactation.

• The apps **MommyMeds** (for moms) and **InfantRisk HCP** (for providers) have over **40,000 subscribers.**

• We **mentor** medical students, pharmacy residents, and researchers to continue this critical work and improve care for families.

THE MATERNAL HEALTH BENEFITS OF BREASTFEEDING: A LIFELONG ADVANTAGE

Most new parents are aware of the infant health benefits from breast milk. However, breastfeeding offers significant health benefits for **mothers**, including reduced risks of breast and ovarian cancers, type 2 diabetes, high blood pressure, and even myocardial infarction. For example, out of **100,000 breastfeeding mothers,** optimal breastfeeding could avert over **5,000 cases** of breast cancer, **12,000 cases** of type 2 diabetes, and nearly **36,000 cases** of hypertension annually, as well as save **2,619 maternal lives**

(2). These improvements drastically reduce healthcare costs, as fewer women require treatment for these chronic and life-threatening conditions.

To maximize health advantages, the American Academy of Pediatrics (AAP) and the World Health Organization (WHO) and other organizations recommend exclusive breastfeeding for the first six months, followed by continued breastfeeding alongside appropriate complementary foods for up to two years or longer, as mutually desired by mother and child(3). This extended duration of breastfeeding not only supports the child's development but also significantly enhances the long-term health of the mother, offering both physical and financial benefits for families and healthcare systems alike.

Healthcare providers often worry about the potential negative effects of maternal medications on breastfeeding infants

(4). As a result, they may err on the side of caution and unnecessarily recommend that mothers either stop breastfeeding or forgo needed medication, both of which can harm maternal health. Medication use is a leading reason mothers are advised to cease breastfeeding during the first year. In fact, a model of factors contributing to provider recommendations of breastfeeding cessation found that medication use was second only to a partner's preference for the mother to stop breastfeeding. Mothers who are unwell or require medication are more than twice as likely to fall short of their breastfeeding goals. The limited availability of safety and efficacy data for medications in breastfeeding women and their infants leads to inconsistent and often contradictory advice

(5). However, very few medications are truly incompatible with breastfeeding. In some cases, medications may even help mothers avoid disease relapse and continue breastfeeding for longer than those who remain untreated.

HOW THE INFANTRISK CENTER BRIDGES THIS EVIDENCE GAP

At the heart of the IRC's work is a multidisciplinary team of pharmacists, researchers, clinicians, and nurses who specialize in understanding the effects of medications on pregnant and breastfeeding populations. Their groundbreaking research has reshaped clinical practices, providing healthcare professionals with essential tools and empowering families to make informed decisions. Our placement at the TTUHSC School of Medicine fosters collaboration with university researchers with a

wide range of knowledge, including pharmacoepidemiology, data science and real-world evidence, toxicology, dairy science (at the Texas Tech University School of Veterinary Medicine located on our campus), pharmacokinetics, and virtually every medical specialty. We collaborate with pharmaceutical companies, clinical research organizations, pasteurized human milk banks supplying NICUs, universities, government organizations, and private partners to drive our mission forward.

In 2021, the IRC launched its **Human Milk Biorepository (HMB)**, a pioneering initiative designed to facilitate lactation research by addressing challenges such as limited exposure windows and the rarity of certain cases. This innovative resource stores milk samples from lactating mothers and makes them available for future studies, broadening the scope of possible research in the field. One such study is a collaboration with the Food and Drug Administration (FDA), working to build an "organ-on-a-chip" lactation model where we use our human milk samples to validate how well the system models drug transfer into "milk" produced by mammary cells in a lab

In 2024 alone, the IRC published **10 peer-reviewed** articles and delivered **10 presentations,** significantly advancing the global understanding of drug safety in pregnancy and breastfeeding. Among these lectures, some were specifically designed to educate the FDA about lactation pharmacology, some were at international conferences, while another was delivered to healthcare providers at the Cleveland Clinic, underscoring the IRC's leadership in this critical field. Collectively, these presentations reached an audience of approximately 12,000 people in 2024, reflecting the widespread interest and impact of their work. These accomplishments prominently feature the contributions of seven medical students, one pharmacy resident, and a OneHealth doctoral candidate, demonstrating the IRC's commitment to fostering the next generation of maternal-infant health researchers.

CARRYING ON A LEGACY

The IRC's influence extends beyond individual consultations and research findings; it has played a pivotal role in shaping healthcare policies globally. In 2022, a student-led case report from the IRC contributed to a **Health Canada safety announcement**, exemplifying the center's role in advancing global health standards. In 2023, Dr. Kaytlin Krutsch drafted the first lactation data elements for interoperable electronic health records for the **National Coordinator for Health Information Technology** and advocated for lactating clinicians and researchers at the **Inaugural Stakeholder Meeting for the Prioritization of Therapeutic Research Needs for Pregnant, Postpartum, and Lactating Persons** at the Eunice Kennedy Shriver National Institute of Child Health and Human Development. The IRC is also collaborating with the Food and Drug Administration's Office of Clinical Pharmacology to improve their understanding of breastfeeding medicine in policy and research.

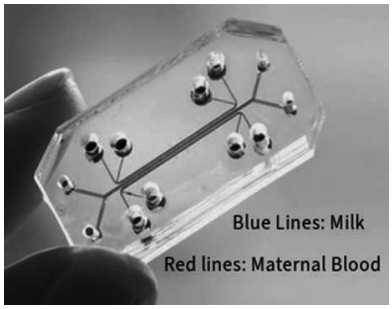

Figure 1. Mammary Gland Organ-on-a-Chip. An image of a micro physiologic system similar to what our study with the FDA will use. Mammary epithelial and endothelial cells will be grown across the middle of the two clear plates to create a 2-dimentional model of the lactating mammary gland complete with laminar flow. The red lines represent the compartment containing maternal blood which will be dosed with medication. On the other side of the mammary cells, the blue compartment will contain human milk. After inducing blood "flow" across the mammary cells, the milk will be tested for the medication. The concentrations of medication in the lab model of milk will be compared to women's milk who are taking the medication in question from the InfantRisk Human Milk Biorepository. This project will be the first of its kind.

In 2023, Dr. Thomas Hale passed the torch of IRC Directorship to his protégé, Amarillo native Dr. Kaytlin Krutsch, a pharmacist and researcher with expertise in lactation pharmacology and a passionate advocate for maternal and infant health. A leading voice in lactation pharmacology, Dr. Krutsch is an award-winning public speaker with lectures translated into over 25 languages. With extensive credentials and a background in nutritional science, Dr. Krutsch is uniquely positioned to propel the InfantRisk Center's mission of improving maternal and infant health through research, education, and advocacy.

THE POWER OF COMMUNITY: LOCAL SUPPORT, GLOBAL IMPACT

In a space filled with uncertainty, the InfantRisk Center stands as a beacon of reliable, compassionate care for breastfeeding women. By bridging knowledge gaps, combating misinformation, and shaping the future of lactation pharmacology, we're not just protecting today's families—we're building healthier futures for generations to come.

The IRC's ability to lead the way in maternal and infant health is made possible not only by the expertise and dedication of our team but also through the vital support of our generous local community. Contributors such as the **Payne Foundation, Laura W. Bush Institute for Women's Health (LWBI), Marshall Verne Ross Foundation, Brumley Foundation, Piñion Foundation,** and **Children's Miracle Network** have been instrumental in sustaining our mission.

This local support underpins everything we do, from answering calls to conducting groundbreaking research. It ensures that the IRC can remain at the forefront of lactation pharmacology while serving mothers and healthcare providers worldwide. The Panhandle's generosity directly impacts families far beyond our community.

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Katie Boatler, a native of Amarillo, is a dedicated nurse at the InfantRisk Center, where she is passionate about supporting breastfeeding moms by advancing research and providing reliable information on lactation and medication safety. After graduating from West Texas A&M University with a BSN, Katie discovered her love for helping moms and babies during her early career in pediatrics. She now works closely with families and healthcare professionals to ensure they have access to the best resources and guidance. Her commitment lies in empowering mothers to make informed choices for their health and their babies' well-being.

Dr. Teresa Baker is professor and chair of the Obstetrics and Gynecology department at Texas Tech School of Medicine in Amarillo. Originally from Hereford TX, she trained at the University of Texas Southwestern in Dallas, completing her residency training in the Parkland Hospital system in Dallas. She is a fellow of the American Board of Obstetrics and Gynecology. Her primary interests are teen pregnancy, postpartum depression, and promoting preventive medicine for the women of the Texas Panhandle, as well as medical student and resident education at TTUSOM.

Dr. Kaytlin Krutsch, a proud Panhandle native, is a mother, researcher, and the director of the InfantRisk Center of Excellence at TTUHSC. Her research focuses on the transfer of medications into breast milk, driven by a dedication to providing practical healthcare solutions for mothers and their families. Passionate about empowering women, Dr. Krutsch believes that mothers deserve more—

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The Impact of Violence against Women in the Perinatal Period

by Kathleen Kendall-Tackett, PhD, IBCLC, FAPA

ABSTRACT

Violence against women (VAW) is common and is perhaps the most potent risk factor for mental illness during pregnancy and postpartum. The most common outcomes are depression, anxiety, posttraumatic stress disorder (PTSD), chronic pain, and substance use disorder. This article describes recent research on the effects of two types of violence that pregnant and postpartum women are likely to have experienced: adverse childhood experiences and intimate partner violence. Sexual assault often overlaps with these two types of violence and is also discussed. Intervention strategies are included as well.

Keywords: *adverse childhood experiences, intimate partner violence, sexual assault, pregnancy, postpartum.*

INTRODUCTION

Every year, millions of girls and women are physically, emotionally, or sexually abused, by strangers or those who are closest to them. Violence against women can affect anyone regardless of income, country of origin, age, or race and ethnicity. Violence also happens to pregnant and postpartum women. Not surprisingly, abuse has a pervasive negative effect on mothers' mental health. In one sample of 1,581 pregnant American women, 36% reported interpersonal violence. Of these women, 25% had depression, anxiety, or PTSD (1).

At different conferences, I have had healthcare providers assure me that abuse does not occur in their patient population. That view is naïve. Just because they do not know does not mean it did not happen. For example, a study from Boston compared pregnant women from the inner city to those from an affluent suburb. The rate of interpersonal violence was lower in the affluent population, but not by much: 47% in the suburbs and 59% in the inner city (2). The rates for physical abuse were 54% in the urban sample and 42% in the suburbs. For sexual abuse, the rates were 20% in the urban sample and 13% in the suburbs. Women who experienced abuse are 63% more likely to be depressed or anxious during pregnancy (3, 4). This is concerning because depression and anxiety during pregnancy increase the risk for negative birth outcomes, such as preterm birth, low birth weight, and small for gestational age (5-7).

You may not always know about patients' history of violence, even if you ask. "No" does not necessarily mean it never happened. "No" could mean, "I don't know you and what you are going to do with the information." As an example of this, a lactation consultant recently told me that she asked a mother 10 times about adverse childhood experiences (it was part of her intake form). The mother said "No" every time. When asked an 11th time, the mother finally said "yes."

This reticence does not mean that you should ignore trauma. You can be "trauma aware" without knowing for sure. Trauma and violence influence women's and infants' physical and mental health, so it is within every healthcare provider's purview. In this article, I describe two common types of violence, adverse childhood experiences and intimate partner violence, that affect perinatal women. Sexual assault is also included as it tends to overlap with the other types of violence. I will also offer suggestions for how you can effectively intervene within your scope of practice.

ADVERSE CHILDHOOD EXPERIENCES

Adverse Childhood Experiences (or ACEs) were first identified in a California study called the Adverse Childhood Experiences Study. The ACE Study sampled more than 17,000 patients in the Kaiser Permanente system, a health maintenance organization in San Diego. In this middle-class, middle-aged sample, 51% reported at least one type of ACE (8). Adverse childhood experiences (ACEs) are a broad term that includes childhood physical, sexual, and emotional abuse; neglect (physical and emotional); witnessing parental intimate partner violence; and parental mental illness, substance use, or criminal activity. These adversities are added together to create an "ACE score." More recent studies have added community violence, unsafe housing, and food insecurity.

Higher ACE scores are associated with worse health outcomes for adults (9). In the original study, those who had 4 or more ACEs had higher risk for diseases such as cardiovascular disease, diabetes, and cancer, and were more likely to die prematurely. Subsequent studies have linked ACEs to many other conditions, including chronic pain syndromes and substance use (5, 10, 11).

In the United States, the Centers for Disease Control's more recent study found that 64% of adults reported at least one type of ACE (12). Nearly 1 in 6 (17%) reported 4 or more types of ACEs. A study of 1,062 French college students had similar findings: 69% reported 1 or more ACEs, with 21% reporting 3 or more (13). ACEs are associated with 5 of 10 leading causes of death and cost an estimated $748 billion a year (12). A more recent study found even higher

costs associated with ACEs (14). The researchers conducted a two-phase cross-sectional survey of 820,673 adults who were a representative sample of the 225 million adults in the US. Sixty-three percent reported one or more ACEs and 22% reported 4 or more. Diseases (such as anxiety, asthma, cancer, COPD, diabetes, and heart disease) and risk factors (such as substance use, obesity, and smoking) were included in the calculation. The economic burden was $14.1 trillion. That figure included $183 billion in direct spending and $13.9 billion in lost healthy life-years. The per-person amounts were $88,000 per affected adult per year and $2.4 million over their lifetimes. Adults who had experienced 4 or more ACEs accounted for 58% of the economic burden, with an annual per-person cost of $4 million.

Focusing specifically on the perinatal period, ACEs cause health problems here as well. ACEs increase the risk for depression, anxiety, and PTSD, in general and during the perinatal period. A sample of 882 young women (age=12-20) from an inner-city health practice found that 59% had experienced abuse or neglect [sexual abuse (18%), physical abuse (20%), emotional abuse (31%) and emotional neglect (41%)] (3). All types of maltreatment increased the risk of depression, substance use, and high-risk sexual activity (unprotected sex, multiple partners, and earlier consensual sexual activity).

ACEs can also be related to substance use while pregnant or breastfeeding. In a sample of 1,343 women who used cannabis while pregnant or breastfeeding, 91% reported a history of ACEs and 59% had experienced 4 or more (15). In the initial analysis, ACEs were directly related to frequency of cannabis use. However, once number of health problems was added to the analysis, ACEs were no longer directly related to frequency of use. Rather, we found an indirect relationship: ACEs increased the number of physical and mental health problems, which increased frequency of use. The more problems they had, the more often they used. We concluded that trauma history alone does not increase the risk of substance use, but trauma sequelae can. To take that one step further, treating trauma symptoms, such as depression and anxiety, may lower frequency of substance use.

INTIMATE PARTNER VIOLENCE

Partner violence also increases the risk for perinatal mental health problems. Recent Pregnancy Risk Assessment Monitoring Systems (PRAMS) data indicated that 13% of mothers in the total sample were depressed (4). However, 33% were depressed if there was partner violence before or during pregnancy. In New York, 884 women were followed from their first prenatal visit to 6 weeks postpartum (16). Physical or sexual abuse during pregnancy were among the strongest predictors of postpartum depression. Similarly, partner violence was one of the strongest predictors of depression at 12 months in a study of 1,507 mothers from Australia (17).

A study of Latina women in the U.S. compared 92 women who experienced partner violence to 118 women who had not (18). Partner violence increased the risk for postpartum depression more than 5 fold. It was a stronger risk factor than prenatal depression, which increased risk by 3.5 times. Unfortunately, if women were abused as both children and adults, they had even higher risk. A review of 43 studies found that they had more lifetime depression and more depression during pregnancy and postpartum compared to women abused either as children or adults (19).

INTERVENTIONS

Healthcare providers often do not ask about abuse or violence because they fear "opening Pandora's box." While understandable (given time constraints in a busy office), ultimately, that attitude may make things worse. Violence is within the purview of healthcare providers because it undeniably affects health. There is no quick fix, but there are things you can do that will genuinely help. Intervention begins with awareness. As you become aware, you may also encounter mothers who do not require assistance because there may have been prior intervention, and they are doing well. Abuse may be part of their story, but it is not central.

In my experience, the providers most able to help are those who have a plan for what to do when patients disclose abuse. If a woman reveals abuse, you can ask her what her biggest concern is right now. Patients may need assistance with issues outside your scope of practice. To prepare for that possibility, find out what services are available in your community and ask if you can refer patients to them. As for screening, you can ask directly, or you can be indirect. Indirect approaches include having posters and brochures about family violence in your office and exam rooms. Distribute resource lists to all your patients. Have a lending library. These materials can normalize women's experiences and increase the likelihood of them speaking up.

If there is current violence, the primary need is safety. Oftentimes, it is not as simple as "just leaving." Mothers need to plan realistically where to go and how they will support themselves and their children. It usually takes several attempts before mothers decide to leave for good. The primary focus is keeping mothers safe. But be mindful that the most dangerous time can be after she leaves.

BREASTFEEDING CAN HELP

My final recommendation is to find out what mothers want to do regarding breastfeeding. The results of previous studies on child sexual abuse survivors may surprise you because they are counterintuitive, but consistent. In several studies, a higher percentage of abuse survivors intended to breastfeed (20) and initiated breastfeeding (21) compared to non-abused women. In other studies, the rates are similar for sexually abused vs non-abused women (22, 23). Like any mother, they may encounter difficulties—and some may not want to. But please do not assume that. I suggest that you keep an open mind and do not try to discourage them preemptively because you believe it is "best for them." We must allow mothers to decide.

Besides promoting the baby's health and allowing for the mothers' autonomy, there is another surprising reason for supporting mothers who want to breastfeed: its substantial effect on their physiology. We tend to think of breastfeeding as simply a way to feed a baby, but it is so much more. Through the action of oxytocin (released during milk ejection), breastfeeding downregulates the mothers' stress system, which has a powerful effect on mothers' physical and mental health (23, 24). This change in physiology is particularly relevant for trauma survivors because it decreases the risk for intergenerational transmission of abuse and attenuates trauma symptoms. In a 15-year longitudinal study of 7,223 mother-infant dyads in Australia, mothers who breastfed for at least 4 months were 2.6 times less likely to physically abuse their infants and 3.8 times less likely to neglect them (25).

Breastfeeding also lessens trauma symptoms (23). Our sample included 994 sexual assault survivors from a total sample of 6,410 women from 59 countries with a child 12 months or younger. In this study, and others, exclusive breastfeeding made the most difference. The sexually assaulted women who exclusively breastfed had significantly lower depression scores, their sleep was better, and they had less anger and irritability compared to sexually assaulted women who had not exclusively breastfed. Mixed feeding did not have these effects. The rate of exclusive breastfeeding in the assaulted vs non-assaulted groups was the same: 78% for both. Breastfeeding attenuated the trauma symptoms; the symptoms were still present, but they were significantly less severe.

There is one caveat. For breastfeeding to have this beneficial effect, it must be going well. When it is not, it upregulates the stress system. That is why timely breastfeeding support is critical, especially for these mothers.

CONCLUSIONS

Adverse childhood experiences, partner violence, and sexual assault are an unfortunate reality for many women. The issues these mothers face can be complicated. However, medical providers are in a key position to help. If mothers tell you about their experiences of abuse or violence, find out what they need and refer them to services in your community. The most effective programs use a team to meet the needs of mothers affected by violence. In the past, medical providers did not believe that abuse and violence fell within their purview. That view is changing, especially since abuse is related to so many health problems including adverse birth outcomes.

The late Ray Helfer, pediatrician and pioneering child abuse researcher, once

noted that the perinatal period can be a significant time for families to change. At no other time are they as open to advice as they are then. You can change the trajectory of families' lives by identifying abuse, treating what you can, supporting breastfeeding, and referring mothers to other colleagues who can help. I wish you great success in this endeavor.

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Dr. Kendall-Tackett is a health psychologist and International Board-Certified Lactation Consultant, and is also the Director of Praeclarus Press, a small press specializing in women's health. For the past 10 years, Dr. Kendall-Tackett has been Editor-in-Chief of Psychological Trauma. She is a Fellow of the American Psychological Association in Health and Trauma Psychology and Past President of the APA Division of Trauma Psychology. Dr. Kendall-Tackett specializes in women's-health research including breastfeeding, depression, trauma, and health psychology. Dr. Kendall-Tackett has authored more than 500 articles or chapters and is author or editor of 42 books. Her most recent books include Breastfeeding Doesn't Need to Suck (2022, American Psychological Association), Women's Mental Health Across the Lifespan (2017, Routledge US, with Lesia Ruglass), and, most recently, Depression in New Mothers, 4th Edition, Vols. I & II (2023, 2024, Routledge, UK). She has lectured substantially across the US and Canada, and in 16 countries outside of North America. Dr. Kendall-Tackett is also a huge fan of Irish history and music, sings soprano in the Amarillo Master Chorale, has an entire herd of animals, and loves travel and travel photography.


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Five-Course Dinner
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RESERVATIONS REQUIRED

The Potter-Randall County Medical Alliance (PRCMA) has a long history of building the community of Panhandle medical professionals and supporting many local health-related initiatives. Join us on Thursday, April 24, 2025, for our Spring Wine Dinner, an evening of epicurean delights and philanthropy at Amarillo Club.

As our signature fundraising event, all proceeds support ongoing community PRCMA outreach programs like the Hard Hats for Little Heads, Texas BookShare at Heal the City, and local post-secondary educational scholarships. We are proud to award scholarships to medical students at the Texas Tech University Health Sciences Center School of Medicine in Amarillo, allied health students at Amarillo College, and nursing students at WT in Canyon. These scholarship programs make an impactful difference in our community allowing us to train and retain health professionals in Amarillo, especially much-needed physicians.

We invite you to enjoy a five-course dinner highlighting spring flavors created by Chef Lauren Whitledge and carefully paired with wine chosen by Wine Enthusiast, Michele Agostini (WSET II). Lauren will present each course, while Michele will describe her selected wine pairing. Please join us for a memorable evening that will make a tangible impact on the health of our Panhandle community.

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Set of Riedel Glasses
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Thank you in advance for supporting the Potter-Randall County Medical Alliance.
Please scan the QR code to sponsor or register for the event.
Call or email with questions.

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Breastfeeding 101

by Krista Savage, RN, BSN, IBCLC

Being a new mother is one of the most exciting and confusing times in a woman's life. She faces many decisions regarding the care of their newborn, including the very important decision about how she plans to feed her baby. Breastfeeding provides many health benefits for mother and baby and is the ideal way to feed infants. Many healthcare providers encourage breastfeeding, and specialized professionals called International Board-Certified Lactation Consultants (IBCLC) are there to help with the many nuances to assist mothers.

I remember being a young, new mom and being asked in my OB office if I planned to breastfeed or bottle feed. I thought "Sure I can breastfeed. You just put them on the breast, right?" I knew it was the best nutrition for my baby, and it didn't seem that complicated. I ended up having almost all the major speed bumps that can be encountered by mothers during lactation. We struggled with difficulty latching, cracked and bleeding nipples, clogged ducts, and mastitis. I remember sobbing from pain when he latched and did not know what I could do to make it better. My son is 28 now, so we did not have a computer or a smartphone in the house at that time. I did not know who to ask for help. After I became a nurse and started working with newborns, I realized that breastfeeding did not have to be the way it was for me. Help through specialized healthcare professionals—IBCLCs--can provide essential breastfeeding support to turn to if a mother's journey hits speed bumps along the way.

BENEFITS OF BREASTFEEDING

Although the benefits of breastfeeding are well-known in the medical community, many women struggle to meet their breastfeeding goals. The Centers for Disease Control (CDC) released their Breastfeeding Report Card in 2022, analyzing breastfeeding data of babies born in America in 2019. Their data showed that 83% of infants started receiving breastmilk after birth, but, by six months of age, only 25% of infants were exclusively breastfed. This is a significant decrease and does not meet the recommendations for exclusive breastfeeding.

Healthy People 2030 has set goals to help keep infants born in the U.S. safe and healthy through the first year of life. These goals aim to reduce infant mortality by increasing exclusive breastfeeding at six months to 42.4%. To help our mothers and communities meet these goals, healthcare providers should take the initiative to understand breastfeeding complications, provide support, and direct mothers to providers specialized in breastfeeding.

The American Academy of Pediatrics (AAP) and the World Health Organization (WHO) recommend that newborns be exclusively breastfed for the first six months of life. Exclusive breastfeeding provides lifelong benefits to both the mother and baby. Human milk is uniquely suited to provide optimal nutrition. It is often called the perfect food for babies, because it provides all the nutrition--macronutrients and micronutrients alike--in the exact amount needed for optimal infant growth and healthy development. Breastmilk contains antibodies that are actively transported into the milk and provide passive immunity to the baby, reducing the risk for viral, respiratory, and gastrointestinal infections. Human milk is sometimes referred to as "living tissue" because it not only maintains an ideal balance of nutrients but also contains countless beneficial bioactive components such as immunoglobulins, hormones, oligosaccharides, and other components (1).

While benefits to the baby may be well-known, breastfeeding also provides many benefits for the mother. The hormone oxytocin is released during the latch and causes the muscles around the milk glands to contract, pushing the milk towards the ducts and nipples; this is referred to as milk "let down". Oxytocin has the additional benefits of enhancing the bonding and attachment of mother and baby. It also contracts the uterus to help reduce postpartum bleeding and return it to pre-pregnancy size. In the long-term, lactation is associated with decreased risk of developing vascular disease, as well as decreased risk of breast and ovarian cancer, later in life.

IBCLCS: ROLES AND RESPONSIBILITIES

An International Board-Certified Lactation Consultant (IBCLC) is a healthcare professional who specializes in care and management of the breastfeeding mother-infant dyad. IBCLCs must meet eligibility requirements and pass an exam to receive their certification. Before testing, the applicant must have 1,000 supervised clinical hours working with breastfeeding mothers and must complete 90 lactation-specific courses. The exam is 175 questions long, testing the application of knowledge, counseling, ethics, and development of care plans for breastfeeding success. IBCLCs must recertify every 5 years.

These providers work with the healthcare team and families to support and meet their infant feeding goals. IBCLCs work in a variety of settings including hospitals, provider's offices, and private practices. Their advanced knowledge in breastfeeding provides expert advice and clinical support to assist the couplet to overcome challenges.

IBCLCs are instrumental in implementing evidence-based policies and guidelines that improve practices that affect breastfeeding patients. The clinical expertise and practice experience of the IBCLC provide substantial insight into the viability of practice changes that affect lactation and breastfeeding initiatives (2). Several important practices can be implemented in the hospital setting to support breastfeeding. For instance, implementing uninterrupted skin-to-skin contact after delivery, rooming-in, and delaying the introduction of bottles and pacifiers in the immediate postpartum period—all have been proven to increase breastfeeding rates. Lactation consultants work with the interdisciplinary team to advocate and ensure that facilities follow these guidelines (3).

Consultants provide professional education to other healthcare providers on breastfeeding guidelines and practices. Most healthcare providers who work with couplets do not receive extensive training in breastfeeding support. Although there is general agreement that breast milk should be the nutrition babies receive for at least one year after delivery, often providers do not understand how to help the mother when complications happen. IBCLCs educate healthcare professionals on the latest research, guidelines, and practical skills needed to support the mother to continue breastfeeding.

Mothers should be encouraged to attend a prenatal breastfeeding class with their significant other, during which IBCLCs provide current, evidence-based education and anticipatory guidance. These classes provide expectant families with information on the benefits of breastfeeding, techniques for successful breastfeeding, and how to overcome challenges. Preparing for breastfeeding provides mothers with confidence and knowledge and can reduce anxiety during the early days of breastfeeding. Lactation consultants and nurses can assist with latching babies and can troubleshoot issues, such as sore nipples and babies not latching during their hospital stay. Once mothers are discharged, lactation consultants remain available to assist mothers with guidance and support.

SPECIALIZED CARE

The most common reason mothers discontinue breastfeeding is nipple pain or trauma with latching. To ensure a proper latch, the baby needs to be positioned correctly at the breast using good body mechanics. The mother should be in a comfortable position with her back and feet supported. The baby should be brought to the breast and supported with pillows. The baby's neck, shoulders, and back need to be aligned and supported. Proper body positioning for both mother and baby can ensure a deeper latch and prevent nipple trauma.

A deep latch allows the baby to transfer more milk during latching. The baby creates a vacuum by sealing the lips around the breast tissue using the tongue and jaw to create suction. Coordinated, rhythmic jaw and tongue movements are used to create suction and transfer milk. These movements stimulate the milk-ejection reflex that releases milk from the glands. The baby's tongue and gums compress the breast tissue and milk ducts, moving the milk towards the nipple. If the latch is too shallow on the breast, the nipple sustains trauma such as blisters, cracks, and bleeding, and less milk is transferred. Unfortunately, if nipple trauma has occurred, it can take a significant time to heal, thus increasing the risk for infection. The nipple cannot be rested and allowed to heal because the mother needs to keep milk flowing from the breast to prevent engorgement and mastitis. Preventing nipple trauma is important to ensure that the couplet continues to breastfeed longer. During consultations with an IBCLC, the consultant can evaluate, assess, and develop a plan of care to ensure breastfeeding success.

There are times when breastfeeding can be continued even if there are further complications with either baby or mother. An IBCLC is an asset for mothers who have had previous breast surgeries, flat/inverted nipples, a history of low milk supply, and medical conditions. The breasts can be evaluated, and a weighted feed can be done to determine how many ounces were transferred during the latch. Babies who have been struggling to latch and to gain sufficient weight need to be evaluated for ankyloglossia, which may be interfering with the transfer of milk. Ankyloglossia ("tongue-tie") exists when the fold of tissue under the tongue (the frenulum) is too short or tight. This restricts free movement of the tongue and interferes with breastfeeding process. After a frenotomy is performed, IBCLC consultants provide support and education to ensure proper healing and continued success.

Mothers need education and assistance in pumping breast milk during times when they are separated from their babies. Pumping is an important aspect of neonatal intensive care unit (ICU) care for babies who are unable to latch. Education on hand expression and proper use of breast pumps is essential to ensure that mothers can express as much milk as possible for their babies. Giving babies in the NICU their mother's milk has been shown to shorten the length of the NICU stay and to decrease the risk of necrotizing enterocolitis (NEC). It can put a mental and physical strain on the mother if she is struggling with supply issues. IBCLCs can provide the support and guidance she needs to continue pumping until the baby is healthy enough to initiate breastfeeding.

IBCLCs are vital members of the healthcare team that can help mothers and babies breastfeed successfully. Their specialized knowledge and skills are integral in increasing exclusive breastfeeding rates in our community. They improve breastfeeding outcomes and lower healthcare costs for families. By promoting the benefits of breastfeeding and educating other healthcare providers, we can improve the clinical management of breastfeeding babies and their mothers.

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Krista Savage RN, BSN, IBCLC has worked with breastfeeding mothers for over 13 years. She obtained her International Board-Certified Lactation Consultant (IBCLC) certification in 2017 and has worked full-time as an RN Lactation Consultant at Northwest Texas Hospital since that time. Krista earned her Bachelor of Science in Nursing (BSN) in 2024 and began working PRN for Infant Risk Center at Texas Tech in 2024 as well.

Immunizations in the First 1000 Days of Life: A Cornerstone for Lifelong Health

by Shanna James, PharmD

The first 1000 days of life represent a critical window for growth and development. During this period, rapid physical, cognitive, and emotional changes occur, laying the foundation for future health and well-being. Among the many factors contributing to optimal outcomes, immunizations stand out as a cornerstone of preventive care, protecting children from life-threatening diseases and fostering community health.

WHY THE FIRST 1000 DAYS MATTER

The early years are marked by the development of vital organ systems, including the immune system. A newborn's immune system is immature at birth, making them particularly vulnerable to infections. Immunizations administered during this time are designed to bolster the body's natural defenses, ensuring that infants can fight off dangerous pathogens while their immune system matures. Beyond individual protection, vaccines also contribute to herd immunity, reducing the spread of infectious diseases within communities (World Health Organization [WHO], 2021).

IMMUNIZATIONS DURING PREGNANCY: A CRUCIAL START

Vaccination during pregnancy plays a pivotal role in protecting both the mother and the baby. Pregnant women are particularly vulnerable to severe complications from certain infections due to physiological changes in their immune and cardiovascular systems. Key benefits of maternal immunization include:

1. Protecting the mother: Vaccines like influenza and Tdap vaccines shield pregnant women from severe illness and complications such as preterm labor triggered by infections (2).

2. Passive immunity for the baby: Antibodies generated by the mother in response to vaccines cross the placenta and provide the newborn with passive immunity during the first few months of life, a period when the infant's own immune system is not fully developed (2).

3. Preventing neonatal diseases: Maternal vaccination significantly reduces the risk of newborn infections like pertussis and influenza, which can be life-threatening in early infancy (2).

KEY IMMUNIZATIONS IN EARLY CHILDHOOD

Some of the key immunizations during the first 1000 days include:

- **Hepatitis B:** Administered at birth to prevent a chronic liver infection that can lead to liver cancer later in life (3).

- **Rotavirus:** Protects against severe diarrhea and dehydration, which are major causes of infant mortality worldwide (3).

- **Diphtheria, Tetanus, and Pertussis (DTaP):** Guards against three potentially deadly bacterial infections (3).

- **Haemophilus influenzae type b (Hib):** Prevents meningitis, pneumonia, and other invasive diseases (3).

- **Polio:** Provides immunity against poliovirus, which can cause lifelong paralysis (3).

- **Measles, Mumps, and Rubella (MMR):** Protects against three highly contagious viral diseases that can lead to severe complications (3).

ADDRESSING CONCERNS AND MISINFORMATION

Despite the overwhelming evidence supporting the safety and efficacy of vaccines, misinformation continues to circulate, leading some parents to hesitate or refuse immunizations. Addressing these concerns is essential:

1. **Safety:** Vaccines undergo rigorous testing in clinical trials and continuous monitoring after approval to ensure their safety (1).

2. **Side Effects:** While mild side effects like fever or soreness are common, serious adverse reactions are exceedingly rare (3).

3. **Efficacy:** Vaccination has eradicated diseases like smallpox and dramatically reduced the prevalence of others, including polio and measles (3).

Healthcare providers play a critical role in educating parents, dispelling myths, and building trust through open communication. Amarillo Public Health has created an educational tool to help you cover this information with the caregivers of the child (see table 1).

THE RISKS OF ALTERNATIVE IMMUNIZATION SCHEDULES

Alternative immunization schedules, which deviate from the recommendations of health authorities like the CDC and WHO, pose significant risks to individual and public health. These schedules often delay or skip critical vaccinations, leaving children vulnerable to preventable diseases during the early years when they are most at risk. Key concerns include:

1. Increased Disease Susceptibility: Delayed vaccines mean extended periods of vulnerability to severe illnesses such as measles, pertussis, and rotavirus (4).

2. Reduced Efficacy: Immunizations are timed to align with a child's immune system development. Delaying them can compromise their effectiveness and protection levels (4).

3. Erosion of Herd Immunity: Widespread adoption of alternative schedules can lead to declining vaccination rates, increasing the likelihood of outbreaks that threaten the broader community, including those who cannot be vaccinated for medical reasons (4).

4. Higher Healthcare Costs: Delayed immunizations can result in more frequent and severe illness, leading to increased medical visits, hospitalizations, and associated costs (4).

5. The Broader Impact of Immunizations Immunizing children in the first 1000 days has ripple effects that extend beyond individual health. Vaccinated children are more likely to attend school and achieve their developmental milestones, contributing to their long-term success (1). At a societal level, immunization programs reduce healthcare costs, prevent outbreaks, and protect vulnerable populations such as the elderly and immunocompromised individuals (3).

CONCLUSION

Immunizations in the first 1000 days of life are an investment in a child's future and a cornerstone of public health. By ensuring that children receive the recommended vaccines on time, parents and caregivers can help shield them from preventable diseases, setting the stage for a healthy and prosperous life. Similarly, immunization during pregnancy enhances maternal and neonatal health outcomes, providing critical early protection to newborns. As communities, our collective commitment to vaccination strengthens the foundation for a brighter, healthier future for all.

Dr. Shanna James has been the Vaccine Expansion Program Manager for the Amarillo Public Health Department. She received her BS in Biology from WTAMU before going to pharmacy school. After receiving her Doctor of Pharmacy degree from TTUHSC SOP in 2011, Dr. James completed a PGY1 residency at the same institution. From 2012-2020 she was an Assistant Professor in the Pharmacy Practice Department at Texas Tech University Health Sciences Center School of Pharmacy.

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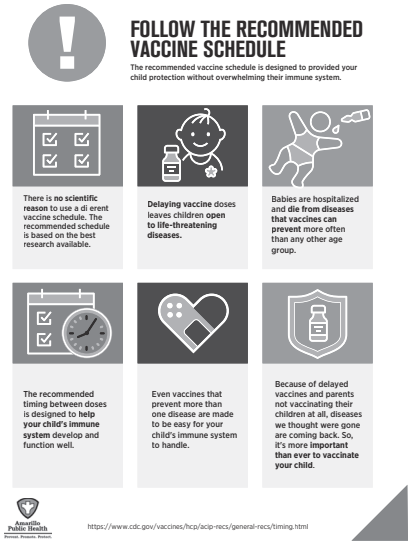
Table 1



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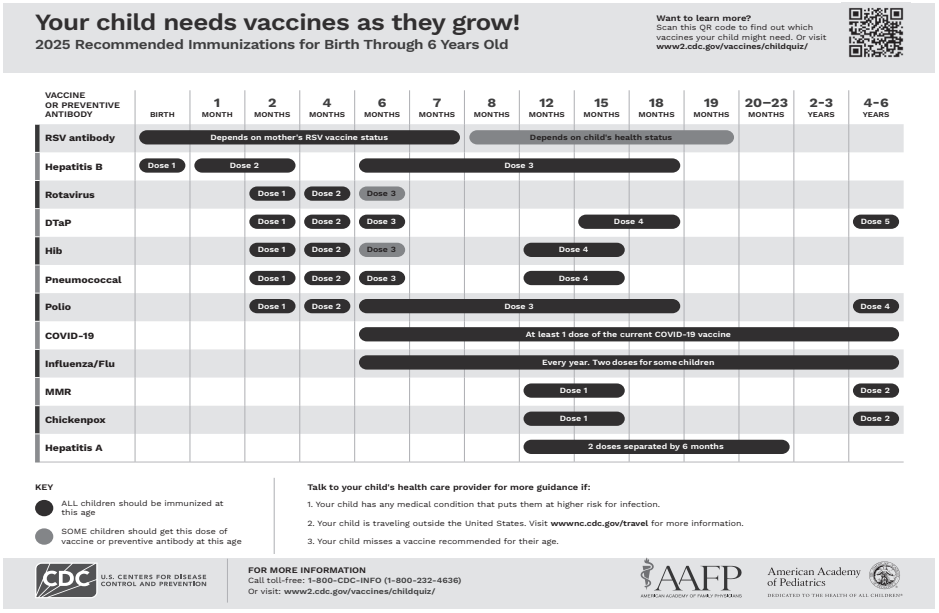

What diseases do these vaccines protect against?

BIRTH–6 YEARS OLD

VACCINE-PREVENTABLE DISEASE	DISEASE COMPLICATIONS
RSV (Respiratory syncytial virus) Contagious viral infection of the nose, throat, and sometimes lungs; spread through air and direct contact	Infection of the lungs (pneumonia) and small airways of the lungs; especially dangerous for infants and young children
Hepatitis B Contagious viral infection of the liver; spread through contact with infected body fluids such as blood or semen	Chronic liver infection, liver failure, liver cancer, death
Rotavirus Contagious viral infection of the gut; spread through the mouth from hands and food contaminated with stool	Severe diarrhea, dehydration, death
Diphtheria* Contagious bacterial infection of the nose, throat, and sometimes lungs; spread through air and direct contact	Swelling of the heart muscle, heart failure, coma, paralysis, death
Pertussis (Whooping Cough)* Contagious bacterial infection of the lungs and airway; spread through air and direct contact	Infection of the lungs (pneumonia), death; especially dangerous for babies
Tetanus (Lockjaw)* Bacterial infection of brain and nerves caused by spores found in soil and dust everywhere; spores enter the body through wounds or broken skin	Seizures, broken bones, difficulty breathing, death
Hib (Haemophilus influenzae type b) Contagious bacterial infection of the lungs, brain and spinal cord, or bloodstream; spread through air and direct contact	Depends on the part of the body infected, but can include brain damage, hearing loss, loss of arm or leg, death
Pneumococcal Bacterial infections of ears, sinuses, lungs, or bloodstream; spread through direct contact with respiratory droplets like saliva or mucus	Depends on the part of the body infected, but can include infection of the lungs (pneumonia), blood poisoning, infection of the lining of the brain and spinal cord, death
Polio Contagious viral infection of nerves and brain; spread through the mouth from stool on contaminated hands, food or liquid, and by air and direct contact	Paralysis, death
COVID-19 Contagious viral infection of the nose, throat, or lungs; may feel like a cold or flu. Spread through air and direct contact	Infection of the lungs (pneumonia); blood clots; liver, heart or kidney damage; long COVID; death
Influenza (Flu) Contagious viral infection of the nose, throat, and sometimes lungs; spread through air and direct contact	Infection of the lungs (pneumonia), sinus and ear infections, worsening of underlying heart or lung conditions, death
Measles (Rubeola)† Contagious viral infection that causes high fever, cough, red eyes, runny nose, and rash; spread through air and direct contact	Brain swelling, infection of the lungs (pneumonia), death
Mumps† Contagious viral infection that causes fever, tiredness, swollen cheeks, and tender swollen jaw; spread through air and direct contact	Brain swelling, painful and swollen testicles or ovaries, deafness, death
Rubella (German Measles)† Contagious viral infection that causes low-grade fever, sore throat, and rash; spread through air and direct contact	Very dangerous in pregnant women; can cause miscarriage or stillbirth, premature delivery, severe birth defects
Chickenpox (Varicella) Contagious viral infection that causes fever, headache, and an itchy, blistering rash; spread through air and direct contact	Infected sores, brain swelling, infection of the lungs (pneumonia), death
Hepatitis A Contagious viral infection of the liver; spread by contaminated food or drink or close contact with an infected person	Liver failure, death

*DTaP protects against tetanus, diphtheria, and pertussis †MMR protects against measles, mumps, and rubella

Last updated November 2024

Rural Maternal Care Deserts in the Texas Panhandle

by Joshua Briggs, DO; Delaney Sauers, MS4; and Teresa Baker, MD

The Texas Panhandle spans 25,620 square miles across the northernmost 26 counties of the state, with an estimated population of 435,000 as of 2022 (1). Approximately 60% of the population resides in Amarillo, the largest city in the region, leaving the remaining population spread thinly across rural areas, with many counties housing fewer than 4,000 residents (1). While the Texas Panhandle's low population density allows for vast open spaces, it also poses significant challenges in delivering adequate healthcare, particularly obstetric care. This article examines current statistics, barriers to care, and potential improvements for expectant mothers and their babies in the region.

PROBLEM #1: PROVIDER AND FACILITY SHORTAGES

In Texas, four types of medical professionals provide obstetric care, each with varying scopes of practice: obstetrics and gynecology physicians (OBGYNs), family medicine physicians with obstetrics training, midwives, and family nurse practitioners (FNPs) (2). Among these, OBGYNs possess the highest level of specialized obstetric training and can handle any complication during pregnancy and delivery. Family medicine physicians (FM) with obstetric training have similar training as OBGYNs but cannot perform all the procedures that an OBGYN can. While midwives and nurse practitioners provide similar antenatal and postpartum patient care, midwives can independently oversee vaginal deliveries, while nurse practitioners cannot. Neither one of these professionals can perform cesarean sections, which can become necessary during delivery with little warning. Additionally, only physicians (OBGYNs and FMs) are able to admit and provide in-hospital patient care. The Texas Panhandle also benefits from having OBGYN residents, or future OBGYNs in training, through the Texas Tech OBGYN Residency Program, which contributes significantly to patient care. Currently, there are 17 board-certified OBGYNs, 12 OBGYN residents, 5 family medicine physicians with obstetrics training, 3 midwives, and 9 obstetric nurse practitioners in the Texas Panhandle—an insufficient number for the region's needs.

Facilities for labor and delivery (L&D) are similarly scarce. Not all hospitals and clinics were created equally when it comes to obstetric care. Facilities must be equipped with the right personnel, equipment, and rooms to be able to provide labor and delivery services. Currently, the Texas Panhandle has 7 L&D facilities: 6 hospitals and 1 midwifery birthing center. While midwifery centers reduce some of the burden, they cannot perform cesarean sections, operative vaginal deliveries, intensive management of pre-eclampsia, or trial of labor after cesarean (TOLAC) patients. Patients requiring emergency procedures must be transferred to larger hospitals, such as BSA Health System or Northwest Texas Healthcare System. This lack of facilities exacerbates the challenges of providing timely and effective care across such a vast area.

COMPOUNDING THE PROBLEM: FINANCIAL AND DEMOGRAPHIC CHALLENGES

Payment for obstetric care presents another significant barrier for women. In 2019, the uninsured rate in the Texas Panhandle was 23.4%, significantly higher than state and national averages of 18.4 and 9.2 percent, respectively (3). While programs like Medicaid and CHIP are available, many women fall into a coverage gap, earning too much to qualify but too little to afford private insurance (2,4). This problem is exacerbated by the fact that Texas, unlike most states, has not accepted federal funds for Medicaid expansion; so a woman has to be almost destitute for Medicaid to help pay for her obstetric care. Even for those who qualify, coverage inconsistencies create additional challenges. For example, Medicaid or CHIP may refuse to pay for standard obstetric services provided by OBGYNs, creating frustration for patients and providers alike. While midwives can relieve the burden, their services often come at a higher cost for patient due to out-of-pocket expenses.

Demographic factors further complicate the delivery of obstetric care in the Texas Panhandle. Travel distances for expectant mothers in the Texas Panhandle hinder access to care, making frequent prenatal visits logistically and financially burdensome for many patients. As a result, some women are forced to forgo essential prenatal care, jeopardizing both maternal and fetal health. In addition, Amarillo has become a haven for refugees from countries such as Afghanistan, Cuba, Haiti, Myanmar and Ukraine (5). While these individuals are brought to the area through resettlement programs and charitable organizations, they often lack health insurance and face numerous barriers to accessing care. Language and cultural differences, combined with the financial strain of adjusting to life in a new country, make it difficult for these populations to obtain consistent and comprehensive obstetric care. This unique demographic challenge underscores the need for culturally competent care and targeted resources to address the needs of underserved populations.

| *continued on page 37*

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POTENTIAL SOLUTIONS TO OBSTETRIC CARE SHORTAGES IN THE PANHANDLE

The most straightforward solution is increasing the number of providers and facilities, but this is complicated by the high cost, time commitment, and rigor of medical training. Board certified OBGYNs require an additional 12 years of schooling after graduating from high school before they can practice independently. Mid-level providers, such as nurse practitioners and midwives, help alleviate some of the burden but, again, cannot admit patients to the hospital or perform life-saving procedures like cesarean sections. Lastly, even if there were enough providers, rural clinics and delivery facilities often struggle to remain financially viable due to low annual patient volumes.

Despite these daunting challenges, efforts are being made to improve maternal health in the Texas Panhandle. Texas Tech University Health Sciences Center (TTUHSC) - Amarillo and its affiliated programs in the Texas Panhandle continue to be a hub for improving maternal health through ongoing research, medical training, and OBGYN clinics. Institutional priorities at Texas Tech School of Medicine encourage rural healthcare, and Tech selectively accepts medical school applicants who have an interest in rural medicine. Additionally, the accelerated three-year Family Medicine Accelerated Track (FMAT) program offered through the School of Medicine allows students to graduate early and begin practicing sooner, with the option to train in obstetrics. These programs aim to address provider shortages by encouraging physicians to remain in West Texas after completing their training.

Texas Tech's research efforts also contribute to improving maternal health. One notable project is the National Institutes of Health (NIH)-funded VIBRANT Moms study, which aims to collect data on maternal experiences and access to care. The study focuses on improving outcomes for pregnancy complications, such as pre-eclampsia, and offers hope for developing evidence-based interventions to enhance care (6). This ongoing research highlights TTUHSC's commitment not only to create solutions to address maternal health disparities in the Texas Panhandle but also to incorporate our community partners in a multi-layered approach.

Community organizations also play a crucial role in supporting expectant mothers. Programs such as Catholic Charities, Haven Health, and informal local church initiatives provide essential services, including transportation to medical appointments, financial assistance, and access to healthcare (7,8). As mentioned in the article in this issue by Casie Stoughton, Amarillo Public Health will soon be opening a women's clinic at 850 Martin Road, where social workers and Medicaid nurse navigators will be available to help smooth a women's entry into the system. As trusted advocates, these organizations help bridge the gap for women who might otherwise struggle to access necessary care, offering a lifeline to some of the region's most vulnerable populations.

Telemedicine could offer a promising solution for bridging the gap in prenatal care. By allowing patients to consult with healthcare providers remotely, telemedicine may reduce the need for travel and enable more frequent remote check-ins. Expanding telemedicine services in the Texas Panhandle could help ensure that more women receive consistent prenatal care, even in remote areas. However, implementing telemedicine requires reliable internet access, which is not always available in rural regions, as well as technological competency. Addressing infrastructure challenges, especially broadband access, is therefore a critical component of expanding telemedicine services.

Policy changes are also necessary to address the financial barriers to care. Reforming Medicaid and CHIP to provide more immediate comprehensive coverage for obstetric services would alleviate the financial strain on both patients and providers. Care is often delayed to the patient's detriment by delays in Medicaid or CHIP approvals. Additionally, increasing funding for rural healthcare initiatives and incentivizing providers to work in underserved areas could help attract and retain highly qualified healthcare professionals who desire to practice in the Texas Panhandle.

CONCLUSION

The Texas Panhandle faces significant challenges in providing obstetric care to its most vulnerable residents. The combination of provider shortages, limited facilities, high uninsured rates, and unique demographic factors creates a complex and multifaceted problem. However, ongoing efforts by institutions like Texas Tech University Health Sciences Center, community organizations, and healthcare providers offer hope for the future. By addressing these challenges through a combination of training programs, research, community support, telemedicine, funding and policy reforms, the Texas Panhandle can move closer to ensuring that every mother and baby receives optimum care, ensuring safe and healthy outcomes. While the road ahead is long, the commitment and resilience of the Texas Panhandle's healthcare community provide a strong foundation for progress.

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After spending over a decade in pharmaceutical sales, Dr. Joshua Briggs and his family decided to pursue his true calling of medicine. After experiencing the unique joys and diversity of clinical rotations, OB/GYN called him for a lifetime of service. He and his kids are excited to train/live here in the Texas Panhandle, with TTUHSC Amarillo serving such a diverse population.

Delaney Sauers is currently a third-year medical student at the Amarillo campus of the Texas Tech Health Sciences Center School of Medicine. She is applying for OBGYN residency this year and is excited for her last year of school and all that is to come afterwards. Her hobbies include reading, powerlifting, and being a cat mom to a 4 year-old tabby cat, Ruthie.

Dr. Teresa Baker is professor and chair of the Obstetrics and Gynecology department at Texas Tech School of Medicine in Amarillo. Originally from Hereford TX, she trained at the University of Texas Southwestern in Dallas, completing her residency training in the Parkland Hospital system in Dallas. She is a fellow of the American Board of Obstetrics and Gynecology. Her primary interests are teen pregnancy, postpartum depression, and promoting preventive medicine for the women of the Texas Panhandle, as well as medical student and resident education at TTUSOM.

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The First 1000 Days: Public Health Disparities

by Todd Bell, MD

As clinicians, we focus on the needs of the patient in front of us. Often, though, patient health and well-being are affected by factors beyond the individual's or clinician's control. "Public health is what we, as a society, do collectively to assure the conditions in which people can be healthy" (1). The purpose of public health is to optimize conditions within which an individual can thrive, and to mitigate barriers to health promotion.

The seeds of adult well-being are planted as early as fetal development. Maternal health, toxin exposure, nutritional status, childhood infections, and socioeconomic factors early in life affect neural development and long-term health outcomes. Through epigenetic modifications, these effects may be passed through generations. The ecobiodevelopmental model recognizes that child health and development result from interactions between genetics and environment. Some environmental factors are outside the direct control of the individual. As such, it is incumbent on society to address environmental factors that adversely affect childhood development. This societal response is not merely altruistic, but reaps societal rewards in the optimized productivity and decreased communal resource utilization of a healthy individual into adulthood. Identification of specific populations at risk for poor health outcomes can provide direction for targeted public health interventions.

RACIAL, ETHNIC, AND GEOGRAPHIC FACTORS IN EARLY-LIFE HEALTH DISPARITIES

Racial and ethnic discrepancies in health outcomes typically come to mind first when looking at health discrepancies. The most common causes of infant mortality (defined as the number of deaths before the age of 12 months per 1000 live births) are birth defects, preterm and low weight births, sudden infant death syndrome, maternal pregnancy complications, and injuries. Although the infant mortality rate in Texas is typically below or on par with the national rate, there is significant geographic and ethnic disparity. The overall Texas infant mortality rate in 2021 was 5.6 deaths per 1000 live births. Mortality for non-Hispanic Black infants, though, was almost twice the state average (9.4/1000). The leading attribution of mortality for non-Hispanic Black infants in Texas is preterm or low-birthweight deliveries. For all other race and ethnicities, the leading attributable cause is congenital malformations (2). Other examples of racial and ethnic based health disparities abound.

Geographic disparities in healthcare exist as well. The infant mortality rate for Potter (7.7/1000) and Randall (9.4/1000) Counties were substantially higher than the state average. In comparison, Lubbock and Midland Counties both fell below the state average during the comparison year (2). Even within Amarillo, geographical variation exists. A study in 2018 looked at vital statistics data by zip code across the state. Amarillo as a whole fared only slightly worse (6.2) than the state and national (5.9) rate of infant death in 2016. When the data were broken into individual zip codes, however, some zip codes were found to have infant mortality rates 2-3 times the national average for that year (3). As a comparison, the infant mortality rate for the poorest performing zip codes in our city was higher than the reported infant mortality rates of the countries of Nicaragua and Honduras during the comparison year (4). The causes of such health disparities are likely to be complex and multifactorial, and remain incompletely elucidated. Factors likely to contribute to infant mortality include maternal mental and physical health, access to medical care, nutritional status of the mother and child, and other socioeconomic factors. Few of these factors are obviated by the stroke of a pen on a prescription pad.

Geographic healthcare discrepancies are not limited to the urban environment. Health status in rural children is lower than in urban children, sometimes for the same reasons as seen in racial disparities. All-cause mortality, obesity, and mental health disorders are all more common in rural children as opposed to their urban counterparts. A lack of healthcare access, food insecurity and poor nutrition, and poverty correlate with poor outcomes in rural communities. Preventive vaccine uptake is lower in rural communities. Higher economic status mitigates, but does not eliminate, these discrepancies. (5).

IMMIGRATION AND INSURANCE FACTORS

Maternal immigration status appears to affect childhood health outcomes as well. Not surprisingly, language and social barriers can result in limited healthcare access, just as much as finances and geographic distance. In Italy, primary care is universal and access is free to both citizens and registered migrants. A study published in 2019 using maternal citizenship as a proxy of immigration status enrolled all children born in a certain region over a 23-year period. The authors showed that, in spite of purported access, primary care utilization was lower and avoidable hospitalizations higher in the migrant population (6). Whether this was due to language barriers, economics, or social pressures is uncertain.

In the United States, where emergency care is a de facto "right" and preventive care a "privilege," insurance status is an additional source of health outcome disparity. Although not limited to early childhood, a burn outcomes study from last year illustrated that patients with private insurance had the highest level of functional recovery, followed by patients with Medicare, then patients with Medicaid (7). Studies of uninsured patients demonstrate poorer healthcare outcomes as well. Closure of critical care access hospitals affects access to care in healthcare shortage areas, but Medicaid as a payor source can be its own barrier. Many facilities and providers choose not to accept Medicaid due to low reimbursement rates. We routinely send pediatric patients 4-6 hours away to find providers willing to accept their insurance. This inconvenience is magnified for patients with special healthcare needs who find travel physically difficult or impossible.

THE COMMON FACTOR: POVERTY

A common thread through each of the above examples is socioeconomic status. Socioeconomic disparities inform healthcare disparities in racial and ethnic groups. More children in rural than urban communities live below the federal poverty line in the United States. Even with financial means, non-native children face barriers to healthcare access. Poverty limits access to healthcare due to transportation, direct service costs, and pharmacy costs. Availability of paid-time-off for workers with children to attend healthcare services is also limited for hourly wage workers. Poverty results in poorer nutrition choices, as high calorie but low nutritive value foods are more affordable than high nutritive value items. Some parts of our community, both urban and rural, have limited access to fresh fruits and vegetables. Almost every community has low nutritive-value snacks at convenience stores, though. Globally, low socioeconomic status communities tend to be exposed to higher levels of toxins, pollutants, and property crime. Psychological stress related to financial insecurity in the expectant mother results in sympathetic system activation and increased cortisol levels. This in turn may affect brain connectivity at birth and lead to reduced gray matter volume and maturational delays (8).

It is not, of course the presence or absence of money that results in these findings, but the presence or absence of what the money represents, i.e., a prenatal and childhood environment in which a child can thrive. Reducing public health disparities requires not a simple corrective, but a view of the child in the context. of the overall societal priorities.

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Dr. Todd Bell moved to the Texas Panhandle in 2006 and has been practicing pediatrics and internal medicine at TTUHSC since that time. He has a long-standing interest in a comprehensive approach to Public Health. He is the Medical Director for the Amarillo Public Health Department.

Panhandle Resources Cover Many Needs

by Cindi Wynia, MLS, CPST

Thirty-three years ago, I accepted a job at the Supplemental Nutrition Program for Women, Infants, and Children (WIC) in Amarillo. I was pregnant and soon learned that my family qualified for WIC benefits even though we were a dual income family. We were what United Way of Amarillo and Canyon refers to as an ALICE (Asset Limited, Income Constrained, Employed) family. Seven years later, I moved on from WIC, but I never stopped referring families to the many local community agencies I discovered while there. In my current position at Amarillo Public Health, we offer resources at www.amarillo.gov/publichealth and www.healthyamarillowomen.org to assist the families we serve in Potter and Randall counties. From health care navigation and food assistance to car seats, portable cribs, and clothing, many needs can be met through community agencies ready to help across the Panhandle region. In this article, I want to make available to patients and providers the many resources that are at your fingertips. A simple website visit, or phone call can help to ensure that your patients or clients are connecting with the right resource and that they meet any specific qualifications that may be required.

GENERAL RESOURCES

An excellent starting point is 2-1-1 Texas (www.211texas.org), a free social service hotline that is available 24 hours a day, 7 days a week, 365 days a year. By calling 2-1-1 or accessing the website, users can receive information about food pantries, clothing closets, health care, rent and utility bill assistance, childcare, senior services, and more.

Panhandle Community Services (PCS) offers a wide range of assistance programs for residents of the top 26 counties of the Panhandle. PCS has Certified Healthcare Navigators to assist with applications, enrollment, and understanding of benefits through the Health Insurance Marketplace, Medicaid, and Children's Health Insurance Program (CHIP). Other services include housing and utility assistance, Veterans assistance, and the Weatherization Assistance Program, which helps eligible families improve the energy efficiency of their homes. Transportation services are available as well; clients can call 800-800-6162 at least 24 hours in advance to arrange transportation through Panhandle Transit (with the restriction that they must be able to enter and exit their home and other destinations without driver help). In addition, a Family Development Program, Hygiene Closet, Retired and Senior Volunteer Program, Tax Preparation, and Adverse Childhood Experiences Education are all available. For information and appointments, clients can call 800-676-4727 or visit www.pcsvcs.org.

Public Health Region 1 works to improve the health of people in the Panhandle and South Plains through essential services and programs. A variety of services are provided, including immunizations for children and adults, tuberculosis education, consultation, and treatment, STD and HIV screening, testing, education, and treatment, pregnancy testing, safe infant sleep and child passenger safety education and resources, wellness programs, and more. Programs are subject to funding, so it is best to call for more information and appointments. Several locations are available: Amarillo Public Health serves Potter and Randall Counties (806-378-6300), Public Health Region 1 suboffice assists counties throughout the Panhandle (806-477-1100), Lubbock Health Department serves Lubbock County (806-775-2933), and Plainview-Hale County Health District covers Hale County (806-293-1359). In addition, there are clinics in Pampa (806-665-1690), Dumas (806-421-0316), and Hereford (806-364-4579).

FOOD ASSISTANCE PROGRAMS

As if that is not enough to digest, let's look at food assistance programs. High Plains Food Bank has several programs that provide nutritious, supplemental food to low-income, at-risk seniors, and at-risk students in our area. The Senior Adult Food Program provides a 25-30 pound box of shelf stable groceries monthly to income-eligible seniors aged 60 and over. The Kids Café, a program of Feeding America, prepares, delivers, and serves weekday meals to at-risk students and some at-risk seniors in apartment complexes. High Plains Food Bank also offers emergency food assistance, a community garden, the Mobile Harvest program, and nutrition education offerings to alleviate hunger in the Panhandle. Their social services program offers SNAP, CHIP, Medicaid, and TANF application assistance, along with referrals to area agencies for other needs. Appointments can be scheduled by filling out a brief form on their website. For more information about programs and services, visit their website at www.hpfb.org or call 806-374-8562.

The Supplemental Nutrition Program for Women, Infants, and Children (WIC) helps pregnant and postpartum women, infants, and children up to 5 years old with nutritious foods, breastfeeding support, and nutrition education. Income and nutrition status will be used to determine eligibility for the program. Information about applying for WIC can be found at www.texaswic.org or by calling 800-942-3678.

Many local churches throughout the panhandle offer food pantries, so clients are encouraged to check in their community for the requirements and the day(s) food will be shared. The Mary E. Bivins Foundation has taken the lead in fighting hunger and food insecurity, especially among the elderly, throughout the panhandle. You can go to their sponsored website at www.seniorhungersolutions.org to find out about the availability of resources such as food pantries, congregate meal sites, and home delivered meal programs in every county in the panhandle. The website also provides demographic information about the prevalence of food insecurity in each county.

RESOURCES FOR PREGNANT WOMEN AND YOUNG FAMILIES

Pregnant women and their families can access assistance through Region 16 Education Service Center's Early Head Start (EHS) program. EHS assists their clients with resources and education during their pregnancy and postpartum period, along with home-based and classroom programs for the infant through age three. Once the child reaches their third birthday, they can transition into the Head Start program to continue receiving nutrition, education, and other services. More information and great resources can be found at their website www.esc16.net under the School Services section by clicking the Head Start tab or by calling 806-677-5421.

The Coalition of Health Services offers several different programs including the Home Instruction for Parents of Preschool Youngsters (HIPPY) Program, which offers home-based services to parents of preschool age children. The goal of the program is to empower parents as the primary educators of their children and thus to maximize the chances of successful early school experiences. Uniting Parents is a parent case management program for families of children with chronic illnesses and/or disabilities. The 12th edition of their Resource Handbook can be found at www.cohs.net under the Uniting Parents link. The 12th edition is available in English and Spanish and offers a wealth of resources for families living in the Panhandle. The Nurse-Family Partnership is available to those experiencing their first pregnancy who meet income requirements, enroll before 28 weeks, and live in an area where the program is available. A registered nurse makes home visits to provide support, education, and community referrals to build confidence in the ability to have a healthy pregnancy, develop parenting skills, and succeed in reaching personal goals. The Nurse-Family Partnership is currently expanding; so, to see what counties are currently served and to get more information about the variety of programs offered by the Coalition of Health Services, clients can call 806-337-1700 or complete the contact form at their website www.cohs.net.

Joseph's Project through Catholic Charities of Texas is also expanding to rural counties and is available to help pregnant people and families with children under the age of three. Once enrolled in the program, advocates are available to assist with applications for health insurance and assistance programs. Families can attend prenatal and parenting classes to earn points that allow them to choose baby care items such as diapers, wipes, supplemental formula, and gently used maternity, baby and toddler clothing. Joseph's Project provides referrals to programs that provide portable cribs, car seats, education assistance, and other resources. This resource can be reached at 806-350-4600 or at the Catholic Charities website www.cctxp.org, where clients can also find additional programs such as the Interfaith Hunger Project, Adult Eye Care, Immigration Legal Services, Refugee Resettlement, and more.

A PARTIAL LIST OF SERVICES AVAILABLE IN THE PANHANDLE COMMUNITY

Beyond pregnancy, food assistance, and family services, our community also provides services for older adults, the unhoused, refugee and immigrant populations, and single people who need a hand. A complete list of community agencies that offer services and resources would fill many more pages, but here are a few that clients will find useful. Many of these organizations include extensive resource lists on their websites which will expand your and your clients' ability to make needed connections.

Area Agency on Aging of the Panhandle, a program of the Panhandle Regional Planning Commission
806-331-2227, www.theprpc.org. Services to those age 60 and over and their caregivers.

Another Chance House Men's Shelter 806-372-3344 www.anotherchancehouse.org, Case management and structured living programs for men.

Bethesda Outreach 806-383-6990 1101 Fritch Highway Amarillo 79108. Food clothing, ESL classes, and more.

City of Amarillo Community Development 806-378-3098 www.amarillo,gov Housing and homeless services.

Faith City Mission 806-373-6402 www.faithcity.org. Housing, addiction recovery, work programs, and more.

Family Support Services 806-342-2500 www.fss-ama.org. Behavioral health and wellness services, crisis response, emergency housing, support for sexual assault, family violence and human trafficking victims, a Veterans Resource Center, and education and prevention programs for children, teens, and adults.

Haven Health 806-322-3599 www.havenhealthamarillo.com. Health services for women and men including contraception, STD testing and treatment, and pregnancy testing.

Heal the City Free Clinic 806-231-0364 www.healthecityamarillo.com. Free medical care and referral services for uninsured people. A comprehensive

resource list is available on their website that covers food, clothing, transportation, shelters, educational resources and more.

Hope Choice Pregnancy Center and Mentoring Programs 806-354-2288 www.hopechoice.com. Faith-based pregnancy services including pregnancy tests, education and resources, and youth mentoring programs.

Mission Amarillo 806-553-0408 www.missionamarillo.org. Shoe closet and faith -based mentoring programs.

No Boundaries International 806-576-2501 www.nbint.org. Faith-based organization reaching out to those affected by human trafficking, homelessness, and addiction.

Panhandle Independent Living Center 806-374-1400 www.pilc.org .Resources, support, education, transportation and other assistance to help people with disabilities to live independent lives.

The Place Multicultural Community Center 806-553-5155 www.theplaceamarillo.org. Refugee services and community-based language, art, cultural and economic growth.

Salvation Army 806-373-6631 www.southernusa.salvationarmy.org/amarillo. Faith-based agency offering shelter and food assistance, mentoring programs, spiritual care, and Christmas assistance through the Angel Tree program.

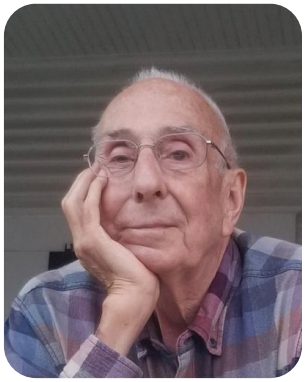
Texas Panhandle Centers 806-337-1000 www.texaspanhandlecenters.org Serves those with mental health and substance use concerns, intellectual and developmental disabilities, children with developmental delays birth to three years, veteran support, and disaster response services.

VIBRANT MOMS at Texas Tech Health Sciences Center www.vibrantmoms.org. Resource lists for the five counties (Deaf Smith, Gray, Parmer, Potter and Randall) participating in the pre-eclampsia research project. Links are available to join the Amarillo Area Outreach Coordinators & Non-Profits and West Texas Healthcare Connection Facebook groups.

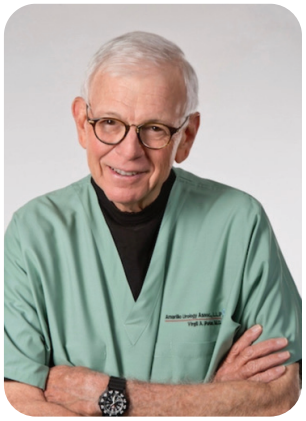
On a final note, the United Way listserv is a great way to keep up with events in the community. To be added to their recipient list, email: listserv@unitedwayama.org. I have no doubt that I am missing organizations that are doing great work. If you are one of them or know of any, please email me at cindi.wynia@amarillo.gov.

Cindi Wynia, MLS, CPST, is the Program Manager for Healthy Amarillo Women and Safe Kids at Amarillo Public Health, providing education and resources to reduce maternal, infant, and child morbidity and mortality in the Panhandle.

In Memory



Dr. Robert J Hays
March 5, 1937 —
January 20, 2025
Amarillo, TX
The family kindly requests that donations be made in Bob Hays' memory to Heal the City Free Clinic, P.O. Box 2556, Amarillo TX, 79105



Dr. Virgil Albert Pate III
August 13, 1944 —
February 24, 2025
Virgil Albert Pate III, 80, of Amarillo, TX

In lieu of flowers, memorial gifts may be made to Faith City Mission, Heal the City or the charity of your choice.

Dr. Sien Hwie Lie, age 87, passed away while in hospice care at Baptist-St. Anthony's Hospital on March 13, 2025, due to complications related to dementia.

Please share memorails by sending them to:
katt.massey@prcmas.com

Our Response to the Women's Health Crisis in the Texas Panhandle: Amarillo's New Women's Health Clinic

by Casie Stoughton

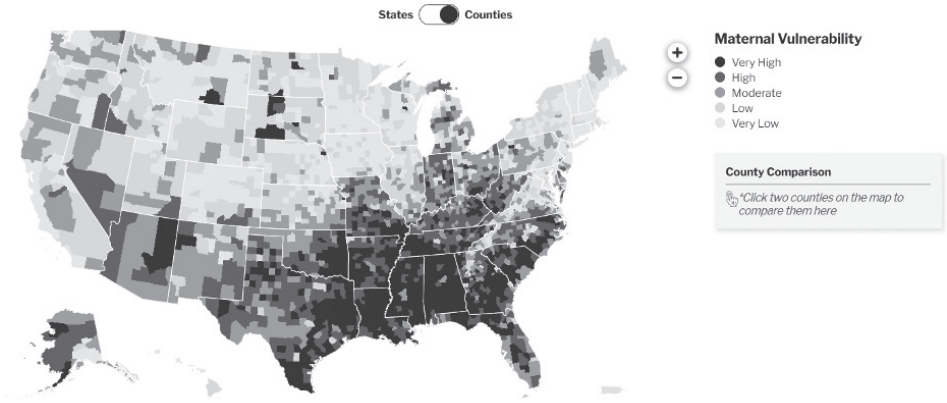
Surgo Ventures, a foundation dedicated to a "customer-driven approach to global health," describes maternal health in the United States as a "shameful problem for one the world's wealthiest countries."

The Maternal Vulnerability Index (MVI), as explained by Surgo Ventures, is a tool to understand and identify where and more importantly why mothers in the United States struggle with high maternal morbidity and mortality. The MVI assigns each county a relative maternal vulnerability score (where 0 = the least vulnerable and 100 = the most).

Amarillo Public Health (APH) recognizes the great need for women's health services in the Texas Panhandle. APH also recognizes the disparity between Potter and Randall Counties, the two counties served by Amarillo Public Health. With ongoing financial support from the Amarillo City Council and continued support from the City of Amarillo City Manager's Office, Amarillo Public Health has studied the problem and has come up with an action plan.

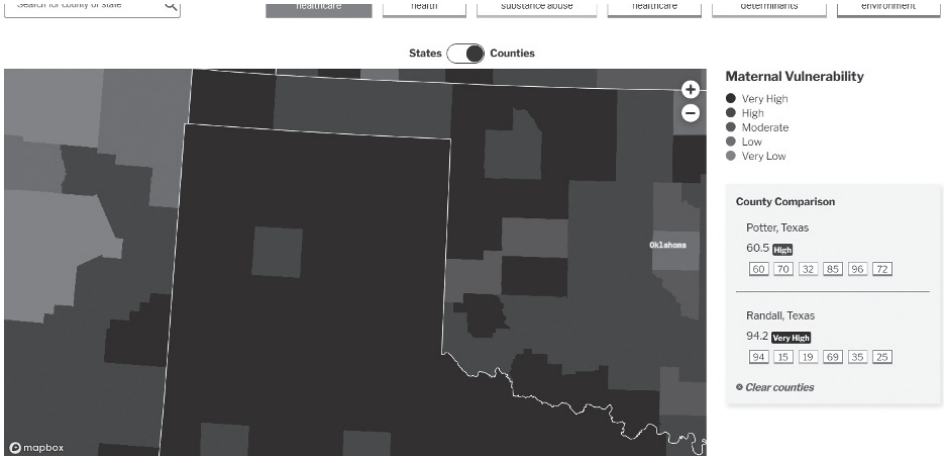
In this article, I will summarize the information from Surgo Ventures describing the challenges facing mothers—especially the underserved mothers of Potter County—in numerous domains measured by the MVI. I will then describe the efforts that the city of Amarillo, through services provided by Amarillo Public Health, are undertaking to address these challenges. As a result, we are honored to be on the cusp of opening the first Women's Health Clinic offered through public health in the panhandle.

Panhandle MVI At a Glance



The Overall Maternal Vulnerability Index score for Potter County is very high at 82 and low at 39 for Randall County. Other MVI scores for counties in the Texas Panhandle range from 99 (Hall Couty) to 43 (Hartley County), indicating the high need for improved maternal health care in the Texas Panhandle.

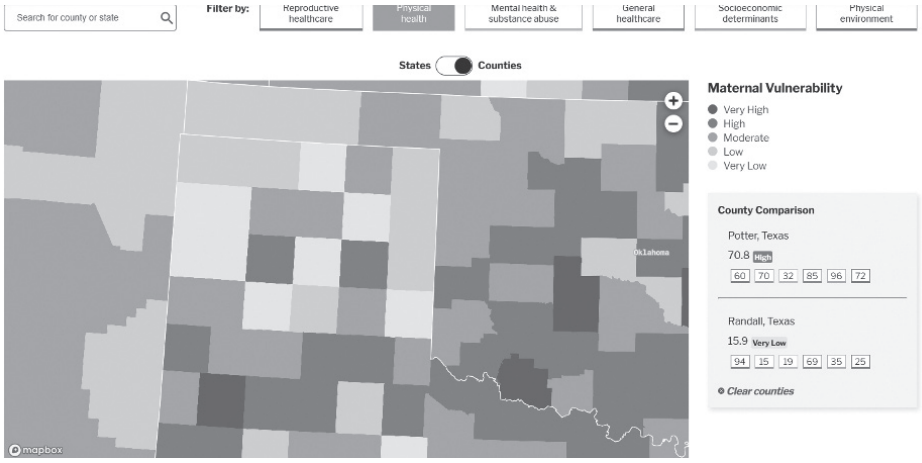
Reproductive Healthcare MVI



Sergo Ventures defines reproductive healthcare to include access to family planning and reproductive services, including abortion, as well as the availability of skilled attendants. Comparing Potter and Randall Counties. The reproductive MVI for Potter County is 60 and for Randall County is 94.

(Potter County is the only county in the panhandle not in the "very high" category for reproductive health vulnerability.)

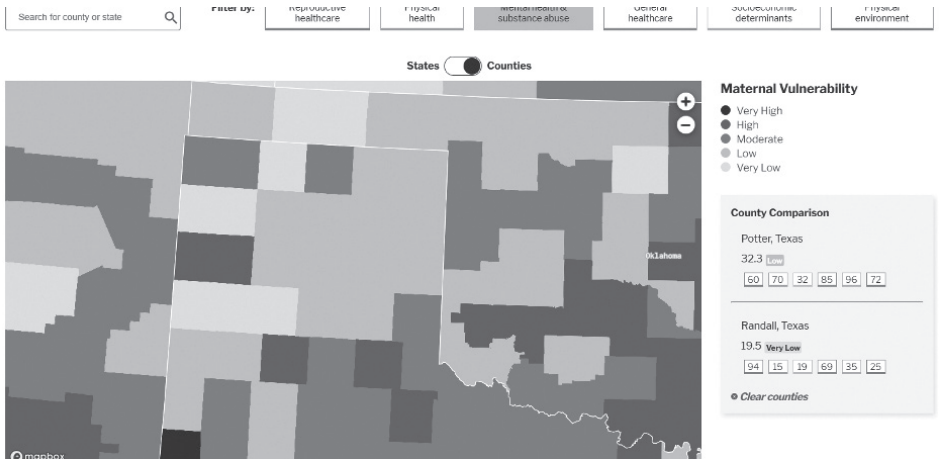
Physical Health MVI



Sergo Ventures defines physical health status to include the prevalence of noncommunicable diseases and sexually transmitted infections. The MVI for physical health in Potter County is 70 and Randall County is 15.

(Potter, Gray, Parmer, Swisher, and Briscoe counties are in the high-risk category for maternal physical health status.)

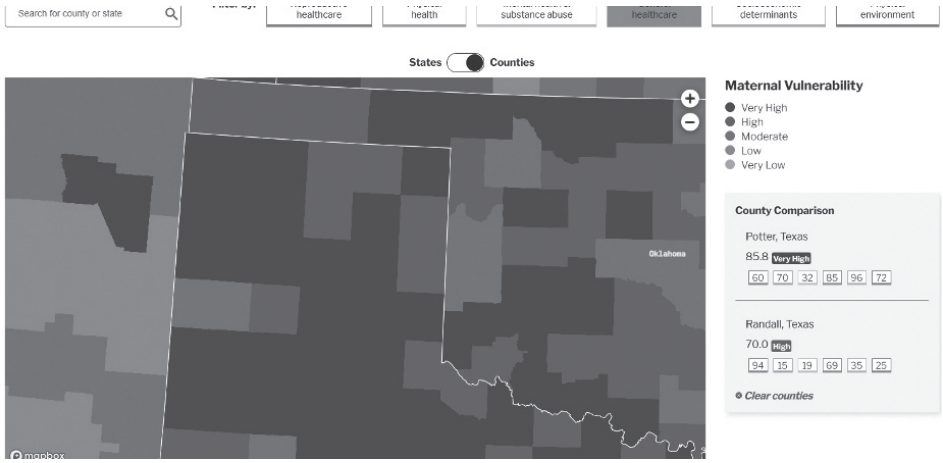
Mental Health and Substance Abuse MVI



Sergo Ventures defines mental health and substance abuse to include factors related to stress, mental health, and addiction. The MVI for mental health and substance abuse in Potter County is 32 and Randall County is 20.

(The panhandle does better in the category of maternal mental health, with only Oldham county in the top 26 showing high vulnerability.)

General Healthcare MVI



(We don't do so well in terms of accessibility and affordability, with only Deaf Smith county scoring less than high or very high risk.)

+MATERNAL MORTALITY IN TEXAS

Maternal mortality in Texas is higher than the national average, with 90% of maternal deaths deemed preventable. Preeclampsia has increased by 37% since 2017. In Potter County, 40.3% of pregnant individuals do not receive prenatal care in the first trimester and 10.9% of all births are preterm. 45.1% of pregnant individuals begin pregnancy with a chronic disease.

In the Texas Panhandle, most counties are considered maternity care deserts. Women's Health services, soon to be provided at Amarillo Public Health, are critical for individuals living in Potter and Randall Counties as well as the Texas Panhandle.

Women's Health services will be provided through the Amarillo Public Health clinical services fixed location, which is in the heart of Potter County at 850 Martin Rd. APH is within walking distance of many underserved neighborhoods, which makes these services a great fit for the community and the area where the clinic is located.

WHAT WE CAN DO: AMARILLO PUBLIC HEALTH WOMEN'S HEALTH CLINIC

While many preparations and planning efforts remain underway, furniture and equipment are on order, positions are posted, staff interviews are taking place, and the team is excited.

Currently, services will include a comprehensive screening program to include STI testing and treatment, Pap testing, mammogram referral, and pregnancy testing. Once pregnancy is identified, APH will have a social worker and two Medicaid navigators on staff to support pre-prenatal care.

The pre-prenatal care program will include Medicaid navigation to assist in securing a payor, and social work to support the individual with social needs such as WIC, SNAP, housing, and other needs that arise. Drug screening, STI screening, and prenatal vitamins will be initiated with the intent to have a smooth transition to local prenatal care providers.

In the future, Amarillo Public Health hopes to have additional grant support to expand services to include basic chronic disease management.

While not all aspects of the Maternal Vulnerability Index can or will be addressed, Amarillo Public Health is dedicated to making a positive impact on families and individuals in our community.

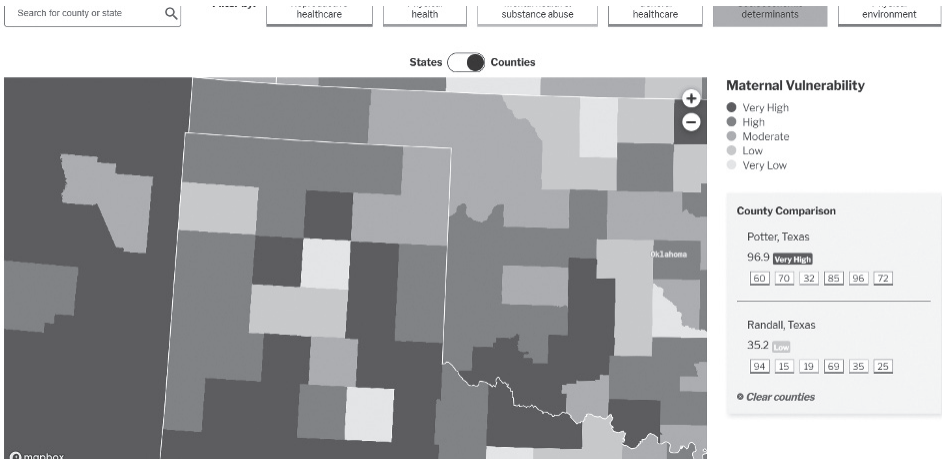
Casie Stoughton has served as the Director of Public Health for Amarillo Public Health for 11 years, overseeing 56 public health workers and serving 260,000 residents. With 21 years of experience, she has worked in immunizations, tuberculosis control, and epidemiology. Casie earned a bachelor's degree in nursing from West Texas A&M University in 2004 and a master's in public health from the University of North Texas Health Science Center in 2015. Her passion for public health was sparked by mission work in Honduras. In her free time, Casie enjoys traveling, crafting, quilting, and spending time with her husband and children.

PRCMS @ THE CAPITOL FOR FIRST TUESDAYS

Thank you Dr. Poage for sharing your time and advocating for the Panhandle's medical community during discussions with Rep. Caroline Fairly and Rep. John Smithee at First Tuesdays at the Capitol in Austin with TMA.

photos shared by Dr. Poage.

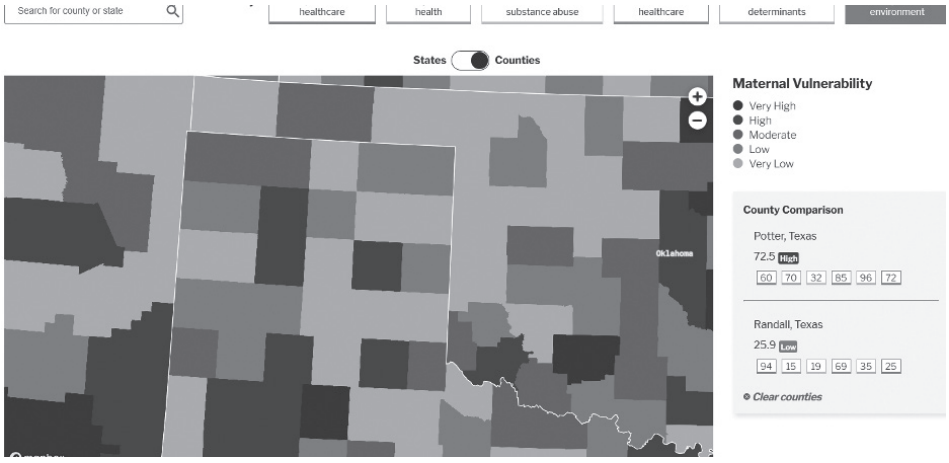
Socioeconomic Determinants MVI



Sergo Ventures defines socioeconomic determinants of health to include educational attainment, poverty and food insecurity, and social support. The socioeconomic determinant MVI in Potter County is 97 and in Randall County is 35.

(Only Carson county looks good in this category; there is a great deal of variability in terms of social determinants of health in the panhandle.)

Physical Environment MVI



Sergo Ventures defines environmental factors that influence maternal health outcomes to include violent crime rates, housing conditions, pollution, and access to transportation. The physical environment MVI in Potter County is 72 and Randall County is 26.

(Again, we see a lot of variability, but Moore, Potter, Gray, Swisher and Hall counties fall short in terms of safety, housing, and transportation.)

PANHANDLE HEALTH

A PUBLICATION OF THE POTTER-RANDALL COUNTY MEDICAL SOCIETY

Editorial Policy and Information for Authors

Purpose: *Panhandle Health* strives to promote the health and welfare of the residents of Amarillo and The Texas Panhandle through the publication of practical informative papers on topics of general interest to most physicians while maintaining editorial integrity and newsworthiness.

Spectrum: The Journal seeks a wide range of review articles and original observations addressing clinical and non-clinical, social and public health, aspects as they relate to the advancement of the state of health in the Texas Panhandle. Pertinent letters to the editor, new submissions, and obituaries are accepted pending editorial review. The Editorial Board accepts or rejects submissions based on merit, appropriateness, and space availability.

Submission Process: Material should be emailed to katt.massey@prcms.com or mailed to Katt Massey, 1721 Hagy Blvd. Amarillo, Texas 79106. A recent photograph of the author (optional) and a curriculum vitae or biographical summary are also to be submitted.

Conflict of Interest: Authors must disclose any conflict of interest that may exist in relation to their submissions.

Journal Articles: Manuscripts should be double-spaced with ample margins. Text should be narrative with complete sentences and logical subheadings. The word count is generally 1200 to 1500 words. Review articles and original contributions should be accompanied by and abstract of no more that 150 words.

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References: References to scientific publications should be listed in numerical order at the end of the article with reference numbers placed in parentheses at appropriate points in text. The minimum acceptable data should include:

Journals: Authors, article title, journal, year volume, issues number, inclusive pages.
Books: Author, title, place of publication, publisher, year.
Websites: URL of the site and the date the information was accessed.

Other Sources: Enough information must be included so that the source can be Identified and retrieved. If not possible, the information for source should be included in parenthetically in the text.

Illustrations: Illustrations should be black and white only with complete-sentence legend.

Previously Published Material: Short verbatim quotations in the text may be used without permission but should be quoted exactly with source credited. Otherwise, permission should be obtained in writing from the publishers

Editing: Accepted manuscripts are edited in accordance with the *American Medical Association Manual of Style.*

Letters: Letters will be published at the discretion of the editor and editorial board. The length should be within 400 words. References should not exceed five. All letters are subject to editing and abridgement.

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Point of View: Opinions published in any article, statement, or advertisement are the responsibility of the author and shall not be construed by any means to represent those of the editors or the medical society.

An Update on the Epidemic of Congenital Syphilis

by Scott Milton, MD, FACP

Treponema pallidum is a spirochete bacteria that cannot be cultivated in clinical laboratories. There are 4 sub-species that are indistinguishable serologically and morphologically. *Treponema pallidum pallidum* causes syphilis, is seen worldwide, and can be acquired congenitally. *T.p.endemicum* causes bejel or endemic syphilis in the Mediterranean and Africa, while *T.p. carateum* causes pinta in Central and South America. Finally, *T.p. pertenue* causes yaws in humid tropical regions of South America, Africa, Asia and Oceania.

Syphilis is a systemic disease that has been divided into stages on the basis of clinical findings. It should be noted that, although it has classically been divided into discrete stages, these different stages of presentation can overlap, which can be confusing to the clinician. Primary syphilis classically presents as a single painless ulcer or chancre at the site of infection. Secondary syphilis is characterized by a skin rash, sestemic symptoms, and lymphadenopathy, while tertiary syphilis can present with cardiac involvement, gummatous lesions, and nervous system disease (tabes dorsalis and general paresis).

LATENT SYPHILIS AND THE RISK OF CNS DISEASE

Syphilis, like many other infectious diseases, can become latent. Latency is defined as cases which lack clinical manifestations but are positive serologically. Latent syphilis acquired within the preceding year is defined as early latent syphilis. All other cases of latent syphilis are classified as late latent syphilis or latent syphilis of unknown duration.

Infection of the central nervous system can occur at any stage of syphilis. Early clinical manifestations occur within the first few months or years. These symptoms, often grouped under the term "meningovascular syphilis", may include altered mental status, stroke, meningitis, and cranial nerve dysfunction. Late manifestations occur decades after infection and include tabes dorsalis and general paresis. Ocular syphilis and otosyphilis can occur at any stage but are often identified during early stages. Ocular syphilis often presents as uveitis but can affect or involve other structures of the eye including the optic nerve, the retina, and the conjunctiva. Ocular syphilis can cause permanent vision loss. Otosyphilis can also cause permanent hearing loss and can present in a variety of ways including tinnitus, vertigo, and sensorineural hearing loss. It is concern about silent progression of latent syphilis to these devastating later phases that motivates our emphasis on diagnosing and treating latent disease.

THE DIAGNOSIS OF SYPHILIS: BACTERIOLOGY AND SEROLOGY

As mentioned initially, *Treponema pallidum* cannot be cultured in the laboratory. Dark field examination and molecular testing from tissue are the definitive methods for diagnosing early syphilis and congenital syphilis. However, many local laboratories are unable to provide these technologies. As a result, multiple tests have been developed. A presumptive diagnosis of syphilis requires the use of two types of serologic tests: a nontreponemal test (VDRL or RPR) and a treponeme-specific test (such as TP-PA). As many as 18 different treponemal assays have been developed.

Traditionally, **non-treponemal tests** (VDRL or RPR) were the first tests ordered upon initial screening. Unfortunately, nontreponemal tests can be falsely positive for many different reasons, including pregnancy, autoimmune disease, and old age. The reason we still order non-treponemal tests in 2025 is that the titers can be followed over time to indicate a response to treatment; a four-fold reduction in titer is usually considered as a satisfactory response to treatment. Indeed, after treatment, non-treponemal test titers may become nonreactive with time.

In contrast, **treponemal tests** typically remain reactive for the life of the patient, unless effective treatment occurs early during the primary stage, in which case 15 to 25% of individuals may become nonreactive after 2 to 3 years. Some laboratories now screen with an automated treponemal immunoassay. This "reverse sequence" (i.e., treponemal test first) algorithm should then include standard quantitative non-treponemal tests with titers. Treatment and management of patients should be guided by the medical history, social risk factors and physical examination. Practically speaking, most individual should be offered treatment in some form.

There has been a marked rise in all stages of syphilis over the last several years across the nation, across the state of Texas, and within our region here in the Texas Panhandle and South Plains. There seems to be a shift demographically as well. Initially, most cases were found among men having sex with men (MSM). More recently, this seems to have shifted away from MSM to heterosexual cases (with the alarming result being a dramatic rise in the number of congenital cases). This

rising incidence seems to be linked to the sex industry and drug abuse, particularly methamphetamine. The increase in cases has been so dramatic, and many of the social issues so complex and difficult, that just finding these individuals by our short-staffed and overworked public health force has become a great challenge. For example, many of these individuals are homeless and often incarcerated. As a result, our public health workers often rely on contacts at the county jails. Trying to rely on individuals infected with syphilis to come to our clinic for treatment and follow-up is usually futile.

RELEVANCE TO "THE FIRST 1000 DAYS": THE RE-EMERGENCE OF CONGENITAL SYPHILIS

Whereas congenital syphilis was almost nonexistent several years ago, there has been a marked rise in cases recently--so much so that Health Commissioner Dr. Jennifer Shuford has made congenital syphilis and mother/child health a top priority. It is now estimated that as many as 1/1300 live births in the United States will be complicated by congenital syphilis (2). Congenital infections can occur at any time during pregnancy but most commonly occur during the spirochetemia of early syphilis. The risk of fetal infection decreases in the latter stages of the disease. As a consequence, as many as 50-70% of infants will become infected if the mother acquires syphilis during her pregnancy. Infection of the fetus earlier than the fourth month of gestation is unusual; therefore, syphilis is not a common cause of early abortion (miscarriage). Adequate treatment of the mother usually (but not always) prevents fetal infection. A serum VDRL/RPR titer of greater than 1:16 and primary, secondary, or early latent syphilis in the mother, or more than 30 days since treatment are factors associated with congenital infection. Fetuses of women with pre-existing syphilis or who have acquired it during pregnancy are followed with serial fetal ultrasound testing. The presence of fetal hepatomegaly and evidence of anemia are cardinal features (although not universally present). Successful treatment of the mother leads to improvement in these findings, usually within 3 weeks. Congenital infections cause 6-7 % of fetuses to be stillborn, especially in untreated or inadequately treated mothers.

Protean manifestations in newborns (or adults) have historically been the hallmark of syphilis, and the clinician should be mindful of this. In the perinatal period, early congenital syphilis most often affects the mucocutaneous tissues, the liver and the skeletal system. Rhinitis or the "snuffles" is followed by a diffuse maculopapular, desquamating rash with extensive sloughing, most prominent in the palms and soles and around the mouth and anus. Vesicles and bullae, loaded with spirochetes, may be present. The liver is often heavily infected, and hepatomegaly, splenomegaly, jaundice, anemia, and thrombocytopenia are seen. Patchy demineralization of long bones (giving a moth-eaten appearance) is typical. CNS involvement is also quite common, involving as many as 60% of neonates, but CSF testing is of low sensitivity. Neonatal congenital syphilis must be differentiated from other congenital infections including rubella, cytomegalovirus and toxoplasmosis. Neonatal death usually occurs from liver failure, hypopituitarism (maternal-fetal endocrine axis disruption), severe pneumonia or pulmonary hemorrhage.

Later manifestations of congenital syphilis, usually occurring after several months, include bony abnormalities, CNS changes, and glomerulonephritis. Osteochondritis, perichondritis or periostitis can occur in any bone of the skeletal system but are easily discernible in the long bones. Untreated children who survive the first 6 to 12 months of life enter a period of "latency". Chronic cartilaginous and skeletal infection can present with deformities such as "saddle nose" and "saber shin". Neurosyphilis (with its attendant risk of stroke), interstitial keratitis, and 8th nerve involvement, resulting in deafness, are also commonly seen. Other stigmata include recurrent arthropathy and bilateral knee effusions (Clutton's joints), Hutchinson's teeth, frontal bossing of the skull and poorly developed maxillae (2).

In my opinion, turning the tide will be possible only by marshalling all the resources that are available in our healthcare system; especially important will be the cooperation of the pharmaceutical industry. Bicillin LA is the form of penicillin used for the treatment of syphilis in the outpatient setting. Unfortunately, this formulation is in extremely short supply. As a result, it has been recommended by the CDC to use Bicillin LA only for the treatment of congenital syphilis. Therefore, doxycycline has been utilized much more frequently in other settings. It is unclear how or if the Bicillin LA shortage has impacted this outbreak, but I suspect it is for the worse, as penicillin is a superior drug for the treatment of syphilis. This form of penicillin has also become quite expensive, for unclear reasons. Most physician offices no longer stock Bicillin LA because of this expense, which is usually over $1000 per vial. In addition, Bicillin LA should be refrigerated. Once taken out of refrigeration, it cannot be returned refrigerated storage and must be discarded.

Of equal importance is the difficulty of screening high-risk mothers early in their pregnancy. The most recent state data suggest that far too many of these mothers are not being adequately screened. All pregnant women should be screened at their initial pregnancy visit. Women at high risk should be screened at 28 weeks gestation, and finally, mothers should be screened at delivery. Many of these mothers do not seek prenatal care, are uninsured or underinsured and often have other challenges such as drug abuse, homelessness and multiple sex partners. Treatment is therefore often delayed and inadequate. Most cases of syphilis in pregnant women are now diagnosed in

the third trimester. The risks of stillbirth or long-term sequelae to the infant are much greater when syphilis is diagnosed late in pregnancy. We must do better!

SUMMARY

Syphilis is a sexually transmitted infectious disease that has been around for centuries. The availability of penicillin in the 1940s and 50s, as well as widespread screening, led to sharp reductions in syphilis in the United States. By the end of the 20th century, this trend halted, and by the early 2000s the numbers were on the rise again. In 2023, there were more than 900 cases of congenital syphilis documented in the state of Texas. The reasons for this are not entirely clear but may in part be secondary to illicit drug use, specifically methamphetamine, and unprotected sex often involving the sex industry. Demographics appear to have changed recently, with more heterosexual cases and an alarming rise in congenital cases. Other challenges that likely contribute to the rising cases include the complicated socioeconomic conditions of many of the individuals suffering from syphilis. The shortage of Bicillin LA, coupled with the cost and storage requirements for the drug, have further hampered the response to the rising number of cases. I would also add that the funding received in order to combat this problem has been woefully inadequate. This is not a new problem by any means, but funding will need to improve before there is a reduction in new cases. Finally, we as healthcare providers must screen our patients much more often with a pertinent discussion about risk factors and testing on a regular basis, especially to those at highest risk.

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