# PANHANDLE HEALAH

### A QUARTERLY PUBLICATION OF THE POTTER-RANDALL COUNTY MEDICAL SOCIETY

FALL 2023 | VOL 33 | NO.3



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PRESENTS

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Objectives: Identify the unique health care challenges facing Texas physicians and their patients. Describe TMA's recommendations for improving the health care landscape for physicians and their patients. Discuss specific actions TMA is taking to address legislative issues on state and federal levels. Learn what steps they must take to improve health care policy and legislation in their communities.

Accreditation Statement: The Texas Medical Association is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. TMA designates this live activity for a maximum of 1 AMA PRA Category 1 Credit. Physicians should claim only the credit commensurate with the extent of their participation in the activity. TMA designates this activity for up to 1 hour in the area of ethics and/or professional responsibility education.



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# **President's Message:**

by Nicole Lopez, MD, FAAFP

This fall's issue of Panhandle Health focuses on Zombie diseases – those diseases that we thought were eradicated but have since re-emerged. The PRCMS editorial board has spent a great deal of time and effort in collaborating for this interesting, albeit "scary," reality.

Although I have never had a "zombie" disease, unless COVID counts, I can definitely relate to feeling like a zombie. This was especially true in medical school, when I was studying a minimum of 15 hours a day or working 36-hour shifts in residency. Then, the emergence of onerous prior authorizations, painstaking tasks in my inbox, and grueling hours after clinic pushed me into burnout in private practice.

Three years out from the beginning of the COVID pandemic, the number of physicians, residents, and medical students battling mental health concerns continues to rise. The Physician's Foundation has reported that "six in 10 physicians and residents and seven in 10 medical students often have feelings of burnout, well above the pre-pandemic percentage of 40% (of physicians) in 2018." Burnout can lead to depression, anxiety, and suicidal thoughts when left untreated. Sadly, physicians outrank most other professions in suicide attempts, and our community has lost several physicians to suicide in the past decade.

National Physician Suicide Awareness Day (#NPSADay), which falls on September 17, was created to help break down the culture of silence and stigma that surrounds physician mental health. As this issue of Panhandle Health was headed to print, Texas Tech University Health Sciences Center in Amarillo was preparing for Grand Rounds on September 14. This event seeks to raise awareness of suicide prevention, to create a culture of wellbeing, and to shift the focus from a system where physicians think they are alone to one where they see their community's support system. To accomplish this, Gracie Hodges, LPC, who was personally affected by this issue, was featured as the guest speaker; and many agencies from our community -- such as The Panhandle Behavioral Health Alliance and The West Texas Suicide Coalition -- were present to support our medical students, residents, physicians and healthcare staff. We plan to continue the conversation and recognize NPSA Day every year. We want to see intrusive mental health questions removed from physician applications, and to share resources that can help those in distress before they reach the "Zombie" stage of crisis.

I hope that you take the time to reflect on your own mental health and wellbeing. Check in with your colleagues and ask how they are doing. A kind word, smile, or gesture may make all the difference in this sometimes scary world.





# **Executive Director's Message**

by Cindy Barnard, Executive Director

Scarlet fever, tuberculosis, mumps, measles: you may think these are deadly diseases of the past, wiped out with vaccines and antibiotics. The truth is that these diseases are still infecting people from all over the world, and some have made resurgences in the United States. In this issue of Panhandle Health, the authors will be touching on some of these "Zombie Diseases".

Texas Medical Association begins sending out dues notices for 2024 in October. Please remember to renew your dues by January 1, 2024. One of the most asked questions when considering membership in any organization is: What is the return on my investment?" Especially in this economy, value is one of the strongest factors in decision-making. Professional organizations around the nation are struggling to retain members in every market. The survival of these organizations is directly dependent on the value they are able to provide to their members. Your membership dollars are constantly working for you at Potter Randall County Medical Society. The value of your membership is defined by both physical assets and the power of the PRCMS network.

When you have a question or an issue with any aspect of your medical practice, we have the resources through our expertise and our knowledgeable network to find you a resolution. If you carry health or life insurance with TMAIT or your liability insurance from TMLT, you must be a member. The Physician referrals increase each year, and Panhandle Health is in its 32nd year of Publication. We also print a Panhandle Area Physician Roster. We have an active Retired Physician Organization and Physician Health and Wellness Committee. PRCMS can only get better as each of you get involved and work together to make a difference.

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# **PRCMSA:** The Alliance won The Fundraising Activity Award by the Texas Medical Association Alliance at ALLMED!

by Tricia Schniederjan

have some great news to share!

First, our Alliance won The Fundraising Activity Award handed out by the Texas Medical Association Alliance at ALLMED in May! Congratulations to our hard-working board for receiving that achievement!.

Secondly, I'd love to share that the bike helmets for the Northside Toy Drive have been completely underwritten by an anonymous local donor who is proud of the Alliance for providing the bike helmets for the children of Amarillo in need. Look for volunteer opportunities this year. It will be Saturday, December 16th. Fitting and handing out the helmets is such a rewarding and fun thing to do. We are so thankful to have the cost taken care of, so come celebrate with us at the upcoming ladies night Thursday September 28th. Don't worry, men, we will plan something for y'all too in the future.

Last spring, our picnic was rained out, but with the money that was received through rsvps we were able to donate \$700 to the Third Strand. The Third Strand is a local nonprofit that donates fresh breastmilk to babies in need.

Finally, our board has been productive in preparing for a board turnover this January. There will be many new members with fun new ideas to help our medical community. Look for the announcement of our new board coming soon.

## Be A Part Of The Circle

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> Be a part of the circle. In 2006, Potter-Randall County Medical Society introduced the Circle of Friends, a program designed with the business of medicine in mind. Members of the Circle of Friends are companies that pay an annual fee to participate in Medical Society events. Their financial commitment allows PRCMS to provide quality programs throughout the year, such as the Annual Meeting, Doctors Day, Resident Reception, Family Fall Festival, Retired Physicians Lunch and Women in Medicine. In return, these companies are invited to attend these events and discuss with the physicians the benefits that their companies offer a physicians practice.

We are grateful for the support of these organizations and anticipate another great year of serving the needs of our members. The purpose for Circle of Friends is to provide a valuable base of resources to assist the physician in the business of medicine so their practice of medicine can improve.

This program has proven to be a valuable resource of services such as liability insurance, accounting, banking and much more. This year, we hope to expand the Circle to include services the physician may use in his or her personal life. Through this program, we can invite businesses serving physicians to support the Society and increase their visibility among its members. Corporate support contributes to the Society's ability to advocate and care for physicians and patients in Potter and Randall Counties.

The Medical Society thanks all of its supporters as it offers new opportunities to its membership. If your business is interested in being a part of our Circle of Friends, please contact Cindy Barnard at 355-6854 or e-mail prcms@suddenlinkmail.com.



# **Guest Editorial: Zombie Diseases**

by Scott Milton, MD, FACP

Zombie diseases are the subject of this dition of Panhandle Health. The illnesses discussed in this issue were selected because they were previously very uncommon but now are being encountered for various reasons. While not all the diseases mentioned in this edition are infectious diseases, many are and were made uncommon decades to centuries ago by basic infection control measures, public health practices and other medical advancements.

Mpox (previously monkeypox) is a viral infection with many similarities to smallpox. Smallpox, which is now eradicated from the world, was a disease that was feared and deadly in the past. In fact, the first government-mandated inoculation campaign was ordered by Gen. George Washington on February 6, 1777. Smallpox killed anywhere from 30 to 50% of those who contracted it. And, for those who survived, convalescence took weeks to months. Many of the sol-

diers of the Continental Army were from farms and other rural areas and therefore had never been exposed to the disease. Soldiers in the British Army, on the other hand, were largely immune, as smallpox had been present in Britain for centuries. Inoculation, as opposed to vaccination, was used because the British physician Edward Jenner had not yet demonstrated that intentionally infecting an individual with the mild cowpox virus (vaccinia) conferred immunity against the deadly smallpox virus. Inoculation was performed by a physician who lanced one of the pustules of a smallpox-infected soldier with a knife or scalpel and then inserted the infected blade under the skin of a soldier who had yet to be infected. Some believe this act itself had a mortality risk of 2 to 5%! If Gen. Washington, however, had not issued this order, some historians believe the revolution may have been lost. Why do I mention this in the context of the current Mpox outbreak? Because the Jynneos vaccine used against today's Mpox is a vaccine that had previously been stockpiled by our government in case of a smallpox bio-terrorist event. Now that is certainly a zombie disease!

Another message that we can infer from this story is how lucky we are to live in an age when we and our children are not at risk of contracting smallpox or many other diseases because of public health practices and other advancements in modern medicine. The history mentioned above should inspire us and guide us as leaders in our community to promote and maintain a strong public health department. We should, as healthcare providers, encourage our policymakers to make wise and informed decisions to promote the well-being and health of all individuals living in our community. By doing so, we as citizens have the best chance of enjoying the freedoms that Gen. Washington and the Continental Army were fighting for.

### Yes, I Would Like To Contribute To The Potter-Randall County Medical Society Endowment Fund

The endowment fund was established in 1981 to promote the advancement of general education in medical science in Potter and Randall counties through discussion groups, forums, panel lectures, and similar programs. It is the hope of the society that, through the endowment fund, the work of our physicians will be continued by increased public awareness and understanding of the advances in medical science.

We are happy to accept memorials and/or honorariums. Notification of gift is sent immediately. Amount remains confidential. Your contribution is tax deductible. Please make checks payable to Potter-Randall County Medical Society and send to PRCMS, 1721 Hagy, Amarillo, Texas 79106.

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# Immunizations in the 21st Century: Are We Winning or Losing?

by Shanna James, PharmD

Immunizations are one of the greatest life-saving public health accomplishments of all time, saving an estimated four million lives every year, according to the Centers for Disease Control and Prevention (CDC) (1). Unfortunately, immunizations have gone from a recognized advancement in public health to a place where vaccine hesitancy is one of the biggest global health threats, according to the World Health Organization (WHO) (2).

To understand this dangerous trend, healthcare providers must look at the whole picture. This means looking beyond vaccine effectiveness and safety to explore other questions, such as what are the public's understanding, beliefs, and attitudes about vaccinations.

An important place to start is with misinformation and disinformation. FDA commissioner Robert Califf believes that misinformation is one of the leading causes of premature death in the U.S. "There's an old saying: life is a sexually transmitted disease with 100% mortality – we are all going to die," Califf said at the 2023 Stanford Drug Discovery Symposium. "But dying early because you didn't do something that people who are knowledgeable know would save your life – that's really tragic." (3)

In the digital age, being an effective healthcare provider requires more than being knowledgeable in the art of medicine. It requires understanding how to communicate about health to patients from diverse backgrounds and knowledge levels.

Infectious diseases continue to be a leading cause of morbidity and mortal-

ity, and these include vaccine-preventable diseases. Many people living today do not know what it was like in the era of polio and the iron lung. Families suffered the fear and heartache of this disease. Then, the discovery of a lifesaving and life-changing vaccine brought relief and celebration.

Existing literature suggests that the American public does not have a clear understanding of how vaccines work or how the body's immunity works. Some believe that vaccines are a dangerous substance that can give them the illness the vaccine is supposed to protect them from, or that too many vaccines will overwhelm the immune system, or that vaccines weaken the natural immune response (4). These misunderstandings affect how a parent makes decisions about vaccines. Several studies have shown that misinformation regarding influenza vaccine-that it causes influenza, that it has harmful side effects, or that it is ineffective-can result in decreased vaccine use (4-6).

A prevalent misconception about vaccines among the general public is that vaccines cause autism. Even though there are now many peer-reviewed studies proving that vaccines do NOT cause autism, this continues to be a common misunderstanding among the public (4,7). Goin-Kochel et al. (2020) found that 29% of surveyed U.S. parents with children on the autism spectrum reported vaccine hesitancy, compared to an average of 15% of parents in the general population. Among parents with children on the autism spectrum, vaccine hesitancy was significantly linked to a belief that vaccines were the cause of their child's autism spectrum disorder; 64% believed that "toxins found in vaccines" contributed to their child's disorder (8). Again, this erroneous belief has been disproven time and again.

In addition to a lack of understanding of how vaccines work and the actual risk of vaccines, existing research points to a lack of knowledge or awareness of the risks associated with opting out of vaccines and contracting vaccine-preventable conditions (9). Studies have shown an increase in vaccine uptake when there is a better understanding of what the vaccine-preventable disease looks like (9).

Most people do not understand herd immunity – also known as "community immunity" – and how it works (10). Many campaigns promoting COVID vaccination emphasized the need to get vaccinated for the benefit of others, but the lack of knowledge of how community immunity works means those campaigns were not widely effective in changing behaviors.

Misinformation about vaccines capitalizes on fears and uncertainty about the safety of vaccines (8). Organizations and individuals that share misinformation rely on personal stories of those "harmed" by vaccines and images that induce fear such as large needles and skulls with crossbones to help magnify the risk and severity of side effects.

According to the American Psychological Association, "disinformation" is false information which is deliberately intended to mislead—intentionally misstating the facts. The spread of misinformation and disinformation has affected our ability to improve public health, address climate change, maintain a stable democracy, and more (11). How can healthcare providers help improve the understanding, beliefs, and attitudes regarding vaccines? Evidence shows that a patient's vaccine acceptance rate is significantly increased when they hear a strong, positive healthcare recommendation and when they are offered the vaccine at that visit (right then!). The CDC has created a model to increase immunization rates based on research and evidence called the SHARE Model (12).

**S** (Share) tailored reasons why the recommended vaccine is right for the patient given his or her age, health status, lifestyle, occupation, or risk factors.

**H** (Highlight) positive experiences with vaccines (personally or in your practice), as appropriate, to reinforce the benefits and strengthen confidence in vaccination.

A (Address) patient questions and any concerns about the vaccine, including side effects, safety, and vaccine effectiveness in plain and understandable language.

**R** (Remind) patients that vaccines protect them and their loved ones from many common and serious diseases.

**E** (Explain) the potential costs of getting the disease, including serious health effects, time lost (such as missing work or family obligations), and financial costs.

Patients throughout our region deserve to hear the lifesaving information about vaccines, and their best source is the healthcare professional that they trust. We should be armed and ready with information for our patients, either by having handouts in our lobbies and exam rooms or by making information available on line. Having these important conversations with all our patients is one of the most effective ways to foster health and indeed to prolong the lives of our patients.

Shanna James, Pharm D, CTTS Amarillo Public Health Department COVID Program Manager

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## **Syphilis** by Scott Milton, MD, FACP

**T**reponema pallidum is a spirochete bacteria that cannot be cultivated in clinical laboratories. There are 4 sub species, which 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. *T.p. carateum*, causes pinta in Central and South America. *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 stages, these different stages of presentation can overlap, which could be confusing to the clinician. Primary syphilis classically presented as a single painless ulcer or chancre at the site of infection. Secondary syphilis presents as a skin rash, cutaneous lesions, and lymphadenopathy. Tertiary syphilis can present with cardiac involvement, gummatous lesions, tabes dorsalis, and general paresis.

Syphilis, like many other infectious diseases, can become latent. Latency is defined as cases lacking clinical manifestations but 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 symp-

toms may include altered mental status, stroke, meningovascular syphilis, 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 infect 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.

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 (at least 18 specific treponemal tests). A presumptive diagnosis of syphilis requires the use of two serologic test: a nontreponemal test (VDRL or RPR) and a treponemal test (TP-PA). As mentioned above, there are many treponemal assays that have been developed.

Nontreponemal tests can be false positive for many different reasons including pregnancy, autoimmune disease, and old age. Nontreponemal test titers usually decrease after treatment. A fourfold reduction in titer is considered as a satisfactory response to treatment. Traditionally, non-treponemal tests were the first tests ordered upon initial screening. After treatment, non-treponemal test titers might become nonreactive with time. In contrast, treponemal tests are typically reactive lifelong unless treated during the primary stage of syphilis. Under these circumstances, 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 algorithm should 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 mainly found among men having sex with men. More recently, this seems to have shifted away from MSM to heterosexual cases and, even more alarmingly a rise in congenital cases. The rising cases seem to be linked to the sex industry and drug abuse, particularly methamphetamine. The rising cases have 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.

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. In my opinion, turning the tide will only be possible by combining expertise and resources that we have available with our healthcare system, not the least of which is the pharmaceutical industry. Bicillin LA is the form of penicillin used for the treatment of syphilis in the outpatient setting. Unfortunately, this is in extremely short supply. In response to this, it has been recommended by the CDC to use this form of penicillin only for the treatment of congenital syphilis. Therefore, doxycycline has been utilized much more frequently. It is unclear how or if the Bicillin LA shortage has impacted this outbreak, but I suspect it is likely for the worst, 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 have Bicillin LA because of this expense, which is usually over \$1000. Bicillin LA should be refrigerated as well. Once taken out of refrigeration, it cannot be returned refrigerated storage and must be discarded.

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. 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 likely need to increase 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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# Outbreaks Or Outliers: Recognizing the Foundations of an Epidemic

by Sheryl Williams, MD

disease outbreak is defined by the AWorld Health Organization as an occurrence of disease cases at a higher-than-expected rate within a defined community or geographic region (1). We are all attuned to the progression of the COVID-19 outbreak that then evolved into a global pandemic. Ebola started as a small outbreak in East Africa that progressed to spread cases in multiple other countries. Smaller scale outbreaks have also caught the attention of the medical community and press, including Marburg virus in Equatorial Guinea and Tanzania and Avian Influenza in the United Kingdom. Early reporting and rapid response are key to controlling an outbreak and preventing spread to unaffected areas. Public Health security is vital to prevent social and economic disruption as well as to minimize the spread of illness throughout the population. But what is a 'actual' outbreak? What constitutes a threat to our communities versus simply a constellation of illnesses? How do we evaluate what we hear in the news and decide if the threat is real? Let's examine a few examples of recent reports of disease outbreaks.

# OLD PATHOGENS THAT WE CAN NOW IDENTIFY

In late May of this past year, local news outlets in Amarillo picked up on a story from CNN about a surge in reported cases of Human Metapneumovirus (HMPV). The CDC reported higher levels of this virus, which can cause lower respiratory symptoms and even hospitalization in the young or elderly. "At its peak in mid-March, nearly 11% of tested specimens were positive for HMPV, a number that's about 36% higher than the average, pre-pandemic seasonal peak of 7% test positivity." (2) A new virus mutation? A new epidemic threat? Is this outbreak real?

As the CDC confirmed, this was an outbreak of a virus that has been around for a long time. Possibly due to rescinding the mask mandate, respiratory viruses surged this past fall, winter, and spring. COVID spiked, as did influenza. As a result of testing for COVID and influenza, the laboratories started testing simultaneously for HMPV. This is not a new virus, and most people may not even know they have had it. Mild disease is simply chalked up to "the crud", or an influenza-like virus (ILV). As physicians, we never had the ability or need to send out for specific PCR testing for viruses. However, as a fallout from the COVID pandemic, labs now can screen for multiple viruses with a single test. Yes, this was an outbreak, but it only came to our attention due to advances in technology over the past two years that allowed us to identify the causative agent.

More extensive laboratory testing has created similar increases in disease prevalence for other clinical syndromes. When patients come to the hospital with severe nausea, vomiting, and diarrhea, it is imperative to check their stool for communicable pathogens such as Salmonella, Shigella, or Campylobacter. Public Health principles require data to localize outbreaks or point sources of these diseases. In the past, with the more limited resources then available, patients were usually labeled as having a self-limited "stomach bug". Now, however, with enhanced technology in the lab, many more viruses and pathogens can be rapidly identified. Norovirus (the cruise ship virus) is now routinely identified as the

leading cause of gastroenteritis in the U.S. (3).

### NEW OUTBREAKS DUE TO CON-TAMINATED PROCEDURES OR PRODUCTS

Not all outbreaks are due to communicable disease. The CDC announced an outbreak of fungal meningitis associated with epidural anesthesia procedures from two specific clinics in Matamoros, Mexico this past May. The particular clinics were closed down on May 13, 2023. All patients identified by the Mexican Ministry of Health have been contacted for testing and surveillance. In addition, the CDC is urging all potentially exposed patients to have early testing even if asymptomatic. To date, there have been eight fatalities, ten confirmed cases, 21 probably infected cases and 154 patients under surveillance.

Outbreaks can also be caused by contaminated products. In February 2023, the CDC announced an outbreak of multi-drug resistant *Pseudomonas* that was associated with two brands of over-the-counter eye drops, EzriCare and Delsam Pharma's Artificial Tears. There was widespread contamination, and eighty-one patients in 18 states have been identified with eye infections from these products, with four fatalities and 18 patients with vision loss and even enucleation of the eye.

# THE IMPORTANCE OF PUBLIC HEALTH AND SURVEILLANCE

One of the best defenses in combating outbreaks from communicable disease is surveillance testing and rapid identification. In 2022, an unvaccinated New York man was diagnosed with paralytic polio

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For language assistance, disability accommodations and the nondiscrimination notice, visit our website. 231636700-1645113 7/23 infection. A single case of polio is considered an outbreak due to the almost total elimination of this disease through vaccination. Wastewater sampling in New York determined that the vaccine-derived polio virus type 2 was circulating in the community, prompting a strong campaign to vaccinate everyone in the area and provide catch-up vaccines to children impacted by interrupted medical care during the COVID pandemic.

The way a patient is exposed and becomes infected with a disease also has impact on whether an outbreak is declared. Malaria is a severe, life-threatening disease world-wide. The CDC reports approximately two thousand cases per year in the US, mainly due to travel to endemic areas (4). Despite the high number of cases, this does not constitute an outbreak. However, in June of this year, five locally acquired cases of malaria in Florida and Texas have been identified. This is not yet an outbreak, but aggressive mosquito surveillance and control methods have been initiated to prevent further spread of the disease (5).

An actual outbreak can be real or due to enhanced laboratory identification. Some outbreaks are due to contaminated products or procedures, and some due to resurgence of old diseases. The best local source of information on current outbreaks is the City Health Department https://www.amarillo.gov/ departments/community-services/public-health where all current advisories are listed on the front page. The Texas Department of Health also has an abundance of information, both state-wide and by region https://www.dshs.texas. gov/. Finally, for country-wide and travel related information, the CDC Health Alert Network shares cleared information on urgent public health situations https://emergency.cdc.gov/han/index. asp. Information can be the best defense against an outbreak through early identification and response.

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# **MPOX** by Scott Milton, MD, FACP

Mpox (previously monkeypox) is a virus int the Pox family of viruses that includes smallpox, molluscum contagiosum, and orf, a poxvirus disease that can occasionally be associated with handling of goats. A global outbreak of Mpox began in May of 2022. As of May 2023, over 30,000 cases had been identified in United States, with 42 deaths. Globally there have been more than 87,000 cases. This outbreak peaked last summer, but small numbers of cases continue to be reported. The Mpox virus is divided into two main clades. The 2022/3 outbreak strain is sub clade 2b. Clade 2, formerly identified as the West African clade, is less virulent than clade 1 (formerly known as the Congo basin Clade).

Classically, Mpox has an incubation period of 3 to 17 days with an illness duration of two to four weeks. Prior to the development of a rash, a prodrome develops over 1 to 4 days and can include fever, malaise, headache, weakness, and myalgia. Lymphadenopathy, either generalized or localized (often in the neck region) can occur. The typical rash usually becomes apparent at this time and progresses through predictable stages that include macules, papules, vesicles, pustules and crusts. These lesions are often painful and become pruritic during the healing phase. Pustules become umbilicated upon maturation, a somewhat distinguishing feature.

The Clade 2b Mpox outbreak is different from others in several respects. This outbreak disproportionately affects men having sex with men, including MSM with HIV. Transmission is typically linked to sexual contact. The rash distribution is more centrifugal than centripetal and can affect both skin and mucosa, especially genital areas and oropharynx. Further, prodromal symptoms may be absent or even follow the rash onset. Individuals with poorly controlled HIV tend to fare worse, especially those with the CD4 count of less than 350. The Clade 2b rash often presents in multiple stages of evolution, another distinguishing feature.

As mentioned, individuals with poorly controlled or in adequately treated HIV (particularly those with a CD4 count less than 350 and high viral load) are at risk of severe disease. Other medical conditions in which the immune system is suppressed or deficient also put the patient at risk of severe disease. In addition, those with chronic skin disease such as atopic dermatitis or eczema or those with breaks in the dermal barrier are at risk of severe Mpox. Complications of severe disease include conjunctivitis, corneal ulcerations with resultant scarring, and neurological complications including seizures, confusion, and encephalomyelitis. Cardiovascular complications including myocarditis and pericarditis have been described, as have rheumatologic complications including acute arthritis and synovitis. Obstructive complications, most often in the lungs or gastrointestinal tract, have been described. These are felt to be due either to ulcer related strictures, severe lymphadenopathy, or edema of the surrounding tissues. Finally, sepsis/hemorrhage and resultant death have occurred.

The transmission of Mpox during this outbreak has been almost exclusively spread from person to person through direct contact. That is, physical contact with infectious skin rash or scabs. Handling of heavily soiled items such as clothing or bed linens that were in intimate contact with infectious skin can also transmit virus, and it is known that the virus can be transferred in utero to the fetus. Patients can be infectious up the four days prior to developing symptoms and can remain infectious until lesions have crusted and healed completely. How often this virus is spread via respiratory secretions is unknown. Transmission of virus during brief interactions between people in close proximity for a longer duration is unlikely. The risk of infection through contact with low-level contaminated service objects in healthcare settings or household areas is considered low.

When evaluating individuals for possible Mpox, a complete history that includes travel, social, and sexual history for the past 21 days is most important. A thorough skin and mucosal examination (anus, mouth, and genitals) should be performed. The differential diagnosis should include varicella zoster, herpes simplex, one syphilis. Many patients in this current outbreak were unaware that they were also infected with HIV, and testing for this is also extremely important because these individuals have a higher risk of severe disease.

When collecting specimens for testing, personal protective equipment (PPE)is strongly recommended. It is unnecessary to unroof or aspirate lesions for Mpox testing. Adequate material can be collected by simply rubbing the top of the lesion without breaking the vesicle or pustule. If the lesion were to break while collecting, try to absorb material onto the collection device. Many laboratories, both commercial and public, are capable of testing for Mpox. Communication with the laboratory prior to collection and transport of the sample is important as the requirements for proper collection and transport maybe different. Testing for genital ulcers and proctitis should include testing for syphilis, gonorrhea and chlamydia, and genital herpes type 1 and 2.

Most often, Mpox infection is self-limited, mild and resolves without antiviral therapy. Lesions are often painful and require pain management. In fact, pain is one of the more common reasons for hospitalization. Wound care for lesions that become denuded or open is important. Tecovirimat (TPOXX) is an antiviral medication approved for the treatment of human smallpox. It may be used for the treatment of Mpox under an expanded access investigational new drug protocol for adults and children weighing at least 3 kg. It is unknown whether Tpoxx is truly effective for the treatment of Mpox. Human case reports suggest evidence of reduced severity, duration of illness, and viral shedding. Animal studies suggest a mortality benefit. It's use in post exposure prophylaxis is unstudied. Tpoxx is available through the Study of Tecovirimat for human Mpox virus (STOMP). It is also available in limited supplies through some local and state health departments. The capsules must be consumed with a full fatty meal. Intravenous formulations can be made available through the strategic national stockpile via consultation with state or local health authorities or the CDC as needed. Other drugs such as cidofivir and immunoglobulin are also available through the CDC. Prompt consultation with the CDC is recommended for all individuals at risk for severe Mpox. Immunocompromised individuals should be managed in a manner in which immune function is optimized. In other words, limiting the use of immune compromising therapies such as chemotherapy or corticosteroids and using effective antiretroviral therapy in patients infected with HIV.

The Jynneos vaccine is a live virus vaccine produced from a replication-deficient vaccinia virus strain. It has been studied in immunocompromised individuals including those infected with HIV and individuals with atopic dermatitis. It is a two-dose vaccine and has been shown to be safe in the current outbreak. Safety has not been established in children, pregnant persons, or breast-feeding women. The vaccine can be administered intradermally or subcutaneously. Vaccine efficacy has ranged from 36% in one study after one dose to 86% in another study after two doses. In all three studies cited by the CDC, very few individuals became fully vaccinated; this should be considered a call to action. Vaccination should be considered prior to exposure in individuals that have a sexual history of significant risk factors within the last six months. Postexposure prophylaxis by vaccination should be administered within 4 days of the suspected exposure but can be given up to 14 days after a suspected exposure in order to reduce illness severity.

Although the current Mpox outbreak has slowed considerably, it still is occurring in small numbers sporadically. Further, there is considerable risk of worsening in groups of individuals most at risk. Healthcare providers should remain vigilant and obtain appropriate social and travel history to assess this risk.

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# We Should Not Forget About Scurvy

by Skyler McLaurin-Jiang, MD, MPH

The disease scurvy conjures images of L pirates on long voyages with bleeding gums and disintegrating skin. While Egyptian and English sailors knew to take fresh lime to prevent the symptoms of scurvy, confirmation that citrus fruits both cured and prevented scurvy arrived in the 18th century through clinical trials directed by Sir James Lind. Before the cure was widely known, scurvy was a commonly deadly disease. Now, scurvy is among the rarer nutritional disorders. Given a lower index of suspicion amongst clinicians, patients with scurvy may experience delays in diagnosis. But scurvy has been the unwanted "comeback kid", especially among children, in recent years.

# THE ROLE OF VITAMIN C IN SCURVY

A chronic deficiency of vitamin C, also known as ascorbic acid, causes scurvy. This deficiency is usually caused by inadequate intake of fruits and vegetables. In the United States, most people consume sufficient vitamin C in their diet. Vitamin C is an essential molecule with many vital properties. As an antioxidant, vitamin C helps protect cells against free radical damage. Vitamin C helps form and stabilize the collagen triple helix which is present in our connective tissues such as skin, muscles, bones, tendons, ligaments, blood vessels, and intestinal lining. The disruption of stable collagen formation accounts for the impact of vitamin C deficiency, not only on the classic symptoms like bleeding gums and fragile skin, but also the more subtle symptoms such as joint pain and weakness. Vitamin C also reduces iron to its ferrous form and enhances absorption of iron in the gut. Interestingly, whereas certain animals, such as rats, possess an enzymatic process to convert glucose to ascorbic acid, humans must directly ingest vitamin C in the form of fruits, vegetables or dietary supplements.

### SUSCEPTIBLE POPULATIONS AND WHY CERTAIN CHILDREN ARE PRONE TO SCURVY

In the United States, scurvy is most common among children and older adults who don't get enough vitamin C in their diets. Children with special health care needs stemming from neurodevelopmental disorders, physical disabilities, psychological conditions, and dietary disorders are particularly susceptible to developing scurvy. I have treated 3 children for scurvy in my first decade of a career as a pediatric hospitalist. These cases shared a commonality of history, physical exam, and treatment patterns. Historically, each of the children had an underlying neurodevelopmental disorder (e.g., autism spectrum disorder) with severe oral aversions. One child subsisted on goldfish crackers alone. All other foods were rejected and parental attempts to provide daily multivitamins failed. Another child had previously used supplemental feeds through a gastrostomy tube. For several months, this child's oral nutrition intake improved enough for the gastrostomy tube to be removed. But picky eating habits and oral aversions progressed, and the symptoms of scurvy recurred.

Vitamin C absorption is reduced in some other medical conditions, including intestinal malabsorption syndromes, and in heavy smoking. Patients undergoing chemotherapy may experience anorexia and nausea leading to reduced intake. Patients with eating disorders, such as anorexia, may have inadequate vitamin C intake due to a limited or restrictive diet. In lactation, women have a higher metabolic demand for vitamin C which should be considered to ensure mother and infant receive adequate amounts.

### MANIFESTATIONS OF SCURVY

Initial symptoms of scurvy may be subtle and mistaken for other illnesses, particularly rheumatological disorders. Weakness, fever, irritability, fatigue, petechiae, joint pain or pain with activity or movement, abnormal gait, and anorexia are among the first signs in children. Patients may be evaluated for hematologic, rheumatologic, or musculoskeletal disorders early in the course of illness. Often, a comprehensive dietary review key to the diagnosis of scurvy—can be overlooked in initial patient encounters.

As the disease progresses, swelling of the gums will occur. The gums may have a darker red or purple hue and are notably more prominent and spongier. Teeth may become loosened or fall out entirely. Corkscrew shaped coils in the hair often occur. Dermatologic manifestations include easy bruising and bleeding, poor wound healing, leg edema, and subcutaneous hemorrhages leading to red or blue spots on the skin known as a scurvy rash. Hematologic manifestations include anemia as well as the easy bruisability.

### TIME TO SYMPTOM DEVELOPMENT

Symptoms of scurvy can arise with 2-3 months of inadequate or irregular intake of vitamin C. This is because humans do not store vitamin C in their tissues. The blood level of vitamin C is related to daily intake. And even though we may eat foods that contain vitamin C in their natural state, the cooking, storage, or oxidation process can cause certain foods to lose their vitamin C content. It is helpful to note that vitamin C is a water-soluble vitamin. To preserve higher concentrations of vitamin C during the cooking process, it is recommended to use minimal cooking water and to cook for shorter time periods. For instance, steamed and microwaved foods retain higher concentrations of vitamin C compared to boiled foods.

### DIAGNOSTIC APPROACH **TO SCURVY**

Because the early symptoms of scurvy may be overlooked or misdiagnosed as other illnesses, bone disease is often what prompts further diagnostic investigation in children. The thorough history (including dietary history), careful physical exam (including evaluation of gumline), and radiographic images help triangulate the diagnosis. Bone disease in scurvy is typically symmetrical. X-rays of bones may reveal changes at the distal ends of long bones. Common findings are "ground glass" appearance due to deficient osteoid matrices, hypercalcification

of cartilage along with brittle, osteopenic bones, and subperiosteal hemorrhages. Plasma levels of vitamin C are not reliable for diagnosis-in other words, a normal level does not rule out scurvy, since any recent supplementation can normalize the plasma level. A therapeutic test of vitamin C repletion is the best confirmation of a scurvy diagnosis.

### THERAPEUTIC APPROACHES FOR SCURVY

Fortunately, the treatment of scurvy can be gratifying. The disease responds to vitamin C with a full recovery likely within 2 days to 2 weeks. Treatment includes vitamin C supplementation with therapeutic doses of 300 mg/day (children) and 500-1000 mg/day (adults). After treatment, daily recommended doses of vitamin C vary by age, pregnancy and lactation status, and smoking status; so if supplementation is deemed necessary due to inadequate dietary intake, consultation with a physician or dietician can help patients determine the correct

individualized dose. Dietary intake is the preferred preventive method.

Vitamin C-rich fruits include citrus fruits (lemons, oranges, limes, grapefruits) and other fruits such as gooseberries, black currents, melons, and tomatoes. Vitamin C-rich vegetables include potatoes, cabbage, broccoli, spinach, lettuce, cucumber, Brussels sprouts, green chilis, and red peppers. It is helpful to re-emphasize that vitamin C is a water-soluble vitamin. As mentioned above, it is best to cook vegetables by steaming or microwaving them to keep the vitamin C from being leached out into the cooking liquid.

After hearing about the miseries of scurvy, is anyone in the mood for a tall glass of orange juice?

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# Climate Change and its Effect on Infectious Diseases

by Brian Weis, MD

### ENERAL REMARKS:

GThe role of climate change in the re-emergence or spread of human diseases is not easy to tease out. While temperature, humidity and rainfall are easily measured, their relationship to disease spread is complicated by other anthropocentric factors. Is the increase in Lyme disease (carried by the deer tick) a direct result of climate change or is it merely a reflection of increased deer population? Multifactorial analysis of large data sets or meta-analysis of multiple small studies are consistent - climate changes, particularly increased temperatures, are at least in part driving the incidence and prevalence of several diseases. While the diseases discussed here are still, mercifully, unusual, it behooves all of us to be aware of their possibility.

### **MOSQUITOS AS VECTOR:**

About 2000 cases of malaria are diagnosed annually in the US. Most of these have been acquired while traveling abroad. However, in the past two months, 8 cases of malaria (caused by the Plasmodium vivax protozoan) have been diagnosed in Florida and Texas, in patients with no history of international travel. These are the first locally-acquired cases of malaria in the US in 50 years. About 30 to 40 species of the genus Anopheles, most commonly Anopheles quadrimaculatus, transmit human malaria. Currently, this species is largely confined to the eastern US, including east Texas. A meta-analysis of 29 studies on the effect of temperature changes on the development, longevity, and insecticide susceptibility of Anopheles mosquito species indicated that as temperatures rise, the development rate and longevity of Anopheles species were reduced, and resistance to insecticides was increased (1). In particular, the decreased longevity is important, as Plasmodium vivax requires at least 10 days to complete its life cycle (2) in the mosquito. This is both good news and bad news. The reduced longevity suggests that fewer mosquitos will be successful in transmitting the disease, but this may be offset by the reduced efficacy of insecticides. Overall, the data suggest that the range of the Anopheles genus will move north and west, taking the risk for malaria with it.

The arboviruses viruses include dengue fever, yellow fever and Zika virus. While these can be transmitted from mother to fetus (and rarely by blood transfusion or transplanted organs), they are most commonly spread by the Aedes aegypti mosquito species, which occurs in virtually all of the state of Texas, the entire southeastern US and most of California. The range of the Aedes aegypti mosquito is anticipated to increase at the rate of 6 km per year by 2020 (3). Advance of the vector range facilitates, but does not guarantee, spread of these diseases.

West Nile virus is spread by several members of the Culex genus of mosquito, the most common mosquito genus of the Texas Panhandle. While most individuals who develop West Nile disease are asymptomatic, about 1 in 150 experience serious symptoms, characterized by high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness, and paralysis. As with the other mosquito-borne diseases, as global temperatures increase, the range of the Culex mosquito is moving northward.

### FLEAS AS VECTOR:

Bubonic plague conjures up visions of the 14th century Europe, where plague is thought to have destroyed from 30% to 60% of the European population. Plague bacteria (Yersinia pestis) are carried by fleas found on rodents, such as rats, mice and prairie dogs. Although plague has occasionally been reported in the Texas Panhandle, it is not common. Bubonic plague is transmitted by a flea bite, and is not usually passed from person to person. However, bubonic plague can develop into pneumonic plague, which easily spreads from person to person with remarkable speed. Untreated, pneumonic plague results in virtually 100% fatality within 24 hours. Between 1970 and 2020, 496 cases of plague have been diagnosed in the USA, more than half in New Mexico. But it has also been reported in Colorado, Utah, Arizona and California, as well as Texas.

Plague prevalence among rodent hosts is related to the probability that plague will be transmitted to the human population. Stenseth et al. (4) studied plague prevalence and transmission in the great gerbil of the desert regions of central Asia. The climate, and recent climate changes, in this region resemble that of the western US. They found that change in spring temperatures was the most important environmental factor determining prevalence level. Warmer spring conditions favor a higher flea to rodent ratio, resulting in a higher plague prevalence in the rodent population, even in the absence of an increased rodent population. However, the conditions that favor a higher flea-to-rodent ratio also favor a higher rodent population. The consequences are an increased probability of plague transmission to the human population. The authors speculate that the combination of warmer springs and wetter summers can trigger a cascading effect on the occurrence and level of plague prevalence among the rodent population.

### TICKS AS A VECTOR:

Spotted fever and Lyme disease are transmitted by the dog tick and deer tick, respectively. The survival and reproductive success of the ticks themselves are dependent on climate conditions. As temperatures warm, the range of these vectors is moving to higher latitudes and higher altitudes (5). Complicating matters, there is evidence that, as temperatures increase, the dog tick exhibits increased preference for humans over dogs (6).

The deer population has increased, even in urban areas. For example, it is estimated that there are more deer in Philadelphia PA now that when William Penn established the colony in 1682. This increase is largely the result of decreased predator population. With the availability of more hosts, the population of deer ticks has also increased, and consequently, the likelihood of human-deer tick encounters has increased.

There is evidence that ticks have a specific range of temperatures. Too cold or too cold, and tick activity decreases (7). Thus, it appears that the net effect of climate change on tick populations, and the likelihood of tick-borne diseases, is to move them toward the poles, and to higher altitudes.

### **FUNGAL INFECTIONS:**

Earlier this year, an outbreak of blastomycosis pneumonia was documented to be linked to a Michigan paper mill. At least 19 cases were confirmed, with an additional 74 possible cases. The fungus Blastomyces dermatiditis normally lives in moist soil and decomposing organic matter. Where the climate has warmed and rainfall has increased, the probability of blastomycosis presence increases. Thompson and Chiller (8) have observed that these fungal diseases are now found outside of their previously known range, and that those ranges are expected to expand as warming continues. This raises the alarming possibility of an increase in fungal pneumonia.

Fungal pneumonias are difficult to treat, as most labs are not equipped to confirm diagnosis. Treatment usually consists of itraconazole (mild cases) or amphotericin B (severe cases). Estimated fatality rate ranges from 4% to 78% according to a meta-analysis of 20 studies including a total of 2028 cases (9). Fungal pathogens that can cause various diseases will likely become more prevalent in the next 10 years, thanks to climate change, and we need to take steps to raise awareness in our profession and in the public.

### THOMPSON AND CHILLER (8) **HAVE SUGGESTED:**

- Educational efforts for both providers and patients;
- Disease reporting and national surveillance of endemic mycoses;
- Including endemic mycoses in future guidelines;
- Exploring a pan-endemic mycoses vaccine; and
- Developing point-of-care diagnostics to improve the time of diagnosis and treatment.

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# Maternal Mortality & Morbidity: A Global Problem Right Here in the Panhandle

by David Vineyard, MD, JD

"Maternal Death" is defined by the World Health Organization as the death of a woman while pregnant or within 42 days of termination of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. The Maternal Mortality Ratio ("MMR") is also defined by the WHO as the number of maternal deaths per 100,000 live births. Concerns about maternal mortality are not new. The WHO first released world-wide maternal mortality estimates in 1984. A seminal article by Rosenfield and Maine, "Maternal Mortality: A Neglected Tragedy," published in The Lancet in 1985, focused popular attention on the factors that adversely impacted maternal death rates around the world (1). This article cites the major causes of maternal death as "haemorrhage, infection, toxaemia, and obstructed labor," and adds the pertinent observation that "Another major cause of maternal mortality is illegal abortion," a statement that may have more significance in Texas given its current political climate (1).

### DATA COLLECTION PROBLEMS IN TEXAS: THE 2012 MATERNAL MOR-TALITY REPORT

Rosenfield and Maine also pointed out that "Even in the United States today, official statistics on maternal mortality are thought to underestimate incidence by 20-30%." (1). Interestingly, an attempt to improve maternal death vital statistics in 2003 led to a massive data problem that culminated in erroneous reporting of maternal deaths in Texas in 2012, and efforts to understand and then correct this data were responsible for

Texas's current focus on maternal mortality reporting. In 2003, a standardized pregnancy question was added to that year's revision of the U.S. standard death certificate. Delays in states' adoption of the new form, together with adoption of non-standard pregnancy questions, led to the inability to publish an official maternal mortality rate from 2007 to 2016 (2). MacDorman, et al., documented their attempts to establish trends in maternal mortality rates in all states between 2000 and 2014 in Obstetrics & Gynecology, noting "The Texas data are puzzling in that they show a modest increase in maternal mortality from 2000 to 2010... followed by a doubling within a 2-year period in the reported maternal mortality rate." (2). The reported MMR for Texas in 2012 was 35.8/100,000 live births. This was a bombshell in the medical press as well as in politics, and contributed to passage of the federal Preventing Maternal Deaths Act of 2018. The Texas Maternal Mortality and Morbidity Task Force had been created in 2013 to evaluate these troubling trends in Texas, and in 2019 the name of the group was changed to the Texas Maternal Mortality and Morbidity Review Committee (the "MMMRC"), along with continuing its funding.

In 2018, Baeva, et al., reported, again in Obstetrics & Gynecology, the results of their detailed review of all maternal deaths in Texas in 2012 (3). In contrast to the 147 maternal deaths reported previously for that year, they concluded that only 56 deaths could with certainty be classified as maternal deaths, leading to a MMR of 14.6 (3). They noted that there was insufficient information to make a determination for an additional 15 deaths, and including them as maternal deaths would raise the number to 71, for a MMR of 18.6 (3). Both MMR rates were significantly lower that the previously-reported MMR (3). This article also pointed out that subgroup analysis revealed that black women had a higher MMR, at 27.8, than did women of other racial and ethnic groups, and that the MMR for the entire group increased with age (3).

### THE TEXAS MATERNAL MORTALITY AND MORBIDITY REVIEW COMMITTEE GETS TO WORK, ALBEIT SLOWLY

The Texas statutes establishing the MMMRC require that it issue a biennial report of its review of maternal health by September 1 of even numbered years. Its 2022 report (the "2022 Report"), investigating the maternal death cohort from 2019, was not released until December. Some commentators have suggested a political motivation for this delay, preventing release of unflattering results until after the general elections held in November. This delay did not go unnoticed. A recent article in JAMA, citing an article in the Houston Chronicle, stated: "Some states, citing concerns for data integrity, have recently delayed release of their date, hampering policy and improvement efforts." (5).

The MMMRC has reviewed every cohort of maternal deaths since 2013 using an expanded time frame of one year rather than the 42 days of the Maternal Death definition. A Pregnancy-Associated Death is the death of a woman

while pregnant or within one year of the end of pregnancy, regardless of the cause. A Pregnancy-Related Death is the death of a woman during pregnancy or within one year of the end of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy. A Pregnancy-Associated, but not Related Death is the death of a woman during pregnancy or within one year of the end of pregnancy from a cause that is not related to pregnancy. Finally, a Pregnancy-Associated, but unable to determine Pregnancy-Relatedness is the death of a woman while pregnant or within one year of pregnancy, due to a cause that could not be determined to be pregnancy-related or not pregnancy-related (5).

### THE 2022 TEXAS MMMRC REPORT: **BETTER LATE THAN NEVER**

The 2022 Report reflects information pertaining to review of 118 of the 141 provisionally identified 2019 maternal deaths in Texas. It is noted that these 118 pregnancy-associated death cases resulted in 6,162 years of potential life lost by the women who died and left an estimated 184 living children forever impacted by the loss of their mothers. The MMMRC determined that 52 of the 118 cases were pregnancy-related, 42 were pregnancy-associated but not related, and pregnancy-relatedness could not be determined for 24 cases. For the pregnancy-related deaths, there was at least some chance for preventability in 90%, or 47 deaths. Obstetric hemorrhage accounted for 25% of these deaths (13 cases), followed by mental health conditions at 17% (9 cases), noncerebral thrombotic embolism at 12% (6 cases), injury at 10% (5 cases), cardiovascular conditions at 8% (4 cases) and infection also at 4% (4 cases). Ruptured ectopic pregnancy was the top underlying cause of obstetric hemorrhage, comprising 3 deaths, followed by uterine rupture, placental abruption and

placenta accreta spectrum with 2 cases each. Obesity and mental disorders other than substance use disorder each contributed to 21% of pregnancy-related deaths (11 each). 27% of deaths (14 cases) were caused by homicide or suicide. Finally, preliminary assessment of the 2019 case cohort indicates that the racial disparities in pregnancy-related mortality ratios, first established in the 2013 cohort, persist. The pregnancy-related mortality ratios from 2013 were 47.6 for Non-Hispanic Black, 20.3 for Non-Hispanic White, 10.8 for Hispanic, and 8.2 for Other (5).

### **REGIONAL DATA AND SEVERE** MATERNAL MORBIDITY (SMM)

The 2022 Report does not provide a geographic breakdown for the maternal deaths, either in the 2019 cohort or from prior years. Another publication from the Texas Department of State Health Services, the Maternal and Child Health Epidemiology 2021 Heathy Texas Mothers and Babies Data Book, indicates that demographic data was suppressed when small numbers of individuals were involved, in order to prevent identification of affected individuals (6). The number of cases of Severe Maternal Morbidity ("SMM"), a term used to describe unintended outcomes of labor and delivery that result in significant adverse health consequences, are higher, however, and thus may be used to give some indication of level of risk associated with different geographic locales (6). An evaluation produced by the UT Health Science Center at Tyler using 2011 through 2016 all-payer hospital discharge public use data file gives an interesting geographic breakdown of SMM in Texas (7). The overall rate of SMM fluctuated between 17.0 per 1,000 deliveries and 19.9 per 1,000 deliveries during this period. In 2016, SMM was highest among non-Hispanic black women at 23.8 per 1,000 deliveries, followed by Hispanic women (18.5 per 1,000 deliveries) and

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non-Hispanic white women at 12.7 per 1,000 deliveries. SMM by county varied between 0.0 to 55.3 per 1,000 deliveries. The counties immediately surrounding Amarillo are at the "base" rate of SMM, at less than or equal to 17.0 per 1,000 deliveries. Similarly, SMM by zip code ranged from 0.0 to 59.2 per 1,000 deliveries in 2016. Over a period of years, some counties were identified with persistently high (at or above 75th percentile) SMM rates, and these were primarily located in the Dallas-Fort Worth-Arlington, Houston-The Woodlands-Sugarland, and San Antonio-New Braunfels metropolitan areas. Zip codes with consistently low SMM rates (at or below 25th percentile) were found in Amarillo as well as the El Paso and Austin-Round Rock-San Marcos metropolitan areas (7).

The United States has the highest rate of maternal mortality among developed nations in the world, with data from the WHO indicating that our MMR has risen from 12 in the year 2000, to 21 in 2020 (8). For every maternal death in the U.S., about 100 women experience SMM (7). Recognition of the rates of Maternal Deaths and SMM in our community and our state must serve as the stimulus to increased systematic and personal efforts to reduce the adverse impacts of these events to all of our patients, and to their families.

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# **Tuberculosis**

by Scott Milton, MD, FACP

Tuberculosis has afflicted humans for millennia. It has been detected from remains at archaeological sites dating back more than 5000 years. Tuberculosis became epidemic in Europe during the Middle Ages. The discovery of the tubercle bacillus by Robert Koch in 1882 as the cause of phthisis, or consumption, marked the beginning of decades of progress in the diagnosis, treatment, and prevention of tuberculosis. Progress has been hampered over the last 40 years two important developments: the HIV epidemic and the development of drug resistant strains of tuberculosis. The impact of these two factors has been greatest globally in Africa, Asia, Latin America and Eastern Europe, as these areas of the world have significant socio- economic challenges and are resource poor, resulting weak public health systems. More than 2 billion people, or almost one third of the world's population, is likely infected with tuberculosis. It is responsible for well more than 1 million deaths per year globally. The World Health Organization has focused its attention on these 30 or so high-burdened countries, which include India and China, but also African countries such as South Africa and Swaziland with rates of tuberculosis more than 150-fold greater than the United States.

The impact of tuberculosis in Texas is also significant. Almost 1100 Texans were diagnosed with tuberculosis in 2022. Texas ranks number two in the United States for the most tuberculosis. This represents a 9.9% increase from 2021. Texas has 3.38 cases of tuberculosis per 100,000 persons which is higher than the national rate. Case counts for the state of Texas and the United States were both affected by the pandemic. These numbers fell in 2020 but have been rising since. This is likely secondary to decreased diagnosis during the height of the pandemic.

Not surprisingly, the counties in Texas with the most tuberculosis were those counties in our major metropolitan areas such as Harris County and Dallas County. However, in 2022, counties along the Texas border were disproportionately affected. 21.2% of TB cases in Texas were found along the border, although only 9.5% of the Texas population live in a border county. In the Texas Panhandle and the South Plains, or public health region 1, the numbers are much less but with challenges that are unique to this area. For example, the agricultural industry such as the dairy industry employs individuals, many of which are from Central American countries with much higher rates of tuberculosis. And in fact there is evidence of human to cattle spread of tuberculosis, although this is rare. Improved screening of employees would likely decrease this risk, and

we have seen some efforts by the dairy industry to address this problem.

As one might suspect, the majority of cases in Texas are in individuals born in a country outside the United States where TB is common. Other risk factors include those individuals living with diabetes, those with current or past substance abuse, those living and working in congregate settings such as prisons or detention centers and those experiencing homelessness. Individuals identifying themselves as Hispanic comprise more than 50% of all cases in Texas. Asians account for 18% cases in Texas, African-Americans around 14% and whites around 10%. Tuberculosis is also more commonly found in men, especially men above the age of 25.

The emergence of drug resistant tuberculosis has further impacted the treatment of TB. In 2022, in Texas, 157 of the 1097 cases of tuberculosis showed resistance to at least one TB medication. Further, 12 cases showed resistance to both rifampin and isoniazid, the most important drugs used to treat tuberculosis. The direct treatment costs for the treatment of multidrug-re-



sistant TB is estimated to be more than \$182,000 by the CDC. In comparison, the cost of treating drug-susceptible TB is around \$20,000. Unfortunately, the emergence of drug resistance is likely to continue to worsen in the future.

In most individuals, the lung is the primary portal of entry for Mycobacterium tuberculosis. Infection is acquired by inhalation of droplet nuclei containing the organism. The initial immune response lasts for several weeks, and includes phagocytosis by macrophages and the release of pro-inflammatory cytokines which include interferon gamma and tumor necrosis factor alpha. The microorganisms grow until they reach sufficient numbers to fully elicit a cell mediated immune response. Successful immune containment leads to latency. Latent TB can be defined as a reactive tuberculin skin test and/or a positive interferon gamma release assay (IGRA) in the absence of clinical and radiographic findings. IGRA assays are blood tests that have a few advantages over tuberculin skin tests and are generally felt to more accurately diagnose latent tuberculosis.

Primary tuberculosis occurs when the immune response is insufficient in containment of the organism. This most commonly occurs in very young children or immunosuppressed individuals, especially those with HIV. Progressive primary TB tends to cause lower lobe disease and can be accompanied by hilar adenopathy and pleural effusions. It can be indistinguishable from bacterial pneumonia and is culture-positive in only 25% of cases. Lung cavitation occurs in only 10 to 30% of adults. In around two thirds of the cases the parenchymal focus resolves, although this process may take years.

Secondary or reactivation tuberculosis occurs many years or even decades after initial infection and, in low incidence countries (such as the United States), almost always as a result of reactivation. In latently infected immune competent individuals, the lifetime risk of TB reactivation is approximately 10%. Immunocompromised individuals, whether by chronic disease or by immunosuppressive medications, have a much higher risk of TB reactivation. Those with untreated HIV coinfection, with a declining CD4 count, for example, could expect a 10% annual risk of TB reactivation. X-ray findings in reactivation often involve the upper long zones and can include cavities with irregular walls and a lack of air fluid levels. Early parenchymal findings show poorly-marginated opacities in apical and posterior segments of the upper lobes and superior segments of the lower lobes. Hilar adenopathy is not typically seen.

When TB is suspected, three sputum specimens for acid fast bacilli smear and culture should be obtained. For smear positive patients, or in patients at high risk for TB, additional sputum for nucleic acid amplification testing (NAAT) should be collected. This test is highly sensitive and specific in smear-positive patients. The XPERT MTB/RIF is a newer NAAT platform and can identify both *Mycobacterium tuberculosis* and rifampin resistance.

Treatment for tuberculosis, whether for latent or active disease, can be complicated, and the best recommendations are found in the CDC guidelines. Rapid reduction of replicating bacteria, elimination of sub populations of persisting bacteria that could cause recurrence, and the prevention of drug resistance during therapy are the three main goals of treatment. Combination therapy, with the exception of nine months of isoniazid for latent TB, is the rule. There are five groups of antituberculosis drugs available and these groups are based on evidence of efficacy, potency, experience of use and drug class. Some of these drugs are difficult to obtain for various reasons. Drug interactions can also be complex. Therefore, consultation with a healthcare provider familiar with these complexities should be sought under most circumstances.

As mentioned initially in this article, 2 billion people are estimated to be infected with tuberculosis. The vast majority are latently infected. Targeting high risk settings and populations with infection control measures, contract tracing, and preventive therapy would provide the best chance of having a meaningful impact. Tuberculosis has long been an important public health problem and will continue to be in the future. Improving the socio- economic conditions in our communities that are most impacted by tuberculosis is the best long-term solution. In the meantime, public health professionals continue to be busy in the treatment, prevention, and eradication of tuberculosis.

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Texas Health and Human Services website for STI data. https:://dshs. texas.gov





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# The Resurgence of Polio: A Look at the Reawakening of a Deadly Virus

by Rouzbeh K Kordestani, MD, MPH

Poliomyelitis ("polio" for short) is recognized as one of the most virulent diseases ever encountered. In the early 1950's, in the United States alone, it was attributed as the cause of approximately 20,000 infections in children a year, with a resulting death count of between 3,000 and 4,000 annually.

# THE EFFECTIVENESS OF POLIO VACCINATION PROGRAMS

In 1955, the Salk vaccine was developed to prevent polio. A few years later, the inactivated oral (Sabin) vaccine was released. With these two interventions, America had the ability to mount a national effort to eradicate the disease. Soon after these national campaigns were instituted, more than 90% of all infections from polio subsided. At the same time, billions of dollars and many international efforts were directed towards the eradication of polio throughout the world. Internationally, the Salk Vaccine was used more often because, as an oral vaccine, it was easier and cheaper to administer. Because of the success of such campaigns, in 1994 the World Health Organization (WHO) declared that polio had been eradicated in the North and South American continents.

Throughout the world, the WHO and local health agencies individually catalogued their response effectiveness regarding the eradication of the polio scourge. England, for example, was declared "polio free" only recently in 2003. Even though polio has been systematically eradicated in most of the world, it continues to be endemic in two countries, namely Pakistan and Afghanistan, where a "wild" strain continues to simmer.

### THE RECENT APPEARANCES OF POLIO IN THE DEVELOPED WORLD

Recently, polio cases have again begun to surface in several countries around the world. Several years ago, after decades, Israel detected its first new cases of polio. Israel has a sewage testing system in place through which central sewage and filtration waterways are tested for genetic viral segments/residues of polio. Israel began this polio surveillance program in 1989. Such a surveillance system for polio does not currently exist in the United States.



In 2022, a new case of paralytic polio was detected in New York, specifically in Rockland County, just north of New York City. Since even one case of polio is considered a national crisis, a health emergency was declared. Since most cases of polio are asymptomatic, any actual case with symptoms is an indication that many asymptomatic cases may be circulating in the community at large. Because of this, even one detected and confirmed polio case presents a true health crisis.

It is reasoned that the resurgence of polio in the United States may be due to a confluence of three converging scenarios. The first is the location of the outbreak. Rockland County in New York has a high concentration of traditional Orthodox Jewish communities. In such closed older Orthodox communities, there is a reluctance to vaccinate children. This is due to a combination of lack of health effort penetration and a lack of belief in the need for a vaccination. The second is the recent unfortunate rise in vaccine misinformation. In some more closed counties/communities, even in the United States, there is thought that vaccinations or vaccination efforts do not work and therefore are not needed. Even worse, some fear that such vaccination efforts actually do the patients harm. Because of this misinformation and lack of understanding and trust, vaccination efforts are blunted. This lack of compliance puts the children in these areas at undue risk for contraction of a deadly disease such as polio. The last and most concerning factor is the lack of funding for surveillance testing. While sewage/ filtration sampling systems exist and have been active in the last few years in major metropolitan areas, they have not been testing for a wide variety of pathogens. As it happens, the most recent surveillance systems have been testing for COVID-19 but not polio. Since in many counties and cities, it is felt that polio is no longer a threat, no surveillance system exists. In addition, there is no funding to implement such surveillance systems.

Because of the lack of understanding of the need for such a surveillance system and the lack of belief that a disease process like polio can recur, even some local health officials have been resistant to pursue such efforts.

# RENEWED EFFORTS TO PREVENT POLIO

In New York state, local authorities are now becoming more cognizant that polio is again a threat. Despite minimal funding, these health care officials have been able to add surveillance testing for polio to their current regimens. Also, to negate misinformation about polio, some of these same officials have made their communities aware of the persistent/ recurrent threat posed by polio. This is incredibly important, since polio is a disease process that can silently infect many individuals. By the time a few cases are detected, polio may have infected hundreds.

As COVID-19 has shown, lack of understanding and poor planning can lead to a pandemic with disastrous consequences. As polio has started to reappear, is prudent for all health care professionals and health care providers to confront and negate health misinformation. It is also critically important for communities to understand the value of an effective vaccination program. Without planning, understanding, education and effective action, we could again face another pandemic, be it COVID-25/26/27, SARS or Polio.

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WOMEN'S HEALTHCARE ASSOCIATES, P.L.L.C. Carin C. Appel, MD Kathryn N. Bonds, MD David L. Chastain, MD Jill A. Gulizia, MD Christina M. Huseman, MD Amanda Murdock, MD Keelie R. Tucker, MD Brooke Hillard, APRN, FNP, BC Jennifer Graham, APRN, NP-C Maria Campbell, APRN, CNP 1301 Coulter, Suite 300 Amarillo, TX 79106 (806) 355-6330 • Fax (806) 351-0950

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Obstetrics & Gynecology

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

> Amarillo Campus 1400 Coulter • 414-9650 www.ttuhsc.edu/amarillo/som/ob

Obstetrics & Gynecology Teresa E. Baker, MD George Barnett, MD Renee Gray, MSN, WHNP-BC Stephen J. Griffin, MD Brandon Haney, MD Tanay Patel, MD David Vineyard, JD, MD Chad Winchester, MSN, WHNP-BC Renee Gray, MSN, WHNP-BC

> *Gynecologic Surgery* Teresa E. Baker, MD George Barnett, MD Stephen J. Griffin, MD Robert P. Kauffman, MD

Maternal Fetal Medicine Obstetric Ultrasound Thomas J. Byrne, MD, FACOG

Menopausal Management Robert P. Kauffman, MD

Reproductive Medicine & Infertility Pediatric Gynecology Gynecologic Ultrasound Robert P. Kauffman, MD

> Genetic Counseling Ramona Martinez, RN

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Obstetrics & Gynecology Brenna Melugin, APRN, FNP-BC

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### John W. Klein, MD Comprehensive Ophthalmology,

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W. John W. Murrell, MD Comprehensive Ophthalmology, Cataract & Oculoplastic Reconstructive Eyelid Surgery 7411 Wallace Blvd. Amarillo, TX 79106 (806) 351-1177 • (800) 782-6393

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Amarillo, TX 79119-6405
(806) 355-5625 Fax (806) 352-2245

Stacie Morgan, MD Amber Price, MD

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### **Bejan Daneshfar, MD** 24 Care Circle

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### Pain Management/ Treatment

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(806) 350-7918 • Fax (806) 418-8982 1901 Medi-Park Dr. Bldg. C, Ste. 2 Amarillo, TX 79106

INTERVENTIONAL PAIN MANAGEMENT Brian S. Murrell , MD Board Certified in Pain Management & Anesthesiology

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### Plastic & Reconstructive Surgery

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RADIOLOGY

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\$2,400,000.00

# 3 CARE CIRCLE Class "A" Multi-Use Office

Very nice multi-use office in the Medical District originally constructed in 2006 with subsequent remodels.

Estimated at 10,000 square feet, excluding the usable second floor storage area.

Currently set up as a corporate office with a drive-thru pharmacy component.

High end construction with a great mix of stone, brick and wood. Property is move-in ready.

Nicely landscaped with plenty of parking (33 spaces), lighted parking lot and security system in place including cameras.

## 6900 WOLFLIN The Arbors

SKILLED NURSING FACILITY: Asking \$4,500,000 Consists of a 42,635 sf, 60 bed facility sitting on 3.71 acres. It has recently been renovated and is move-in ready. The facility was formerly operated by Baptist Community Services.

TOWNHOMES: Asking \$1,350,000.

Six townhomes - 4 currently occupied by tenants.

Land Tract A: Asking \$275,000. 31,500 sf with frontage on both Medipark Drive & Phil Langden Blvd.

Land Tract B: Asking \$412,000. 65,000 sf with frontage on Wolflin Avenue, Phil Langen Blvd. and Medipark Drive.

SELLER WILL CONSIDER DIVIDING THE PROPERTY AND SELLING INDIVIDUAL PIECES



## 7501 WALLACE Formerly Vibra Hospital

We have 44,494 square-feet of first floor space available. It is a Class A medical facility that includes a 30 bed hospital, 7 bed intensive care unit, administrative office space, radiographic imaging area, full service commercial kitchen, and general medical office.

\$6,537,000.00

Space has the potential to be divided in order to fit a tenant's needs.

Some key features include: overhead fire protection system, covered ambulance entrance, hospital area with private restrooms, ICU unit with private restrooms, security cameras, controlled access, great location, class A construction, medical gas lines/vacuum throughout, isolation room with touch free access, and more.

# CliffNotes

# Insurance Made Simple

Professional Liability Commercial Personal Employee Benefits

# Get it All with One Call





**Cliff Craig,** CPCU, CIC (806) 376-6301 Cell: (806) 672-9534 cliff.craig@ncwriskmanagement.com



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