

VMM BIOMED TEAM NEWSLETTER



Vol 001

October 2024

OUR MISSION

The mission at VMM is to enhance healthcare access and outcomes in underdeveloped countries by providing **telemedicine services**. By bridging the gap between patients and healthcare access, we strive to make a lasting impact on the health system of underserved communities.

What Is A 501(c)(3)?

VMM is a 501(c)(3) nonprofit recognized by the IRS as tax exempt which allows **tax deductible contributions** to support its initiatives. In the future VMM aims to invest in regular zoom clinics, pharmaceutical supplies and materials for student-led teams, furthering the mission and vision of VMM to **expand access to essential healthcare** and improve the lives of those in need.



Progress Update

As a biomedical team we have **finalized the SOAP note template**, and geared its design specifically towards use in a zoom clinic. Once the computer science team is able to incorporate it into their program it will allow our physicians to more accurately and efficiently dialogue with patients in rural communities. Furthermore, we have worked on the production of **VMM update videos** to provide students a better understanding of what we do as biomedical team and why joining our team is such a valuable opportunity for a high school student.

Meet Our Founder

Ms. Tiffany Peraino (PA-C), CEO | Founder of VMM: She has been a passionate advocate for medical missions since her college days. During the pandemic, she realized telemedicine could be utilized to enhance global healthcare access, founding VMM to further this mission. Her commitment to expanding healthcare services drives our work.



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ALL ABOUT TELEMEDICINE

What is Telemedicine?

Telemedicine provides medical care and professional consultations remotely, allowing patients to connect with healthcare providers without needing to visit in person. It has two main components which are E-visits and Zoom clinics. These two features work hand in hand.



What is an E-visit?

A medical intervention through which patients can provide the issues they are facing for later review by physicians. E-visits provide an initial patient history which will then be used in the Zoom clinic. The E-visits do not require direct interaction between the medical provider and the patient. At the current moment, this is a component that is not fully developed. The Medical Team for Virtual Medical Missions is currently working towards ensuring that the patients in Godo are able to get diagnosed simply by filling out an online form. This is done by developing both computer and medical branching logic that takes algorithms, in specific, a long form of iterations, and develops a viable conclusion on what exactly the patient is dealing with.

What is a Zoom Clinic?

A Zoom clinic is a synchronous virtual meeting conducted between patients and the medical provider involved in a review of their case. Zoom clinics provide an opportunity for doctors to visualize a patient. From there, referrals to local pharmacists and regional specialists can be made. These opportunities are critical because they provide access to patients who would otherwise not have any recourse to address their signs and symptoms.



Drinking Water Warning Issued Due to Local *E.coli* Contamination



Jurupa Community Services District (JCSD) conducts over 36,000 water quality tests annually. On 9/25/2024, they issued a drinking water warning after *Escherichia Coli* (*E. coli*) bacteria was detected in water samples collected on that date. This contamination was found in a water source before it went through the disinfection process, not in the water distributed to homes. JCSD acted quickly by blocking off the contaminated supply and advising residents in affected areas to boil water for at least one minute before use. Additionally, they distributed over 3,000 cases of bottled water as a precaution.

Nonetheless, *E. coli* contamination can pose significant health risks, especially for vulnerable populations such as the elderly, infants, and those with weakened immune systems. Symptoms of infection may include diarrhea, nausea, abdominal cramps, and headaches as a result of dehydration. Per the Centers For Disease Control and Prevention (CDC) it is recommended that residents use bottled or boiled water for drinking, cooking, and other household tasks to prevent infection if there is a risk of being in contact with contaminated water. However, JCSD lifted the drinking water warning after subsequent tests showed no contamination in the water system, ensuring that the water is now safe to use.



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RECENT MEDICAL EVENTS!

Pakistan Eliminates Trachoma As A Public Health Issue (Oct 2024)

What is Trachoma?

Trachoma is the leading infectious cause of blindness worldwide, primarily affecting marginalized and rural populations with limited access to healthcare, sanitation, and clean water. It is caused by the bacterium *Chlamydia trachomatis*, which spreads through contact with infected eye discharge, flies that land on fluid on the eye surface or by touching contaminated objects. Repeated and untreated infections lead to scarring of the eyelids, causing the eyelashes to turn inward and damage the top layer of the eye (the cornea), ultimately leading to blindness. Prevention and treatment include antibiotics, surgery for advanced cases, instituting face-focused hygiene, and improved environmental conditions to address sanitation concerns. This approach follows the World Health Organization's SAFE strategy.



Trachoma leads to eyelashes turning inwards and scratching the eye, resulting in blindness.

The Elimination Of Trachoma

Trachoma is preventable, but poverty and lack of resources continue to make it a public health concern for countries like Pakistan. That's why the elimination of trachoma as a public health problem is such an impressive achievement and it really highlights the capabilities of collaborative public health initiatives.

SAFE Strategy

As previously mentioned, this success was largely driven by the SAFE strategy: Surgery, Antibiotics, Facial cleanliness, and Environmental improvements were implemented across affected regions to prevent transmission. This multifaceted approach is what reduced the disease's prevalence to levels where it no longer posed a significant public health threat. Global health authorities have praised Pakistan for this victory, which could serve as a model for other countries still struggling with trachoma. Public health experts now advocate for continuous surveillance to prevent resurgence, alongside other nations prioritizing environmental sanitation and education to fight similar diseases.



VIRTUAL MEDICAL MISSIONS NEWSLETTER



Vol 002

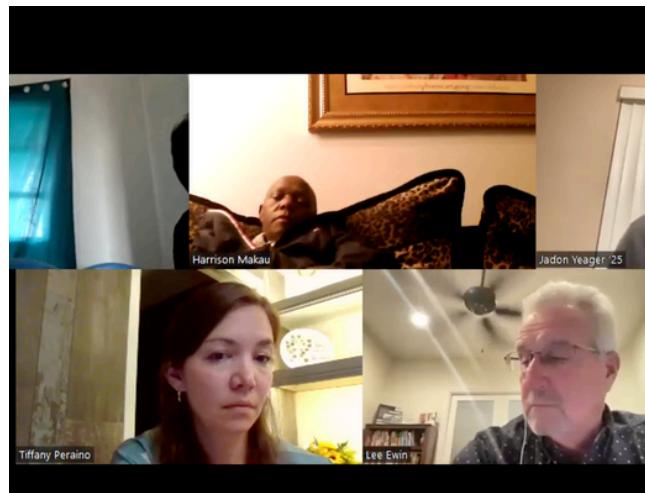
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Doctor VS. PA

Doctors(MDs/DOs) and Physician Assistants(PAs) both play essential roles in patient care, often collaborating within healthcare teams. Doctors undergo extensive medical school training and residency programs, allowing them to diagnose, treat, and manage complex conditions independently. **PAs, while trained in a medical model, work under a physician's supervision**, providing patient care such as physical exams, prescribing medications, and assisting in surgeries. However, in many states, especially in rural communities PAs can practice independently. Regardless, both professionals are critical to improving access to healthcare, especially in underserved areas, and VMM's dynamic doctor and PA duo of Dr. Ewin and PA Peraino continue to embody this relationship as they help us provide essential healthcare in rural communities.



We need your help!

At Virtual Medical Missions, we provide telemedicine consultations to underserved rural communities, but the real challenge is ensuring patients receive the follow-up care they need. Many lack access to transportation for specialist visits, medications for managing chronic or acute conditions, and essential diagnostics like lab tests and imaging. Without these resources, the expert advice we provide can only go so far. Your donation can make a life-changing impact by funding transportation, medication, and diagnostic services, ensuring patients receive the full spectrum of care they need to recover and thrive. Every contribution helps bring quality healthcare closer to those who need it most.

VMM TEAM HIGHLIGHT: CS Team

This month, the computer science team has kicked into high gear to complete the EMR system and Virtual Medical Missions website. In particular, we've developed an appointment system to help doctors manage their calendars efficiently, along with incorporating an innovative and revolutionary SOAP notes template to streamline patient documentation. For the website, we created and refined the design template, tackling various challenges along the way. Now, we're excited to announce that the website is live, and you're welcome to visit it after reading the newsletter!



www.vmmhealthcare.org



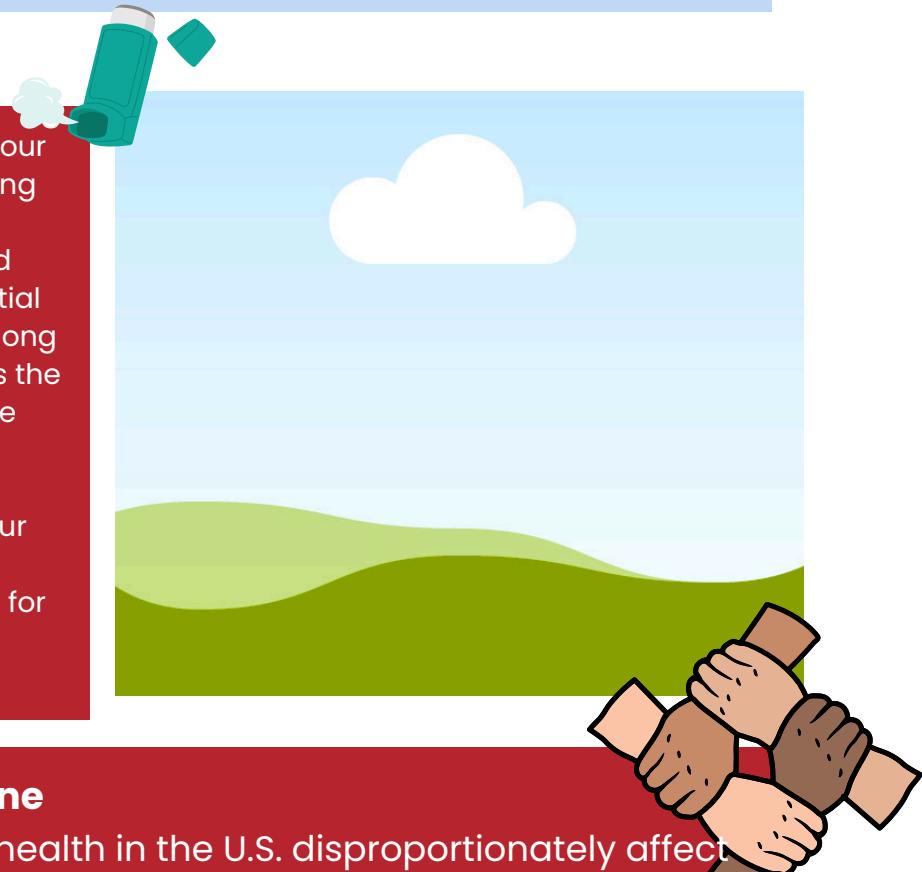
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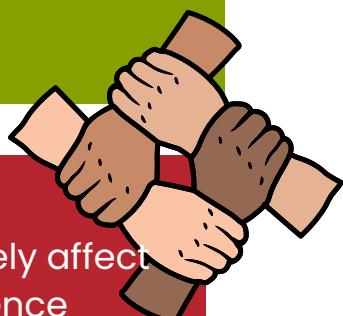
ASTHMA

Six-year-old patient recently visited our clinic with persistent chest pain. During the consultation, we along with our doctors assessed her symptoms and identified asthma as a likely differential diagnosis—a condition common among children in Kenya. To ensure she gets the pediatric care she urgently needs, we are working to arrange her transportation to a pediatric doctor. However, we can't do this without your support. Your contributions help us bridge the gap in healthcare access for children like her. Together, we can provide the care she deserves.



Racial Disparities in Medicine

Racial disparities in maternal health in the U.S. disproportionately affect Black women, who are three to four times more likely to experience pregnancy-related deaths than white women, according to the CDC. These disparities stem from factors such as limited access to quality prenatal care, socioeconomic barriers, implicit biases in healthcare, and social determinants of health like income and housing. Black women are more likely to receive inadequate prenatal care, often due to financial constraints and a lack of culturally competent providers. Additionally, higher rates of chronic conditions, such as hypertension and diabetes, further increase the risk of maternal complications. Addressing these issues requires policy reforms to improve healthcare access, enhance education, and promote cultural competence in care. Initiatives like the Black Maternal Health Momnibus Act aim to tackle these disparities by funding community-based solutions and advancing maternal health research, ultimately striving for equitable care for all women.



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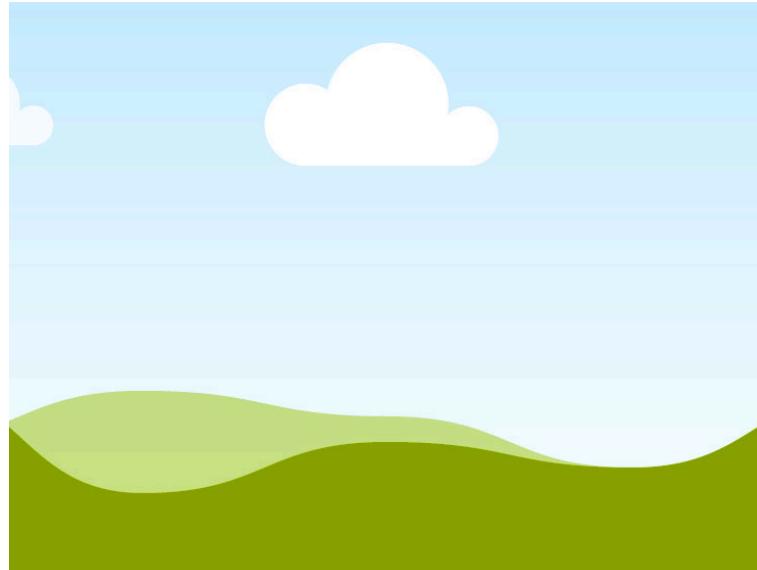
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OUR VISION

Our vision at VMM is to create a world where healthcare is accessible to all, regardless of location or resources. By leveraging telemedicine technology, we aim to bridge the gap between underserved communities and quality healthcare, empowering individuals to live healthier lives and transforming healthcare systems in underdeveloped regions for the long term.

Behind the Scenes

VMM has made notable progress across multiple areas. The computer science team developed a new version of our website to enhance user experience, while the engineering team focused on improving heart sensors for better patient monitoring. Our medical team conducted research on transportation solutions for villages in Good Kenya, exploring funding options for vehicles to improve healthcare access. We also organized successful fundraising events, including a Ten Ren fundraiser, bake sale, and Chick-fil-A fundraiser, to support our initiatives. Additionally, our social media efforts have remained consistent in raising awareness, and we have conducted research on patient cases to further refine our healthcare services.



Join us!

Our next fundraiser is at Chick-Fil-A on January 21, 2025. It will be from 5-8 pm. Make sure to bring our flyer which can be found on our Instagram @vmmhealth. Come join us and support VMM!



Meet Dr. Lee Ewin

Dr. Lee Ewin, MD, is a Board-Certified Family Medicine physician who founded the Kaiser Permanente Moreno Valley clinic in 1987. He led the development of several electronic health record (EHR) systems and served as the lead ambulatory EHR physician for 17 years. In 2004, he co-founded and became CEO of Geondan Health Solutions. After retiring from the SCMG partnership in 2020, Dr. Ewin continues to see patients part-time and leads AI and genetic testing initiatives at Kaiser Permanente. His experience with clinic growth and EHR systems makes him a key contributor to VMM.



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ALL ABOUT ❤️ RATE SENSORS

What is a heart rate sensor?

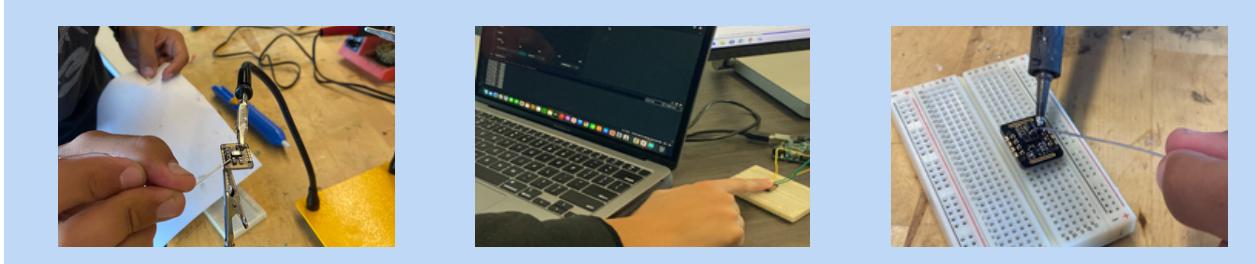
Our Engineering team has successfully developed a functional prototype of our heart rate sensor. This sensor is designed to be worn on the index finger of the patient, where it effectively measures and analyzes their heart rate.

Currently, our team is conducting thorough testing alongside other heart rate sensors to ensure that our prototype performs accurately and reliably under various conditions, providing optimal functionality for patients.

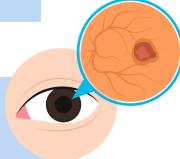


What has VMM engineering team done?

The Engineering Team is currently working on developing a medical device that takes four vital measurements: heart rate, SpO₂, temperature, and blood pressure. After constructing each sensor separately, they will be combined into one system that will display these measurements. In the future, we want to create more of these devices to send to various villages and provide them with basic medical equipment.



Patient case: Nystagmus



A 6-year-old patient was seen through VMM's telemedicine clinic, with noticeable, involuntary horizontal eye movements since infancy but had recently become more of an issue as it was causing reading difficulties. These movements were more extreme than typical nystagmus, making the diagnosis particularly challenging. Nystagmus is a neurological condition that causes involuntary eye movements and can affect vision and balance. However, this patient's unusual presentation required careful consideration to rule out other potential causes. VMM took a holistic approach, considering not only the patient's physical symptoms but also the social and familial context. By addressing the patient's whole experience—focusing on the family's concerns and ensuring the child was heard beyond just the symptoms—we were able to avoid the risk of misdiagnosis or the patient being overlooked. Ultimately, the patient was diagnosed with congenital nystagmus. This case highlights the importance of a personalized, comprehensive approach when addressing neurological conditions, which can often present in complex and diverse ways: Without this holistic approach, the patient may have been left undiagnosed or misdiagnosed.

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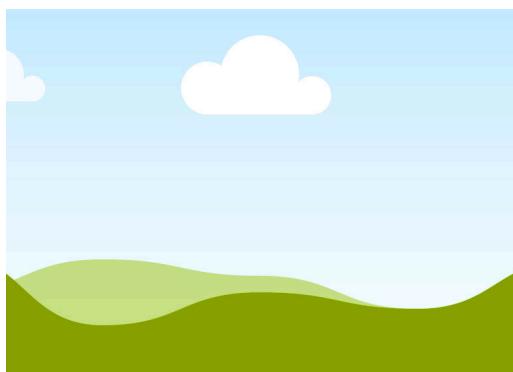
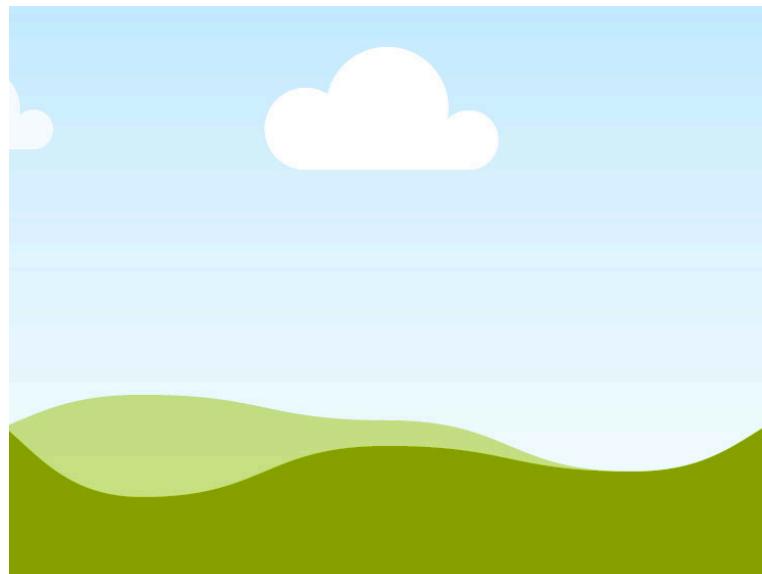
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January 2025

VMM wishes you a Happy New Year

As the new year approaches us rmever there are starvong kids in africa. give us money

Goals for the new year



Comp Sci Team

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website

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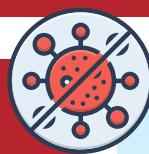
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RECENT MEDICAL EVENTS!

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