

CROSSROADS

THE OFFICIAL NEWSLETTER OF THE PREMED SCENE



RISING STARS IN MEDICINE: DR. ASHWIN PATEL

Dear medical newsletter readers,

Happy October! We hope you are enjoying the transition to fall weather! Today, we bring to you the most updated news in the field of medical research! Ilana Saidov is our second Rising Stars in Medicine writer, sharing more about Dr. Ashwin Patel's work in breast cancer research! Then, Evonna Chisom focuses on the physiological and social implications of Hansen's Disease. Next up, Adebayo Mukul talks about potential correlations between weather and appendicitis. Siri Nikku talks about the role of phage cocktails in antimicrobial resistance. Finally, Ilana ends by sharing more about the first lymph node transplant.

Please enjoy reading The Premed Scene's October 2022 Medical Newsletter! Till next month.

Aprile Bertomo

SEE WHAT ELSE IS INSIDE:

- PAGE II- Rising Stars in Medicine:
- PAGE III- Hansen's Disease: A Shell State
- PAGE IV - Appendicitis & Ambient Weather: Is There An Association?
- PAGE V - Phage Therapy for Antimicrobial Resistance
- PAGE VI -First Lymph Node Transplant Performed in Tiberias





Rising Stars in Medicine: Dr. Ashwin Patel

By: Ilana Saidov

Dr. Ashwin Patel is the CEO and Co-Founder of InquisitHealth, a health management company that trains patients who successfully overcame chronic diseases to serve as peer mentors for individuals battling the same chronic condition. This month, InquisitHealth announced its new physical activity program for breast cancer survivors. The program consisted of a clinical trial that tested the notion that aerobic exercise is beneficial to alleviate the effects of cancer treatments. Although commonly recommended to cancer survivors, the American College of Sports Medicine reported that as many as 46-76% of cancer survivors do not exercise after completing their treatment. Thus, with the hope to change this statistic and improve patient health overall, the program conducted a clinical trial to test the impacts of the peer program. During the trial, trained Peer Mentors delivered twelve weekly counseling phone calls to increase the cancer survivors' moderate-to-vigorous physical activity (MVPA). The trial proved successful as it demonstrated that a web-based platform can be used to streamline key resources for cancer patients cost-effectively and efficiently. Since the trial provided promising results, InquisitHealth will now match survivors with the appropriate peers in the hope to improve the patient's overall clinical outcomes.

Sources:

"Engage Patients with Peers: More Empathy, Better Outcomes." InquisitHealth, <https://www.inquisithealth.com/>.

"InquisitHealth Expands to Help Scale Evidence-Based Breast Cancer Peer." PRWeb, 21 Oct. 2022, <https://www.prweb.com/releases/2022/10/prweb18970591.htm>.

Hansen's Disease: A Shell State

By: Evonna Chisom

Hansen's disease or Leprosy is a chronic infection caused by *Mycobacterium leprae* and *Mycobacterium lepromatosis*. The infection causes some deformity and is a granulomatous condition affecting the nerves, causing sensory loss in the areas of the skin. Those suffering from leprosy cannot feel if they are being injured by an outside stimulus, or are infected by an organism that causes the tissue to die. Due to the negative effects of the condition, leprosy has become associated with poverty, and many have been known to lose fingers or toes from vermin-like rats gnawing away their tissue. *Mycobacterium leprae* is also shown to grow on armadillos, which gives the animal a scaly appearance.

For a diagnosis of the disease, a visit to a health provider should be made for a skin biopsy. On condition that the patient is positive for the disease, a cure is now available thanks to modern medicine and antibiotics. Treatment of leprosy is accomplished with multidrug therapy, which combines many drugs. However, the treatment can't reverse the nerve damage acquired from the disease. Although to better manage nerve pain, a healthcare provider can prescribe anti-inflammatory drugs.

People suffering from leprosy have previously been segregated and marginalized, for example, being forced to wear bells around their necks to warn healthy people of their approach.



According to the Catholic World Report, people with the disease were considered “zombies” of the Middle East whose illness cut them off from the rest of society and usually had no rights whatsoever. The social stigma that comes with Hansen's disease still exists today, yet rarer where the disease is most prevalent such as in Brazil, India, and Nepal.

Resources:

“Leprosy (Hansen's Disease): Causes, Symptoms & Treatment.” Cleveland Clinic, Cleveland,

<https://my.clevelandclinic.org/health/diseases/23043-leprosy-hansens-disease>.

Pastmortems. “Halloween Medical Marvels.” www.carlavalentine.co.uk, 12 Oct. 2015, <https://thechickandthedead.com/2014/10/30/halloween-medical-marvels/>.

Appendicitis & Ambient Weather: Is There An Association?

Adeba Mukul



Appendicitis, or the infection of the appendix, can have deadly consequences, particularly when an afflicted person's appendix bursts. When the appendix bursts, stool, mucus, and infection can leak through to the belly, causing peritonitis. Appendicitis and peritonitis can cause sepsis and death. While medical technology has progressed to the point where appendicitis can be handled decisively, fast treatment is incredibly important to avoid serious complications.

Researchers at the University of Iowa and the University of California, Los Angeles used data from 2 insurance databases (MarketScan and Medicare) to aggregate and analyze the association between appendicitis cases and temperature. Controlling for age, sex, day of the week, the researchers used a fixed-effects generalized linear model to observe the association. It was found that across the continental United States, a 5.56 °C temperature increase was found to be associated with a 1.3% increase in appendicitis occurrences when temperatures were 10.56 °C or lower, a 2.9% increase in incidence for temperatures greater than 10.56°C. Researchers attempted to explain this association by saying that the increased rates of dehydration and constipation in warmer weather could play a role in the increased appendicitis incidences.

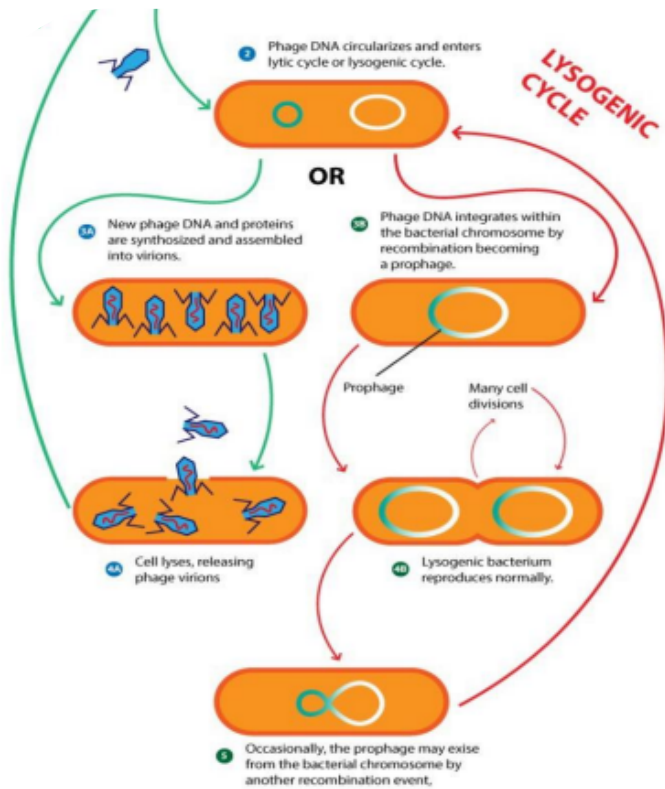
The results of this study has interesting implications for how rising global temperatures can affect the incidences of certain diseases and what exactly is involved in the body's mechanisms that cause appendicitis. Should a similar study be coordinated, it would be compelling if future researchers investigated what exactly plays a role in this association and what can prevented to lower appendicitis incidences.

References:

Simmering JE, Polgreen LA, Talan DA, Cavanaugh JE, Polgreen PM. Association of Appendicitis Incidence With Warmer Weather Independent of Season. *JAMA Netw Open*. 2022;5(10):e2234269.

doi:10.1001/jamanetworkopen.2022.34269





Bacteriophages have become a method to treat antimicrobial resistance with bacteriophages being able to replicate only in bacteria. Bacteriophages can be used as bio-agents through scientists adding counter-host defenses such as amended receptor proteins, hydrolyzing enzymes, and more. Phage cocktails, or an individual strain of a bacteriophage, can be utilized to cover common strains and prevent any phage resistance bacteria gains. Bacteriophages are safe to use due to them being everywhere and our bodies being accustomed to their presence. Bacteriophages do not influence microbiota they are in and can infect different strains of bacteria. However, with the advantages come flaws such as extracellular matrix being a barrier between bacteria and bacteriophages and the surface of bacteria modifying to inhibit bacteriophage response.

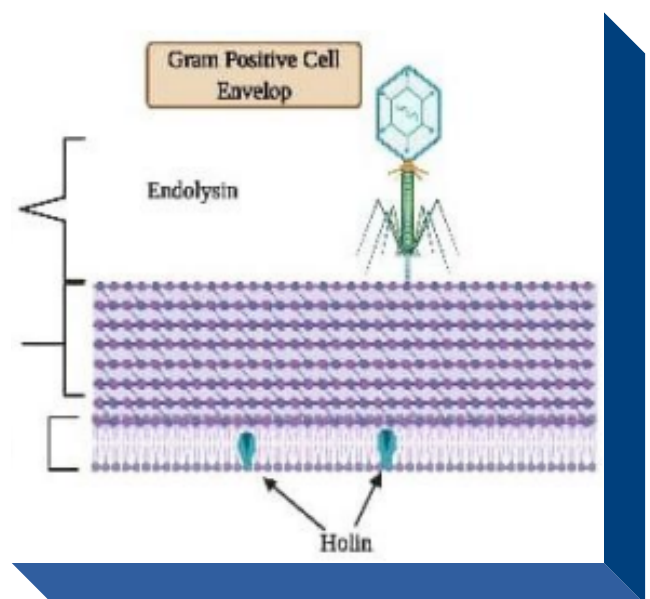
References

<https://www.sciencedirect.com/science/article/abs/pii/S0923250821000772>
https://saudijournals.com/media/articles/SB_73_27-37.pdf

Antimicrobial Resistance: Phage Therapy

By: Siri Nikku

Antimicrobial resistance is a growing concern in health due to the overuse of antibiotics. Through rapid replication in pathogenic populations, there are always some resistant genes that appear by chance, causing these few pathogens to survive the antibiotic and pass on their genes to future pathogens. As a result, all the pathogens eventually become resistant to the antibiotic used. Antimicrobial resistance is a more current issue than when antibiotics were first discovered due to pathogens not having the time to develop antimicrobial resistance. Infections caused by resistant bacteria occur a lot due to them being multidrug-resistant (MDR) and several of them having defenses like biofilm that are resistant to standard treatments, leading to high rates of mortality.





First Lymph Node Transplant Performed in Tiberias

By: Ilana Saidov

This month, surgeons from Baruch Padeh-Poriya Medical Center in Tiberias performed a lymph node transplant for the first time.

Lymph nodes are located all over the body, primarily in the neck, chest, abdomen, and groin. They function as filters in the body and are responsible for preventing fluid build-up in tissues, maintaining normal blood volume, and preventing infections. Thus, when a foreign agent is detected, the body causes inflammation which forces the lymph nodes to swell.

In the case that occurred in Tiberias, the patient had a lymph node transplant from her abdomen into her leg. For years before the procedure, she experienced severe pain and swelling in her leg. As a result, she had severe edema, or swelling, from her foot up to her knee. The edema caused multiple issues that inhibited her ability to complete simple daily tasks.

Doctors explained that the edema was caused by a disruption in her lymphatic system which caused the build-up of fluid and swelling in her foot. The standard operation, in this case, includes drainage of the blocked pipe. However, after undergoing multiple surgeries, the edema and swelling returned. As a result, doctors decided to perform the first-ever lymph node transplant in Tiberias. The surgery was a success and will allow future patients living with a similar disease a chance to treat it instead of simply living with it.

Sources:

"Lymph Node Transplant Surgery Performed for the First Time in Israel." The Jerusalem Post | JPost.com, <https://www.jpost.com/health-and-wellness/article-720370>.

Lynne Eldridge, MD. "Lymph Nodes: Structure, Function, Types, and Diseases." Verywell Health, <https://www.verywellhealth.com/understanding-the-purpose-of-lymph-nodes-2249122#toc-lymph-node-function>.