



CROSSROADS

The official newsletter of The Premed Scene



NEW ADDITION!!
THE HOPE CORNER (pg. 2)

EVERY MONTH, THE
PREMED SCENE CONTENT
WRITERS WILL HIGHLIGHT
TOPICS RELATED TO
WELL-BEING IN THE
MEDICAL FIELD!

Welcome, 2022!

Dear readers,

Welcome to 2022! As you might have noticed, this month we've renamed our monthly newsletter to be called CROSSROADS. Why? Because the intersections between different fields of science and medicine are essential for the communication and success of these disciplines, just as the communication and success of human culture were enabled by crossroads in trade routes throughout early human history.

Keeping in mind, that the pandemic nearing its *third* year in the U.S., The Premed Scene content writers will be sharing an article of hope, motivation, and even tips for self-improvement for you all to enjoy. This month's Hope Corner is called Retaining Motivation and Morale. Go ahead - take a peak!

This month's articles feature the heightened ability to predict preeclampsia, news in sports psychology, interesting finds on the role of vitamin C and sepsis in hospitals, as well as the discovery of novel depression biomarkers!

Have fun reading!

Yours truly,

Ryen Belle Harran
The Premed Scene Content & Newsletter Director

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The Hope Corner

Retaining Motivation and Morale

ASHLYN SOUTHERLAND

As a pre-medical student, you may be juggling so many tasks at once, such as taking prerequisite courses, participating in a research lab, or volunteering. How can you ensure that feelings of drain or burnout do not surface?

First things first, be kind to yourself. Understand that although you (ideally) would like to be motivated all of the time, it is perfectly okay to have "off" days. Everyone has them. You are a human being, not a robot. You matter.

In addition, it is essential that while you prepare for medical school, you dedicate time for self-care or hobbies. The old adage, *you can't fill from an empty cup*, is especially true here. Talk with a friend, have a bubble bath, or dance for fun! Self care and hobbies may help inspire long-term morale and continuous motivation.

Lastly, review the goals you are aiming to achieve, as well as your purpose. Without a solid understanding of why you want to go into the medical field, your persistence to keep going (even when things get tough) could crumble and fall apart.

By ensuring that your confidence and drive stay intact, you will be able to reach your achievements! We can't wait to see your positive impact on the medical field in the future.





Predicting Preeclampsia through Blood Tests

WRITTEN BY ORIANA TOLENTINO

Since preeclampsia heightens the mother's risk of hypertension, lifetime cardiovascular disease, stillbirth, and death, there is a need to discover a reliable and efficient means of identifying this condition before the manifestation of symptoms. Therefore, a new research study was published earlier this month that could pinpoint potential complications in the pregnancy term which includes abnormalities in the placenta implantation and fetal development.

Through observing the plasma cell-free RNA (cfRNA), medical professionals would be able to determine the normal patterns of pregnancy and compare such with possible deviations.

Utilizing a blood test to keep track of the pregnancy progression entails observing four crucial genes (PAPP2, CLDN7, TLE6, and FABP1) which would provide insight regarding preeclampsia. This method is projected to be seven times more accurate than the present procedures because it has a 75% sensitivity which means that it could determine $\frac{3}{4}$ of preeclampsia occurrences.

Additionally, this method would play a role in improving the healthcare system in terms of breaking down racial disparities as race is no longer related to the risk of having preeclampsia.

- <https://www.statnews.com/2022/01/05/predicting-preeclampsia-blood-test-pregnancy-complications/>
- <https://www.nature.com/articles/s41586-021-04249-w>



The Role of Sports Psychiatry

ILANA SAIDOV

Whether you are cheering from the sidelines or scoring the winning goal, the majority of individuals recognize the immense impact of the athletic community. Athletes and fans from around the world gather to share their love for the sport. Thus, sports teams have recognized the importance of prioritizing the physical and mental health of their athletes in order to ensure that each player is in peak condition. With this in mind, sports teams have begun to welcome performance psychologists into their wellness team.

Sports psychiatrists use their experience and expertise in pathophysiology and psychiatric illnesses management in order to provide psychotherapeutic and psychopharmacological interventions for athletes. In addition to this role, sports psychiatrists also treat substance disorders, anxiety disorders, and eating disorders. From mild to severe conditions, these specialists mitigate the risk of mental-health related issues in hope to prevent career-ending illnesses.

Recently, the NBA set up a network of mental health providers in each NVA city to address and aid former players with mental health issues. The NFL has also announced their continuous effort in incorporating sports medicine psychiatrists.

The best athletes are the ones who are as mentally fit as they are physically for it is our minds that allow us to excel in every aspect in life. To read more about this development in sports, visit:

https://journals.lww.com/cjsportsmed/Fulltext/2022/01000/Sports_Psychiatry_An_Update_and_the_Emerging_Role.1.aspx

Vitamin C and Decreased Sepsis Mortality in Hospitals

ASHLYN SOUTHERLAND

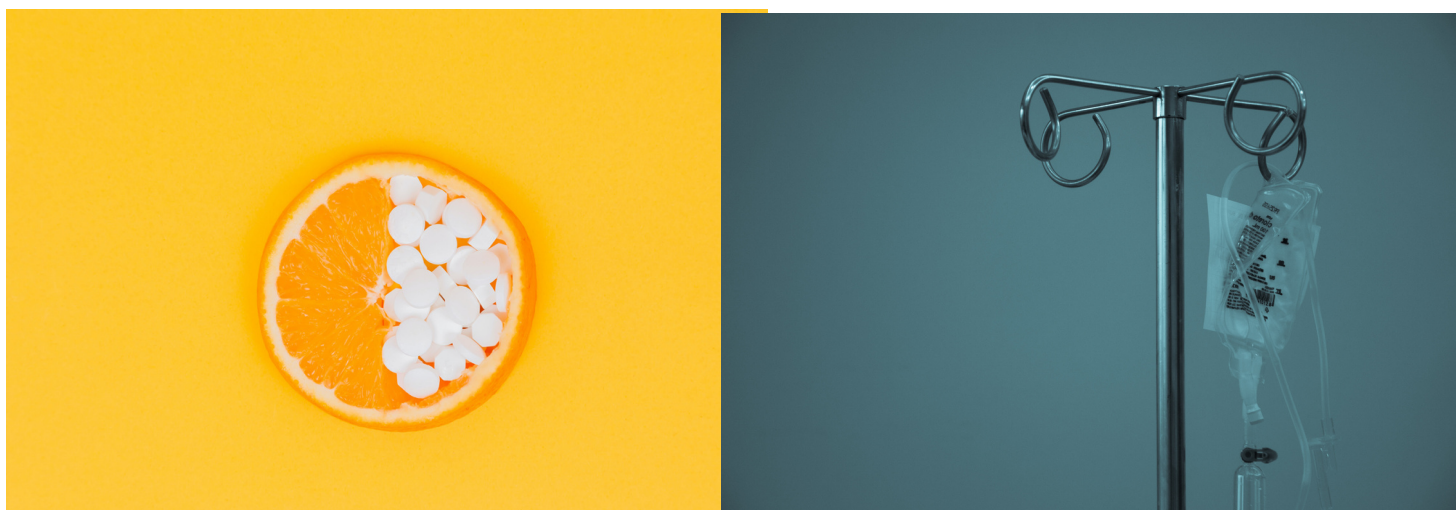
In many hospitals around the globe, tackling of both the incidence and prevalence of sepsis has remained particularly difficult. Is it possible that the secret to reducing these deaths is a nutrient commonly found in widely-marketed fruits and vegetables?

Sepsis, a fatal destruction of organs facilitated by unregulated infection, leads to more than 5 million deaths yearly on a global scale. Although measures have been taken to reduce the rate in which patients gain infections that could potentially cause sepsis, a solid approach has yet to be revealed.

Vitamin C, known to reduce inflammatory-prone cytokines in the body, was tested by researchers for overall ability to reduce sepsis mortality. To properly assess this, researchers collected the data of adult patients with sepsis and general 97% of

the Korean population through an NHIS database. This database was able to distinguish patients through the duration of Vitamin C dosage provided.

As the study concluded, results revealed that intravenous Vitamin C, if provided to patients for 5 or more days, could lead to a statistically significant decrease in hospital mortality. Although further studies need to be conducted to test efficacy of Vitamin C in combination of other vitamins or drugs, this finding is a great first step to dissolving this health concern.



Discovering a New Depression Biomarker

APRILE BERTOMO

Assessing the effects of antidepressants in the treatment of depression has been largely difficult in the past. However, there is hope for quicker identification of efficacy. A new study recently published by Targum et al., 2022 evaluated the role of a potential depression biomarker, and the results of such analyses have, ultimately, been promising.



Major depressive disorder has been identified by the World Health Organization as being a common source of disability, with potentially one out of every ten individuals being afflicted with the disorder. Anti-depressants are often utilized as treatment for the disorder; however, as previously stated, examining efficacy can sometimes take too much time and, consequently, the negative outcomes associated with ineffective medications may ultimately manifest over time. As a result, Targum et al., 2022 hoped to determine a quicker means by which anti-depressant efficacy could be evaluated.

As indicated by the study authors, past studies have discovered a correlation between depression onset and adenylyl cyclase concentrations. Researchers indicated that the development of depression was associated with decreased concentrations of activated adenylyl cyclase. Such a reduction is

correlated with a lower amount of cyclic adenosine monophosphate, or cAMP. Reduced amounts of cAMP have been associated with depression.

Normally, adenylyl cyclase is capable of producing cAMP via Gs alpha. Yet, in some cases, this heterotrimeric G protein can become stuck within certain lipid rafts.

Consequently, Targum et al., 2022 hypothesized that anti-depressants could be concluded to be effective if Gs alpha is released from such lipid rafts following treatment with such medications. Preclinical data was able to support this hypothesis to a degree.

Although further research is necessary, such results are, ultimately, quite promising. Utilizing cAMP as a biomarker could be revolutionary within the field of depression treatment in the near future.

References:

1. <https://www.medicalnewstoday.com/articles/new-biomarker-may-help-improve-depression-treatment#The-depression-biomarker>
- 2.2. Targum, Steven D., et al. "A novel peripheral biomarker for depression and antidepressant response." *Molecular psychiatry* (2022): 1-7.

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