

CROSSROADS

THE OFFICIAL NEWSLETTER OF THE PREMED SCENE



RISING STARS IN MEDICINE: DIVYA NAG

Dear medical newsletter readers,

Happiest January! I hope all of you have had an excellent start to this new year! Today, we bring to you the most recent news in medical research! I am your fourth Rising Stars in Medicine writer, talking more about Divya Nag and her work in medical technology! Then, Siri Nikku focuses on the importance of the HPV vaccine. Next, I spread greater awareness regarding new proposals for screening for colon cancer. Ilana Saidov talks about prevention of stillbirths. Finally, Adeb Mukul ends by sharing more about findings regarding sudden infant death syndrome.

Please enjoy reading The Premed Scene's January 2023 Medical Newsletter! Till next month.

Aprile Bertomo

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Rising Stars in Medicine: Divya Nag

By: Aprile Bertomo

In today's world, medical technology is consistently evolving. From innovations in research applications to developing medical devices that are cheaper and more accessible, the medical field has been impacted by the multiplicative influences of varying minds. One such individual who has made tremendous change in medicine is Divya Nag.

Divya Nag attended Stanford University as an undergraduate student from 2009 to 2011. She later decided to leave Stanford in order to co-found Stem Cell Theranostics. This was a biotech company that worked exclusively on utilization of stem cells developed from skin cells for better understanding of drugs. Nag was aware that testing drugs on human patients often elicited negative effects that would prevent such drugs from being fully tested. To further elaborate, Stem Cell Theranostics would develop heart stem cells via the addition of transcription factors. In such a way, the effects of potential drugs could be further explored without putting humans in immediate danger.

At Stanford, Nag also developed Start X Med. This was an organization that served to assist students at the university in evolving startups in the field of healthcare. Nag recognized the difficulties when attempting to establish Stem Cell Theranostics and aimed to provide assistance to students who were interested in developing their own healthcare startups as well through Start X Med. Since its development in 2012, Start X Med has officially aided healthcare startups in earning more than four hundred million dollars.

Nag continued to exert her influence following joining Apple in 2014. She first worked in the Special Projects unit, where she collaborated with others on her team to make patient health data more accessible to providers and other facilities. Finally, Nag aided in the facilitation of a mobile application known as "ResearchKit." This app can quickly gather together users' health data. This data can then be utilized for acquiring a more enhanced understanding of different aspects of medicine and human health as a whole. It also assists in facilitating greater connection between health care professionals and the patients they serve.

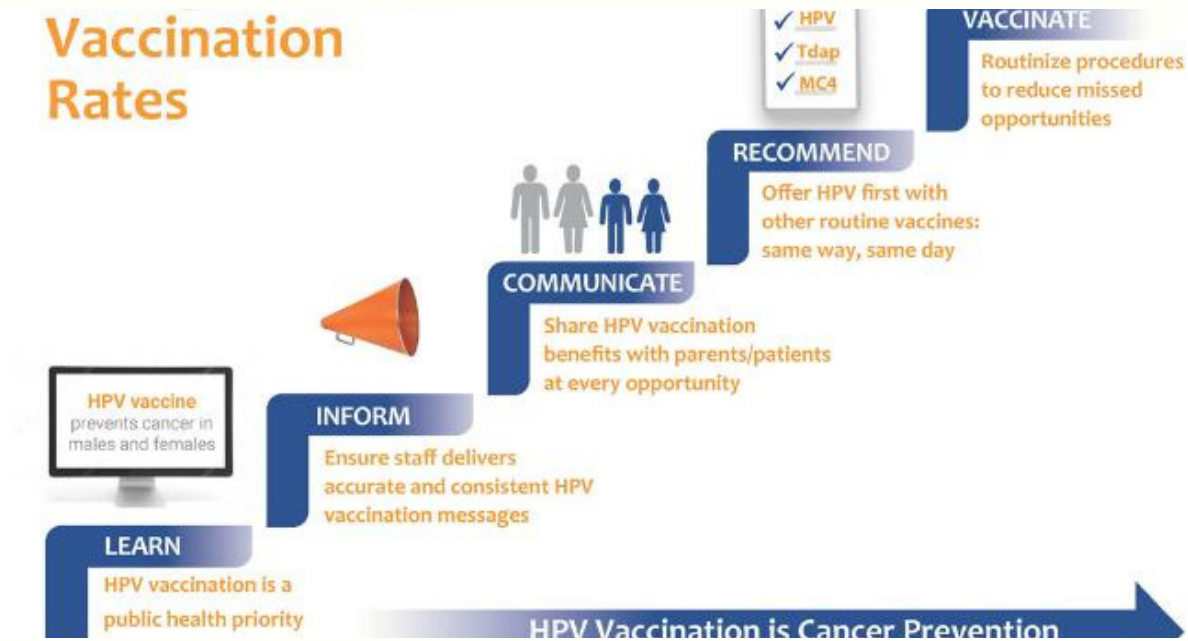
Nag has been recognized for her achievements in varying ways. She was part of the Silicon Valley Top 100 Innovators and Disruptors list. Fast Company recognized her as the Second Most Creative Woman in Business. Business Insider also named her one of the Most Powerful Millennials. Nag is sure to continue to make tremendous impact in the medical field and beyond.

Works Cited:

<https://www.divyanag.com>

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The Necessity for Human Papillomavirus Vaccination

By: Siri Nikku

January is Cervical Health Awareness month, which is a reminder to be vaccinated with the human papillomavirus (HPV) vaccine if you have not already. Almost all forms of cervical cancer within the US are caused by HPV; the easiest way to prevent this from happening to you is by ensuring you are vaccinated before engaging in any sexual activities since HPV is an infection that is spread sexually through skin-to-skin contact in vaginal, anal, and oral sex. The warts are contagious through direct touch or through a surface it's been in contact with. Some factors that can increase your chances of contracting an HPV infection include damaged skin, direct contact of warts, a high number of sexual partners, a younger age, and a weak immune system. Having safe sex practices like using a condom can reduce the chances of getting HPV as well as being tested regularly.

While the infection can sometimes go away on its own, some variants of HPV can cause cervical cancer, head and neck cancer, or cancer of the penis. HPV can live within the epithelial cells on skin and on the surface of the vagina, anus, cervix, and head of the penis as well as the mouth and throat. Around 60 of the 100 forms of HPV can lead to warts on the hands or feet while the other 40 forms transmit through the body in sexual contact and are drawn to moist areas. Symptoms of an HPV infection include genital, common (present on the hands/fingers), plantar (bigger warts on the base of feet), or flat warts (present on the legs and face usually).

To avoid having warts or cancer from HPV, one should get vaccinated around 11-12 years for two doses 6-12 months apart. After age 15, three doses of the vaccine are needed and you can get vaccinated up until 26; since your body's immune system won't be as strong as you age, it's recommended to get it younger before engaging in any sexual activities.

References

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Screening Colonoscopy Time Intervals

By: *Aprile Bertomo*

Individuals often receive a screening colonoscopy in order to assess indications of colorectal cancer development. In such a way, the procedure is a type of preventative health measure. It is currently recommended that individuals receive such a colonoscopy every ten years; however, other researchers have been looking into whether such a frequency is necessary. A particular group of researchers have conducted a cross-sectional research study supporting an extension of the current ten-year screening colonoscopy recommendation.

To conduct this study, Heisser et al. looked into the frequency of advanced colorectal neoplasm (ADN) development among over 120,000 individuals in Germany who were logged into an accessible registry and who underwent consecutive screening colonoscopies at a minimum of ten years post testing negative for colorectal cancer indicators. All individuals were 55 years old or older since the year 2002 at the start of the study. These individuals later performed a screening colonoscopy at least ten years later following a negative test, and the results of these procedures were obtained by the researchers.



In total, approximately 60.1% of participants were women. ADN prevalence was 3.6% among women and 5.2% among men ten years following a negative colonoscopy.

For individuals who had a colonoscopy fourteen years following a negative result, the prevalence of ADNs was 4.9% among women and 6.6% among men. When analyzing in terms of sex and age specificities of prevalence, it was noted that ADN frequencies were lower in women than in men and among younger than older populations.

With such results in hand, the researchers concluded that evidence of colorectal cancer development was low in a repeat colonoscopy ten years following a negative result. In such a sense, the researchers indicated it may be beneficial to increase the standard ten-year interval for testing. Such a change implies potential cost benefits and a minimization of performing an invasive procedure.

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Stillbirth Prevention

By: Ilana Saidov

Nearly 2.6 million babies worldwide are lost each year due to stillbirth. Stillbirth is defined as the loss of a baby before or during delivery due to various complications. Common causes of this stillbirth include obstructed labor, high maternal blood pressure, and maternal diabetes. Overall, stillbirths are more common among women in low-and-middle-income countries, with 98% occurring in these areas.

To decrease the cases of stillbirths in low-income countries, a group of researchers in London created a low-cost device that can be used to perform vaginal exams and assess fetal position. The device consists of sensors on the glove's fingertips that sense the position and force applied to the fetal head. Additionally, the glove can determine fetal sutures and provide the force readings in real-time. Not only will this ensure safer delivery for both mother and child, but it can also be used to simulate the fetal head in labor during clinical training.

The estimated cost of this device is approximately one dollar. Due to the low cost of the device, it has the potential to be used in low-income areas and reduce the number of stillbirths that occur. With this device, physicians will be able to improve the safety of the baby and mother during vaginal delivery and decrease the number of vaginal exams required during labor.

Source:

Jaufuraully, Shireen, et al. "Preventing Stillbirth from Obstructed Labor: A Sensorized, Low-Cost Device to Train in Safer Operative Birth." *Frontiers*, Frontiers, 8 Dec. 2022, <https://www.frontiersin.org/articles/10.3389/fgwh.2022.1039477/full>.





SIDS: Is There A Relationship Between Siblings?

By: Adeba Mukul

SIDS, or sudden infant death syndrome, is one of the most painful experiences a parent can go through. As one of the leading causes of deaths for children under the the age of one, the unknown nature of SIDS has prompted research into the complexities of a daunting medical phenomenon. There is no clear understanding on why SIDS occurs or what factors impact SIDS, therefore, at this point in time it is impossible to predict SIDS in children.

Researchers at the Copenhagen University and the University of Amsterdam assessed if family history of SIDS was related to subsequent SIDS deaths in the same family. This could be potentially be the first discovered predictor of SIDS occurring. Researchers collected information on all SIDS deaths in Denmark from 1978 to 2016 and collected information on the siblings of the children who died of SIDS. The aggregated data

included details about the children's sex, age of death, and the mother's socioeconomic status.

Descriptive data techniques and Poisson regression found that "siblings of SIDS victims had a 4-fold higher risk of SIDS compared with the general population." It has not been understood *why* that is the case, however, this association is an important one. More known research on SIDS has found that prone sleep, exposure to tobacco smoking, and and overheating during sleep can contribute to SIDS deaths.

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