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Health Rounds: New vaccine design may improve effectiveness

By Nancy Lapid



(Health Rounds is published on Tuesdays and Thursdays. Think your friend or colleague should know about us? Forward this newsletter to them. They can also subscribe here.)

Feb 2 (Reuters) - Welcome to Health Rounds! Today we cover a new approach called “rational vaccinology” that may allow manufacturers to not only modify vaccine ingredients, as they can do now, but also to switch around the way the ingredients are organized until they find the most effective structure. In other news, people who have had very mild strokes may need to speak up and ask for proper blood thinner therapy that many are not routinely getting. And if your knees ache, a low dose of exercise may be enough to help.

New approach to vaccine design improves results

Structuring the components of vaccines, rather than blending them into a mixture, may transform the way cancers are treated and infections are prevented, studies in mice suggest.

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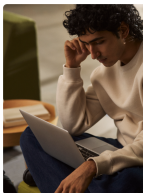
Conventionally, antigens and adjuvants are blended together, and it is impossible to predict how much of each component will reach each immune cell.

“The blended mish-mosh works to some extent,” but effectiveness can be improved by organizing vaccine components in specific ways, said Chad Mirkin, director of the International Institute for Nanotechnology at Northwestern University and co-founder of biotech startup Flashpoint Therapeutics.

The spherical nanostructure platform his team invented allows for delivery of precise doses of antigen and adjuvant to every immune cell, so they are all equally primed to attack the invader. Researchers can change the structural locations of the components until they find the most effective organization – an approach Mirkin calls “rational vaccinology.”

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In experiments in mice funded by Northwestern and by the National Cancer Institute reported on Monday in Nature Biomedical Engineering, his team compared two cancer vaccines with the same ingredients but with different structures.

One of the vaccines yielded much slower tumor growth and much longer survival than the other.

Mirkin’s team has observed improved effectiveness with structured vaccines in mice with triple-negative breast cancer, papillomavirus-induced cervical cancer, melanoma, colon cancer,

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“We can’t tell you that this approach will always lead to curative vaccines, but we can tell you it will lead to better vaccines,” Mirkin said.

Patients with minor strokes often miss out on blood thinners

Most patients, particularly women, with less-than-severe strokes do not get appropriate blood-thinning medications when they leave the hospital, and may need to specifically ask for these drugs, researchers plan to report next week at the International Stroke Conference 2023 in Dallas.

Among nearly 3,000 survivors of mini-strokes or mild strokes who were discharged from nine Maryland hospitals from 2018 through 2021, only 40% received an appropriate prescription for two blood-thinning drugs, data released on Thursday ahead of the meeting showed.

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Women were significantly less likely to get this so-called dual antiplatelet therapy (DAPT) than men.

The drugs, such as aspirin and clopidogrel, prevent platelets in the blood from sticking together and forming clots that can block arteries carrying blood to the brain and cause strokes.

In this study, just 43% of men and 37% of women received DAPT. The percentage of patients receiving DAPT did not differ significantly by race, age or whether the person was treated at a specialized stroke hospital.

Patients and family members should inquire about the use of this clot preventing therapy after a stroke or TIA, study leader Dr. Jonathan Solomonow of the University of Maryland Medical Center in Baltimore said in a statement.

Increasing the use of DAPT in appropriate patients “could lead to reduced rate of short-term stroke recurrence,” his team said in a summary of their presentation.

How much exercise for worn-out knees?

If your knees ache from arthritis caused by wear and tear known as osteoarthritis, you have likely been told that exercise is helpful – but how much exercise should you aim for? A randomized trial in Scandinavia found that higher and lower amounts of exercise were both helpful, with little extra benefit from more-intense workouts.

At four hospitals in two countries, researchers enrolled 189 patients with knee arthritis causing pain and functional limitations. Half were assigned to do 11 supervised exercises for 70 to 90 minutes three times a week for 12 weeks. The other half did five exercises for 20 to 30 minutes, on the same schedule.

Over the next year, participants were questioned about their symptoms, pain, knee function and quality of life.

The researchers expected the more intensive program to be more effective, but found “both groups improved over time, (with) no benefits of high-dose therapy in most comparisons,”

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The high-dose exercise regimen did afford slight benefits for sports and recreation and for quality of life at six and 12 months, they found.

“High-dose treatment could be preferable... in the long run for people who lead active lives,” they said.

The Swedish Rheumatic Fund was the study’s primary funding source. (Reporting by Nancy Lapid; Editing by Bill Berkrot)

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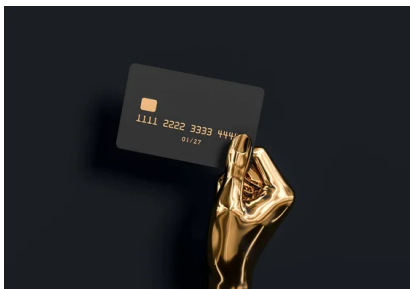
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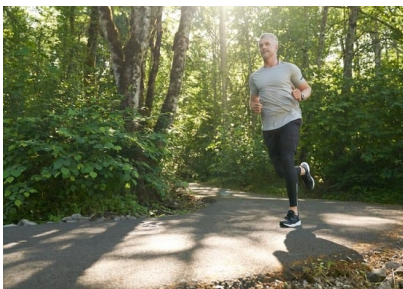


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