The
Liker Health Report

Keeping People Focused on Staying Fit & Healthy

Winter 2021

A New Tool in the Arsenal Against Infectious Diseases

What Are mRNA Vaccines and How Do They Work?

Unlike traditional vaccines that trigger an immune response in the body following an injection of a weakened or inactivated virus, messenger RNA (mRNA) vaccines do not contain the actual virus. mRNA vaccines, such as the ones currently being developed for COVID-19 work by teaching the body's cells to make a harmless protein, or a piece of a protein, and this protein then triggers the immune response. The response by the immune system is to produce antibodies which remain on "standby" in case the real virus (SARS-CoV-2) enters the body in the future.

In the case of the COVID-19 mRNA vaccine, the injection is administered in the muscle of the upper arm, similar to the flu shot. The vaccine instructs the muscle cells to produce a piece of the spike protein that is located on the surface of SARS-CoV-2. After the spike protein piece is made, the muscle cells break down the mRNA, thus eliminating the instructions. The newly made spike protein pieces then sit on the surface of the muscle cells, and the immune recognizes them as "foreign" and mounts an immune response by manufacturing antibodies against them. The immune system would essentially do the same if you had encountered during a natural COVID-19 infection, but in the absence of vaccination, the illness of COVID-19 can be more serious and possibly deadly.

Manufacturing of mRNA vaccines offers advantages over traditional vaccines, such as standardization and scaling-up for faster development, production, and distribution. Unlike the flu vaccine which is grown in chicken eggs, mRNA vaccines are not limited by the availability of necessary materials (i.e., chicken eggs). The expectation is that future mRNA vaccines might be able to provide protection for multiple diseases in a single shot, or fewer shots, so that greater protection can be conveyed for existing and emerging diseases to an ever-growing global population.

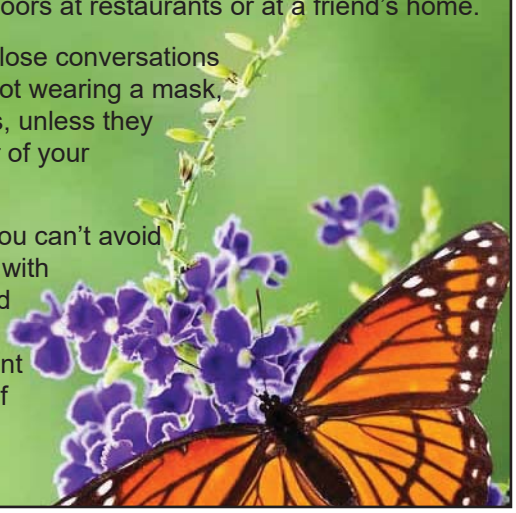
Managing Your COVID-19 Risk

Without exception: Eliminate spending time in confined spaces with any unmasked person who does not live in your household.

Do not eat indoors at restaurants or at a friend's home.

Do not have close conversations with anyone not wearing a mask, even outdoors, unless they are a member of your household.

Minimize: If you can't avoid being indoors with non-household members, limit the amount of time, even if everyone is masked.



RESEARCH PEARLS:

Gut Microbiome and Sleep Disturbances

Significant changes in the gut microbiome due to common antibiotics can impact sleep according to new research. Japanese researchers gave mice broad-spectrum antibiotics for four weeks which served to deplete their gut microbiota. The newly depleted microbiome was severely compromised in its normal function of producing neurotransmitters. First, the metabolites that convert tryptophan to serotonin were almost non-functional; even though their diet was high in tryptophan, the mice could not make any serotonin. Second, the mice became deficient in vitamin B6 metabolites, which in turn, hindered production of both serotonin and dopamine. The mice's sleep/wake cycles were disrupted and actually reversed. Researchers hypothesized that serotonin depletion was responsible and suggested paying more attention to the microbiome.

Scientific Reports 2020 Nov 11;10(1):19554

Brain Health

Strategies to Prevent Cognitive Decline

The prospect of experiencing cognitive decline and later developing a neurocognitive disease such as Alzheimer's is understandably scary. Many people have seen a parent or loved one struggle with memory issues that eventually progress into severe neurodegenerative disease. No one wants to suffer the same outcome, with all the heartache it entails. And although there may be a "cure" by the time you reach that vulnerable age, there's no time like the present to take action to ensure your best possible brain health.

Feed Your Body - Feed Your Brain

Most experts agree that a Mediterranean style diet can delay cognitive decline. A diet primarily comprised of vegetables, fruit, and fish is associated with improved language skills, processing speed, and memory tasks; olive oil has been identified as one of the most brain-enhancing components of the Mediterranean diet. Specific nutrients, such as l-theanine (in green tea) and polyphenols (in Concord grape juice) may help fight early memory decline due to their antioxidant and anti-inflammatory properties.

Get Moving

Regular exercise helps tamp down inflammatory processes and increases blood flow to the brain. It also enhances the body's own production of the proteins called neurotrophins that induce the development, function, and survival of neurons.

Keep Your Brain Calm

Lowering stress levels may be an effective intervention for improving cognition. Meditation increases blood flow to the brain and improves verbal fluency and memory.

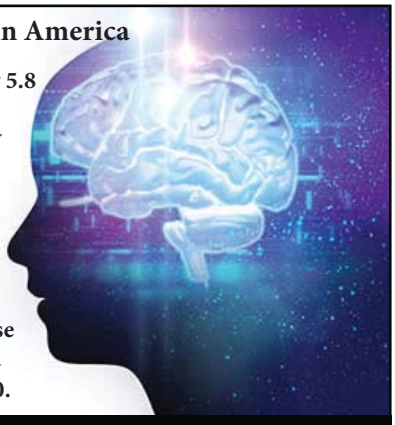
Sleep Like a Baby

Getting a full night sleep with adequate "deep sleep" disposes of the brain's waste products helps decrease the risk of developing dementia and Alzheimer's.

Alzheimer's Disease in America

As of 2020, approximately 5.8 million Americans age 65 and older have AD; nearly two-thirds are women.

Without major medical advancements, disease projections show the number of people 65 and older with AD will increase to 7.1 million by 2025 and reach 13.8 million by 2050.



Joy is the simplest form of gratitude.

Karl Barth

Dear Dr. Liker...

What is the role of deep sleep in preventing dementia?

Getting a good night's sleep on most nights is important for more than just optimal day-to-day mental functioning. Recent research shows that "deep sleep" is important to stave off dementia and Alzheimer's Disease in particular. Deep sleep is the period of sleep at the end of night in which body temperature drops, the brain begins to slowly produce electrical pulses, and the brain's "self-cleansing" process is most active.

The brain's waste-removal system (the glymphatic system) removes metabolic waste products from the previous day, including the toxins that are believed to play a role in Alzheimer's Disease and other neurological disorders. This occurs as the brain is flooded with cerebral spinal fluid which in turn, flushes out toxins and harmful protein by-products. During deep sleep, the cells within the brain temporarily reduce in size, which allows the waste to be removed more efficiently and more completely.

The presence of beta-amyloid and tau in the brain are two indicators of Alzheimer disease, and deep sleep is believed to reduce both. Studies examining the amount of deep sleep participants got over a period of years, comparing it to their brain scans found that those who slept less had more beta-amyloid. Other studies showed that chronic sleep deprivation led to higher levels of tau.

HL

LIKER CONSULTING, INC.

The Center for Executive & Corporate Health

Harley R. Liker, M.D., M.B.A.

CEO

9675 Brighton Way, Suite 350
Beverly Hills, CA 90210

E-mail: hliker@likerconsulting.com
www.likerhealthreport.com

Publisher and Editor-in-Chief -- Harley Liker, M.D., M.B.A.
Senior Editor -- Karen Edwards, M.S.