Trends & Technology

Trends

Effects of surgery on pediatric sleep-disordered breathing

A clinical trial funded by the National Heart, Lung, and Blood Institute has found that surgical removal of tonsils and adenoids in children with snoring and mild breathing problems during sleep can improve their quality of life a year after surgery. The first large, randomized, year-long trial addressing the effects of adenotonsillectomy on children with mild sleep-disordered breathing involved 459 pediatric participants, aged 3-12. Half of the participants underwent adenotonsillectomy, while the other half received supportive care without surgery, including education on healthy sleep and lifestyle and referral for untreated allergies or asthma. Both surgery and supportive care groups showed improved cognition and attention, but the surgery group demonstrated additional benefits such as reduced daytime sleepiness, improved sleep quality, lower blood pressure, fewer behavioral problems, and a lower likelihood of progressing to sleep apnea. The researchers plan to continue investigating the long-term impacts of surgery in this population.

Source: **asamonitor.pub/48FGiAs**

Noma recognized as a neglected tropical disease

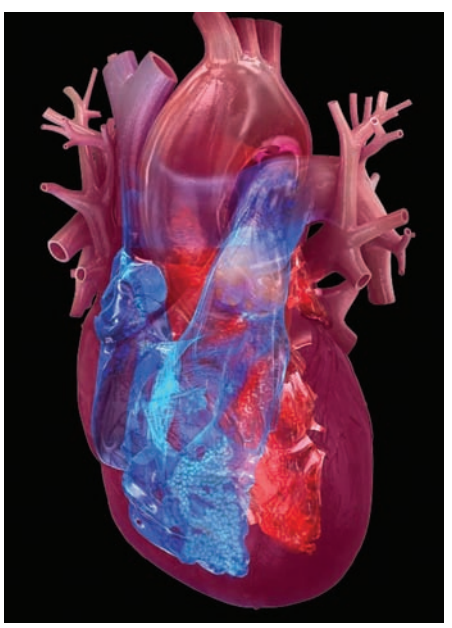
As of December 2023, the World Health Organization (WHO) has officially included noma, also known as cancrum oris or gangrenous stomatitis, in its list of neglected tropical diseases (NTDs). Noma is a severe gangrenous disease affecting the mouth and face, primarily afflicting malnourished children aged 2-6 in regions of extreme poverty. Noma's risk factors include poor oral hygiene, malnutrition, weakened immune systems, and infections. Caused by bacteria in the mouth and starting as gum inflammation, noma, if untreated, rapidly destroys facial tissues and bones, often leading to death and severe disfigurement in survivors. Early detection is crucial for effective treatment, involving antibiotics, oral hygiene improvement, and nutritional supplements. In severe cases, reconstructive surgery may be necessary. Noma survivors often face social stigma and isolation. The disease is prevalent in Sub-Saharan Africa, with cases also reported in the Americas and Asia. WHO's recognition of noma as an NTD, prompted by the 17th meeting of the Strategic and Technical Advisory Group for Neglected Tropical Diseases (STAG-NTD), aims to raise global awareness, catalyze research, secure funding, and enhance efforts to control the disease. The inclusion aligns with broader strategies for achieving universal health coverage, targeting underserved populations. Noma joins a list of 21 diseases or groups of diseases classified as NTDs.

Source: **asamonitor.pub/3NKvcIp**

Heart-valve infection death rate increases

Recent analysis of research based on death certificate data from the Centers for Disease Control and Prevention (CDC) indicated an overall decline in infective endocarditis death rates in the U.S. from 1999 to 2020. Death rates increased significantly, however, for young adults at an average annual change of more than 5% for the 25-34 age group and more than 2% for the 35-44 age group. Infective endocarditis, a rare bacterial infection affecting the heart lining, valves, or blood vessels, can affect people with previous valve surgeries, heart valve abnormalities, artificial valves, congenital heart defects, or those who inject illicit drugs. The study highlighted a notable rise in substance use disorder diagnoses among young adults with infective endocarditis listed as the underlying cause of death. Three states at the epicenter of the opioid crisis – Kentucky, Tennessee, and West Virginia – experienced significant increases in death rates related to infective endocarditis. Researchers deemed these rates "alarming," prompting a call for more research and comprehensive care approaches for infective endocarditis patients, including screening and treatment for substance use disorder.

Source: **asamonitor.pub/3NPmqmn**



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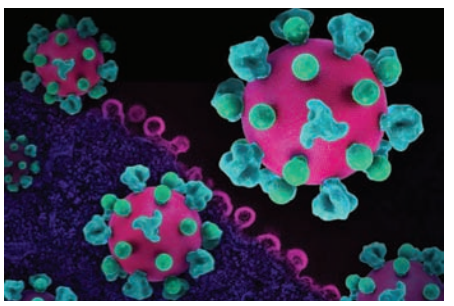
CD8+ T cell activity could improve effectiveness of HIV vaccine

A study funded by the National Institute of Allergy and Infectious Diseases suggests that an effective HIV vaccine might need to stimulate robust responses from CD8+ T cells to protect against HIV acquisition. In HIV infection, the virus damages the immune system by integrating into CD4+ T cells. Among individuals known as "long-term non-progressors" or "elite controllers" (LTNPs/ECs), the immune system recognizes and activates CD8+ T cells, which then destroy HIV-infected CD4+ T cells,



suppressing the virus. Previous vaccine candidates designed to stimulate CD8+ T cell activity did not prevent HIV acquisition or control viral replication in clinical trials. In the study, researchers compared immune system activities in individuals from past HIV vaccine studies with those known as LTNPs/ECs who naturally suppress the virus without antiretroviral therapy. The study found that while both vaccine recipients and LTNPs/ECs generated CD8+ T cells recognizing HIV, the CD8+ T cells of vaccine recipients failed to deliver the proteins needed to destroy HIV-infected CD4+ T cells. The dampened response could be due to reduced sensitivity of vaccine recipients' T-cell receptors to HIV. The study suggests that future HIV vaccine candidates might be more successful with additional doses or prolonged persistence in the body to further stimulate the immune system. It also recommends evaluating HIV vaccine potential by assessing CD8+ T cell function and sensitivity, in addition to the quantity of generated CD8+ T cells. These insights aim to guide future HIV vaccine design and development, as well as inform HIV immunotherapy approaches.

Source: **asamonitor.pub/4aKu5vU**

Technology

Phantom limb pain relief from spinal cord stimulation

A proof-of-concept study conducted by the University of Pittsburgh School of Medicine demonstrated that spinal cord stimulation can induce sensation in the missing foot and alleviate phantom limb pain in individuals with lower limb amputations. Among the 1.5 million Americans with lower-limb amputations, eight out of 10 experience chronic pain perceived in the missing limb. Traditional pain medications often prove ineffective against phantom limb pain, severely impacting quality of life. Conventional prosthetics lack sensory feedback functionality, leaving amputees susceptible to balance deficits and falls. Rehabilitation scientists used thin electrode strands implanted over the spinal cord in the lower back connected to a stimulation device, allowing researchers to modulate sensations in response to pressure on the prosthetic foot. Active control of stimulation parameters in real time was a unique feature of this research. This spinal cord stimulation technology not only relieved phantom limb pain but also enhanced balance and gait stability. Participants experienced clinically meaningful improvements in balance control and gait, with an average 70% reduction in phantom limb pain. The technology showed efficacy in individuals with peripheral nerve damage due to chronic conditions like diabetes or traumatic amputations. The approach does not require custom-made electrodes or uncommon surgical procedures, making it potentially scalable on a national level.

Source: **asamonitor.pub/3NOdRZ0**

Test to assess risk for opioid use disorder

The FDA has granted approval to the AutoGenomics, Inc. AvertD test, the first genetic laboratory test designed to assess the elevated risk of developing opioid use disorder in certain individuals. The test is a prescription-use-only genetic test for patients aged 18 and older, intended for use before the first exposure to oral opioid pain medications in patients being considered for a four-30-day prescription for acute pain, such as those undergoing planned surgical procedures. Administered by health care providers, the test involves swabbing the patient's cheek to collect a DNA sample, which is then used to determine if the patient has a combination of genetic variants associated with an elevated risk of developing opioid use disorder. It is not intended for patients being treated for chronic pain and should be part of a complete clinical evaluation and risk assessment. AutoGenomics, Inc. is required to provide training to health care providers for the appropriate use of the test and to conduct a post-market study to assess device performance, regularly reporting progress to the FDA. ■

Source: **asamonitor.pub/3RMfS9f**