

RESPIRATORY ILLNESS

A new vaping-induced syndrome

N. Engl. J. Med. 10.1056/NEJMoa1911614 (2019)



Credit: YS graphic / Moment / Getty

The use of e-cigarettes (vaping) is linked to lung injury in young adults in two US states

The use of e-cigarettes is known to expose users to harmful substances, and it has risen sharply in US high school students since 2017, although the health risks to this specific group of users are not known.

The Wisconsin Department of Health Services and the Illinois Department of Public Health investigated cases of young adults admitted to hospital with acute pulmonary disease between June and August 2019 that were linked to recent e-cigarette use in 53 cases. They were able to define

a syndrome of similar symptoms, whose pathological mechanisms remain to be investigated.

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<https://doi.org/10.1038/s41591-019-0617-x>

CANCER THERAPY

Activating cytokines in the brain

Sci. Transl. Med. 11, eaaw5680 (2019)

A locally injected version of the gene for the anti-cancer cytokine human IL-12 (hIL-12) can be safely and specifically activated in humans with an oral activator.

Recurrent high-grade glioma (rHGG) is an aggressive brain tumor for which treatment options are limited by inadequate understanding of the tumor and its microenvironment and the challenge of getting therapies across the blood–brain barrier. Although IL-12 is a potentially promising rHGG therapy that activates immune responses to target the tumors, its toxicity precludes systemic administration in humans.

Chiocca and his colleagues carried out a phase 1 study in individuals post tumor resection, who had the hIL-12 gene vector injected and also took an oral activator. They found that this approach was safe and showed some promising effects, including the passage of the activator across the blood–brain barrier.

HS

<https://doi.org/10.1038/s41591-019-0614-0>

CARDIOVASCULAR DISEASE

Immunotherapy for heart injury

Nature 573, 430–433 (2019)

T cells can be programmed to eliminate pathology-causing cardiac fibroblasts after heart injury.

Following cardiac injury, pathological cardiac fibroblasts are activated and deposit extra cellular matrix proteins, resulting in fibrosis, which both negatively affects the heart's physical properties and further signals cardiomyocytes, altering their function. Thus far, therapies have mostly aimed to reduce the rate of heart fibrosis.

Jonathan Epstein and his colleagues engineered T cells that identify the pathological fibroblasts using a protein unique to these cells. They show in mice that after heart injury, the engineered T cells can ablate the fibrosis-causing fibroblasts, improving cardiac function.

HS

<https://doi.org/10.1038/s41591-019-0615-z>

INFECTIOUS DISEASE

Tracking hidden Zika

Cell 178, 1057–1071 (2019)

Outbreaks of Zika virus that go otherwise undetected can be identified using a combination of clinical sequencing and travel surveillance.

The detection of Zika virus epidemics is confounded by the high rate of subclinical infection and the overlap between the symptoms of Zika and other mosquito-borne illnesses. The resultant under-reporting of infection and epidemics could hinder the worldwide effort to combat the disease.

An international group of scientists employed a combined approach of analyzing travel-associated Zika cases and performing clinical sequencing to identify a previously unreported Zika virus outbreak that occurred in Cuba in 2017. Their strategy suggests a complementary framework for outbreak monitoring.

HS

<https://doi.org/10.1038/s41591-019-0616-y>

Hannah Stower

VACCINES

Supporting HPV vaccination

Lancet 394, 497–509 (2019)

Vaccinating girls against human papilloma virus is an effective strategy for preventing HPV infection in the wider population.

HPV is responsible not only for causing anogenital warts but also for most cases of cervical cancer; however, the primary prevention method for this cancer has been screening for precancerous lesions (known as CIN2+ lesions) rather than preventing HPV infection. But a vaccine against HPV has now been licensed for just over 10 years and is being used in vaccination programs in 99 countries.

Marc Brisson and his colleagues reviewed data from 14 high-income countries with vaccination programs for which up to 8 years of follow-up data were available. They find that vaccination of girls protects against cervical premalignant lesions in women and girls, and anogenital warts in the population as a whole, indicating a herd-immunity effect. They also show that multiple-cohort vaccination and higher vaccination coverage were more effective.

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<https://doi.org/10.1038/s41591-019-0618-9>