

International medical review

Researchers from Perm University have developed a mathematical model that identifies the least durable places in the coronary stent. This allows to calculate the risk of stent deformation and to prevent an aortic rupture. The researchers look upon the deformation of the wire from which the stents are made on the macro level. On the other hand, their components, i.e. metal grains are considered on the meso level. Thus, the model considers the features of grain boundaries, which, by creating distortions of the crystal lattice, largely determine the deformation of the stent. It is influenced by the size of metal grains, their mutual arrangement and the direction of applied forces. The researchers have identified the most dangerous deformation modes that significantly affect the placement of biomedical stents. In the long term, they will make it possible to perform operations to dilate blocked vessels without risk to the patient.

According to the Materials journal

Cardiovascular diseases at an early age contribute to impaired memory and cognitive function in middle age, according to the US authors. The researchers noted that early onset of CVD is associated with greater hyperintensity in the white matter, temporal and parietal lobes of the brain and with increased mean white matter diffusion, indicating reduced cerebral tissue integrity. 3146 patients aged 18-30 years were included into the study. The mean follow-up time was 30 years. MRI scan of the brain was performed in 656 participants. The researchers stated that people aged 20-30 years should start preventing CVDs to maintain brain health and delay the onset of cognitive decline.

According to the Neurology journal

Long-term therapy with pioglitazone for type 2 diabetes significantly reduced the risk of dementia in elderly patients. According to recent studies, the drug reduces the likelihood of stroke and its recurrence. Researchers analyzed the Korean National Health Insurance System database from 2002 to 2017 to identify the characteristics of patients in whom pioglitazone had the greatest protective effect. The researchers were able to identify 91,000 patients aged 50 and over with type 2 diabetes and without dementia at the start of the study. 3,467 people received pioglitazone.

According to the Neurology journal

The study by scientists from the University of Helsinki and University College London states that patients hospitalized with bacterial or viral infections have an increased risk of subsequent adverse cardiovascular events. The risk associated with infection increased by 7.87 times in the first

month after the admission and remained elevated by 1.47 times during the entire follow-up period. Acute myocardial infarction and death from coronary heart disease accounted for more than a half of ACVE. The analysis showed that severe infections can cause 4 to 6% of ACVE, leading to 150 000 deaths each year in high-income countries.

According to the Circulation journal

Scientists believe that genetic diseases can create a predisposition to infertility and other diseases. They sequenced exomes from 197 women between the ages of 18 and 40 with a cause-unidentified infertility. In 6.6% of the participants, they found clinically relevant gene variants that were likely to cause pathologies such as heart disease and breast cancer. In total, the researchers identified 14 clinically significant gene variants, including the well-known BRCA1 and BRCA2, associated with a high risk of developing breast and ovarian cancer. The lifestyle changes or medical interventions could at least reduce their risk. The researchers concluded that infertility could be a 'biomarker' for the development of the other pathologies in the future.

According to the England Journal of Medicine

Researchers from the Finnish hospital found that statin therapy within 90 days of ischemic stroke improved the long-term treatment outcomes. The researchers analyzed data from 59 588 patients admitted to the hospitals in Finland with ischemic stroke. All-cause mortality among participants who did not take statins was 74% higher for up to one year and 37% higher for 12 years compared with patients who started taking statins up to 90 days after the ischemic stroke. The authors of the study believe there is a need to develop interventions aimed at the timely prescription of statins to patients after ischemic stroke to improve long-term treatment outcomes.

According to the Stroke journal

Researchers from China conducted a retrospective study of 190,115 patients from the database of the Chinese Association of Cardiovascular Diseases with acute onset of symptomatic arrhythmia in the period from 2015 to 2021. The analysis included only data collected from 2,025 hospitals with chest pain centers certified by the National Chest Pain Centers Program in 322 cities. The study used a time-stratified cross-case analysis.

Exposure to air pollution is associated with the onset of symptomatic arrhythmia within a few hours, new data indicate.

According to the Canadian Medical Association Journal