

A summary of general medicine news that affects your patients, your practice, and you.

Cellular Reprogramming Changed Pancreas Cells to Insulin-Producing Cells

Investigators at the Harvard Stem Cell Institute used a process called “direct reprogramming” to transform pancreatic cells from adult mice into insulin-producing beta cells, according to study published in *Nature*.

Douglas A. Melton, PhD, and colleagues identified a specific combination of three transcription factors (Ngn3, Pdx1, and Mafa) that reprograms differentiated pancreatic exocrine cells in adult mice into cells that closely resemble beta-cells. The investigators injected the

transcription factors into the pancreases of adult diabetic mice. After 3 days the cells produced small amounts of insulin. After 10 days, approximately 20% of exocrine cells converted to beta-cells. Their insulin production was comparable to the production of normal beta cells, the study authors said. The researchers observed a significant improvement in the fasting glucose levels of mice treated with the three transcription factors compared with controls that received placebo.

Statin Use Protects Against Dementia, Memory Loss

Individuals who take cholesterol-lowering statins are less likely to develop dementia and cognitive impairment without dementia (CIND), according to a report published in *Neurology*. The population-based cohort study included 1,674 older Mexican Americans without dementia or CIND at baseline. Researchers with the University of Michigan administered cognitive and clinical evaluations every 12 to 15 months for a 5-year period.

Of the 1,674 participants, 452 (27%) took statins at any time during the study. Over the 5-year follow-up period, 130 participants developed dementia and CIND. Patients who used statins were about half as likely as those who did not use statins to develop dementia or CIND, the researchers concluded.

Low Vitamin D Associated with Premature Death

Low vitamin D levels may increase the risk of premature death in the general population, according to researchers from Albert Einstein College of Medicine in New York.

Investigators evaluated the association of low 25-hydroxyvitamin D (25[OH]D) levels with cancer, cardiovascular disease (CVD), and all-cause mortality in 13,331 adults aged 20 years or older from the mortality files of the Third National Health and Nutrition Examination Survey. Participants' vitamin D levels were collected from 1988 through 1994, and participants' mortality was tracked through 2000.

Using cross-sectional multivariate analysis, researchers

determined that increasing age, female sex, nonwhite race/ethnicity, diabetes, current smoking, and higher body mass index were independently associated with higher odds of 25(OH)D deficiency (lowest quartile of 25(OH)D level, <17.8 ng/mL) while greater physical activity, vitamin D supplementation, and nonwinter season were associated with lower odds of 25(OH)D deficiency.

During a median 8.7 years' follow-up, 18,006 deaths occurred, including 777 from CVD. Compared with the highest quartile, the lowest quartile (<17.8 ng/mL) was associated with a 26% increased rate of all-cause mortality. Adjusted models of CVD and cancer mortality revealed a higher risk, but the increase was not statistically significant, the study stated.

Excess Weight Not Always Associated With Poor Metabolic Health

Many overweight and obese Americans are metabolically healthy, while many normal-weight individuals have cardiometabolic health problems, according to a report in the *Archives of Internal Medicine*. Rachel P. Wildman, PhD, and colleagues assessed combined body mass index and cardiometabolic abnormalities in a cross-sectional sample of 5,440 participants in the National Health and Nutrition Examination Surveys from 1999 through 2004.

The study reports that among US participants aged 20 years and older, 23.5% (approximately 16.3 million) of normal-weight adults were metabolically abnormal, whereas 51.3% (approximately 35.9 million) of overweight adults and 31.7% (approximately 19.5 million) of obese adults were metabolically healthy.

Risk factors for cardiometabolic abnormalities among

normal-weight individuals included older age, lower physical activity levels, and larger waist circumference. Lower risk of cardiometabolic abnormalities among overweight and obese individuals was seen in those with younger age, non-Hispanic black race/ethnicity, higher physical activity levels, and smaller waist circumference.

Treadmill Exercise Improved Fitness, Brain Function in Stroke Patients

Treadmill exercise improved fitness and brain function in stroke survivors, investigators recently reported. The randomized, controlled trial, published in *Stroke*, evaluated the effects of 6-months of treadmill exercise (n=37) versus comparable duration stretching (n=34) on walking, aerobic fitness, and in a subset (n=15/17) on brain activation measured by MRI.

Treadmill exercise improved treadmill-walking velocity by 51% and cardiovascular fitness by 18% compared with an 11% increase and a 3% decrease, respectively, with stretching ($P<.05$). Additionally, stretching did not affect brain function. Treadmill exercise affected brain activation during paretic limb movement but not during non-paretic limb movement, showing 72% increased activation in the posterior cerebellar lobe and 18% in the mid-brain ($P<.005$). Exercise-mediated improvements in walking velocity correlated with increased activation in the cerebellum and midbrain.

Elderly Patients Less Likely to Benefit From Flu Vaccine

Previous observational studies that reported a 50% mortality reduction for older patients who received influenza vaccination were most likely in error due to confounding, a study published in the *American Journal of Respiratory and Critical Care Medicine* suggests. Investigators prospectively collected clinical, laboratory, and functional data on 1,813 adults with community-acquired pneumonia admitted to six hospitals in Canada outside of influenza season.

Influenza-vaccinated patients (n=352) were matched with nonvaccinated control patients (n=352). Eight-five percent of patients were 65 years or older, 29% had severe pneumonia, and 12% died.

Influenza vaccination was associated with a 51% mortality reduction outside of influenza season (unadjusted odds ratio, 0.49; $P=.004$). Eight percent of vaccinated patients died compared with 15% of control patients, the study reported. However, when adjustment was made for

confounding variables, such as functional or socioeconomic status, the benefit and statistical significance were "markedly attenuated," the researchers found (adjusted odds ratio 0.81; $P=.61$).

Association Found Between Cognitive Function and Diabetes Duration, Severity

Mild cognitive impairment (MCI) is associated with earlier onset, longer duration, and greater severity of diabetes mellitus, according to a recent study. The population-based case-control study, published in *Archives of Neurology*, included patients aged 70 to 89 years with MCI (n=329) and patients without MCI (1640) and dementia. The frequency of diabetes was similar in patients with MCI (20.1%) and in patients without MCI (17.7%). However, investigators found that MCI was associated with onset of diabetes before age 65 years, duration of 10 years or longer, treatment with insulin, and presence of diabetic complications.

US Incidence of HIV Stabilized, Estimate Says

The incidence of HIV increased in the mid-1990s, slightly declined after 1999, and has stabilized in recent years, according to a report published in the *Journal of the American Medical Association*.

Researchers tested remnant diagnostic serum specimens from patients aged 13 years or older and newly diagnosed with HIV during 2006 in 22 states. According to investigators, an estimated 39,400 individuals were diagnosed with HIV in 2006 in the 22 states. Of 6,864 diagnostic specimens tested, 2,133 (31%) were classified as recent infections. Based on extrapolations of these data, researchers estimated 56,300 new infections occurred in 2006; the estimated incidence was 22.8 per 100,000 population. Forty-five percent of infections were among black individuals and 53% among homosexual men, the study said. Researchers calculated that 55,400 new HIV infections occurred per year from 2003 through 2006. ■

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