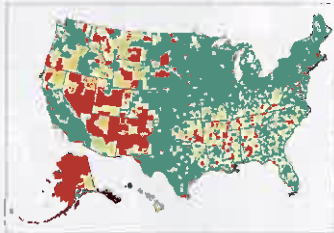# In This Issue of JAMA

Research

Evolocumab and Coronary Disease in Statin-Treated Patients   2373

Proprotein convertase subtilisin kexin type 9 (PCSK9) inhibitors produce incremental lowering of low-density lipoprotein cholesterol in statin-treated patients. In a randomized placebo-controlled clinical trial that enrolled 968 patients with angiographic coronary disease treated with statins, Nicholls and colleagues assessed the effect of PCSK9 inhibition with evolocumab—added to statin therapy—on progression of coronary atherosclerosis. The authors report that compared with statin therapy alone, evolocumab combined with statin therapy resulted in a greater decrease in percent atheroma volume.

⊞ CME jamanetworkcme.com

County-Level Trends in Mortality for Major Causes of Death   2385

In analyses of US vital statistics data representing more than 80 million deaths from 1980 through 2014, Dwyer-Lindgren and colleagues assessed county-level patterns in mortality rates for 21 major causes of death. The authors found large between-county disparities for all 21 causes of death. Geographic regions with elevated mortality rates differed among causes. For most causes of death, both increases and decreases in county-level mortality rates were observed from 1980 through 2014. In an Editorial, Clark and Williams discuss the limitations and potential contributions of small area modeling approaches to inform priorities and design strategies to address geographic health disparities.

◀ Editorial 2363
⊞ Author Video Interview jama.com CME jamanetworkcme.com

Deep Learning Technology to Detect Diabetic Retinopathy   2402

Deep learning is a machine learning technique that allows an algorithm to program itself by learning predictive features from a set of demonstrative examples. Gulshan and colleagues report the development and validation of a deep learning algorithm to detect diabetic retinopathy and macular edema in retinal photographs. The authors compared performance of the deep learning algorithm with ophthalmologists' manual grading of retinal images (n = 128 175 and n = 11 711 in the algorithm development and validation sets, respectively). The authors report that the deep learning algorithm had high sensitivity and specificity for detecting diabetic retinopathy and macular edema. Two Editorials discuss the promise and challenges of applying deep learning technology in clinical care.

◀ Editorial 2366 and 2368

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Research (continued)

Immunogenicity of 9-Valent HPV Vaccine: 2- vs 3-Dose Regimen — 2411

Reduced dose schedules for the human papillomavirus (HPV) vaccine may improve vaccination coverage. In an international, open-label, noninferiority clinical trial involving 1518 participants, Iversen and colleagues evaluated the immunogenicity of a 2-dose regimen of a 9-valent HPV vaccine administered to boys and girls aged 9 to 14 years. The authors report that immunogenicity assessed 4 weeks after the last vaccine dose among girls and boys aged 9 to 14 years who received 2 doses of the 9-valent HPV vaccine—either 6 or 12 months apart—was noninferior to a 3-dose regimen given over 6 months in a comparison cohort of adolescent girls and young women aged 16 to 26 years. An Editorial by Markowitz and colleagues discusses HPV vaccine dose schedules.

◄ Editorial 2370

Clinical Review & Education

Repeat *Clostridium difficile* Testing — 2422

This JAMA Diagnostic Test Interpretation article presents a patient who had abdominal pain and frequent watery diarrhea after completing a course of azithromycin. A stool polymerase chain reaction test for the toxin B gene was positive—consistent with *Clostridium difficile* infection—and the patient's symptoms resolved after a 10-day course of oral metronidazole. Six weeks later, he presented with abdominal discomfort for 3 weeks relieved by bowel movements of typical consistency but increased frequency. A repeat stool *C difficile* toxin test was positive. How would you interpret this result?

From The Medical Letter: Cannabis and Cannabinoids — 2424

This *Medical Letter on Drugs and Therapeutics* article summarizes information about medical use of cannabis and cannabinoid products. Although a number of states permit some medical use of botanical marijuana (*Cannabis sativa*), cannabis is not approved as a treatment for any medical condition. Two oral prescription cannabinoids, dronabinol and nabilone, are approved for treatment of chemotherapy-associated nausea and vomiting not responsive to other antiemetics. Some evidence suggests that cannabinoid products may be effective for cancer-associated and neuropathic pain and for multiple sclerosis–associated spasticity.

⊞ Online @ jama.com

Editor's Audio Summary
Howard Bauchner, MD,
summarizes and comments
on this week's issue.

Author Interview
VIDEO Interview with Christopher J. L. Murray,
MD, DPhil, author of "US County-Level Trends
in Mortality Rates for Major Causes of Death,
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