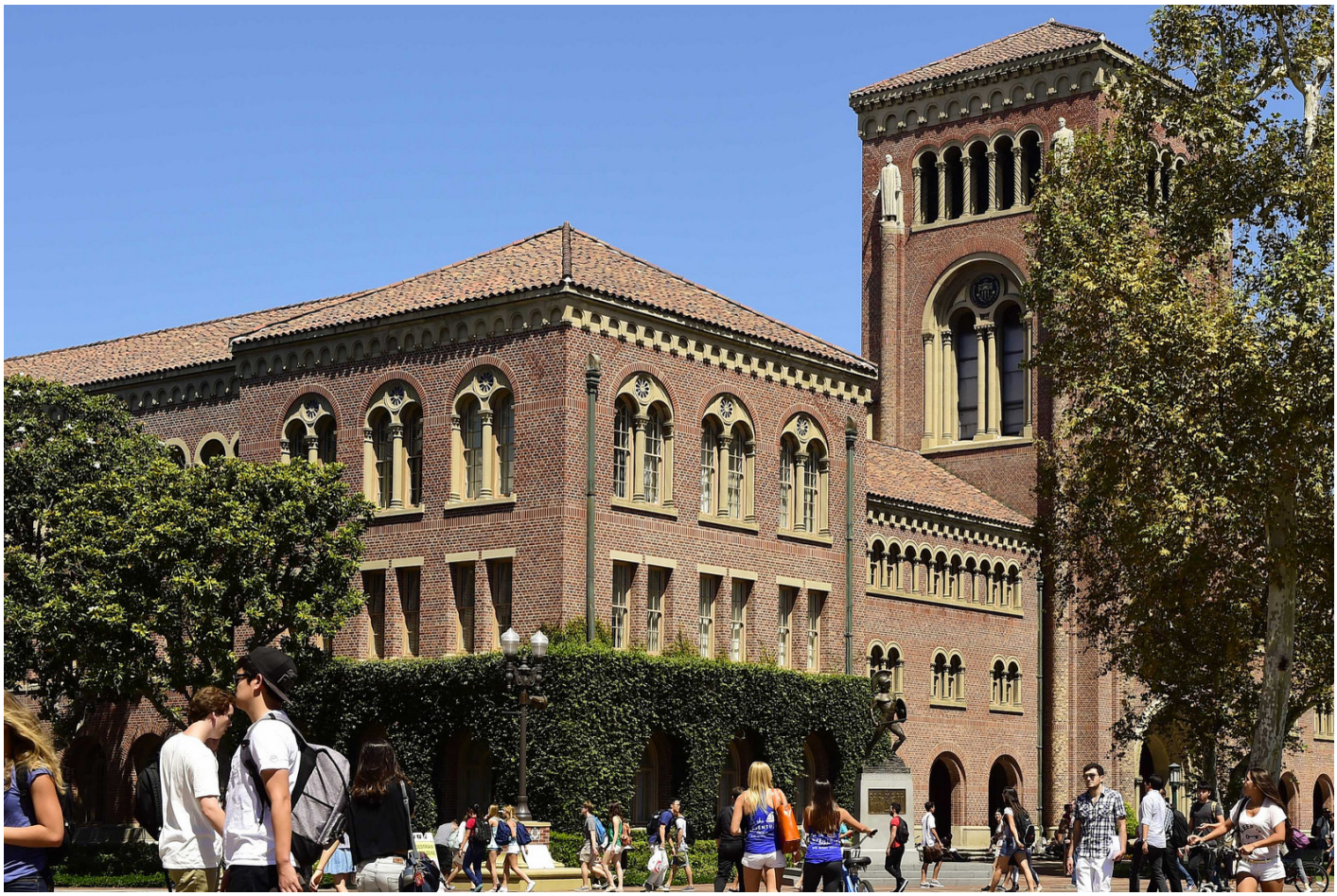
USC algorithm could reduce spread of infectious diseases

By **Greg Slabodkin**

February 26, 2018, 7:33 a.m. EST

An algorithm developed at the University of Southern California could help public health outreach campaigns better locate and treat people living with undiagnosed infectious diseases such as tuberculosis and gonorrhea.

Researchers from the USC Center for Artificial Intelligence in Society used data—including behavioral, demographic and epidemic trends—to create a novel model of disease spread that both captures the underlying population dynamics and contact patterns between people.



Also See: USC releases MRI stroke dataset to spur AI research

"While there are many methods to identify patient populations for health outreach campaigns, not many consider the interaction between changing population patterns and disease dynamics over time," says Sze-chuan Suen, an assistant professor of industrial and systems engineering and assistant professor in the Leonard D. Schaeffer Center for Health Policy and Economics. "Fewer still consider how to use an algorithmic approach to optimize these policies given the uncertainty of our estimates of these disease dynamics. We take both of these effects into account in our approach."

In a study, published earlier this month at the AAAI Conference on Artificial Intelligence, the algorithm demonstrated in computer simulations that it did a better job at reducing two real-

world disease cases— tuberculosis in India and gonorrhea in the United States—than current health outreach policies by sharing information about these diseases with individuals who might be most at risk.

In fact, the algorithm produced a policy that is predicted to avert an average of least 8,000 person-years of tuberculosis and 20,000 person-years of gonorrhea annually, compared with current policy.

"Our study shows that a sophisticated algorithm can substantially reduce disease spread overall," says Bryan Wilder, the first author of the paper and a doctoral candidate in computer science. "We can make a big difference, and even save lives, just by being a little bit smarter about how we use resources and share health information with the public."

By leveraging data analytics and machine learning methods, researchers believe this type of algorithm could improve health outcomes for other infectious disease interventions, such as HIV and influenza.

Greg Slabodkin Managing Editor, Health Data Management

Public health | Artificial intelligence | Machine learning | Diseases and conditions | Disease management programs

TRENDING

HIT

What should lie ahead for healthcare IT in the next decade

As Health Data Management wraps up 27 years of reporting on the healthcare information technology industry today, it gives me a chance to pause and reflect, and to look hopefully toward the future for the industry.

By Fred Bazzoli February 13

DATA PRIVACY

VA apps pose privacy risk to veterans' healthcare data

The increasing use of apps provided by the Department of Veterans Affairs is meant to improve access to patient health and benefits information in convenient digital platforms. However, members of Congress are worried that this electronic data is vulnerable.

By Greg Slabodkin February 13

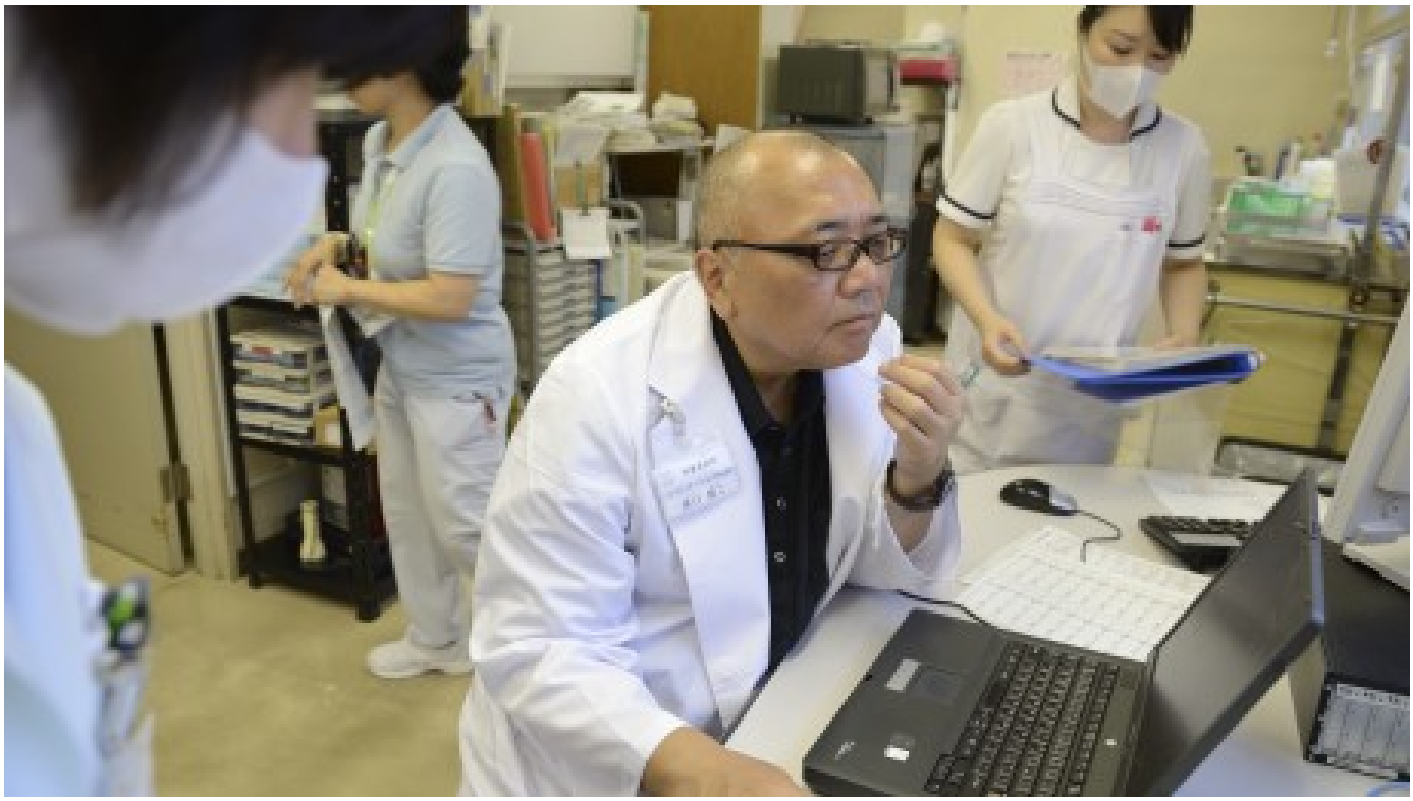
EHR IMPLEMENTATIONS

House panel to hold hearing on VA delay of first EHR go-live

The chair of the House subcommittee charged with legislative oversight of the VA's Cerner electronic health record implementation is concerned about the agency's decision to delay the EHR's initial go-live.

By Greg Slabodkin February 13

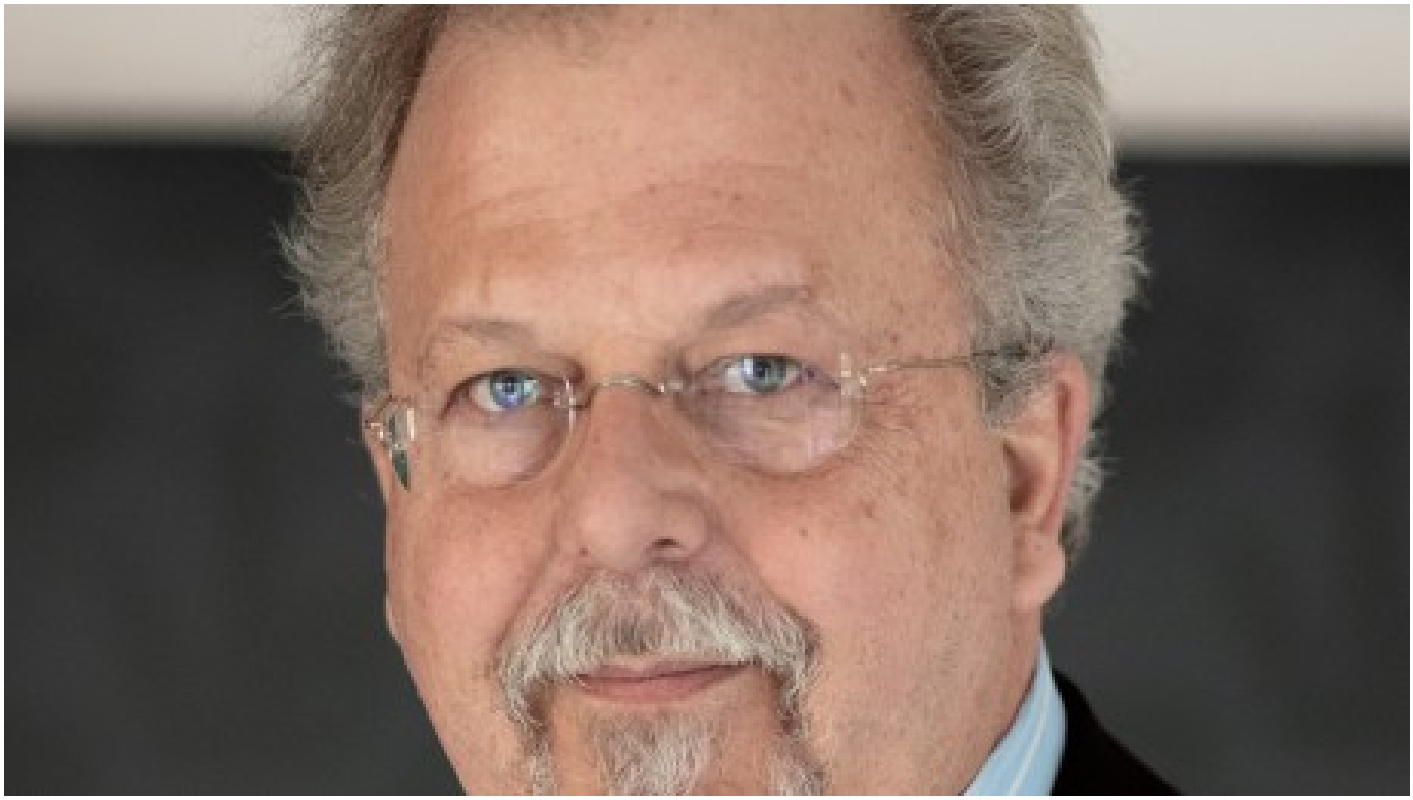
MORE FROM HEALTH DATA MANAGEMENT



DISEASES AND CONDITIONS

Health standards organizations help codify novel coronavirus info

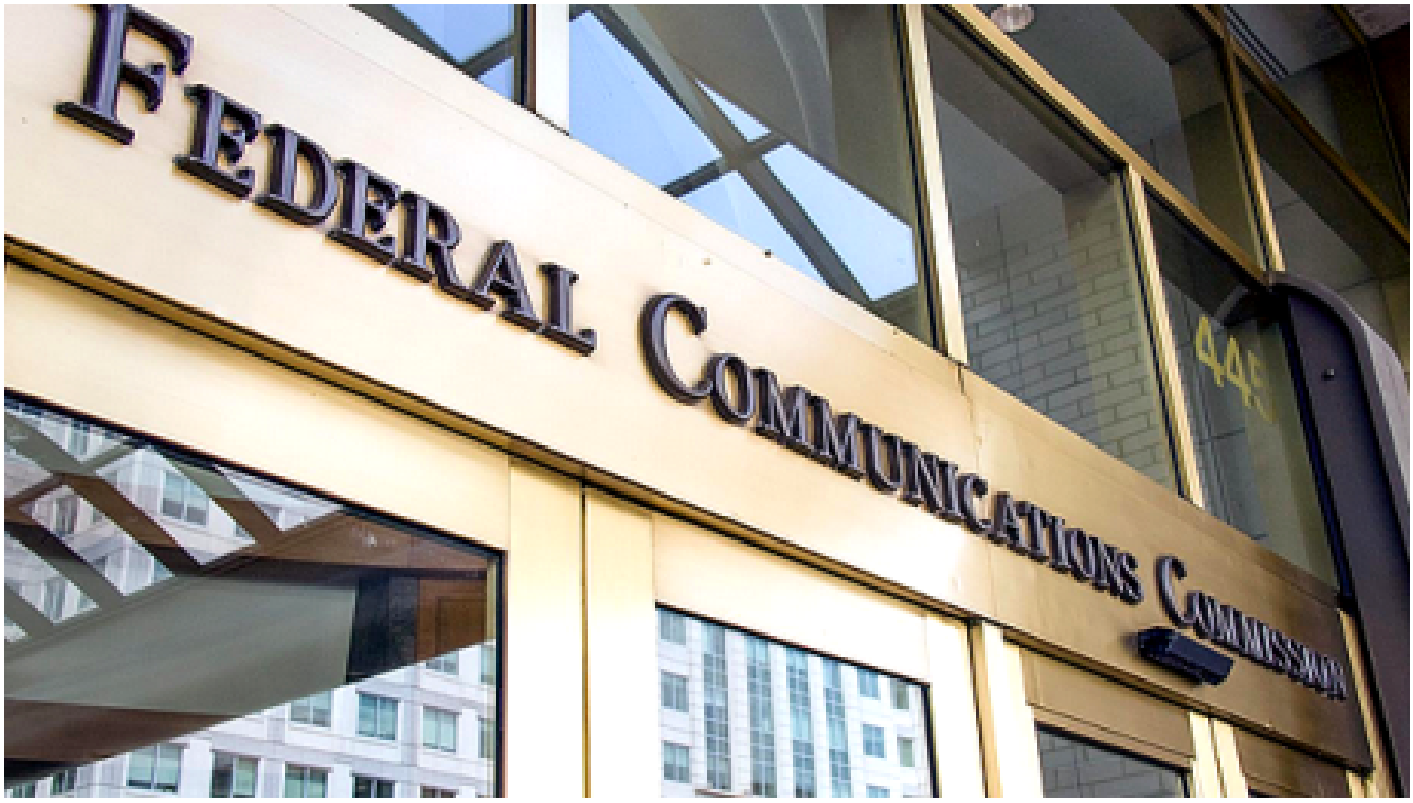
By Fred Bazzoli February 13



VALUE-BASED CARE

Apervita's NCQA approval helps health plans speed VBC analysis

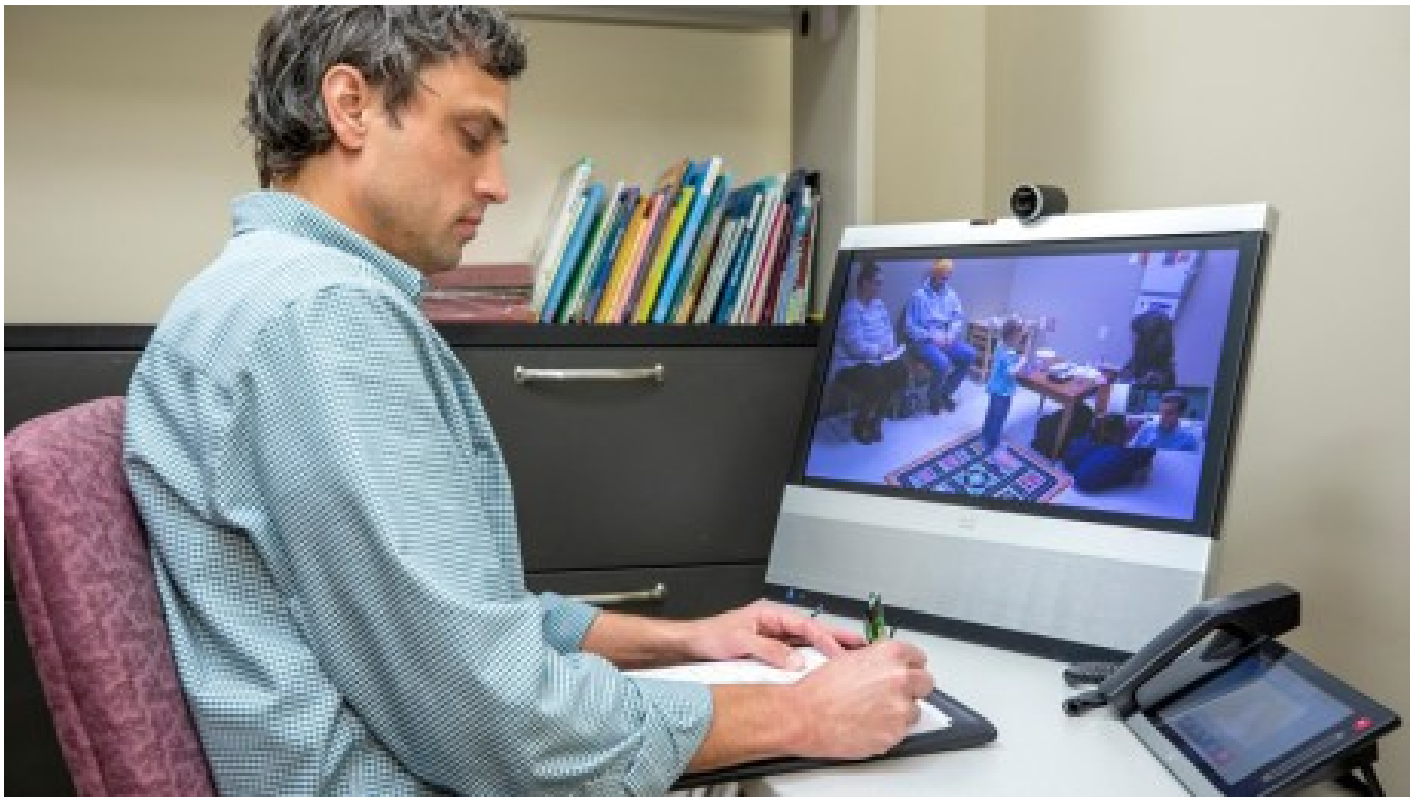
By Diana Manos February 12



TELEHEALTH

FCC close to finalizing $100M telehealth pilot program

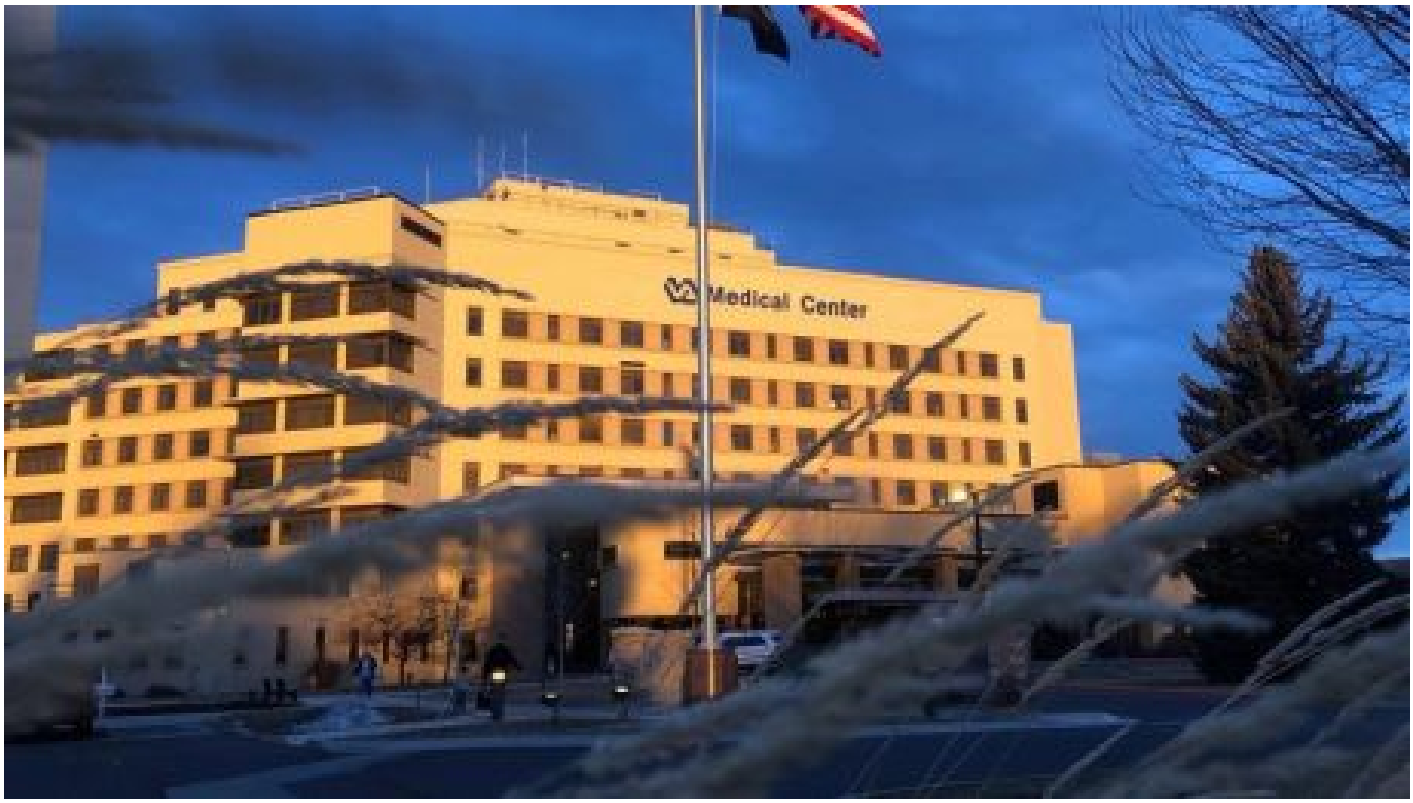
By Greg Slabodkin February 12



TELEHEALTH

Louisiana Medicaid plan launches telehealth effort

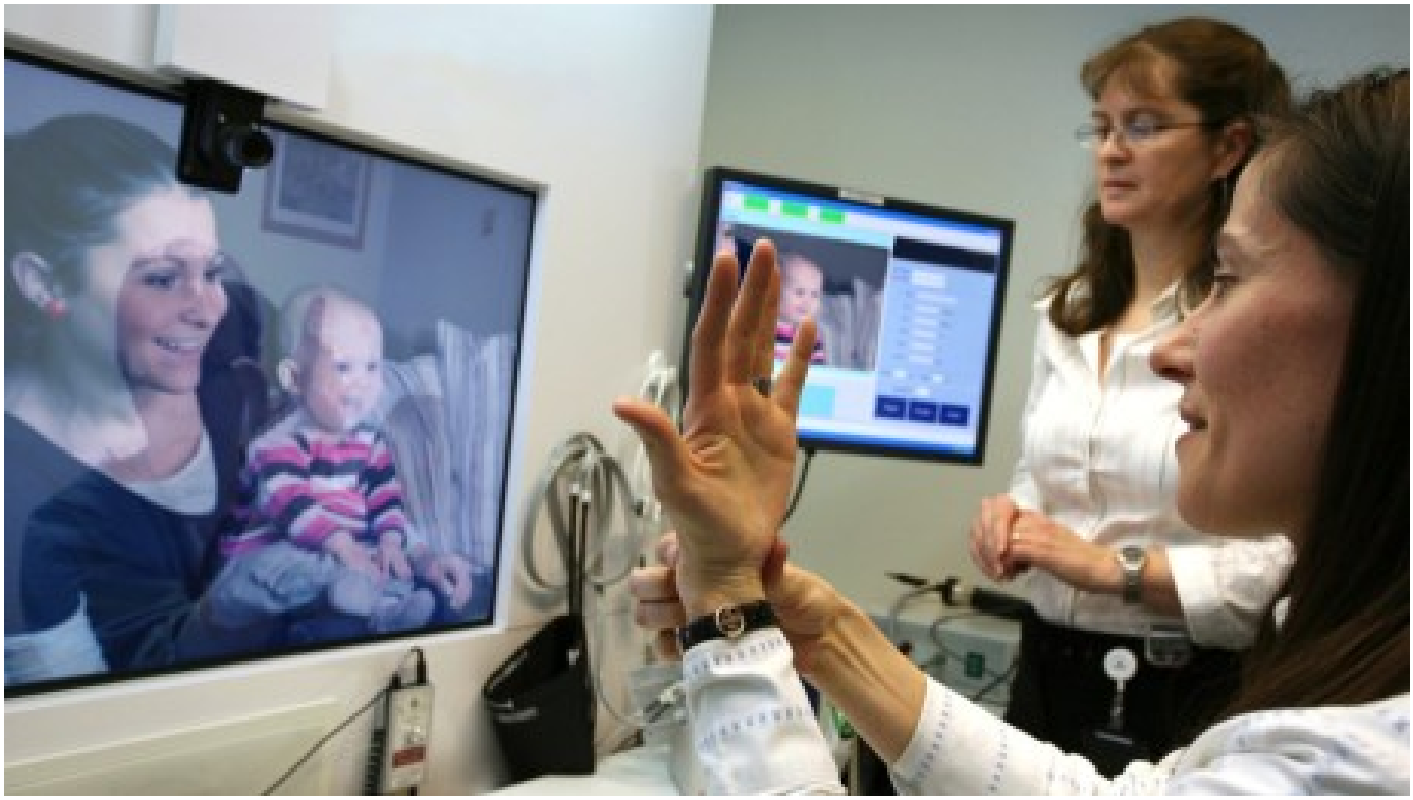
By Diana Manos February 11



EHR IMPLEMENTATIONS

VA delays first go-live of Cerner EHR at Spokane center

By Greg Slabodkin February 11



TELEHEALTH

House bill would require national telehealth strategy from feds

By Greg Slabodkin February 11

Great expectations for I.T. in the 2020s

Efforts to improve patient care and capitalize on vast stores of medical information will lean heavily on healthcare information systems—many experts believe computerization must pay off now