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# What the Hospitals of the Future Look Like

The sprawling institutions we know are radically changing—becoming smaller, more digital, or disappearing completely. The result should be cheaper and better care.

By *Laura Landro*

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The days of the hospital as we know it may be numbered.

In a shift away from their traditional inpatient facilities, health-care providers are investing in outpatient clinics, same-day surgery centers, free-standing emergency rooms and microhospitals, which offer as few as eight beds for overnight stays. They are setting up programs that monitor people 24/7 in their own homes. And they are turning to digital technology to treat and keep tabs on patients remotely from a high-tech hub.

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For the most part, the investments in outside treatment are driven by simple economics: Traditional hospital care is too costly and inefficient for many medical issues. Inpatient pneumonia treatment, for example, can cost 15 to 25 times more, yet many low-risk patients who could be safely treated as outpatients are hospitalized, studies have shown.

And being hospitalized carries its own risks: With the rise in antibiotic-resistant bacteria, at any given time one in 25 patients in the U.S. is battling an infection acquired in the hospital, according to the Centers for Disease Control and Prevention—at a cost of \$10 billion annually for the five

most common infections.

But patient preferences for how they get care and a national focus on more prevention and wellness are also driving the new models.

“We should be investing in people and processes, not hospitals,” says David Feinberg, president and chief executive of Geisinger Health System, which is based in Danville, Pa., and has 13 hospitals in New Jersey and Pennsylvania and a health-insurance plan. His goal: to put his own hospitals “out of business” by keeping patients healthier and engaging them in improving their own well-being.

Already, the U.S. has more hospital beds than it needs in most markets, suggests a March 2017 report by Medpac, an independent analysis group reporting to Congress. The average hospital-occupancy rate was just 62% in 2015. There were also more hospital closings than openings over the four years ending in 2015, with nearly half of those converting to outpatient-only facilities. Hospitals have continued to close their doors, especially in rural areas, and a spate of mergers will speed consolidation.

“If technological and reimbursement trends continue—including large cuts to Medicare—it is likely that the country would need fewer hospitals,” says Ken Kaufman, chairman of health-care advisory firm Kaufman Hall.

Hospitals could also be squeezed as large employers band together to reduce health-care costs, such as the recent announcement that Amazon.com Inc., Berkshire Hathaway Inc. and JP Morgan Chase & Co. are forming a company to provide less-expensive health care for their employees.

To be sure, there will always be a need for modern full-service hospitals to care for the sickest patients, perform complex and risky procedures and deal with trauma cases.

“Hospitals aren’t going away anytime soon, nor should they,” says Jennifer Wiler, executive director of the Care Innovation Center at UCHealth, a Colorado-based health-care system, and vice chairwoman of emergency medicine at the University of Colorado School of Medicine. “But the traditional model of a hospital as the hub of care with a single facility providing every facet of treatment is changing.”

Bruce Leff, a geriatrician and professor at Johns Hopkins University School of Medicine predicts, “Hospitals will start to evolve into large intensive-care units, where you go to get highly specialized, highly technical or serious critical care.”

Payment models for shifting care out of hospitals are being worked out, but Medicare and private insurers are weighing various reimbursement approaches such as bundled payments, which provide a single sum for 30 days of services, regardless of where they are delivered.

Here’s a look at some of the changes coming to the traditional hospital model.

### Help patients at home

Studies by Dr. Leff and others show hospital-level care at home for certain conditions can be provided for 30% to 50% less than inpatient care with fewer complications, lower mortality rates and higher patient satisfaction.

New York’s Mount Sinai Hospital has developed a hospital-at-home program, HaH-plus, for some patients who show up at the emergency department or are referred by their primary-care doctors. A mobile acute-care team provides staffing, medical equipment, medications and lab tests at home, and is on call 24/7 if a condition worsens.

“For some admissions, we can avoid the emergency department, but for most admissions like pneumonia or dehydration or a skin infection, we evaluate them in the ED and then send them home in an ambulance with an IV in place,” says Linda DeCherrie, clinical director of Mount Sinai at Home. The HaH-plus program provides 30 days of care, including referring patients back to primary-care doctors and connecting them to services they need to avoid readmission.



Mount Sinai Hospital in New York has developed a program called HaH-plus that delivers hospital-level care at home for some conditions for 30 days. PHOTO: BESS ADLER FOR THE WALL STREET JOURNAL

Mount Sinai estimates that nationally, 575,000 cases each year could qualify for such a program, and treating just 20% of those could save Medicare \$45 million annually. Mount Sinai is working with Contessa Health, which manages bundled-payment arrangements for hospital-at-home services, and plans to expand the home program to other areas, such as patients recovering from surgeries that would typically require an inpatient stay.

Richard Rakowski, chief executive of hospital-at-home provider Medically Home, estimates that eventually as much as 30% of care once provided in a hospital may be delivered at home.

One patient who saw a benefit from hospital-at-home care was Phyllis Camaratta, a heart-failure patient living in Malden, Mass. After three years in and out of the hospital, the 93-year-old says she didn't want to go back after she became ill again last fall. When a nurse practitioner suggested a Medically Home program offered through her health-care provider Atrius Health, Ms. Camaratta agreed to try it.

At first, she says, she was a little overwhelmed by how many people showed up to provide care, check her condition, set up equipment and perform tests on portable machines. But she was impressed by the care, including a daily video consult via iPad so a doctor could see if her legs had too much swelling from fluid buildup.

At the end of a month, she was discharged from the program and referred to a new primary-care doctor. "We were so impressed that they could do all the same things they did in the hospital and have my mother be comfortable in her own bed and her own bathroom...with family and familiar surroundings," says her daughter, Debbie Camaratta. "She was in a very fragile state, but The care really helped her bounce back to the best she can be at this age."

### **Build smaller facilities**

To offer services and expand in locales where it doesn't make sense to build a new hospital, health systems are building free-standing emergency rooms and microhospitals, commonly called neighborhood hospitals. The scope of services varies, but microhospitals usually include emergency rooms and beds for short-stay recovery.

Houston-based Emerus Holdings Inc. partners with big health systems to open microhospitals. Commonly called neighborhood hospitals, they typically anchor a two- or three-story "healthplex" buildings with emergency care, labor and delivery, surgical procedures and lab and radiology services. For example, it has opened four in partnership with Dignity Health-St. Rose Dominican, which operates hospitals and other medical facilities in southern Nevada, allowing the system to expand services to a broader area around Las Vegas. And Emerus is joining with Highmark Health, which includes health plans and the Allegheny Health Network, operator of West Penn Hospital, to build multiple neighborhood hospitals in western Pennsylvania.

Typically, 92% of patients who come to the microhospitals are treated and sent home in an average of 90 minutes, and 8% are admitted overnight for care such as intravenous-medication administration, according to Chief Executive Craig Goguen. If need be, patients can be transferred to higher-level care, such as a hospital cardiac-catheterization lab, sometimes in less time than it takes in a hospital's own emergency room, Mr. Goguen says.

Michigan Medicine, the academic medical center of the University of Michigan, is completing a nearly 300,000-square-foot center in Brighton, Mich., which will house more than 40 specialty services for adults and children, cancer treatment, operating rooms and a short-stay unit. Eventually, most patients who aren't acutely ill "will be getting care in an outpatient center that can do everything short of admitting you, and maybe just watch you overnight," says David A. Spahlinger, president of the University of Michigan health system.

Ochsner Health System, Louisiana's largest nonprofit academic health system, has 30 owned, managed or affiliated hospitals. President and Chief Executive Warner Thomas says 80% of its capital expenditures are going to outpatient clinics, and "I don't see us building new hospitals."

In the Baton Rouge area, for example, in addition to a recently opened outpatient cancer center, it is developing a medical office building with more primary-care and diagnostic and specialty clinics. Attached to the building will be a 10-bed inpatient hospital and surgical center, which Mr. Thomas says will offer procedures such as knee replacements requiring stays of 24 hours or less.

### **Find new uses for old hospitals**

In some cases, health systems are taking existing hospitals and turning them into specialized facilities.

After buying the River Parishes Hospital in LaPlace, La., three years ago, Ochsner joined with a provider of psychiatric and addiction treatment to convert the hospital to an inpatient psychiatric facility to provide services for mental-health disorders. Emergency care once

provided at River Parishes is now offered at a new medical complex including 24/7 emergency services with 13 beds and on-site lab and radiology.

In New York, after Mount Sinai Health System's 2013 acquisition of Continuum, a network of community hospitals, it no longer made sense to operate all of them as full-service hospitals, says Kenneth L. Davis, Mount Sinai's president and chief executive.

The focus now has been on converting the facilities to centers for specialty care, while continuing to ensure that each hospital can handle emergencies and other community needs, Dr. Davis says. The former Roosevelt Hospital, on Manhattan's West Side, for example, has been rebranded as Mount Sinai West, specializing in orthopedics, neurosurgery and complex ear, nose and throat cases, as well as mother-and-child services.

St. Luke's Hospital in West Harlem is specializing in cardiac interventions, circulation restoration, weight-loss surgery and orthopedic trauma cases. Mount Sinai is replacing the antiquated Beth Israel hospital with a new downtown network of primary, specialty, urgent, behavioral and outpatient-surgery services, as well as a new hospital designed for short stays and procedures with an emergency department. And New York Eye and Ear Infirmary's current site will be transformed into a full-scale ER with stroke and heart care, along with beds for short stays.

The goal is to care for each patient in the most appropriate setting, whether in a traditional hospital bed, an outpatient center or at home, Dr. Davis says. While Mount Sinai has faced questions from some groups concerned about a reduction in the number of hospital beds, especially should there be a citywide emergency, "we can't build facilities for doomsday," Dr. Davis says. "We need a new model of care that focuses on wellness and prevention and keeps people out of hospitals."

### Reach out to those at risk

The population-health strategy at Geisinger Health System includes identifying groups who can benefit from programs to improve health and avoid hospitalization, such as diabetics whose blood sugar isn't well controlled. Dr. Feinberg says preventive care could have prevented foot amputations in many such patients in Geisinger hospitals.



To improve health and reduce hospitalization from diabetes, Geisinger Health System runs a Fresh Food Farmacy for patients in Shamokin, Pa. PHOTO: GEISINGER

In Shamokin, Pa., for example, about 50% of the population is predisposed to diabetes, mostly due to obesity, and one in three residents is considered "food insecure." A healthier diet can lead to improvement in the disease. In a pilot program, Geisinger established a Fresh Food Farmacy, prescribing fruits, vegetables, lean proteins and whole grains, and providing them free to patients and families who need assistance, along with diabetes education, cooking tools and recipes.

Dr. Feinberg says Geisinger has seen a decrease in blood-sugar levels for participating patients, "and we are scaling the program up as fast as we can."

Research is helping identify the health risks of other patients. A study of Geisinger electronic health records, published in *JAMA Internal Medicine* in 2016, suggested that patients who lived near heavy gas-drilling activity from fracking in Pennsylvania face a larger risk of asthma attacks. And a 2013 study of Geisinger patient records found that proximity to high-density livestock production was associated with MRSA, a form of staph. Doctors can wait until

children “We can wait until kids show up with asthma or come in with a staph infection, or go into the community and intervene with those people who have risk factors,” Dr. Feinberg says.

Geisinger is also conducting a study, the MyCode Community Health Initiative, sequencing the genome of volunteers to look for risks such as cancer and heart disease. So far more than 170,000 patients have signed on; in many cases, Dr. Feinberg says, “people have a medically actionable condition, and there is something we can do.”

### Help from afar

More hospital systems are reducing the need for large hospitals staffed by high-level specialists by investing in telemedicine. This technology lets doctors in one or more central hubs monitor and care for patients in widely dispersed intensive-care units, such as stroke victims and premature newborns.

For instance, specialists using two-way video and audio technology can monitor and recommend care for newborns in multiple neonatal units from one hub, while a patient with a rash or wound needing special care can use Skype or FaceTime to consult with a specialist from their local doctor’s office, home computer or mobile phone. Telemedicine also allows local practitioners to consult remotely face to face with experts in big medical centers.



In Midvale, Utah, near Salt Lake City, Intermountain Health Care’s telemedicine center links small hospitals to big-hospital expertise. PHOTO: INTERMOUNTAIN

With 179 hospitals, HCA Healthcare Inc. still sees demand for more hospital capacity in its markets, adding 1,350 inpatient beds over the past three years, with plans for 2,000 more in the next three years. But last year, HCA also provided 115,000 telehealth consults, including for hospitals it doesn’t own. “Telehealth is the glue that allows us to transcend time and geography,” says Jonathan Perlin, president, clinical services, and chief medical officer of HCA. Dr. Perlin says HCA guarantees it can remotely evaluate stroke patients within 15 minutes of a request to help local doctors determine whether to administer clot-busting drugs or transfer a patient to a higher level of care.

Intermountain Health Care, based in Salt Lake City, with 22 hospitals in Utah and one in Idaho, uses telemedicine for patients in its more far-flung locations. In Utah, smaller rural hospitals can connect emergency-department patients with crisis-care workers in Salt Lake City. Intermountain Medical Center also offers remote outpatient psychiatry consults, as well as guiding local treatment of wounds.

Eighteen rural hospitals, for example including two it doesn’t own, have access to remote neonatologists, and more than 1,000 patients have been treated through its telestroke program, administered by experts at its main Intermountain Medical Center to patients in emergency rooms across its system.

“We aren’t interested in building more bricks and mortar, but are leveraging technology to expand our reach and our footprint,” says Jim Sheets, Intermountain Healthcare vice president of outreach services. “Patients and families shouldn’t be penalized because they were born in Blanding, Utah, and don’t have access to the level of acute care we have in Salt Lake City.”

### Make hospitals more efficient

As less-complex care moves outside of their walls, traditional hospitals are turning to big data and the science of predictive analytics to improve care of the sickest patients. That allows them

to better recognize who is deteriorating quickly in intensive care, identify which patients are likely to end up back in the hospital once they've been discharged, and make sure operating rooms are available when needed for surgeries.

UCHealth in Colorado typically assigned blocks of operating-room time to surgeons, but the full allocations weren't always used, and there was no reliable way to open them up for other surgeons and procedures, according to Steve Hess, UCHealth's chief information officer.

In partnership with Silicon Valley company LeanTaas, UCHealth has adopted a program called iQueue, which analyzes data about how surgeons are using their operating-room time, identifies the causes of delays such as starting the first case late, and pinpoints other problems causing bottlenecks. It uses machine learning to detect patterns of over- or underuse and reallocates operating-room time as needed.

"We can easily see if a surgeon is consistently using only two-thirds of an eight-hour block, and whether we can easily reduce that to six hours without any pain," says Mr. Hess. Surgeons get early warnings when their use of operating-room time approaches lower bounds set by the hospital. And surgeons can use their mobile phones to release assigned blocks, request blocks and swap time with other colleagues.

"Many hospitals would say we need to build more ORs instead of trying to optimize the 10 we have," says Mr. Hess. "But we know the increase in health-care costs is unsustainable, and we have to do things more efficiently."

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