

global climate change. We don't know whether there was always a low incidence of silent, unrecognized cases of scrub typhus in South Korea and Chile, but I suspect that they were always present in those countries. Similar speculation may apply to the identification of scrub typhus in Africa, where the dominant concern about malaria may have overshadowed even a substantial incidence of scrub typhus, allowing it to go unrecognized.⁵

The newly recognized appearance of an unsuspected infectious zoonotic and vectorborne disease in a location far from its known established geographic distribution often provokes hypotheses about transport of a vector by migratory birds or ancient separation of the geographic areas by continental drift. The feasibility

of chiggers feeding on migratory birds on a very long trip from the Asian Pacific "tsutsugamushi triangle" is unknown and will depend both on whether the *O. tsutsugamushi* vector is identified on Chiloé Island and on the vector's host preferences. Of equal importance would be the appropriate ecologic conditions for the vector's establishment and maintenance on Chiloé Island.

Alternatively, natural cycles of *O. tsutsugamushi* with a large geographic distribution may have existed unrecognized for eons. Perhaps ongoing investigations of the vector and its natural cycle on Chiloé Island and possibly elsewhere in the Western Hemisphere will contribute usefully to our knowledge and our ability to prevent scrub typhus outbreaks in the future.

Disclosure forms provided by the author are available at NEJM.org.

From the Center for Biodefense and Emerging Infectious Diseases, University of Texas Medical Branch, Galveston.

1. Paris DH, Shelite TR, Day NP, Walker DH. Unresolved problems related to scrub typhus: a seriously neglected life-threatening disease. *Am J Trop Med Hyg* 2013;89:301-7.
2. Valbuena G, Walker DH. Approaches to vaccines against *Orientia tsutsugamushi*. *Front Cell Infect Microbiol* 2013;2:170.
3. Moron CG, Popov VL, Feng HM, Wear D, Walker DH. Identification of the target cells of *Orientia tsutsugamushi* in human cases of scrub typhus. *Mod Pathol* 2001;14:752-9.
4. Paris DH, Chattopadhyay S, Jiang J, et al. A nonhuman primate scrub typhus model: protective immune responses induced by pKarp47 DNA vaccination in cynomolgus macaques. *J Immunol* 2015;194:1702-16.
5. Horton KC, Jiang J, Maina A, et al. Evidence of rickettsia and orientia infections among abattoir workers in Djibouti. *Am J Trop Med Hyg* 2016;95:462-5.

DOI: 10.1056/NEJMp1608499

Copyright © 2016 Massachusetts Medical Society.

Flipping the Script — A Patient-Centered Approach to Fixing Acute Care

Keith E. Kocher, M.D., M.P.H., and John Z. Ayanian, M.D., M.P.P.

When confronted with an unanticipated acute need for health care, patients must weigh multiple complex considerations, including costs, time constraints imposed by family responsibilities and job obligations, and uncertainty about whether their symptoms represent a minor illness or a more serious condition that could worsen if diagnosis and treatment are delayed. Patients must also consider a range of potential local care options, each with a different degree of accessibility and different costs. The relative importance of these factors will vary from person to person and according to the perceived

acuteness and seriousness of the health condition. But ultimately, patients seek what acute care providers offer: diagnosis, treatment, alleviation of symptoms, and reassurance.

Acute care addresses a broad range of patient concerns and medical conditions, yet it lacks a consistent and well-accepted definition. One recent conceptual model has sought to address this gap.¹ Sometimes described as first-contact care, acute care accounts for about one third of all outpatient health services delivered in the United States.² It addresses problems ranging from self-limited symptoms and minor

injuries to major trauma, severe exacerbations of chronic disease, and life-threatening illnesses. Providers of such care must respond to needs of both otherwise healthy and chronically ill people of all ages and from all demographic groups.

The key common feature of these diverse conditions is their apparent time sensitivity — the patient identifies an acute need for health care. Because such a need can occur at any hour of the day on any day of the year, demand for acute care services is often unpredictable, necessitating health care organizations' ongoing investment in fixed facility

costs, after-hours staffing, and standby capacity. Unfortunately, the health system's responsiveness when providing acute care frequently falls short of patients' expectations and needs.

The system that constitutes the U.S. response to acute health care needs is highly fragmented, with inconsistent quality and availability that can result in substantial delays in care. It consists of a patchwork of primary, specialty, and emergency care delivered in diverse settings, including physicians' offices, community health centers, free-standing urgent or

the perspective of payers and providers rather than that of patients. We believe that efforts to improve care for acute health needs should begin by placing patients at the center of the system. Four strategies premised on patients' perspectives can promote the development of a more responsive, efficient, and value-driven acute care system.

The first strategy is to maximize value by adopting a patient-centered focus on the timeliness of acute care. A recent Institute of Medicine report highlighted timeliness as one of the least-

ue in health care is that there's little accountability for consistently providing timely care. Timeliness will become a priority only if clinics, hospital emergency departments, clinicians, and health systems face financial or reputational consequences for inappropriately delayed responses to patients' acute needs.

Second, we can change organizational structures to align with a patient-centered understanding of acute care. Waits for care are common, generally believed to be inherent to health care delivery, and frequently blamed on resource limitations. Nonetheless, solutions requiring few additional resources can often be developed with improved planning and more rational scheduling, facilitated by the application of queuing theory and principles of industrial engineering. In contrast, telehealth innovations may require more investment in infrastructure and in overcoming existing reimbursement and regulatory obstacles but have the potential advantage of serving some acute care needs of patients from a distance. Solutions will also be advanced by the implementation of a more comprehensive approach to organizing care that allows for innovation and sharing of successful strategies among diverse practice settings and communities. For example, timely access to after-hours urgent care could be improved with the development of large-scale primary care cooperatives, which play a prominent role in the Netherlands.⁴

A third strategy is to develop measurement standards that permit accurate evaluations of the aspects of acute care performance that are meaningful to patients. Change can be accelerated by

Efforts to improve care should begin by placing patients at the center of the system. Strategies premised on patients' perspectives can promote the development of a more responsive, efficient, value-driven acute care system.

emergency care centers, retail clinics, and hospital emergency departments, as well as telehealth approaches. Many of these organizations cannot share records, communicate effectively, or coordinate care with one another.

Moreover, with little price transparency and sparse guidance for making informed decisions about when and where to seek acute care, patients facing a health crisis are often constrained by geography, typically have little opportunity to shop on the basis of price or quality, and therefore have limited understanding of their choices and the consequences of their decisions. Too often, the acute care system suffers from a fundamental problem: a model of care that adopts

studied aims of a high-quality health system.³ Despite the lack of relevant research, we can define timeliness as system accessibility when patients are seeking care, which affects the effectiveness and efficiency of that care. Timely guidance and access to proficient care matter to patients, whether they have a minor illness or a life-threatening one, and in some circumstances may be enhanced when patients maintain continuity with a usual source of routine care. To maximize the value of acute care for patients, the health system will have to respond effectively to patients' unanticipated and unscheduled health needs.

The primary challenge in adopting timeliness as a universal val-

tying payment to such measures. Assessments can include process measures of acute care such as timeliness of access, diagnosis, and treatment; outcome metrics such as symptom relief and functional recovery; and costs related to episodes of care. Metric development in this area is in its infancy but could incorporate patient-reported outcomes pertaining to relief of pain and other acute symptoms or successful return to physical and social functioning.

Few, if any, clinics, hospitals, or health systems can meaningfully measure patient outcomes or calculate costs related to an episode of acute illness. This work is challenging, since acute care episodes often involve multiple sites (clinics, free-standing urgent care centers, hospital emergency departments, and skilled nursing facilities could all be involved); may cross borders between different providers, payers, and record-keeping systems; and tend to be defined by symptoms (e.g., chest pain) rather than diagnoses (e.g., acute myocardial infarction) or procedures (e.g., coronary-artery bypass grafting). Improvements in quality or costs require a clear understanding of the resources needed to deliver care during an

acute illness and the outcomes that are meaningful to patients.

Fourth, we can improve the efficiency of spending by fully integrating acute care into alternative payment models. Such models, particularly comprehensive population-based payments tied to the care of a group of patients, may better align payer and provider incentives with patients' needs by allowing acute care to be provided in varied settings while encouraging more effective use of slack in the system's capacity in order to address those needs in a more timely fashion. For example, if less severe illnesses can be managed efficiently in a hospital emergency department, should patients delay treatment to be seen in an office setting the next day? In addition, assessments of and responses to patients' acute health needs may improve when integrated delivery systems are responsible for the total cost of an episode of acute care and are accountable for the consequences of that care.⁵

Acute illness represents a substantial responsibility for the U.S. health care system, yet it has largely been overlooked in reform efforts focused on chronic disease management and hospital inpatient services. Current approach-

es to acute care are plagued by inefficiency, fragmentation, and redundancy. Fundamentally, to optimize our health system's responsiveness to acute care needs, we will have to place patients at the center of the delivery system.

Disclosure forms provided by the authors are available at NEJM.org.

From the Department of Emergency Medicine (K.E.K.) and the Division of General Medicine, Department of Internal Medicine (J.Z.A.), University of Michigan Medical School, the Center for Healthcare Outcomes and Policy (K.E.K.), the Institute for Healthcare Policy and Innovation (K.E.K., J.Z.A.), and the Gerald R. Ford School of Public Policy (J.Z.A.), University of Michigan, and the Department of Health Management and Policy, University of Michigan School of Public Health (J.Z.A.) — all in Ann Arbor.

1. Pines JM, Lotrecchiano GR, Zocchi MS, et al. A conceptual model for episodes of acute, unscheduled care. *Ann Emerg Med* 2016 June 30 (Epub ahead of print).
2. Pitts SR, Carrier ER, Rich EC, Kellermann AL. Where Americans get acute care: increasingly, it's not at their doctor's office. *Health Aff (Millwood)* 2010;29:1620-9.
3. Kaplan G, Lopez MH, McGinnis JM, eds. *Transforming health care scheduling and access: getting to now*. Washington, DC: Institute of Medicine, 2015.
4. Giesen P, Smits M, Huibers L, Grol R, Wensing M. Quality of after-hours primary care in the Netherlands: a narrative review. *Ann Intern Med* 2011;155:108-13.
5. Selevan J, Kindermann D, Pines JM, Fields WW. What accountable care organizations can learn from Kaiser Permanente California's acute care strategy. *Popul Health Manag* 2015;18:233-6.

DOI: 10.1056/NEJMp1601899

Copyright © 2016 Massachusetts Medical Society.