The Citadel Cannot Hold: Technologies Go Outside the Hospital, Patients and Doctors Too

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THE HOSPITAL, OUR TREATMENT INSTITUTION FOR the care of the sick in bed, is being downsized. That is well known. Many hospitals have closed, and many that continue to function have reduced their beds as their admissions decrease. Meanwhile, ambulatory visits to physicians and the use of diagnostic and treatment technologies in out-of-hospital and home settings have increased. The well-documented decline in hospital use and size has many interrelated explanations, which, however, are technical, clinical, and organizational; it is not a phenomenon that can be attributed either to institutional planning or to health care policies.

Five explanations for the reduction in beds are notable:

1. The decentralization of diagnostic-treatment technologies to out-of-hospital sites.
2. The clinical substitution of quick diagnostic *testing* of the ambulatory patient for the longer diagnostic *observation* and *testing* of the patient hospitalized in bed.
3. The diminished use of hospital bed rest and the expanded use of out-of-hospital exercise and activity for treatment, convalescence, and rehabilitation of both acute and chronic disablements.

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4. The corporate organization of hospital work that emphasizes process efficiency to reduce the lengths of stay in order either to achieve greater profits or to reduce costs.
5. The group practice organization of generalists and specialists that now provides more ambulatory diagnosis and treatment of patients with complex disorders whom practitioners had formerly admitted to the hospital.

As a result, the frequent uses of the hospital—for the patient's diagnosis, treatment, and convalescence/rehabilitation—are no longer so needed when a good deal of the work of patient care can be accomplished outside. How did this shift to care in the community happen, and what is the future of the hospital? A look back provides perspective on its uses and function to date.

Previous Uses of the Hospital

Residential Isolation and Operative Use

Historians have noted that general hospitals were founded in the 1600s to attend the "sick poor" with "medical relief," not simply to house "the poor" as "poor relief." The sick poor were removed from the community and hospitalized because of infectious disease, while persons with acute injury, surgical disorders, and, later, complicated pregnancies were admitted because the hospital's surgical interventions under anesthesia and aseptic conditions promised better "medical relief" than care at home, even when such care was available (Vogel 1980).

Bed Rest and Time Use

While the hospital offered housing, bed rest, and medical relief to the sick poor, those services in turn provided its practitioners with bedded patients and time. The expanded use of the general hospital derived from clinical and secular ideas about the body's need for bed rest in diagnosis, treatment, and convalescence/recovery. Bed rest served three clinical functions:

1. Diagnosis: the patient was available, permitting observation and prompt study of changing bodily signs and symptoms of disease.
2. Treatment: the patient's frail resistance, which had led to disease, was strengthened.
3. Convalescence/recovery: the patient was protected from the stresses of everyday life in order to regain bodily strength and vigor.

In diagnosis, the clinical dictum that drove professional thinking was the idea that, by careful observation of the patient, the diagnosis and "natural history of the disease" (its cause, course, and complications) would be discovered, and that such observation could best be accomplished by examining the patient over time in the hospital bed during the daily rounds or visits of physicians and surgeons, known as "attendings." Hospital stays often averaged 20 days, sometimes two months (Rosner 1982; Pashkow and Dafoe 1992). In treatment, bed rest that improved resistance was essential to prevent further bodily damage and to allow tissue healing. With convalescence/recovery, physicians and surgeons viewed rest as restorative to health, and they considered it their professional duty to the hospitalized sick to attend to them until they were fully recovered, free of pain, temperature, or distress or until their injury, surgical wound, or disease process was healed.

These rationales and uses of bed rest were to be accomplished while the patient was under the care of hospital nurses and the physician or surgeon. Moreover, keeping the patient in bed was the doctor's therapeutic signal to the patient and family that "everything was being done." Bed rest protected the doctor–patient relationship from mistreatment error, much as diagnostic testing may protect the doctor today from misdiagnosis—and perhaps malpractice. Even if the illness worsened under bed care, the physician felt assured that he or she would not be blamed for the poor outcome.

These ideas, both clinical and secular, about the benefits of bed rest for the patient and the doctor drove the expansion not only of the acute general hospital, but also of the similar, but specialized, treatment institutions: the tuberculosis sanatorium (Brown 1941; Dubos and Dubos 1952; Rothman 1994) and the mental hospital or sanitarium (Grob 1994). Both were designed for residential "rest cures" that meant relief from work and stress, renewed and strengthened resistance, time for healing and recovery, and, in both instances, isolation from the healthy community.

Technologies and Testing Use

From 1900 into the 1920s, hospital use and size expanded further with diagnostic technologies. The history is familiar. Hospitals began to develop and apply to patients the technologies that promised more accurate diagnosis, although rarely more effective treatment. The electrocardiogram (or EKG), the radiographs (or X rays), and the special laboratories in hematology, bacteriology, and chemistry all contributed to more accurate diagnoses, but not to "cures" (Flickenstein 1984; Howell 1989). Hospitals promoted these scientific benefits and opened their beds to patients of "all classes," particularly the private patients of their staffs (Cabot 1920; Rosner 1982; Howell 1989). Many hospitals then expanded their number of beds without assured financing from receipts of either hospital insurance or bonds, looking instead to voluntary funds. Their bed expansion was driven by the potential of their new technologies, which had already benefited their "free patients" and promised even greater social benefit if they were also made accessible to "paying" as well as "free" patients, with the former helping to finance the latter (Rosner 1982). By the 1930s and into the 1940s, the spread of hospital insurance to working- and middle-class persons in exchange for wages on the job increased the availability of hospital care and its diagnostic testing. Patients' out-of-pocket payments were not required for tests in the hospital, unlike tests performed at the doctors' offices.

Moreover, compared to the hospital, fewer testing technologies were then available in the doctor's community office or in community facilities; even when office tests were available, the requirement of out-of-pocket payments prevented their widespread, intensive use. Indeed, the diagnostic technologies at the doctor's office were of limited scope (Stoeckle and White 1985): blood counts and urinalysis (by office technicians, nurses, or even by the practitioner); X rays for chests, joints, and bones (offered by some general practitioners, chest physicians, and orthopedists); EKGs (by general practitioners, internists, and cardiologists); and bacteriologic samples, which might be cultured in office incubators. In addition to testing, there was some office surgery: incision and drainage of abscesses, excision of skin lesions, and biopsies.

Far more tests and surgeries took place in the hospital, and they were paid for by hospital insurance. As a result, the hospital became the doctor's workshop, a group practice of sorts around patients in bed, where diagnostic studies, consultations, and procedures could be organized and often delegated to nurses and technicians. With the growth of hospital

insurance during the 1930s and 1940s, the patient requested hospital admission "to have the tests done" without being asked to "pay the cash up front" that would be required at the doctor's office.

The Decline of Hospital Use

Decentralized Technologies

The idea of the hospital as a place to have a complete workup dominated the medical scene from the 1930s to the 1960s, when more diagnostic technologies became available; conditions then began to change. By the 1960s, technologies for testing and treatment were rapidly being decentralized and were becoming available at entrepreneurial sites in the community outside the hospital, namely, at ambulatory care, imaging, and surgical centers; group practices; walk-in units; clinics; and the offices of private individuals, where miniaturized technologies were used for quick analyses of blood and urine during the office visit. Office labs multiplied because health insurance policies now paid for outpatient testing and treatment (Stoeckle 1989). Although for-profit, the innovations for testing and treatment outside the hospital also improved the organization of these services, making them more accessible and convenient than the often centralized, bureaucratic hospital arrangements. Their more open appointment schedules permitted the community-based facilities better to meet the needs of working patients, who could be seen before and after work. They promised the patient who had undergone an operation in a free-standing clinic a quick return to work after convalescing at home rather than in the hospital. Care outside of the hospital, once viewed as symptomatic treatment of the "worried well" and as suitable for simple cases ("sniffles and sneezes," "aches and pains," "gas and indigestion"), shifted into "high tech" for diagnosis. Complex cases stayed outside under shared care by generalists and specialists, who both used the decentralized technologies to diagnose, to perform surgery (sometimes), and to provide the patient with continuing care.

Rapid Diagnosis versus Watchful Waiting

The use of testing outside was not only driven by the appearance of convenient, controlled, decentralized facilities or by profit, but also by changes in the nature and use of testing for managing illness. More rapid diagnosis became feasible and was soon pursued by patients and physi-

cians. Computerized tomography scans, magnetic resonance imaging, and ultrasonography, in addition to elaborate chemical, hormonal, and immunologic body fluid testing, quickly produced an internal anatomic examination and a functional-disease assessment of the ambulatory patient. This information about the body rapidly outstripped the traditional history and physical exam, blood and urine tests, and standard radiographs in producing the definitive diagnosis, if not the clinical hypothesis, of what disease was inside. The readily available modern testing techniques, and the quick transmission of the information to the practitioner (and the patient), stimulated new professional and, in turn, public expectations, namely, for the rapid diagnosis of bodily complaints. Quickly discovering a diagnosis in one or two days through outpatient testing was preferred to watchful waiting and empirical treatment. The physical exam performed on the outside of the body moved inside and was conducted on the ambulatory patient, who arrived with requests for tests as well as bodily complaints (Murphy and Goroll 1985).

In contrast, back in the 1950s, one might schedule a "GI" gastrointestinal ("stomach X ray") series for persistent unexplained "indigestion" only after treating the patient empirically and expectantly over a period of four to eight weeks. Such clinical tactics—taking a history of bodily complaints, conducting the physical exam, and providing empirical treatment, followed perhaps by standard radiological studies—were no longer sufficient. Although clinical outcomes of "watchful waiting" might not be any different for patient relief or the doctor's diagnosis, nonetheless, both patient and doctor now expect quick proof or disproof of diagnoses from the many more tests that are available.

Moreover, the modern press to test in the search for disease is not only for diagnosis and relief in the symptomatic patient, but also for early risk assessment and disease detection in the asymptomatic to promote prevention. For that early preventive treatment and risk reduction, even more testing information is now needed, or at least ordered (Epstein, Bess, and Mohad 1986).

The Decline of Bed Rest, the Rise of Exercise

As diagnostic testing moved outside and practitioners depended less on observation at bed rest, treatment also moved as it too relied decreasingly on bed rest, the major historical rationale of hospital care. This diminished use of bed rest did not develop as a result of explicit policies

directed toward cost, but rather because clinical studies on the physiology of bed rest did not support it (Dock 1944; Dietrick, Whedon, and Shorr 1948; Bergel 1990). Instead, a lay/professional exercise movement for universal physical fitness emerged for the disabled and the healthy alike, and went on to demonstrate the benefits of exercise over rest (Morris and Crawford 1958; Fixx 1977; Green 1986; Simon 1992; Curfman 1993). World War II had shown that convalescence of the injured proceeded more rapidly with exercise; since that time, a speedier return to work was shown not to harm the recently sick and disabled. The benefits of bed rest for tuberculosis that were ascribed to "taking the cure" at sanatoria were questioned by clinicians even before the use of antibiotic therapy made tuberculosis an outpatient disease (author's personal observation of medical practices at Raybrook Sanatorium in Raybrook, New York, 1947).

Some examples of the decline of bed rest as cure or care are notable, for example, for joints and muscles (low back pain and even rheumatoid arthritis), infections (hepatitis, mononucleosis, and tuberculosis), the disabled lung (chronic obstructive lung disease), and the impaired heart (myocardial infarction). Patients with these medical disorders were frequently admitted to hospitals for acute symptoms or signs and kept for long stays at bed rest. As clinical studies failed to reveal any harm to patients from activity and as new therapies reduced complications following discharge, the customary prescription of six to eight weeks of bed rest for a myocardial infarction, rationalized as a requirement to heal the damaged muscular tissue based on pathological studies (Mallory, Whig, and Salcedo-Salgar 1939), was first modified to bed and chair (Levine 1944; Levine and Lown 1952), then to shorter and shorter hospital stays (Hellerstein 1968; Hutter et al. 1973), finally dwindling down to five to seven days. Similarly, studies of acute low-back pain failed to reveal any benefit to bed rest except in the first few days (Deyo 1983), nor was there a differential benefit between strict bed rest and ward ambulation with rheumatoid arthritis (Mills et al. 1971). Bed rest was also demonstrated to be without benefit for hepatitis, mononucleosis, and tuberculosis treated with antibiotics (Chalmers et al. 1955; Darymple 1964), and patients disabled with shortness of breath from chronic obstructive pulmonary disease (emphysema) were improved by lung exercises (Baruch, Bickerman, and Beck 1952; Pierce et al. 1964; Fries and Killian 1990) rather than by rest—all in advance of diagnosis related groups (DRGs), giving practitioners the confidence not to hospitalize patients, to ambulate early those who were hospitalized, and to shorten hospital stays.

At the same time that bed rest was often found unnecessary and exercise beneficial in medical disorders, the new minimally invasive surgical technologies (e.g., laparoscopic surgery) also decreased hospital admissions, and the number of days of bed rest for recovery from surgeries done in the hospital was shortened. More and more operations, now estimated at 50 percent, are performed at day-care facilities or "surgicenters": some examples are herniorrhaphies, cholecystectomies, joint arthroscopies, and musculoskeletal repairs (American Hospital Association 1992). Even patients hospitalized for complex surgeries go home quickly, and those with joint replacement and coronary artery bypass grafts now leave in five to seven days. Surgeons gave up the use of the hospital for daily observation of their patients' recovery (not alone in response to cutting hospital treatment costs) because they had new clinical confidence in their patients' reformulated "post-op" recovery without prolonged bed rest under their daily hospital observation.

Besides the clinical demonstrations and growing skepticism about the benefits of bed rest, the lay/professional exercise movement for universal health, longevity, and physical fitness added to the new clinical confidence that injured, diseased, and disabled bodies could tolerate movement and exercise for convalescence at home without daily physician oversight. If needed, professional observation could be done at home by the visiting nurse (Altman and Walden 1993). Indeed, exercise programs designed for rehabilitation from acute injuries were first organized in the 1950s (Faxon 1959), and they are now widely prescribed. Professional confidence also continued to grow in doing ambulatory surgery both at free-standing and hospital ambulatory centers, followed by home convalescence and office observation. Finally, the old use (and perception) of the hospital bed as the last resort, "a place to die," has been supplanted by the lay/professional hospice movement that currently provides for some 300,000 patients to receive humane care while dying at home or in a hospice (Strahan 1994).

These changes in professional and public attitudes, accompanied by shifts in professional practices to the ambulatory mode, have contributed to the declining use of bed rest both in and out of the hospital.

Corporate Organization of Hospital Work

Hospital occupancy has been reduced not only by more diagnosis and treatment in the ambulatory mode, but also by the more efficient orga-

nization of inpatient services, driven by the corporate press to increase profits and reduce costs (Gray 1991; Stoeckle and Reiser 1992). That press for profits not only drives the administration, but also impels the staff to organize quicker, more convenient testing and treatment than in the past, when delays of two to four days in being tested were common. This drive for institutional efficiency is partly the result of outside pressure: Medicare regulations, for one, specify the hospital stays for DRGs, and the managed care plans, for another, provide economic incentives to limit stays. Such payment regulations and financial incentives speed up services that in turn diminish bed stays.

Group Practice Organization Outside

Group practice has also facilitated the decline of bed care. The use of technologies outside the hospital for quick assessment of complex chronic and acute illness would not be possible without generalists and specialists working closely together to manage the patient's illness. Indeed, such collaboration has occurred. Specialists joined the exodus of technologies from the hospital to sign on with generalists in community-based practices or in group practice organizations, where practice is driven, in part, by the need for common use of testing technologies. Unlike Western Europe and Scandinavia, the United States has had a long tradition of group practice, which has rapidly expanded in the last four decades to the degree that some 60 percent or more of physicians are in groups: HMOs, private group practices, health centers, faculty practices, and hospital clinics (McKinlay and Stoeckle 1988). This group practice movement has joined generalists and specialists, facilitating their comanagement of the chronically ill outside of the hospital. Their practice groups enable them to organize quickly the work-up of many acute complications of chronic illness, using outside diagnostic technologies to follow up readily on the recently discharged medical or surgical patient, and to maintain the chronic patient in optimal functioning with continuing collaborative care.

In sum, the five changes listed at the outset have played a special role in the decline of hospital use. They involve practitioners and patients in clinical-practice decisions on the goals, speed, scope, and site of care—decisions that have moved care increasingly to community sites and focused it on chronic versus acute illness (Fox 1993). As tuberculosis sanatoria closed in the 1950s with the advent of public health policies for

outpatient antibiotic treatment, and as the mental hospitals nearly emptied during and after the 1960s in accordance with public and civil rights policies that shifted management of the mentally ill away from internment/confinement and toward the use of community mental health centers to administer medication (Grob 1994), the domain of the acute-care hospital has been shrinking as well. Yet the reasons are distinctly different. Unlike the sanatoria and mental hospitals, however, the acute-care hospital has contracted without planned institutional management or public policy. Rather, the clinical, technical, and organizational changes in the management of acute and chronic illness have moved technologies, doctors, and patients outside into the community. The citadel cannot hold.

The Hospital Domain Is Smaller

What is fascinating is how the exodus of care has transpired over the past 25 years largely beneath the awareness of hospital administrators and trustees and, until the last few years, mostly unpredicted in health care policy studies—right up to the last few years (Robinson 1994). Although the expansion of prepaid practice plans and managed care has exerted additional organizational pressures on efficiency and costs, leading to a decrease in hospital use, the trends in fact were present long before. Some have speculated that the managers and boards of trustees overlooked the move toward community care because they were focusing on the capital expansion of the hospital: building new or replacing old beds and enlarging the technical facilities to promote so-called tertiary care with an eye to the promise of greater return from these technical services than could be extracted from care in the community, which historically has been a loss leader. Others might note that the management and governance of hospitals was increasingly dominated by administrators and trustees, who were interested more in the hospital as a corporate business than they were in social concerns for care in the community, about which they were often uninformed. Regardless of the reason, recent management/governance was not directed toward the founding mission of hospitals (Conway 1993). This inward focus since the 1970s seems paradoxical in light of the reforms of the 1950s and 1960s, which led to care in the community with community participation and to social goals for reducing the physical and mental impairments resulting from poverty

and ill health—which have constituted the hospital's mission from ancient to modern times. The shift to outside care might also be interpreted as a movement by practitioners who are interested not simply in improving care and treatment in the community, but rather in obtaining more control over decision making in their practices (and sometimes in achieving more profits) than was possible inside the hospital—that is, an entrepreneurial as well as a social concern. Whatever the reason, the decline in hospital use forces reconsideration of its mission and organization.

The Future

Two general directions are apparent with respect to the shrinking bed domain of the hospital. As that occurs, the hospital strives for a different expansion of its domain, namely, by diversifying and adding a variety of ambulatory-based practices under its own central corporate organization. Its central administrative/clinical management of practices keeps hospital beds as full as possible. Or, it can take a second direction, which is to decentralize, affiliate, and redefine itself amid new organizations and practice plans for care in the community. As group practice corporations in the community become the modern centers of care and focus more on chronic than on acute illness, they could join with hospitals in a cooperative corporation devoted to care in the community (New Physicians Organization 1994). The hospital is then not the center, but rather an adjoining, participating institution available for the acute and seriously disabled and sick that coordinates with the varied home, office, and community services as required. The center shifts to community practices and to their missions, which are not alone care and treatment, but include prevention as well. To prevent illness and reduce disability means not merely new organizations, but new directions—risk assessment, early disease detection, and functional assessment of both individual patients and populations—members of the prepaid practice itself and residents of communities.

Yet, for the most part, hospitals are now struggling to maintain their traditional domain and dominance, purchasing community medical practices outright or creating networks of practitioners for hospital referrals in an effort to assure their bed occupancy. These tactics are not inspired by any external service mission or strategy for care in and of the community with its major health problems, many of which are associ-

ated with poverty, social class, and community disorganization. Rather, the current direction of hospitals is toward market positioning for survival, especially in the case of institutions in urban centers where there is a surplus of beds. They are struggling to be more industrially efficient in order to maintain their internal, organizational control and their profits as business enterprises; they are consolidating as bigger practice corporations in order to carve out a bargaining position in the market for services from insurance plans. Such hospital tactics characterize a business without a mission. Yet, if hospitals were renewed in a cooperative corporation with community-based group practices, the new alliance could promise better health care for the individual whose health and illnesses depend so heavily on the conditions of their lives and on their care in the community.

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