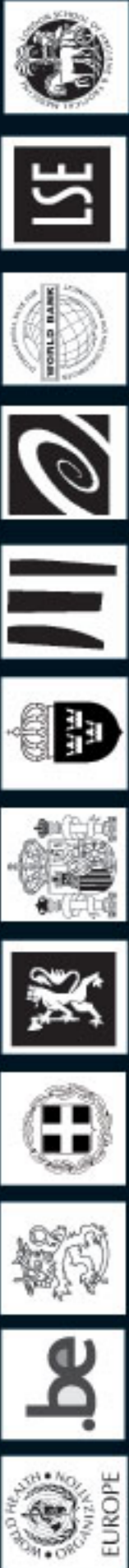




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This policy brief is intended for policy-makers and others addressing the issue of hospitals and their role in health care systems.

Policy brief

Configuring the hospital in the 21st century

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by

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Configuring the hospital for the 21st century

In this policy brief, we will take a fresh look at the hospital, and examine the questions that policy-makers need to be asking about its role in the health care system.

Although most health care takes place outside hospitals, for most people, they have come to symbolize the health care system. The capacity of a health care system is often measured by the number of hospitals or hospital beds. Yet these measures tell us almost nothing. A “hospital” may have only a handful of beds, a staff with only basic skills and no infrastructure – even no electricity or running water in some parts of the former Soviet Union. Or it may have hundreds of beds, a highly trained staff and sophisticated equipment, operating theatres and laboratories. Yet health care policies continue to be based on international comparisons in which there is no meaningful basis for comparison.

To understand the concept of the modern hospital, it is helpful to go back to its origins in the Middle Ages. At that time, most illnesses were self-limiting – patients either recovered spontaneously or died. Hospitals provided a place where patients could be supported and comforted until nature took its course. They were often small and widely

dispersed, and they were frequently founded as parts of existing religious establishments. The scope of health care expanded in the late 19th century, as infection became better understood and the development of safe anaesthesia made more complex surgery possible. These developments gave rise to the model of health care delivery that can now be seen in all industrialized countries. As laboratories and operating theatres grew more specialized, and imaging technology more expensive, it became necessary to concentrate resources at a few sites. The configuration of hospitals was driven largely by technology, and their other roles developed with little conscious thought. Emergency departments became a common, and frequently chaotic, entry point to the hospital, even though those passing through them often had very diverse needs and final destinations. In countries where hospitals ran outpatient clinics, such clinics had to fit in with what was often seen as the more important inpatient work. There was rarely any attempt to look at the hospital as an integrated part of the broader health care delivery system.

As a consequence, the basic structure of the hospital has changed little in the past

century, even while the nature of diseases it must respond to, its possible responses and its role in the broader health care system have changed beyond recognition. Even today, hospitals that adhere to this traditional model are still being designed and built, often with little thought for how health care may change in the future. What is particularly remarkable is that, though there is a vast literature on the financing of health systems, the organization of health services is still a neglected field.

Pressures for change

Some very substantial pressures on hospitals have been compelling them to change.

Changes in health care. There has been a long-term shift towards much greater specialization, which limits the number of conditions that an individual specialist is able to diagnose and treat. Larger caseloads are needed for a hospital staff to keep up to date and to ensure that specialist skills do not atrophy with under-use. In turn, greater caseloads require much larger populations than hospitals have previously served.

Increasing specialization. One of the consequences of new training regimes and increased specialization is that a specialty team often has to be available 24 hours a day. This requires much larger teams of trained specialists than in the past, when teams relied on trainees or interns and general practitioners.

Changes in employment practice. In the European Union, the European Working Time Directive and associated rules about rest times are already having an enormous impact on hospitals' ability to staff relatively small services.

Improved efficiency. Hospitals are under pressure to reduce costs, particularly through the

introduction of reimbursement systems that are based on case mix. There are also initiatives to cut costs by eliminating duplicated services and reducing fixed costs. Business process re-engineering has provided managers with tools to improve productivity and reduce system costs. These changes create incentives to rely less on buildings and other high-cost assets.

Quality and volume. The presumption that there is a strong relationship between volumes and outcomes has been a major driver of centralization. Yet there is no compelling evidence for such a relationship, except in a relatively small number of specialties. However, and perhaps more importantly, there is evidence that multidisciplinary approaches produce better results, and such coordinated efforts also require larger teams – though in some cases they need not require centralization and can be achieved through clinical networks instead.

Safety and quality. Hospitals are increasingly hazardous places. Not only do a significant number of patients experience untoward incidents while they are in hospital, but the incidence of multiresistant infections acquired there is also growing.

Concerns with patient safety and patient outcomes have become important drivers of change in medicine and in the role of clinical staff. Together with the increasing complexity of many treatments, these factors will increasingly lead individual hospitals to question whether they should continue to offer certain specialist services, such as:

- surgery on very small children
- care for certain types of major trauma
- vascular surgery
- the management of some cancers.

Technology. Developments in diagnosis, anaesthesia, imaging, video conferencing, robotics and communications are making virtual hospitals a greater possibility, allowing hospital-type care to be supported in remote locations.

Consumerism. Growing consumer power across Europe has created pressure to improve the organizational responsiveness of services in the health sector, as in other sectors. It is also clear that an increasingly vocal public is unwilling to see significant changes in the pattern of local hospital services, and can find the means to oppose and even halt them.

Taken together, these pressures promote both centralization and decentralization. They require policy-makers to take radical steps to rethink the role of the hospital, rather than simply providing more of the same.

Challenging assumptions

There are a number of key policy issues that need to be considered in planning hospitals and understanding their new role in the health care system.

Which health care services should the hospital provide?

Perhaps the most important message to convey to hospital planners is that the workload undertaken by a hospital is, to a considerable extent, under its own control or the control of the health care system. By using appropriate incentives and effective care regimes, especially for chronic diseases, significant reductions can be made in many areas of hospital activity, particularly emergency and inpatient care.

Emergency care and urgent diagnoses. Only a very small number of the patients who go to

emergency units are suffering major trauma (typically <1% in Europe, although somewhat higher in the United States due to greater access to firearms there). Although the percentages vary, reflecting differences in admission policies, about 65% of those who go are likely to have minor illnesses and injuries. These patients, who do not need to go to a hospital, often do so because they do not feel they have access to any alternatives. Yet well-designed alternative models of care do exist that can be more effective and more acceptable to patients. These models include arrangements for increased after-hours access to primary care, and stand-alone minor injury units that can be staffed by nurses rather than doctors. As such units are small, they can be dispersed widely and thus made more accessible to patients. The use of virtual links to main centres and the rotation of staff between units can further help to increase the range of services and maintain high-quality care.

Many patients who go to a typical emergency department do so because it is the established way to get a diagnosis when a possible emergency condition is suspected. While these patients do require diagnosis, the procedure has often been to admit first and diagnose later. Rapid assessment that relies on high-quality diagnostics with quick turnaround and a limited number of systematic protocols can limit admission to those patients who really need it. New technology, such as troponin assays to diagnose myocardial infarctions and low molecular weight heparin to treat deep vein thrombosis, may offer opportunities for decentralized diagnosis and treatment, particularly in rural areas.

Such decentralization implies a significant change in emergency services. In particular, it would require closer links between

community services and the hospital, better access to diagnostic equipment for primary care doctors and perhaps, because care would be more widely dispersed, additional methods to ensure that patients arrive in the right place. Consequently, some countries have developed telephone helplines where trained staff, often nurses, use carefully designed protocols to advise patients where to seek help, in certain instances providing advice on self-care or assuring them that treatment is unnecessary.

Inpatient care. Hospitals typically have significant numbers of patients in acute wards who have ceased to benefit from medical care and around-the-clock intensive nursing care. Such patients would receive more appropriate care in other settings. In internal medicine and orthopaedic surgery wards, they can comprise more than 50% of the patients. Streamlining care processes can reduce this percentage somewhat, but the biggest gains come from providing alternative care in rehabilitation beds, skilled nursing facilities, home care programmes and nursing homes. However, it should be noted that these options, while often enhancing the patient's quality of life, may not actually save money unless the hospital can shed the fixed costs associated with the unoccupied bed.

Development of day surgery. Advances in anaesthesia and surgical techniques, particularly minimally invasive procedures, mean that many operations that would once have required a stay in hospital of several days can be performed on an ambulatory basis, and many operations may no longer need to be undertaken in hospitals at all. In fact, procedures performed in hospital in some countries have long been performed in physicians' offices in other countries, often reflecting different systems of financial incentives.

Paediatric care. The care of children has seen especially large changes. A combination of immunization, improving social conditions and safer food supplies mean that many of the previously serious childhood diseases are now rare. Many of the conditions that affect children today are more appropriately managed in a community setting, where high-quality services are increasingly available. Consequently, more and more hospitals will be providing children only ambulatory care, while very few provide specialist inpatient care for diseases such as paediatric cancer.

Obstetrics. The nature of obstetrics is also changing. The over-medicalization of childbirth that has become customary in many countries is being challenged, drawing on evidence that many routine interventions are ineffective. In countries where home facilities are satisfactory, there has been a substantial reduction in the time spent in hospital following a normal delivery, often to 24 hours or less. But at the same time, there is pressure from the public, supported by an increasingly voracious legal profession, to produce perfect risk- and pain-free births. These forces are pushing obstetrics in two opposing directions. There is support for the creation of independent midwife-led childbirth centres for low-risk pregnancies. Yet, at the same time, together, mothers' wishes for pain-free births (epidurals) and defensive practice (medical procedures designed to forestall lawsuits) appear to be leading to an increase in assisted deliveries, and there are pressures to centralize services as has been done in other specialties.

Improvements in diagnostics. In the area of diagnostics, cost reductions and miniaturization are also making it possible to decentralize activities that were previously concentrated

in a central laboratory. New types of equipment are making it possible to train staff to perform a wide range of basic tests without involving two or three different departments. In fields requiring skilled interpretation, such as pathology, a single facility may be able to provide services to several hospitals. Images and other information can now be transmitted around the world, allowing access to expertise regardless of location.

Clinical networks that are supported by information technology offer policy-makers the opportunity to integrate hospital care more closely with primary care, and to redefine the role of the hospital to reflect changes in medicine and society.

Changing workforces

The changing nature of the workforce is perhaps the greatest challenge that many health care systems face. An explosion in the number of super-specialists serving large populations often occurs in tandem with a move to multispecialist and multiprofessional teams. These developments benefit patients with rare conditions, but managing the increased volume of general hospital work presents a major challenge. For example, in the United Kingdom, breast surgeons are increasingly uneasy about undertaking emergency general surgery. Much general medicine requires specialists to have a wide knowledge of a range of conditions, since so many patients (particularly the elderly) have multiple conditions. The idea of the generalist whose expertise lies in the diagnosis and treatment of a range of common conditions may be making a comeback. In the United States, these physicians, termed “hospitalists”, sometimes also have particular skills in organizing and coordinating the increasingly complex care pathways.

Countries with restrictions on working hours need to develop new methods for staffing hospitals nights and weekends, and to find ways to ensure that high-quality medical advice is available at all times without requiring doctors to work very long hours. Taken together with changes in attitudes toward the use of professional staff other than doctors, hospitals will need to redefine professional roles, in particular by expanding the role of nurses. However, an expanded role for nursing will substantially change the nature and status of the profession, and nurses will no longer be willing to accept the often low pay and subordinate position in the clinical hierarchy they now put up with. These developments are accentuated by the increasing shortage of nurses in many parts of the world, which is putting further pressure on hospitals to develop imaginative strategies for staff utilization.

In general, the major human resources policy challenge for hospital planners is how to break down the traditional barriers between the different medical professions. These barriers often owe more to history than to logic, and they result in frequently inappropriate use of staff members and fragmentation of patient care, causing errors as patients are passed from professional to professional.

Improving the patient experience

Even in the United States, with its extremely high levels of health care expenditure, patient experience in hospitals leaves much to be desired, as shown in the Institute of Medicine reports *Crossing the quality chasm* and *To err is human*. Poor organization, badly designed work processes, multiple handovers between staff members and a poorly designed environment are common problems. Patient ex-

perience needs to be more than an afterthought. A growing body of evidence indicates that a well-designed environment can improve patient outcomes and reduce staff turnover. Natural light, external views and other aspects of environmental design enhance patient and staff experience.

Organization inside the hospital

The internal design and configuration of hospitals is also being re-examined in light of new care pathways, so that the layout will reflect the process of treating patients. This approach can improve the efficiency of a hospital.

Hospital departments have often been structured according to traditional divisions between medicine, surgical specialties and other functional departments rather than patient needs. This structure is being challenged in new hospital buildings in several ways.

- On a small scale, grouping services by body system allows specialists with different skills and training but similar interests to work together. This approach is now common in cardiology and cardiac surgery. It can mean that centralized services such as imaging, interventional radiology and operating theatres are provided as part of these departments in flexible multi-use rooms.
- On a larger scale, services can be grouped according to case severity and patient needs along the care pathway, rather than by specialty, so that wards are grouped into critical, acute, step-down and ambulatory care. This approach has been described as the graduated model of care.

If efforts succeed in preventing unnecessary admissions and promoting early dis-

charges, the seriousness of the remaining patient conditions will increase. This means that critical care will need to be much more widely available in the hospital, rather than just confined to specialist units. In addition, the ratio of operating theatres to beds must change, with more theatres and fewer beds as recovery times after surgery decrease.

Is the hospital a useful unit for planning?

Hospitals have often been seen as institutions that are separate from the systems in which they sit. They are generally managed in isolation from each other. This trend is actually being encouraged in many countries by developments that seek to increase hospital autonomy. Such autonomy has its benefits, but hospitals also need to be seen as part of wider networks with important responsibilities to other providers. Firstly, they need to work closely with primary care services and support them in the management of chronic diseases. Secondly, they need to work more and more with each other. As it becomes harder for individual hospitals to offer a complete range of services, they need to join forces to make use of scarce expertise. In many health systems, organizational structures hinder integration of hospital and non-hospital services. Even in those systems where there is competition among providers, policy-makers need to find ways to create incentives and management structures for appropriate collaboration.

Hospitals and their communities

Perhaps the most important form of integration for hospitals is integration with the communities they serve. There is an urgent need to move from the typical technocratic planning model to a much more sophis-

ticated discussion with the public and other stakeholders about the changing face of hospital care. There may be enormous challenges in the way primary care functions in a new model, and they need to be included in the discussion.

Some countries are experimenting with various types of mutual and non-profit-making models for hospital governance. With the rise of consumerism and growing performance expectations, hospitals cannot afford to be divorced from the communities they serve.

Management and leadership

Many of these changes require management and leadership of the highest calibre. Unfortunately, in many hospital systems there has been a tacit understanding that managers should not intervene in clinical work at any level. Attempts to make care more systematic, to apply process design approaches, to audit performance or to challenge variations in practice have often met strenuous resistance. Leaders need to be prepared to persevere and engage their front-line clinical staff members in changing the hospital. Leadership is not confined to the top but is required at all levels.

Conclusions

Predictions are invariably fraught with errors. The one thing of which we can be certain is that the hospital of the future will be different from the one we know today. It will treat patients with other diseases, using different clinical interventions. And the pace of change, which has been accelerating rapidly since at least the 1970s, will become faster still.

This means that hospitals must be designed for maximum flexibility. The internal

configuration of a hospital being built today is likely to change several times over its lifetime.

Above all, hospitals need to respond much more radically to changes in public expectations and in the practice of medicine. If they do not, they may find that other more agile parts of the health care system are using advances in technology and information systems to challenge the logic that led to the original concentration of services in the hospital. These providers may be able to replicate hospital services in a more inexpensive, accessible and patient-friendly form. While it has been fashionable to predict the end of the hospital, however mistakenly, it is certainly a time of major change for the institution, and hospitals will need to respond or lose some of the centrality they enjoy today.

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