



What are the lessons learnt by countries that have had dramatic reductions of their hospital bed capacity?

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ABSTRACT

Health Evidence Network (HEN) synthesis report on reduction of hospital beds

Many countries have decided to reduce the number of hospital beds. Some have succeeded by making a sustained investment in alternative facilities, but some have been so successful that they now face shortages, meaning growing waiting lists and difficulties in admitting acutely ill patients. Other countries have had more difficulty reducing the number of beds, especially where hospital ownership is dispersed among several organizations. Some central and eastern European countries have faced problems in trying to apply reforms without fully adjusting policies to their particular socioeconomic context, human resources and stakeholders.

This report is HEN's response to a question from a decision-maker. It provides a synthesis of the best available evidence, including a summary of the main findings and policy options related to the issue.

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Summary

The issue

Counting beds is a rather poor way to measure the capacity of a modern health care system. This is especially the case given the unexpected difficulty of even defining a hospital bed, and in light of many alternatives to hospital care now available.

Many countries have decided to reduce the number of hospital beds. Some have succeeded by making a sustained investment in alternative facilities, but some have been so successful that they now face shortages, meaning growing waiting lists and difficulties in admitting acutely ill patients. Other countries have had more difficulty reducing the number of beds, especially where hospital ownership is dispersed among several organizations. Some central and eastern European countries have faced problems in trying to apply reforms without fully adjusting policies to their particular socioeconomic context, human resources and stakeholders.

Findings

There is some evidence that the need for hospital beds can be reduced by:

- coordinating disease management programs;
- directing patients to more appropriate facilities;
- shifting from inpatient to ambulatory interventions;
- facilitating earlier discharges.

However, there is also contradictory evidence suggesting that both reduced admissions and reduced lengths of stay may lead to increased cost per patient, and that many of the anticipated cost savings arising from bed closures may not be realized because of the cost of alternative modes of care.

There is little empirical evidence concerning the overall implications of reduction in hospital beds. Most studies come from Canada and the United States, and to a lesser degree, the United Kingdom. The ability to draw lessons for all of Europe is therefore limited. The evidence largely examines impacts on staff, access to care, and terminal care.

There is extensive evidence that reductions in hospital capacity adversely affect the remaining staff — especially those transferred to other facilities — mainly because of poor communication and increased workload. However, there is some evidence that careful relocation of staff can lead to improved job satisfaction and decreased burnout.

Prediction of the impact of bed reductions on patients is critically dependent on the starting level, and specifically on the availability of spare capacity or alternative facilities. There is limited evidence that where there is spare capacity a relatively modest reduction in hospital beds may not adversely affect either quality of care or the health status of the population, and that it may have a minimal effect on access to care by elderly people.

In contrast, where capacity is already constrained, major bed reductions may substantially reduce the ability to admit acutely ill patients in emergencies. There is also limited evidence suggesting that a dramatic reduction in hospital beds will substantially reduce the length of stay for patients at the end of their life, thus significantly increasing the number of patients who die away from the hospital.

Policy considerations

Strategies to reduce hospital bed capacity should take into account the overall pattern of health and social services in the affected area and include:

- sustained investment in alternative facilities
- carefully planned transfer of staff to other facilities
- mechanisms to reduce inappropriate admissions, and facilitate more rapid discharge.

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Introduction

In many countries there has been a shift from acute and long-term hospital care, in favour of ambulatory care and other alternatives. International comparisons show large variations in numbers of hospital beds and the relatively high cost of maintaining hospitals has created political pressure to reduce their capacity. There is considerable interest in how countries have gone about reducing hospital capacity and in the impact such changes have had on stakeholders.

This question was identified during a process of consultation with senior health policy-makers. As with most questions in the area of health policy, its formulation provides important clues about the answer that is being sought. It is, therefore, helpful to pause briefly to unpack the question's various elements and test its implied assumptions.

What is meant by hospital bed capacity?

This question itself raises further questions. First, what is a hospital bed? This seemingly straightforward question is actually almost impossible to answer. Although numbers of beds are frequently used as a measure of the capacity of a health care system, on its own a bed is no more than an item of furniture on which a patient can lie. For a bed to make any meaningful contribution to the ability of a health care facility to treat someone it must be accompanied by an appropriate hospital infrastructure, including trained professional and managerial staff, equipment, and pharmaceuticals.

Furthermore, when defined in terms of the supporting infrastructure, there are many different types of hospital beds, reflecting differences in the sort of patient they are intended to treat. A bed for a patient undergoing rehabilitation following a stroke is very different from a bed accommodating a patient with multiple organ failure, requiring ventilation, dialysis and circulatory support. To add to the complexity, there are many items of furniture within hospitals that appear to be 'beds' but which may not be counted as such. They include beds for relatives staying with patients (especially children), cots for normal newborn infants, and beds for patients undergoing ambulatory surgery. Similarly, there are some items of furniture that do not appear to be beds but which may be counted as such, such as chairs in which patients undergo dialysis.

Second, what is a hospital? Here the major issue is the interface between health and social care. Traditionally, many 'acute' hospitals care for significant numbers of patients receiving long term nursing care. Many such patients are now cared for in alternative facilities, such as nursing homes, although there are substantial differences among countries in the levels of provision that are unrelated to the age structure of their populations (1). In some countries, for example Belgium in 1982 (2), facilities once labelled hospitals have been re-designated as nursing facilities. This has implications for comparisons of bed numbers over time (Are apparent reductions simply re-designations?) and among countries (Are the same types of facilities being included?).

Because of the problems created by the varying interfaces of hospital and social care, we have decided to concentrate on what are commonly referred to as acute hospital beds. In addition, there is extensive specialist literature on closures of long-term psychiatric beds that could be the subject of a synthesis report in its own right.

It should, however, be noted that international comparisons are fraught with problems even when using this more restricted definition, due to differences in how hospital care is organized in different countries. As Table 1 shows, countries can differ considerably in what they report to international organizations. In particular, in some countries, entire sectors, such as private, military or prison health care are excluded. Although some countries have developed systems to classify different types of 'bed' in more detail, these systems are not used in international comparisons.

Table 1 Definitions of acute hospital beds in selected countries

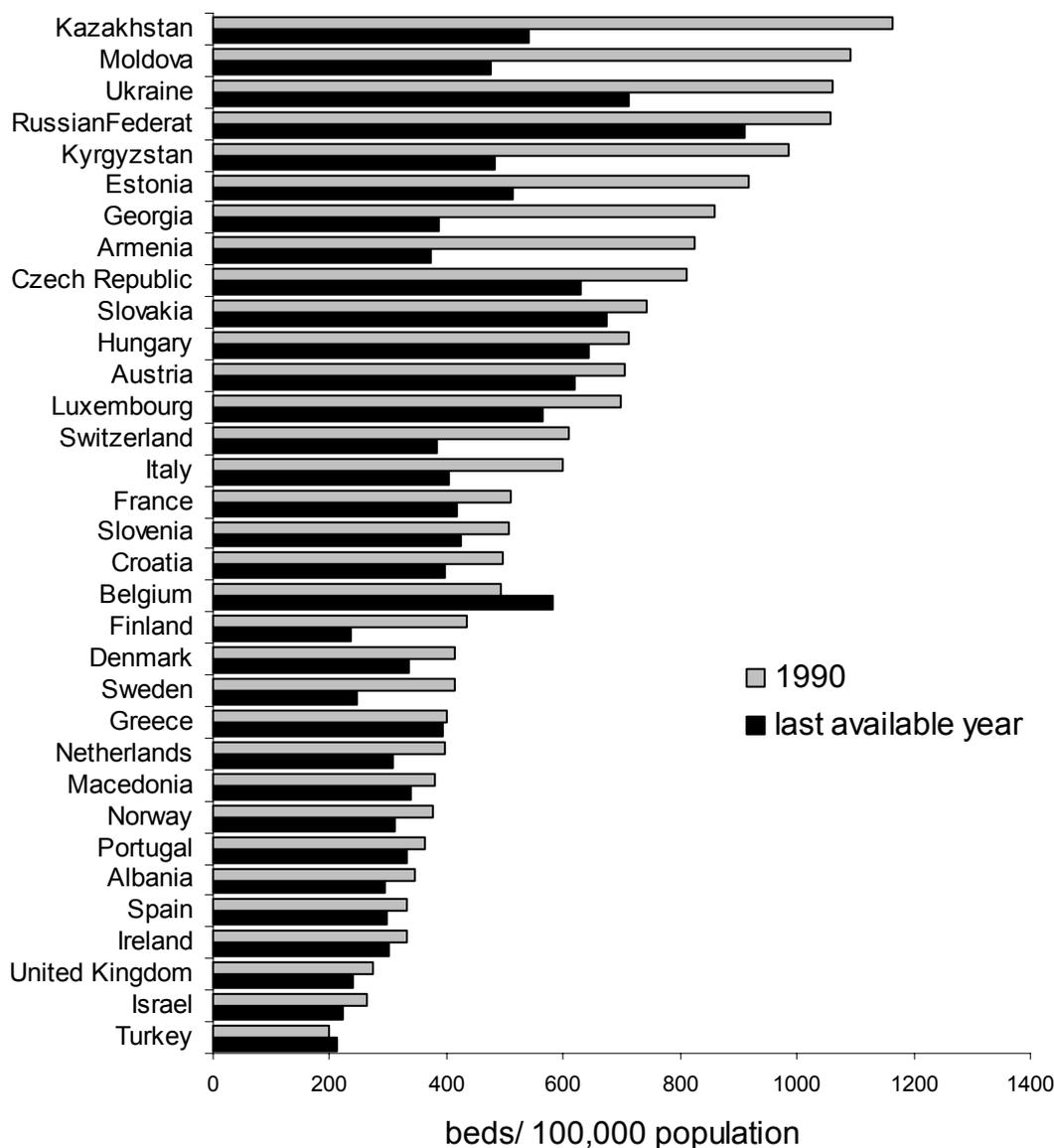
Country	Content	Day care beds included?
Austria	Beds in hospitals with average length of stay of 18 days or less	Some
Belgium	General hospitals without services for patients suffering from chronic diseases, geriatric services, or specialty services.	No
Czech Republic	All beds in general hospitals (including psychiatric beds)	No
Denmark	Beds remaining after number of beds in departments with ALOS longer than 18 days have been subtracted from number of beds in somatic hospitals	No
Finland	Somatic wards in specialized hospitals, part of health centres, and hospital units	No
Germany	Beds other than psychiatric and long term beds	No
Iceland	Calculated from bed-days, assuming 90% occupancy rate; beds in medicine and surgery of main hospitals and mixed facilities in small hospitals	No
Ireland	In-patient days and day beds in publicly funded acute hospital (length of stay less than 30 days), voluntary (non-profit) hospitals and health board hospitals included	Yes
Italy	In-patient beds of psychiatric hospitals and in-patient beds of psychiatric wards of other hospitals included	No
Netherlands	Somatic wards in hospitals with specialization service (excluding psychiatric hospitals), includes cots for normal neonates and day care beds	Yes
Norway	General somatic hospitals and somatic specialized hospitals	?
Portugal	General hospitals, maternity, other specialized hospitals, health centres	No
Spain	General hospitals, maternity, other specialized hospitals, health centres	No
Sweden	Beds for short term care run by county councils and 3 independent communities (short-term includes medical, surgical, miscellaneous medicine/surgery, admission department and intensive care)	No
Turkey	Public hospitals, health centres, maternity hospitals, cardiovascular and thoracic surgical centres, orthopaedic surgery hospitals	Yes
United Kingdom	National Health Service acute medical, surgical and maternity beds (excluding Northern Ireland)	?

Source: OECD

In which countries has hospital bed capacity been reduced dramatically?

Clearly when answering this question, the many caveats noted above must be borne in mind. However, on the basis of figures reported to the World Health Organization, it can be seen that, taking 1990 as a baseline, some countries have experienced dramatic reductions in hospital beds (Figure 1).

Figure 1. Acute hospital beds per 100,000 population in 1990 and latest available year



Source: WHO Regional Office for Europe's HFA database

In absolute terms, these reductions have been greatest in countries that started with the largest numbers of beds per population, namely the countries of the former Soviet Union and, in particular, those in the Caucasus and central Asia that faced the greatest economic hardships in the 1990s. However, in relative terms, large changes (46% and 41% respectively) have also occurred in Finland and Sweden. Otherwise, most countries of western Europe have experienced reductions of between 10 and 20%. Alone in western Europe, Belgium had an increase in acute beds in the 1990s, although this followed a considerable reduction in the 1980s. Of course, these figures only consider one aspect of hospital activity; some countries have made only small reductions in bed numbers but have experienced large reductions in bed occupancy.

A more detailed analysis of international trends in hospital activity between the mid- 1980s and mid-1990s has been undertaken by Hensher et al. (3). Although space does not permit a full analysis here, it is important to note that changes have varied among specialities with, for example, considerable opportunities (at times unrealized) for reductions in numbers of obstetric beds as birth rates have fallen dramatically in many countries.

Were the changes a result of health care reform?

Once again, this question raises another one. Even if closures were a result of health care reform, was bed reduction the aim of the reform or was it an unintended consequence? Or did it occur for other reasons?

As ever, the situation varies. In both Sweden and Finland, a substantial part of the reductions can be attributed to decisions to transfer parts of the health care system to the social sector. In Sweden this was the aim of the 1992 Ädel Reform, in which the municipalities assumed responsibility for the care of many long-term patients (4). This led to both re-designation of facilities and a programme to construct more appropriate facilities outside the hospital sector, although this also coincided with broader economic changes that encouraged reductions in hospital capacity. However, simple comparisons of beds in each sector can also be misleading, as shown by the example of Denmark. There, construction of new nursing homes was stopped in 1987, and investment has since been focused on sheltered housing and social and nursing support to individuals living in their own homes (5). As a consequence, bed reductions in the Danish hospital sector have not been accompanied by increases in the social sector because care is now provided in different ways.

In England, a detailed analysis of changing patterns of hospital activity has identified many different contributions, with a reduction in length of stay in acute hospitals, but a major expansion of beds in private nursing homes, so that total bed numbers actually increased slightly (6).

In Kazakhstan, in contrast, the reduction was unplanned and was largely a consequence of the withdrawal of funding from the many small rural hospitals. Three-quarters of these hospitals, which were underused and able to provide only very basic health care, closed between 1991 and 1997 (7).

In Estonia, the reduction was also due in part to the closure of small, poorly equipped hospitals, although in this case it was a result of an explicit policy to introduce a system of accreditation, which these hospitals failed, in 1994 (8). In Moldova, local administrations engaged in a process of reconfiguring many small hospitals as primary care facilities (9). In Albania, change arose initially as a consequence of a near collapse of the health care system during the widespread civil disorder during the early 1990s. This led many health care staff to flee rural areas, where they had been working in small, dilapidated rural hospitals (10). Subsequently, with assistance from a large World Bank loan, many facilities were closed and others converted to primary care facilities. However progress since 1994 has been slow, in part because it has been impossible to achieve consensus on which facilities to invest in and which to close.

A further question concerning reforms to reduce bed capacity is whether they have succeeded, and if not, why not? The picture is rather mixed. Some western European countries have been too successful in reducing acute bed numbers and now find that they face shortages. For example, Ireland (11), Denmark, the United Kingdom (12) and Australia (13) have faced growing waiting lists or difficulties in admitting acutely ill patients to hospital and are now attempting to expand bed numbers (notwithstanding the increase in overall bed numbers in England noted above). However, in the United Kingdom this goal is threatened by the introduction of a new system of financing capital developments, in which higher costs mean that new hospitals are smaller than those they are replacing (14), and hoped for improvements in efficiency (measured as patient throughput) are not being realised (15).

Elsewhere, change has been more difficult to achieve. A review of experiences in western Europe found that reductions in capacity (whether measured in beds or hospitals) were difficult to achieve where ownership and management of facilities were dispersed among different organisations (16). They were especially likely to succeed where, as in France (17) and Spain (18), health care delivery was considered from a regional perspective, taking account of the overall pattern of hospitals and other health care facilities, and where change was accompanied by sustained investment in alternative facilities.

In contrast, some countries in central and eastern Europe with historically high levels of hospital provision have faced difficulty in reducing capacity. In Hungary, for example, a succession of mechanisms had only limited success. They included financial incentives based on diagnosis related group-based payments, central designation of bed reduction targets for individual hospitals, and a regional initiative to develop of substitutes for hospital care and increase hospital efficiency (19).

The Hungarian experience is described in a HEN working paper (20) that shows how an initial reduction in bed numbers was essentially a statistical adjustment, removing unused beds from the total. A later reduction in actual beds required the development of a national plan for hospital capacity — with a complex formula taking account of population numbers, health and socioeconomic indicators, and regional and national roles of institutions — which was implemented through consultations with local stakeholders.

In Poland, where there was very little change in the number of beds until the late 1990s, a fall of 13 033 acute beds between 1998 and 2000 (5.6% of the total) was partly compensated for by an increase of 5200 long term beds (21). A review of experience with hospital system restructuring identified a series of problems that were rarely addressed adequately, including: failure to take account of the specific context of the reforms, over-reliance on market mechanisms to bring about change, insufficient recognition of the wide range of stakeholders involved, failure to ensure that incentives and policies are aligned, and lack of appropriate human resources to implement changes (22).

Research evidence

Despite the importance of hospitals in the health care system, there is remarkably little published research on their reconfiguration, mostly from Canada and the United States. This reflects several factors: first, as noted previously, most research on hospitals is concentrated in a very few countries (23), partly due to the willingness of funding agencies to support organizational research in the health sector. Second, evaluative research requires well developed systems to collect routine data, ideally on a population basis, and outside Scandinavia, few countries in Europe have such systems.

Although the United States has been the setting for much of the published research on hospitals, the ability to draw lessons for Europe from this is limited, except in certain narrowly defined areas such as the impact on health care staff, since much of the research reflects the particular characteristics of the market-oriented American health care system. Consequently, the most important source of information, from a European perspective, is Canada, a country that has experienced major reductions in hospital capacity but where, uniquely, those changes have been studied in great detail.

Before addressing the main question of what lessons can be learned from countries that have undergone large reductions in acute hospital beds, it may be useful to reflect briefly on two questions concerning the need for hospital beds.

How many beds are needed?

This is probably the most frequently asked question about hospitals. It is also one that has no easy answer, except it depends on a variety of factors, some of which cannot easily be changed — such as the disease patterns and social structure of the population (24) — and some that are more easily changed, such as the efficiency of diagnosis and treatment (25) and the provision of alternatives to hospital care (26). There are many models that seek to take account of these multiple factors (27, 28, 29). They can be valuable in testing various assumptions, but require extensive and often unavailable data (30), and given the many and complex feedback systems involved, prediction is difficult.

What is the impact of an aging population on bed requirements?

It is widely assumed that an aging population will increase the need for acute hospital beds, but the assumption may not be justified. Although aging has led to increased utilization in many countries, this is

largely attributable to growing numbers of people with long-standing disease processes, in particular the consequences of cognitive decline, for which acute care is ineffective and for which alternatives, in particular nursing care, are more appropriate (31). The well known relationship between age and need for acute care is actually a reflection of the increase in need with proximity to death, with individuals requiring the greatest resources in the year that they die. Consequently, the effects of an aging population are minor (32).

How can the need for hospital beds be reduced?

The most effective, though difficult, way to reduce the need for hospital beds is to enhance the health of the population. In the short-term, however, two broad categories of intervention may be effective: preventing admission and facilitating rapid discharge. The evidence concerning the effectiveness of different interventions has been reviewed by Hensher et al. (33). In brief, inappropriate emergency admissions are most easily avoided by establishing a variety of systems, including medical observation units, that can direct patients to more appropriate settings. Non-urgent admissions may be prevented by shifting from in-patient to ambulatory surgery and investigations. However, the major gains are likely to come from policies designed to facilitate earlier discharge. This requires the creation of a wide range of alternatives to hospital care, including nursing homes and intensive intervention in the patient's home. Nonetheless, the authors concluded that most interventions intended as alternatives to hospital care actually complement it, so that the total volume of activity increases. Furthermore many interventions designed to support patients in the community are as or more expensive than hospital care.

A Cochrane Review of the effectiveness of discharge planning found some evidence that it may lead to reduced length of stay, and in some cases reduced readmission to hospital (34). There was no evidence that it reduced health care costs, although few studies conducted a formal economic analysis. Another review comparing hospital at-home schemes with conventional inpatient care concluded that while the former could reduce acute bed days, the overall period of care was prolonged and there were no cost savings (35).

In contrast, a growing number of evaluations of care packages that manage common conditions according to protocols, supported by system redesign to co-ordinate the required inputs (36, 37), show that these do reduce lengths of stay and costs.

What is the impact of reductions in acute hospital beds on access and utilization?

Empirical research on the impact of reductions in bed numbers on utilization at a population level is almost exclusively from Canada. Between 1991 and 1993, almost 10% of acute hospital beds in Winnipeg, Manitoba were closed (38). The authors concluded that access to hospital was not adversely affected as the reduction in beds led to increases in ambulatory surgery and earlier discharges. Neither was quality of care affected, as there were no increases in the mortality rate (within 90 days of admission), the overall premature mortality rate, readmission rates (within 30 days of release), or post-release physician contacts (within 30 days).

A follow-up study in 1995-1996 (39) confirmed a shift from inpatient care, with more ambulatory surgery, earlier discharges, and a marked expansion in nursing home capacity. There was a large increase in numbers of common procedures, including cardiac surgery and cataract extraction. As in the earlier study, quality of care, measured by mortality and readmission rates, was unaffected by bed closures. The study looked in detail at two vulnerable groups, the elderly and those with low incomes. For both, access and quality of care remained unchanged.

Another Canadian study examined the impact on utilisation by elderly people of a 30% reduction in beds in 'short-stay units' in British Columbia (40). The sophisticated system of record linkage that exists in the province was used to generate two cohorts of people over age 65 in 1986 and in 1993 respectively, before and after the major changes in bed numbers. Overall changes in health care use were small, suggesting that the repercussions of the decline in acute care services for elderly people have been minimal. The higher age-adjusted death rates in the later cohort in full-time care suggests that long-term stays are becoming reserved for a sicker group of elderly people than in the past.

In contrast, a long term programme of bed reductions in England has had a major impact on the ability to admit patients in emergencies. Problems have been greatest in winter, coinciding with peaks in respiratory illness, giving rise to the term “winter pressures” (41). One detailed study of an English hospital in the mid 1980s showed how closures of a relatively small number of medical and surgical beds led to an immediate increase in the probability that the hospital would be unable to admit acutely ill patients (42). One reason why the United Kingdom has been especially vulnerable is the long-standing pursuit of “efficiency”, interpreted as achieving bed occupancy rates of 90% or more, even though mathematical modelling demonstrates that occupancy rates of over 85% greatly increase the risk of periodic bed crises, leading to failure to admit acutely ill patients (43).

What is the impact of bed reductions on care for the dying?

Given the extensive use of hospital beds by dying patients, have they been adversely affected by bed reductions? A study undertaken in Alberta, Canada, in the 1990s (44) found that a reduction of 50% in acute beds was associated with an 18.5% reduction in the number of deaths occurring in hospitals and an 83.3% reduction in length of final stay. These trends partially reversed when beds began reopening. Over half of all patients dying during their last admission received only nursing care, with no diagnostic or therapeutic procedures performed prior to death. The authors concluded that bed availability influenced admissions and lengths of stay, but not treatment decisions affecting seriously ill and dying patients.

Do bed closures reduce costs?

Research from the United Kingdom during the 1980s suggested that only about 20% of the cost-savings anticipated from bed closures were actually realized, because of the cost of alternative modes of care (45). Several studies from North America have found that, contrary to expectations, reductions in hospital capacity increased the cost of hospital care. In one case this was because closure of a small hospital meant that patients were treated in more expensive teaching hospitals (46), and in another case reductions in beds led to reductions in admissions but also in lengths of stay, and consequently to a greater cost per case (47). Similarly, in California in the 1980s, an 11% reduction in admissions was associated with a 22% increase in cost per case (48). These studies highlight an important point: in many cases the first few days of an admission are the most resource-intensive, after which costs per day are often small. Consequently, reductions in lengths of stay due to faster discharge often yield only minor savings, unless they lead to closures of entire facilities. They do, however, have a substantial effect on the mix of patients that remain, so that staff workloads increase as a higher proportion of their patients are in the immediate, more resource-intensive, post-admission period.

What is the impact of hospital capacity reductions on remaining staff?

There is extensive evidence that reductions in hospital capacity impact adversely on remaining staff (49, 50), especially those transferred to other facilities (51). Adverse effects on staff are made worse by poor communication within the organization and increased workloads (52). However, with care, successful relocation of staff is possible and can lead to improved job satisfaction and decreased burnout (53).

What is the impact of the closure of small rural hospitals?

Across the world a combination of factors is threatening the survival of small hospitals in rural areas. In Saskatchewan, funding for acute inpatient care was withdrawn from 52 small rural hospitals, each with fewer than eight beds, in 1993 (54); most were subsequently converted to primary health care centres. Although it was widely feared that the closures would have an impact on health, this was not borne out in reports from residents of the communities. Although some communities did face problems with health care delivery, others adapted well. Critical success factors included strong community leadership, development of acceptable alternative services, and local support for innovative solutions. The authors concluded that very small hospitals with few facilities contributed little to rural health care. A better model was based on creative approaches to the provision of primary care and good emergency services, supported by effective public communication of the intentions and outcomes of the changes.

In contrast, a study from the United States found more negative effects (55). Problems included difficulty recruiting and retaining physicians, concern about the loss of local emergency rooms, and increased travel times to hospitals. The degree of problems was a function of the distance to the nearest hospital. Health professionals saw increased travel times as having the greatest effect on vulnerable populations, such as the elderly, the disabled and the poor, although these groups were also viewed as disadvantaged in areas where hospitals remained open. The major barriers to access by vulnerable populations were transport and the rigours of travel. The authors concluded that improvements in transport were needed both in communities where hospitals closed and where they remained open. These fears were not borne out in a study quantifying patient flows following closures and conversions of rural hospitals in Texas between 1985 and 1990 (56), which found little detrimental effect on access to services, although in a few cases the availability of hospital beds and physicians were reduced. As in Saskatchewan, development of alternative health care facilities served to maintain access to health services in isolated rural areas.

The impact of hospital closure is not limited to its staff and patients, given the role of the hospital as a contributor to the local economy and civic status symbol (57). An American study surveyed mayors of towns whose sole hospital had closed between 1980 and 1988 and not reopened (58). A typical hospital of this type had 31 beds, with an average daily occupancy of 12 patients, and half were 32 km or more from another hospital. Of 132 hospital buildings closed, only 38% remained unused in any capacity, with most having been converted to another type of health care facility such as an ambulatory clinic, nursing home, or emergency room. More than 75% of the mayors felt that access to medical care had deteriorated in their communities after hospital closure, with a disproportionate impact on the elderly and poor. More than 90% felt that closure had substantially impaired the local economy.

A common theme in these examples has been the conversion of hospitals to alternative health care facilities, which is seen as a way of maintaining medical services in rural areas (59). The Texas study (56) found that alternative health care uses were more likely where the local economy was healthier and when there were fewer substitute forms of health services. Government-operated hospitals were less likely to convert than were private non-profit making providers. It is, however, important to emphasize once again the importance of taking context into account, recognizing that evidence from the USA may not be generally applicable to Europe, and in particular to the countries of the former Soviet Union.

Gaps in evidence

Paradoxically, although the need to restructure health care delivery to reflect changing needs is recognized in almost all countries, and it is acknowledged that such changes are usually controversial and would benefit from appropriate evidence, there is remarkably little published evaluative research of the consequences of major changes in Europe and central Asia, although it may be that information exists in unpublished reports.

There are several reasons for the apparent lack of evidence. One is the lack of primary research (reflecting both an absence of funding and limited capacity) on health service delivery and organization in most of Europe, unlike in North America. A rare exception is the United Kingdom. A second is that few countries have actually undertaken major reductions in hospital capacity, or where they have, as in some countries of the former Soviet Union, it has been done as a crisis response. Third, few countries in Europe have the sophisticated systems of population-based data on health care utilization that exist in Canada.

One gap is especially obvious. Apart from evaluations of specific initiatives to provide alternative care models, such as hospital at home, there is very little information on the impact of bed reductions on the burden borne by patients' families and their other care-givers.

Finally, it should be recognized that this type of research is extremely difficult, even in the best circumstances, when methodological limitations include difficulty in capturing burdens of care transferred to lay care-givers and in attributing causes and effects due to a lack of controls (60). Consequently, as Edwards and Harrison have shown, many policies on hospitals are based on fallacies and misunderstandings (61).

Applicability

The evidence presented here is extremely context-dependent. Most obviously, the consequences of a reduction in hospital beds will depend on the initial supply in relation to need. For example, as noted earlier, even relatively small reductions in beds can have a considerable impact on access to care where capacity is already constrained. This is likely to explain the different results seen in Canada and the United Kingdom. Context is also extremely dynamic. Changes in supply of one type of health care provision are often compensated for by changes in others. Thus, reductions in acute beds in several countries have been associated with increases in nursing home beds. However, it is not easy to determine which caused which, and indeed in many cases the relationship is likely to be two-way.

A particular problem is the almost complete lack of evidence from the countries of central and eastern Europe and the former Soviet Union. Any generalization of findings from North America to these countries must be undertaken with extreme caution.

Some insights can be gathered from reports of projects to restructure hospitals in the central Asian republics. A modelling exercise undertaken in Kyrgyzstan, suggested that it would be possible to reduce beds in Bishkek, the capital city, by 52% over 10 years using a combination of more intensive use of beds, modest reductions in length of stay, shifts to outpatient care, and a staged closure of some of the 26 separate hospitals that then served the population of 700 000 (62). Similarly, a project using data on utilization of rural hospitals in Kazakhstan found that it was possible to make substantial reductions in beds, leading to the elimination of a third of the beds in one district, including the closure of one of three rural hospitals (63). The authors identified several issues to be addressed that would allow even greater reductions in hospital capacity, leading to improved quality of care if appropriately managed. They include more intensive use of existing beds — many of which spend long periods empty — implementation of care protocols reducing excessive lengths of stay, withdrawal of many ineffective treatments left over from the Soviet period, and a shift to ambulatory care for many common disorders. However, the authors also recognized that there are many regulatory barriers to change.

Conclusions

1. Numbers of acute hospital beds fell in many, but not all, countries during the 1990s, although comparisons are problematic because of differences in methods of counting. Furthermore, the number of beds is a very poor measure of health system capacity as a bed only contributes to health care if it is supported by an appropriate mix of staff and equipment.
2. The number of beds needed in a country depends on many factors, including patterns of disease and availability of alternative care settings. At present, however, some countries appear to have excessive hospital capacity while in others earlier reductions are being reversed. The ability to absorb reductions in acute beds depends on the initial hospital capacity.
3. Strategies to reduce hospital bed capacity should include policies to reduce inappropriate admissions, improve the efficiency of inpatient care provision, and facilitate more rapid discharge. These will often require the development of alternative facilities and services, and while beds may be reduced, the overall cost to the health system may not fall.
4. Reductions in capacity often have adverse effects on the health care staff, although these can be mitigated by good communication and an appreciation of the increased workload that accompanies capacity reductions.

Policy recommendation

Strategies to reduce hospital bed capacity should take into account the overall pattern of health and social services in the geographical area concerned and be accompanied by the following:

- sustained investment in alternative facilities;
- carefully planned measures to transfer staff to other facilities; and
- mechanisms to reduce inappropriate admissions and facilitate more rapid discharge.

Annex: Description of synthesis methods

The material on which this synthesis report is based was obtained in several ways:

1. Search of PubMed from 1990 to the present, using the terms:
'hospital' + 'beds' + 'closure'
'hospital' + 'beds' + 'reduction'
'hospital' + 'beds' + 'reconfiguration'
'hospital' + 'downsizing'
2. Search of internet using Google and same search terms.
3. Background material obtained during the preparation of. *Hospitals in a changing Europe*, McKee M, Healy J (eds), Buckingham: Open University Press, 2002.
4. Search of the Cochrane Library, in particular reports from the [Cochrane Effective Practice and Organisation of Care Group](#)
5. Information on hospitals from the Health System in Transition reports, undertaken by the European Observatory on Health Care Systems.
6. A series of case studies on hospital restructuring in central and eastern Europe and the former Soviet Union undertaken by the European Observatory on Health Care Systems in 2001 (64).
7. Bertelsmann Foundation: International Trends in Health Policy Reform website.
<http://www.healthpolicymonitor.org/>
6. University of York Health Technology Assessment database <http://agatha.york.ac.uk/htahp.htm>

In addition, more focused internet and PubMed searches were undertaken as necessary to follow up leads from the initial searches, complemented by searches of web sites of academic units and individual researchers identified as undertaking research in relevant areas.

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