The public hospital of the future

Jeffrey D Zajac

ABSTRACT

- Public hospitals designed for the past are not changing rapidly enough to meet the needs of the future. Changing work practices, increased pressure on bed occupancy, and greater numbers of patients with complex diseases and comorbidities will determine the functions of future hospitals.
- To maximise the use of resources, hospital "down times" on weekends and public holidays will be a distant memory. Elective surgery will increase in the traditionally "quiet times", such as summer, and decrease in the busy winter period.
- The patient will be the focus of an efficient information flow, streamlining patient care in hospital and enhancing communication between hospitals and community-based health providers.
- General and specialty units will need to work more efficiently together, as general physicians take on the role of patient case managers for an increasing proportion of patients. Funding needs to be adequate, and system management should involve clinicians.
- Safety will be enshrined in hospital systems and procedures, as well as in the minds of hospital staff.
- If these changes are not implemented successfully, public hospitals will not survive in the future.

MJA 2003; 179: 250–252

FASTER AND FASTER AND BETTER AND BETTER, or faster and faster and worse and worse. These are the only two pathways into the future for Australia's public hospital system.

Public hospitals are very special places — large numbers of committed, high quality clinicians, registrars in training, medical students, nursing and allied health staff care for a diverse range of people with particular needs determined by diagnostic diversity. But the organisation and infrastructure of public hospitals are designed for times past and are not changing rapidly enough to meet the demands of the next decade or so. Although I am optimistic about the future of public hospitals, they face significant challenges. Four issues exemplify these challenges.

- In the "good old days", a patient knew who his or her doctor was. Today, with the interdisciplinary team approach to patient care, and rotating interns, registrars and consultants, the one-on-one doctor–patient relationship is rapidly receding or long gone. There is a need to prevent complete fracture of this vital personal link.
- In the "good old days", a quick ward round on Saturday morning sufficed for discharge planning, as the final decision was left until Monday. Now the question is *"How many patients did your unit discharge last Sunday?"*, reflecting the increasing demand on beds and the need to make best use of available resources.
- In the "good old days", older, frail patients were unlikely to have elective surgery, and, if they did, they would be admitted 2 or 3 days before the operation "to get them ready". Now, when an 82-year-old man with ischaemic heart disease, chronic respiratory disease and cognitive dysfunction is admitted for a hernia repair, it is often on the day of surgery, but a 2-week postoperative stay is likely, and the procedure can be life threatening if care is not optimal.
- In the "good old days", it was assumed that errors and omissions did not occur, or, on the rare occasion that they did, it was because of individual carelessness or ignorance. We now have strong evidence that, despite best intentions, suboptimal care can occur, and patients are at risk of being harmed by system failures.

Today's public hospital system is mainly based around the needs of those who work in it, rather than the needs of the patients receiving treatment. For example, ward rounds are often designed to suit busy visiting doctors rather than complex hospital needs. Public hospital development has been haphazard, resulting in duplication and inefficiencies,[1] and this haphazard development is reflected in the high incidence of adverse events. Despite the dedication and hard work of the clinical staff, the operational systems of public hospitals need to be improved. Changing doctor–patient relationships, the increase in pressure to move patients through the system, the increasing number of older patients with complex conditions, and issues of safety will all determine the future development of public hospitals.

Department of Medicine, University of Melbourne, Austin Health, Heidelberg, VIC.

Jeffrey D Zajac, MB BS, PhD, FRACP, Head of Department of Medicine.
Reprints will not be available from the author. Correspondence: Professor Jeffrey D Zajac, Department of Medicine, Austin Hospital, Level 7, Lance Townsend Building, Studley Road, Heidelberg, VIC 3084.
j.zajac@unimelb.edu.au

Factors shaping hospitals of the future

I believe that the organisational structure of hospitals, not their buildings, will be unrecognisable in 10 years' time. Senior doctors will re-engage in the planning process. Boundaries between various specialist and general medical and surgical units will blur or disappear, and the focus will be on patient care.

The relative shortage of funding for hospitals will remain. Although we are spending more than ever on healthcare — both in absolute terms and as a percentage of gross domestic product — it is likely that, in the future, the proportion spent on hospitals will continue to decline. Thus, efficiency

and effectiveness will become unstoppable driving forces. Despite the perception of most clinicians that more money is the solution, there is a view in government health departments and treasuries that increased funding does not always solve the problems of delay in access to treatment, waiting lists and poor staff morale. These financial pressures will test the role of public hospitals as centres of excellence for therapy, training and research.

Finally, service provision in hospitals is poor. The overriding problem with hospitals as organisational entities is that they fragment the continuum of care.[2] If supermarkets offered the same level of customer service as encountered at times in public hospitals, they would not survive in a competitive market. The customers of hospitals are clinicians and patients who can and will "vote with their feet".

The public hospital of the future

Niels Bohr said prediction is very difficult, especially when it concerns the future. Facing this difficulty, rather than making a prediction, I will describe a hospital in which I would like to work in the year 2013. A useful framework for assessing and planning change is provided by the six specific aims for improvement in healthcare recommended by the US Institute of Medicine. Healthcare should be:[3]

- Safe — avoiding injury from the care;
- Effective — providing evidence-based services;
- Patient-centred — providing care responsive to patient preference;
- Timely — reducing waits and sometimes harmful delays;
- Efficient — avoiding waste; and
- Equitable — providing care that does not vary in quality because of patient characteristics (sex, ethnicity, socioeconomic status).

Efficient communication and flow of information

Hospitals today are relatively inefficient. A patient with a complex medical problem is seen by a large number of clinicians — he or she often has to repeat the same history to the general practitioner, emergency room triage nurse, emergency room registrar and specialist, general medical registrar and intern, not to mention assorted consultants. The physical examination is also repeated on many occasions. Then there are allied health staff (physiotherapists, occupational therapists) as well as pharmacists and nurses. No wonder patients become agitated or exasperated and don't know who is looking after them!

Efficient information flow is essential, and technological solutions will have to be found. Hospitals of the future will need to develop strategies for streamlining patient care. The patient will be the focus of a system of information flow about diagnosis, therapy and prognosis. The hospital of the future will no longer be the hub of medical care; this function will shift to community-based providers,[4] and there will be substantial enhancement in communication between hospitals and surrounding GPs. Technological improvement involving email, web-based reporting of results and computer-based teleconferencing will revolutionise communication. Files and test results will no longer disappear, and we may be able to avoid that familiar sinking feeling, as an elderly patient with language difficulties and a large bag of tablets is wheeled into the consulting room, while the clerk explains that the file cannot be found. All healthcare staff involved in patient care will carry personal organisers to ensure that this problem never occurs.

There will be greater continuity of information across all healthcare settings, better systems for triage, and better systems for assisting evidence-based clinical decision-making. Patients will have confidence in the safety of hospital care based on available audit data, not just a warm confidence in their doctors.

All those involved with a particular patient will be able to see the same investigation data at the same time, and consultant opinion will be able to be analysed immediately by all those involved in the patient's care. Delays in patient management will be identified because of variation from standard care, and rectified. Doctors will once again be able to concentrate on the interpersonal aspects of patient care rather than the soul-destroying inefficiencies of locating histories, x-rays and pathology results, chasing up the registrar, or waiting for an orthopaedic opinion. I hasten to add that I recognise that data entry and computers are not fail safe, and mechanisms to minimise errors will need to be developed.

Maximising use of resources

Hospitals will learn from industry — hospital infrastructure will be used more efficiently. Weekends in public hospitals will be indistinguishable from weekdays, as empty beds are filled with elective surgical patients. More elective surgery will be performed over the traditional summer break, and less in the winter, when the hospital intake of sick, elderly patients peaks. Thus, surgeons will need to take skiing lessons so they can take their annual leave in the winter, while physicians may have to give up skiing!

To make the maximal use of resources, staff levels will have to increase — more medical, surgical and nursing and allied health staff are inevitable. However, with professional and personal pressure, there is a significant risk that medical (and nursing) staff will find major public hospitals less appealing places to work. Increasing patient throughput, increasing regulation, increasing rates of change and decreasing security of employment, particularly for senior staff, will affect staff retention. Migration of excellent medical and surgical staff out of public hospitals will be fatal to hospital quality and efficiency. Management will need to be more attuned to what doctors want from their employment in major public hospitals.

Reorganising hospital systems

Advocates of preventive care, improved public health education and increased use of ambulatory care suggest that these will lead to an improvement in the general health of the community, and I agree. However, they also conclude that there will be less need for hospital care. But, with people living longer and staying healthy for longer, I think that, when they finally come to be admitted to hospital, they will be older and sicker. This will mean more work for hospitals, not less.

As the population ages and more patients are admitted with complex health problems and comorbidities, general medicine will be the key to efficiency within large public hospital systems. Hospitals are gradually filling with older people. The flow of patients from general practice to emergency units will be redirected to general medical units and, where appropriate, to aged-care departments. General physicians will be the patient case managers, and central to this function will be the doctor–patient relationship. Specialty medical and surgical units, general surgical units, radiology, nuclear medicine and pathology services will be used as required. An 80-year-old woman with abdominal pain, associated heart failure and a recent stroke will be managed by a medical unit, with surgical input, including operative care, as required. A 42-year-old man with angina requiring angioplasty, or hernia requiring surgery, will be immediately referred to the appropriate specialist unit. Such patients without complications are likely to become significantly less common in hospital inpatient practice, as more are treated in ambulatory settings. It is therefore imperative that specialty medical and surgical units do not become disenfranchised.

Developing such a system

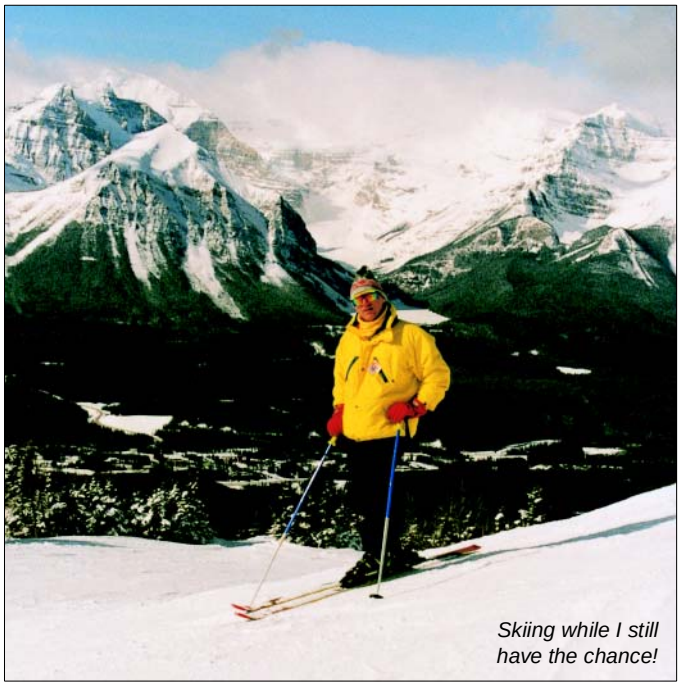
■ *Medical staff need to embrace change.* Senior hospital doctors need to become part of the solution rather than part of the problem by taking on clinical leadership. The relationship between general medicine and specialty medicine needs to improve. The care of individual patients is paramount, and should overcome parochial issues of patient ownership and bickering about the respective size of hospital departments. This improved relationship is likely to occur rapidly, as the current trend is for new "general physicians" to be specialist physicians in disguise. As the traditional "pure" general physician retires, we will go through a phase of subspecialist physicians, with general medicine as an interest. In the longer term, there will be a new cohort of general physicians whose responsibilities will combine elements of emergency medicine, intensive care, aged care and internal medicine.

■ *The learned colleges need to change.* The general medicine training program needs to be restructured, with more exposure to ambulatory practice, emergency medicine, administration, safety and quality improvement, as well as cost-effectiveness and resource allocation.

■ *Hospital executives and health department heads need to change.* They will need to rediscover the skills and experience of skilled clinical staff, engage them in the planning process and supply adequate funding for public hospitals. They will need to recognise the academic strengths of major teaching hospitals, which train the doctors of the future and devise the therapies of the future. Either funding for teaching hospitals will have to increase appropriately or rationing (perhaps termed prioritisation) will need to become more overt.

■ *Hospitals need to change.* They need to be more efficient, with better organisation and more staff. The culture and attitudes of the staff need to change, with the focus on the needs of the patient. There is a significant danger that the needs of patients will be overlooked in the complicated and fast moving public hospital systems of the future. The complex pathway of the patient through this system needs to be directed efficiently and with humanity by the hospital case managers of the future. Let us continue to call them general physicians.

In the absence of these changes, public hospitals will become a thing of the past.



Skiing while I still have the chance!

Competing interests

None identified.

References

1. Hillman K. The changing role of acute-care hospitals. *Med J Aust* 1999; 170: 325-328.
2. Malcolm L. Primary health care and the hospital: incompatible organisational concepts? *Soc Sci Med* 1994; 39: 455-458.
3. US Institute of Medicine of the National Academies. Crossing the quality chasm: a new health system for the 21st century. Available at: www.iom.edu/includes/DBFile.asp?id=4124 (accessed Jul 2003).
4. Shortell S, Gillies RR, Devers KJ. Reinventing the American hospital. *Milbank Q* 1995; 73: 131-160.

(Received 15 Oct 2002, accepted 5 May 2003) ❑

The public hospital of the future

Jeffrey D Zajac

ABSTRACT

- Public hospitals designed for the past are not changing rapidly enough to meet the needs of the future. Changing work practices, increased pressure on bed occupancy, and greater numbers of patients with complex diseases and comorbidities will determine the functions of future hospitals.
- To maximise the use of resources, hospital "down times" on weekends and public holidays will be a distant memory. Elective surgery will increase in the traditionally "quiet times", such as summer, and decrease in the busy winter period.
- The patient will be the focus of an efficient information flow, streamlining patient care in hospital and enhancing communication between hospitals and community-based health providers.
- General and specialty units will need to work more efficiently together, as general physicians take on the role of patient case managers for an increasing proportion of patients. Funding needs to be adequate, and system management should involve clinicians.
- Safety will be enshrined in hospital systems and procedures, as well as in the minds of hospital staff.
- If these changes are not implemented successfully, public hospitals will not survive in the future.

MJA 2003; 179: 250–252

FASTER AND FASTER AND BETTER AND BETTER, or faster and faster and worse and worse. These are the only two pathways into the future for Australia's public hospital system.

Public hospitals are very special places — large numbers of committed, high quality clinicians, registrars in training, medical students, nursing and allied health staff care for a diverse range of people with particular needs determined by diagnostic diversity. But the organisation and infrastructure of public hospitals are designed for times past and are not changing rapidly enough to meet the demands of the next decade or so. Although I am optimistic about the future of public hospitals, they face significant challenges. Four issues exemplify these challenges.

- In the "good old days", a patient knew who his or her doctor was. Today, with the interdisciplinary team approach to patient care, and rotating interns, registrars and consultants, the one-on-one doctor–patient relationship is rapidly receding or long gone. There is a need to prevent complete fracture of this vital personal link.
- In the "good old days", a quick ward round on Saturday morning sufficed for discharge planning, as the final decision was left until Monday. Now the question is *"How many patients did your unit discharge last Sunday?"*, reflecting the increasing demand on beds and the need to make best use of available resources.
- In the "good old days", older, frail patients were unlikely to have elective surgery, and, if they did, they would be admitted 2 or 3 days before the operation "to get them ready". Now, when an 82-year-old man with ischaemic heart disease, chronic respiratory disease and cognitive dysfunction is admitted for a hernia repair, it is often on the day of surgery, but a 2-week postoperative stay is likely, and the procedure can be life threatening if care is not optimal.
- In the "good old days", it was assumed that errors and omissions did not occur, or, on the rare occasion that they did, it was because of individual carelessness or ignorance. We now have strong evidence that, despite best intentions, suboptimal care can occur, and patients are at risk of being harmed by system failures.

Today's public hospital system is mainly based around the needs of those who work in it, rather than the needs of the patients receiving treatment. For example, ward rounds are often designed to suit busy visiting doctors rather than complex hospital needs. Public hospital development has been haphazard, resulting in duplication and inefficiencies,[1] and this haphazard development is reflected in the high incidence of adverse events. Despite the dedication and hard work of the clinical staff, the operational systems of public hospitals need to be improved. Changing doctor–patient relationships, the increase in pressure to move patients through the system, the increasing number of older patients with complex conditions, and issues of safety will all determine the future development of public hospitals.

Department of Medicine, University of Melbourne, Austin Health, Heidelberg, VIC.

Jeffrey D Zajac, MB BS, PhD, FRACP, Head of Department of Medicine.
Reprints will not be available from the author. Correspondence: Professor Jeffrey D Zajac, Department of Medicine, Austin Hospital, Level 7, Lance Townsend Building, Studley Road, Heidelberg, VIC 3084.
j.zajac@unimelb.edu.au

Factors shaping hospitals of the future

I believe that the organisational structure of hospitals, not their buildings, will be unrecognisable in 10 years' time. Senior doctors will re-engage in the planning process. Boundaries between various specialist and general medical and surgical units will blur or disappear, and the focus will be on patient care.

The relative shortage of funding for hospitals will remain. Although we are spending more than ever on healthcare — both in absolute terms and as a percentage of gross domestic product — it is likely that, in the future, the proportion spent on hospitals will continue to decline. Thus, efficiency

and effectiveness will become unstoppable driving forces. Despite the perception of most clinicians that more money is the solution, there is a view in government health departments and treasuries that increased funding does not always solve the problems of delay in access to treatment, waiting lists and poor staff morale. These financial pressures will test the role of public hospitals as centres of excellence for therapy, training and research.

Finally, service provision in hospitals is poor. The overriding problem with hospitals as organisational entities is that they fragment the continuum of care.[2] If supermarkets offered the same level of customer service as encountered at times in public hospitals, they would not survive in a competitive market. The customers of hospitals are clinicians and patients who can and will "vote with their feet".

The public hospital of the future

Niels Bohr said prediction is very difficult, especially when it concerns the future. Facing this difficulty, rather than making a prediction, I will describe a hospital in which I would like to work in the year 2013. A useful framework for assessing and planning change is provided by the six specific aims for improvement in healthcare recommended by the US Institute of Medicine. Healthcare should be:[3]

- Safe — avoiding injury from the care;
- Effective — providing evidence-based services;
- Patient-centred — providing care responsive to patient preference;
- Timely — reducing waits and sometimes harmful delays;
- Efficient — avoiding waste; and
- Equitable — providing care that does not vary in quality because of patient characteristics (sex, ethnicity, socioeconomic status).

Efficient communication and flow of information

Hospitals today are relatively inefficient. A patient with a complex medical problem is seen by a large number of clinicians — he or she often has to repeat the same history to the general practitioner, emergency room triage nurse, emergency room registrar and specialist, general medical registrar and intern, not to mention assorted consultants. The physical examination is also repeated on many occasions. Then there are allied health staff (physiotherapists, occupational therapists) as well as pharmacists and nurses. No wonder patients become agitated or exasperated and don't know who is looking after them!

Efficient information flow is essential, and technological solutions will have to be found. Hospitals of the future will need to develop strategies for streamlining patient care. The patient will be the focus of a system of information flow about diagnosis, therapy and prognosis. The hospital of the future will no longer be the hub of medical care; this function will shift to community-based providers,[4] and there will be substantial enhancement in communication between hospitals and surrounding GPs. Technological improvement involving email, web-based reporting of results and computer-based teleconferencing will revolutionise communication. Files and test results will no longer disappear, and we may be able to avoid that familiar sinking feeling, as an elderly patient with language difficulties and a large bag of tablets is wheeled into the consulting room, while the clerk explains that the file cannot be found. All healthcare staff involved in patient care will carry personal organisers to ensure that this problem never occurs.

There will be greater continuity of information across all healthcare settings, better systems for triage, and better systems for assisting evidence-based clinical decision-making. Patients will have confidence in the safety of hospital care based on available audit data, not just a warm confidence in their doctors.

All those involved with a particular patient will be able to see the same investigation data at the same time, and consultant opinion will be able to be analysed immediately by all those involved in the patient's care. Delays in patient management will be identified because of variation from standard care, and rectified. Doctors will once again be able to concentrate on the interpersonal aspects of patient care rather than the soul-destroying inefficiencies of locating histories, x-rays and pathology results, chasing up the registrar, or waiting for an orthopaedic opinion. I hasten to add that I recognise that data entry and computers are not fail safe, and mechanisms to minimise errors will need to be developed.

Maximising use of resources

Hospitals will learn from industry — hospital infrastructure will be used more efficiently. Weekends in public hospitals will be indistinguishable from weekdays, as empty beds are filled with elective surgical patients. More elective surgery will be performed over the traditional summer break, and less in the winter, when the hospital intake of sick, elderly patients peaks. Thus, surgeons will need to take skiing lessons so they can take their annual leave in the winter, while physicians may have to give up skiing!

To make the maximal use of resources, staff levels will have to increase — more medical, surgical and nursing and allied health staff are inevitable. However, with professional and personal pressure, there is a significant risk that medical (and nursing) staff will find major public hospitals less appealing places to work. Increasing patient throughput, increasing regulation, increasing rates of change and decreasing security of employment, particularly for senior staff, will affect staff retention. Migration of excellent medical and surgical staff out of public hospitals will be fatal to hospital quality and efficiency. Management will need to be more attuned to what doctors want from their employment in major public hospitals.

Reorganising hospital systems

Advocates of preventive care, improved public health education and increased use of ambulatory care suggest that these will lead to an improvement in the general health of the community, and I agree. However, they also conclude that there will be less need for hospital care. But, with people living longer and staying healthy for longer, I think that, when they finally come to be admitted to hospital, they will be older and sicker. This will mean more work for hospitals, not less.

As the population ages and more patients are admitted with complex health problems and comorbidities, general medicine will be the key to efficiency within large public hospital systems. Hospitals are gradually filling with older people. The flow of patients from general practice to emergency units will be redirected to general medical units and, where appropriate, to aged-care departments. General physicians will be the patient case managers, and central to this function will be the doctor–patient relationship. Specialty medical and surgical units, general surgical units, radiology, nuclear medicine and pathology services will be used as required. An 80-year-old woman with abdominal pain, associated heart failure and a recent stroke will be managed by a medical unit, with surgical input, including operative care, as required. A 42-year-old man with angina requiring angioplasty, or hernia requiring surgery, will be immediately referred to the appropriate specialist unit. Such patients without complications are likely to become significantly less common in hospital inpatient practice, as more are treated in ambulatory settings. It is therefore imperative that specialty medical and surgical units do not become disenfranchised.

Developing such a system

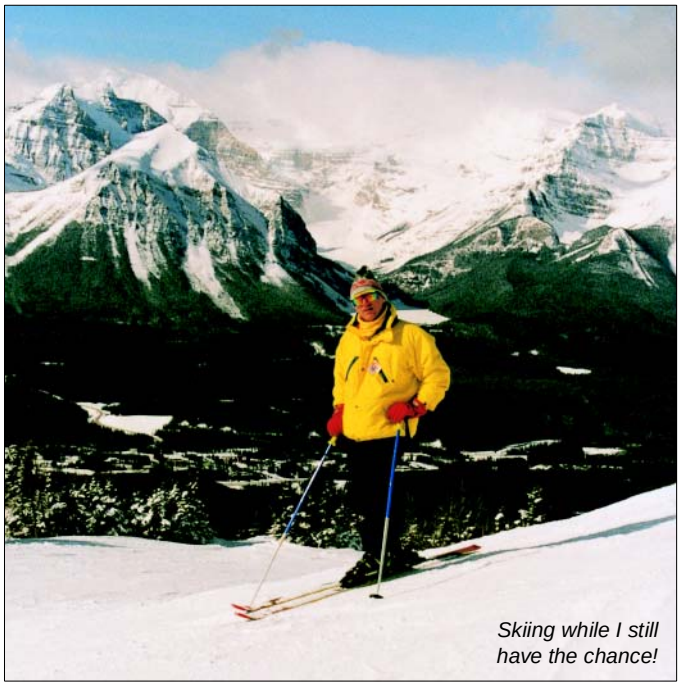
■ *Medical staff need to embrace change.* Senior hospital doctors need to become part of the solution rather than part of the problem by taking on clinical leadership. The relationship between general medicine and specialty medicine needs to improve. The care of individual patients is paramount, and should overcome parochial issues of patient ownership and bickering about the respective size of hospital departments. This improved relationship is likely to occur rapidly, as the current trend is for new "general physicians" to be specialist physicians in disguise. As the traditional "pure" general physician retires, we will go through a phase of subspecialist physicians, with general medicine as an interest. In the longer term, there will be a new cohort of general physicians whose responsibilities will combine elements of emergency medicine, intensive care, aged care and internal medicine.

■ *The learned colleges need to change.* The general medicine training program needs to be restructured, with more exposure to ambulatory practice, emergency medicine, administration, safety and quality improvement, as well as cost-effectiveness and resource allocation.

■ *Hospital executives and health department heads need to change.* They will need to rediscover the skills and experience of skilled clinical staff, engage them in the planning process and supply adequate funding for public hospitals. They will need to recognise the academic strengths of major teaching hospitals, which train the doctors of the future and devise the therapies of the future. Either funding for teaching hospitals will have to increase appropriately or rationing (perhaps termed prioritisation) will need to become more overt.

■ *Hospitals need to change.* They need to be more efficient, with better organisation and more staff. The culture and attitudes of the staff need to change, with the focus on the needs of the patient. There is a significant danger that the needs of patients will be overlooked in the complicated and fast moving public hospital systems of the future. The complex pathway of the patient through this system needs to be directed efficiently and with humanity by the hospital case managers of the future. Let us continue to call them general physicians.

In the absence of these changes, public hospitals will become a thing of the past.



Skiing while I still have the chance!

Competing interests

None identified.

References

1. Hillman K. The changing role of acute-care hospitals. *Med J Aust* 1999; 170: 325-328.
2. Malcolm L. Primary health care and the hospital: incompatible organisational concepts? *Soc Sci Med* 1994; 39: 455-458.
3. US Institute of Medicine of the National Academies. Crossing the quality chasm: a new health system for the 21st century. Available at: www.iom.edu/includes/DBFile.asp?id=4124 (accessed Jul 2003).
4. Shortell S, Gillies RR, Devers KJ. Reinventing the American hospital. *Milbank Q* 1995; 73: 131-160.

(Received 15 Oct 2002, accepted 5 May 2003) ❑