I preface the following comments with a statement that these comments represent a personal view, in that I do not represent any organisation or body. I do however have over 20 years experience in healthcare services management and planning for hospitals, government and most recently for the private health insurance industry. My overall impression of the factors affecting increasing costs of technology in healthcare draw from all these areas of experience, but data and quantitative information are drawn from my recent experience in the private sector almost exclusively.

Drivers

Several significant drivers have become evident in relation to the influences of advances in medical technology on health costs, some more direct and others less. Of the direct drivers, the more significant seem to have been and continue to be:

- Pharmaceuticals
- Medical devices (implantable prostheses, aids to surgery)
- Enhanced safety of healthcare delivery

The latter is a less visible change in technology. However it is evident that as procedures and treatments are deemed to carry fewer and fewer risks by doctors, or even assessed as being safer by informed patients, then the perceived benefit to risk assessment leans further and further towards an intervention option over a conservative or wait-and-see option. This safety aspect relates to what may be a gradual movement of technology, generally as an outcome of refinements of drug treatments, computer technology, anaesthetic techniques, or device technology (smaller, more reliable, more replaceable, more versatile, stronger), rather than a revolution.

The concept that medical technology has conferred an improvement on the safety of healthcare intervention may be one of perception as there is ample evidence that medical error and misadventure remain significant problems (and may themselves be significant costs related to healthcare and advances in medical technology). Nevertheless, the perception is important, there have been improvements in “ideal care”, and the increased demands on health services are measurable.

Significant examples in recent years can be found in trends for hip and knee replacement surgery, coronary artery stenting, and certain types of neurosurgery. Particularly with respect to the example of joint replacement surgery, while many of the commonly used hip and knee replacements were introduced 15 or more years ago, a large increase in the surgery rate is more likely due to significant improvements in the safety of surgery and the benefits of surgery, than evidence of improved health status attributable to a change in the joint replacement technology itself.

More recently, and perhaps even more noticeably, the introduction of Drug Eluting Coronary stents (DES) was associated with an enormous increase in the procedure rate that was not balanced by a reduction in coronary artery grafting (CAG). This is despite the fact that a soon to be published review by Bazian (a UK based evidence assessment group) (Babapulle) notes that the literature produced to date does not support improvements in the rate of myocardial infarction or sudden death post DES stenting compared to the outcomes of stenting using the previously available bare metal stents. And yet presumably these would have been the key goals of any change

in stenting practice and the principal reasons for clinicians extending access to coronary artery stenting as they have done. This too may suggest that the perception of reduced risk rather than evidence of improved health outcome alone, has a significant impact on demand for and delivery of healthcare interventions, and perhaps even more so for expensive healthcare interventions.

(On a tangent, it is interesting that the healthcare interventions showing the highest increases in demand over the last couple of decades seem to be those same interventions where the cost of the new technology is greatest. Following on from this unsubstantiated observation, if it cannot be shown that the health outcome improvement is also greatest in these areas, then a question must be raised as to whether the potential economic gains to suppliers of the technology, along with the consequent marketing, have unduly influenced the patterns of healthcare delivery.)

Medical salvage has also been significantly enhanced. That is, patients have the potential benefits of being able to be retrieved from what would have been, even as little as a decade ago, probable death or major disability. The quality of Intensive Care services, retrieval services, drugs to combat significant infection, drugs which have a reasonable chance of stemming what would in the past have been unmanageable bleeding, all contribute to the lesser risk of intervention and change in the balance of the risk versus benefit equation.

Indirect, or less direct, drivers of increased costs related to advances in medical technology include:

- Enhanced access to technology (expansion into private sector, greater health insurance coverage since July 2000, more hospitals with the capacity for complex treatments, for example, cardiothoracic surgical capacity, neurosurgical capacity, oncology services)
- Ageing population
- Preparedness, or perhaps keenness, to accept smaller incremental improvements in health status for quite significant health care expenditure.
- Absence of any guidance from government, community or health professions as to an ethical framework for a population based approach towards affordable health technology, cost-effectiveness of technology and increments in technology.

Others may also question the rates of discretionary procedures such as gastroscopy, but that is not the subject of this discussion.

Ageing

The relationship between the impact of ageing within the population and medical technology is also associated with the safety of newer technology. That is, not only is it safer to offer a treatment because the health status of many individuals remains reasonable despite their age, but as the life expectancy of older persons is greater, there is a greater perceived benefit, or anticipation of a greater longevity of benefit, in providing technology whose benefit may have, in the past, been appropriately restricted due to the potential risks and the perceived limited years of benefit for the individual.

There is a very strong interaction between the relative health of the individual patient, that now regularly extends to their 70's or 80's, the concern of patients of any age over pain, limitation or infirmity that might remain with them for a further 20 or more years of what might otherwise be an active life (and certainly more years than would have been expected to have been the case even three decades ago), the confidence of health professionals in the safety and utility of interventions (and I again draw attention to previous comments made in relation to lack of evidence of significantly improved health outcomes for many apparent advances in technology and treatment), and the ease of access to treatment. In relation to access, the trends to reduced lengths of stay in hospital and towards ambulatory care can again alter the perception of social risk to the patient who no longer needs to consider that intervention may cause them to be removed to hospital from their usual and desired environment for a lengthy period, potentially their last.

It should be noted however that the types of intervention and the costs of healthcare related to age are changing. The peak expenditure remains towards the end of life and so is moving (slowly) to the right of the age line as life expectancy extends. There is now a body of research that suggests that it is inappropriate to extrapolate the relative expenditure by age without an adjustment for this shift. The health of a 70 year old in 2004 is better than the health of a 70 year old in 1984 and probably better than that of a 70 year old in 1994. The average 70 year old today is not approaching end of life interventions. At the same time that they would be more likely to seek quality of life enhancing interventions with the expectation of many years ahead of them.

Examples of Increased Cost of Medical Technology

Prostheses

Arrangements for payment of benefits by health funds to private hospitals and public were changed in early 2000. As an example of the effect of recent changes in the costs of medical technology in the private sector, for one particular health insurer the payments of benefits for prostheses listed on Schedule 5 have risen as below since that time

2001/2002	$27.3m
2002/2003	$37.5m
2003/2004	$45.7m

This represents an increase of over 67% in only two calendar years, and has been typical of the experience of other health funds and even of earlier years.

Significantly, while there has been a 33% increase in the average expense of prostheses for the admissions to hospital during that period where prostheses were implanted, there was also a significant increase in the numbers of fund members being admitted to hospitals and receiving implants.

As a specific example, the introduction of drug eluting stents in 2002 has seen an increase of over 75% in the number of members of that health fund admitted for insertion of coronary stents during the following two years, with an increase in the cost of each stent originally increasing by 200%, albeit more recently stabilising to a level about 100% more than the 2001 benefit. Irrespective of the striking increase in the cost per unit of stent technology, the increase in sheer volume appears to reflect the confidence that the procedure has become far more safe and efficacious, a health outcome benefit apparently now being desirable for a greatly increased number of people.

Hip replacement surgery increased by 25% and knee replacement surgery by 38% over the same period. Together the prostheses for these procedures account for about 50% of the overall benefits paid for prostheses by health funds.

However in the last 12 months the release of some research papers in medical journals which support greater use of Cardiac Defibrillators in heart failure might see the expenditure for this item overtaking, and perhaps even dwarfing that of the others where prostheses used in these procedures can amount to over $60,000 per procedure and a patient may require repeat procedures every 5 to 7 years, even if there are no adverse events.

Even more striking in terms of unit cost, the recent use of an artificial heart, each of which might cost $100,000 to $300,000 per patient, raises both the spectre of the continuation of rapidly growing expenditure on prostheses, as well as questions of affordability.

Detailed data on expenditure on prostheses might be provided by individual health funds or the Australian Health Insurance Association, and further examples can be provided on request. However I feel that one very important issue highlighted by the exponential growth in this area of medical technology is that there are few signals to ensure that the use or introduction of medical devices is cost-effective, affordable from a community viewpoint, and based on a standard of evidence considered appropriate to our community. Currently, it is only a theoretical requirement that the introduction of new or enhanced technology with a substantial potential impact on the health budget be supported by evidence, in direct contrast to the arrangements applying to new drugs. As the cost of individual items increases, the uses for prostheses expand, and access improves, there is a significant risk to patients, to payers within the health industry and to government (directly and related to the 30% rebate) that new prosthesis technology able to cause a significant drain on health budgets could be introduced before appropriate checks and balances can be brought into place.

This prospect of a sudden shift in the allocation of resources should be a concern to planners and to government as there are already warnings about the potential for the size of this problem to be great.

Drugs

The last decade has seen an expansion of the range of relatively expensive drugs available to Australians, either through the national Pharmaceutical Benefits Scheme arrangements (and associated schemes such as S100) or privately, which would

include the funding of expensive non-PBS drugs by private health insurers, Department of Veterans Affairs, or self payers.

There have been some which have provided major breakthroughs for the treatment of certain chronic conditions such as infliximab for arthritis and Crohn's Disease where treatment for those with refractory disease was virtually unavailable previously. At a cost of almost $20,000 per annum per patient for maintenance therapy, the costs are high, and represent a change from the past where acute treatment was often expensive but chronic therapy was far more likely to be with less expensive medication.

There is, however, a need to note a trend in the use of other expensive drugs. For example, following the presentation of an abstract on the use of a reasonably expensive anti-cancer drug for prostate cancer last year, and the publication of those studies in May 2004, a number of oncologists pressed strongly for the use of this drug combination for refractory prostate cancer. While this is not of itself extraordinary, the studies in question suggested an increase in median survival using the new regime from 16 months to 18 months. That there was pressure to use this regime and apply this early research for individual patients where they could afford to pay, at a cost of over $10,000 per patient, and this before there was consideration at a community level of whether the incremental improvement in outcome justified the cost of this drug, raises issues of concern.

Namely, the development of new drugs or the expanded indications for existing but expensive drugs, impacts on the costs of treatment at the margins, and will eventually affect the availability of funds for other purposes. Very expensive treatments were at one time largely confined to the public sector and were therefore subject to decisions within the hospital community or by hospital committee. The shift of expensive treatments to the private sector or to ambulatory care is associated with a change in the responsibility for decision making. Individual doctors are more able to make patient care decisions in conjunction with their patients, who are not uniformly well informed or able to digest complex clinical research evidence, without external scrutiny. This heightens the potential to choose expensive treatment alternatives with marginal health outcome improvements.

While patient choice and the primacy of the doctor patient relationship are to be commended, there is expanding potential for these to determine selection of treatment options without the benefit of a previously available more objective review by a wider group of practitioners attempting to take note of evidence and opportunity cost. While I am not aware of any research which can prove this hypothesis, this may be a largely unheralded effect of expanded access to the private sector and ambulatory care.

At this time it does not yet represent a large portion of healthcare expenditure but as the potential drug formulary expands, with some drugs costing as much as $160,000 per person per annum, the current arrangements do not give adequate guidance to payers or clinicians, or indeed their patients, as to what might be a reasonable level of expectation of health improvement before certain drugs become widely recommended on variable levels of evidence.

Particularly with the recall of widely prescribed drugs following disclosure of evidence of adverse effects known to the manufacturer for some years, it is no longer

reasonable to expect individual clinicians to be able to readily access available evidence on certain drugs without the influence of the manufacturer and their marketing. The impact on total health expenditure and the potential for there to be an opportunity cost can be ignored no less.

Intensive Care

Medical technology is now capable of maintaining the heart and brain for an extended period without reasonable expectation of the body recovering.

There have been recent instances of patients who have been maintained in Intensive Care for almost five months, despite a poor prognosis and poor outcome. Clinicians are not well supported in that their legal and moral status in trying to explain and negotiate with loved ones is uncertain or, it would appear, often without recourse, where there would be reasonable justification to limiting the decision making on the basis of reasonable expectation of recovery.

It is not certain that this would have the effect of increasing health costs overall, but it could well deprive other patients of access to limited ICU resources.

The effectiveness of Intensive Care services is an important contributor to the greater expectation of safe outcome which has previously been suggested as contributing to the take-up of new technology and even existing technology.

Conclusion

This paper is presented with apologies that it is poorly referenced and lacking in quantitative information. However I no longer have access to the industry information once available to me and you will receive many papers offering quantitative assessments of the increasing costs of healthcare due to medical technology.

Even so, I am concerned that there are sufficient recent examples of the introduction of costly new medical technology that the community should have some concern as to the affordability of this care, and the opportunity costs of spending in these areas as opposed to various preventive, health promotion, general access to care, and social support activities.

The potential for new devices (e.g. robotic surgery, ambulatory drug delivery devices) and prostheses to be introduced with minimal evaluation of efficacy and cost-effectiveness, even by existing organisations such as TGA, Department of Health and Ageing, Medical Services Advisory Committee, NHMRC or the newly formed Prostheses and Devices Committee, requires attention. It can now be shown that some devices can impact on the costs of healthcare of the order of tens of millions of dollars and more, and the community should have the expectation that spending by government, directly or indirectly, and by health funds should represent investment with the responsible expectation of health improvement at an acceptable cost.

While there would appear to be a far higher standard of evidence required for the introduction of new drugs, there remains a risk that the pressure to introduce new drugs as they are developed will be associated with attempts to work around the existing controls, carrying with it a similar risk.

I would urge the Commission to consider the need to support the expansion of government supported institutions with the brief to monitor technology (such as the Australian Orthopaedic Association's National Joint Registry) and evaluate the affordability of new technology and new uses of new and existing technology.

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