SUBMISSION FROM
THE AUSTRALIAN INSTITUTE OF MEDICAL SCIENTISTS TO THE PRODUCTIVITY COMMISSION INQUIRY
IMPACT OF ADVANCES IN MEDICAL TECHNOLOGY ON HEALTHCARE EXPENDITURE IN AUSTRALIA

Introduction

The Australian Institute of Medical Scientists (AIMS) is a professional organisation representing some 2000 Medical Scientists from all disciplines of pathology and associated industries. It is involved in establishing and maintaining the high academic and professional standards of medical scientists employed in Australian medical laboratories. The institute also provides medical scientists with the opportunity to continually update their professional knowledge through national and state scientific meetings, a scientific journal and postgraduate programmes such as the Fellowship. AIMS has a minimum requirements standards document for accredited degree level courses in medical laboratory science offered by Australian universities and undertakes regular reviews to ensure the courses meet these standards.

As the leading organisation representing medical scientists in the pathology industry our members work at the interface of evolving technologies. Pathology is a significant contributor to healthcare costs within Australia with approximately 15% of Medicare expenditures being on pathology alone. This $1 billion a year amount does not include Commonwealth contributions to public inpatient and outpatient services(1). Unique funding arrangements with government have ensured expenditures are maintained within well defined limits, however there are continuing pressures on this capping agreement. Forces influencing healthcare costs have been well identified within the Commission's own paper and other documents(2). The artificial control of the supply of pathology tests acts as a deterrent to the introduction of new technologies and may limit the benefit to the community. For example withholding MBS approval for the application of flow cytometry to feto-maternal haemorrhage despite clear improvement in patient outcomes and more efficient usage of the limited stocks of anti-D immunoglobulin was both clinically inappropriate and costly. The influence of public will and sentiment for advanced and sometimes unproven technology or diagnostics may often override any evidence of community benefit as is the case with PSA testing, where significant debate over the benefit of screening for prostate cancer still occurs. The greatest challenge to healthcare within our sector lies in harnessing the benefits of new technologies without escalating the cost to the public purse.

Laboratory automation and consolidation

Historically cost containment within pathology has been achieved through the introduction of new technology including laboratory automation and improved information systems. This, coupled with major organisational changes including laboratory consolidation and the capping of funding, has seen the increase in pathology costs kept to relatively low levels in comparison with other medical costs. The net effect over an extended period has been a reduction in employment costs through loss of personnel or increased use of lesser qualified staff, reduction in costs per test and improved turnaround times and error rates(3). The ability of further improvements in medical technology to achieve further cost reductions is debatable. Community access to pathology in remote and regional areas must be balanced against the drive for centralisation of testing and the benefit in economies of scale.

The increase in the proportion of the population over 60 years of age brings with it major increases in many chronic diseases. The ability of technology to cope with increased demand for testing, estimated in USA to be of the order of 17%, is difficult to gauge. Young *et al* and the American Society of Clinical Laboratory Science identified the impact of age and disease complications on laboratory costs (6,7,8). Extrapolation of these findings would suggest that the ageing of the Australian population will bring about a significant increase in the demands for laboratory tests. The quantum of this baby boomer induced increase may be offset by measures to improve general community health through preventative health measures focusing on such areas as diabetes, obesity and the environment.

Education and clinical research

A consideration often forgotten is the requirement for appropriately qualified staff that will be created by the increasing test demand. Within Australia the trend to corporatisation in many medical areas may have contributed to the scarcity of pathologist manpower (4). Similar conclusions have been reached in the US where growth in testing demand has not seen appropriate training and recruitment of laboratory personnel. Subsequent loss of clinical research and the loss of the viability of healthcare education may result in significant cost and reduction in the quality of pathology services in the long term. These concerns are not unique to Australia; Relman (5) as early as 1997 recognised that market driven healthcare and the move to investor owned business models had altered the healthcare dynamic and this might significantly alter public health policy. As we trend to more American style funding models an awareness of the need to ensure development of clinical research and continued training of specialist and scientific staff is required. Specific counterbalances to encourage the corporate sector to take on these responsibilities are essential. The expenditure to ensure training and development both in the clinical setting and for new graduates will need to be significant to ensure maintenance of quality standards, unless new medical technologies such as virtual microscopy and on line training are embraced and appropriately funded. We note in the October 2004 *Pathology*

Today a call for expressions of interest in Private Sector pathologist training. The subsidised program at least recognises the need for a contribution from the private sector, but similar funding of accredited medical laboratory science courses, especially the critical practicum period of training, may avoid potential shortages in the future.

Point of care testing (POCT)

The increase of chronic illness and likelihood of more decentralised point of care testing will bring with it unique requirements for laboratory staff to provide support through education, training and assessment (8). The need to ensure the elderly and other community members are competent in the use of instrumentation and interpretation of results is the key to success of such programmes involving this relatively new medical technology. Many guidelines exist for its introduction, but within Australia there are limited funding mechanisms for laboratories to support these activities. The relative advantages of such systems cannot be fully recognised until this is resolved, and success stories such as the introduction of a diabetic monitoring programme within the indigenous rural community and iCARnet, a scheme to improve cardiac care to rural South Australia, will not be repeated(9,10).

The impact on health budgets of the widespread introduction of POCT is open to debate; but there are studies to suggest cost effectiveness and clinical benefit if these are introduced appropriately (11). However, when there is a failure to identify needs appropriately, for example the introduction of POCT into low utilisation scenarios, there may be increased cost ten fold over conventional laboratory testing. It is an interesting dilemma that the drive to day surgery procedures underscores the need to allow funding models for pathology testing which are contrary to the current aggregation model adopted by current pathology practice to obtain maximum economy of scale. Rebates for POCT and additional incentives for provision of laboratory support of such instruments in non traditional healthcare settings are critically important. Especially if quality is to be maintained, challenges will include training in environments of high staff turnover, maintenance of client medical records and comparability of results across platforms.

Genetic Testing

The holy grail of medicine, the promise of personalised medicine, is answered with the molecular diagnostics revolution. The ability to avoid the trial and error of current pharmacological treatments and adopt approaches that are effective and safe for the individual, and the ability to detect disease and genetic defects including “disease” and “risk” genes will allow interventions that may save the health industry millions of dollars(16). Unfortunately the rush to patent parts of the genome will act as a counter to this potential. Currently where patents are in place for diagnostic testing, hepatitis C, there is a significant premium over similar non patented tests, hepatitis B markers.

"Genetic testing will improve prediction of disease predisposition, timing of their onset, severity as treatment or medications likely to be efficacious or harmful" (12) It offers huge saving to the pharmaceutical companies in avoiding the necessity for large trials on drugs where adverse reactions to drugs are the result of genetic differences, and genomic technology will allow predictability of response(13)

It is debatable whether these saving will be passed on to the health system. The Australian Law Reform Commission discusses at length the many concerns around the potential impact on health costs and funding of genetic testing and gene patents (14). We concur with many of the aspects highlighted in this paper and recognise that longer term savings must be tempered against short term affordability. Historically the MBS system of giving item numbers only to "proven" tests is a successful mechanism of controlling expenditures. However, currently most of this testing is performed within the public sector so the cost impact of patents, royalty payments and demand will hit hard on this sector. It is difficult to determine demand for new genetic tests, but the growth of testing is assured(15). Current delivery mechanisms for genetic tests often require extensive counselling services to meet demand; and it may be necessary to expand training and education to support this. The ethical debate, the impact on individuals and the insurance industry are debates that will need considerable discussion beyond the scope of this paper.

It can only be hoped that costs per test in this area are reduced with the application of newer micro-array and similar technologies, which offer improvement over previous extremely manual testing procedures.

Blood and Blood Substitutes

The shrinking blood supply within Australia brings with it some potential cost increases, with hospitals being held more accountable for their blood usage and the requirement for expanding infrastructure to monitor appropriate usage. The community's wish for a zero risk of disease transmission has also contributed to the cost of the product and eliminated many potential donors. The growing plethora of screening tests and research for additional tests for vCJD and the probable introduction of West Nile Virus will not alleviate the cost burden. The growing use of recombinant factor products for coagulation deficiencies will enhance therapy and avoid transmission risk but again at significant cost.

The blood shortage will drive the search for more successful blood substitutes, which will no longer be a volunteer non profit product. The users of blood substitutes will have to find significant funds to supplement the coffers of large for profit organisations. This is a new paradigm and again represents a potential burden to the healthcare system (17). As does any movement in the value of the Australian dollar if these products must be purchased from overseas.

Introduction of regulation and accreditation

The introduction of these regulatory processes have delivered improved high quality services at significant additional costs. With the move for additional regulation of the industry and the impact of global harmonisation of standards encouraged through the completion of free trade agreements, there may be a significant cost impact to laboratories as resources are diverted from previous testing to maintenance of "quality" issues.

Conclusion

The impact of medical technology on healthcare budgets is often profound and the promise of paying now for a long term benefit is difficult to sell to government. It can be accepted that availability of a technology will result in its utilisation, often without a full evaluation of cost effectiveness and clinical benefit. The trend to evidence based medicine might assist in developing models to allow systematic introduction of medical technologies. Australia has avoided some of the traps by not being an innovator in adopting technologies unless they have been critically appraised. This is important if healthcare costs are not to explode and cause further financial burdens.

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