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Quality of pathology services: new strategic directions required

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Abstract

Purpose – The purpose of this paper is to discuss the challenges faced in Australia to maintain and sustain quality in pathology services, and present new strategic directions to address such challenges.

Design/methodology/approach – The paper is a review of the literature on pathology services and its quality of delivery and emerging issues.

Findings – Major issues are emerging in pathology services which threaten to impact on the quality of future service delivery. These issues include workforce shortages, growth in inappropriate testing, advancing technology, rural and remote region servicing, and a negative image of the sector. New strategic directions are shown to be necessary in terms of workforce planning and addressing the escalation of new technology and innovation. In order to sustain quality of services, a significant change from current practice is recommended, with strong leadership as the change driver.

Practical implications – This paper highlights the potential impact of emerging issues on future pathology-service quality. Significant implications for service delivery and patient care quality are reviewed.

Originality/value – This paper provides valuable information on current strategic and planning issues impacting on pathology services. It provides new solutions from the perspective of leadership of health and health services.

Keywords Health care, Health services, Australia, Pathology, Strategic objectives, Workforce issues, Quality assurance

Paper type General review

Introduction

Clinical pathology services are pivotal to today's health care. Pathology plays a significant role to the overall good health of the nation. It clearly underpins health care in Australia with around 70 per cent of all medical decisions involving diagnosis, management or treatment being informed by clinical pathology data (AAPP, 2008). The quality of clinical pathology services in Australia is regarded amongst the best in the world (AMA, 2011). National policies and funding arrangements have ensured access and affordability for patients, safety and quality for the community, timely delivery of pathology services, specialist training of the workforce, and a robust system of quality improvement and accreditation (AAPP, 2008; CHF, 2009; AMA, 2011).

However, there has been a pathology workforce shortage in Australia and elsewhere over the past 20 years or so (Eccles, 2006; Graves, 2007; Hilborne, 2008), and quite significant in rural and remote areas (Cameron and Dupal, 2009). This has presented ongoing concerns in terms of sufficiency of capacity to maintain and support the quality of clinical service delivery (DOHA, 2011). A series of recent workforce reports have projected significant issues in terms of the future delivery of clinical pathology services in Australia (Legg, 2008; DOHA, 2008, 2010, 2011). These reports confirmed a major workforce shortage which would impact on service quality unless urgent strategic action was taken.

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Over the past 30 years demand for pathology services has escalated with growth greater than general practitioner and specialist activity in Australia (AAPP, 2008). This has resulted in significant economic and quality of service concerns (Isouard, 1999a, b, c; Rao, 2003), including impact on pathology service efficiency and the declining workforce associated with it (Isouard, 1999c, d, 2000).

In Australia, pathology has established a quality framework which underpins patient safety and built around a patient-centred approach which responds to the preferences, needs and values of patients and consumers (ACSQHC, 2010). In addition, consumers of health services are starting to have a significant voice on the quality use and delivery of pathology services (CHF, 2009). In Australia, the Consumers Health Forum was recently funded by the government to provide feedback on their experiences with pathology services so as to improve current practice, and ensure patient focused services that enhance informed choice and meet consumer needs (CHF, 2009). The rationale of this paper is to discuss the challenges faced in Australia to maintain and sustain quality in pathology services, and present new strategic directions to address such challenges. This article provides valuable information on current strategic and planning issues impacting on pathology services. It provides new solutions to quality enhancement from the perspective of leadership of health and health services. This is of major significance because pathology services are integral to the health care of the nation since it plays a major part in medical decision making.

Australian pathology services

Pathology services are delivered through both the public and the private sectors in Australia. Currently, approximately 40 per cent of pathology is undertaken by the public sector which now includes public hospital services, reference laboratories, and other services including transplant, neonatal, and genetic services. The private sector pathology laboratories represent the remaining 60 per cent of services (DOHA, 2011).

Pathology services in Australia receive significant annual funding from the public sector. Over the past 25 years expenditure has increased from $346 million to just over $2 billion. This represents a 5.8 fold increase with annual growth of 7.3 per cent. However, annual growth has recently slowed down to just a 2.1 per cent increase in expenditure during 2009/2010 (DOHA, 2011).

About 85 per cent of the Australian population visits a doctor at least once every year. In 2007 there were 117 million attendances to general practitioners and 22 million to specialists. Pathology tests are requested in 36.7 per cent of all general practitioner episodes, with about 50 per cent of the population experiencing one episode or more of pathology testing annually (AAPP, 2008; DOHA, 2011). General practitioners request approximately 70 per cent of all pathology services. The type of pathology testing has also changed in recent times, with more services now undertaken for chronic disease management and preventive health care (AAPP, 2008).

Current and emerging issues

A number of the current and developing issues that impact on the quality of pathology services will now be briefly reviewed. These include the workforce crisis, the appropriateness of pathology test ordering, the implementation of Computerised Provider Order Entry (CPoE), the impact of rural and remote locations, and the image of pathology as a career, and the quality of services.

Workforce crisis

A national survey of the pathology workforce has identified a significant shortage of pathologists and scientists within an ageing workforce (DOHA, 2011). The shortage is of particular concern in regional and rural areas, and there is difficulty in attracting suitably qualified people to move there (Hilborne, 2008). The crisis is expected to peak within the next five years, with a third of the total workforce expected to leave. This would represent a shattering loss of around 1,340 people from the workforce (DOHA, 2010). The Report also identified other major concerns, including high staff turnover, and the training, recruitment and retention of staff from most areas of the pathology service (DOHA, 2011). In particular, there were significant costs associated with providing on-the-job training. This was obligatory as a result of the lack of practical training available in many university based courses, and in particular those undertaken by medical scientists. The data showed that many such graduates lacked the practical experience when starting work (Human Capital Alliance, 2010).

Another difficulty has been the recruitment of pathology workers to remote and rural areas (Hilborne, 2008). Research has shown that there is little incentive for suitably qualified pathology workers to relocate to smaller regional communities. Although around 25 per cent of the workforce is found outside of metropolitan areas, pathologists as a group remain unrepresented with only 17 per cent living in rural and remote districts (DOHA, 2011). Serious implications on the health care system are expected if these workforce issues are not appropriately addressed (Graves, 2007). These include delays in the diagnosis of cancer, failure to diagnose some infectious diseases, and blood transfusions not proceeding safely. The current quality of pathology service delivery would be jeopardized (AMA, 2011).

Pathology test ordering

Over the past three decades there has been a massive growth in the volume of pathology services with many more people having tests performed for them than ever previously. Numerous studies have indicated that a significant proportion of testing performed in Australia is inappropriate (MacPherson *et al.*, 2005; Conyers, 1999; Isouard, 1999a; Isouard, 2000). Research has shown that as high as 40 per cent of pathology tests are unnecessary, with very few centres being able to sustain a reduction of these unnecessary tests (Rao *et al.*, 2003; Lord Carter of Coles, 2010). This of course has led to a significant increase in costs and health care resources, and raised major concerns about unnecessary and excess test ordering. Another important potential implication for patient safety, threatening to increase the number of false-positive test results associated with unnecessary and time-consuming diagnostic examinations. As an example, one study found that through having requested ten pathology tests in a healthy individual there is a 40 per cent probability of a false-positive result. This would require more investigation and follow up using more resources and time (Axt-Adam *et al.*, 1998). In particular, excessive pathology ordering has been reported as significantly evident in patients presenting for elective surgery (MacPherson *et al.*, 2005).

Computerised provider order entry (CPoE)

CPoE systems have recently been introduced to enhance the appropriateness of test ordering and improve the efficiency, effectiveness, and quality of services delivered.

These innovative systems potentially contribute to the provision of consistent and secure exchange of pathology data using standardised formats which could enhance increased continuity of care and greater responsiveness across the pathology sector (Georgiou, Greenfield, Callen and Westbrook, 2009; Georgiou, Westbrook and Braithwaite, 2010). Its implementation is likely to significantly improve compliance with clinical guidelines and therefore improved appropriateness of testing (Georgiou and Westbrook, 2007; Georgiou *et al.*, 2007). Although pathology services are expected to eventually reap benefits from the application of CPoE, recent evidence has shown several challenges with introducing and maintaining the systems (Aarts and Koppel, 2009). Such issues have included not being able to achieve consensus on diagnostic algorithms for certain patient disorders, clinical resistance to CPoE, compatibility with existing applications, and failure to complement the way clinical and laboratory work is performed (Georgiou *et al.*, 2010). These are significant issues that must be addressed if the pathology systems are to function appropriately.

Rural and remote locations

Rural and remote regions offer enormous challenges in Australia to the provision of health care, and in particular pathology services. Major issues exist for consumers in terms of access and the availability of testing facilities. This was recently identified through a major review undertaken by the Consumers Health Forum (2009). For those consumers that require frequent testing, several unique challenges are apparent in terms of access, availability and turnaround time for the results (CHF, 2009; DOHA, 2011). In particular, specialized testing for complex and rare conditions is not always available at the nearest pathology collection centre in the rural and remote region (Cameron and Dupal, 2009; DOHA, 2011). There also needs to be a clear understanding and recognition of the unique aspects of the staffing in rural and remote pathology and the increased level of support required for them (Cameron and Dupal, 2009). The range of skills and multidisciplinary approach needed is vastly different to that of the major pathology centres. As an example, the scientists in regional areas require skills in all disciplines offered by the laboratory, together with skills in phlebotomy, data entry and customer service. Various mechanical skills and an analytical mind are needed to locally maintain equipment since technical support is not readily available (Cameron and Dupal, 2009).

Image as a career

As the health care system faces a current workforce crisis in many health professions, clinical pathology has significantly been impacted and many contributing factors implicated (Scott, 2009; DOHA, 2011). One often neglected aspect that undoubtedly contributes to the continued shortage of workers is the negative image that pathology seems to portray as a possible career path (Hung, 2011). Recent evidence suggests that pathology is an unpopular residency choice for medical students (Hung, 2011). This was found to result in a significant shortage of pathologists in some countries, and subsequently impact on the quality of clinical pathology services. A number of factors were implicated including a negative perception regarding pathologists as being "non-medical" and "invisible" in practice. The study found that such negative perceptions by the medical students had most likely contributed to them rejecting pathology as a career.

Service quality

Over the past 30 years, technological advances, rising costs and a diminished workforce have contributed to significant changes in the way clinical pathology services operate. Although testing productivity may have been enhanced, the activities of the pathologists and senior scientists to assure optimal quality of service may have lagged somewhat behind (Blanckaert, 2010).

Pathology in Australia has an international reputation in the area of quality and patient safety (DOHA, 2011).The sector has established a strong quality framework which underpins patient safety. More recently it has built itself around a patient-centred approach which responds to the preferences, needs and values of patients and consumers (Bauman et al., 2003; ACSQHC, 2010). A significant step towards maintaining quality standards in service delivery was achieved recently through the development of the Pathology Quality and Outlays Memorandum of Understanding (PQOMU, 2008). This agreement was established between the Australian Government and the profession of pathology services. It aims to ensure a patient-centred care approach though increased community access to quality and affordable pathology services, effective management of government expenditure towards pathology, and, enhanced care through improved quality and appropriateness of test services.

Patient-centred care is universally regarded as a key element for high-quality health. It was identified in the seminal Institute of Medicine report "Crossing the Quality Chasm", as one of six quality objectives for improving care. Strategies used to enhance quality of health have developed as policy-level drivers for improving patient-centred care (ACSQHC, 2010). However, several recent cuts to Government funding have potentially compromised the quality of pathology service delivery by impacting on key areas that affect patient-centred care such as accessibility, affordability and safety (AMA, 2011).The concern is that since pathology services are largely government funded, then any cutbacks in resources, together with the emerging workforce issues, could result in diminished quality.

The pathology laboratory plays an important role in ensuring patient safety and quality of services delivered. It provides reliable, accurate and timely results to inform clinical management and treatment, and the safe administration of medications and blood products. All pathology testing must meet accreditation standards established to provide quality services. It is obligatory that all pathology laboratories taking part in the Medicare funded system achieve accreditation. Accreditation is under the auspices of the National Association of Testing Authorities Australia (NATA) in conjunction with the Royal College of Pathologists of Australasia (RCPA). Accreditation to ISO 15189 is set for pathology servicing various areas of human pathology including anatomical pathology (histology and cytology), chemical pathology, microbiology, haematology, immunohaematology, cytogenetics, molecular biology, immunology and assisted reproductive technologies.

New strategic directions

The current and emerging issues present major concerns and challenges to the pathology medical and scientific profession in terms of the provision of quality services. New strategic direction is clearly required on many fronts, rather than just reactive strategies. Research evidence has shown that all too often, the pathology sector has tended to take reactive strategies by aiming for the "more for less" demand. This unfortunately results

in laboratories faced with even more laboratory data, often with shorter turnaround times for results and even less resources overall to use (Blanckaert, 2010). Such strategies have traditionally been incorrectly referred to as "increased efficiencies" with the resulting impact on quality and patient safety rarely assessed. The key element required for introducing and implementing new strategic directions in the pathology service is strong leadership at the national level to drive change. In terms of driving change, new directions will be essential in two specific areas- workforce strategies and technological advancement. These will now be reviewed.

Leadership to drive change

If real change is to be achieved in order for quality of pathology services to be sustained, a complete paradigm shift from current practice seems to be necessary. Leadership amongst the medical and scientific professions of pathology must address organisational change directly. The leaders must envision the change and work within its quite complex and turbulent environment, complicated by a rather diminishing workforce and rapid technological advancements (Graetz et al., 2011).

Successful change often comes to organisations and groups which are prepared to continuously reinvent themselves by anticipating and responding positively to challenges from all directions (Graetz et al., 2011). In line with this approach, Blanckaert argued that leaders need to rethink the current models for health and disease management, and through this define a pathology strategy that adds value to our impact on clinical practice and health outcomes (Blanckaert, 2010). One suggested path was for leaders to move away from just striving to improve laboratory workflow to one of driving for excellence in the knowledge processes of pathology. As per Michael Porter's value chain concept, "knowledge processes" are seen as primary activities, while test workflow as secondary "supporting" activities (Blanckaert, 2010). If this paradigm shift were to occur, the move would be to the critical knowledge area, the key driver for economic prosperity and quality.

Another suggested path is that of leadership leveraging the rise of consumerism and consumer participation in the direction of active consumer involvement in health and disease management (Blanckaert, 2010). This would require strong leadership from the pathology sector and a clear vision of what is required to genuinely empower consumers of pathology services to be part of an integrated delivery system.

Workforce strategies

The recent workforce studies have pointed to several strategies being required to address the future pathology challenges in Australia. These include, increasing the supply of the pathology workforce, redistributing the workforce to regions with higher demand, and improving the productivity of the workforce (Legg, 2008; DOHA, 2011). For these strategies to be successfully implemented requires a major shift in the current strategic focus by the leadership of governments, planning authorities, professional groups, health services, higher education and other training institutions, and of course, the pathologists and medical scientists working and delivering pathology services.

Increasing the supply of pathologists and medical scientists in the workforce could be achieved in several ways. An important start would be the continued allocation by the Government of newly funded pathologist training positions. The Royal College of Pathologists of Australasia (RCPA) has actively campaigned for this over the past

decade (Graves, 2007). If not provided, the RCPA has warned that the current high quality of pathology services cannot be sustained (Graves, 2007). In addition, recent findings have shown that a major issue contributing to the shortage of scientists is the limited opportunities available to advance their careers. The evidence indicates poor opportunities for promotion or advancement to senior positions. Increasing the supply of pathology workers would, therefore, require a combination of strategic initiatives which included additional funded pathologist training positions, enhancing opportunities for education and training, improving career prospects, improving recruitment practices, retaining workers for longer periods, and attracting re-entry of workers who were previously lost to the pathology workforce (Legg, 2008; Cameron and Dupal, 2009).

The task to redistribute the pathology workforce from areas of lower to higher demand, both geographically by region and also by specialty is a major challenge that also needs to be addressed. As discussed earlier, there needs to be a clear understanding of the unique characteristics of staffing requirements, accompanying skills and training, and testing approaches. Greater support is required for staff and incentives provided to promote the geographic relocation. Strategies need to be planned and implemented once these aspects are recognised and accepted by governing authorities.

In planning and implementing such strategies, it is recommended that several supporting enablers are introduced to allow for a smoother transition period. The following initiatives were recommended by employers in the recently published major workforce study undertaken on pathology services (DOHA, 2011). One important enabler is providing effective leadership to allow for appropriate succession planning, well designed workplace training practices, and the commitment to align organisational goals with workforce issues. Employers also stressed the importance of engaging with tertiary program providers so that graduates become "job ready" through structured training directed at the workplace. In addition, new appointments are required which support enhanced career structures for scientists.

Technological advancement

There is no doubt that the pathology sector is being subjected to great challenge through the escalation of new technology and innovation. These include the introduction of shared electronic health records, CPoE, and Point of Care Testing (PoCT).

Several studies have shown that implementing a new system does not necessarily lead to improved efficiency and effectiveness of work practices (Henson, 2002; Krupinski, 2010). On the contrary, not only is the new technology expensive but it ends to cause major disruption to work practices and leads to change of existing roles and responsibilities in the organisation (Wilkinson, 1997). Successful implementation is often determined by how the unit adapts to the organisation and communication changes it is being subjected to (Westbrook and Braithwaite, 2010). Leadership here plays an important part in addressing and introducing the innovation and technological advancement (Isouard, 2010).

First, the introduction of a shared electronic health record and consumer informatics systems will require a paradigm shift to current planning and operations. The challenges faced by leaders of the pathology sector will be the increasing role of informed consumers in future pathology information systems embedded by the principles of patient centred care. Future leadership decisions will no doubt require a dynamic and intuitive integration of the patient centred approach. The emphasis on

patient empowerment and the proliferation of consumer informatics systems will have significant implications for future service delivery (ACSQHC, 2010).

Second, new advances in technology, such as microarray and proteomics, will have a significant impact not only in the delivery of diagnostic and therapeutic manoeuvers but also in the workflow of medical practice and ethos of patient care delivery (Kwang, 2009). The introduction of these technologies creates a new level of clinical-pathology interaction. Leaders in the sector will need to direct pathology information systems to the clear and quite complex needs of all the key stakeholders-pathologists, pathology scientists, clinicians, and consumers.

Third, the introduction of CPoE has become a new challenge as recent evidence shows that it has been met with various levels of success and failure (Lapointe et al., 2011; Black et al., 2011). One recent study showed that the uptake of the technology was only 20 per cent in several countries, and that its expected benefits were rarely achieved (Aarts and Koppel, 2009). Studies have shown that an organisational wide approach is required for successful attainment of the benefits of efficiency and quality of health services (Westbrook and Braithwaite, 2010).

Finally, PoCT is another technological advancement which has been growing in use and application. As this form of testing is performed at the site of patient care it offers the advantage of ease of access to test results while the clinician is attending to the patient (Freedman, 2002; Sobieraj-Teague and Eikelboom, 2010; Al-Ansary et al., 2011). Although available for decades in various forms, the emergence of new technology, increased pressure on hospitals and the changing role of consumers are resulting in its increased availability (ACSQHC, 2010). These services have been shown in some instances to play a significant part in supporting general practice in the management of chronic disease, and overall provide for improved primary care services (AMA, 2011). However, not all desired pathology tests are available through this mode of delivery (Mcmullan et al., 2010).

Several issues have, however, accompanied the introduction of PoCT that require ongoing monitoring for quality of service delivery. These include inappropriate testing, inaccurate results, and escalating health care costs as a result of the new technology and more frequent re-testing (CHF, 2009; Meier and Jones, 2005). Inaccurate or misinterpreted results, operator incompetence, and the use of uncontrolled reagents and equipment are also of concern, particularly when a test is completed by the individual without specialist pathologist or scientist supervision (Meier and Jones, 2005; CHF, 2009).

The critical issue here is that as PoCT becomes more readily available, leadership from the central pathology department will need to establish clear strategies to initially secure responsibility for testing, and then to maintain the quality of the procedures and the integrity of the patient results. There are clear benefits from the introduction of this technology, but it needs to be led and coordinated by specialist pathologists and medical scientists rather than the equipment and the accompanying training and quality control being introduced in an ad hoc manner from numerous sources at the ward and clinic level (Meier and Jones, 2005).

These services need to be undertaken within an appropriate quality and accredited framework to ensure service and patient safety. This mode of delivery also provides some solutions for certain tests and may prove quite useful in rural and remote areas. However, there are still numerous aspects of clinical pathology that require routine and specialized testing and training that can only be undertaken by a functional laboratory

with trained and qualified staff (Cameron and Dupal, 2009). Strong leadership within the pathology sector must assert this direction or otherwise quality in service delivery may be compromised.

Discussion

The review of the significant issues impacting on pathology in Australia indicates that new and bold strategic directions need to be secured if the sector is to sustain quality in its services. The key element found was that of providing strong leadership at the national level to drive change, and in particular towards new workforce strategies and the ongoing technological advancement. The leaders need to envision the change and work within its turbulent environment if they are to succeed. As discussed, reactive strategies have failed in the past and often found to exacerbate the situation. Successful change often comes with leaders who are prepared to reinvent themselves by responding positively to challenges as they arise. As such, leaders need to evaluate the present models for health and disease management, and in doing so redefine a pathology strategy that adds value to clinical practice and health outcomes.

The rise of consumerism and consumer participation in health and disease management is an important area in which strong leadership needs to play an important role. A clear vision is needed of what is required to genuinely empower consumers of pathology services, and how this needs to be turned into policy and implemented. It also remains critical that new workforce strategies are developed and introduce to address the current crisis. Strong leadership at the national level is required to provide new directions to increase the supply of the pathology workforce, redistribute the workforce to those regions with higher demand, and for improving the productivity of the workforce. In addition, leadership must lift the profile of the sector so that enrolments in medical science and pathology can increase accordingly. Strong leadership is further required at all levels of the sector to guide pathology services through the challenges that innovation and new technology can provide. As discussed earlier, although technology in its various forms and applications promises to provide significant benefits, recent evidence has shown that major issues arise unless carefully planned across the organisation.

Conclusion

The nature of the declining workforce and skill set shortages in pathology services within Australia is so critical that urgent and immediate action is required. This review recommends that several strategies are required to be implemented to address future workforce needs nationally. Such strategies would need to incorporate specific measures to increase the supply of pathology workers, redistribute where possible the workforce from areas of lower to higher demand, improve the productivity and efficiency of the workforce, and reduce the demand and growth of services. The key message voiced by industry stakeholders is the requirement for effective leadership at the policy and decision making levels of government and the professions. The aim is to increase the workforce capacity through investment in the desired areas. Strategies would target new people into a career of clinical pathology through a significant move in internal focus as well as a major campaign towards the more positive aspects of the industry. This would then assist the development of new formal career paths and structures for scientists and pathologists, and significantly promote rural and remote area placements and careers.

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