

**DEST MEDICAL EDUCATION STUDY
2006**

**SUBMISSION FROM THE COMMITTEE OF DEANS OF
AUSTRALIAN MEDICAL SCHOOLS (CDAMS)**

About CDAMS

The Committee of Deans of Australian Medical Schools (CDAMS) is the peak body representing medical education¹ and medical research in Australian universities. The Deans and/or Heads of Australia's current 18 medical schools are represented formally on CDAMS; and the Deans or Heads of prospective medical schools are invited to participate in CDAMS' meetings as observers. CDAMS has close ties to the four medical schools in New Zealand, Fiji and Papua New Guinea, providing a valuable forum for communication, information-sharing and mutual support in the ongoing development of medical education and research in the South Pacific region.

CDAMS is currently an unincorporated association, and is in the process of incorporating. CDAMS is governed by a five-member Executive Committee and employs 2.5 FTE staff members. The CDAMS secretariat is currently based in the Faculty of Medicine, University of Sydney. Further information can be obtained from the CDAMS website www.cdams.org.au.

CDAMS' objectives as an association include:

- Representing the common interests of medical schools in a variety of national forums;
- Contributing to the development of health and education policy frameworks as they relate to medical education and medical research;
- Building and maintaining respectful, consultative relationships with State and Commonwealth governments, stakeholder organisations, and the wider community.

¹ The term 'medical education' is used for university-based education in medicine, comprising both undergraduate and graduate entry courses leading to an initial Bachelor's degree. 'Postgraduate training' refers to 'prevocational training' (which is also often referred to as PGY1 (intern), PGY2 (RMO), etc.), and 'vocational training' which is general practice or specialist training overseen by the medical colleges. Together with continuing medical education (CME), these constitute what is increasingly being known as the 'medical education and/or training continuum'.

Strand 1: Preparation for internship

- ***What competencies (knowledge, skills and professional, including cultural, attitudes) do medical graduates need to be successful interns, both at the outset and later in the intern year?***
 - The current recently revised Australian Medical Council (AMC) document ‘*The Assessment and Accreditation of Medical Schools*’ specifies the competencies which medical graduates are expected to attain by the time of graduation. Each medical school refers and conforms to these guidelines in designing and implementing its medical course.
 - The Confederation of Postgraduate Medical Education Councils (CPMEC) is also actively pursuing a national project to define more clearly the competencies which will be expected by the end of internship.
 - Work needs to be done to differentiate these two sets of guidelines in terms of:
 - What is expected of graduates at start of internship?
 - What extra is added during internship?
 - What then is expected of interns at the end of their year of training and what has been gained compared with their competencies at the time of starting internship?

Strand 1 of the DEST Medical Education Study is aimed at assisting with this differentiation.

- ***What are the implications of those requirements for undergraduate medical education?***
 - Once there is agreement as to what competencies should be expected at the time of graduation and what should be additionally gained during internship, there should be further refining of the statement in the AMC guidelines to medical schools about those competencies expected to be gained by graduates of medical courses.
 - As a result medical schools will refine their programs to match the expected competencies.
 - Medical schools will also be able to have a clearer dialogue with CPMEC and the State-based Postgraduate Medical Councils (PMCs) concerning the transition between medical students at graduation and intern training. Many courses already provide a ‘pre-intern’ phase as part of the final year and some have Medical Education Officers who work between medical schools and the support of interns in hospitals.
- ***How well are medical graduates prepared for internship?***
 - In the view of medical schools, the current education programs in Australia’s medical schools prepare their graduates extremely well for internship and much better than they previously did. This is the primary mission of medical courses. The changes overseen by the AMC in medical courses in Australia and New Zealand over the past 15 years or so have been aimed at ensuring that our medical graduates are as well prepared as possible for their primary initial role. A focus on preparation for this role has been a major driver for broadening the

- content and orientation of medical courses which previously did not prepare their graduates as well as they might for workforce readiness.
- Current programs now address the relevant basic and clinical sciences and the clinical practice of medicine in a more integrated manner using adult learning strategies such as problem-based and case-based learning. Compared to previous curricula there has been a greater emphasis on the better acquisition of communication skills, on understanding the psychosocial contributions to health and illness, on population health, on the ethical dimensions of health care, on personal and professional development and on the quality and safety of health care. Evidence-based health care is given considerable prominence. In addition there has been a more rigorous and staged approach to the acquisition of diagnostic and procedural skills using initially simulated situations in a laboratory setting employing models, class-mates, simulated patients and teaching associates prior to exposure to actual patients in the clinical environment.
 - Both anecdotal and published information would suggest that current graduates function exceedingly well as interns. Those few formal studies which have been conducted have shown that both types of graduates are generally satisfied with their ability to cope with their intern year (1, 2), although graduates from the newer problem-based courses rate their medical school preparation more highly than those from traditional schools in a number of areas. More data are needed to define the optimum requirements for preparation for internship and further training, and this effort should be assisted by the outcomes of the current DEST study.
- ***What areas of study and methods of learning have been more/less successful in preparing students for internship, and what are their relative strengths and weaknesses?***
 - The vastness and rapidly changing nature of the biomedical knowledge base have needed a change in approach and methodology which have been embraced in current medical education programs. The programs now explore learning in context using small group problem- or case-based learning strategies. These approaches encourage self-directed and life-long learning skills and an approach to continuous knowledge acquisition and renewal which would not have been possible with the more traditional didactic approaches. These methodologies encourage the acquisition of the strategies embodied in the concept of ‘evidence-based medicine’ and thus the ongoing critical appraisal of knowledge sources which was not incorporated into previous programs.
 - Because modern courses employ appropriate methodology for the acquisition of learning skills and how to access requisite knowledge, they provide the modern graduate with the skills to cope with the avalanche of new knowledge to which they are continually exposed throughout their working life.
 - Modern courses enable not only the integration of the basic and clinical sciences of medicine but also allow appropriate consideration of more practice-based material relating to psychosocial context, ethical aspects and quality and safety of care.

- It could possibly be argued that current graduates may not have the same detailed knowledge of the normal and abnormal structure and function of the human body as did their predecessors, but instead they possess a much broader base of knowledge relevant to the practice of medicine; their basic medical science knowledge is more focussed on relevance to human health and is better integrated with clinical practice; they are more adaptable, being better equipped with strategies for continuous learning; they have a much wider range of diagnostic and procedural skills than did their predecessors; and they have considerably better communication skills. In other words they are much better equipped to undertake the role of an intern and then to engage in further training in any branch of medical practice they should choose.
- It is the task of those involved with the postgraduate vocational training now to define more clearly what advanced basic science knowledge each speciality requires and to work with universities to devise appropriate strategies for graduates to attain such knowledge on their pathway to postgraduate specialist training. As this level of advanced basic science knowledge is not required by all medical graduates, it is appropriate that this additional knowledge acquisition occurs in the context of a program of training for each speciality. Such programs currently happen entirely in the postgraduate domain. In future, with appropriate dialogue and cooperation across the continuum of medical education, these programs could commence towards the end of the medical course and continue through early postgraduate training to link more appropriately with specialist training.
- There have been a number of meta-analyses of research into the outcomes of problem-based learning (PBL) (3, 4). While much of the research is beset by design limitations, the studies indicate that there are no major differences in knowledge acquisition, at least as measured by national licensing examinations, between students graduating from PBL courses and those from more traditional courses. There are differences on other measures such as clinical reasoning and, in particular, student satisfaction (5). Graduates from McMaster University in Canada, where PBL originated, have been found to be better communicators than graduates from other Canadian medical schools and those who entered family practice spent more time in patient care. Students were also more likely to seek affiliation with McMaster after graduation (6, 7). Graduates from the medical school at Maastricht University in the Netherlands, one of the early adopters of PBL, rated themselves as having superior cooperation, problem-solving and independent work skills than colleagues from other Dutch schools (8). In one school in Canada (Dalhousie), scores on the Medical Council of Canada Qualifying Examination were compared before and after the conversion of the curriculum from conventional to PBL-based. Graduates from the two courses performed similarly, except in psychiatry, preventive medicine and community health, in which PBL graduates scored higher (9).
- In Australia the medical school at Newcastle was the first to adopt PBL. A study comparing Newcastle graduates to those from other

New South Wales (NSW) schools revealed that the Newcastle students rated their undergraduate preparation for hospital practice more highly in the domains of interpersonal skills, confidence, collaboration, preventive care, holistic care and self-directed learning. There were no differences for patient management and understanding science (1). In a more recent study using the same questionnaire as the Newcastle research, interns who had studied in the graduate-entry PBL course at Sydney University rated themselves as more prepared for hospital practice than other NSW interns in the same domains as the previous study with the exception of preventive care. They rated themselves as no less prepared in the three other domains (2). Further, organisers of clinical training in the study identified clinical competence, confidence and communication and professional skills as strengths of Sydney graduates. There was not a clear view on knowledge of basic sciences with both strengths and weaknesses mentioned. Care should be taken in interpreting the results of all of these studies in that the gains may not be due to PBL alone, but may also be associated with other innovations in selection methods, early clinical exposure and assessment adopted in conjunction with the use of PBL. Nevertheless they do indicate significant and positive outcomes from the innovative models of medical education introduced in Australia in recent times.

- ***Could the transition to internship be improved and, if so, how?***
 - There is current interest in Australia's medical courses to enhance the intern readiness of graduates. This has involved the provision of clinical experiences in which students essentially work as interns; the provision of interactive scenarios which address the common on-call situations faced by interns; engagement in laboratory-based simulations of team-based care of acute emergencies; provision of specific modules addressing the quality and safety of care; and enhanced consideration of the ethical dilemmas seen in every day practice by discussion with mentors of situations which the students face day-to-day during their clinical practice. Programs to address specifically this issue of 'transition to internship' are still evolving and providing the stimulus for the development of a number of innovative approaches. Evaluation of the outcomes of such strategies will be the next stage.
 - More precise definition of the range of competencies required at the commencement of internship should assist this development of programs aimed at improving the outcome of this final transitional phase of medical school education.

Strand 2: Preparation for postgraduate training

- ***What competencies (knowledge, skills and professional, including cultural, attitudes) do medical graduates need for postgraduate training?***
 - Medical graduates currently require at least 1-2 years of general prevocational postgraduate training including the intern year prior to entering postgraduate vocational training. During this time the competencies (knowledge, skills and attitudes) acquired initially as medical students are consolidated ‘on the job’ in the practice environment through a series of rotations usually of 10-12 weeks in duration through different clinical disciplines including at least emergency medicine, general internal medicine and general surgery. At least in the intern year there is a mandatory continuing education program which underpins the experience gained in practice and which is required to enable the graduate to move from provisional to full registration as a medical practitioner.
 - In a modern university medical course the foundations for postgraduate prevocational and vocational training are fully laid during the time as a student. Medical education is viewed both within the university medical course and in the postgraduate period (up to and including continuing professional development) as a rising ‘spiral’ continuum – initial knowledge, skills and attitudes are expanded and consolidated at ‘each successive turn of the spiral’ represented by the time-based professional progression. Right from the beginning of undergraduate medical education the underpinning basic and clinical sciences are now integrated and taught in the context of clinical problems with concomitant graded exposure to clinical practice and the gaining of clinical skills relevant to the expanding knowledge base. Possibly the only area which has little or no coverage during the undergraduate period relates to the ‘business’ of running a practice, which the graduate will not face until at least four years following graduation.
 - The aims of the first phase of medical education leading to a Bachelor’s degree are to prepare the graduate to be able to function knowledgeably and competently as an intern and also to provide sufficient knowledge, skills and professional attitudes to be able to enter any of the available postgraduate vocational training programs. A vast amount of knowledge is covered during this initial phase of medical education and it is essential that from this the graduate gains a solid understanding of the principles and the basis of modern medical practice. As well as understanding fully the language and vocabulary of medicine, one of the most important skills imparted is that of self-directed learning as it is only by acquiring this skill that the graduate can continue to gain and apply the new information to which they will be relentlessly exposed.

- ***How well prepared are medical graduates for postgraduate training?***
 - All of the medical courses in Australia are regularly subject to a rigorous international standard accreditation process by the Australian Medical Council (AMC) against a broad set of criteria. Graduates of accredited Australian or New Zealand medical degrees are eligible to

enter practice as an intern in either country. As the accreditation process focuses on the ability of a particular course to satisfy the basic aims of this ‘first phase of medical education’, there is strong assurance to the Australian public through the high standards and quality of the accreditation process that once accredited a particular course is preparing its graduates satisfactorily both for internship and for subsequent postgraduate vocational training.

- CDAMS strongly supports the AMC’s accreditation process and believes that it has been instrumental in stimulating a major renewal and modernisation of medical education in Australia and New Zealand since it was instituted in the early 1990s. As a result CDAMS considers that our medical education is now the equal of that in any other country in the world and in many areas it is considered to be at the forefront. As a result Australian medical practice is also of very high quality and equal to that in any country in the world.
- ***Which areas of study and methods of learning have been more/less successful in preparing students for postgraduate training, and what are their relative strengths and weaknesses?***
 - As already indicated, the greater breadth of current medical courses compared with traditional didactic discipline-based courses provides the modern medical graduate with the requisite knowledge, skills and attitudes which are the foundation for postgraduate vocational training in any discipline. It is currently the responsibility of the PMCs and the Medical Colleges to build on this foundation in both the undifferentiated early postgraduate years and in the speciality training programs. Medical Schools consider that in the future their collective expertise should be used to a much greater extent than it is across this continuum of medical education.
 - The one area in which the foundations laid during basic university medical education may not be as well developed during the early postgraduate period as they could be is the consolidation of knowledge in the basic medical sciences to the standard required by some postgraduate programs. As indicated previously this is an area of opportunity in which there needs to be improved collaboration between the medical Colleges and the universities to achieve the desired outcomes. The fundamental issue here is that the basic science knowledge gained in current medical courses is entirely adequate for our graduates to engage where appropriate in the advanced acquisition of such knowledge relevant to particular training programs.
- ***Could the transition to postgraduate training be improved and, if so, how?***
 - There are various ways in which the transition to postgraduate vocational training could be improved. These all require better collaboration between the different providers responsible for the various stages of training both horizontally and vertically. Such cooperation has begun to happen and various pilot programs are in progress.
 - Medical schools can take a variety of roles in enhancing postgraduate vocational training. These include:

- Providing advanced basic science courses which would result in postgraduate university awards;
- Consider ways in which specialisation could commence during the medical course without compromising the desirable generalist nature of our courses or the quality of our pluripotential product.
- Being accredited by the medical Colleges to provide either part or all aspects of individual training programs. In this way there would be better coordination across the continuum and better opportunity to explore relevant efficiencies.
- Working with the other providers across the continuum to define better the competencies required for all of the individual forms of medical practice and in particular their commonalities and thus transferabilities. This would enable the implementation of a skills escalator concept across medical practice as has recently been instituted in the United Kingdom <<http://www.mmc.nhs.uk/pages/home>>.
- Providing awards which are recognised as part of individual postgraduate training programs.
- Providing education and training programs and awards for which currently no program exists.
- Assisting in the identification of some areas for which role substitution (task transfer) would be appropriate and provide relevant education and training programs and awards.

Strand 3: Clinical Education

- ***What type and level of clinical exposure do undergraduate medical students need to prepare them for internship and postgraduate training?***
 - Traditional discipline-based medical courses provided their clinical training entirely in a patient-based manner predominantly in the wards and clinics of teaching hospitals. Students entering this environment had no prior training in the requisite skills and attitudes required for even this initial stage of clinical practice. Such an approach is no longer either feasible or acceptable.
 - *This approach is not feasible* as medical care has changed. Much of medical care is no longer provided in association with urban public teaching hospitals but is provided either in the community or in private facilities, both in urban and rural areas. Clinical teaching for medical students now needs to occur in a balanced manner across the whole variety of settings in which medicine is practised.
 - *This approach is no longer acceptable* as the community expects higher standards of practice and personal interaction than were previously tolerated. Much of the public questioning of the quality and safety of health care both in Australia and internationally has identified that inadequate and inappropriate training have been contributors. Modern medical education seeks to ensure that any student on having first contact with patients in the real practice situation is already equipped with the necessary knowledge and skills for their particular stage of education and training.
 - The approach now taken in all medical schools is one of *graded exposure to the acquisition of the skills and attitudes needed for the clinical process* in concert with acquisition of the relevant knowledge base. This has been enabled by the universal uptake of integrated non-discipline-based courses particularly in the earlier years of all current medical courses. This graded exposure occurs from the time of entry into the medical course and no longer only after the basic science component of the course has been delivered.
 - This graded exposure to the acquisition of clinical skills is now gained initially in clinical skills laboratories using a variety of manikins and models, the students themselves as subjects, simulated patients using actors and volunteers from the community, community-based teaching associates and computer-based simulation. The skills gained in such settings include the whole range necessary for medical practice including both the communication skills and the manual and cognitive skills required for diagnostic and clinical procedures.

- A feature of the programs of graded acquisition of clinical skills is the linkage between the clinic and the skills laboratory as the student gains sophistication and experience in both settings.
 - Competencies can be assessed and certified before particular levels of clinical exposure;
 - New higher levels of competency can be gained in the laboratory prior to engaging in the relevant clinical setting;
 - The skills laboratory can be revisited at any time for refreshment or recertification (as has been practised for many years by airline pilots).

- As already indicated, medical education is now successfully exploiting the full range of medical practice situations, including acute hospital and community-based care and chronic care (now predominantly in the community) in all core and sub-speciality disciplines. This move to other settings has been predominantly opportunistic and unplanned in terms of ensuring appropriate resourcing other than that provided by the Department of Health and Ageing for programs in the rural sector. There is an urgent need for better support of teaching and learning in these areas , including the private hospital sector.

- Another feature of modern medical care is that it is becoming more multidisciplinary and team-based. The role of the medical practitioner in such teams is changing from being the person who has been considered to have almost the full range of knowledge and skills required for any situation to being often more in a coordination and consultatory role with other practitioners taking on a range of the tasks previously only the domain of medical practitioners. Medical schools are now grappling with the challenge of educating students appropriately for practice in such multidisciplinary team-based care.

- ***How well is undergraduate clinical education currently preparing students for internship and postgraduate training?***
 - In general, it can be asserted that the current Australian medical courses are preparing graduates extremely well for internship and postgraduate training. This is their mission. They are expected to deliver on it and to produce graduates of high standard as determined through the accreditation of all programs by the AMC. All medical schools have risen successfully to the challenge of adapting their courses to current needs and community expectations. They are all engaged in a process of continuous quality improvement and evolutionary change.
 - Current Australian medical courses provide appropriate balanced exposure for their students across the whole variety of medical disciplines in the full range of practice settings which is aimed at meeting the goals of basic medical training
 - The scope and quality of all programs is ensured by the rigour of the AMC accreditation process.

- Appropriate graded exposure to clinical practice has been enabled by the establishment of clinical skills laboratories and the introduction of sophisticated computer-based simulation
 - A major issue which has not been addressed in any coordinated and nationally strategic manner is the adequate resourcing of such developments for both their set-up and maintenance phases. This needs to be addressed with some urgency by both DEST and DoHA and the State- and Territory-based health jurisdictions.
- ***What are the challenges facing undergraduate clinical education and how could they be addressed?***
 - The nature of medical practice has changed.
 - Public hospitals are now predominantly only dealing with acute episodes of care;
 - Many hospital admissions occur in the private sector and these have not generally been accessible for student teaching despite the fact that the private sector is a major beneficiary of the nation's medical education programs.
 - Chronic care and management of preoperative and postoperative phases of elective surgery and also postoperative phase of acute surgery are now also predominantly community-based in general and specialist practice
 - Resources associated with clinical education and training have traditionally been embedded in the budgets of teaching hospitals
 - There is no current coordinated process to ensure that such resources are redistributed and appropriately follow the education and training needs at either the undergraduate or postgraduate levels.
 - There is no current coordinating mechanism to ensure that any available resources however distributed are appropriate and remain so.
 - The number of medical school places has increased.
 - There has been inadequate planning for the needs of such students in medical schools either in the earlier years of their courses or more importantly in the clinical placement years. It is possible that there may not be adequate resources and/or that the funding for such resources may not be appropriately distributed.
 - There has been inadequate planning for the early and later postgraduate training needs of these additional graduates. If such planning does not take place urgently in a well coordinated manner across the jurisdictions, there may not be adequate training places for either early undifferentiated or vocational postgraduate training. If this scenario eventuated the quality of the final products of Australian medical education would be impaired and the quality of medical care to the community would be diminished.

- ***How effective/efficient are current alternative models for implementing and supporting undergraduate clinical education (including the use of clinical teachers)?***
 - The traditional teaching hospitals are no longer the sole sites for the provision of either undergraduate or postgraduate clinical training. For over 20 years since placements in general practice became commonplace in medical courses, medical education has been moving beyond the teaching hospital sector. This has addressed not only a major deficiency in the clinical exposure provided in the previous traditional courses but has also been an ongoing and dynamic process to match the changes in the provision of medical care. As already pointed out, there has been no coordinated planning to ensure that the resources linked to clinical training within the State-based hospital sector are redistributed to ensure that they appropriately follow the students and now increasingly postgraduate trainees out of hospitals and into the community. The DEST funding of medical places also does not recognise any enhanced responsibility in this regard. The transition to alternative placement sites has only been possible through specific funding initiatives such as that for the rural clinical schools or by accessing payment mechanisms such as the Practice Incentive payments through Medicare for general practitioners.
 - As already indicated a major innovation in Australian medical education has been the establishment of graded clinical skills programs based initially and recurrently on the use of clinical skills and simulation centres. Through individual enterprise medical schools have exploited a variety of funding mechanisms and partnerships to ensure that this development could occur in a timely manner. There now needs to be recognition by Government that this is an entirely necessary strategy for not only medical schools but for postgraduate training and continuing professional development. Centres are needed to cater for the needs of medical students and often other health professional trainees. Centres of a greater degree of sophistication are required in the postgraduate sphere and for particular specialities. A coordinated national strategy is required to ensure that there is adequate resourcing for the development and maintenance phases of this essential resource.

Other issues

- ***The following broad themes have been identified as being of particular relevance to the Study:***
 - ***Course content***
 - ***Teaching methods***
 - ***Selection of students***
 - ***Assessment***
 - ***Effective clinical training***
- **Content, Teaching Methods and Assessment**

Each of these broad themes is a major area of attention in the AMC accreditation process for medical courses. All of Australia's medical courses have given very significant attention to *course content* and curriculum design and implementation using the most appropriate *teaching methods* (pedagogical approaches). In the same manner a very large amount of work has been committed to ensuring that a variety of relevant valid and reliable *assessment* strategies are used which are strongly blueprinted to the underpinning curricula. Courses are subject to continual evaluation by students and peers as well as by the AMC accreditation process and as a result are in a process of continual change and improvement.

CDAMS unreservedly refutes the claims made in the submission to this Study by the Australian Doctors Fund (ADF) that current medical education will affect the 'future standards and safety of medical practice'. Their critique appears to have been based on concern that there is insufficient basic science content, particularly anatomy, in current medical courses and that they do not approve of the teaching methodologies which are now being used. They appear not to have appreciated the non-discipline-based integrated nature of current courses or the evidence base supporting the change in teaching methods which has been universal both in Australia and throughout the developed world. Indeed, in respect of anatomy, there is published evidence from the Netherlands that learning outcomes from traditional and PBL-based schools are equivalent in this discipline at the time of graduation (10).

Unfortunately the ADF has not provided any evidence to support its claims. Instead it has provided anecdote and opinion by those who have not engaged in the successful change process in medical education which has occurred around them. The criticisms which have been voiced could have been applied to any of the courses which have been developed in Australia since the 1970s and in particular commencing with the Newcastle course. There is no evidence that the products from these courses are inferior to those which preceded them. On the contrary current graduates perform as well or better on all measures of function than did products of traditional courses. This has been observed with the Newcastle graduates and now with the graduates from the first entirely graduate-entry medical schools, of which there are now at least six cohorts. These graduates are much more workforce ready and

pluripotential than were their predecessors. They have the knowledge and skills to practise at a higher level and more safely.

- **Selection**

There has been significant ill-informed and/or self-interested criticism of the current processes for selection of students to enter medicine. All medical courses have embraced a multi-stage process involving some prior evaluation of academic achievement, a specific entry test and usually also a structured interview. A major reason for embracing this more complex selection process had been the realisation that simple selection on academic merit did not address the foundations for the acquisition of knowledge, skills and attitudes required for medical practice. The process often selected people with a poor aptitude for the study and practice of medicine or those who had been pushed into medicine against their real wishes by ambitious parents and/or school teachers. The result of these previous selection processes had been a high rate of attrition of the order of 10-20% of any school-leaver cohort, which was unacceptably high for such a high demand course.

The strategies which have been employed to get a better fit between applicants and their likely success not only as students but also as practitioners has been to use a multistage process and also in many cases to change to graduate entry-only or at least to have a specific graduate-entry stream. The graduate-entry strategy has followed the success with this approach throughout the last century and since in the United States and Canada. The result of both types of selection strategies has been a marked reduction in attrition in all courses. In graduate entry courses it is 1% or less of any cohort.

The selection processes adopted by Australia's medical schools as with all other components of our courses are subject to rigorous scrutiny by the AMC. The current processes including the graduate-entry strategy which have proven to be very successful have been unambiguously supported by the AMC. As with all processes despite their success they can always be subject to refinement and improvement.

A specific complaint from some quarters has been that as a result of current selection processes some very high-achieving school leavers are unable to get a place in their medical school of choice. A telling commentary on this topic has been provided in a recent letter to the Australian by Professor Justin Beilby, Executive Dean, Faculty of Medicine and Health Sciences, University of Adelaide. Professor Beilby pointed out that his medical school is currently only able to offer 109 Commonwealth-supported places each year. The school has more than two thousand applicants for these places including over 200 who have 'perfect' tertiary entrance scores. If only this latter group was offered by ballot all of the available places, less than 50% would be successful at achieving a place. As with all other schools the Adelaide school has adopted a multistage entry process including an interview to identify those with the best mix of academic merit and aptitude to enhance the success rate and retention in the course.

A further criticism of the current selection processes has been voiced by the ADF in its submission to the Study. They have expressed the concern that mature students entering graduate-entry programs are unlikely to engage in the lengthy training programs entailed in specialist training and thus a lop-sided workforce will result. They are also concerned about the length of time these graduates will spend in the workforce. Currently there is no evidence that graduates from graduate entry programs are any less likely to engage in speciality training. It will take a generation of such graduates for it to be known whether they will on average practice for less time. Experience from the USA and Canada would clearly suggest otherwise. It also needs to be appreciated that the demography and attitudes of the whole medical workforce are changing. The workforce is becoming feminised and all medical practitioners both male and female are seeking a better quality of life and better working conditions than did their predecessors. This involves not only shorter working hours but often shorter and more varied working lives. These are likely to be the major influences on both the longevity and the type of practice in the future rather than the selection processes or curricula of medical courses. It has been these changes which have already resulted in the current workforce shortage and maldistribution to which the government has made such a dramatic recent response in relation to releasing new medical school places both Commonwealth-supported and domestic fee-paying.

- **Effective Clinical Training**

Sufficient comment has been made already in relation to CDAMS views concerning clinical training. This vital part of medical education and training requires better resourcing than at present and better coordination if adequate high quality training opportunities relevant to modern medical practice are to be sourced and retained.

- *Are there any other relevant issues in undergraduate medical education in Australia that you think need to be addressed?*

The successful revolution in Australian medical education

Medical education in Australia has undergone a major revolution in the past 15 years. This major change emanated from the Doherty Report released in 1998. It dealt for the first time with a range of issues which had up to then been managed almost entirely by the universities with medical schools rather than being debated in the public domain. This Report, which covered the whole continuum of medical education, considered such matters as selection, curriculum, clinical training, funding and workforce. Importantly it also recommended that the education of medical students should be broader than previously so that they would have a greater knowledge of the environment and context in which they worked and a better range of skills related to the social interaction side of medicine.

About the same time as the Doherty review was being conducted, the Australian Medical Council was established and soon after developed and implemented its process of accreditation of medical courses in Australia and New Zealand. The underpinning principles were that all courses had similar aims in regard to producing

workforce-ready pluripotential graduates but also that the individual schools had control over the design, delivery and assessment of their own course provided that it met the rigorous standards set by the AMC. In setting these standards the AMC was mindful and supportive of the recommendations of the Doherty Report for changes in the approach to medical education in Australia. Together with a greater international awareness of the overall needs of medical graduates and of the range of pedagogical methods which could be applied to achieve the desired outcomes, the Doherty Report and the AMC's accreditation process have driven the successful revolution in Australian medical education over the past 15 years or so.

As a result of this major change in approach to medical education, which has been responsive to community demand, all existing medical courses have undergone very significant restructuring and all new courses have adopted approaches which reflect current educational thinking and methodologies. The traditional discipline-based courses which provided a strong basic science underpinning prior to a clinical apprenticeship phase of the course existed in Australia for almost 100 years following the recommendations of the United States physician Abraham Flexner in the first decade of the 20th century. These courses have now successfully been replaced by integrated approaches where the knowledge and skills from the foundation biomedical disciplines are learned within the context of relevant clinical scenarios together with a staged exposure to the clinical process from the beginning of the whole course. There is careful attention to curriculum design issues and courses are underpinned by maps of essential knowledge and skills to ensure appropriate coverage of the biomedical and clinical disciplines relevant to medical practice. All courses are also more inclusive of material related to the social foundations of medicine and to professionalism and encompass a strong program of communication skills. Contemporary Australian medical schools draw on medical education expertise in the design and evaluation of curriculum, the selection of teaching and learning methods and the design of assessment. Most schools now have Medical Education Units or Centres employing a mix of educators, scientists and clinicians with educational expertise.

Many existing and most of the new schools have considered that selecting more mature individuals into medical courses should be an associated necessary change in Australian medical education so that now more than 50% of the medical courses are either entirely graduate-entry or have graduate-entry streams. All schools are aware of the need to engage in continuous quality improvement and are thus committed to a process of continual change which is overseen by the regular rigorous accreditation process of the AMC. As a result of this successful revolution, the innovations undertaken by Australian medical education have provided international leadership and medical courses from across the world now primarily look to Australia for assistance with their own developments.

Issues which currently concern Australian medical education

The issues which currently concern Australian medical education are really the next phase of the community engagement which was instituted by the Doherty review and its Report. Society has been changing rapidly with an increasing concentration of the population in the older age groups who have an accumulation of often chronic medical problems and put a different and relatively greater demand on medical

services. In affluent western societies and now in developing societies there is also a continual shift away from the impact of infectious diseases towards chronic illnesses which are often determined by the prominent life-style factors in society. At the same time there has been a shift in medical practice with major changes resulting from rapidly advancing knowledge and technological developments. These developments have increased life expectancy and the quality of life. They have taken much of medical practice back into the community from the hospitals and raised the aspirations of everyone in the community to have the best available medical care at their doorstep. At the same time the medical workforce has been changing – there is a marked inequality in distribution between urban and rural areas; the gender mix of medicine is shifting towards a female predominance; and many medical practitioners as with the rest of society are seeking a more balanced life-style with greater leisure time than their predecessors.

It has rather belatedly been accepted by government that there is a relative crisis in Australia in the availability and distribution of all health professionals not just medical practitioners. From the perspective of medical schools the major government strategy to which they have been required to respond has been the marked increase in the number of commencing students approved for entry into medical schools (both Commonwealth-supported as well as more recently fee-paying domestic students) and the creation of a number of new medical schools. The resultant issues which have now become a major focus for medical schools are:

- The impact on the physical infrastructure of medical schools of increasing numbers of students;
- Ensuring that all medical schools are appropriately staffed with high quality staff;
- The impact on the clinical training environment of providing an appropriate range and quality of clinical placements for the increased number of students;
- Ensuring that there are sufficient appropriately – supported training positions in hospitals and in the community to cater for the increased number of graduates;
- Responding to the changing community priorities in health with current emphasis being given to rural health, Indigenous health, mental health and chronic disease management.

Unfortunately the lack of consultation with medical schools and an apparent lack of planning related to this development have meant that there is a potential for the current high standards of Australian medical education and training to be eroded unless there is a shared understanding of and willingness to address the issues and concerted response across all jurisdictions.

These changes have been occurring in an environment where the funding of universities particularly for the core Bachelor's degree programs such as medicine has been insufficient for the past decade due to inadequate indexation of Commonwealth funds. A response of universities to this resourcing situation has been to enrol significant numbers of international and now increasingly fee-paying Australian students. Often this increase in fee-paying students has taken up the reserve teaching and placement capacity in medical schools. The increased number of Commonwealth-supported students will now see some readjustment of the proportions of these different categories of students. However there will be concern

by all Schools to preserve their revenue streams. Overall the increased student numbers put excessive strain on staffing and clinical placement capacity as well as infrastructure.

Medical schools are actively responding to the issues raised in the National Health Workforce Strategic Framework published in 2004. CDAMS is in active dialogue with the Medical Colleges and the Confederation of Postgraduate Medical Education Councils to consider ways in which the pathway to fully-fledged medical practice can be stream-lined while retaining the quality of practitioner which the Australian community expects. Universities envisage that in future they will have a greater role in postgraduate medical vocational education which at present is the domain of the Medical Colleges. There are a number of ways in which this can happen from universities partnering with Colleges to provide aspects or all of their programs, to universities filling niches which are currently not addressed by the Colleges, to universities mounting their own accredited postgraduate training programs.

A key issue which is relevant to all Strands of the DEST Medical Education Study but particularly Strands 1 and 2 is whether there can be opportunity to begin specialisation both within the medical course and during early postgraduate training. Up to now Australian and New Zealand medical courses have aimed for pluripotential graduates and at least the intern year (PGY1) has also been seen as a generalist year of initial training. Debate is now starting to consider ways in which the elective parts of medical courses and aspects of the PGY1 and PGY2 years could incorporate placements and preparatory studies more relevant to speciality training than they do at present. Such specialisation both in medical courses and in early postgraduate training has been happening for many years in the USA and Canada.

MedEd 2005 and MedEd 2007

Together with the AMC, CDAMS hosted a very successful national medical education conference in Canberra in March 2005: 'MedEd 2005 – Medical Education towards 2010: Shared Visions and Common Goals'. The proceedings of this conference are enclosed with this submission. The conference brought together senior interested parties from across the continuum of medical education. It identified major themes for further development in relation to:

- Building links between medical education and the health sector;
- Professionalism in education and practice;
- Curriculum development, assessment and review.

A very important outcome of the conference was the linkages which were forged across the continuum of medical education. These contacts which have spawned a continuing series of meetings over the succeeding year have laid the framework for better dialogue between the responsible parties and an undertaking to work together to address the various challenges posed by modern medical practice and the current workforce crisis.

A further outcome of the meeting has been for another such conference to be organised in Melbourne in April 2007. This conference (MedEd 2007) will be sponsored not only by the AMC and CDAMS but also by the Confederation of Postgraduate Medical Councils (CPMEC), the Committee of Presidents of Medical Colleges (CPMC), The Medical Council of New Zealand and the Department of

Health and Ageing. It will focus specifically on issues related to the continuum of medical education and ways in which education and training can be made more efficient and if possible shortened, provided that quality is retained.

REFERENCES

1. Hill J, Rolfe I, Pearson SA. Do junior doctors feel they are prepared for hospital practice? A study of graduates from traditional and non-traditional medical schools. *Med Educ* 1998; **32**: 19-24.
2. Dean SJ, Barratt AL, Hendry GD, Lyon MA. Preparedness for hospital practice among graduates of a problem-based, graduate-entry medical program. *Med J Aust* 2003; **178**: 163-66.
3. Albanese MA, Mitchell S. Problem-based learning: a review of literature on its outcomes and implementation issues. *Acad Med* 1993; **68**: 52-81.
4. Vernon DTA, Blake RL. Does problem-based learning work? A meta-analysis of evaluative research. *Acad Med* 1993; **68**: 550-63.
5. Norman GR, Schmidt HG. Effectiveness of problem-based learning curricula theory, practice and paper darts. *Med Educ* 2000; **34**: 729-38.
6. Woodward CA, McAuley RG. Can the academic background of medical graduates be detected during internship? *Can Med Assoc J* 1983; **129**: 567-9.
7. Woodward CA, Ferrier BM, Cohen M, Goldsmith A. A comparison of the practice patterns of general practitioners and family physicians graduating from McMaster and other Ontario medical schools. *Teach Learn Med* 1990; **2**: 79-88.
8. Schmidt HG, van der Molen HT. Self-reported competency ratings of graduates of a problem-based medical curriculum. *Acad Med* 2001; **76**: 466-8.
9. Kaufman DM, Mann KV. Comparing achievement on the Medical Council of Canada Qualifying Examination Part 1 of students in conventional and problem-based learning curricula. *Acad Med* 1998; **73**: 1211-3.
10. Prince KJAH, van Mameren H, Hylkema N, Drukker J, Scherpbier AJJA, van der Vleuten CPM. Does problem-based learning lead to deficiencies in basic science knowledge? An empirical case on anatomy. *Med Educ* 2003; **37**: 15-21.