WORKFORCE MODELS FOR A HEALTHIER AUSTRALIA

A Productivity Commission Submission

Prepared By

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This is a personal submission of Professor Wayne Gibbon, Director of the Centre for Ambulatory Care Research, The Prince Charles and Redcliffe Caboolture Health Service Districts and the University of Queensland.

I appreciate the opportunity to contribute my thoughts to the Productivity Commission review. The ideas contained in this submission are our own and have not in any way been endorsed by Queensland Health nor the University of Queensland. It is not intended to be a comprehensive submission, i.e. it does not address all of the issues that require consideration within the Terms of Reference. It simply addresses those matters on which I wish to make comment or propose our ideas regarding the health workforce.

INTRODUCTION

Hospitals and health service structures, as they currently exist were defined to meet the needs of the past. New technologies and treatment modalities, and changing demographics provide both the requirement and the opportunity to establish contemporary models of care that are more attuned to the needs of contemporary society. It is an economic and social imperative that we establish models of care that are community based and that enable people to be cared for and managed within the community. This is to prevent the aged or chronic disease sufferers deteriorating through disease exacerbation, to the extent that they require frequent, expensive, acute hospital admissions for episodic care. This may mean better outreach from hospitals, community based outpatient clinics within an ambulatory care setting, hospital in the

home programs, development of nurse and allied health practitioners with the expertise to assess and treat people and refer to specialists as necessary.

Professional boundary protection occurs because of the subculture allegiances within health and the professions' ability to regulate scope of practice through health registration boards. The reality is that the boundaries between health professional groups have been constantly changing throughout history as new professions have emerged, usually in response to new needs. History shows that these changes usually occur rapidly in response to crisis eg. physiotherapy development occurred as a response to the polio epidemics and the rehabilitation requirements generated through war trauma.

The "crisis" necessary to generate such changes is slowly emerging in relation to workforce supply/patient demand imbalance; we see the "cracks" in the system appearing with an international health workforce shortage. However the demographic predictions are poorly understood by health professionals and the community generally, so professional lobbies continue to be able to blame governments (with some legitimacy) for supply shortages. The reality is that we do need more health professionals but we also need them to be working differently so that we maximise the benefits of their skill sets, to the community.

WORKFORCE PLANNING

Effort must be concentrated on both *workforce planning*, i.e. creating and modifying the future workforce requirements around the predicted future needs of the organisation and on *workforce management* i.e. the acquisition, retention, deployment and effective utilisation of staff.

The context for health workforce planning needs to reflect:

- Demographic changes such as population ageing and the accompanying ageing of the health workforce, the growth of chronic disease related demand, population dispersal and population migration;

- Economic factors for example the impact of interest rates on retirement patterns, funded retirement and hence service access within the public/private service mix;
- Changes in technology and treatment methods, resulting in changes in models of care;
- Societal changes such as client demand/expectation, increasing litigation, and the changing expectations of the workforce.

Workforce planning needs to predict to a long horizon, however major trends in new technologies and treatments are difficult to foresee. Workforce planning therefore, needs to be an active process, constantly revisited as new trends emerge to change the planning context.

The most critical and probably the most predictable factor which needs to be considered in health workforce planning is changing demographics. Because of the age profile of client groups, most human services will have similar or even reduced levels of demand in the future. Not so for states such as Queensland which, due to population ageing, will experience growth in demand, in the order of 1.25 times that of population growth.

Hence Health is set to experience the "double whammy" demographic effect of:

- Relative shrinkage of the base-grade recruitment pool (the "twenty-somethings") that will be experienced by all services and
- A significant increase in the demand for services to the ageing members of the population, who will at some point, invariably be suffering from a form of chronic disease. Improvements in health treatments and technologies that will make a broader range of interventions available to improve the quality of life for older people will accentuate this impact. We see this already occurring with the availability of joint replacement surgery, cataract extractions and lens replacement surgery etc.

The impact of this is that Health will require a larger proportion of the total labourforce, to maintain services at similar levels to those of today. Queensland Health's workforce statistics, for instance, suggest that the proportion of the age 20-29

population in the health workforce traditionally has been 2.6%. To meet demands over the next 5-10 years, this needs to increase to around 3.4%, which means that health profession intakes will need to increase by around 30%.

Currently, changing demographics is altering the dependency ratio, such that the available labourforce is becoming a smaller proportion of the total population. Health professions will be in strong competition with other industries in the future to attract students into the industry, from a shrinking base recruitment pool.

WORKFORCE MANAGEMENT

Workforce management processes need to concentrate on building capacity, sustainability and staff engagement, within the existing health workforce. The success of Health in achieving this, will depend on the organisational leadership. The leadership will need to be strong but visionary.

Health services are provided by people, to people. Revised approaches to workforce management must be seated in philosophies and cultures that recognise and value the contributions of the people of the organisation, while planning service delivery around patient and community need, and promoting the research and growth of new technologies and treatments. These values must translate to competitive salary and employment conditions to retain staff within the public sector, and pay must be commensurate with responsibility. Issues such as child care and elder care cannot be ignored.

In recruitment, we are currently competing for health professionals in what is an increasingly global market. The National Health Service in the United Kingdom has a slogan "*More people, working differently*". This recognises both the need for growth in numbers of health professionals and the need to reform the health professionals' roles. Realistically, given the predicted imbalance between demand and supply, and the competition that workforce shrinkage will create, it may not be possible to enrol sufficient undergraduates to meet future demand. The current concerns regarding the competence of overseas trained graduates will continue, unless Australia develops

appropriate infrastructure in collaboration with those countries with a labour surplus, to improve training standards and new graduate assessment. A possibility would be the increased export of training expertise to Asia, to assist in the development of a skilled workforce which may provide both a recruitment pool for this country and a labour export market with the associated economic benefits, for neighbouring countries.

WORKFORCE REFORM

There have been ongoing concerns expressed, by professional lobbies, about "task substitution". Significant workforce reform is required to change existing service delivery models and roles within the workforce. Task substitution is being explored around the world in response to the current and predicted imbalance between workforce and demand requirements. The concern is to ensure that individuals are competent to undertake the tasks assigned to them, not just that they work within a profession that has normally had a specified scope of practice.

What is being proposed now, nationally and internationally, is that the health provider community should plan such reform in a well considered way, design the changes that are required and educate for them, to ensure that new and existing practitioners are competent to undertake their changing roles (vide infra).

We need to build a community based workforce that has the competence to assess and manage chronic disease sufferers within the community and to refer them to specialists only when specialist treatment or assessment is required

It is clear that the health current workforce is becoming inadequate to meet demand. Attached to this submission are a number of papers providing examples of the ways in which workforce reform might occur to better service escalating demand.

1. Radiographer Reporting

No plain film reporting is occurring within many hospitals due to the absence of sufficient radiologist resources to formally read and report these. It is imperative that

radiographers are trained to read and report plain films, particularly films that require rapid reporting such as those within an emergency department. International evidence substantiated through meta-analysis and published in February 2005 indicates radiographer competence as being equivalent to radiologists in this function, if appropriately trained. An example of a solution for this problem is a paper at **Appendix 1** which explores the issues and process for providing an improved service through radiographer reporting.

2. Non medical anaesthetists

Many states are struggling to sustain their operating theatres services in the absence of sufficient trained medical anaesthetists who are prepared to work in the public sector. Non-medical anaesthetists have been practicing in the USA for approximately 100 years and all evidence indicates that given the appropriate training they are equally competent to perform assigned anaesthetics as are medical anaesthetists. In some countries, non medical anaesthetists are performing most anaesthetics under the supervision of a medical anaesthetist, who is there to provide support and advice as it is required. This is a potential solution for Queensland health. A paper that outlines the issues around nurse anaesthetist practice in the United States is at **Appendix 2**.

3. Skill Mix in Emergency Departments

Many states such as Queensland also have difficulty obtaining sufficient numbers of trained Emergency Physicians to staff its Emergency Departments. Queensland Health has undertaken an analysis of the tasks and functions performed by staff in its Emergency Departments, and an ED nurse practitioner project is currently being undertaken in the Redcliffe Caboolture ED. It would be possible to revise the skill mix of the staff in the Emergency Departments to include a balance of advanced nurse clinicians and nurse practitioners, as well as to utilise the skills of physiotherapists in the management of minor trauma. A paper exploring this concept is attached at **Appendix 3.**

4. Deconstruction Of Service Requirements

The current model of medical staff employment used within Queensland Health is based on a traditional physician-centric service delivery model. An alternative model would be to look at the specific services required and manage human resources based

on required skill-mix. Clinical human resources can then be purchased using rational decision making criteria. It should similarly allow clinicians to tender for this necessary activity based on personal work preferences and skills either as individuals or in partnership.

This paper considers Medical Imaging at "Hospital A" as an example of how this may work. The local service manager may look at the expected annual activity and decide that:

- Some studies could be planned around a patient centric, rather than Medical Imaging Department model, i.e.:
    - Ultrasound studies will be performed and reported within clinical units rather than within the Medical Imaging Department. These would be performed by sonographers with advice where necessary from clinical specialists within the same work unit e.g. obstetric studies performed in conjunction with obstetricians, cardiac studies performed in conjunction with cardiologists.
    - In certain areas the ultrasound might be performed by the treating clinician as part of physical examination eg. gynacologiocal ultrasound studies could be performed by gynaecologists or sonographers in the clinic setting, Department of Emergency Medicine (DEM) ultrasound studies could be performed by DEM physicians +/or sonographers in the DEM setting
- suitably trained radiographers would both perform and report DEM radiographs, given the evidence that this is a safe working practice and there is a general lack of radiologist availability for immediate reporting

- Given the evidence that there is little value in the routine reporting of Orthopaedic and follow up trauma radiographs, radiographic studies would not be reported (unless specifically requested)
- Where clinicians are appropriately trained and experienced in radiographic interpretation, in-patient radiographic studies would not be routinely reported if agreed by clinical groups.

Therefore, when assessing required services the above activity can be excluded from those services requiring radiologist input. The radiologist staffing requirement in relation to the remaining activity can be calculated using a modification of the US Medicare complexity-weighted relative value unit system (RVUS).

The advantages of the changes to the employment model and the skill mix variation are that:

- the hospital can dictate the precise nature of required services
- there is greater capacity to introduce new radiographer and nurse practitioner roles in order to more effectively manage limited human resources and
- the clinician has a primary allegiance to public health in general, encouraging the involvement in service delivery networks rather than affiliation with a single public hospital or private practice.

WORKFORCE TRAINING AND DEVELOPMENT

Workforce training and development is very important to Health, but has to date been poorly structured. In 1998 a project was undertaken within Queensland Health to identify the funds being expended on workforce training and development, and this was identified as being in excess of $59M. The evidence showed that training and development was accessed by some staff more easily than others eg. medical staff have an award entitlement for study leave that does not exist for other staff. Moreover, the distribution of funded training infrastructure was such that statewide access was variable. Current models of undergraduate training act to maintain professional silos and this has been recognised particularly in the UK where the New Generation Project has developed a skills escalator model that better integrates development across professional streams. This model allows articulation between the professions based on development through common learning modules.

Development Of New Skills Escalators For The Health Workforce In Australia

In order that effective health workforce reform can occur there is a requirement that education and training processes are in place that allows continued opportunity for the

up-skilling of health professionals and staff migration across traditional professional boundaries. This would best be achieved by a series of skills escalators with different routes existing whereby workers can reach similar role endpoints. The concept of the "Skills Escalator" forms one of the four pillars of NHS Plan and is fundamental to the NHS "strategy to deliver the challenging objective of growing and changing the workforce" [1]. The local development of similar escalators in Australia needs to be correlated with clinical role delineation (and eventually role remuneration). Although the current models are described separately potential exist for common learning at undergraduate level should a university wish to reproduce the philosophy of the University of Southampton, University of Portsmouth, Hampshire & Isle of Wight NHS SHA collaborative "New Generation Project" [2]. In this project a "Common Learning" philosophy and processes are used across 12 different health disciplines. Even greater possibilities exist for such common learning in terms of postgraduate education and training. It is important to realize that all of the different health professions comprising the workforce may utilize one or more of the skills escalator models described in this document. It is important, however that these education and training structures are closely aligned to the eventual workforce designations.

1. Flexible Medical Specialist Model

This is a 15+ year escalator ultimately allowing the development of medical specialists who should have both a broad knowledge across a range of medical disciplines as well as great in-depth knowledge of a particular discipline or disciplines (Figure 1).

The Undergraduate Basic Medical Training should be of standard 5 year duration. Depending on a student's prior background this may be preceded by a 12 month accelerated Pre-Med Program providing an intensive learning period for those entering Basic Medical Training from school without a prior science background. Graduate entry students may be allowed to enter at Year 2 or even Year 3 of the Basic Medical Training depending on the nature of their prior learning and academic standards achieved. Medical Graduates from overseas wishing to join the program may do so at the start of Year 4 or 5 depending on how the AMC assesses the quality of their prior undergraduate training.

The Intern Year can remain in its traditional form although this period should still include formal opportunity for Continuous Professional Development (CPD) so as to enhance the learning experience of this year. The 2 year Post Basic Training years (PGY 1&2) will remain largely as currently stands except that rotations may be tailored to a medical graduate's intended specialty interest e.g. a medical graduate who subsequently wishes to become a specialist orthopaedic surgeon may chose a rotation which includes respective 6 month periods in Emergency Medicine, Rheumatology, Neurosurgery and Plastic Surgery (although a compulsory 6 month rural position may also be included depending on state necessity).

Advanced Physician or Advanced Surgical Training is intended as a means of producing a "hospital grade" or "Associate Specialist" staff position. This would allow practitioners wishing to carry out work within a specialist field without them being required to complete a Specialist Training Program. They would be to practice within set parameters with a significant degree of autonomy but under the ultimate supervision of a trained specialist. Again taking the example of orthopeadic surgery an Associate Orthopeadic Specialist would be able to autonomously internally fix femoral neck fractures but would only be able to revise any subsequent complications under the "supervision" of a deemed Orthopaedic Specialist. Similarly, they would be able to manage the initial "fist aid" treatment of complex pelvic fractures, however, definitive treatment would require the services of an Orthopaedic Specialist with particular expertise in the area of pelvic trauma. Only on successful completion of an Advanced Surgical Training Program (PGY 3 & 4) and formal competency-based summative assessment would a practitioner be eligible to become a deemed Associate Specialist.

In this way any overseas trained specialists wishing to enter Australia could have a range of potential entry points at:

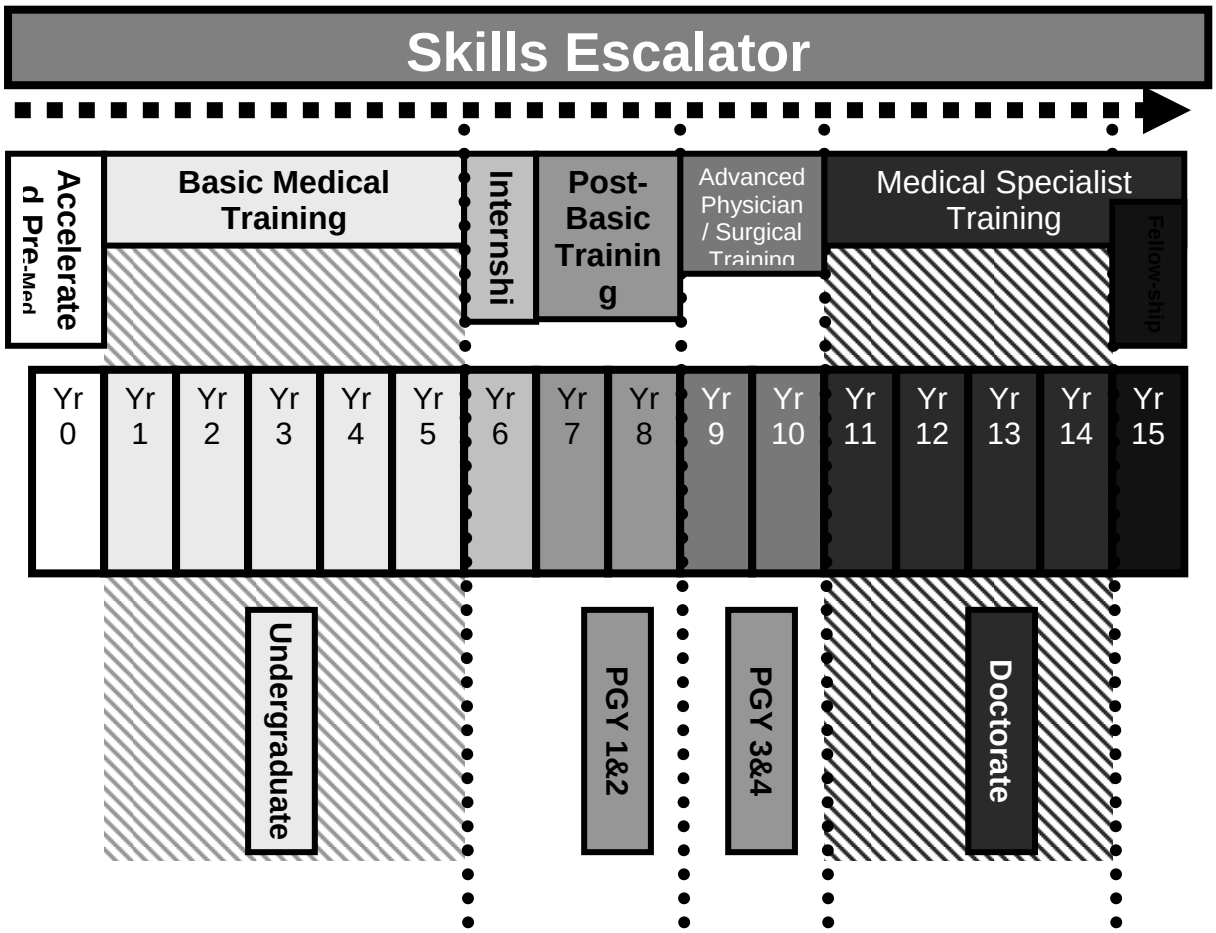
1. the start of PGY 3 or 4
2. Associate Medical Specialist level
3. full Medical Specialist level

- depending on their level of training and competency as assessed by the Medical Board in conjunction with the relevant Medical College.

The Medical Specialist Training period should continue to be 5 year duration with there being an “exit” assessment at 4 years followed by a Fellowship period. The Royal Colleges should continue to act as the regulating bodies, however, trainees should be enrolled on a concurrent Professional Doctorate Degree Program as a collaboration between the Colleges and local Universities so as to optimise the learning experience. Only on successful completion of an Medical Training / Professional Doctorate Program and formal competency-based summative assessment would a practitioner be eligible to become a deemed Medical Specialist.

It is envisaged that the above would produce a pyramidal structure where-by the Medical Specialists would form its apex.

Figure 1: Flexible Medical Specialist Model



The Accelerated Pre-Med and Yr 1 may be omitted if the candidate has a prior Baccalaureate Degree i.e. to effectively become a 4 year graduate medical program.

The cross-hatched areas represent the flexible-term component of training

The dotted line represents competency-based assessment entry / exit points

The undergraduate component would normally take 5 / 6 years but could take as little as 3 / 4 years for graduate entry students and 1 / 2 years for medical graduates entering from overseas.

The specialist training could take anything between 3 and 5 years depending on progress.

The Internship, Post-Basic Training and Advanced Physician / Surgical Training will be a fixed minimum of 5 years but extendable if the exit competency assessment is demonstrates an inadequate performance level. Completion of Advanced Physician Training OR Advanced Surgical Training will allow the practitioner to function as a hospital grade medical practitioner (Associate Medical Specialist).

2. Non-Medical Practitioner Models

These reflect two university-based and one VET-based models whereby non-medical healthcare practitioners can obtain basic training with potential for entry in to integrated advanced training programs.

Figures 2 and 3 show two different variations as to how basis and initial postgraduate training can be achieved using a university-based model In “Route 1” the nursing and allied health practitioners would enter a standard 3 year Basic Training Program. Graduate entry would be at the start of Year 2. Successful undergraduates would then enter a Post-Basic Training Period which would be of standard 2 year duration or 1 year for graduate-entry students. In “Route 2” the nursing and allied health practitioners would enter a standard 4 year Basic Training Program consisting of 2 years “general” training and 2 years in a nursing or allied health sub-specialist area. An example may be a nurse wishing to specialize in DEM nursing where they would spend 2 years in a general nursing program followed by 2 years in a sub-specialist area rather than 1 year in general or mixed “elective” areas. Another example may be an undergraduate who has decided to subsequently specialise as a podiatric surgeon (along the North American line where they perform a large proportion of the “below knee” surgery. Such an undergraduate may decide that a 2+2 year program combining 2 years of a general physiotherapy program with 2 years in a shortened podiatry program may best suit their undergraduate learning needs. In the case of “double major” graduates the Post-Basic Training period could also be reduced to 1 year.

Following completion of a statutory 2 year Post-Basic Training period a nursing or allied health graduate could then chose to follow the existing professional career structure. Alternatively they may choose top enter a period of Advanced Training. This would be a suite of postgraduate taught course programs each of which would be its own end-point related to specific functional requirements e.g.

1. a radiographer wishing to “report” mammograms may chose to complete an appropriate Post-graduate Certificate which would allow them accreditation for such a clinical task
2. a physiotherapist wishing to work in a Shoulder Clinic may chose to complete a Post-graduate Diploma in Musculoskeletal Ultrasound which would allow them to better manage patients within that clinic

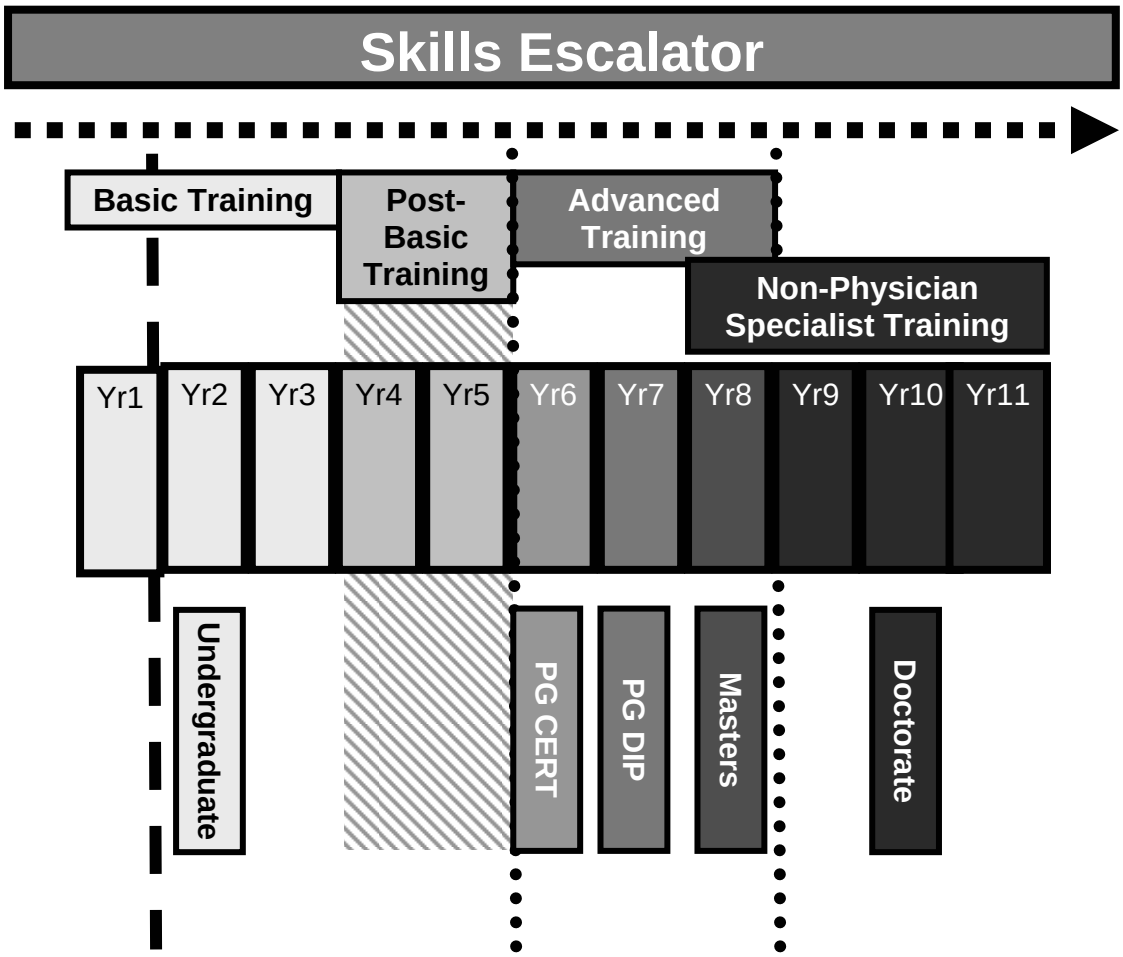
3. a nurse wising to be a DEM Nurse Practitioner may be required to complete a Masters Degree in Emergency Department Care in order to comply with state regulations for practice

In order to enter into Advanced Training there would be a competency-based entry examination. There would also be a formal competency-based summative assessment for those wishing to show that they have completed their Advanced Training. Completion of Advanced Training and competency-based assessment will allow practitioners to have formal “Practitioner” status i.e. they will be allowed to perform a range of tasks autonomously and other tasks under the supervision of an appropriately trained Medical or Non-Physician Specialist

Non-Physician Specialist Training would be concurrent with a 5 year professional doctorate or 4 years if they have recently (within 5 years) completed an appropriate Masters Program. Completion of Non-Physician Specialist Training and competency-based assessment will allow practitioners to have formal “Non-Medical Consultant” status i.e. will be allowed to perform a range of tasks autonomously and other tasks under the supervision of an appropriately trained Medical Specialist (similar to Associate Medical Specialists).

Figure 4 shows how via “Route 3” VET-based education and training allow achievement of the same eventual career end-points as the university-based models. This integrates Certificate levels 1-4 as a Basic Training period with differential entry points. The flexible period post-basic training period with competency based entry point into Advanced Training allows an option for rapid progression to exceptional graduates. Although the Advanced Training may begin with a VET Postgraduate Diploma it would have to be completed via a university-based Masters Degree (Under current higher education regulations). An expansion of available VET Postgraduate Diplomas is in keeping with Queensland's proposed responses to the challenges of skills for jobs and growth [3]. As with Routes 2 and 3, a 4 year doctorate Non-Physician Specialist Training option would be available at the completion of Advanced Training again in conjunction with a university-based professional doctorate.

Figure 2: Non-Medical Practitioner Model Route 1



The dashed line represents Graduate entry point

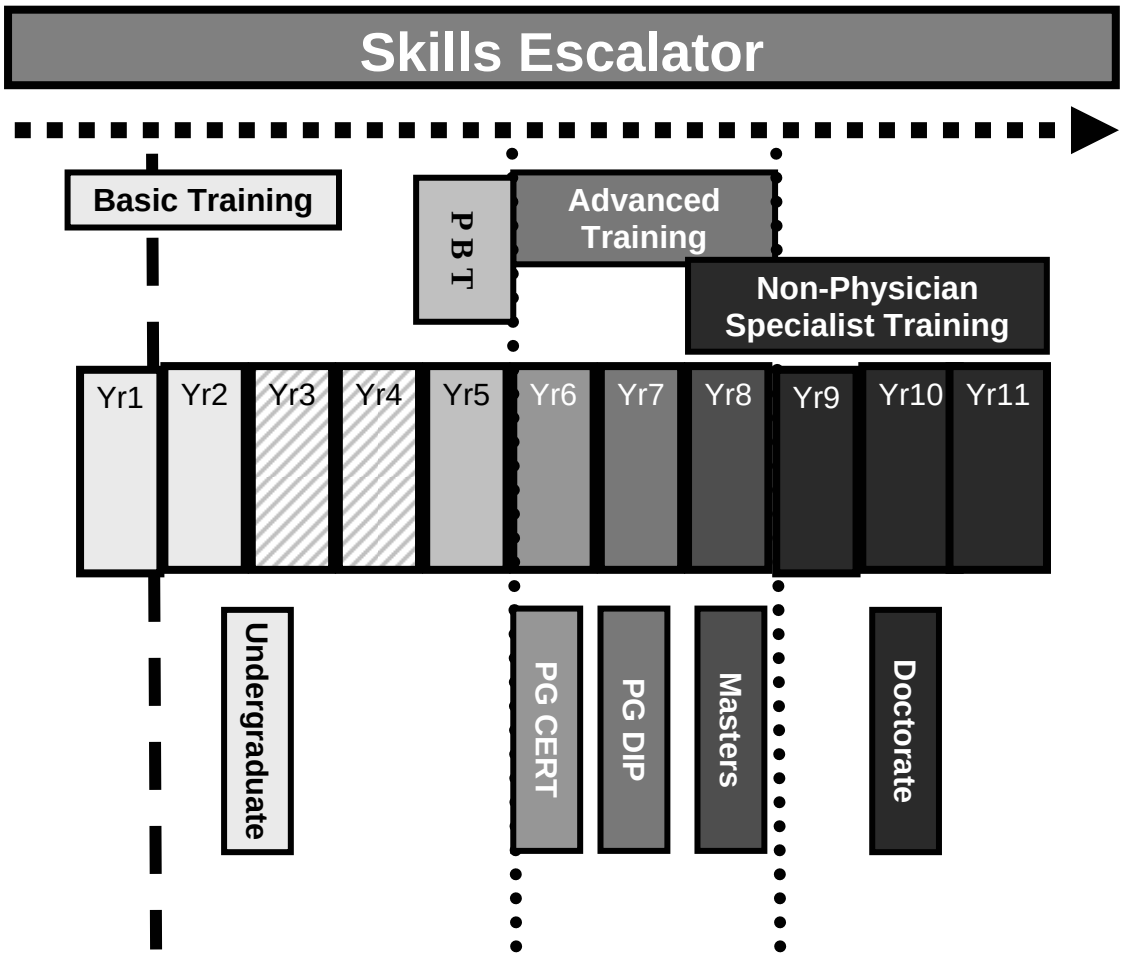
The cross-hatched areas represent the flexible-term component of training for graduate students

The dotted line represents competency-based assessment entry / exit points

Rout 1 = Standard university based training model for healthcare professionals

The flexible period post-basic training period with competency based entry point into Advanced Training allows an option for rapid progression to exceptional graduates.

Figure 3: Non-Medical Practitioner Model Route 2



The dashed line represents Graduate entry point

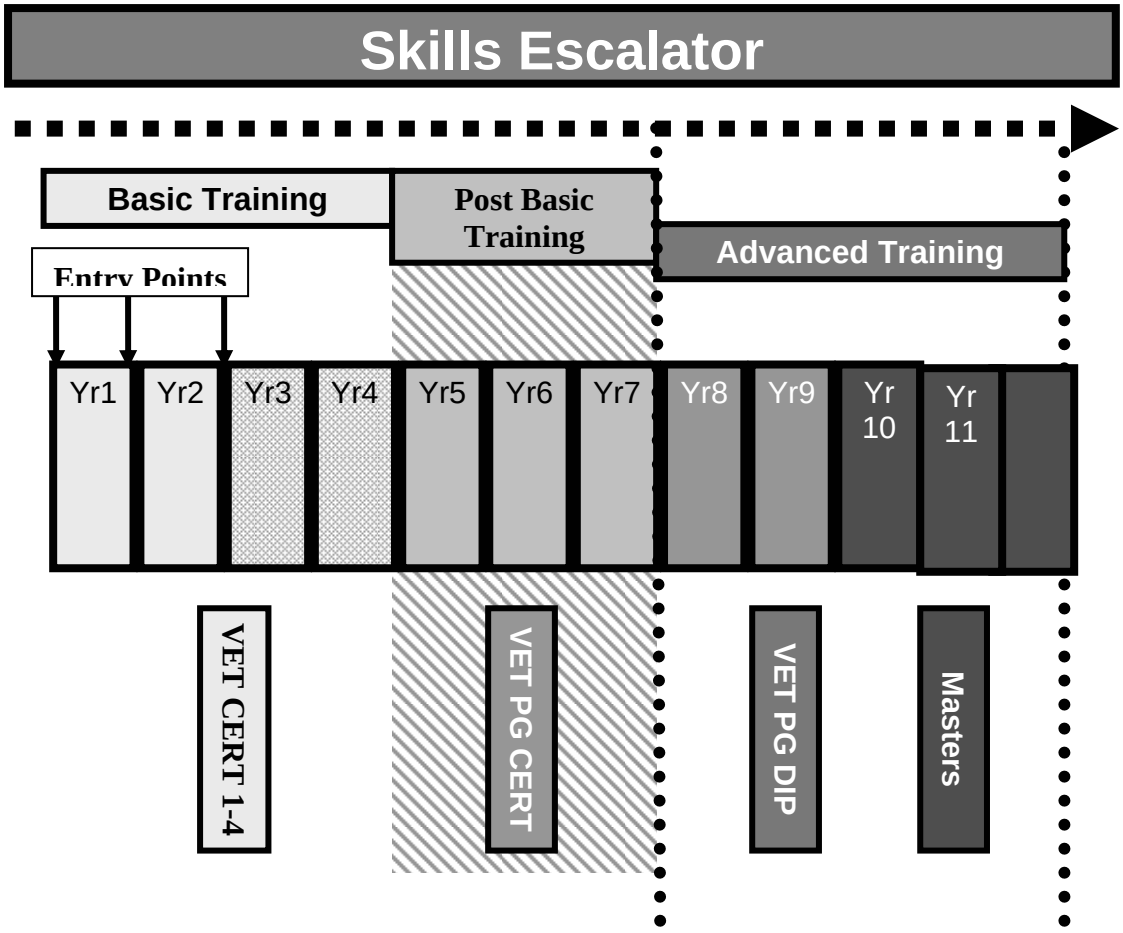
The dotted line represents competency-based assessment entry / exit points

NB. This model is essentially the same as for Route 1 except that it allow for 2 + 2 year mixed degrees

e.g.1 A nurse completing 2 years of general nursing program followed by 2 years in a Emergency Nursing, Nurse Anaesthetist or Midwifery program.

e.g. 2 A physiotherapist completing 2 years of general physiotherapy program followed by 2 years in a shortened podiatry program.

Figure 4: Non-Medical Practitioner Model Route 3



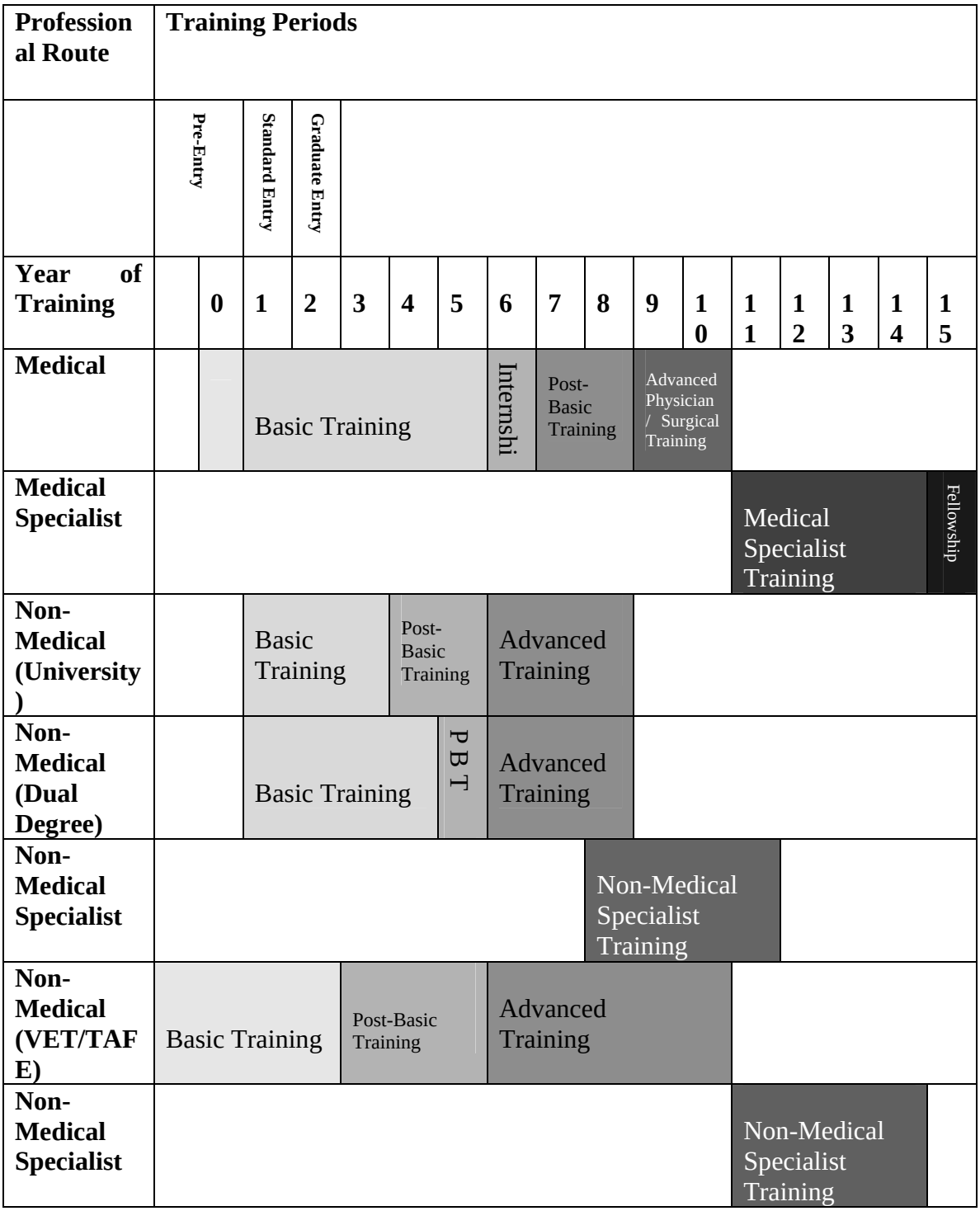
The cross-hatched areas represent the flexible-term component of training

The dotted line represents competency-based assessment entry / exit points

Rout 3 = VET / TAFE based training model for healthcare professionals

Finally, Figure 5 attempts to summarise the above models showing how the duration of training varies. The box shading shows how equivalent professional standing may be achieved across the different models. This schema outlines the parallel nature of the proposed skills escalators, their common features and points of potential cross-over between career pathways.

Figure 5: Schema Showing Relationships Between Training Timescales And The Different Skills Escalators



Linkage Of Education To New Workforce Designations

It is essential that any education and training is specifically geared to eventual clinical role delineation. It is also important that in addition to the incorporation of multi-disciplinary learning in the education process that there is opportunity to approach any new workforce designations from a range of discipline backgrounds. These routes should be mapped to those role designations and have sufficient flexibility to allow individual career re-engineering. Below are 4 different models as to how such mapping may occur and those areas within the shaded boxed reflect potential pilot program for proof-of-concept studies (Figs 6 – 9).

Figure 6: The "Medical" Nursing Route Skills Escalator

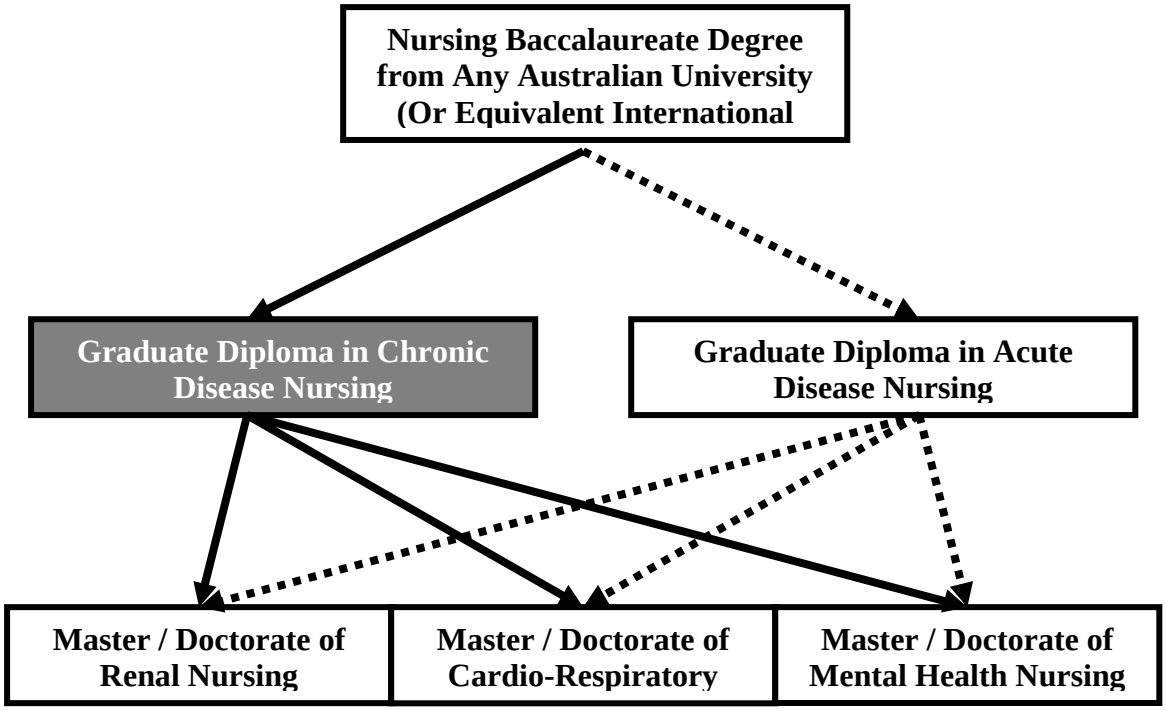


Figure 7: The "Surgical" Nursing Route Skills Escalator

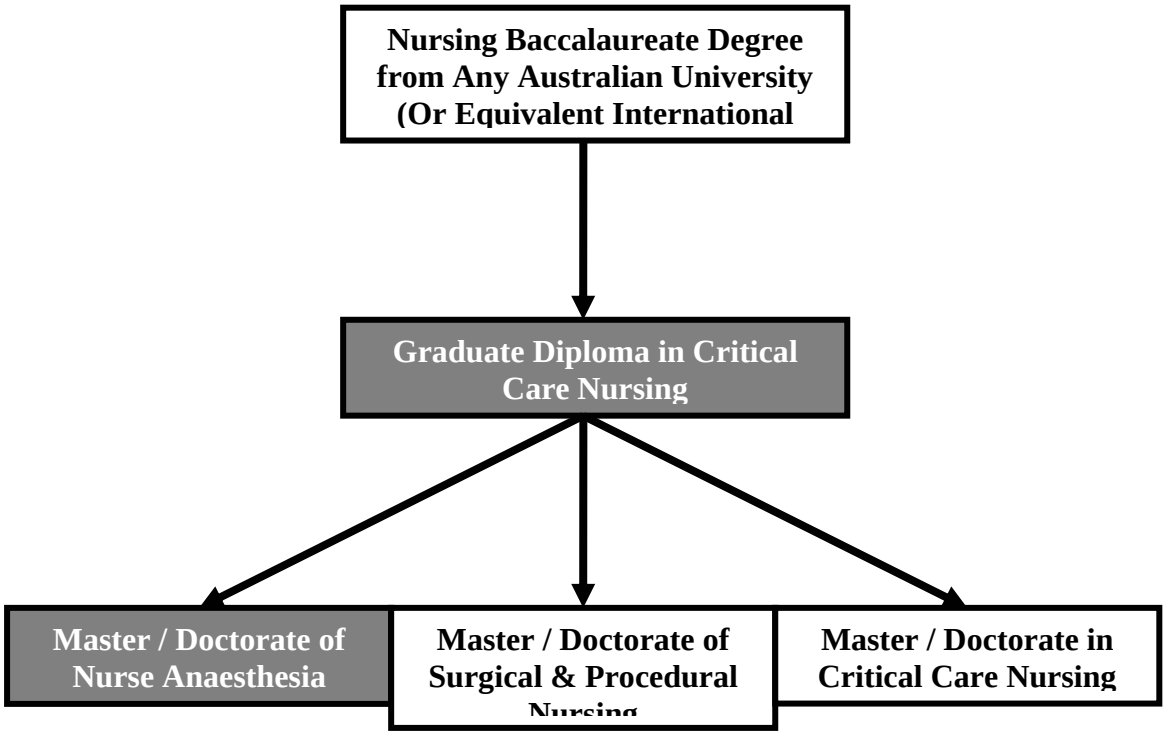


Figure 8: The Medical Oncological Route Skills Escalator

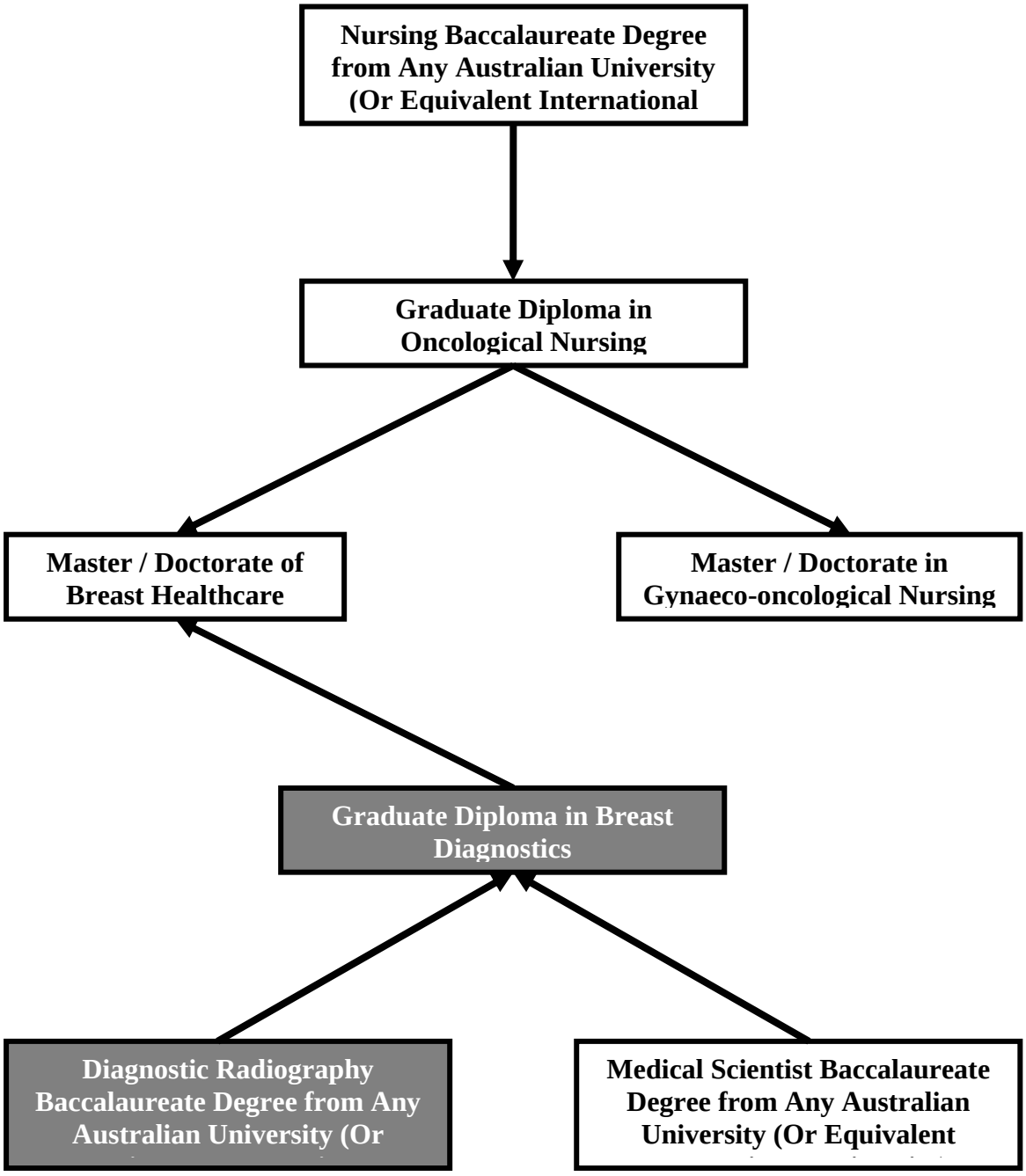
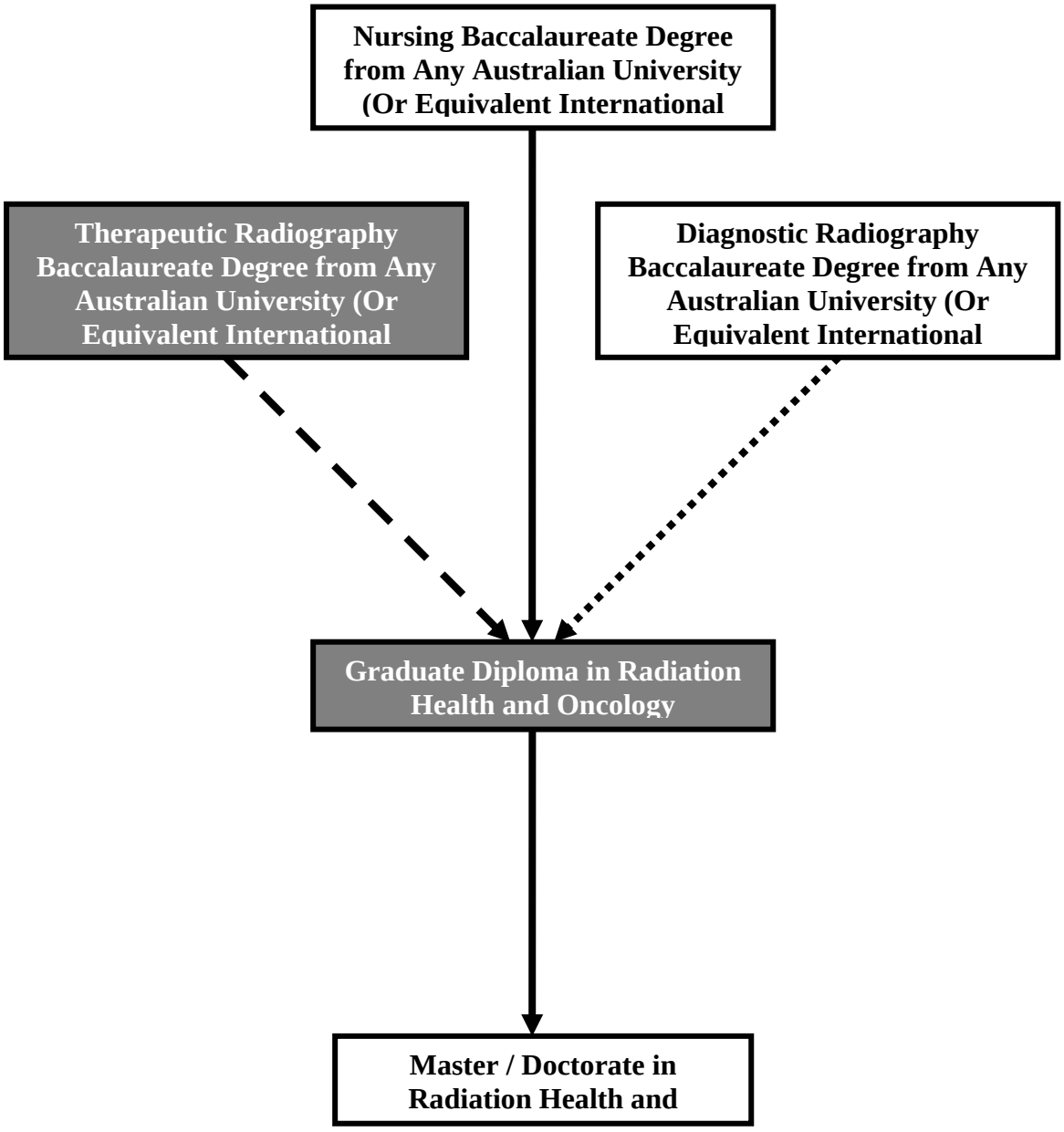


Figure 9: The Radiation Oncological Route Skills Escalator



ESTABLISHMENT OF A STATE COLLEGE OF HEALTH SYSTEM

Healthcare is facing increasing competition from other industries for students and graduates. While there were significant increases across the country in undergraduate health professional preparation programs, universities report that no university in Australia has been able to fill its nursing intake places for the current year. This is a worrying trend reflected in other States enrolments for some years. States such as Queensland, through its taskforce approach, has made considerable gains in the recruitment and retention of certain skill groups. Nevertheless, some areas continue to be under pressure due to the challenge of recruiting staff in all categories. These include rural and remote services, and specialised services such as mental health, aged care, intensive care, anaesthetics and oncology. Given that there is a natural tendency for professions to protect their "boundaries" and for unions to protect their membership, collaboration with these groups and others, on long term planning around revised skill mix models is essential.

In many states there is an agenda to actively encourages business, community and social development to increase educational opportunities and promote research and development. The establishment of the first state government organisational college with a mandate to offer skill set revisions that assist state Health Boards to modify its professional workforce could be very much at the forefront of this agenda. A State College of Health could both help in avoiding over-reliance on particular skill groups and organisations for training purposes and encourage buy-in by others.

Universities are increasingly concentrating on enrolment of full-fee-paying domestic and international students at both undergraduate and post-graduate level. The result will be that graduates will increasingly, on obtaining their awards, migrate immediately towards jobs, which will most rapidly clear their outstanding educational debt. Universities, will similarly respond by focusing on high-salary, vocationally based degree programs. These factors will generally have a negative effect on public sector workforce recruitment and retention where incomes are traditionally lower than in the private sector. It will also, potentially make difficult, health workforce re-engineering and multi-skilling due to the high cost of course provision and commercial pricing within universities.

In November 2001 a submission was made by the Organisational Improvement Unit, to the Director General through the State Manager, Organisational Development entitled "Establishment of a Queensland Health College". The submission was made in the context of the Higher Education (General Provisions) Act 1993 and Regulation 1996. This Act limited the ability of non-university organisations to award higher education degrees in its own right. Accordingly, it was recommended that Queensland Health (QH) should "establish a partnership arrangement with one or more Universities, chosen through a tender process, for the establishment of the Queensland Health College". While it was intended at the time to proceed in this fashion, the first priority was seen as the establishment of the Skills Development Centre and it was to this project that Queensland Health turned its energies.

The subsequent Commonwealth Higher Education (General Provisions) Act 2003 and Regulation 2004 changed the rules governing the provision of higher education awards. This legislation now allows non-university providers to offer higher education if the State Minister for Education specifically accredits individual higher education courses.

The Health Workforce

Although, Australia is rightly very proud of the way its healthcare workforce has been designed there is a realisation that the workforce of the future will be very different. Workforce planning is required for creation and modifying the future workforce requirements around the predicted future needs of the organisation. Accordingly, government needs to be able to predict the trends which will affect the society and service delivery of the future, define suitable policy to guide development and plan and manage the education and training of its workforce to meet those trends. There is no doubt that skill mix revision will be required as the health workforce competes with other highly attractive professions for undergraduates, in an increasingly demand driven era, related to population ageing.

The general population is ageing and demand for health services is increasing. Demand increases will progressively occur, in areas of chronic disease management associated with ageing, and in procedures that improve the quality of life for ageing individuals eg. Joint

replacements, eye procedures such as lens replacements. At the same time, the health workforce is ageing and the population base that makes up the recruitment pool, i.e. school leavers, is growing slowly, so workforce shrinkage is predicted. Some other countries, particularly the UK, have recognised that it will be impossible to sustain the traditional workforce in health services, and are working to re-define the future workforce around predicted patient requirements. For example, procedures undertaken at present largely by doctors are being reassigned to nurse practitioners or to technicians who have been skilled to undertake an expanded role. Some tasks traditionally undertaken by nurses are being moved to patient care assistants. Australia needs to move in a similar direction; however there are currently impediments in the system to such changes, requiring the Commonwealth and State jurisdictions to work collaboratively and across portfolios, to achieve solutions.

The Complexity of Workforce Reform

The development of a highly skilled and responsive health workforce which is able to cope with emerging and future demands requires cooperation and collaboration between employers, unions and professional associations and colleges and universities. Currently post graduate medical education i.e. the preparation of medical specialists occurs primarily in the public sector under the auspices of specialist colleges. Specialist Medical Colleges control the accreditation of facilities for training, and the selection and examination of trainees. Issues that need to be further explored include the roles and responsibilities of private hospitals in the provision of clinical placement opportunities, and whether some post graduate qualifications could be developed and awarded by universities or State Health Boards, rather than Medical Colleges. Moreover, in the UK, universities are offering programs to develop required procedural specialists from nursing and allied health backgrounds eg. the University of Birmingham two year program to develop specialist obstetricians, without a medical degree entry criteria.

Addressing Undergraduate Education Issues

Under current funding arrangements it is in the interests of universities to continue to roll out existing, traditional programs, rather than rework programs to achieve better program articulation, and produce new types of workers with different sets of skills. Each state would like to see fully integrated program development to allow health professionals to move laterally across the education system, with articulation from vocational programs to post graduate training. Under such a system all health professionals would undertake components

of common learning and these would be recognised for credit into higher level programs. It has been possible to achieve changes in the traditional models of training in the UK, because the health services hold the funds to purchase under-graduate training, whereas in Australia, the funds are provided to universities directly from the Commonwealth Department of Education, Science and Training. Many states, have great difficulty recruiting dentists to the public system because of the greater earning capacity of dentists in the private sector. The Commonwealth's solution to this workforce shortage seems to increase the numbers of fee paying student places for dentistry students. This is unlikely to improve the problems of public sector dentistry as students who pay for their own education are likely to move immediately into private sector dentistry to gain a return on their self investment. This matter has been raised with the Commonwealth through the Australian Health Ministers Advisory Committee, but has not been satisfactorily resolved.

Changes to Higher Education Legislation

The Higher Education (General Provisions) Act 2003 states that a non-university provider can offer higher education in Queensland if the State Minister for Education specifically accredits its higher education courses. Universities deliver most higher education in the State. However, a small but growing number of non-university providers are also now authorised by the State to offer higher education courses and confer higher education awards. Examples include the Securities Institute of Australia (Graduate Certificate, Diploma and Master of Applied Finance and Investment), the Brisbane College of Theology (Baccalaureate, Graduate Certificate, Diploma and Master of Theology) and the Royal Australian College of General Practitioners (Graduate Diploma in Rural General Practice).

Proposal

To suggest a process to provide a cost-effective, organisationally sensitive and timely, postgraduate award-based model of “in-house” workforce education and training to support projected changes in health service provision and maximise return on existing investment in human resource training and development. A pilot scheme should be established within Queensland as “proof of concept”.

Rationale

Objectives

The objectives of the creation of the Queensland College of Health would be to:

- Establish a strategic, consistent and coordinated approach to training and development across QH.
- Develop and deliver training programs, including the awarding of qualifications (up to a Masters Degree) that allow the skills and competencies of QH employees to be modified to meet current and emergent needs.
- Reduce the cost to QH of training programs that are currently university based.
- Improve the management of QH's intellectual property and raise revenue associated with the sale of this IP.
- Establish clear, effective communication and marketing of QH training and development activities.
- Provide training and development opportunities for rural and remote employees.

Outcomes

- Cost savings due to a reduction in duplication of program development and as a result of economies of scale in terms of cost/volume student ratios.
- Investment in and valuing of staff, leading to improved organisational culture.
- A sufficiently flexible training program to be responsive to QH's changing workforce requirements.
- Provide a mechanism to ensure that programs required to meet current and future skills gaps could be provided so as to enable continuity of quality service delivery.

Options For Queensland Health

There would now appear to be four options for QH;

Option 1. Do nothing and let the status quo remain.

Option 2. Link with a university through a tendering program to develop a Queensland College of Health in collaboration and partnership with a University (eg. the Coles-Myer model).

Option 3. Establish a Queensland College of Health and undertake in house program design, development and teaching.

Option 4. Establish a Queensland College of Health, develop some programs internally and / or purchase other accredited pre-existing programs that can be taught within the College.

Option 1. ***Do nothing and let the status quo remain.***

This will ultimately be the most expensive and the least satisfactory option. While there are a few exceptions, QH has had limited success in changing university program offerings to suit its workforce requirements, except where paying universities for the direct development of award programs.

With the increasing commercialisation of universities within a global market, fee structures are becoming especially higher for more prestigious universities.

There is little indication that many universities will be prepared or able to, within current funding arrangements, undertake the major program re-design that is required to truly meet current and future health workforce needs. This option is therefore, less than optimal.

Option 2. ***Link with a university through a tendering program to develop a Queensland College of Health in collaboration and partnership with a University (eg. the Coles-Myer model);***

This was the only other possible option, prior to the legislation amendments in 2003. There are, therefore, models in existence that can be reviewed.

As course development would be undertaken by a university, the costs would still be, in all likelihood, higher than QH in house development costs and a contract would need to specify standard course costs and intellectual property arrangements. Previous development partnerships with universities would indicate that there would be a significant input from QH employees to the design of programs and the development of teaching materials.

Option 3. ***Establish a Queensland College of Health and undertake in house program design, development and teaching.***

Since the changes to the Higher Education legislation in 2003, this option is now open to QH. The State Minister for Education can now accredit higher education degree awards on a course-by-course basis. This would allow:

- Training and education degree programs to be tailored specifically to its immediate and projected workforce requirements.
- Improved workforce recruitment and retention by linking award programs to service provision e.g. linking a 5 year Professional Doctorate to nursing or allied health "Specialist Training Programs" and subsequent "Consultant Practitioner" positions.
- Maximum use of other QH resources such as the Skills Development Centre.
- Networking of facilities at all Health District Graduate Education Centres for education provision across QH (and possibly with TAFE Institutes) via a combination of local and e-Learning.
- Improved staff satisfaction by building teaching as well as learning functions into job descriptions.
- Improved research profiles within Queensland Health, by production of a suite of degree programs including Master and PhD awards "by portfolio", incorporating work-based research dissertations into the taught-course programs and by allowing QH to income generate via "research award completions" (especially institutions such as the Queensland Institute for Medical Research).
- New income-generation via educational collaboratives with other state institutions both within Australia and internationally.
- Greater bargaining power when QH still actually does have to purchase any learning resources from local universities.

Importantly, the above can be carried out solely at postgraduate level, thus avoiding interaction with the Federal Government, or could be incorporated into a comprehensive skills escalator from vocational training through to doctorate level.

Option 4. ***Establish a Queensland College of Health, develop some programs internally and purchase other accredited, pre-existing programs that can be taught within the College.***

This is a viable alternative to Queensland Health undertaking all course development and should be further explored as a hybrid model that would enable the organisation to rapidly develop course options. In order for this to be viable it would need to sit within an established Queensland College of Health infrastructure, which enabled suitable courses to be identified, amended and "re-badged" where necessary and taught.

Benefits Of A Queensland College Of Health

Development of Existing QH Programs

In addition to developing award programs to support health workforce re-engineering it would be possible to further develop existing Queensland Health programs within the College eg.

- Core clinical skills.
- Communication for clinicians.
- Evidence-based practice.
- Human factors (blame free culture).
- Clinical process improvement.
- Clinical information management.
- Risk management (clinical).

Development of New Non-Clinical Programs

There would also be a possibility to develop / resite both award and non-award Corporate / Managerial programs within the college framework:

- Leadership.

- Resource Management.
  (human/financial/materials/information/project).
- Change management.
- Media Communications.
- Consumer education.
- Risk management.
- Corporate systems/governance.
- Core skills/operational/admin stream.

Responsiveness to Need

Developing programs through a Queensland College of Health could overcome the current, long lead times required for universities to make the changes necessary to curriculum and enrolment numbers.

The time scale advocated in the Queensland Government, Department of Education and the Arts "Guidelines for the Accreditation of Higher Education Courses offered by Non-University Providers" is:

- 10 months between submission of an application to a decision being made by the Minister for Education
- 3-6 lead time for marketing of the course subsequent to accreditation approval.

Also QTAC generally requires providers to submit requests for entry in its handbook by March of the year prior to the course being offered. However, if QH wished to develop a Queensland College of Health initially for its own staff only, it could potentially start issuing its own awards within 10 months of it submitting an application to the State Minister of Education on a course-by-course basis i.e. as a non-university higher education provider any new higher education award programs are individually assessed by the State Office of Higher Education as opposed to universities which are "self-accrediting" in this respect. What is more, any award program could be combined with a period of practical / experiential learning similar to the way Medical Colleges arrange specialist training and any education programs offered now could potentially be credited towards an award, as long as they are of suitable academic standard for the award level.

If QH, for example, wished to start developing the concept of Nurse Anaesthetists as part of a Professional Doctorate Program it could make a submission to the State Minister for Education before the end of April which would allow a Queensland College of Health to offer awards starting at the end of February 2006 (Semester 1 start at most Australian Universities). The courses are assessed by a panel formed at the request of the Minister. Also, as long they were of suitable quality and that they were appropriately assessed the individual course units could be delivered earlier and given as "credit" towards any subsequent award. This would essentially allow QH to start formal enrolment "internal" candidates onto such a program any time from Q1 2006, and could potentially start providing training to "potential" candidates Q3-4 2005. It could then post the program in the QTAC Handbook and begin marketing directed at "external" candidates for enrolment Q1, 2007.

If QH was to establish its own College of Health it would allow the organisation to rapidly and effectively respond to changes in workforce planning drivers such as changes in population demographics, societal and economic environment, technology and treatment, models of care and service delivery networks. In-house academic award programs could be specifically developed to enhance QH workforce management, facilitating the blurring of traditional professional boundaries and allowing the emergence of new categories of workers with clearly defined work roles.

Dealing with the Complexity of Workforce Reform

The development of a highly skilled and responsive health workforce which is able to cope with emerging and future demands requires cooperation and collaboration between employers, unions and professional associations and colleges and universities. Currently post graduate medical education i.e. the preparation of medical specialists occurs primarily in the public sector under the auspices of specialist colleges. Specialist colleges control the accreditation of facilities for training, and the selection and examination of trainees. Issues that need to be further explored include the roles and responsibilities of private hospitals in the provision of clinical placement opportunities, and whether some post graduate qualifications could be developed and awarded by QH itself, rather than colleges. Moreover, in the UK, universities are offering programs to develop required procedural specialists from nursing and allied health backgrounds eg. the University of Birmingham two year program to develop specialist obstetricians, without a medical degree entry criteria.

Currently, the fees for health-related post-graduate taught courses at the nine main Queensland-based universities are a disincentive for many QH staff to undertake further study, It, therefore, often falls to QH to provide support for programs not only through the payment of development costs but also through the provision of scholarships to support staff through such programs. The cost of workforce reform will have to be borne directly or indirectly by QH. Directly - by having to pay the universities for workforce training and education or through the provision of scholarships. Indirectly - through increased staff awards & re-classification via the enterprise bargaining process (i.e. either a new salary spine with pay points for "advanced" workers or qualification allowances will be required, to provide incentives for future study).

Addressing Undergraduate Education Issues

Under current funding arrangements, it is in the interests of universities to continue to roll out existing, traditional programs, rather than rework programs to achieve better program articulation and produce new types of workers with different sets of skills. Ideally, fully integrated program development would allow health professionals to move laterally across the education system, with articulation from vocational programs to post graduate training. Under such a system all health professionals would undertake components of common learning and these would be recognised for credit into higher level programs.

It has been possible to achieve changes in the traditional models of training in the UK, because the health services hold the funds to purchase under-graduate training. Whereas in Australia, the funds are provided to universities directly from the Commonwealth Department of Education, Science and Training. Queensland, like other states, has great difficulty recruiting dentists to the public system because of the greater earning capacity of dentists in the private sector. The Commonwealth's solution to this workforce shortage is to increase the numbers of fee paying student places for dentistry students. This is unlikely to improve the problems of public sector dentistry as students who pay for their own education are likely to move immediately into private sector dentistry to gain a return on their self investment. This matter has been raised with the Commonwealth through the Australian Health Ministers Advisory Committee, but has not been satisfactorily resolved.

Influence over Workforce Regulatory Bodies

Currently, QH relies on the local universities within the State to provide it with the majority of its workforce training and education allowing the organisation to concentrate on other issues. However, universities have their own problems related to the delivery of health workforce education. It is an increasingly competitive market, often clinical components are not sustainable and the management and scheduling of clinical placements is becoming very difficult. Universities are also under increasing pressure from professional colleges and regulatory authorities wishing to determine curriculum content. Queensland Health and linked bodies such as the Queensland Medical Board are probably in a better position than universities to influence these processes. It would also improve Queensland Health's return on educational investment at post graduate level through research income, cost vs. reward, ability to match learning to industry needs and provide greater flexible of required delivery options.

Funding Incentives

Rewarding good practice and removal of perverse funding incentives from the total system is necessary. New procedures are required to have demonstrated, evidence based outcomes, to be accepted on to the Medicare Schedule. Procedures on the Schedule that are inconsistent with evidence based practice can however, remain on the Schedule. We could see some health expenditure as an investment in the future, rather than a cost. There is little investment in public health initiatives to reduce the costs of lifestyle related diseases of ageing (2% of all health related funding according to the Australian Institute of Health and Welfare). It might be better to pay now for programs that train people to assist patients to maintain joint mobility, than to face an increasing demand for joint replacements.

Current Queensland Health Expenditure On Training And Development

In 1998 a study of the cost of training and development was undertaken by Organisational Development. This study took 6 months and ascertained that approximately $56 million is spent a year on training and development in QH. The study took account of all conference leave and associated costs including award entitlements, all formal on-the-job training and all mandatory training such as orientation and fire and safety. There has been significant funding growth in the area of training subsequently, with new initiatives such as the Skills Development Centre, coming on line.

The maintenance of mandatory training and individualised training programs to meet specific District or facility requirements is important for maintaining the skills of QH staff. There are, however, pools of funds within the Department that could be utilised as part of the Queensland College of Health such as the funding provided to the Rural Health Training Units.

Current Cost of Postgraduate Course Fees at Queensland Universities

Currently, the fees for health-related post-graduate taught courses at the nine main Queensland-based universities range from:

- $3,120 to $10,700 for Graduate Certificate
- $7,680 to $20,400 for Graduate Diploma
- $8,740 to $36, 848 for Master Degrees.

The costs vary considerably depending on field of study, type of study and institution. Recent changes in Federal legislation, however, mean that universities may now charge the same course fee as for their currently heavily subsidised, undergraduate programs. Accordingly, these existing fees may increase 2- or 3-fold over the next 2-5 years. Depending on future requirement they could cost QH a considerable amount of money.

Flexibility

At most universities a Masters degree is the standard entry requirement for a doctorate program (or under exceptional circumstances an honours first degree plus extensive practical experience). At most Queensland universities, a "full-time" student must spend less than half of an academic week in employed work. Assuming, that most graduate students that QH wishes to train earns on average $60k / yr then under the current university systems QH would lose a worker for at least 50% of the week if it wishes them to be accelerated into any new workforce function. Therefore, if QH wished to provide an "in-service" training program for production of Nurse Anaesthetists through existing universities it could take as much as 108 months part-time. The model of higher specialist training advocated by the Medical Colleges similarly approximates to 60 months with at least 36 months prior postgraduate clinical experience. However, a Queensland College of Health could hybridise these

two processes. A nurse could enrol on an award “escalator” combining theoretical learning, experiential learning and clinical research allowing a Doctor of Nurse Anaesthesia to be trained over 4.5 years whilst still providing clinical services. This option would be both cheaper for QH and would achieve workforce re-engineering much quicker whilst still appearing to be maintaining high academic standards.

QUALITY CONTROL ISSUES REGARDING MULTI-SKILLING?

There is a widely held public belief that good healthcare is physician-led healthcare. Any acceptance of workforce multi-skilling will only be achieved if there is clear evidence that there will be no deterioration in standards of care and even then only if the public information system is adequate to reassure the population.

Staff will need assurance that this is a process of rationalization rather than rationing. A state-wide strategic policy and process will need to be introduced, founded on evidence-based-practice and with local implementation and monitoring systems.

It is essential that any process change does not result in reduction of benchmark for care standards and that there is no “dumbing down” of services. Maintenance of Quality is dependent upon 3 key factors:

1. Appropriate level of training is acquired
2. There are suitably high accreditation standards and credentialing
3. Performance audit and re-evaluation is integral to process

In Australia the benchmark standard for the level of training are the Medical College’s Training Programs and their Fellowship Examinations. The required standard for safe practice, whether by an individual or combination of individuals, should therefore reflect a comparably high level of performance quality albeit over a more narrow or focused field of practice. The requisite education and quality control programs will have to be constructed prior to implementation with that implementation being via a state-wide roll-out following successful completion of pilot studies.

Accreditation

If in Australia the benchmark standard for the level of training is a Medical College Training Program and its Fellowship Examination then it is essential that any process change does not result in reduction of this care standard. The required standard for safe practice, whether by an individual or combination of individuals, should therefore reflect a comparably high level of performance quality albeit over a more narrow or focused field of practice. The accrediting body should be:

- Independent of the training organization
- Able to equally assess all relevant healthcare disciplines involved in production
- A delegatable authority for State / Federal legislation.

When considering medical imaging thane the Medical Boards could potentially fulfill this role in conjunction with other accreditation organizations such as the RANZCR, AIR, MINA etc. In terms of diagnostic studies where practical skill performance assessment is not required then it should be possible for the accreditation process to be carried out on line using a secure network and supervised test environment. Practical skill performance testing could be carried out at Clinical Skills Centres or by recognized “clinical skills assessor”.

Accreditation should be:

- Clearly defined
- Confined to a narrow clinical practice role.
- Time limited / Renewable
- Statewide

Credentialing

The credentialing of accredited individuals should be the responsibility of the employing organization, site specific and activity specific. The level of supervision, if any, should be clearly defined. The credentialing process should be the same as existing district systems for medical staff and extended to all healthcare professionals mirroring those functions

Performance Monitoring

There is increasing interest in performance measurement by accreditationing bodies, however, any assessment of performance of technical abilities in this field will need to use multiple assessors, basing judgements on an adequate sample of reports [4].

The first report presenting measures of agreement made systematically, simultaneously, and on a continuing basis, during a screening program for quality assurance was probably than on the Canadian national breast cancer-screening program published in 1986 [5]. Receiver operating characteristic (ROC) curve analysis as part of routine audit can be used for maintaining and improving the quality of an individual's performance, and targeting learning on areas of particular weakness [6]. It is one form of an objective measurement that can be used to compare newer imaging technologies against human observer performance (the ability of the expert radiologist). Use of ROC curves allows one to account for a continuum of radiologic interpretations when calculating sensitivity and specificity for an imaging modality and avoids the inaccuracies that arise from assuming that imaging findings are absolutely normal or abnormal [7]. An ROC curve is generated by plotting sensitivity on the y axis as a function of [1-specificity] on the x axis for a continuum of diagnostic criteria. ROC curves allow visual analysis of the trade offs between the sensitivity and the specificity of a test with regard to the variable diagnostic criteria used by radiologists. In general, ROC studies are designed in such a way that multiple readers read the same images and each image is presented by means of two different imaging systems. Statistical methods for the comparison of the ROC curves from one reader have been developed, but extension of these methods to multiple readers is not straightforward. A non-parametric estimation of the variances and covariances between the various areas under the curves is more appropriate than the paired t test, because it also takes the case-sample variation into account [8].

Clinical performance monitoring is a fundamental cornerstone of successful multi-skilling and should be:

- On going in-service assessment
- Wherever possible normalized to overall standards using ROC analysis
- Directly cross-linked to accreditation and credentialing processes.

- Integrated with as system for periods of re-training should performance fall below predefined benchmark standard
- The responsibility of the accrediting authority in conjunction with the credentialing organization.

System Incentivisation

It is not the intention of this paper to go into detail with regards to incentivisation to learn new skills and perform higher level tasks. Some of these incentives will be professional and some financial. The development of non-medical specialist grades will undoubtedly necessitate the development of an appropriate wage spine in the public system. In the private system there will need to be significant widening of healthcare worker eligibility for Provider Numbers. The important principle should be, however, that health professionals are rewarded for the quality and difficulty of the work they do on behalf patients and the general community. It should not be directly dependent on their original professional discipline.

CONCLUSIONS

All large, complex organisations need to continuously and systematically, re-invent themselves. What is often not understood by the public and even by health care workers is that in order for Health to achieve its goals, necessary service revision and re-configuration is a continuous process. This is due to the rapidly changing service delivery context, exemplified by new treatments and technologies, and demographic changes such as population movements and population ageing. Change management initiatives may thus take many forms and can emerge from all and any areas. This Submission provides a body of work that has been developed to explore concepts for consideration, in defining strategies to further strengthen our public health service. The author is committed to the provision of a robust public health system that provides good value for money to the people of Australia.

There is a requirement to develop mechanisms whereby the health workforce can up-skill within their disciplines and can articulate to other health disciplines in order to:

- re-skill to meet new or changing population health or technology requirements
- optimise the utilisation of scarce human resources
- encourage continuing professional development and career progression.

The skills escalator described in this paper provides an instrument which links professional roles with educational and training requirements in an integrated process.

There are undoubted potential benefits from the development of a State College of Health System including:

- A strategic, co-ordinated and holistic approach to training and development across the organization.
- Development of skills required to meet current and future service delivery demands.
- Clearer communication and marketing of training and development programs and provide staff with a central point of reference for information on available training and development programs.
- Development of staff with specific expertise on issues such as copyright, intellectual property ownership and issues associated with the on-line delivery of training and

development materials. This would provide for the effective management of intellectual property.

- Significant cost savings as a result of reducing duplication of resources and administrative processes associated with the development and delivery of training and development activities.
- Significant cost savings as a result of economies of scale in terms of cost / volume ratios.
- Program design that satisfies organisational needs by affording direct involvement in curriculum development i.e. allowing it to design the programs it wants for its workforce not work with university-defined products.

It would allow Health Boards to focus the funding already being spent, into areas of priority, maximise return on investment, offer award based programs in areas of priority, either free of charge or at much reduced rates than those charges by universities and tailor curricula to meet current and emergency workforce needs.

The way in which such a College of Health should be constructed is less clear. In reality a symbiotic relationship exists between Health and the universities (and VET / TAFE) and a collaborative approach is likely to produce the most successful end result building on the strengths of all parties concerned. Therefore, the Federal and State Governments should, in collaboration, set in motion plans to establish a Queensland College of Health and open discussions with all interested parties accordingly.

It is essential that any process change does not result in a reduction in care standards. Maintenance of quality is dependent upon an appropriate level of staff training, suitably high accreditation standards with appropriate credentialing and performance audit and re-evaluation.

Any such process will require an appropriate system for workforce incentivisation. Health professionals should be rewarded for the quality and difficulty of the work they do on behalf patients and the general community and <u>not</u> their original professional discipline.

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APPENDICES

Appendix 1:

1-Gibbon- RadiographerReporting.doc

"Multi-Skilling In Medical Imaging"

Appendix 2:

2-Gibbon-NurseAnaesthetists.doc

"Non-Physician Anaesthetists"

Appendix 3:

3-Gibbon-DEM.doc

"Multi-Skilling Potential In The Emergency Medicine Department"

MULTI-SKILLING IN MEDICAL IMAGING

In order to initially train radiographic staff to "report" radiographs and also to subsequently monitor their performance requires a significant organizational commitment. The investment of time and money required can only be justified where there is sufficient volume of activity and / or where a process change will have a significant positive effect on patient management. One such area where there is both a high number of studies and where potential benefits may be achieved is using radiographers to support a 24 hour "immediate" reporting system for conventional radiographs for a busy Accident and Emergency Medicine Department.

RADIOGRAPHER PLAIN FILM REPORTING

The greatest supporting evidence for radiographer reporting, however, is a recent article in Clinical Radiology which concluded unequivocally from meta-analysis "that radiographers can accurately report plain radiographs in clinical practice" [1].

Radiographer reporting was at the centre of an ongoing conflict with the medical profession in the formative years of radiography [2, 3]. In just over the 100 years of X-rays, two periods take prominence, the early part of the 20th century until 1925, and the 1990s. The year 1925 saw the culmination of the long-running dispute between radiographers and radiologists over the division of labour. The decision, forced upon the Society of Radiographers to change its articles of association, prevented its non-medical members from reporting, thus determining the occupational boundaries of radiography and the direction of radiographic practice for 70 years. In the last decade of the 20th century, matters came full circle with the re-emergence of radiographer reporting, although the process of re-appraisal had begun some 20 years earlier. However, the 1990s, with rapid advancement of technology, increase in work loads, financial

imperatives within the National Health Service and the aspirations of UK radiographers together with the support of many radiologists, contributed to the re-emergence of radiographers in reporting.

Appropriately trained and supervised radiographers can successfully undertake diagnostic reporting of selected skeletal examinations on accident and emergency patients [4]. Nearly 20 years ago it was shown that radiographers could support casualty officers in order to reduce the level of missed diagnoses [5]

In a study where two specially-trained radiographers reported 561 plain film examinations on accident and emergency patients in parallel with rota radiologists of varying seniority the incidence of errors (false positives and false negatives) in the reports made by the two groups of observers was not significantly different [6] In a different study using receiver operating characteristic (ROC) curve analyses for 2 radiographers' and a group of consultant radiologists' ability to report on a retrospectively selected random stratified sample of 400 Accident and Emergency and General Practitioner-referred plain radiograph X-ray examinations for all body areas, there was no statistically significant difference at the 5% level between the area under the ROC curves for the radiographers and consultant radiologists [7]**.** Formal training of radiographers in radiographic interpretation would seem to be necessary in order to produce such a high quality result. In a similar study of untrained radiographers the overall disagreement between the radiographers and radiologists was much higher at 9.4% with most errors occurred in assessing radiographs of the skull, facial bones, chest, abdomen, and soft tissues [8]. A 6 months training programme was established for three radiographers in various aspects of the radiology of orthopaedics and skeletal trauma [9]. The sensitivity for fracture detection improved from 81.1% at the commencement of the trial to 95.9% at the end which was also highly significant ($p < 0.001$). Radiographer specificity for the exclusion of fractures also improved from 94.4% during the first 2 months to 96.6% in the final 2 months, and this was also significant ($p < 0.05$). The difference in sensitivity for fracture detection at the commencement of the trial period between radiologist and radiographer was highly significant ($p <0.001$), but there was no statistically significant

difference during the last two months of the trial. The difference in specificity between radiologist and radiographer, however, remained highly significant both at the beginning and the end of the trial ($p < 0.001$). With further training or reporting in combination with clinician assessment may be an appropriate way of reporting emergency department radiographs at a time when a report has greatest clinical benefit i.e. at time of presentation. In a different study performed over a 9-week period, 438 reports by a radiographer of the peripheral skeleton were compared with a radiologist's reports of the same films as the reference standard [10]. The radiographer's overall sensitivity at the end of the 9-week period was 96.7% and specificity was 98.4%. These values provide no data on how the radiographer's ability changed over time, however, and we show that there was a rising rate of diagnostic accuracy from 87.8% in week 1 to 100% in week 9. The improvement in performance was due to a number of factors such as familiarization with normal variants, tutorial support on search strategies and increased sophistication in report writing.

Such studies are not just limited to overseas. In a recent study performed at the Royal Brisbane and Women's Hospital two senior radiographers reporting 540 DEM appendicular musculo-skeletal radiographs demonstrated a 98.0% sensitivity and 99.1% specificity [11].

Similar results have been obtained for radiographers involved in mammographic reporting. Trained radiographers read mammograms to a standard comparable with that of radiologists [12]. Technologist review has been proven to be a cost-effective alternative to double reading by two radiologists [13].

When technologists who had received special training in mammographic interpretation reviewed 27,863 mammograms they detected of nine cancers missed at the first radiologist's interpretation. These technologists were very discriminating; only 391 cases (1.4%) were sent for double reading. After intensive training in mammographic interpretation physician assistants have been shown to be more sensitive and as specific as HMO radiologists and as effective as those by radiologists described in the literature.

In receiver-operating-characteristic curve analysis, the areas under curves for physician assistants were larger than those under curves for radiologists their interpretations took less time and cost less than those by radiologists [14]. When radiographers act as a second reader for screening mammograms, their recall and cancer detection rates are similar to those of radiologists ($P>0.05$) with their double reading detecting 9% more cancers [15]. Radiographers take the same length of time to film read as radiologists ($P>0.05$) [16]. Radiographer/radiologist double reading results in similar increases in sensitivity as those reported in radiologist double reading studies [17]. The key to good results just as with radiographer reporting of skeletal radiographs is the level of training and expertise. When previously untrained radiologic technologists took a pretest, underwent an 8-hour training course followed by a period of preceptorship, and then took a posttest the overall technologists sensitivity (78%) at the pretest improved at the posttest (90%) [18].

Slightly less successful results have been obtained for radiographers reporting just chest radiographs. The radiographic staff in a regional cardiothoracic centre, were asked to assess all pre- and post-operative chest radiographs over a 6-month period. Using reports by radiologists as the gold standard these radiographers had a sensitivity and specificity was 90% and 99%, respectively i.e radiographers appeared to err on the side of caution when confronted with an abnormal chest radiograph, especially when previous radiographs and reports were unavailable resulting in a relatively high false positive rate [19]. Such an effect could possibly be again reduced by a formal rather than informal, experiential learning process.

SONOGRAPHY

Whilst errors are made both by radiologists and radiographers a radiographer based ultrasound service provides a satisfactory level of accuracy [20]. In a prospective double-blind study comparing the accuracy of radiologists and experienced radiographers both were shown to be highly accurate in performing and interpreting routine abdominal

sonography, missing only a small minority of abnormalities [21]. There was no statistically significant difference in the accuracy of radiographers and radiologist. In another retrospective study the overall accuracy of radiographers was 92.0% compared to 91.7% for radiologists, however, the accuracy rates were 94.0% and 96.4%, respectively, when minor abnormal findings without significant influence on the patient's clinical outcome were excluded [22]. In a similar retrospective study in 94% of cases, the report prepared by the sonographer gave an accurate account of the findings [23]. In this latter study 6.3% of reports the radiologist provided additional comments, whilst in only 0.7% of cases was the sonographer's report significantly altered. Where adequate follow-up data was available, there was a false positive ultrasound rate of less than 0.2%. The discordance rate between radiographer is lower for obstetric examinations is half that for abdominal and pelvic examinations [24]. Concordance improves with increasing years of experience of the technologist, however, an active role of physicians in the overall conduct of ultrasound examinations is still viewed by some as being essential to optimize provision of a complete, accurate report [24, 25]. These results suggest that a sonographer run service is appropriate for both obstetric and non-obstetric ultrasound services with a radiologist providing additional clinical interpretative support where necessary. Indeed this is already the system adopted by probably the majority of public imaging departments in Australia.

The sonographer practitioner or advanced practice sonographer is potentially one important piece to the radiologist shortage puzzle [26, 27]. Such positions, however, will depend upon issues such as reimbursement, quality control, training, and credentialing [28, 29].

BARIUM CONTRAST STUDIES

A sensitivity of 90.6% for radiographer-performed double contrast barium enema studies compared favorably with 89.7% for radiologist-performed studies and supports the practice of radiographers undertaking barium enemas [30]. In another study the double-

contrast barium enema examinations, no statistically significant differences were found between the technologists and residents for amount of barium used, degree of distention, caecal opacification, and quality of spot radiographs [31]. Indeed the technologist-performed examinations had a statistically significant lower mean fluoroscopy time (3.2min, compared with 4.0 min for staff radiologists and 5.7 min for residents). Other studies have also shown delegation of the performance of the double-contrast barium enema by radiographers is both acceptable to the patient and safe [32, 33] and that there is no significant difference between those films produced in the rural hospital and in a university center [34]. In terms of staffing costs, radiographers performing barium enemas not only liberates radiologist time, it is also a cost-effective method of providing an out-patient barium enema service. The additional cost per cancer detected by double reading is not drastically higher than with single reading [35]. In a study where double reporting of double contrast barium enema was routinely performed the miss-rate for colorectal carcinoma was 7% compared to previous single investigator studies which have shown miss-rates of 15-24% [36]. This suggest that double reporting significantly reduces the miss-rate and that this reduction is due to fewer perceptive errors. The fact that a radiographer can perform to a high level the study itself, is more cost-effective than such studies being performed by a radiologist, and double reading improves diagnostic accuracy suggests the logical process would seem to be for a suitably trained radiographer to perform the study and produce a primary report with the study subsequently double read by a radiologist.

Similarly for the oesophagrams, no statistically significant differences between technologists and residents has been found for single-contrast oesophagrams; radiographs of the gastric cardia; assessment of motility, reflux, and transit of a solid bolus; and fluoroscopy time [31, 32]. Double-contrast oesophagrams obtained by technologists received a better mean score than did those of the residents [31]

PRE-REPORTING BY A RADIOGRAPHER

There is strong evidence to suggest that dual reading of studies is advantageous with regards to service quality. The greatest wealth of evidence for this relates to mammography. Dual reporting improves cancer detection sensitivity [37]. In one study the reporting sensitivities of the less experienced radiologist improved during the 3 years of the first screening round from 90.6% to 98.9%. For the more experienced radiologist sensitivities ranged from 97.1% to 98.9% [38]. Overall the increased sensitivity from double reporting over single reporting was 1.5% over the best to 4.2% over the worst single reader. With such a relatively small difference between single and double reporting and high individual reporting standards, it is hard to justify the additional resources required for double reporting. The incremental cost of any additional cancer found is 39% higher cost per additional cancer found by double reading [39]. The poor cost-effectiveness relates to funding of an additional radiologist. Pre-reporting by an appropriately trained radiographer who is already involved in that clinical episode i.e. obtaining the radiographic image, should theoretically be much more cost-effective particularly if such pre-reporting increases the number of studies “reported” per hour by the radiologist using an electronic environment [40]. The greater the reporting training level of the radiographer the greater this potential cost-benefit.

ADDITIONAL POSSIBLE AREAS OF STAFF MULTI-SKILLING

Staff multi-skilling to facilitate better resource management of Radiologists is not simply an issue of “Reporting”. It is important to not solely focus on reporting and intervention skills. It takes a great deal of investment to train a radiologist. There needs to be analysis of their core functions so that alternative systems can be put in place to allow a Radiologist to concentrate on those core functions.

Extended roles of radiographers is already at an advanced stage in the UK [41]. In many UK NHS Trusts the roles of radiographers have been extended to include new tasks, particularly in non-teaching trusts.

These areas include:

1. Contrast administration

A Radiologist is often required to check a patients suitability for contrast, consent patient to receive contrast, insert cannula for venous access, inject contrast and monitor for possible contrast reactions. Most, if not all of these functions could be delegated to a nurse, radiographer or "physician's assistant" so that the radiologist can concentrate on reporting / consultation functions etc. Although some sites already allow such multi-skilling it requires greater formalisation and expansion for universality and appropriate training and credentialling systems put into place. Safeguards should include suitable training and back-up, agreed protocols, participation in regular audit and formal arrangements for delegation [42].

2. Management / Administration

Individuals with the necessary skills should perform such functions. These often do not require Radiologist's input and detracts from other core skill utilisation. Departmental management should be constructed whereby there is a Lead Radiologist providing clinical input to management rather than Radiologist Director positions.

3. Image post-processing

The technical complexity of cross-sectional imaging is increasing. Imaging. Between 1995 and 2000, United States and European combined volumes increased 19% for MRI examinations, 10% for catheterization-laboratory procedures, 10% for CT studies, 8% for ultrasound examinations, and 4% for nuclear medicine procedures [43]. In the UK between 1996 and 2001 the number of examinations grown by 2 per cent a year [41]. Some of the biggest increases were in complex and time-consuming techniques such as Computed Tomography (40%) and Magnetic Resonance Imaging (60%) [41]. Increases workloads are occurring independent of clinical referral patterns due to technology

changes: In the case of CT - one to two examinations per hour, per room, were typically being conducted in 1992, and there were approximately 40 slices acquired per study. A decade later, there were three to four examinations per hour, per room, with slices acquired per study ranging from 120 to as many as 1,000 for neck and spine CT [44]. A suitably trained radiographer with interpretive skills would better perform "post-processing" of large data-set studies and subsequently reduce radiologist reading times

4. Radiography Helpers

In addition to extending the role of radiographers upward, there is scope for radiographers to delegate some of their more straightforward tasks to helpers or assistants. Helpers can provide support to radiographers in tasks such as positioning patients during examinations, collating films and reports [41]. The total number of helpers used to support radiographers and radiologists has increased by 46 per cent since the mid-1990s, from 893 to 1,307 whole time equivalents. The UK Audit Commission's 2000/01 survey found that those departments which most extended the roles of radiographers also had the highest number of helpers [41]. Departments in non-teaching trusts make most use of helpers, giving radiographers the opportunity to take on more extended roles.

CONCLUSIONS

In specifically focused areas, and with appropriate training, radiographers can safely report medical imaging studies and they should do so, particularly when an immediate report provides improved patient care or when the "value added" from a third-part radiologist consult is low.

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NON-PHYSICIAN ANAESTHETISTS

INTRODUCTION

There is world wide variation in the roles played by health professionals with a tendency for this variation to occur in response to the particular needs of a service at a specific time, often a time of crisis such as war or pandemic. Moreover, in response to the growing world wide shortage of health professionals, some countries have been more pro-active than Australia in systematic workforce reform. There therefore exists numerous new or different health professional roles in other countries, that might be examined as potential solutions to workforce shortages now becoming apparent in Australia. The nurse anesthetist is one such role and this paper discusses the nurse anesthetist as an example of the type of health worker role reform that must be explored in Australia.

DISCUSSION

Nurse anesthetists have been providing anesthesia care in the United States for over 125 years having first provided anesthesia to wounded soldiers during the Civil War. The American Association of Nurse Anesthetists was founded in 1931 and subsequently introduced a certification program for individual practitioners in 1945 and for educational programs in 1952. In 1986 the US Congress made nurse anesthetists the first nursing specialty to be given direct reimbursement rights under the Medicare program. Currently, in the USA there are more than 30,000 certified registered nurse anesthetists (CRNAs) administering approximately 65% of all anesthetics given to patients there each year. CRNAs usually provide anesthetics to patients in collaboration with surgeons, anesthesiologists, dentists, podiatrists, and other qualified healthcare professionals. However, they are the sole anesthesia providers in approximately two thirds of its rural

hospitals and without such services many rural healthcare facilities would be unable to offer obstetrical, surgical, and trauma stabilization services. These specialist nurse practitioners provide anaesthetic services in traditional surgical suites, both in hospital and ambulatory-care settings, obstetrical delivery suites and pain management units. Approximately 26 million anesthetics are given by CRNA's each year to patients in the USA.

As anesthesia specialists, CRNAs take care of patients before, during and after surgical or obstetrical procedures. Nurse anesthetists stay with their patients for the entire procedure, constantly monitoring every important body function and individually modifying the anesthetic to ensure maximum safety and comfort. A CRNA takes care of a patient's anesthesia by:

- performing a physical assessment
- participating in preoperative teaching
- preparing for anesthetic management
- administering anesthesia to keep the patient pain free
- maintaining anesthesia intraoperatively
- overseeing recovery from anesthesia
- following the patient's postoperative course from recovery room to patient care unit.

In the United States, nurse anesthesia education has flourished by continuing to meet increasingly stringent educational standards. .Nurse anesthesia education has evolved since the first organized course in anesthesia for graduate nurses in 1909. In order for a US nurse to be eligible to become a CRNA they must on obtaining their nursing baccalaureate degree:

1. gain at least one year of experience as a registered nurse in an acute care setting
2. undergo a formal period of postgraduate specialist clinical training in university-based or large community hospitals
3. successfully complete an accredited 24-36 month nurse anesthesia Master's degree program*

4. pass a national certification examination following graduation.

*as of February 1, 2004, there are 92 nurse anesthesia programs with more than 1,000 affiliated clinical sites in the United States enrolling 3,500 students.

In the USA it has been estimated that approximately eight nurse anesthetists can be educated for the cost of one anesthesiologist. The didactic part of the graduate nurse anesthesia programs curricula includes:

- courses in anatomy, physiology, pathophysiology, pharmacology, chemistry, biochemistry and physics
- courses in anesthesia practice - induction, maintenance, and emergence from anesthesia; airway management; anesthesia pharmacology; and anesthesia for special patient populations such as obstetrics, geriatrics, and pediatrics
- instruction in the use of anesthesia machines and other related biomedical monitoring equipment.

Also simulator training is being increasingly used to develop dexterity and the critical thinking skills essential for the practice of nurse anesthesia.

The supervised clinical residency of nurse anesthesia education provides students the opportunity to incorporate didactic anesthesia education into the clinical setting. During this residency period (and simulator training) nurse anesthetists are prepared to:

- administer all types of anesthesia, including general, regional, selected local and conscious sedation, to patients of all ages for all types of surgeries.
- use all currently available anesthesia drugs, to manage fluid and blood replacement therapy, and to interpret data from sophisticated monitoring devices
- insertion of invasive catheters
- recognition and correction of complications that occur during the course of an anesthetic,
- provision of airway and ventilatory support during resuscitation
- provide effective pain management.

In order to be accredited a nurse must have performed a minimum of 450 anesthetics*, which must include specialties such as pediatric, obstetric, cardiothoracic, and neurosurgical anesthesia. This anesthesia experience includes the care of not only healthy but also critically ill patients of all ages for elective and emergency procedures. During this practical training period students are supervised by qualified CRNAs or medical anaesthetists.

* in most US nurse anaesthesia programs, this minimum is surpassed and the average number of anesthetics performed upon graduation is 773 reflecting an average of 1595 hours of clinical experience per student.

Most programs include formal teaching in research methodology and some form of research dissertation. The number of doctorate prepared CRNAs is also increasing.

In the USA there are two types of non-physician assistants. In addition to CRNA's a different professional group, anaesthetic assistants (AA's) also may act as non-physician anaesthetists. They have degrees in biological sciences and undertake a postgraduate three year training course. AA's are supervised in the operating theatre on a 1:2 basis. A physician must be present at induction and reversal of anaesthesia. Unlike CRNA's they may not undertake independent anaesthetic practice without supervision and cannot undertake the spinal and epidural blocks often required for obstetric practice.

CONCLUSION

This paper identifies that roles already exist in other countries that have direct transferability to Australia and would provide rapid solutions to emergent workforce problems. The paper outlines the history and role of the nurse anesthetist in the United States of America, as an example of a successful model where a non medical practitioner can substitute in certain cases for a medical practitioner, providing they are sufficiently

well trained and their competence is established. Anesthetics is an area that is currently under significant workforce pressure in states such as Queensland, yet we have to date failed to seriously examine worker substitution as a solution, despite its obvious success elsewhere.

MULTI-SKILLING POTENTIAL IN THE EMERGENCY MEDICINE DEPARTMENT

INTRODUCTION

Recently there has been increasing interest in the use of "Lean Thinking" methodology for improving processes within healthcare systems particularly around a "patient's journey" through Emergency Medicine Departments [1]. The question also arises, as to whether the same methodology can be used to design new service models rather than simply correct process faults in existing systems. Let us take for example an otherwise fit and well fifty year old female with an isolated significantly dorsally angulated and displaced fracture of the distal radius. The clinical findings and radiographic deformity is such that closed reduction and casting would seem an appropriate fist line treatment.

TASK SUBSTITUTION

In general terms the healthcare worker roles that are required are someone to:

- clinically assess the patient
- obtain radiographs of the injured part
- interpret (report) radiographs of the injured part
- decide on the treatment required
- administer general or regional anaesthesia
- reduce the fracture and apply cast
- "recover" patient, provide post-operative analgesia and check no initial complications exist
- discharge patient home
- arrange appropriate follow-up
- provide appropriate follow-up

Traditionally in metropolitan Australia these processes are largely performed by physicians apart from obtaining the radiographs, post-anaesthetic "recovery" and arranging follow-up.

- Throughout Australia appropriately trained physiotherapists assess and manipulate symptomatic cervical spines. The manipulation of wrist fractures probably carries no greater risk than cervical spine manipulation and yet physiotherapists are not trained in fracture management. Also much of the morbidity related to such injuries relates to associated soft-tissue problems the assessment and treatment of which is a core physiotherapist function.
- Diagnostic radiographers obtain emergency department radiographs in all but the most rural of departments. A recent metanalysis has shown unequivocally that radiographers can safely interpret radiographs of the appendicular skeleton [2].

- Currently, in the USA there are more than 30,000 certified registered nurse anesthetists (CRNAs) administering approximately 65% of all anesthetics given to patients there each year (approximately 26 million anesthetics are given by CRNA's each year to patients in the USA) [3]. These specialist nurse practitioners also oversee recovery from anesthesia, following the patient's postoperative course from recovery room to patient care unit.

Logically a combination of appropriately trained physiotherapist, diagnostic radiographer and practitioner anaesthetist could carry out all of the above functions. Medical supervision would then only be required for the small number of complicated injuries, atypical radiographic appearances, failure of conservative treatment and patients with high anaesthetic risk.

If only 12% of patients with clinically suspected scaphoid fracture [4] and 16% of patients with acute ankle injuries [5] are subsequently found to have a bony injury this means that 88% and 84% actually have a soft-tissue injury sufficiently severe for them to seek medical advice. When considering distal radial and humeral surgical neck fractures any subsequent long-term morbidity will often more reflect associated soft-tissue injury than the sequellae of the fracture itself. When considering the closed manipulative reduction of displaced, but otherwise uncomplicated limb fractures, it seems paradoxical that physiotherapists seldom, if ever, carry out such procedures and yet they commonly perform manual therapy on patients with chronic cervical spine injuries. This state of affairs is particularly strange when it is considered that physiotherapists are widely trained to apply plaster casts and for many their professional *reason d'ete* is the effective rehabilitation of patients with significant soft-tissue injuries. The core skills of Physiotherapists usually include the ability to accurately perform clinical assessment of acute and chronic skeletal injury and disease making them an ideal skill-group to manage skeletal trauma not requiring operative surgical intervention. However, the capacity for physiotherapy to improve the outcome after fracture of the distal radius is unproven [6]. In a multivariate linear regression analysis, variables that were independently associated with overall Sickness Impact Profile (SIP) score included pre-injury SIP, poverty status, education status, social support, having hired a lawyer, and involvement with workers' compensation [7]. Similar results have been shown by other authors [8]. In a randomised controlled trial comparing conventional physiotherapy with a regime of home exercises it was concluded that "exercises are adequate rehabilitation after uncomplicated fracture of the distal radius, and routine referral for a course of physiotherapy should be discouraged" [6]. These studies suggest that a holistic rather than mechanistic approach to management of patients with distal radial fractures would seem appropriate and instruction regarding post-immobilisation home exercises at time of visit for fracture follow-up could reduce the need for formal physiotherapy appointment. Accordingly the skill sets of nurses and physiotherapists may be most suitable for management of such patients.

The formal training of physiotherapist to work within Emergency Departments would allow them to clinically manage both the attending patients related to their traditional referral patterns (e.g. patients attending with acute exacerbation of chronic back pain) as well as those attending with acute non-major

skeletal trauma. They could also both act as a filter for selecting out patients requiring immediate orthopaedic review with view to possible surgical intervention and triage point for patients requiring subsequent outpatient or community physiotherapy.

Training would include:

- Rational requesting and interpretation of conventional appendicular or axial radiographs.
- Assessment and management of patients with simple, closed fractures.
- Common fracture and dislocation manipulation techniques.
- Regional anaesthetic techniques.

NEW ROLE DELINEATIONS

The nurse practitioner role is already being locally developed and successfully introduced at places like Redcliffe Hospital in Queensland. The nurse skill set provides a wide range of roles where multi-skilling can occur in an ED. Potential DEM Practitioner Roles could include:

DEM Physiotherapy Practitioner

Assessment and protocol-based treatment of specific patient groups including those presenting with:

- Minor surface trauma and soft tissue limb injuries.
- Finger and toe dislocations.
- Simple, undisplaced fractures of forearms, metatarsals, metacarpals and phalanges.
- Non-compound limb fractures with uncompromised neurovascular integrity.
- Replacement and review of Plaster of Paris (not unstable fractures).
- Calf / lower leg pain with normal neurovascular status.
- Spinal injuries with no neurological symptoms or signs.
- Acute non-traumatic spinal pain without neurological disturbance.

Also ability to request conventional radiographic studies of the appendicular and axial skeleton and their subsequent interpretation plus ability to request or perform musculoskeletal ultrasound studies.

DEM Physiotherapy and DEM Nurse Practitioner

Ability to:

- Assess and suture uncomplicated lacerations and peripheral injuries in the absence of tendon and joint injuries.
- Perform ring and limb blocks.
- Complete sick-leave certificates and workcover, third party and Centrelink documentation.

DEM Nurse Practitioner

Assessment and protocol-based treatment of specific patient groups including those presenting with:

- Marine stings or insect/animal/human bites.
- Peripheral limb cellulites.
- Foreign bodies of peripheral limbs, ear, nose, throat and eyes in the absence of major trauma.
- Peripheral limb, face and scalp lacerations.
- Facial injuries.
- Nasal fractures and septal haematomas including insertion of nasal packs, tampons and balloons.
- Minor head injuries.
- Eye injuries /splashes including flash burns and excluding penetrating injuries.
- Needle- stick injuries and body fluid exposure (occupational and non-occupational).
- Non-viable pregnancy (excluding severe pain/bleeding).
- Toothache.
- Bronchiolitis, mild-moderate asthma or croup.
- Sore throat and tonsillitis.

Also ability to:

1. Request conventional radiographic studies of the head, neck, chest and abdomen and their subsequent interpretation plus ability to request peripheral Doppler and pelvic ultrasound
2. Request a range of microbiology, haematology and clinical chemistry tests and basic interpretation of the subsequent pathology results.
3. Treat imminently and potentially life-threatening conditions, for patients triaged as category 2&3 and those patients with Heart Rate <50 of >150 (Adult), Systolic Blood Pressure <90mmHg, Blood Sugar Level <2mmol/L and >16mmol/L and Glasgow Coma Score <13/15
4. Prescribe and administer a larger range of analgesia, antibiotics, vaccines, local and inhalational anaesthetic agents, anti-tetanus therapy, antivirals, steroids, bronchodilators, eye medications.
5. Utilise advanced skills in airway maintenance and fluid replacement.
6. Grade and treat minor thermal injuries.
7. Initiate of intravenous access and insert urethral catheters (excluding pelvic trauma).
8. Notify Public Health Services of communicable/infectious diseases.
9. Perform blood-alcohol testing.
10. Treat ingrown toenails.
11. Attend Emergency Department telephone advice line.
12. Co-ordinate inter-hospital transfers.

NB. The above health practitioner roles are taken from the currently unpublished "summary of extended scope and patient groups suggested in ED nurse practitioner submissions" to the *Emergency Department Skill Mix and Work Analysis Project Report* prepared by Queensland Health (2005) i.e.

these roles reflects clinical activities that experienced ED nursing staff themselves believe to be within their potential scope of practice.

Obviously in the rural and remote setting nurses are more common than physiotherapists and as such could be trained with view to all of the above functions. Even in more urban areas nurse multi-skilling may be found to be more appropriate on “Lean Thinking” analysis.

CONCLUSION

Analysis of the work processes within a Department provides opportunity for both process reform and for task substitution, to streamline care within a sustainable workforce design. Queensland Health has undertaken an analysis of the workforce roles and functions performed in Emergency Departments. This paper explores the possible task substations that might by made, to create a viable and sustainable workforce model in an area of significant workforce pressure.

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