

# The faculty of medicine, University of Newcastle - A problem based, community- oriented medical school

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*This article provides insights into and ideas for a restructured and re-oriented medical education. The article sums up the experiences and results of members of the Faculty of Medicine at Newcastle, New South Wales, Australia. The author, Professor John D Hamilton, is the Dean of the Faculty of Medicine.*

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## **A mandate for innovation**

In the early 1970's the Commonwealth government of Australia undertook a review of Medical Education under the Chairpersonship of Professor Peter Karmel. The resulting report, "Expansion of Medical Education", noted three prevailing criticisms of medical education:

- 1 It was "too scientific", implying neglect of the humanitarian aspects of medicine. At the same time: "medicine without a scientific foundation cannot exist".
- 2 It was not interested in family care.
- 3 There was no innovation and no experimentation.

Its most important recommendation was that a new school be set up in Newcastle with a curriculum to reflect the needs and priorities of the community; and that above all it introduce innovations in curriculum and student selection. That was the

mandate for the Faculty of Medicine at Newcastle.

In 1975, Professor David Maddison, then Dean at Sydney, arrived as Foundation Dean and set about gathering an energetic and imaginative faculty to create a new approach to medical education.

Fifteen years after the Karmel Commission, the Commonwealth Government set up a new and more extensive review of medical education chaired by Professor Ralph Doherty. Our faculty made a large submission and undertook detailed consultations. Our own achievements and ideas are very prominent in the Doherty Report.

## **The Community of Newcastle**

The City of Newcastle and the surrounding Hunter Region has a population of 600 000, occupied with heavy industry, mining, farming and a large commercial seaport. It is several hundred kilometres long and wide; large enough to require a full range of medical facilities, but with a population small enough to retain a community identity.

All health services, including the teaching hospitals, are organised under the Hunter Area Health Board. A new teaching hospital is under construction. As Dean, I am on the Board and I chair the Appointments and Credentials Committee responsible for all Specialist appointments. This brings together the health service and University to their mutual benefit.

## **Health Needs of the Community**

Australia faces increasingly the health problems common to all developed countries. The population is ageing and therefore suffers from predominantly degenerative disease: musculo-skeletal, cardio-vascular, cerebro-vascular and malignant diseases. These require expensive health care and protracted social support. Infectious diseases are largely under control with the striking new exception of AIDS. The new challenges are the rising morbidity and mortality from diseases of lifestyle. Those in Australia relate particularly to excessive sun exposure (with an increased risk of skin cancer), alcoholism, drug addiction and smoking, sexual behaviour, traffic accidents, violence and child abuse. Family life is changing with the appearance of more single parents. Unemployment is currently at 12% and presents a constant hazard to health provoking anxiety, depression, loss of self-esteem, alcoholism, troubled family life and poor parenting.

These social factors are at the root of much poor health in Australia and an increasing focus for government attention. Positive action for maintaining health through diet, exercise and appropriate lifestyle tends to be the luxury of those better off and better educated. For the rest, health promotion has had little impact.





**The Newcastle medical school directs its education at the health needs of the community it serves, focusing on diseases of the increasingly aging population, lifestyle diseases and AIDS**

Although the population of the Hunter Region is relatively stable, there is elsewhere in Australia a rising inward migration of young people, particularly from South-East Asia. The special needs and aspirations of migrant groups challenge us to prepare a generation of doctors for an increasingly multi-racial society.

Finally, the original inhabitants of Australia, the Aboriginal population has fared worst of all. They have suffered severely as a result of European colonisation and it is unlikely that their original stable culture will ever be regained. Rather late in the day Australia is addressing issues of equity and justice and here also is a challenge for medical education.

It is crucial that for the future health of Australia doctors be trained to be both sensitive and competent in organising an effective response to the social origins of health and illness with the same competence with which they must deal with the acute problems of individual illness. It is that challenge that provides the stimulus to the community orientation of our own curriculum.

## **The Newcastle Curriculum**

The founding faculty had the advantage of a clean start. Our recent celebrations to mark our 10th year demonstrated how important the first foundations were. The original educational objectives still form the basis for curriculum, student assessment and programme evaluation. Working papers published during the first three years laid down the principle and practices of our curriculum and faculty

organisation. their importance lies not only in what they said, but in the fact that they were laid down, discussed in detail and adhered to.

The curriculum is tightly integrated and all academic disciplines contribute throughout the five years. Such a curriculum cannot be put together piecemeal. Its development and implementation is governed by a strong Undergraduate Education Committee. All staff work to the guidance of that Committee.

## Principles and Innovations

Our curriculum integrates the basic and clinical sciences and the biological and social sciences. Since the curriculum is not based on isolated courses from individual departments, there had to be an alternative structure. This structure has two dimensions.

1 There is a succession of experiences organized in the first two years, around the study of successive body systems (cardio-vascular, respiratory, etc); year three explores selected sub-specialties (Ear, Nose and Throat, Ophthalmology etc) and initial hospital experience. Years four and five consist of rotations of hospital clerkships. Throughout the five years both the clinical and basic sciences form the foundation of study. This dimension determines the structure of Domain III (see below).



**At an early stage in their training, Newcastle medical students learn how to counsel, interview and examine patients**



2 The various experiences across the five years are also organised into five Domains of learning. These are each organised as a separate programme, but they co-ordinate one with the other with respect to topic. Each are assessed independently. Successful performance in each is required for onward progression from year to year. The Domains are as follows:

## Domain I - Professional skills

From the very first week students begin to learn how to interview, examine and counsel patients. This also provides a backdrop of experience to classroom tutorial work. For example, while studying the respiratory system, they are also learning its physical examination and how to counsel against smoking.

## Domain II - Critical Reasoning Skills

These are essential for independent learning and continuing medical education and are developed through analysis and evaluation of information, the application of scientific method to the practice of medicine and the critical analysis of scientific literature.

## Domain III - Identification, prevention and management of illness

The structure of this Domain organises that of the others and provides the succession of experiences outlined in the preceding section (see 1 above). This deals with the main content of most medical curricula, namely the basic sciences, the mechanisms and manifestation of disease, the principles of health promotion and maintenance.

The main method of study in the first two years is problem-based learning. This is described below.

## Domain IV - Population medicine

Here the principles and practice of individual medicine are applied to the community and to the population as a whole. This is described in more detail below.

## Domain V - Self-directed learning

Students develop the skill of self-directed learning through all of the Domains, but in Domain 5 this is reinforced through structured exercises and projects, further refining their ability to develop and evaluate their own learning skills.

A number of other topics are contained in these Domains. These include health,



law and ethics, human sexuality, health education, Aboriginal health, counselling skills, care of the terminally ill and problem-based learning.

## **Community orientation in the curriculum**

Our curriculum lays down a firm foundation of basic biological sciences and clinical skills in the management of individual patients. But to respond to the health priorities facing Australia as outlined above, the curriculum also has a special emphasis on health problems in the community. To that extent it is community oriented. And to the extent that at least some this study is undertaken within the community, it is community-based. Many of our academic staff have indeed been recruited with interests in these fields and have built research programmes to study strategies of preventive care, health promotion and risk factors for physical and psycho-social illness. Australia's future health will rest more upon preventive care through a change of lifestyle and the reduction of hazards than it will upon the delivery of curative services, important as they are. The high death rates from traffic accidents, alcoholism, smoking related disease, diet related malignancy, are an agenda for preventive care, more than they are an agenda for cure. Our research programmes establish a scientific basis for a rigorous curriculum. Key disciplines are Clinical Epidemiology, Biostatistics, Behavioural Sciences, Anthropology, Sociology, Health Economics, Occupational Environmental Health, Bioethics, Social Psychiatry and Geriatrics. We have put much effort into developing these disciplines to provide the academic rigour for our community-oriented curriculum.

Orientation of a curriculum to community priorities does not occur by chance. It was spelled out in our educational objectives and developed through working papers. It is implemented in the curriculum in the following ways, each with an illustrative example.

### **1 Orientation of study problems**

The problems students study in Domain III are structured to lead naturally, not only to basic sciences, but also to wider community issues. When the patho-physiology of myocardial ischaemia is being studied, so also are issues of societal risk factors, strategies for preventive care, efficiency of health services for ischaemic heart disease and the efficacy of interventions.

### **2 Early clinical exposure**

Students learn for themselves of beliefs and habits about health and the impact of illness. For instance, when studying the genetic basis of inherited disorders, they will meet a family with an affected child and learn the impact of that problem upon family life.



### 3 General practice

Students are attached to a General Practitioner during the first two years and have formal postings thereafter. They see patients in an early stage of illness, in their home circumstance and see at first hand, preventive and counselling strategies in action. They are also attached over a period to a family with a new baby, or a family coping with a frail, elderly relative. They have to write an analytical report of their experience.

### 4 Country hospital postings

In the third year, students are posted to country hospitals for eight weeks. They work directly with clinicians in hospital and general practice, getting to grips with the pattern of health services and needs in a smaller community.

### 5 Special programmes to meet community needs

These have included programmes relating to the health of Aboriginal populations, human sexuality, health, law and ethics and geriatrics. As new priorities emerge, we develop new programmes. An integrated curriculum avoids inter-departmental tussles over time.



Newcastle medical students are attached over a period to a family with a member who is elderly or to one that has a new born baby

## 6 Aboriginal health

We now take four Aboriginal students each year in an attempt to overcome the disadvantages in education and opportunity that have plagued Aborigines. All students gain a much better understanding of issues in Aboriginal health.

## 7 Population medicine

This Domain stretches across the five years and concentrates upon health problems in the population as a whole.

During the first years, students work within a defined district of Newcastle, learning how to explore health and social needs. They select one problem and then, with the community, mount a project to deal with it.

This last year we have tried something different. Students play the role of disabled people out in the streets and thereby have gained great insight into the implications and consequences of disability. From time to time we shall develop fresh approaches.

In the second year, the class as a whole does a comprehensive study of a subject of high importance to the community's health. Last year it was AIDS, this year alcoholism. This demands a very wide exploration of risk factors, epidemiology, public policy and community beliefs, together with an appraisal of health and community services and costs. The work is divided up within the class. They are taught the basic principles of the study of a population and then they learn practical skills in the field. The entire study comes together in a major half-day presentation from which each group is assessed.

In the subsequent years, students study the epidemiology, cause and risk factors of specific health problems and the effectiveness of community intervention.

## 8 Electives

Students design their own electives, subject to approval. Many take electives overseas, in both remote areas and major centres, gaining international perspectives upon Australia's problems.

## 9 Student selection

Members of the community from many walks of life assist us by interviewing applicants.

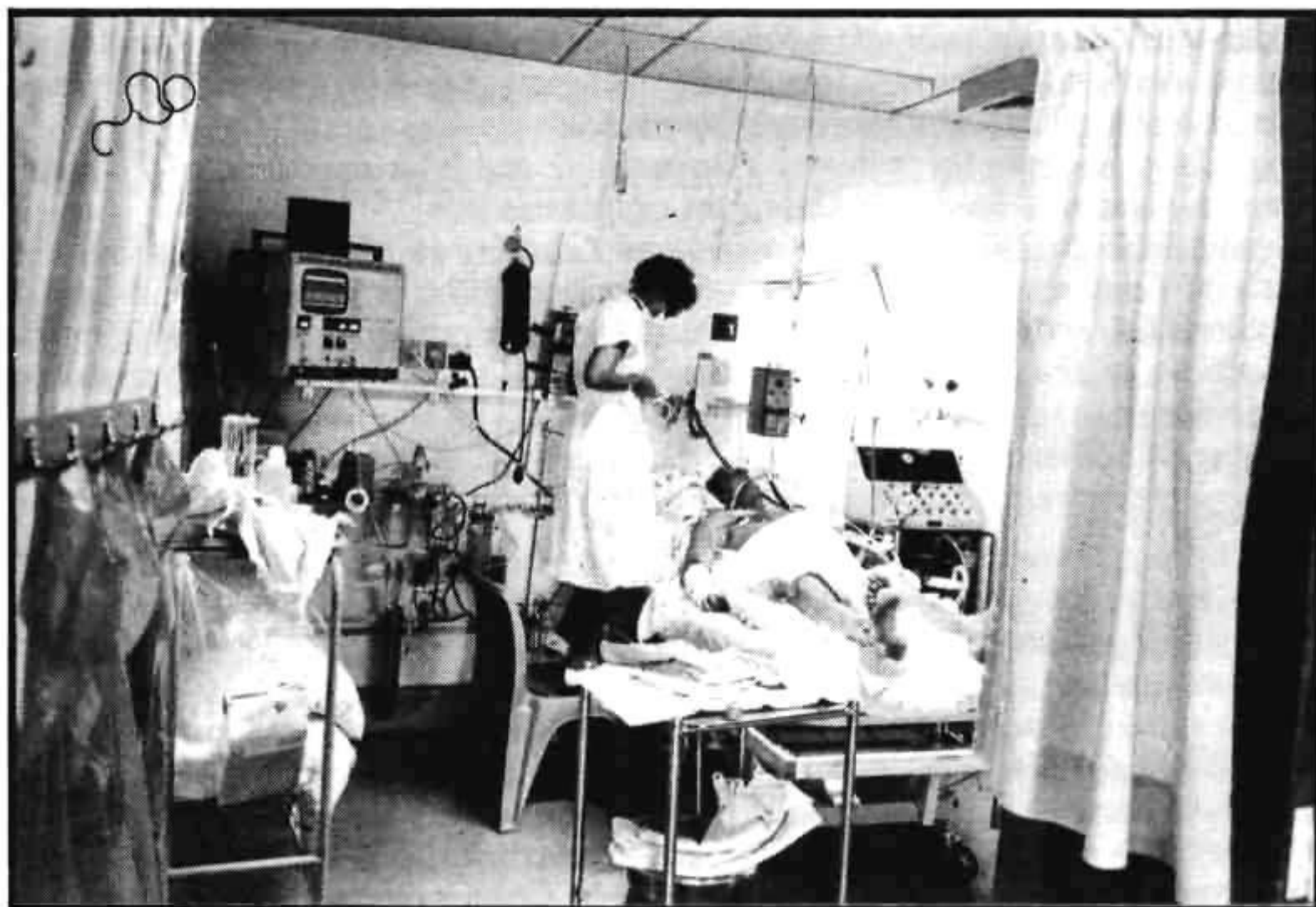
We seek students who would thrive in the independence of our programme and, as far as we can judge, have a commitment to the care of the community. Some of our students have already had a role in this way, through a prior career. This assists in consultation within the community.

Our interviews do, incidently, predict how well a student is going to do.



## The administration and structure of the Faculty

With a radically innovative curriculum, the Faculty has developed an administration and structure to match. The Undergraduate Education Committee takes a commanding role and individual disciplines have to fit into that programme. Although they give up some autonomy, it has proved acceptable and practicable. Both the curriculum and the assessment system require close co-operation and co-ordination. To provide the large number of staff required, we have called upon many hundreds of our colleagues in general practice and specialities to complement the role of our small full-time staff of 48. All staff, full and part-time, are supervisors, tutors and assessors and it has required us to put much effort into staff development through training and orientation. The Dean has an important co-ordinating role maintaining and developing the Faculty which has, in many ways, the administrative characteristics of a single, large department. Key committees for education, research, student admissions, programme evaluation, space allocation and equipment all relate to the Faculty as a whole and respond to overall priorities developed by the Faculty as a whole. If the Faculty had been organised along traditional departmental lines, with individual department courses, many of the innovations would have been extremely difficult, if not impossible.



**The Faculty of Medicine addressed the criticism that medical education was too scientific (neglecting the humanitarian aspects of medicine) whilst acknowledging that a scientific foundation to medicine is necessary**

## How do students fare?

Students enjoy the curriculum - the independence it offers, the active role they need to play, the early contact with patients and the obvious relevance of the curriculum to their future. Some have trouble with the lack of a rigid limit to what they may learn and a few would prefer to concentrate upon the hard facts of basic sciences and ignore the community orientation. Five years of students have now graduated and they have been well received. In many cases, they are the preferred choice for internship placements in competition with graduates of the other medical schools.

Our early impression of the doctors we have trained is encouraging, but we are not complacent. Only time will tell whether they will have a major impact on the development of health services in Australia and whether they will continue to adapt their practice to the needs of the community. There is no doubt we have fulfilled our mandate from the Karmel Commission and there is now no doubt that we are having a substantial impact on the pattern of medical education within Australia. Our task now is not to rest on our laurels, but to look to the future.

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