

## THE CURRENT STATUS OF NUCLEAR MEDICINE IN AUSTRALIA

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Those who attended the first of the Asia & Oceania congresses in Sydney did, hopefully, appreciate that Nuclear Medicine in Australia in 1976 was very healthy. The first specialist appointments to hospitals had been made some twelve years or so previously and subsequently many Departments of Nuclear Medicine had been created at almost all major teaching hospitals. From 1976, however, the growth did seem to slow down and, related to the world-wide economic difficulties, the speciality was associated with only very gradual development, to an extent that caused considerable concern. In the last two years, however, there is little doubt that many of the difficulties that had occurred have resolved and the speciality is showing very distinct signs of revival.

There are now 53 Nuclear Medicine establishments within the country. (Table) Forty of these are Nuclear Medicine Departments in public hospitals whereas 13 are private facilities. The move to the private sector, which seems likely to continue, is actually a very recent phenomenon and does reflect major changes in our Governmental health policy in the last two years. In the state of New South Wales, for example, 4 of the 6 private units are less than 2 years old. The distribution of the services throughout Australia does cause some concern. They are almost predominantly sited in the five major coastal cities of the country with some being in smaller cities. Country areas are, however, poorly served and in New South Wales, for example, there is only one rural unit, created in 1983.

The role of Nuclear Medicine in delivery of health care has been increasingly realised. Many departments have required considerable extensions and the recognition of the critical role in modern health care delivery of Nuclear Medicine is shown by the amount of space devoted in some of our new hospitals.

The pattern of equipment installations does perhaps show the trend of current attempts to provide adequate facilities. There are now 122 gamma cameras throughout the country, 79 being LFOV, 24 SFOV, and 19 mobile cameras, one being installed in a van. This, therefore, gives a relationship of 1 camera per 123,000 head of population. It is, however, of particular interest that 33 cameras have been purchased in the last 18 months some as replacements for old units and others for new departments. A further 10, at least, will be installed in 1985. Twelve of the 33 are SPECT instruments, indicating that many hospitals can provide current state-of-the-art service.

There are 56 computer systems in use. These are sited in all public hospitals departments

Table . Nuclear Medicine Units in Australia

	Public Hospitals	Private	Total
N.S.W.	16	6	23
Victoria	10	6	16
South Aust.	4	-	4
Queensland	3	1	4
Western Aust.	3	-	3
Tasmania	2	-	2
ACT	2	-	2
Totals	40	13	53

and in 7 of the 13 private units. Programming is dominantly the responsibility of physicists and there are very active user groups permitting programme interchange between the hospitals.

The patterns of staffing do illustrate how Nuclear Medicine has developed within Australia, having been fully accepted as a sub-speciality of Internal Medicine. Thus, 45 of the 53 departments are supervised by physicians trained in Nuclear Medicine. These physicians are in charge of departments in 35 of the 40 Public Hospitals and 10 of the 13 private units. Twenty-six departments have full time or part time support by medical physicists, there being 31 actively engaged in Nuclear Medicine activities. However, in contrast, only 5 departments have radiopharmacists. This does, to a fairly considerable extent, reflect the historical development of radiopharmaceutical services within Australia.

Throughout the 1970's the Australian Atomic Energy Commission, sited near Sydney, was extremely active. Not only was it leading in the development of many radiopharmaceuticals but it provided a unique service in the preparation of common radiopharmaceuticals and their distribution throughout Australia. This activity, however, has been considerably curtailed partly perhaps because of the increasing demand, but more particularly because of more stringent governmental regulations controlling the introduction of new agents. Many hospitals have, therefore, had to rely increasingly on imported kits and indeed consider that the controls are unduly strict. This is reflected by either the lack of availability or restriction of availability of a number of radiopharmaceuticals in kits which are freely marketed overseas. It is of much greater concern that despite numerous submissions by professional bodies and committees of enquiry there is still no medical cyclotron within Australia. Such agents as gallium and thallium must be imported at considerable cost and naturally many other procedures are not feasible because of the lack of short lived cyclotron produced radionuclides which obviously cannot survive the long trip to Australia. PET scanning does therefore remain a dream. However, the Federal Government has finally been persuaded to undertake a feasibility study to evaluate the cost-benefit of a medical cyclotron to the Australian health care system.

The training of personnel in Nuclear Medicine is now well established and does, ensure a constant high standard. Physicians in Nuclear Medicine are required to be thoroughly competent in internal medicine. Their initial training, therefore, consists of a minimum of 3½ years of post-graduate experience in approved hospitals. They must then pass written and clinical examinations in Internal Medicine of high standard. Having achieved this hurdle, they are then required to undertake 3 years of specialised training under supervision. A minimum of 2 years must be undertaken in an accredited Nuclear Medicine Department, the third year either being in Nuclear Medicine or in an allied subspeciality of medicine.

The objective of such training is to achieve the qualification of Fellow of the Royal Australasian College of Physicians. This degree permits registration as a physician in Nuclear Medicine; allowing membership of the Australia and New Zealand Association of Physicians in Nuclear Medicine, of which there are currently 70 members, and obtaining a licence to use radioactive substances. However, the regulations in this regard do vary from state to state but in New South Wales, for example, a licence for the use of radioactive substances in relation to scintigraphy requires the training as outlined. Subsequently, of course, the individual may practice as a physician in Nuclear Medicine although most do have other clinical duties in internal medicine, endocrinology and other specialities.

The hospital physicists have a somewhat less well defined training programme. However, in-service training in all aspects of medical physics is undertaken in most teaching hospitals with particular expertise being developed in a selected aspect, for example, Nuclear Medicine. Although it is not essential, individuals are encouraged to obtain the Membership of the Australasian College of Physical Scientists in Medicine, eligibility for which demands a physical science degree and 5 years practical experience.

The training for Nuclear Medicine Technologists (in one state the rather neologistic term "Nucleographer" is used) does vary from state to state. In general, however, it requires two years of academic study with a carefully planned specialised syllabus and also in-service practical training in a Nuclear Medicine Department with a minimum of 2 years full time or equivalent. This does lead to accreditation by our Society of Nuclear Medicine, so ensuring comparative standards in the different states and ensuring that there is certification of competence in all aspects, i.e. scintigraphy, computer operation, in vitro assays and radiation safety.

The Australian and New Zealand Society of Nuclear Medicine, of which there are approximately 500 full associate members, is of course, active in many other ways. In particular, it organises scientific meetings, the main one being the annual 3 day national meeting which rotates to the major cities. The range and quality of papers, 66 in 1984, demonstrates that the speciality, despite some setbacks, is thriving. There are, in addition, bi-monthly branch meetings in most states.

**In summary** Nuclear Medicine in Australia has had some difficulties in recent years but, despite persistent problems, does make the full range of procedures available to the vast majority of our population and does continue to develop.