

Radiopharmaceutical Scientists

Background

The NSW Ministry of Health, Workforce Planning and Development Branch, monitors relevant data pertaining to NSW Health Workforces. The *NSW Health Professional Workforce Plan 2012-2022* requires that attention be given to the five (5) small but critical workforces that include **Radiopharmaceutical Scientists (RPS)**. This fact sheet outlines background information and the data collated as at June 2014.

Work Context

RPS generally work in Nuclear Medicine departments, together with a team of specialist physicians, medical physicists, medical radiation scientists (nuclear medicine technologists) and nurses, all trained in the safe use of radionuclides for medical applications. RPSs may also work in commercial radiopharmacies, medical cyclotron facilities and research institutions. The role of the RPS within this team is to **develop**, **manufacture** and **validate** specialised radiopharmaceuticals, as well as to provide knowledge and guidance on the **safety and efficacy** of the radiopharmaceuticals used, including the choice of procedures in place to test and ensure quality.

Definition

Radiopharmaceutical science is a multidisciplinary field, encompassing chemistry, physics and biology. It is the science of incorporating a suitable radionuclide into a pharmaceutical or other biologically active molecule in such a way as to enable it to trace or mimic certain in vivo physiological or biochemical processes. The resulting radiopharmaceuticals are used in diagnostic imaging or therapy of patients.

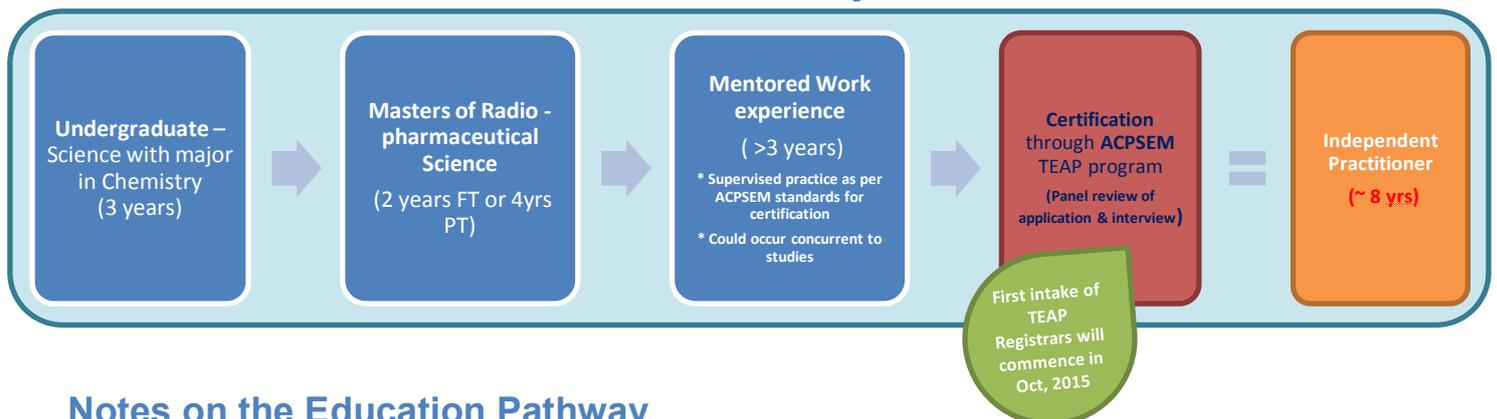
A Radiopharmaceutical Scientist (RPS) is a specialist professional with a chemistry, pharmacy or sciences background and is involved in the design, manufacture and analysis of radiopharmaceuticals. By utilising their scientific knowledge and analytical skills, RPS also provide knowledge and guidance on the safe and efficacious use of these products to ensure their suitability for clinical application.

A qualified RPS has postgraduate qualifications and suitable experience such that they are eligible for admission to the Register of Radiopharmaceutical Scientists administered by the Australian College of Physical Scientists and Engineers in Medicine (ACPSEM).

The RPS training, education and assessment program (TEAP), also administered by ACPSEM, guides a new university graduate through the required mentored work experience to become eligible for professional certification as a qualified RPS.

Source: Radiopharmaceutical Science Specialty Group, ACPSEM

Education Pathway



Notes on the Education Pathway

- ACPSEM Certification commenced in 2015.
- The Masters of Radio-pharmaceutical Science recommenced in 2015 at Macquarie University, NSW.
- There are currently no employees in NSW Health with a MRPS. All current employees entered the workforce through an informal supervised practice process. Most have come with post graduate qualifications, some with prior training at the Australian Nuclear Science and Technology Organisation [ANSTO] or overseas.

Current Workforce

Due to limitations with data on this workforce, it is difficult to identify the profile of the existing workforce without identifying the individuals. However the following data is known;

- In Australia (2014) there were approximately 70 individuals working as Radiopharmaceutical Scientists in both the public and private sectors.
- There were 14 Radiopharmaceutical Scientists employed in the NSW public health system (2014).

Source: Australian and New Zealand Society of Nuclear Medicine

Statistics*

NSW Health Workforce:

14

Australian Workforce:

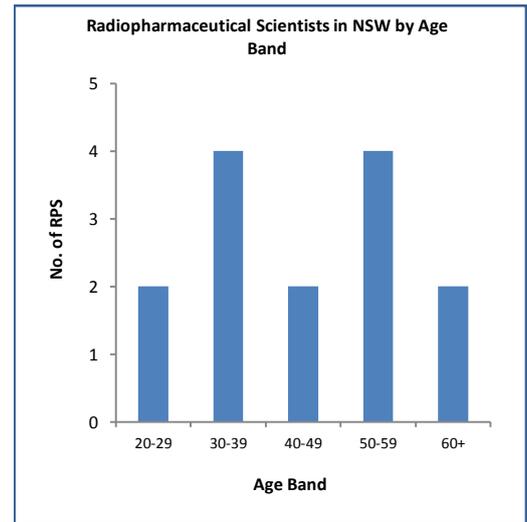
70

Retirement Intentions:

42%

Intend to retire in the next 5-10 years

*Workforce Modelling
NSW 2014



Source: Australian and New Zealand Society of Nuclear Medicine, 2012

Workforce Drivers

Demand	Risk	Supply	Risk
Technology developments	▲	Attraction	▲
Industry Standards and Requirements	▲	Education	▲
Commercialisation	▲	Retention	▲
		Workforce Planning	▲

High Med Hi Med Med Low Low

▲ ▲ ▲ ▲ ▲

Known demand drivers for RPS

1. **Technology drivers** : The most impact has come from developing technology and the rapid increase in requirement for the specialist knowledge and skills of the RPS e.g. cyclotron proliferation, increasing use of radiopharmaceuticals with more complex synthesis and validation requirements
2. **Industry standards and requirements**: With the increase in complexity of the technology, increased and more demanding regulatory requirements, the industry standards and control practices have to increase, and therefore the requirement/ demand for specialised staff.
3. **Commercialisation**: the proliferation of commercial entities requiring the knowledge and skills of the RPS

Known supply drivers for RPS

1. **Attraction**: Awareness of the profession in health.
2. **Training & supervision**: A three year training, education and assessment program (TEAP) prepares the graduate to become an independent practitioner in this field. Training positions are required to enable this aspect of the education pathway.
3. **Retention**: Variations in employment conditions across jurisdictions impact on the supply of RPS's in NSW. Attrition due to age of incumbents will also contribute to expected shortage.
4. **Workforce planning**: Limited understanding of the role and value of RPS services may limit the number of positions available and post-graduation training positions.

Small but Critical Workforce Threats and Opportunities

Threats to monitor

- Accurate workforce data is difficult to access as it is not captured by ANZSCO coding (Australian and New Zealand Standard Classification of Occupations - most accurate way to measure)
- Small and ageing workforce. Data collected in 2012 indicated that 42% of this workforce in NSW would be in a position to retire in less than 10yrs
- Recruiting experienced RPS to vacancies is expected to be difficult in future due to lack of numbers in the training pathways. Availability of supervision and positions that support the mentor program, and succession planning in LHDs. New scientists need to be employed in the field in order to obtain their mentored training for certification (ACSPem).
- Demand from other entities (local and global).

Opportunities

- Assist the development of online training modules for the Masters of Radiopharmaceutical Science course – to provide for distance educations and less time off the job.
- Commonwealth funding exists for training positions for Radiation Oncology Medical Physicists (ROMPs) and Diagnostic Imaging Medical Physicists (DIMPs). For NSW to take advantage of that opportunity, more of a coordinated approach is required.
- Succession management. Retiring practitioners must be able to prepare successors. Availability of experienced certified practitioners for mentoring will impact on the availability of training.
- Increasing intake into the Masters Degree in Radiopharmaceutical Science at Macquarie University with incentives.
- Establishing and strengthening relationships between health services and educational institutions.