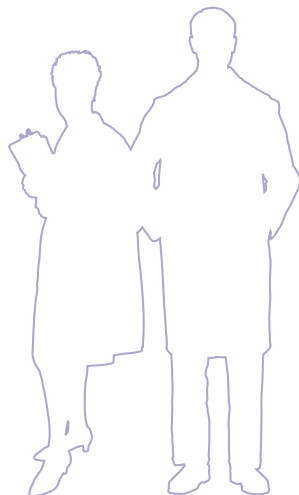


# Modernising Healthcare Science Careers Programme



better **skills**  
better **jobs**  
better **health**

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# 1. Acknowledgments

Acknowledgments are due to many colleagues outside of Skills for Health for important contributions during the 'Modernising Healthcare Science Careers Programme'. Many have participated in the Project Board, in Reference Groups, in Think Tanks and/or Geographical Workshops.

Particular thanks are due to:

- Those in the four health departments across the UK
- The Federation of Healthcare Science and other professional bodies
- The Workforce Review Team
- The University of Keele
- The University of Bradford
- The University of Westminster

To all, the achievements of the programme would not have been possible without your contribution.

## 2. Executive Summary

- **Skills for Health**
- **Programme Outline**
- **Methodology**
- **Current Situation**
- **Application in Healthcare Science**
- **Conclusions**

### Skills for Health

Skills for Health is the Sector Skills Council for the UK health sector, which employs over two million people across the UK within the National Health Service, independent healthcare providers and voluntary organisations.

Skills for Health's purpose is to help the whole sector develop solutions that deliver a skilled and flexible UK workforce in order to improve health and healthcare. Its specific aims are to:

- Develop and manage national workforce competences
- Profile the UK workforce
- Improve workforce skills
- Influence education and training supply
- Work with key partners

### Programme Outline

The Skills for Health Modernising Healthcare Science Careers Programme began in July 2005 and ended in July 2007.

It was sponsored by the Department of Health in England. The Health Departments in Scotland, Wales and Northern Ireland requested that the programme be developed across the UK and they have supported this work.

The Modernising Healthcare Science Careers Programme followed on directly from two foundational pieces of work: the Healthcare Science (HSC) National Occupational Standards (NOS) work developed through SEMTA, the Sector Skills Council for science, engineering and manufacturing technologies; and the Healthcare Science Career Framework which was published in November 2005.

The key purposes of the Programme were to:

- Integrate the HCS NOS into the Skills for Health suite of competences.
- Populate the Career Framework with transferable roles.
- Develop coherent, competence based education and training programmes.

From the beginning, it became clear that the HCS NOS tended to describe the work of a team rather than a function undertaken by an individual. Much time and effort has therefore been spent in 'unbundling' the HCS NOS. This has affected the extent of progress which could be made in populating the Career Framework and developing a full set of education and training programmes. Nevertheless considerable progress has been made and this is described in the full programme report.

## Methodology

The programme has undertaken desk research and worked with experts, both individuals and groups, to integrate the Healthcare Science NOS into the overall Skills for Health NOS database, with these objectives:

- To develop and test a methodology for the Career Framework.
- To develop transferable roles for Healthcare Science.
- To develop Awards and Qualifications in Healthcare Science.

The outcome of this work is set out in chapters 6, 7 and 8.

## Current Situation

Sixty thousand people are employed by the NHS in Healthcare Science across the UK comprising about 4% of the health workforce. Of these about 50,000 are in England, 5,000 in Scotland, 3,000 in Wales and 2,000 in Northern Ireland.

They work in 50 different disciplines which are grouped into the three broad areas of life sciences, physiological sciences, and physical sciences and engineering.

The workforce is engaged in:

- Using scientific methodology in the delivery of healthcare.
- Developing new techniques and devices.
- Quality assuring the application of technology.
- Innovating services and systems.
- Applying new scientific knowledge and ideas.
- Researching into basic science for healthcare.

They function at all levels of practice from support workers to Consultant Clinical Scientists, who have recognised equivalence with medical consultants in some disciplines.

They access a wide range of educational opportunities across the qualification levels and are represented by a vast array of professional associations. They access a healthcare science career through numerous entry points.

A number of drivers are transforming healthcare into a modernised service. The drivers include patient focused care, technological change and the need for a more flexible and productive workforce. Some of the changes are specific to healthcare science.

## Application in Healthcare Science

During the course of the programme, several opportunities arose to apply the healthcare science competences and to assist with particular workforce development issues. A selection of examples are presented in chapter 9. The testing of NOS helped to demonstrate some of the practical opportunities that are apparent across the range of healthcare science.

Key achievements include:

- Shared learning of the benefits of cross training staff.
- New ways of working developed by extending roles.
- Potential new awards and qualifications to improve service models.
- Greater flexibility and transferability within certain workforces.
- More flexible learning programmes allowing individuals to fast track into related disciplines.
- Greater collaboration between the different elements of the health sector to improve patient services.

## Conclusions

The Modernising Healthcare Science Programme set out to:

- Integrate the HCS NOS into the Skills for Health suite of competences.
- Populate the Career Framework with transferable roles.
- Develop coherent, competence-based education and training programmes.

During the two years of the Programme, there has been broad engagement and work with all sections of Healthcare Science across the UK and with relevant policy leads.

The HCS NOS have been incorporated into the Skills for Health database of NOS. The generic HCS NOS have been rationalised. Some, for example those relating to research and development, have been broadened in scope to be applicable right across healthcare. Some have been replaced by other NOS that are more relevant.

The HCS Career Framework has been populated with a range of jobs.

The landscape across vocational and Higher Education is changing, as described in chapter 8. This includes developing packages of learning which can be used as building blocks for education and training at all levels.

Modernising Healthcare Science Careers Programme has taken the development of competences for HCS, role development, and education and training development on to a new level. Two further programmes are already under way to move on even further. One is the Skills for Health Specific Function Project, which is revising the discipline-specific Healthcare Science NOS. The other is the Department of Health's Modernising Scientific Careers Programme.

The two Programmes are working closely together. Both are informed by the outcomes of the HCS Programme.

### 3. Healthcare Science – background and description

- **The Healthcare Science workforce and function**
- **Drivers for change**
- **Emerging Roles in Healthcare Science**

#### The Healthcare Science workforce and function

Sixty thousand individuals are employed by the NHS in Healthcare Science across the UK comprising about 4% of the health workforce. Of these about 50,000 are in England, 5,000 in Scotland, 3,000 in Wales and 2,000 in Northern Ireland.

They work in 50 different disciplines which are grouped into the three broad areas of life sciences, physiological sciences, and physical sciences and engineering, see Appendix 1 for the full list. Their particular contribution is to apply practical, analytical and interpretative skills to healthcare delivery in an increasingly scientifically based and technologically driven health system. They are engaged in:

- Using scientific methodology in the delivery of healthcare.
- Developing new techniques and devices.
- Quality assuring the application of technology.
- Innovating services and systems.
- Applying new scientific knowledge and ideas.
- Researching into basic science for healthcare.

They function at all levels of practice from support workers to Consultant Clinical Scientists, who have recognised equivalence with medical consultants in some disciplines.

Prior to the introduction of Agenda for Change, Healthcare Scientists were employed in the NHS on six different sets of employment gradings.

They access a wide range of educational opportunities across the qualification levels and are represented by a vast array of professional associations. They access a healthcare science career through a wide range of entry points.

Currently only two professional groupings within the healthcare science workforce – Biomedical Scientists and Clinical Scientists – are registered with the Health Professions Council. Other aspirant groups are applying for registration.

Healthcare Scientists are fundamental to the government's reform agenda for the NHS, to the delivery of priorities and to the scientific and technological advancement of healthcare.

They have an important working partnership with university education and with industry.

## Drivers for change

A number of drivers are transforming healthcare into a modernised service. The drivers include patient focused care, technological change and the need for a more flexible and productive workforce. Therefore, the roles and functions of many individuals have moved away from traditional and rigid uni-professional roles to roles which may be extended or advanced and, possibly, cross professional boundaries. This change has often been facilitated by the development of competences on which a new role can be based.

Some of the changes are specific to healthcare science. Some apply more generally to the whole of the healthcare workforce.

## Emerging Roles in Healthcare Science

In meeting with a wide group of stakeholders during the course of the programme, the Programme Team have encountered a large number of non-traditional roles which have emerged or which are emerging. Table 1 shows a sample of such roles.

**Table 1: Emerging Roles in Healthcare Science**

Career Framework Level	Emerging roles
9	
8	
7	<ul style="list-style-type: none"> <li>• Catheter Laboratory Practitioner (Cardiac Physiologist, Radiographer, Nurse)</li> <li>• Nuclear Medicine Cardiac Stressor</li> <li>• Specialist Transfusion Practitioner</li> <li>• Thrombosis Clinic Manager</li> <li>• Point of Care Manager</li> </ul>
6	<ul style="list-style-type: none"> <li>• Point of Care Co-ordinator</li> </ul>
5	<ul style="list-style-type: none"> <li>• Genetics Technologists</li> <li>• Ward Based Electronic and Biomedical Engineering</li> </ul>
4	<ul style="list-style-type: none"> <li>• Hearing Aid Audiologist</li> <li>• Engineer Maintaining Automated Platforms</li> <li>• Associate Practitioner in Pathology</li> <li>• Point of Care Tester and Reporter</li> </ul>
3	<ul style="list-style-type: none"> <li>• Hearing Aid Audiologist</li> <li>• Engineer Maintaining Automated Platforms</li> <li>• Associate Practitioner in Pathology</li> </ul>
2	<ul style="list-style-type: none"> <li>• Point of Care Tester</li> <li>• Audiology Support Worker, Newborn Hearing Screener</li> </ul>
1	

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## 4. Modernising Healthcare Science Careers Programme

- **Skills for Health**
- **The key purposes of the Modernising Healthcare Science Careers Programme**
- **Summary of work undertaken**

### Skills for Health

Skills for Health is one of 25 Sector Skills Councils covering the whole UK economy which make up the Skills for Business Network. They are licensed by the Secretary of State for Innovation, Universities and Skills (DIUS) in consultation with Ministers in Scotland, Wales and Northern Ireland.

Skills for Health (SfH) is the Sector Skills Council for the UK health sector, which employs over two million people across the UK within the National Health Service, independent healthcare providers and voluntary organisations. The majority of occupations are linked to hospital activities and community health services but the sector also includes general medical and dental practitioners and a very significant number of healthcare professionals working in nursing homes, private surgeries and retail outlets, e.g. pharmacists, opticians and self-employed practitioners.

Skills for Health's purpose is to help the whole sector develop solutions that deliver a skilled and flexible UK workforce in order to improve health and healthcare. Its specific aims are to:

- Develop and manage national workforce competences.
- Profile the UK workforce
- Improve workforce skills
- Influence education and training supply
- Work with key partners

### The key purposes of the Modernising Healthcare Science Careers Programme

The Skills for Health Modernising Healthcare Science Careers Programme commenced in July 2005 and concluded in July 2007.

It was sponsored by the Department of Health in England. The Health Departments in Scotland, Wales and Northern Ireland requested that the programme be developed across the UK and they have supported this work.

Two foundational pieces of work were available at the outset.

The first was an extensive set of National Occupational Standards (NOS) developed through SEMTA, the Sector Skills Council for science, engineering and manufacturing technologies. These NOS were specifically developed for Healthcare Science. Some of the NOS are for general application across functions such as specimen preparation and equipment management. Other NOS are for 46 individual Healthcare Science disciplines from Anatomical Pathology to Vascular Technology including Biochemistry, Nuclear Medicine and Respiratory Physiology, for example. They were published in July 2005.

The second foundational piece of work was the Healthcare Science Career Framework which was published in November 2005. This introduced a nine stage Career Framework for all of the constituent disciplines of the Healthcare Science workforce based on competences, level descriptors and a functional guide to the identification and development of transferable roles.

The Modernising Healthcare Science Careers Programme followed on directly from the foundation work and focused on implementation. The key purposes were to:

- Integrate the HCS NOS into the Skills for Health suite of competences.
- Populate the Career Framework with transferable roles.
- Develop coherent, competence based education and training programmes.

In beginning to work on the transfer and integration of the HCS NOS, it became clear that they tended to describe the work of a team rather than a function undertaken by an individual. A considerable amount of time and effort has therefore been spent in ‘unbundling’ the HCS NOS and this has affected the extent of progress which could be made in populating the Career Framework and developing a full set of education and training programmes. Nevertheless considerable progress has been made and this is described in the following chapters.

### **Summary of work undertaken**

The programme has undertaken desk research and worked with experts, both individuals and groups, to integrate the Healthcare Science NOS into the overall SfH NOS database, to develop and test a methodology for the Career Framework, to develop transferable roles for Healthcare Science and to develop Awards and Qualifications in Healthcare Science. The outcome of this work is set out in chapters 6, 7 and 8.

The conduct of the programme has followed SfH requirements for project management and accountability. It has been strategically overseen by a Programme Board jointly chaired by Nic Greenfield, Deputy Director of Workforce Department of Health, England and Sue Hill, Chief Scientific Officer Department of Health, England. The membership is shown in Appendix 2. Oversight of the day-to-day management has been through the Programme Management Group chaired by Chris Pearson, Director of Workforce Development, Skills for Health.

### **Members of the Programme Team:**

- Andrew Butcher, Programme Director
- Pippa Hodgson, Programme Manager
- Martin Broom, Development Manager
- Michelle Logan, Development Manager
- Jenny Manning, Development Manager
- Andrea Watwood, Development Manager
- Jean Tonry, Administrator
- Candace Miller, Technical Adviser

Programme staff have built and maintained contact with a reference network of stakeholders comprising 250 individuals from across the UK.

The work on NOS has been validated by a Reference Group which met in November 2006 and in May 2007. The membership has been a self-selected group of 50 individuals, drawn from the SfH HCS Reference Network and working in Healthcare Science from across the UK and from most HCS disciplines.

Two pieces of work have been commissioned to assist with the development of the Awards and Qualifications section, one from the University of Keele led by Professor Maggie Pearson and the other from the University of Bradford led by Professor Jeff Lucas.

The means of communication has been through four Programme Information Bulletins, Geographical Workshops and individual contacts.

Two series of Geographical Workshops were held in September/October 2006 and in May/June 2007. The purpose was to inform stakeholders of the programme and its progress and to seek views on the appropriateness of findings. 170 individuals attended the first series and 200 attended the second.

Geographical Workshops were held in:

- Belfast (one)
- Birmingham (one)
- Bulth Wells (one)
- Crickhowell (one)
- Derby (one)
- Durham (one)
- Exeter (one)
- London (two)
- Salford (one)
- Stirling (two)

A series of Think Tanks have been held. There were four across Clinical Science, one for Biomedical Science and one joint one for Clinical Physiology and Clinical Technology. These were attended by a number of senior Healthcare Scientists and helped work through some complex strategic issues.

A Visioning Event was held in January 2007 to review some critical policy issues within healthcare science and so sketch out the direction of travel for healthcare science, the careers required and the education and training that would be appropriate. The event was required to respond to the emerging outcomes of the Programme and the outcomes are feeding into successor programmes of work.

Subsequent work in respect of education and training in Healthcare Science is continuing through the recently commenced Modernising Scientific Careers programme which is being sponsored and led by the Department of Health.

## 5. United Kingdom issues

- **Overview**
- **England**
- **Scotland**
- **Wales**
- **Northern Ireland**

### Overview

As has already been noted, 60,000 Healthcare Scientists are employed in the NHS across the UK comprising about 4% of the health workforce. Of these, about 50,000 are in England, 5,000 in Scotland, 3,000 in Wales and 2,000 in Northern Ireland.

The four countries have different policy drivers and contexts but each is keen to develop the Healthcare Science workforce and to participate in the development and application of competences as one means of achieving the development.

Although the Modernising Healthcare Science Careers Programme was largely funded from the DH in England, each of the UK countries have participated at the level of government department, of employer and practitioner, and through education providers.

The Programme Board had representatives from all four countries.

Scotland, Wales and Northern Ireland all face issues of rurality to a greater extent than is the case in England. With this comes a greater reliance on the role of the generalist practitioner.

Each of the countries has supported the development through the Programme of an S/NVQ for Pathology Support Workers. This work is described in chapter 9.

During the course of the Programme various geographical workshops were held across the UK. The purpose was to inform stakeholders of the Programme and its progress and to seek views on the appropriateness of findings.

### England

Within England, geographical workshops were held in Birmingham, Derby, Durham, Exeter, London and Salford.

### Wales

Geographical workshops were held in Builth Wells and Crickhowell.

Members of the Programme Team gave a presentation and held a discussion on the programme with the Welsh Partnership Forum.

The Welsh Assembly Government has sponsored work to establish a common approach to point of care testing across Wales. This has led to strong participation in the Pathology Support S/NVQ work (see chapter 9).

The Wales Pathology Modernisation Workforce Planning Steering Committee received a presentation on the work to develop a relevant qualification for support workers, i.e. the S/NVQ Health Award with Pathology options.

The following points were noted:

- The proposed S/NVQ3 is being created in response to the profession's and service needs as fully evidenced by robust research.
- SfH are heavily committed to full consultation across the UK.
- The S/NVQ3 is NOS constructed and that the NOSs involved are health based.
- The S/NVQ is expected to become an additional pathway in the Health Awards suite, pending the outcome of the Health Awards review. This was particularly welcomed as it will enable employers to include pathology S/NVQ3 candidates in the cross professional generic core training activities.
- Skills for Health is working closely with partners in Wales so that ultimately the UK-wide qualification will be well received and supported across Wales.

## Scotland

Two geographical workshops were held in Stirling.

Members of the Programme Team have participated in the meetings and work of the Scottish Forum for Healthcare Science, including the Healthcare Science Consensus Event in May 2007 which was organised by the Scottish Executive and supported by the Forum.

Clinical Physiology and Clinical Technology are both priorities for Healthcare Science in Scotland. This is particularly so in physiology as there are no commissioned education and training programmes in Scotland at present. In establishing any programme, a number of issues would be faced with regard to the sustainability and viability of courses using conventional models of provision. Clinical Technologists are needed to work across a number of disciplines. There is interest in exploring the potential for common areas of learning between the two groups.

Because of the rurality issues in Scotland, there is a need for generalist practitioners, who might be able to cover aspects of the various disciplines as solo or small team workers with perhaps a community-dimension role. Similar issues are pertinent in Wales and Northern Ireland.

## Northern Ireland

A geographical workshop was held in Belfast.

Members of the Programme Team participated in meetings of the Institute of Biomedical Sciences.

All contacts with colleagues in Northern Ireland indicated a genuine welcome for the work of the programme and an acknowledgement of the general applicability of it to the healthcare situation in Northern Ireland.

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## 6. Competences

- **Competences and rules for their development**
- **Healthcare Science National Occupational Standards, July 2005**
- **Integration of generic NOS**
- **Integration of specific NOS**

### Competences and rules for their development

As the Sector Skills Council for Health, SfH is responsible for developing and maintaining a comprehensive set of competences. Competences describe the performance criteria, knowledge and understanding required to carry out a work activity effectively. They describe what individuals need to know and do regardless of who is performing the activity. They are about the function being performed, not about who does it or about where it is done.

They can be used within the defined scope by anyone working in any healthcare role, within any field of practice, at all career levels and in all parts of the UK. As such they are shared between staff groups, transferable across healthcare provider settings and applicable across the UK.

They are robust because they have been widely tested. When tested to the satisfaction of SfH, they become National Workforce Competences (NWC). When also tested to the satisfaction of the UK Co-ordinating Group, they become National Occupational Standards (NOS). The UK Coordinating Group draws its membership from the Qualifications and Curriculum Authority (QCA), the Scottish Qualifications Authority (SQA), the Welsh Assembly Government's new Department for Education Lifelong Learning and Skills (DELLS), the Council for the Curriculum Examinations & Assessment in Northern Ireland (CCEA) and the Sector Skills Development Agency (SSDA).

Competences can underpin both the development and design of roles and the development and design of education programmes. As such they are powerful building blocks for modernising healthcare careers and healthcare education and training including healthcare science careers and healthcare science education and training programmes, both academic and vocational.

NWCs and NOSs describe:

- **A single function**, i.e. one recognisable and meaningful process and outcome within a defined context;
- **which an individual can deliver in its entirety**, i.e. it does not need a team of people, each doing separate parts, to complete it;
- **with sufficient detail for application with consistent quality and patient safety;**
- **but which is sufficiently broad to accommodate local variation and changes in methodologies and technologies;**
- **and so are truly transferable**, i.e. an individual who is competent in the function needs only re-orientation on moving to a new workplace, not a complete re-learning process.

In contrast, Standard Operating Procedures have considerable local variation and are not therefore transferable as they contain more detail within the function and particular detail about equipment and processes.

NWCs and NOSs can be used to help different people in different ways, including:

- Individuals to develop their knowledge and competence, improve performance and gain credit for achievements.
- Teams to identify and develop their collective skills and improve team performance.
- Service providers to improve service quality and to plan, manage, train and develop their workforce.
- Education and training commissioners to specify the education and training required.
- Education and training providers to design education and training content that supports service needs.
- Education and training providers to identify individuals' learning needs, define learning outcomes and form the basis of qualifications.

Under SfH, all NWCs and NOSs are organised into one overall Health Functional Map (HFM), which structures the database of NWCs and NOSs allowing them to be managed and updated. The NWCs and NOSs outline all of the functions that are performed to achieve the overall purpose of promoting, maintaining and improving health. The HFM is structured into four underpinning principles and eight key domains, i.e:

- **The Underpinning Principles:**
  - Communication
  - Equality and Diversity
  - Health, Safety and Security
  - Safeguarding and Protection
- **The Key Domains:**
  - Assessment and Investigation of health.
  - Planning/preparation for and addressing health requirements.
  - Promotion and protection of the health of the public.
  - Support of health care with medical devices, products and equipment.
  - Provision of facilities and estates for health care.
  - Development and sharing of information and knowledge on health.
  - Management and administration of health care.
  - Education and learning around health.

The domains are subdivided into key areas, the key areas into key roles and the key roles into reference functions. As an example the first key domain, Assessment and investigation of health, includes a key area 'A2: Assess and diagnose the health status and healthcare needs of individuals' and A2 subdivides into nine key roles, as shown in Table 2:

**Table 2: Example of Key Roles**

A2	Assess and diagnose the health status and healthcare needs of individuals
A2.1	Plan assessment of an individual's health status needs of individuals
A2.2	Obtain information on an individual's health status and needs
A2.3	Obtain and manage biomedical samples and products needs
A2.4	Analyse and produce information from biomedical samples and cultures
A2.5	Conduct investigations where the individual is present and cultures
A2.6	Capture images and data for investigations
A2.7	Interpret and present information on an individual's health status
A2.8	Assess an individual's health status against expectations status
A2.9	Undertake postmortem assessment of the cause of death

### Healthcare Science National Occupational Standards, July 2005

The HCS NOS were developed in a project managed by SEMTA (SSC for science, engineering and manufacturing technologies) and transferred to the jurisdiction of Skills for Health in 2006. They comprise two groups. One is a set of generic NOS covering functions across the whole of healthcare science. The other is a larger set of discipline specific NOS.

There are 112 generic NOS covering ten functional areas as shown in Table 3.

**Table 3: Functional Areas in Generic HCS NOS**

Series	Functional area	Number of NOS
A	Equipment	6
B	Protocols	4
C	Specimen handling	18
D	Interpreting results and clinical advice	5
E	Health and safety	4
F	Management	23
G	Training and professional development	12
H	Research and development	15
I	Patient care	18
J	Provide advice on healthcare	7

The specific NOS cover 46 disciplines with approximately 11 NOS per discipline. There are 552 in total.

### Integration of generic NOS

At the time of integration of the HCS NOS into the SfH suite, a technical evaluation was conducted to identify the actions needed to ensure their harmonisation with other SfH NOS. This was to ensure they would support educational provision development. A number of issues were identified, essentially around a mismatch between the HCS NOS model and the wider Health model as indicated in Table 4 on next page:

**Table 4: Differences between HCS NOS Model and Health Model**

Health model	HCS NOS model
The goals of the health sector modernisation programme require NOS to be uni-functional.	Many HCS NOS are multi-functional.
Best practice requires NOS to be clear as to the depth and breadth of knowledge needed.	HCS NOS identify topics but are not precise as to depth and breadth within each NOS – other documentation provides this.
Workforce modernisation and the development of accessible and effective applications requires NOS to be truly transferable with clarity as to the scope of practice covered.	HCS NOS vary in the extent to which the scope is defined and delimited and additional documents need to be referred to.
Flexibility in workforce development and service re-design requires that NOS are not delimited by professional group/occupation. If a function is to be delivered and can be described in a NOS, the model holds that any and all occupations called upon to undertake that function must do so to the standard set down in the NOS.	HCS NOS have been developed by different professional groups and are being promoted as for the exclusive use of HCS professionals. As a consequence of this approach there is both significant overlap between and variation within the different suites of HCS NOS.
Health service modernisation requires that functions that are generic and those that are shared between and/or common to several health service contexts are represented by NOS that apply equally across those contexts, without the production of variations specified in each of the possible contexts.	HCS NOS have devised HCS specific versions of generic, common and shared functions. Many common and shared HCS NOS overlap with discipline specific versions.

The implications of these differences can be summarised as followed:

- The HCS NOS could not be used directly to develop vocational qualifications; in particular they would not support Scottish/National Vocational Qualifications (S/NVQ) development at lower levels of the career framework.
- The HCS NOS did not readily support wider health service modernisation agendas linked to improving workforce flexibility and service re-design.
- The HCS NOS could not easily be incorporated into the electronic tools being devised to support workforce planning and development across the health sector.

Ensuring that the HCS NOS could take a central role within the harmonised ‘family’ of health competences required that the differences were addressed and a plan developed for taking the work forward. This plan built constructively on what had been developed including effective engagement with practitioners in the sector.

This integration work took place simultaneously with a major SfH project to rationalise all of the NOS in the SfH database with a view to eliminating unnecessary duplication.

The 112 generic healthcare science NOS have been replaced within the SfH suite of competences. In some cases pre-existing NOS have replaced the HCS NOS because they were more applicable. In other cases the HCS NOS have been broadened in their scope to become applicable across the whole of healthcare. For example all of the HCS NOS in respect of research and development have been incorporated for wider use with any reference to ‘healthcare science’ being replaced by the broader term ‘healthcare’.

The generic specimen journey set of NOS now comprise a sequence as shown in Table 5 below:

**Table 5: Specimen Journey set of NOS**

Competence Reference	Title
CHS 83	Interpret and report on the findings of investigations.
CHS 180	Collect food, water and environmental specimens.
CHS 181	Package biomedical specimens, samples and donations prior to transportation.
CHS 182	Transport specimens and samples.
CHS 183	Receive specimens for preparation.
CHS 184	Maintain chain of custody.
CHS 185	Perform basic specimen/sample preparation.
CHS 187	Dispose safely of biomedical specimens and samples.
CHS 188	Prepare culture media and solutions.
CHS 189	Perform quality control of culture media and solutions.
CHS 190	Investigate at a microscopic level.
CHS 191	Stain specimens and samples.
CHS 192	Perform standard tests using an automated analyser.
CHS 193	Perform standard tests using manual methodologies or commercial kits.

Some of these NOSs are already being used to establish vocational qualifications for pathology support workers. They are also being used to help reprofile roles within pathology. Brief details are given in chapter 9.

These generic NOS for the specimen journey fit well with the six processes identified in the Carter Report, i.e:

- Taking samples
- Transporting samples
- Receiving samples
- Testing samples
- Interpreting results
- Reporting results

### Integration of specific NOS

A major project commenced in September 2007 to integrate the specific NOS into the SfH suite of competences. It is being managed by Skills for Health and will last for 15 months.

The project is working with professional staff from Healthcare Science to remove duplication and multifunctionality within the HCS NOS and so ensure that each specific NOS describes a function which is undertaken by one individual. The project will also identify NOS which can be shared across disciplines. The NOS will be able to be used to describe the requirements of an education and training programme as well as describe the role and function of an individual.

The project is drawing on the SfH NOS identified for generic healthcare science functions and will lead to rationalisation across many of the disciplines of Healthcare Science particularly within the broad areas of life sciences, physical sciences and engineering, and physiological sciences.

## 7. Career Framework

- **Career Framework for Healthcare Scientists in the NHS, November 2005**
- **The Skills for Health Career Framework, 2007**
- **Emerging roles**

### Career Framework for Healthcare Scientists in the NHS, November 2005

The DH in England published a Career Framework for Healthcare Scientists in the NHS in November 2005. It was a guide on the implementation of an integrated Career Framework for all Healthcare Scientists based on the concept of skills escalation and offering flexible career opportunities to meet workforce, service and individual needs. The HCS Framework is a specific presentation of the overarching Career Framework for the NHS introduced by the NHS Modernisation Agency in June 2004. The development work for the HCS Career Framework was led by Professor Sue Hill in conjunction with a number of major stakeholders from employers, professional organisations and staff-side organisations across the four countries.

The overall aim of the HCS Career Framework is to:

- Introduce an integrated Career Framework encompassing all disciplines and employment groups within the workforce based on roles and function and linked to transferable skills and competences.
- Clearly identify pathways for progression and transfer, supported by learning and development providing enhanced opportunities.
- Provide national consistency and maximum flexibility to support local service delivery, the expansion and extension of current roles, and the emergence of new roles.

The Framework sets out nine career levels, as shown in Table 6 below:

**Table 6: HCS Career Framework levels**

9	Very Senior Scientists and Consultant Healthcare Scientist Directors.
8	Consultant/Principal Healthcare Scientists.
7	Advanced Healthcare Scientists.
6	Senior or Specialist Healthcare Scientists.
5	Healthcare Scientist Practitioners.
4	Associate Healthcare Scientists.
3	Senior Assistant Healthcare Scientists.
2	Assistant Healthcare Scientist/Key Support Workers.
1	Initial entry level Assistant Healthcare Scientists.

The location of an individual role on the Career Framework was determined by reference to seven functional areas as follows:

- Knowledge training and experience
- Analytical and clinical skills
- Patient care and public health
- Organisational skills and autonomy/freedom to act
- Planning, policy and service development
- Financial, physical and human resources
- Research and development

Each functional area has a definition for each level of the Career Framework.

When published, the Guide anticipated some key projected changes in the Healthcare Science workforce in the future. These were:

- (a) The need for more skills and competences to be transferred to assistants and associates (Level 3 and Level 4).
- (b) The creation of more advanced and consultant level posts (Level 7 and Level 8) to support the scientific and technological advancement of healthcare and new roles at the medical scientific interface.
- (c) The need for scientific workforce numbers to increase.

### **The Skills for Health Career Framework, 2007**

Responsibility for developing the Career Framework has now passed to Skills for Health. The two early versions, i.e. the Modernisation Agency version of 2004 and the Healthcare Science version of 2005, have now been brought together and enhanced with a more detailed set of functional descriptions which have been extensively tested across a range of jobs.

The new Framework retains the same nine levels within the Career Framework but it has increased the number of functional areas which are assessed to eight.

#### **These are:**

- Knowledge, skills, training and experience
- Supervision
- Professional and vocational competence
- Analytical/clinical skills and patient care
- Organisational skills and autonomy/freedom to act
- Planning, policy and service development
- Financial, administration, physical and human resources
- Research and development

The specific descriptors for the Career Framework, as at May 2007, are enclosed as Appendix 3.

The levels identified in the Career Framework (CF) for any role are not equivalent to an Agenda for Change (AfC) pay banding. The CF and AfC were developed as separate and independent processes and were never intended to match or correlate. In some cases the CF Level and the AfC banding are the same but they may not be and this is particularly so at the higher levels. One key reason for this is that the CF encompasses every role in healthcare whereas the AfC covers most but not the most senior of roles in the NHS. Another key reason is that AfC has four separate levels for band 8 whereas the CF has only one.

### Transferable Roles

During the life of the Programme, many job descriptions for Healthcare Science roles have been collected. Many of these have been levelled using the CF tool.

The Programme Team has used these to begin to develop specific and general roles in many of the Healthcare Science disciplines.

The following examples shown in Table 7 from a sample of disciplines are set out in summary form in Appendix 4.

**Table 7: Sample Roles in HCS Discipline**

	<b>Audiology</b>	<b>Neurophysiology</b>	<b>Pathology</b>	<b>Genetics</b>	<b>Biomedical Engineering</b>	<b>Nuclear Medicine</b>
9						
8	Consultant Clinical Scientist	Service Manager	Consultant Biomedical Scientist, Cytology	Principal Clinical Scientist, Cytogenetics	Medical Devices Management Co-ordinator	Principal Clinical Scientist, Radiation Physics
7	Chief Audiologist	Highly Specialist Clinical Neurophysiologist	Chief Biomedical Scientist, Specialist Chemistry	Senior Clinical Scientist, Molecular Genetics	Section Team Leader	Senior Clinical Technologist in Nuclear Medicine
6	Senior Audiologist	Specialist Clinical Neurophysiologist	Specialist Biomedical Scientist Transfusion/ Transplantation	Clinical Scientist, Molecular Genetics	Electro-Medical Technician Servicing Engineer	Specialist Clinical Technologist
5	Audiologist	Clinical Neurophysiologist	Biomedical Scientist, Microbiology	Healthcare Scientist, Metabolic Diseases or Genetics Technologist	Clinical Technology Technician	Clinical Technologist in Nuclear Medicine
4	Associate Audiologist	Associate Clinical Neurophysiologist	Cytoscreener		Multi Skilled Maintenance Electrician	Radioisotopes Supplies Officer
3	Senior Hearing Assistant	Assistant Clinical Neurophysiologist	Healthcare Technician, Transfusion/ Transplantation			
2	Hearing Assistant	Assistant Technical Officer	Laboratory Assistant			
1						

## 8. Education and Training

### Background

- Sector Qualification Strategy
- Scope of Awards and Qualifications in Healthcare Science
- Healthcare Science environment
- Current qualifications and other learning provision
- Other sector uses of qualifications
- Realising the future in HCS qualifications
- Vocational Qualifications Regulatory Framework
- Higher Education

### Methodology for developing competence-based learning

- Using competences in developing packages of learning.
- Assessment

### Vocational Qualifications

### Packages of learning

### Education and training programmes

- Programme design
- Possible undergraduate programme structure
- Opportunities and challenges
- Meeting employers' and individuals' needs

### Background

During the latter part of the HCS programme, SfH was undertaking a separate piece of work with Stakeholders across the UK to develop the Sector Qualification Strategy (SQS). The SQS has been finalised within SfH and approved by the Sector Skills Development Agency (the body which licenses SSCs) as an exemplar document.

The award and qualification aspects of the HCS programme is written here in a format that reflects the SQS and dovetails with it.

## **Sector Qualification Strategy**

The SQS sets out the strategy for the development of qualifications designed to meet the needs of healthcare as it changes in response to policies, priorities, their supporting strategies and roles as articulated through the Sector Skills Agreement (SSA). The SQS for health has been developed to follow on from the SSA. It has been informed by key policy drivers and by consultation with employers and other key Stakeholders.

The future healthcare workforce needs to be equipped with skills and qualifications which respond to changes in the demand and need for health and healthcare services. The strategic drivers and evidence influencing the transformation of the future workforce are articulated in SSAs which have been published or are under development for each of the four UK countries.

The SQS focuses on existing and future qualifications that are contained within the Qualification and Career Framework (QCF), the Scottish Credit and Qualifications Framework (SCQF) and the Credit and Qualifications Framework for Wales (CQFW). These frameworks will need to align with the European Qualification Framework (EQF) and other international qualification frameworks. The qualifications addressed in the SQS relate in the main, but not exclusively, to those in Career Framework Levels 1 to 4.

A full review of qualifications delivered within Higher Education institutions fell outside of the scope of the SQS, however consideration has been paid to the articulation of Vocational Qualifications (VQ) with the Higher Education (HE) system.

## **Scope of Awards and Qualifications in Healthcare Science**

### **Healthcare Science Workforce**

The Healthcare Science workforce is described in chapter 3 of this document. In summary, 60,000 people are employed in Healthcare Science in the NHS across the UK. They work in 50 different disciplines which are grouped into three broad areas of Life Sciences, Physiological Sciences, and Physical Sciences and Engineering.

### **Range of Provision**

The SfH HCS programme has considered the whole range of education and training provided and required. In doing so it looks at HE, professional body delivered and work-based learning as well as vocational qualifications so that a coherent progression of learning can be described and attained.

## Priorities

Education and training is increasingly seen as a lifelong process characterised by flexible and accessible learning, by transferable skills and by learning programmes that reflect new roles, a patient focus and service improvement. Recognised workplace learning should be an important part of flexible and accessible learning. Short courses and CPD should contribute to purposeful and lifelong career-relevant personal development rather than perhaps be ends in themselves. Vocational qualifications, professional courses and higher education programmes all have their part in workforce development as do opportunities to step off and on to longer programmes, increased inter-professional learning and the accreditation of prior experience and learning.

Education and training priorities in HCS fit very comfortably with key objectives identified in the SSA for qualifications and learning provision. These key objectives include:

- Progressing the development of a UK-wide system of nationally recognised competences.
- Establishing modern and consistent qualification frameworks and assessments.
- Supporting skills development solutions.

In following these objectives, HCS qualifications and awards should be designed on the basis of need for a role or roles, i.e. fitness for practice, not on the basis of qualifications themselves.

Progressive education and training will be robust if it is:

- Employer driven with regards to local service design and delivery.
- Based on packages of learning which can be aligned one to another through mechanisms that identify level and credit values for each.

Thus individual packages can be combined into programmes of learning, giving either breadth or depth of learning and entry into employment where necessary.

## Learning Design Principles

In order to facilitate the development of robust, competence-based education and training programmes, SfH has established seven Learning Design Principles which are closely aligned to good practice and standards in learning design by many learning providers. They are set out in Box 1A. and are amplified by the notes in Box 1B.

These principles have been designed to ensure that the development of new awards, qualifications and other ways of recognising achievement are undertaken in a way that ensures a cohesive approach within a health sector framework for the recognition of learning. The use of the learning design principles outlined will future proof the emerging healthcare workforce by ensuring that packages of learning provide for the acquisition of skills guaranteeing fitness for purpose whilst also ensuring flexibility, transferability and progression routes for lifelong careers.

### **Box 1A: Skills for Health Learning Design Principles**

1. Recognition and reward of all learning developed in response to robust intelligence on requirement or rationale.
2. Flexible and constantly developing units/modules of learning which both stand alone and enable defined packages of learning which are underpinned and mapped by the use of National Workforce Competences.
3. A structure that ensures alignments with UK and European educational level descriptors, Career Frameworks, the NHS Knowledge and Skills Framework (KSF) and country specific level and credit frameworks.
4. Packages or units of learning which meet the needs of the employer, learner, education or training provider, professional bodies and regulators from use of 'rules of combination' in construction of awards and qualifications.
5. A structure that facilitates and promotes the principles of skills escalation by the provision of horizontal and vertical progression routes which also provide the opportunity to study a breadth and/or depth of knowledge and skill as required.
6. The reward and recognition of different types of learning (formal, work based, experiential, informal and theoretical).
7. Reliable and valid quality assured assessment of learning and flexible continued learning development.

### **Box 1B: Brief notes and definitions of each learning design principle indicating the parameters and complexities of each, without being exhaustive**

1. Fitness for purpose: Clearly identified need or rationale for the development of packages of learning. This will be closely aligned to the emergent Sector Skills Agreements and labour market intelligence to inform on requirements/priorities etc.
2. NWC/NOS based – Close alignment with NOS based workforce and role design and other definitions of proficiency/performance and educational requirements. The use of NWC/NOS to underpin and inform curriculum/training development and learning outcomes and mapping to offer transferability of functional competence.
3. Packages of learning – To capture unitisation or modularisation in award and qualification design, 'stand alone' units of learning and new ways of recognising achievement. Encompasses design to provide flexible routes/progression, transferability and blended learning approaches.
4. Alignments – Recognition driven by use of educational level descriptors, country specific level and credit frameworks, Career Frameworks, The NHS Knowledge and Skills Framework (KSF) – Multiple requirements regarding alignments to frameworks to ensure recognition/fitness for role/progression routes and the transferability of competence and wider learning.
5. Progression – The importance of promoting horizontal and vertical progression and the need for breadth and/or depth in learning design and provision – responsiveness to workforce design and role needs, skills escalation, widening entry and participation, career development etc.

6. Measurement of attainment – To include guidance on assessment of competence in practice. From full accreditation/validation of learning to other assessment/ accreditation standards that meet local/country requirements. Measurement of attainment ranging from recognition for the learner for locally developed and provided learning to the requirements of national statutory regulation and or professional standards for practice.
7. Quality – From Quality Assurance (QA) of Higher Education, endorsement of vocational qualifications by Skills for Health, further developments in kite marking of awards and qualifications such as the Foundation degree and other work in progress to recognise and quality assure learning to meet local/country requirements and QA standards.

## Healthcare Science environment

### Strategic Principles for Awards and Qualifications in Healthcare Science

The Healthcare Science Programme has developed strategic principles which must underpin Awards and Qualifications in healthcare science. They were developed on the advice of the University of Keele and are listed in Box 2. They are amplified by the notes in Appendix 5.

#### Box 2: Strategic Principles for Awards and Qualifications in Healthcare Science

- A. Congruence with the Career Framework for Health.
- B. Competence as a currency.
- C. Transferability: a standard learning currency.
- D. Recognising the diversity of education and training providers.
- E. Recognising the diversity of learning environments.
- F. Anticipating technological and scientific advances.
- G. Building more flexible careers for all healthcare scientists.
- H. Widening participation in the workforce.
- I. Supporting multi-professional team working.
- J. Simplifying the delivery of education and training.
- K. Education and training providers as awarding bodies.
- L. Recognising informal learning and awarding credit for vocational qualifications.
- M. Encouraging both horizontal and vertical progression of individuals' learning.
- N. Equipping Healthcare Scientists with the education and training they need to carry out their Scopes of Practice and roles.
- O. Having recognised step-off points from education programmes into defined generic roles.
- P. Having negotiated learning provider opportunities for accreditation of workbased learning in a structured academic programme.

The Learning Design Principles and the HCS Strategic Principles, though separately derived, fit together well as shown in Box 3.

**Box 3: Fit of Skills for Health Learning Design Principles with HCS Strategic Principles**

1. Recognition and reward of all learning developed in response to robust intelligence on requirement or rationale.
2. Flexible and constantly developing units/modules of learning which both stand alone and enable defined packages of learning which are underpinned and mapped by the use of National Workforce Competences.
  - B. Competence as a currency.
3. A structure that ensures alignments with UK and European educational level descriptors, Career Frameworks, The NHS Knowledge and Skills Framework (KSF) and country specific level and credit frameworks.
  - A. Congruence with the Career Framework for Health.
  - C. Transferability: a standard learning currency.
  - H. Widening participation in the workforce.
4. Packages or units of learning which meet the needs of the employer, learner, education or training provider, professional bodies and regulators from use of 'rules of combination' in construction of awards and qualifications.
  - E. Recognising the diversity of learning environments.
  - J. Simplifying the delivery of education and training.
  - K. Education and training providers as awarding bodies.
  - N. Equipping Healthcare Scientists with the education and training they need to carry out their Scopes of Practice and roles.
  - O. Having recognised step-off points from education programmes into defined generic roles.
5. A structure that facilitates and promotes the principles of skills escalation by the provision of horizontal and vertical progression routes which also provide the opportunity to study a breadth and/or depth of knowledge and skill as required.
  - G. Building more flexible careers for all healthcare scientists.
  - I. Supporting multi-professional team working.
  - M. Encouraging both horizontal and vertical progression of individuals' learning.
6. The reward and recognition of different types of learning (formal, work based, experiential, informal and theoretical).
  - D. Recognising the diversity of education and training providers\*.
  - L. Recognising informal learning and awarding credit for vocational qualifications.
  - P. Having negotiated learning provider opportunities for accreditation of workbased learning in a structured academic programme.
7. Reliable and valid quality assured assessment of learning and flexible continued learning development.
  - F. Anticipating technological and scientific advances.

## Current qualifications and other learning provision

### Main qualification types

Education and training in Healthcare Science covers a very wide range of levels and types. Some examples of the relevant qualifications available include:

- An S/NVQ 2 in Clinical Laboratory Support.
- Inclusion of Pathology units in the S/NVQ 3 Health Award by May 2008.
- A Foundation degree in Audiology.
- A range of Honours degrees, e.g. in Physics, Physiology or Biomedical Science.
- A range of Masters degrees, e.g. in Immunology or Vascular Technology.
- Doctorates
- Short courses in specific topics

With the exception of the Level 3 S/NVQ in Health, these programmes have been established over many years for a variety of reasons. They do not necessarily lead to easy progression from one level to another or readily allow individuals to broaden education and training at the same level.

### Current volumes

Across the UK, the largest staff group within Healthcare Science work in Life Sciences (approx 60% or 36,000 of the 60,000 in Healthcare Science). The Life Sciences workforce is made up of three groups; Clinical Scientists, Biomedical Scientists and support workers.

Support workers at Career Framework levels 2, 3 and 4 make up between 10-20% of the present workforce, depending on local workforce profile. It is expected that Support Workers will in due course comprise 40% of the Pathology workforce. This level of growth implies an increase of 2.0 Whole Time Equivalents in each pathology department in each of the next five years. With five such departments in, say, 300 acute hospitals, this implies a potential 3,000 new staff being recruited and needing training per annum. Given this expansion there is a potential 1,000 new staff per year requiring a vocational qualification in each of the next 10 years.

Graduate entry to the scientific grades must support a workforce of approximately 36,000, i.e. the 60% of the 60,000 not working in support grades. If individuals followed an NHS career for an average of 30 years, some 1,200 graduates need to be recruited each year. In addition all of the workforce need ongoing professional development.

### Match to employer needs

The fragmented approach to qualifications in HCS has contributed to a fragmented workforce where staff can become restricted in career options and can become too highly specialised at an early stage in their career.

Employers and employees need a coherent approach to qualifications to allow progression where desired and to ensure staff remain up to date in their abilities whether they progress in career terms or not. If all qualifications were based on competences and developed following the Skills for Health Learning Design Principles then both progression and transferability would be enhanced.

The SQS indicates that work is needed to ensure that vocational qualifications are recognised as providing a valued route into Higher Education.

## Other sector uses of qualifications

### Regulation of practice

The recent White Paper on regulation (Trust, Assurance and Safety – The regulation of Health Professionals in the 21st Century Cm 7013, 2007) will have a bearing on qualifications in years to come.

### Consumer protection

It is increasingly important to maintain public confidence in healthcare and in the healthcare workforce. The role of the professional regulators, including the Health Professions Council, is to ensure that staff are fit for practice, most commonly through an accepted qualification at the point of registration and subsequently through CPD.

## Realising the future in HCS qualifications

### The vision

Awards and qualifications in Healthcare Science must prepare individuals for a science career in health and must allow for multi-discipline and cross-discipline work even if many individuals spend their whole career in one specific discipline. Such an approach reflects patient focused care. It permits the development of roles to be service driven whilst allowing individuals to reach their full potential without regard to the level at which or the setting in which they commence a healthcare career and without regard to the qualifications they bring with them at that point.

Elements of the vision set out in the SQS are directly relevant to the future of qualifications in HCS. As such, they must be:

- Transferable UK-wide
- Fit for purpose, being based on NOS and meeting any requirements for regulation.
- Valued, by employers, employees and learners.
- Flexible
- Responsive, particularly to the development of new roles, new ways of working and changes in best practice.
- Accessible, to a wide entry group and through innovative delivery including e-learning.
- Underpinned by the SfH Learning Design Principles.

### Structural elements required in the Framework

In addition to the strategic principles set out above, the Framework needs to fit with recognised structural characteristics to provide for levelling and credits as set out below.

### Qualifications Levels

Packages of learning need to be levelled to determine where they fit on qualifications frameworks. In doing so, it will be possible to see how they relate one to another and how they articulate with each other.

The Frameworks are:

- National Qualifications Framework (to be replaced with the Qualifications and Credit Framework) covering England, Wales and Northern Ireland and regulated by the Qualifications regulators for these three countries. It only includes Vocational Qualifications.
- Scottish Credit and Qualifications Framework – non regulated and includes both Vocational and Higher Education.
- Credit and Qualifications Framework for Wales – non regulated and includes both Vocational and Higher Education.
- Further and Higher Education Framework – Further and Higher Education in England, Wales and Northern Ireland.
- European Qualifications Framework – only sets out level descriptors.

The QCF, SCQF and CQFW are all signatories to the Credit Common Accord where 10 hours of assessed learning is equivalent to 1 credit.

The Frameworks can be seen in Table 8. A more detailed comparison between levels is possible for England, Wales and Northern Ireland, see Table 9.

It is not a requirement that an individual must advance through award and qualification levels at the same rate and at the same time as advancing in their career. Some individuals may have acquired abilities through experience, for example, and may be recognised academically through APEL procedures. Others may have a higher level qualification than is required in the person specification for a role.

**Table 8: Comparison of qualifications levels across the UK**

National Qualifications Framework (NQF) /Qualifications and Credit Framework (QCF) England, Wales and Northern Ireland	Credit and qualifications Framework Wales (CQFW)	Scottish Credit and Qualifications Framework (SCQF)	England & Northern Ireland Framework for Higher Education Qualifications (FHEQ)	Exemplars of Awards and Qualifications Across the UK	European Qualifications Framework (EQF) DRAFT
8	8	12	Doctorate	Doctorate,	8
7	7	11	Masters	Masters & (S)NVQs 5	7
6	6	10	Honours	Degree	6
5	5	9	Intermediate	Diploma,	5
4	4	8	Certificate	Foundation Degree	4
3	3	7		Advanced, Highers & (S)NVQs 3	3
2	2	6		Apprenticeships	2
1	1	5		Access/BACC	1
Entry	Entry	4			
		3			
		2			
		1			
		Access			

**Table 9: Comparison of levels National Qualifications Framework for England, Wales and Northern Ireland with other qualifications**

Key Skills	National Vocational Qualifications	National Qualifications Framework (Original levels)	National Qualifications Framework (Revised levels from January 2006)	Framework for Higher Education Qualifications (FHEQ)
	Level 5 NVQs	Level 5 BTEC Advanced Professional Diplomas and Awards	Level 8 BTEC Advanced Professional Diplomas and Awards	Doctorate
			Level 7 BTEC Advanced Professional Diplomas and Awards	Masters
Level 4 Key skills	Level 4 NVQs	Level 4 BTEC HNDs & HNCs BTEC Professional Diplomas and Awards	Level 6 BTEC Professional Diplomas and Awards	Honours
			Level 5 BTEC HNDs & HNCs BTEC Professional Diplomas and Awards	Intermediate
			Level 4 BTEC Professional Diplomas and Awards	Certificate
Level 3 Key skills	Level 3 NVQs	Level 3 BTEC National Diplomas, Certificates & Awards BTEC Diplomas, Certificates & Awards A Levels		
Level 2 Key skills	Level 2 NVQs	Level 2 BTEC First Diplomas & Certificates BTEC Diplomas, Certificates & Awards GCSEs grades A* – C		
Level 1 Key skills	Level 1 NVQs	Level 1 BTEC Introductory Diplomas & Certificates BTEC Diplomas, Certificates & Awards GCSEs grades D – G		
Entry Level Literacy & numeracy		Entry Level BTEC Certificates in Life Skills BTEC Certificates in Skills for Working Life		

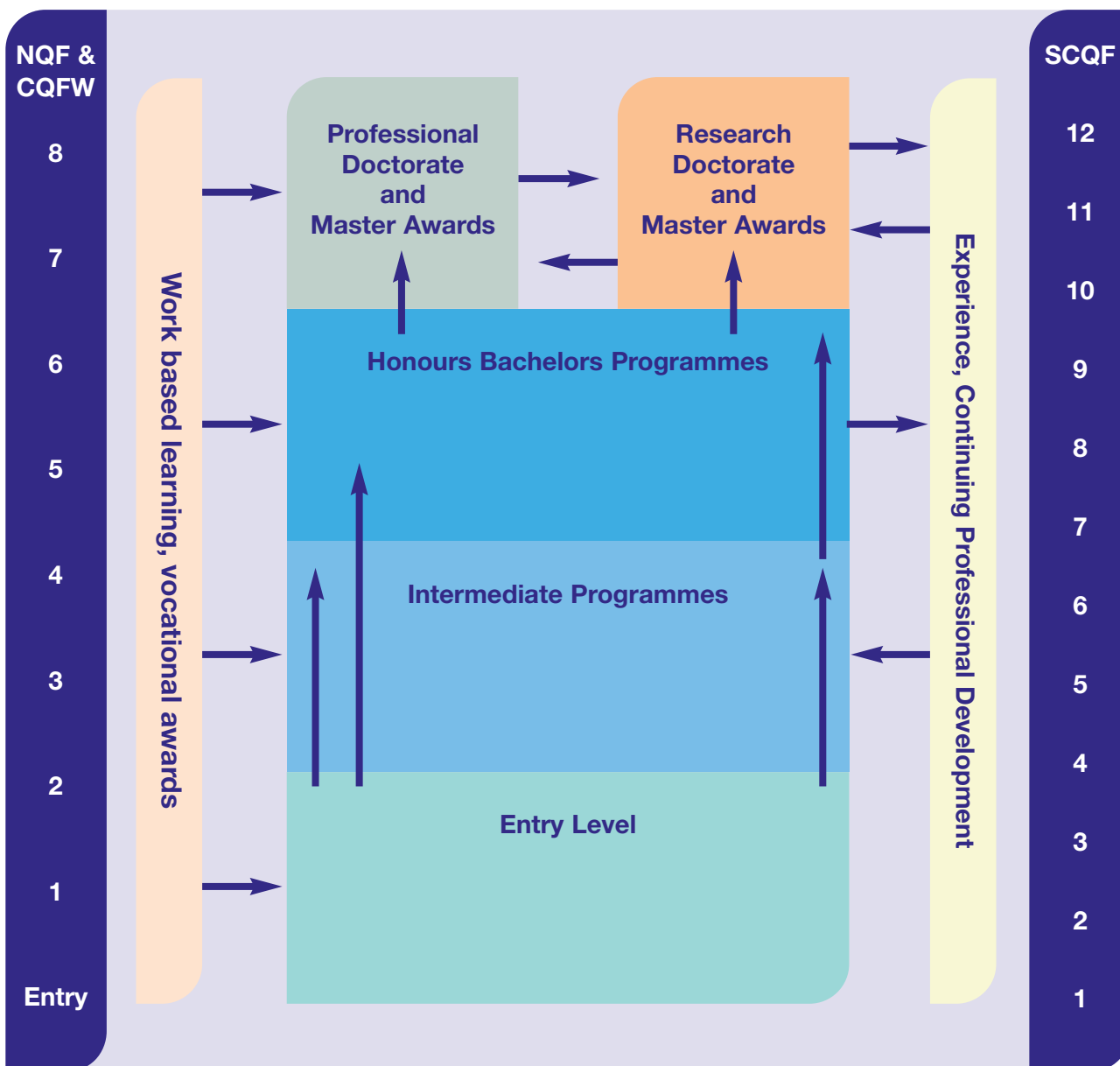
### Levelling Professional Education and Training Programmes

Within Healthcare Science, many education and training programmes are provided outside of Higher Education and outside of the awarding bodies for vocational qualifications. In many instances programmes are provided by professional organisations which determine the need for programmes, then design and provide them, assessing the suitability of the learner for practice.

Within a modernised education and training regime, these programmes would benefit from being independently validated and quality assured. The health sector as a whole would benefit if the programmes were levelled to show how they fit alongside other packages and programmes of learning. In many cases it might prove possible to incorporate a professional package or programme into a recognised award. In such cases robust assessment methodologies need to be developed to give academic credit to work based learning and continuing professional development.

Diagram 1 shows how different types of programme and different levels fit together.

**Diagram 1: The alignment of different types of education and training programmes**



## **The Awards and Qualifications Framework for Healthcare Scientists:**

### **Vocational Qualifications Regulatory Framework**

The NQF is being replaced with the Qualifications and Credit Framework. The introduction of the QCF in England, Wales and Northern Ireland is part of the UK Vocational Qualifications Reform Programme. Tests and Trials are being undertaken through to June 2008 for the QCF with the intention that qualifications that have been developed in response to the Sector Qualifications Strategy will be available from September 2008.

NQF Vocationally Related Qualifications (VRQs) currently have no standard for the titling of qualifications. The QCF is proposing that qualifications will be:

- Awards for up to 120 hours of learning time.
- Certificates for 121 to 260 hours of learning time.
- Diplomas for over 260 hours of learning time.

Awards, Certificates and Diplomas will be prefixed by the relevant level. The 'conventions' will be confirmed as an outcome of the Tests and Trials.

At present S/NVQs are qualifications which assess both 'doing' and 'knowing'. VRQs assess 'knowing'. They are developed from or mapped to the knowledge and understanding part of a NOS.

The qualifications regulators for England, Wales and Northern Ireland (QCA, DELLS and CCEA) have set out level descriptors for vocational qualifications. The summary descriptors for levels 1 to 8 are given in Table 10 opposite page.

**Table 10: Level descriptors for positioning units in the QCF tests and trials, QCA, DELLS and CCEA, 2006**

<b>Level 1</b>	Achievement at Level 1 reflects the ability to use relevant knowledge, skills and procedures to complete routine tasks. It includes responsibility for completing tasks and procedures subject to direction or guidance.
<b>Level 2</b>	Achievement at Level 2 reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. It includes taking responsibility for completing tasks and procedures and exercising autonomy and judgement subject to overall direction or guidance.
<b>Level 3</b>	Achievement at Level 3 reflects the ability to identify and use relevant understanding, methods and skills to complete tasks and address problems that while well defined have a measure of complexity. It includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgement within limited parameters. It also reflects awareness of different perspectives or approaches within an area of study or work.
<b>Level 4</b>	Achievement at Level 4 reflects the ability to identify and use relevant understanding, methods and skills to address problems that are well defined but complex and non-routine. It includes taking responsibility for overall courses of action as well as exercising autonomy and judgement within broad parameters. It also reflects understanding of different perspectives or approaches within an area of study or work.
<b>Level 5</b>	Achievement at Level 5 reflects the ability to identify and use relevant understanding, methods and skills to address broadly defined, complex problems. It includes taking responsibility for planning and developing courses of action as well as exercising autonomy and judgement within broad parameters. It also reflects understanding of different perspectives, approaches or schools of thought and the reasoning behind them.
<b>Level 6</b>	Achievement at Level 6 reflects the ability to refine and use relevant understanding, methods and skills to address complex problems that have limited definition. It includes taking responsibility for planning and developing courses of action that are able to underpin substantial change or development, as well as exercising broad autonomy and judgement. It also reflects an understanding of different perspectives, approaches or schools of thought and the theories that underpin them.
<b>Level 7</b>	Achievement at Level 7 reflects the ability to reformulate and use relevant understanding, methodologies and approaches to address problematic situations that involve many interacting factors. It includes taking responsibility for planning and developing courses of action that initiate or underpin substantial change or development, as well as exercising broad autonomy and judgement. It also reflects an understanding of relevant theoretical and methodological perspectives and how they affect their area of study or work.
<b>Level 8</b>	Achievement at Level 8 reflects the ability to develop original understanding and extend an area of knowledge or professional practice. It reflects the ability to address problematic situations that involve many complex, interacting factors through initiating, designing and undertaking research, development or strategic activities. It involves the exercise of broad autonomy, judgement and leadership in sharing responsibility for the development of a field of work or knowledge or for creating substantial professional or organisational change. It also reflects a critical understanding of relevant theoretical and methodological perspectives and how they affect the field of knowledge or work.

## Higher Education

The Quality Assurance Agency (QAA) has established level descriptors for higher education qualifications which indicate the principal outcomes that a student should be able to demonstrate following the successful completion of an award, for example;

- An Honours graduate will have developed an understanding of a complex body of knowledge, some of it at the current boundaries of an academic discipline. Through this, the graduate will have developed analytical techniques and problem-solving skills that can be applied in many types of employment. The graduate will be able to evaluate evidence, arguments and assumptions, to reach sound judgments, and to communicate effectively.

- An Honours graduate should have the qualities needed for employment in situations requiring the exercise of personal responsibility, and decision-making in complex and unpredictable circumstances.

These indicators and descriptors promote a clear understanding of the achievements and attributes of a particular qualification at each of the levels from Entry Level to Doctorate. They set out the attributes and abilities that can be expected from the student and holder of the qualification for each educational level.

The key word at HE Level, as advised by the University of Bradford, together with an example of outcome is given in the Table 11 below.

**Table 11: Key word HE Level descriptors**

Higher education Level	Outcome
Level I 'Understands'	<ul style="list-style-type: none"> <li>• Understands the macro-organisation of the kidney and adrenal gland.</li> <li>• Describes the normal structure and function of the nephron.</li> </ul>
Level II 'Applies'	<ul style="list-style-type: none"> <li>• Applies the concepts of auto-regulation to electrolyte balance and normotension.</li> <li>• Understands and performs basic renal function tests competently.</li> <li>• Calculates renal function using normal test data.</li> </ul>
Level III 'Analyses'	<ul style="list-style-type: none"> <li>• Determines the relationship between altered structure and function and appreciates the common pathophysiologies of the kidney and adrenal gland.</li> <li>• Performs a range of renal functions tests competently and can relate the results to the diagnosis and treatment including dialysis.</li> <li>• Evaluates the contribution of surgical and pharmacological intervention to renal function electrolyte balance and control of blood pressure.</li> </ul>
Level M 'Masters and evaluates'	<ul style="list-style-type: none"> <li>• Masters a comprehensive range of tests and techniques to assess renal and adrenal function.</li> <li>• Contributes to the treatment and care planning of patients in degrees of renal failure or malfunction, including diet, drugs and other specialist interventions.</li> <li>• Uses protocols, guidelines and research evidence to advance personal practice.</li> </ul>

Assessment of application is reinforced by retesting understanding and assessment of analysis is reinforced by retesting application. In this way the undergraduate curriculum revisits and reinforces learning from an earlier level. This we describe as a 'spiral curriculum'.

### **Determining Education and Training Credits which contribute to Awards and Qualifications**

An award is made up of a certain number of credits and the credits relate to individual modules and units of learning which are aggregated into whole awards. Higher education frameworks across the UK are based on one credit equating to ten notional hours of successful learning. Recommended minimum credit levels are shown in Table 12 together with the range of levels which can be included in an award and the maximum number of credits which can be gained at the lowest level.

It is possible that credits from one programme could be transferred to another programme to reduce the repetition of learning that some people experience. This transfer is not automatic, but an aim of this framework is to facilitate this process.

**Table 12: Recommended minimum credit values of postgraduate, graduate, undergraduate and associated qualifications**

Level	Qualification	Minimum number of credits	Range of academic levels and number of credits at highest Level	Maximum number of credits at lowest Level
D	Professional Doctorate	540	Levels (6), 7, 8 Min 360 at 8	Max 30 credits at Level 6
M	Masters Degree	180	Levels (6), 7 Min 150 at 7	Max 30 credits at Level 6
M	Integrated Masters Degree	480	Levels (3), 4, 5, 6, 7 Min 120 at 7	Max 30 credits at Level 3
M	Post-Graduate Diploma	120	Levels (6), 7 Min 90 at 7	Max 30 credits at Level 6
M	Post-Graduate Certificate	60	Levels (6), 7 Min 40 at 7	Max 20 credits at Level 6
H	Graduate Diploma	120	Levels (3, 4, 5), 6 Min 90 at 6	Max 30 credits at Level 3
H	Graduate Certificate	60	Levels (3, 4, 5), 6 Min 40 at 6	Max 20 credits at Level 3
H	Honours Degree	360	Levels (3), 4, 5, 6 Min 90 at 6	Max 30 credits at Level 3
I	Ordinary Degree	300	Levels (3), 4, 5, 6 Min 60 at 6	Max 30 credits at Level 3
I	Foundation Degree	240	Levels (3), 4, 5 Min 90 at 5	Max 30 credits at Level 3
I	Diploma in HE	240	Levels (3), 4, 5 Min 90 at 5	Max 30 credits at Level 3
I	HND	240	Levels (3), 4, 5 Min 90 at 5	Max 30 credits at Level 3
C	HNC	150	Levels (3), 4, 5 Min 30 at 5	Max 30 credits at Level 3
C	Certificate in Higher Education	120	Levels (3), 4 Min 90 at 4	Max 30 credits at Level 3

## **Accrediting Prior Learning and Experience**

Awards and Qualifications need to reflect contemporary education imperatives like lifelong learning, social inclusion, widening participation, employability and partnership. As a result, Higher Education Institutions recognise significant knowledge, skills and understanding which an individual may have acquired. Such learning may be recognised as prior learning which does not need to be repeated in a subsequent programme.

The QAA has set out five different types of prior learning:

- Accreditation of prior learning (APL)
- Accreditation of prior certificated learning (APCL)
- Accreditation of prior experiential learning (APEL)
- Accreditation of prior certificated and/or experiential learning (AP[E/C]L)
- Accreditation of prior learning and achievement (APL&A)

The QAA has also set out principles to guide the application of prior learning. These principles are included as Appendix 6.

Vocational learning has similar principles as above but it has proved very difficult to apply them in practice. The introduction of Credit and Qualifications Frameworks supported by mutual recognition, the use of shared units and the rationalisation of qualifications titles will assist in transferability and portability of credit.

## **Developing programmes with step off points**

Higher education delivered programmes up to and including Honours Level are usually developed as three year courses for school leavers. Many programmes in Healthcare Science will need to meet this requirement. However, others will be required which run to Certificate, Diploma or, in England, to Foundation Degree Level. Such an approach will help to widen access and provide stepping off points for those who do not wish to progress directly to Honours Level. These points are illustrated in Diagram 1, which also shows that beyond the initial education and training, packages of learning can support CPD and support extending practice.

Stepping off points are important for those who cannot complete a longer programme, especially if they can return to the programme at a later date. However, stepping off points will only ever provide a minority of entrants to a career. Specific entry qualifications linked to a role will remain the prime entry means.

## **Methodology for developing competence-based learning**

### **Using competences in developing packages of learning**

Qualifications or Awards are given for the successful completion of programmes of learning following a period of education and training. Success is demonstrated by assessment against the set learning outcomes. Programmes usually comprise a set of modules in the higher education context or a set of units, mapped to National Occupational Standards (NOS), in vocational qualifications.

The work to modernise Healthcare Science careers and pre-registration education and training has taken a competence, i.e. NOS based, approach. The methodology developed takes NOS and groups them into packages of learning which are topic based and which can be grouped into modules to suit the circumstances of education providers. A module is likely to comprise more than one package but different education providers may group packages in different ways perhaps to reflect modules which are already delivered to students in other healthcare programmes.

The SfH NOS describe a single function which can be placed as a whole into a package which in turn can be levelled. However, the HCS NOS as published in 2005 describe more than one function some of which may require higher level abilities than others. Thus, the HCS NOS cannot be placed as a whole into one levelled package.

In Higher Level qualifications, packages of learning will always comprise more than the sum of a set of NOS. They will include, for example, reasoning, critical appraisal and synthesis in order that an individual can develop the analytical, intellectual and interpretive skills needed in practice.

### **Assessment**

SfH has completed a project in Higher Education aimed at the initial identification of a typology of assessment in Higher Education. This will form the basis on an evolving document that will be informed by other work within the Skills for Health Higher Education strategy. It will also inform another evolving guidance document on using NOS in Higher Education. An extensive range of integrated work streams within Skills for Health is in hand to evolve, evaluate and inform the way educational pathways in Higher Education healthcare programmes can be initiated and devised. This activity will evaluate the roles of the key stakeholders in development work. It is being progressed through a number of demonstration sites which represent partnerships between SfH, local employers and education providers. Those involved are being supported by an infrastructure designed to help the participants to understand where NOS arise and how they can be utilised.

This work will offer recommendations and shape the strategic direction for the assessment of competence in practice, and will inform the detailed development of awards and qualifications in HCS.

### **Packages of learning**

Packages of learning are building blocks of differing sizes. Development work within the Healthcare Science programme suggests that packages of learning can be categorised into one of three groups:

- General, which is applicable to all Healthcare Science disciplines.
- Common, which is applicable to several disciplines but not to all.
- Specific, which is applicable to one discipline only.

The packages being developed are shown in Box 4. Each package sets out indicative content for learning, skills to be acquired and suggested learning outcomes. Each package can be delivered at different education and training levels depending on the roles and functions being supported. The general and common packages are available at Levels 4, 5 and 6. Summary descriptions of the packages are given for Level 5 in Appendix 7.

#### **Box 4: Suggested packages of learning for Healthcare Science**

##### **General**

- Audit.
- Communication.
- Data & Information Management.
- Ethical practice.
- Health & safety.
- Management – resources.
- Maths and Statistics.
- Multi-disciplinary working.
- NHS Policies, Priorities and Organisation.
- Personal Development.
- Problem solving.
- Quality management.
- Research.
- Service Improvement.
- Supporting professional practice learning.
- Underpinning science.

##### **Common**

- Analysis of data.
- Equipment and technology.
- Patients and carers.
- Quality.
- Reporting of results.
- Specimens and samples.

##### **Specific**

- Equipment and technology.
- Knowledge of disease processes.
- Knowledge of human body systems.
- Professional practice – theoretical and practical.
- Specialist science in own area of practice.

The general and common packages are available at Levels 4, 5 and 6.  
Summary descriptions of the packages for Level 5 are given in Appendix 7.

## Education and training programmes

### Programme design

Programmes and Qualifications are developed by grouping packages together. At the smallest level a programme may consist of one package, which might be taken to broaden or deepen knowledge and skills in a particular area and is likely to be part of Continuing Professional Development. Large programmes will comprise many packages drawn together to meet identified and funded needs. Given that some packages in Healthcare Science are general to all disciplines or common across some, many programmes will comprise parts which are shared across disciplines and maybe shared with disciplines outside of Healthcare Science, for example, with medicine, nursing or with the Allied Health Professions, as is already the case in many instances.

Packages of professional practice will in the main need to be workbased.

### Possible undergraduate programme structure

The development work undertaken by the University of Bradford has indicated that several approaches to Pre-registration education and training are possible.

Undergraduate programmes would have to:

- Cover the three broad areas of life sciences and genetics; physical sciences and engineering; and physiological sciences, or cover one of the three.
- Be flexible so that students could easily change disciplines.
- Produce graduates who were well rounded scientists with a good understanding of the fundamentals of their chosen discipline.
- Produce graduates who were flexible and comfortable with changing technologies and practice.
- Have stepping-off points which would allow students to enter the NHS after at a technical or associate grade after studying successfully to certificate or diploma level.

In addition a three year undergraduate programme could be extended into a four year integrated undergraduate degree of Master. The fourth year would contain a substantial research project, as well as deepening and broadening skills and understanding.

### **Opportunities and challenges**

The greater the extent that education and training can be shared across HCS disciplines, the more likely will it be that the following benefits would be secured:

- All Healthcare Science graduates would share some educational experience.
- Students would follow flexible pathways, i.e. they could choose their preferred discipline partway through the programme.
- Modules need not be specific to the Healthcare Science programme – consequently, students from other programmes could also take the modules, with the result that lectures could be delivered more economically to greater numbers of students.
- The multidisciplinary nature of the programme would promote closer ties between cognate faculties and should encourage interdisciplinary research.

Implementing a flexible broad-based programme such as that envisaged would present some challenges, including:

- Fitting the core requirements of the three disciplines into one cohesive programme.
- Reconciling the more rigorous mathematical requirements of the physics/engineering stream with that of the biological-related disciplines.
- Introducing some work-related competence-based modules into the undergraduate programme and designing bespoke modules for specific disciplines.
- Cross-faculty working in the administration of the programme.
- Fitting requirements for registration into programme design.
- Mapping the accreditation requirements of regulatory and professional bodies onto competence based programmes.

The approach to assessing competence in existing training-intensive courses would need to change in order to achieve the efficiencies of teaching large diverse groups envisaged. An approach based on module learning outcomes and course or stage output standards, as adopted in other sectors (e.g. UK Standard for Professional Engineering Competence, Engineering Council UK), would allow quality-assured competence while remaining within the normal higher education assessment regime.

### **Meeting employers' and individuals' needs**

Employers will need to give some direction in the types of Programmes and Qualifications to be offered. It is essential that workforce planning informs the development of programmes and that student numbers are not just left to the sum of student choices. Employers should profile the types of people to be recruited and specify their entry requirements. These aspects should be reflected in their education commissioning.

## 9. Specific applications

- **Introduction**
- **Catheter Laboratory Practitioner**
- **Nuclear Medicine Heart Scanning – Cardiac Stressing**
- **Critical Care Technology**
- **Renal Science Technology**
- **Pathology Support Roles and NVQ**
- **Audiology**

### Introduction

The approach taken in the Modernising Healthcare Science Careers Programme has been to develop competences which describe the functions undertaken in the various disciplines. These competences are building blocks, i.e. they are of little use in themselves. They need to be clustered together to describe roles and jobs and to build education and training programmes. These aspects have been described in chapters 6, 7 and 8.

The danger in the approach is that it can be theoretical or impractical or out of touch with reality. Reality and value are achieved by applying the building blocks to real life situations, to service improvement opportunities and to current workforce development issues. In return, these applications help to test the competences and the thinking on roles, jobs and education and training.

During the course of the programme, numerous opportunities have presented themselves to apply the competences and to assist with particular workforce development issues. The following are just a selection of detailed work undertaken. They have been chosen to demonstrate some of the practical opportunities that are apparent across the range of healthcare science.

### Catheter Laboratory Practitioner

A busy cardiac catheter laboratory in the East Midlands needs three separate qualified practitioners present for each procedure – a nurse, a radiographer and a cardiac physiologist. On occasions one of the three would be required to work in another area of the hospital meaning that cardiac procedures would be cancelled and then rescheduled. This lengthened waiting times, caused distress to patients and frustration to staff.

For some time the Consultant Cardiologist had considered cross training staff to allow them to cover for these absences but first needed to develop a coherent, robust and sustainable training programme. Using the Skills for Health competences, the functions of the roles and the competences needed to carry out those functions were identified. The functions and competences were identified separately for each of the three qualified practitioners.

The competences identified were mapped to the Learning Packages.

In sharing this work with a wider audience for information and comment, colleagues in the North West of England have offered to pilot an education and training programme as they were experiencing the same problems. They are now working with a local Cardiac Centre and a Higher Education Institution to develop a Graduate Certificate for a Catheter Laboratory Practitioner. Each practitioner will undertake training in a discipline different from their qualification. The education and training is based on the identified competences and wherever possible is undertaken alongside colleagues taking the full degree/diploma in that discipline. The assessment of Knowledge and Understanding and Professional Practice will meet the same requirements as for the full degree/diploma.

Following the successful conclusion and assessment of the pilot it is hoped to roll this programme out across the UK with the approval of the British Cardiac Society.

### **Nuclear Medicine Heart Scanning – Cardiac Stressing**

This piece of work was initiated by leading edge professionals within Nuclear Medicine sourced from across the UK by the British Nuclear Medicine Society led by Professor Isky Gordon, Chairman of the Education Committee. In parallel, a Skills for Health demonstration site for the 18 week diagnostic agenda at Central Manchester and Manchester Children’s University Hospitals was investigating Nuclear Medicine Cardiac Stressing service delivery by utilising a competence based approach to service redesign and delivery.

One aim of the work was to enhance the opportunity for an extended role by the different professional groups. Other aims were to offer solutions for reduced waiting times, improve throughput in the patient pathway, and to enhance diagnosis and reporting rates of clinical conditions thereby significantly improving patient outcomes.

Both groups worked independently in scoping their departments but nevertheless came to similar conclusions and identified similar issues. Subsequently Skills for Health enabled information to be shared between the two groups. The issues identified through scoping and sharing were:

- Long waiting times for reporting cardiac stressing tests.
- Bottlenecks in patient referrals and patient throughput.
- Professional silo working patterns exacerbating bottlenecks.
- Extended roles and new ways of working would address bottlenecks and lead to more timely completion of patient episodes.
- Inter-professional team working would reduce and, may, eliminate bottlenecks.
- Education and training provision for extended practice and new ways of working would be required.
- Technology changes initially reduce patient throughput because of staff training.

Work to address the issues included:

- Detailed process mapping to identify functions.
- Competence mapping of appropriate National Occupational Standards to identified functions.
- New ways of working, improved team working and cross discipline working investigated.
- Recruitment needs identified
- Education and training provision for new and extended practice investigated.
- Training for new technology, new roles and/or extended practice identified prior to implementation.
- New unifunctional National Occupational Standards would support a competence based education and training programme.

Some of these issues were addressed within the project time boundaries, but others were outside the project remit. The achievements to date include:

- Process mapping completed and mapped to National Occupational Standards for Career Frameworks 5, 6 and 7.
- Job descriptions in Manchester mapped to National Occupational Standards.
- Patient pathway critical factors identified.
- Pre stress patient preparation devolved to career framework 5 and 6 technical staff and nursing staff.
- New ways of working developed by extending roles of career framework 6 and 7 within the team identified and agreed in principle (Manchester and London).
- Cannulation training for technical staff completed to enable stress testing by technical staff at Career Framework levels 6 and 7.

An education and training programme in London has been identified as potentially suitable but further competence mapping is required before being certain.

## Critical Care Technology

Education and training for Critical Care Technology has been reviewed through collaborative working with the University of Westminster, the Society of Critical Care Technology Education and Training section and the Skills for Health Modernising Healthcare Science Careers Programme. It embeds competences within initial education and workplace training.

The draft Scope of Practice for regulation of Critical Care Technologists identified significant commonality with Clinical Physiology. Linking Critical Care Technology with an existing accredited and validated BSc course was considered the best option to deliver a sustainable, cost effective, pre registration course for critical care. Critical Care Technology functions overlap with Clinical Physiology functions within Respiratory, Cardiology and Neurophysiology as well as the technological aspects for equipment to sustain life systems in critical care, intensive care, high dependency, operating theatres and emergency care transport for adults and children.

It was realised that:

- Analysis of the core modules within the Clinical Physiology BSc demonstrates that they map well to the requirements for Critical Care Technology initial education and training.
- A BSc Clinical Physiology (Critical Care) would be relatively easy to set up as the current RCCP validated BSc Clinical Physiology only needs additional optional academic specialist modules and work based training in critical care.
- Furthermore, candidates who have undertaken the BSc Clinical Physiology in a related physiology discipline, i.e. Respiratory, Cardiology or Neurophysiology, could fast track into the specialist modules for Critical Care Technology.
- This fast tracking has the potential to increase the workforce in critical care and allow flexibility and transferability into other physiology disciplines.
- The University of Westminster has considered broadening the Clinical Physiology BSc modules to accommodate Critical Care knowledge and understanding. The Society of Critical Care Technology (SCCT) education and training division undertook the development of the clinical workplace training to adjunct to the academic modules which were developed by both SCCT and the University of Westminster Clinical Physiology Programme leads.

The Critical Care Technology workplace training has been mapped to Skills for Health competences.

As a result of this work a BSc in Critical Care Technology has been validated and accredited at the University of Westminster. It will commence in September 2008.

## Renal Science Technology

Renal Science Technology is one of the professions aspiring to regulation. It is a high priority area across the UK for delivering services in primary, secondary and domiciliary care.

At present, there is a lack of appropriate courses for BSc pre-registration education and training of new renal science technology staff.

Scoping and analysis of the BSc Clinical Technology core modules at Bradford University identified commonality with educational and workplace training requirements for Renal Science. Bradford University were willing to consider broadening their existing course to incorporate renal science technology as specialist modules. Clinical placement tutors are planned to deliver renal science technology and dialysis modules.

Through broadening the Clinical Technology BSc degree it was realised that:

- The BSc in Clinical Technology (Engineering) would be a good baseline programme on which to add specialist modules and work based training in renal science.
- Analysis of the BSc Clinical Technology indicates a good fit for Renal Science Technology pre registration education and training.
- Adding breadth to the BSc strengthens its sustainability over the longer term.
- Candidates who had undertaken a BSc in Clinical Technology (Engineering) could be offered the renal science technology modules and therefore fast track into renal science technology.
- This has the potential to increase the renal science technology workforce relatively quickly.

## Pathology Support Roles and S/NVQ

Widespread interest has been expressed in increasing the number of Pathology Support posts across the UK and in developing a suitable education and training programme for such staff. The extent of the support was assessed through a scoping event held in October 2006. The event was attended by 45 individuals from across the UK representing pathology laboratories, service management and human resources.

As a result of the level of interest, SfH has initiated work to incorporate Pathology Support units within the Health S/NVQ framework. The first stage of the development work was completed in October 2007. The preferred programme design has fed into the review of the Health S/NVQ.

It is anticipated that the revised S/NVQ will be a combination of:

- Core units
- General Clinical/Therapeutic Activities
- Pathology specific units
- Work Effectiveness units

In Scotland the qualification could be incorporated into the Allied Health Professional and Support SVQ or as a standalone SVQ.

Specific pathology related units include those relating to specimen preparation, which are listed in chapter 6.

## Audiology

The most thorough specific application worked up so far is in respect of audiology. A new role and education programme have been developed for audiology at Level 4 of the Career Framework. This is as a result of collaboration between the independent sector, the NHS, education providers, the Hearing Aid Council, the Department of Health and Skills for Health.

The new role at Level 4 fits the needs of both the independent and NHS sectors. In the independent sector, a range of providers employ Hearing Aid Audiologists. Their agreed scope of practice covers the assessment, non-medical management and rehabilitation of hearing impairment and hearing related disorders in adults, including the prescription and fitting of hearing aid systems. They are autonomous, professional healthcare practitioners and are regulated by a statutory body.

In the NHS, the role is very similar but there is supervision in the workplace by more senior colleagues.

Competences have been mapped onto the two roles and a combined list agreed by representatives of the profession.

A new education and training programme has been drawn up. The programme can be offered at HE Diploma or Foundation Degree Level. It is competence based, applying the National Occupational Standards to the packages of learning appropriate to Level 4 of the Career Framework. Some Higher Education Institutes are offering it as a validated programme.

Those involved in developing this Level 4 role are continuing to work together in order to develop audiology roles at Level 2 and 3, together with the required education and training.

## 10. Conclusions

The Modernising Healthcare Science Careers Programme was established to:

- Integrate the HCS NOS into the Skills for Health suite of competences.
- Populate the Career Framework with transferable roles.
- Develop coherent, competence-based education and training programmes.

In undertaking this work, the Programme built on the HCS NOS published and on the HCS Career Framework both of which were published in 2005.

During the two years of the Programme, there has been broad engagement and work with all sections of Healthcare Science across the UK and with relevant policy leads.

The HCS NOS have been incorporated into the SfH database of NOS. The generic HCS NOS have been rationalised. Some, e.g. those relating to research and development, have been broadened in scope to be applicable right across healthcare. Some have been replaced by other NOS that are more relevant.

The HCS Career Framework has been populated with a range of jobs.

The changing landscape across vocational and Higher Education has been described. This includes developing packages of learning which can be used as building blocks for education and training at all levels.

The SfH Healthcare Science Programme has taken the development of competences for HCS, role development, and education and training development on to a new level. Two further programmes are already under way to move on even further. One is the SfH Specific Function Project, which is revising the discipline-specific Healthcare Science NOS. The other is the Department of Health's Modernising Scientific Careers Programme.

The two Programmes are working closely together. Both are informed by the outcomes of the HCS Programme.

## Abbreviations

<b>AfC</b>	Agenda for Change
<b>APEL</b>	Assessment of Prior Experiential Learning
<b>CCEA</b>	Council for the Curriculum Examinations & Assessment in Northern Ireland
<b>CF</b>	Career Framework
<b>CPD</b>	Continuing Professional Development
<b>CQFW</b>	Credit and Qualifications Framework for Wales
<b>DELLS</b>	Department for Education Lifelong Learning and Skills in the Welsh Assembly
<b>DH</b>	Department of Health
<b>DIUS</b>	Department for Innovation, Universities and Skills
<b>EQF</b>	European Qualification Framework
<b>HCS</b>	Healthcare Sciences
<b>HE</b>	Higher Education
<b>HFM</b>	Health Functional Map
<b>KSF</b>	Knowledge and Skills Framework
<b>NOS</b>	National Occupational Standards
<b>NWC</b>	National Workforce Competences
<b>QA</b>	Quality Assurance
<b>QAA</b>	Quality Assurance Agency
<b>QCA</b>	Qualifications and Curriculum Authority
<b>QCF</b>	Qualifications and Credit Framework
<b>SEMTA</b>	The Sector Skills Council for science, engineering and manufacturing technologies
<b>SfH</b>	Skills for Health
<b>S/NVQ</b>	National and Scottish Vocational Qualifications
<b>SQA</b>	Scottish Qualifications Authority
<b>SCQF</b>	Scottish Credit and Qualifications Framework
<b>SQS</b>	Sector Qualification Strategy
<b>SSA</b>	Sector Skills Agreement
<b>SSDA</b>	Sector Skills Development Agency
<b>VQ</b>	Vocational Qualifications

# Appendix 1

## Healthcare Science Disciplines

### Life Sciences & Genetics

Analytical toxicology  
Anatomical pathology  
Blood transfusion  
Clinical biochemistry & toxicology  
Clinical cytogenetics  
Clinical embryology  
Clinical immunology  
Cytopathology including cervical cytology  
Electron microscopy

### Physical Sciences & Engineering

Biomechanical engineering  
Clinical measurement  
Diagnostic radiology (including MRI)  
Equipment management  
Maxillofacial prosthetics & reconstruction  
Medical engineering design  
Medical electronics & instrumentation  
Medical illustration

### Physiological Sciences

Audiology  
Autonomic neurovascular function  
Cardiology  
Clinical perfusion  
Critical Care Technology  
Gastrointestinal physiology  
Hearing therapy

External Quality Assurance  
Haematology  
Haemostasis and thrombosis  
Histocompatibility & immunogenetics  
Histopathology  
Molecular genetics  
Microbiology  
Phlebotomy  
Tissue Banking

Nuclear medicine  
Radiation protection & monitoring  
Radiopharmacy  
Radiotherapy physics  
Rehabilitation engineering  
Renal care science and technology  
Ultrasound & non-ionising radiation

Neurophysiology  
Ophthalmic science  
Respiratory physiology  
Sleep studies  
Urodynamics  
Vascular technology  
Vision science

## Appendix 2

### Members of the Modernising Healthcare Science Careers Programme Board, as at January 2006

Name	Designation	Organisation
<b>Joint Chairs</b>		
Nic Greenfield	Deputy Director of Workforce	Department of Health, England
Sue Hill	Chief Scientific Officer	Department of Health, England
<b>Members</b>		
Ian Barnes	National Clinical Leader for Pathology	Department of Health, England
David Bingham	Director of Human Resources	Department of Health, Social Services and Public Safety, Northern Ireland
Simon Brewer	Education Development Manager	SHA Healthcare Science Leads
Andrew Butcher	Programme Director	Skills For Health
Judy Curson	Director	Workforce Review Team
Owen Crawley	Chief Scientific Adviser	Welsh Assembly Government
John Day	Physiological Science Lead	Federation for Healthcare Science
Joan Fletcher	Education Commissioners	SW London Strategic Health Authority
Ashley Fraser	Medical Director	NHS Employers
Kath Galloway	Qualification for work	Dept for Education & Skills
Glynis Henderson	Principal Officer	Council for Curriculum Examinations and Assessments, Northern Ireland
Debbie Hilder	Healthcare Science Advisor	Workforce Review Team
Kath Hinchliff	Director of Education Commissioning	West Yorkshire Workforce Development Confederation
Pippa Hodgson	Programme Manager	Skills For Health
Keith Ison	Chair	Federation for Healthcare Science
Dianne Kennard	Genetics Lead	Department of Health, England
Jeff Lucas	Pro-Vice Chancellor	University of Bradford
Eileen Martin	Dean Faculty of Health & Social Care	Universities UK
Paul Martin	Director of Human Resources	Scottish Executive Health Department
Sharon McGuigan	Accreditation Advisor	Scottish Qualifications Authority
Candace Miller	Programme Advisor	Skills for Health
David Noyce	Regional Consultant South West	Higher Education Funding Council for England
Chris Pearson	Director of Workforce Planning	Skills For Health

Qualification	Designation	Organisation
Mike Pitillo	Principal, Robert Gordon University	Universities UK
Pat Saunders	Regulation Project Manager	Department of Health, England
Marc Seale	Chief Exec Officer Healthcare Professions Council	Health Professions Council
Ann Spinks	Vocational Qualifications Advisor	Qualifications, Curriculum and Assessment Authority for Wales (ACCAC)
Elaine Wilde	Sector Development Manager	Quality Curriculum Authority
Filao Wilson	Senior Quality Assurance Co-ordinator	Skills For Health
Kevin Wyke	Associate Director, Diagnostic Directorate	Greater Manchester SHA

Some people's designation changed during the course of the programme and some people were represented by alternates on occasions.

## Appendix 3

### Instructions – Career Framework Levelling Tool

The following descriptors have been developed and extensively tested to support the population of the Career Framework for Health. The descriptors have been organised into eight Domains. These Domains have descriptors which allow roles to be levelled onto one of nine levels and the Career Framework Tool aggregates these scores to provide a single Career Framework Level for the role. The descriptors have been developed using an action learning approach to support the levelling of all roles across the health sector. Therefore the descriptors for each level of each domain contain a number of statements and to be assigned a particular level the role only needs to meet one of these criteria and does not need to meet all the statements or all the statements included at lower levels for that dimension.

The tool is divided into eight Dimensions – and each dimension has nine levels.

Using a Job Description, look for phrases or explanations which match or demonstrate that a practitioner works at a particular level.

When you find a match, then mark it in the ‘Tick’ column with an ‘X’. You can put a number of Xs in a single box if you find more than one reference in the JD which matches. Note usually the descriptors mean AND/OR, so if you find evidence which matches any one of the options in the Description then mark an X.

You can have X in more than one level in a single dimension, because the tool will work out the highest level where you've placed an X and use that one. If the role doesn't really relate to a dimension (e.g. Research & Development) then just don't assign any Xs.

**NOTE**  
Enter 'X' into the Cells marked in GREEN – you can't change the other cells

YN1	Job Title
	Key Function
	Trust
04/05/2007	Date
Your Name Here	Assessed by

**CF Scores**

Descriptor scores	D Level
1. Knowledge, Skills, Training & Experience	
2. Supervision	
3. Professional and vocational competence	
4. Analytical/Clinical Skills and Patient Care	
5. Organisational Skills and Autonomy/Freedom to Act	
6. Planning, Policy and Service Development	
7. Financial, Administration, Physical and Human Resources	
8. Research and Development	
Overall	

1. Knowledge, Skills, Training & Experience	Level
<p>Recalls basic general knowledge and uses language, literacy, numeracy and information technology to carry out straightforward tasks. Shows understanding of a small number of routine work procedures gained through short induction or on the job training.</p>	1
<p>Recalls and comprehends basic knowledge of a work area. The range of knowledge involved is limited to facts and main ideas. Uses skills and key competences to carry out tasks where action is governed by rules defining routines and processes. Selects and applies basic methods, tools and strategies.</p>	2
<p>Applies knowledge to a work area that includes processes, techniques, materials, instruments, equipment, terminology and some theoretical ideas. Uses a range of work area-specific skills to carry out tasks and show personal interpretation through selection and adjustment of methods, tools and materials. Evaluates different approaches to tasks.</p>	3
<p>Uses a wide range of work area-specific practical and theoretical knowledge. Develops planned approaches to tasks that arise in work or study by applying specialist knowledge and using expert sources of information. Evaluates outcomes in terms of strategic approach used.</p>	4
<p>Uses broad theoretical and practical knowledge that is often specialised within a field and shows awareness of limits to knowledge base. Develops strategic and creative responses in researching solutions to well defined concrete and abstract problems. Demonstrates ability to transfer theoretical and practical knowledge in creating solutions to problems.</p>	5
<p>Uses detailed theoretical and practical knowledge of a work area. Utilises some knowledge that is at the forefront of the work area and will involve a critical understanding of theories and principles. Demonstrates mastery of methods and tools in a complex and specialised work area and demonstrates innovation in terms of methods used. Devises and sustains arguments to solve problems.</p>	6
<p>Utilises highly developed specialist/specialised knowledge covering a range of procedures and underpinned by relevant broad based knowledge, experience and competence. Uses highly specialised theoretical and practical knowledge some of which is at the forefront of knowledge in the work area. This knowledge forms the basis for originality in developing and/or applying ideas. Demonstrates critical awareness of knowledge issues in the work area and at the interface between different work areas. Creates a research based diagnosis to problems by integrating knowledge from new or interdisciplinary work areas and makes judgements with incomplete or limited information. Develops new skills in response to emerging knowledge and techniques.</p>	7
<p>Uses highly developed specialist/specialised knowledge to critically analyse, evaluate and synthesise new and complex ideas that are at the most advanced frontier of a work area. Extends or redefines existing knowledge and/or professional practice within a work area or at the interface between work areas. Researches, conceives, designs, implements and adapts projects that lead to new knowledge and new procedural solutions. Applies advanced specialist knowledge across a work area or over more than one work areas acquired over a long period OR in-depth specialist knowledge, experience and competence.</p>	8
<p>Applies advanced and highly developed theoretical and practical knowledge over a wide range of clinical, scientific, technical and/or management functions.</p> <p>Ensures all staff within area of responsibility have required skills and knowledge to deliver products of the highest standard and facilitates effective knowledge management to ensure evidence based practice and quality assurance.</p>	9

2. Supervision	Level
Works under direct supervision and demonstrates personal effectiveness in straightforward and stable contexts.	1
Works under close but not continuous supervision. Takes limited responsibility for improvements in performance in work contexts and within familiar, homogeneous groups.	2
Takes responsibility for completion of tasks and demonstrates some independence in work where contexts are generally stable but where some factors change. May have supervisory responsibilities.	3
Manages role under guidance in work contexts that are usually predictable and where there are many factors involved that cause change and where some factors are interrelated. Makes suggestions for improvement to outcomes. Supervises routine work of others.	4
Manages work independently that require problem solving where there are many factors some of which interact and lead to unpredictable change. Shows creativity in developing work. Work is managed rather than supervised; monitors performance of others.	5
Manages team and resources in environments that are unpredictable and require that complex problems are solved where there are many interacting factors AND/OR Demonstrates leadership for a work area. Shows creativity in developing projects and shows initiative in management processes that includes the development of others to develop team performance.	6
Demonstrates leadership and innovation in work contexts that are unfamiliar, complex and unpredictable and that require solving problems involving many interacting factors. Reviews strategic impact/outcome of the work or team.	7
Demonstrates substantial leadership, innovation and autonomy in work contexts that are novel and require the solving of problems that involve many interacting factors.	8
Takes overall responsibility for service area, ensuring goals, targets and quality benchmarks are achieved. Interprets policy and strategy to set goals and standards and directs services with responsibility and accountability. Provides leadership across a number of areas bringing strategic direction, innovation and influence through work practice.	9

3. Professional and vocational competence	Level
<p>Accepts guidance on work practice. Demonstrates awareness of procedures for solving problems.</p>	1
<p>Seeks guidance on work practice. Solves problems using information provided.</p>	2
<p>Takes responsibility for own development and work practice. Solves problems by integrating information from expert sources taking account of relevant social and ethical issues.</p>	3
<p>Demonstrates self-directed development and work practice. Solves problems by integrating information from expert sources taking account of relevant social and ethical issues.</p>	4
<p>Evaluates own practice and identifies development. Formulates responses to abstract and concrete problems. Demonstrates experience of operational interaction within a work area. Makes judgements based on knowledge of relevant social and ethical issues.</p>	5
<p>Consistently evaluates own practice and identifies development needs. Gathers and interprets relevant data in a work area to solve problems. Demonstrates experience of working within a complex environment. Makes judgements based on social and ethical issues that arise in work or study.</p>	6
<p>Demonstrates autonomy in the direction of practice and a high level understanding of development processes. Solves problems by integrating complex knowledge sources that are sometimes incomplete and in new and unfamiliar contexts. Demonstrates experience of managing change within a complex environment. Responds to social, scientific, clinical and ethical issues that are encountered in work or study.</p>	7
<p>Demonstrates capacity for sustained commitment to development of new ideas or processes and a high level understanding of development processes. Critically analyses, evaluates and synthesises new and complex ideas and makes strategic decisions based on these processes. Demonstrates experience of operational interactions with strategic decision making capacity within a complex environment. Promotes social and ethical advancement through actions.</p>	8
<p>Takes overall responsibility for service area, department or clinical pathway (to include financial and managerial responsibility). Critically analyses, evaluates and synthesises new and complex ideas and makes strategic decisions based on these processes. Demonstrates experience of operational interactions with strategic decision making capacity within a complex environment. Carries responsibility for policy implementation. May involve formulating long term strategic plans impacting across or beyond the organisation.</p>	9

4. Analytical/Clinical Skills and Patient Care	Level
Performs limited clinical, technical, administrative, or scientific tasks in a narrow area. May handle patient information.	1
Performs clinical, technical, administrative, or scientific tasks in a narrow area. Makes judgements involving straightforward work-related facts or situations.	2
Performs a wider range of protocol driven clinical, technical, administrative or scientific tasks. Makes judgements some of which require comparison of options.	3
Performs clinical, technical, administrative or scientific procedures. Makes judgements requiring a comparison of options.	4
Makes judgements requiring analysis, interpretation and comparison of options. Performs broad range of clinical, technical or scientific procedures.	5
Provides specialist clinical, technical or scientific services and/or advice. Makes judgements involving a range of complex facts, options, analysis and interpretation.	6
Provides specialist or highly specialist clinical, technical and/or scientific services, and may be accountable for direct delivery of part of service. Makes complex judgements.	7
Provides highly specialist clinical, technical or scientific services and/or advice, across a work area. Makes complex or highly complex judgements. Able to act as an expert in one or more service areas.	8
Provides clinical, technical, and scientific expertise and leadership which may be recognised at national and/or international level. May have corporate responsibility or lead provision of clinical, technical or scientific services which may extend beyond employing organisation.	9

5. Organisational Skills and Autonomy/Freedom to Act	Level
Works to established procedures/protocols.	1
Works to established procedures/protocols. May organise own day-to-day work tasks or activities.	2
Work within established procedures/protocols. May organise work tasks of others.	3
Plans straightforward tasks. Work guided by standard operating procedures/protocols.	4
Plan, organise and prioritise own work, activities and tasks.	5
Directs work activities of a team or others.	6
May be responsible for work area, specialist services or clinical pathways. May be accountable for direct delivery of part of service.	7
May direct and influence commissioning and/or service provision. May be accountable for direct delivery of part or all of a service/s.	8
Has responsibility and accountability for services, setting goals, standards and direction by interpretation of strategic policy and national strategy.	9

6. Planning, Policy and Service Development	Level
Follows procedures determined by others.	1
Follows procedures determined by others.	2
May suggest improvements to procedures or possible service developments.	3
May comment on procedures or possible service developments. May propose changes to working practices or procedures for own work area.	4
May develop procedures or propose changes to working practices or procedures for own work area.	5
Implement policy and propose changes to working practices or procedures. May plan complex activities involving liaison with others and/or over long time periods.	6
Proposes changes to practices or procedures which impact beyond own work area. May plan and/or organise a broad range of complex activities or programmes with formulation of strategies.	7
Proposes changes to practices or procedures which impact beyond own work area. May plan and/or organise a broad range of complex activities or programmes with formulation of strategies. May develop and implement policy and service developments which impact beyond own area of responsibility beyond organisation.	8
Plans or organises a broad range of complex activities and formulates strategy, and may develop policy and service developments which impact beyond own area of responsibility. May carry responsibility for policy implementation and policy or service development at directorate/division or organisational level or with other organisations and agencies. May involve formulating long term strategic plans impacting across or beyond organisation.	9

7. Financial, Administration, Physical and Human Resources	Level
Observes personal duty of care in relation to equipment and resources used in course of work.	1
Observes personal duty of care in relation to equipment and resources used in course of work. May be responsible for safe use of equipment used by others.	2
Responsible for safe use of equipment used by others. May assist in or carry out training related to own work activity. May have financial responsibility within strict guidelines.	3
Responsible for safe use of highly complex equipment. May be responsible for maintaining stock. Takes some responsibility for the training of others and may deliver training. When undertaking financial transactions works within organisational processes and policies.	4
Responsible for safe use of highly complex equipment. Trains others and develops team performance. Manages people and reviews performance of self and others. Contributes to administration and management of work area or department. Works within organisational processes and policies for financial and human resource activities.	5
May hold delegated budget. May be responsible for purchasing and/or maintenance of assets. Undertakes supervision and/or teaching and training inside/outside work area.	6
May be responsible for purchasing and maintenance of assets. Undertakes supervision and/or teaching and training. May devise training or development programmes. May hold a budget. Manages staff and/or services ranging in size and complexity.	7
May be responsible for purchasing and maintenance of assets. Undertakes supervision and/or teaching and training. May be responsible for overall delivery of teaching and training programmes. Likely to be a budget holder for one or more services and be responsible for physical assets.	8
Responsibility for delivery against local and national quality, financial and performance frameworks.	9

8. Research and Development	Level
May contribute to simple audits or surveys relevant to own work area.	1
May perform simple audits or surveys relevant to own work area.	2
Performs simple audits or surveys and may assist with occasional clinical trials or research projects.	3
May actively contribute to clinical trials or research projects within own work area.	4
May evaluate equipment, techniques and procedures. May undertake straightforward or complex audit or assist with clinical trials or research projects.	5
May also carry out R&D as a major activity. May regularly undertake clinical trials or research projects.	6
In addition to above, may initiate and develop R&D programmes.	7
In addition to above, may coordinate and implement R&D programmes and/or initiate and develop programmes with external impact.	8
In addition to above, may also be responsible for coordination of R&D programmes.	9

## Appendix 4

### Job Summaries

#### Physiological Sciences

##### Audiology

##### **CF8 – Consultant Clinical Scientist, Audiology Manager**

- To be accountable, with a high degree of autonomy, for the management and development of multi-disciplinary services for Audiology, and for hearing and balance rehabilitation in the Trust, including the provision of hearing aids, diagnostic audiology, specialised/complex rehabilitation, hearing devices and hearing therapy.
- To be responsible for overall Audiology Services including management responsibility for all staff employed including audiologists, Hearing Therapists, and assistant staff.
- To provide expert scientific input to the full range of diagnostic and rehabilitation audiological services available in the Trust.
- To lead the long-term strategic planning and ongoing development of audiology services and rehabilitation services for hearing and balance for the Trust.
- To provide advanced scientific clinical input to the adult and paediatric diagnostic and rehabilitation services including holding a caseload of patients.

##### **CF7 – Chief Audiologist, Adult Rehabilitation Service**

- To provide management of an evidence-based, comprehensive, adult rehabilitation service within the Hearing Centre.
- To work autonomously as an independent practitioner and lead specialist, taking responsibility for the delivery of a skilled performance of a broad range of work or activities, the great majority of which are complex and non-routine.
- To develop guidelines, protocols and care pathways while setting standards of care, ensuring the service provided is efficient, equitable and accessible for all patients.
- To provide clinical supervision, education and development of junior staff and students.

##### **CF6 – Senior Audiologist**

- To participate fully in the provision of audiology services & hearing care, to the adult population of the area.
- To provide a full and complete diagnostic, technical and rehabilitative assessment and management for individuals with audiological, vestibular and ENT complaints.
- To provide an expert clinical service in the rehabilitation of adults with hearing loss.
- To undertake clinical supervision, training and support for trainee staff, locum audiologists & medical students.

### **CF5 – Audiologist**

- To provide audiological services for the adult population of the Trust without direct supervision.
- To provide Audiology cover for ENT clinics, the provision of common Audiology techniques and a full hearing aid service, including, fitting, reassessments and repairs to NHS hearing aids.
- To provide an audiology service at community locations and through domiciliary visits.

### **CF4 – Associate Audiologist**

- To plan and perform investigations, following recommended procedures including Otoscopy, Audiometry and Tympanometry.
- To develop, deliver and maintain specified parts of a treatment plan.
- To undertake interventions, including taking ear impressions, undertaking ear mould fitting and modification, and selecting, programming, maintaining and evaluating hearing aid systems.

### **CF3 – Senior Hearing Assistant**

- To assist the audiology staff in the performance of their duties.
- To perform a wide range of routine tasks, including patient preparation and routine equipment maintenance.
- To liaise with senior staff in the delegation of duties and the management of the hearing assistants within the department.

### **CF2 – Hearing Assistant**

- To assist the audiology staff in the performance of their duties.
- To perform a wide range of routine tasks, including patient preparation and routine equipment maintenance.

## **Neurophysiology**

### **CF8 – Service Manager**

- To be accountable for the quality and standards of service delivery and be responsible for ensuring this is maintained to the full range of patients with neurological and/or psychiatric disorders referred to the department from across the Trust.
- To be accountable for the long-term strategic service provision planning and the negotiation of service level agreements as required.
- To undertake interpretation of results and provision of reports and assist junior staff in the process, overseeing all results and data entry for statistical purposes.
- To ensure all members of staff work together on a daily basis so contributing to the smooth and efficient running of the service.
- To be responsible for providing the education, training and supervision of junior staff, including members of the research group.
- To be accountable for ensuring ongoing quality assurance and audit within the department and on a regional basis.

- To be accountable and responsible for the procurement, effective use and quality assurance of all equipment.
- To ensure effective liaison with a wide range of staff both within and external to the Trust including medical, non-medical, clerical, manufacturers and support staff.
- To be accountable for the on call rota of the department, ensuring an emergency service is available at all times.
- To be responsible for liaison with other departmental and directorate managers as appropriate.

#### **CF7 – Highly Specialist/Advanced Clinical Neurophysiologist**

- To provide highly complex, specialist Clinical Neurophysiology service (s) to patients of all ages from a range of specialties suffering from a wide variety of medical disorders including those which may be neurological and/or psychiatric in nature.
- To be responsible for the provision, audit and quality of a specialist area of Clinical Neurophysiology Service delivery.
- To be responsible for the development and training of Clinical Physiologists (Neurophysiology) within the designated specialist area.
- To undertake interpretation of results and provision of reports.
- To work collaboratively on a day-to-day basis with others to ensure that service needs are met.
- To be responsible for the service delivery of an area and/or responsibility for the day-to-day management of the Neurophysiology service(s) in the absence of the Head of Dept.
- To provide advice to clinicians.

#### **CF6 – Specialist Clinical Neurophysiologist**

- To provide a complex, specialist Clinical Neurophysiology service to patients of all ages from a range of specialties suffering from a wide variety of medical disorders including those which may be neurological and/or psychiatric in nature.
- To undertake professional interest in a specialist area of Clinical Neurophysiology Service delivery.
- To undertake analysis of data and provide reports.
- To work collaboratively on a day-to-day basis with others to contribute to the smooth and efficient running of the service.
- To supervise junior staff
- To participate in training and education of junior and/or other staff groups.
- To participate in quality assurance, audit and/or research and development programmes.

### **CF5 – Clinical Neurophysiologist**

- To provide a complex, specialist Clinical Neurophysiology service to patients of all ages from a range of specialties suffering from a wide variety of medical disorders including those which may be neurological and/or psychiatric in nature.
- To undertake interpretation of results and provision of reports.
- To work collaboratively on a day-to-day basis with others to contribute to the smooth and efficient running of the service.
- To supervise junior staff
- To participate in training and education of junior and/or other staff groups.
- To participate in quality assurance, audit and/or research and development programmes.

### **CF4 – Associate Clinical Neurophysiologist**

- To provide routine EEG and assist with specialised Clinical Neurophysiology service across a limited range of procedure to patients of all ages from a range of specialties suffering from a wide variety of medical disorders including those which may be neurological and/or psychiatric in nature.
- To follow policies and procedures appropriate to the tasks under the auspices of registered practitioners.
- To participate in training, education and assessment in line with National and Professional requirements, including the use of analytical and judgemental skills in the analysis and provision of patient reports.
- To participate in quality assurance and/or research and developmental programmes.
- To work collaboratively on a day-to-day basis with others to contribute to the smooth and efficient running of the service.

### **CF3 – Assistant Clinical Neurophysiologist**

- To provide assistance in a complex, specialist Clinical Neurophysiology service to patients of all ages from a range of specialties suffering from a wide variety of medical disorders including those which may be neurological and/or psychiatric in nature.
- To work collaboratively on a day-to-day basis with others to contribute to the smooth and efficient running of the service.
- To supervise and train junior assistant staff.
- To follow policies and procedures appropriate to the tasks under the auspices of registered practitioners.

### **CF2 – Assistant Technical Officer, Clinical Neurophysiology**

- To provide assistance in a specialist Clinical Neurophysiology service across a limited range of procedures.
- To follow policies and procedures appropriate to the tasks under the auspices of registered practitioners.
- To use judgemental skills appropriate to grade and in accordance with agreed policies/guidelines/procedures.
- To work collaboratively on a day-to-day basis with others to ensure that the Clinical Neurophysiology Service (s) need is met.

## **Life Sciences**

### **Pathology**

#### **CF8 – Consultant Biomedical Scientist, Cytology**

- To act as the Lead Cytologist for the Trust for specific clinical matters under the direction of the Clinical Head of Department.
- To authorise cervical smear reports at all clinical levels.
- To liaise closely with all Clinical, Primary Care Trust and Health Authority departments concerned with cytology service delivery and training.
- To deliver a high quality, cost effective and timely Cytology Service.
- To develop the service to meet the national standards and the needs of service users.
- To ensure that the Cytology department maintains full CPA accreditation, and contribute to the directorate's continuing achievement of the requirements for accreditation by the Commission for Health Improvement, the Clinical Negligence Scheme for Trusts and Investors in People.
- To perform the full role of Hospital Based Programme Coordinator as defined by the NHSCSP (National Health Service Cervical Screening publications) ensuring that the Cytology and Colposcopy service meets minimum national standards.

#### **CF7 – Chief Biomedical Scientist, Specialist Chemistry**

- To act as a higher specialist registered Biomedical Scientist providing scientific services to patients and clients as an aid to clinical diagnosis, with particular responsibility for the provision of therapeutic drug monitoring, drugs of abuse screening (clinical, post mortem and forensic) and agreed general services.
- To be responsible for managing the operations of the laboratory maintaining an efficient and effective service and providing advice on technical issues.
- To be involved as a member of the laboratory management team in the strategic planning of the department service together with the formulation and implementation of departmental policies and practice affecting service delivery.
- To work with the laboratory management team to allocate staff and resources to maximum benefit and contribute to policy and practice change.
- To encourage the highest professional standards through personal and staff development.

### **CF6 – Specialist Biomedical Scientist Transfusion/Transplantation**

- To perform, analyse, interpret, document and report complex and specialist investigations in any diagnostic laboratory, e.g. Red Cell Immunohaematology, Histocompatibility & Immunogenetics, Reference Microbiology, Donation Testing or Research.
- To contribute to a clinical laboratory service leading to release of reports or products.
- To provide specialist advice to a range of service users.
- To act as a mentor and trainer for junior scientific and support staff.

### **CF5 – Biomedical Scientist, Microbiology**

- To assist in the provision of the Microbiology service in a timely, accurate and efficient manner.
- To sort and process pathological specimens received in the laboratory.
- To isolate, identify and perform antibiotic susceptibility testing on microorganisms.
- To interpret and report results via hospital computer system.

### **CF4 – Cytoscreener**

- To practice as a Cytoscreener in the Histology/Cytology department in the provision of an efficient cervical cytology screening service according to agreed policies and within available resources.
- To assist with the preparation of non-gynaecological specimens.
- To carry out routine work in the cytology department.
- To maximise the use of available resources under the supervision of the SDM and section leader for the cytology department.

### **CF3 – Healthcare Technician (Processing) Transfusion/Transplantation**

- To participate in the work of the Processing Department performing a range of routine and non-routine tasks, including processing of whole blood, pooling of platelet concentrates, secondary manufacturing and quality monitoring to exacting standards.
- To update production and quality records, take receipt of, and account for, incoming blood, samples and materials, dealing with queries from other departments.
- To provide support and training to less experienced staff in own area of work.

### **CF2 – Laboratory Assistant**

- To act as a Laboratory Assistant to provide a high quality pre and post analytical service to the specialist laboratories.
- To prepare potentially hazardous biological patient specimens for analytical processing.
- To perform high volume, accurate computer data entry in a timely manner.

## Genetics

### CF8 – Principal Clinical Scientist, Cytogenetics

- To be responsible for overseeing the day to day running of a specialist clinical cytogenetics service for leukemia and other cancers, including quality management and managing scientists and technical staff.
- To undertake extensive molecular genetic and cytogenetic analysis, interpretation and reporting of diagnostic results.
- To supervise the work of highly competent Clinical Cytogeneticists and technical staff.
- To support the Head of Cytogenetics with the managerial issues and deputise for them in their absence.

### CF7 – Senior Clinical Scientist, Molecular Genetics

- To perform a broad range of molecular genetic investigations in the provision of an effective and high quality service to patients.
- To manage the BRCA1 and BRCA2 mutation screening samples that have undergone partial analysis previously, including high throughput sequencing, data analysis on mutation surveyor and MLPA analysis.
- To check and authorise laboratory data and communicate effectively at all levels.

### CF6 – Clinical Scientist, Molecular Genetics

- To undertake the scientific duties and responsibilities of a Clinical Scientist in clinical molecular genetics in the provision of an effective and high quality service to patients.
- To take responsibility for delivering molecular genetic services for specific disorders, rotating between the service groups of the laboratory.
- To be personally responsible for her/his own work and time management and for an appropriate share of the workload of the laboratory.
- To assist in the training and the supervision of the work of technical staff and assist in the basic training of A grade trainee scientists in consultation with the Group Lead Clinical Scientist and Laboratory Training Officer.
- To collaborate and liaise with other members of the laboratory in all matters necessary to achieve the maximum efficiency of the service.

### CF5 – Genetics Technologist

- To work with senior members of the laboratory in providing an efficient and effective diagnostic laboratory service.
- To perform analyses on samples referred for a wide range of genetic disorders as directed by a registered clinical scientist.
- To provide technical support for the laboratory.

## Physical Sciences

### Biomedical Engineering

#### CF8 – Medical Devices Management Co-ordinator

- To co-ordinate all technical and engineering aspects of the Trust wide management and use of medical devices.
- To be the lead technical specialist for the Trust in dealing with incidents involving medical devices.
- To be responsible for the technical and clinical engineering input to the Trust's policies and practices to meet the need for safety and quality for Medical Devices, to meet National standards.
- To take a professional and management lead in coordinating areas of overlap between the Sections in the Department: Medical Equipment Management (MEM), Clinical Equipment Care (CEC), Medical Instrumentation and Computing (MIC).
- To be responsible for the Medical Device training in the Trust.
- To be the lead technical specialist for the Trust supporting the procurement of all medical devices, particularly writing specifications, performing technical evaluations and supporting the commercial process.
- To supervise Clinical Scientist trainees undertaking Medical Equipment Management training as part of a national scheme.

#### CF7 – Section Team Leader

- To be responsible for the management of staff working within their section and to be involved in all aspects of technology management within their speciality.
- To provide support to other specialities within the Department from time to time, covering for sickness and absence.
- To act as a directorate liaison technologist with regard to the use and application of medical devices within directorates.
- To assist teams within the Department with regard to the management of medical technology and equipment training.

#### CF6 – Electro-Medical Technician Servicing Engineer

- To carry out scheduled preventative maintenance, servicing, repair, calibration, safety and acceptance testing on a wide range of medical equipment, working to high standards of safety and accountability.
- To liaise with clinical and technical staff to identify faults and repair equipment, including working in clinical areas and with manufacturers.

#### **CF5 – Clinical Technology Technician**

- To provide in house maintenance and repairs for medical equipment owned by the Trust and equipment covered by contract or service level agreement for third party organisations, in line with MDA DB9801.

#### **CF4 – Multi Skilled Maintenance Electrician**

- To provide diagnostic and repair services principally to electrical, but also of a more general nature to plumbing, mechanical plant and equipment, steam installations, refrigeration and air conditioning services.

### **Nuclear Medicine**

#### **CF8 – Registered Principal Clinical Scientist in Radiation Physics**

- To manage and develop the Radiation Physics Section's work relating to scientific, technical and medical physics expertise support to diagnostic radiology departments thereby enabling the Trust and other contracted clients to comply with the statutory safety requirements for the safe use of ionising radiation.
- To fulfil the roles of Co-ordinating Quality Assurance Physicist and Medical Physics Expert in mammography to the Breast Screening Service on behalf of the Regional Quality Assurance Reference Centre.
- To provide radiation physics services and radiation protection advice relating to ionising and non-ionising radiation hazards within the Trust and to external clients.
- To instigate and carry out appropriate research and development work in radiation physics and protection.

#### **CF7 – Senior Clinical Technologist in Nuclear Medicine – Gamma Camera Operations**

- To work as a Nuclear Medicine Technologist, actively involved in all aspects of technical work required for imaging, non-imaging, in-vitro counting, therapeutic and radiopharmacy procedures.
- To be lead Technologist for cameras and computers.
- To work unsupervised and to supervise more junior staff.
- To rotate through all areas of the department including the satellite unit site and on occasion be the most senior MTO in that satellite unit.
- To take part in the organisation of the workload, giving guidance to more junior staff and liaising with technicians, medical, nursing and secretarial staff as necessary.

#### **CF6 – Specialist Clinical Technologist in Nuclear Medicine**

- To be part of a team of technicians, radiographers and physicists providing a clinical Nuclear Medicine service to patients of the Hospital.
- To bring particular interest, skills and experience in one major area of the work to the team, for example in techniques of advanced cell labelling, training and education or monitoring of clinical trials.

#### **CF5 – Clinical Technologist in Nuclear Medicine**

- To work as a Clinical Technologist in Nuclear Medicine, actively involved in all aspects of technical work required for imaging, non-imaging and in-vitro counting procedures.
- To work without close supervision and participate in the supervision of unqualified staff.
- The postholder will be required to rotate through all areas of the department and will be required (on a rota basis) to work in a satellite unit remote from the main department.
- The postholder is expected to assist with the organisation of the workload, liaising with more senior technicians, medical, nursing and secretarial staff as necessary. Flexible working practices within the department require that all staff work as a team to ensure that daily workload is fully covered.

#### **CF4 – Radioisotopes Supplies Officer**

- To be responsible for the day to day operation of the Radioisotopes Supply service to all NHS and non NHS customers, including the supply of FDG (FluoroDeoxyGlucose).

## Appendix 5

### Strategic principles for Awards and Qualifications in Healthcare Science

#### A. Congruence with the Career Framework for Health

The Healthcare Science Awards and Qualifications Framework maps onto the Career Framework for Healthcare Scientists and the Career Framework for Health which is being developed by Skills for Health. Both these frameworks use a nine stage Career Pathway.

The Healthcare Science National Occupational Standards (NOS) project has described the skills and knowledge needed by healthcare scientists to demonstrate their competence to perform designated roles within each healthcare science discipline. The Career Framework for Healthcare Science has been populated with roles described by competence (NOS) at each level of the career pathway.

#### B. Competence as a currency

Each healthcare science role has been described in terms of its constituent national occupational standards (NOS) which outline the skills and knowledge an individual practitioner must demonstrate to perform that particular role. The national occupational standards therefore create a currency for describing competence. Furthermore, national occupational standards can inform the learning outcomes of any programme of education or training where the demonstration of competence underpins the assessment strategy and the educational credit or currency of the award. Competence therefore is a powerful integration tool across the Healthcare Science Award and Qualifications Framework.

Using competence as a currency will realise the workforce vision for healthcare science where the skills and expertise required to fulfil healthcare science roles are described as competences and supported by national occupational standards. Education and training programmes will be designed to develop these competences mapped to the NHS Knowledge and Skills Framework, to Agenda for Change and other pay reward systems, and also linked to personal development planning and appraisal for each member of staff.

Adopting competence based education and training programmes with competence as the central currency provides:

- Education and training programmes explicitly designed and assessed to develop and validate competence and fitness to practice.
- Education and training programmes where the content, learning outcomes and assessment criteria are developed by a partnership of learners, education providers, commissioners, employers, and professional bodies to reflect service need.
- Clinical governance and workforce regulation underpinned by each employee's ability to demonstrate competence to practice.

- Workforce planning informed by the need for defined skills and expertise for local service delivery solutions and not the need to employ more staff with a particular occupational title.
- Flexibility of educational and training offerings: the workforce can easily respond to change and new demands as responsive education and training programmes deliver the skills and expertise to perform new and redesigned roles.

### **C. Transferability: a standard learning currency**

The granting of awards and qualifications will be more flexible and accessible so that different forms of achievement, including practical experience gained through work based learning, can be readily given an educational credit. This will be achieved by describing the knowledge and skills acquired in both academic and vocational learning environments through competence and valuing this competence development in a common transferable credit system.

This will widen access to both education and training (and to the achievement of awards) to a wider number of students and trainees from a greater range of social, cultural and work experience backgrounds. Work in Merseyside and Cheshire has demonstrated that HEIs can collaborate across institutions to provide flexible awards supported by a flexible credit currency.

### **D. Recognising the diversity of education and training providers**

Education and training opportunities for healthcare scientists are available through a range of providers, including those in the independent and other sectors. The Framework must allow for the learning from all educational opportunities to be valued consistently within an award structure.

### **E. Recognising the diversity of learning environments**

Currently, the education and training of healthcare scientists takes place in a range of formal and informal learning environments. Some programmes are delivered in academic institutions and require students to travel to these institutions for formal blocks of learning. Some are delivered through non-HEI awarding bodies, particularly at levels 2 – 4 of the Career Framework. Others are workplace based and are validated either through formal work based competence assessment or informally through personal development programmes, continuing professional development or lifelong learning objectives.

This diversity of learning environments should be explicitly extended. With the development of innovative learning technologies, learners can access education and training opportunities through a range of media. While these will still include experiences in higher and further education institutions, it is important to recognise that distance learning packages, e-based learning, mentoring, work based and other experiential learning opportunities are effective environments for delivering education and training where they are supported by robust assessment processes. It is important to explicitly recognise that different learning methods have differing benefits. An integrated learning programme will value the benefits of each approach (which will vary across approaches) and will blend them in any learning programme to maximise their potential for each learner.

Supporting best practice in e-learning emphasises the importance of adopting and using new delivery modalities to support accelerated learning for faster service transformation. There are benefits in blending a range of learning systems (for example, face to face delivery with technology based learning) in the design, delivery and support of education and training programmes.

## **F. Anticipating technological and scientific advances**

The consolidation of a research-based culture within the NHS is important to manage the ongoing integration of evidence-based practice into services. Policies for implementing clinical governance, improving the spread of research findings and introducing new technologies mean that healthcare scientists at all levels need to be research aware. Many need to be able to critically appraise and manage the implementation of research findings or to become active researchers.

## **G. Building more flexible careers for all healthcare scientists**

The Award and Qualifications Framework recognises that there are, within the Career Framework, stepping on and stepping off points which reflect each individual's ability, competences and professional aspirations. While there is a link between higher skill development, career progression and the demonstration of competence, and the acquisition of awards and qualifications, each individual healthcare scientist can renew and extend their skills and knowledge, transfer and progress at their own pace and according to personal preference, proven ability and organisational and service need. The requirements of continuing professional development will ensure that every healthcare scientist continues to demonstrate competence to practice at any given level within the Career Framework.

The Framework allows for:

- Multiple entry points enabling access for individuals from a wide variety of backgrounds.
- Flexibility of career paths to enable individuals to build on their knowledge and skills and develop in a variety of ways.
- The development of high levels of professional skills and knowledge where there is a service need for these.

The need to introduce innovative career opportunities for healthcare scientists is recognised across the four UK countries. Improving Health – Getting Results: A Strategy for Diagnostic Services in Wales (2003) recognises the central role played by healthcare scientists in the delivery of care.

## **H. Widening participation in the workforce**

Having a systematic framework for valuing the skills and expertise of a wide spectrum of the population will attract a diversity of students and trainees from a greater range of backgrounds to pursue a career in healthcare science in the NHS. The healthcare science workforce will better reflect the composition of the general population and will be well placed to provide culturally sensitive treatment and care. Additionally, by attracting a diverse workforce, there will be opportunities to expand the workforce to meet future demand if this is required.

## **I. Supporting multi-professional team working**

Actively developing multi-professional teams across the whole of healthcare to deliver patient centred services across traditional service boundaries makes the best use of the skills and knowledge staff have, where governance and safety is ensured through the acknowledgement of validated competence to practice. By breaking down the professional boundaries which say that only one professional group can provide a particular type of care, the contribution that all staff can make to providing patient care can be maximised.

## **J. Simplifying the delivery of education and training**

The introduction of the Awards and Qualifications Framework for Healthcare Scientists as a competency based accreditation framework which assigns credit across a flexible education and training system delivered in competency based modules is supported by the NHS Improvement Plan.

One of the challenges for education providers is to re-profile existing education and training programmes so that they explicitly develop competence in line with service need, and to develop a simplified award and qualifications structure supported by a standard credit system which enables the recognition and transfer of standard educational credits across all providers. Work to articulate credit frameworks across the four UK countries is already underway.

## **K. Education and training providers as awarding bodies**

While HEIs and other education providers will design, develop and sometimes deliver programmes of education and training in partnership with a number of audiences including learners, employers, commissioners of NHS services and professional and regulatory bodies, the responsibility for granting an award will rest solely with the designated educational provider.

These providers will have to comply with any legislative and other frameworks which inform the granting of awards including QAA national terms and definitions, regulatory requirements and any changes in legislation which impact on regulation, the Framework for Achievement, the National Qualifications Framework and the Higher Education Qualification Framework. Educational providers will also be responsible for using appropriate benchmarking tools such as the QAA benchmark statements in the design of learning.

## **L. Recognising informal learning and the award credit for vocational qualifications**

Different education establishments appear to have different criteria for accrediting prior knowledge and experience. There is a need to work with these establishments to define these criteria more consistently across the wider UK.

## **M. Encouraging horizontal progression of an individual's learning as well as vertical**

The design of the HCS Careers Framework and the associated 'blocks or units' of learning are correlated with educational level descriptors and therefore emphasise an award and qualification design based on vertical progression. The framework needs to demonstrate the value and importance of horizontal progression as well in order to meet the needs of service delivery into the future (SSA SfH 2006).

Maintaining the Science base within the NHS (page 8) is vital in relation to research and future development. Achieving this requires workforce redesign to support and protect the time of specialist staff, liberating them from functions that could be undertaken by others following appropriate educational preparation.

**N. Equipping the Healthcare Science Workforce with the Skills and Knowledge to carry out their designated Scope of Practice and Role**

Healthcare Scientists need to work to defined Scopes of Practice (SoP) and defined roles to guide the development of training manuals and facilitate consistent educational academic delivery. Training manuals need to be mapped back to competence-based roles and programme specifications.

**O. Having recognised step-off points from education programmes into defined generic roles**

Where education programmes last for more than one year, some participants may want or need to leave the programme part-way through. They may or may not be able to rejoin the programme at a later date. If these participants have passed the set assessments, they have knowledge and skills and should be employable.

Typically, but not exclusively, the principle of useful step-off points will apply to three-year HE Honours Degree programmes which lead to regulation as an autonomous professional. In this example, step-off points need to be applied at the end of Years 1 and 2 such that an individual who successfully completes the programme could become a Support Worker after Year 1, an Associate Practitioner after Year 2 and a Registered Professional after Year 3. It will also apply to Postgraduate programmes, where, for example, 180 credits are required for a full Masters degree. Step off points are available at 60 credits, Postgraduate Certificate, and at 120 credits, Postgraduate Diploma.

**P. Having negotiated learning provider opportunities for accreditation of workbased learning in a structured academic programme**

Much of a Healthcare Scientist's education and training is workbased but not accredited by a recognised education body. It is essential that such learning can be accredited as part, at least, of an award or qualification.

## Appendix 6

### Accreditation of Prior Learning

#### Principles as recommended in the guidelines published by the QAA September 2004

##### Policies and Procedures

###### Principle 1:

Decisions regarding the accreditation of prior learning are a matter of academic judgement. The decision-making process and outcomes should be transparent and demonstrably rigorous and fair.

###### Principle 2:

Where limits are imposed on the proportion of learning that can be recognised through the accreditation process, these limits should be explicitly stated. The implications for progression, the award of any interim qualification and the classification or grading of a final qualification should be clear and transparent.

###### Principle 3:

Prior experiential and/or certificated learning that has been accredited by an HE provider should be clearly identified on students' transcripts.

##### Information

###### Principle 4:

Higher Education providers should provide clear and accessible information for applicants, academic staff, examiners and stakeholders about its policies, procedures and practices for the accreditation of prior learning.

###### Principle 5:

The terminology, scope and boundaries used by an HE provider in its policies, procedures and practices for the accreditation of prior learning should be explicitly defined in information and guidance materials.

###### Principle 6:

Information and guidance materials outlining the process(es) for the assessment of claims for the accreditation of prior experiential and/or previously certificated learning should be clear, accurate and easily accessible.

###### Principle 7:

Higher Education providers should consider the range and form(s) of assessment appropriate to consider claims for the recognition of learning.

**Principle 8:**

The criteria to be used in judging a claim for the accreditation of prior learning should be made explicit to applicants, academic staff, stakeholders and assessors and examiners.

**Principle 9:**

Applicants should be fully informed about the nature and range of evidence considered appropriate to support a claim for the accreditation of prior learning.

**Principle 10:**

The assessment of learning derived from experience should be open to internal and external scrutiny and monitoring with an institutional quality assurance procedure.

## Roles and Responsibilities

**Principle 11:**

The locus of authority and responsibilities for making and verifying decisions about the accreditation of prior learning should be clearly specified.

**Principle 12:**

All staff associated with the accreditation of prior learning should have their roles clearly and explicitly defined. Full details of all roles and responsibilities should be available to all associated staff and applicants.

**Principle 13:**

Appropriate arrangements should be developed for the training and support of all staff associated with the support, guidance and assessment of claims for the accreditation of prior learning.

## Support

**Principle 14:**

Clear guidance should be given to applicants about when a claim for the accreditation of prior learning may be submitted, the timescale for considering the claim and the outcome.

**Principle 15:**

Appropriate arrangements should be in place to support applicants submitting claims for the accreditation of prior learning and to provide feedback on decisions.

## Monitoring and Review

**Principle 16:**

Arrangements for the regular monitoring and review of policies and procedures for the accreditation of prior learning should be clearly established. These arrangements should be set within established institutional frameworks for quality assurance, management and enhancement.

## Appendix 7

### Summary description of packages of learning at Level 5

General	A Healthcare Scientist will be able to:
Audit	Demonstrate a detailed knowledge of the main aspects of the audit process, the application and benefit to their work area. Undertake an evaluation of their own practice using a range of audit processes.
Communication	Reflect on and analyse communication skills in clinical practice with patients, carers, colleagues and other healthcare workers; underpinning their analysis with theoretical frameworks.
Data & Information Management	Manage data, clinical and non clinical, to meet the needs of the patient and service through gaining a wider understanding of data interpretation and its application within the NHS to meet HPC registration criteria on data management.
Ethical Practice	Have an understanding of ethical and moral practice in a health context and how that relates to an individual's practice. To include an awareness of research ethics.
Health & Safety	Working safely and have an understanding of health and safety legislation. Individuals will understand their role in contributing to health and safety in the work context. To include basic life support.
Management (Resources)	Have the personal resources (particularly knowledge, understanding, skills and time) to undertake a management role and review performance against agreed objectives.
Maths & Stats	Demonstrate an understanding of mathematics and statistics applied to clinical data analysis in healthcare science investigations and research.
Multi disciplinary working	Work with their team members and with other healthcare workers effectively to the deliver a patient centred service.
NHS Policy, Priorities and Organisation	Demonstrate an understanding of NHS Policies and Priorities, Equality and Diversity in the NHS as an organisation and in the community at large.
Personal Development	Demonstrate the skills and ethos needed by healthcare scientists to undertake continuing professional development in their field of practice throughout their career to maintain competence and, for registered practitioners, meet regulatory body requirements.
Problem Solving	Demonstrate problem solving strategies and skills including clinical reasoning.
Quality Management	Understand and apply underlying principles of quality management approaches in the areas of clinical governance and quality. assurance.
Research	Understand and apply research methods and techniques including research ethics to area of practice.
Service Improvement	Identify and take steps to implement service improvement within their area of responsibility.
Supporting professional practice learning	Have the skills and competence to support work based learning (self and others), assessing competence and how to develop strategies to overcome problems in learning.
Underpinning Science	Anatomy, physiology, chemistry and physics.

<b>Common</b>	
Analysis of Data	Have the knowledge and ability to analyse data in the context of an individual's work.
Equipment & Technology	Be able to maintain, operate and calibrate equipment & technology (applies where equipment is common across disciplines e.g. laboratory equipment).
Patient & Carers	Interact with patients and carers in a professional manner: communication, taking a history, privacy and dignity, advice, counselling and seeking views of service users.
Quality	Understand and apply quality control techniques to support area of practice, to include interpretation of quality data.
Reporting of results	Understand and apply the correct procedures for reporting of results and results interpretation for registered practitioner.
Specimens & samples	Understand and apply the correct procedures for the handling of specimens before, during and after analysis.
<b>Specific</b>	
Equipment & technology	Demonstrate the knowledge, operation, application, maintenance and calibration of specialised equipment relevant to the area of practice.
Knowledge of disease process	Specific & detailed.
Knowledge of Human Body Systems	Specific & detailed including pathophysiology.
Professional Practice – theoretical & practical	Skills and associated knowledge and understanding, as appropriate, including assessment, plan, perform, interpret, report, review, advise, rehabilitate.
Specialised science in own work area	Specific & detailed.



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