HINOS Review Project

Scoping Report and Gap Analysis

August 2009

HINOS Review Project

Scoping Report and Gap Analysis

Contents **Page**

1 Background

The Health Informatics National Occupational Standards (HINOS) were originally developed during 2003 to 2004, and submitted for approval by the Accrediting Bodies in February 2004. At the request of the Strategy Group at that time, the HINOS were given a relatively short period of accreditation (two years). A subsequent Review Project took place in 2006 to bring the HINOS in-line with changes in practice, changes to the overall approach to NOS and changes to 'imported' NOS.

There is now a need for further review and development work to be done in relation to the HINOS. This work will up-date the HINOS, and also provide the basis for them to be used for future qualifications and apprenticeship frameworks, the UK wide Career Framework, the Health Informatics Quality Scheme for Learning and Development and a range of workforce development activities.

This report provides direction and scope for the subsequent stages of the review project. It is based on the findings of desk research, telephone interviews, workshops and meetings.

2 Health Informatics

The overall purpose of Health Informatics has been defined as to:

> Enable, promote and support the effective use of data, information, knowledge and technology to support and improve health and health care delivery[1]

Therefore, the role of Health Informatics is to ensure an organisation has the required cost effective systems, information and technology services needed to provide excellent clinical care to its patients, in conjunction with its partners throughout the wider health community. The flow and quality of information is critical to the delivery of a service.

Many groups of staff in the health sector will have some health informatics skills as part of their overall skill set. For example, a clinical nurse will be required to review data and information, and complete records. However, the area of Health Informatics as a work domain is understood to be made up of the following staff groups:

- knowledge management staff
- information management staff
- ICT staff
- health records and patient administration
- clinical informatics
- HI educators and trainers
- project and programme management staff[2].

The main activities carried out by these groups of staff are summarised in Table One (below). Other groups of staff which also now fall into this domain are discussed in a later section of this report.

[1] Taken from the Functional Map for Health Informatics (Skills for Health 2004).

[2] These staff groups have been sourced from the Health Informatics Career Framework (HICF) 2009 – developed by Informing Healthcare and Connecting for Health.

Table One: Health Informatics staff and the work they carry out
Knowledge Management Staff in this area support health professionals and management staff in their education, training, development and professional practice. Access to knowledge may be through books, periodicals, databases and on-line resources.
Information Management Staff in this area use data, information and statistics and in order to plan, monitor and develop the health service. They work in one of the many different fields, including research and data analysis to support the provision of services to patients.
ICT Staff ICT staff run the internal and external electronic systems. This includes the hardware and software. ICT staff diagnose and fix faults with hardware and software and also support staff in their use of computers through the help-desk facilities. Roles in this area also help to develop and manage new applications and systems.
Health Records and Patient Administration Staff in this area collate, store and retrieve records used in diagnosis and treatment, and also provide essential administrative support to services. Accurate and accessible health records are now more vital than ever because many different healthcare professionals can be involved in treating an individual patient.
Clinical Informatics Staff Clinical Informatics staff are usually doctors, nurses or other qualified professionals who have moved into a part-time or full-time role in health informatics. Clinical informatics concerns the capture, communication and use of patient data and clinical knowledge by healthcare professionals. It also includes the development and implementation of electronic tools to support the whole cycle of clinical information.
HI Educators and Trainers Staff in this area support the effective use of computers through application and systems training. Staff in this area may also work in a general training, IT or clinical environment.
Project and Programme Management Staff There are a variety of roles within projects and project management. Roles here will involve managing the introduction and development of new information systems. A variety of staff make up the project team and all contribute to the effective implementation of successful projects.

3 The Health Informatics NOS

The existing Health Informatics NOS include a number of Skills for Health developed NOS, as well as NOS brought in from the work of other Sector Skills Councils. The NOS developed by Skills for Health are as follows:

HI 1 Manage risks to information
HI 2 Develop models for processing new data and information
HI 3 Identify and specify data and information requirements
HI 4 Collect and validate data and information
HI 5 Analyse data and information and present outputs of analysis
HI 6 Monitor, evaluate and improve the management of data and information
HI 7 Comply with an external audit of data and information
HI 8 Produce coded clinical data
HI 9 Prepare, conduct and report the results of a clinical coding audit
HI 10 Capture, organise and disseminate information and knowledge
HI 11 Appraise information and knowledge resources
HI 12 Promote and facilitate the use of information and knowledge
HI 13 Identify the needs of clinicians, patients and the public for communication, information and knowledge systems
HI 14 Develop a specification for communication, information and knowledge systems to meet the needs of clinicians, patients and the public
HI 15 Facilitate, and clinically validate, the development of communication, information and knowledge systems to meet the needs of an agreed specification
HI 16 Facilitate, and clinically validate, the implementation, evaluation and improvement of communication, information and knowledge systems to meet the needs of clinicians, patients and the public
HI 17 Facilitate the clinical audit process
HI 18 Search for clinical information and evidence according to an accepted methodology
HI 19 Critically appraise clinical information and evidence
HI 20 Develop evidence-based clinical guidelines
HI 88 Enable individuals to access and use information
GEN13 Synthesize new knowledge into the development of your own practice
GEN22 Communicate effectively with individuals
GEN25 Administer appointments
GEN29 Promote an information culture
GEN31 Initiate, and participate in, networks and discussion groups
GEN32 Search information, evidence and knowledge resources and communicate the results

HI1 to HI20 relate to the handling of data, information and knowledge, and therefore have broad coverage. They are relevant to Health Informatics staff, but are also of wider interest to other groups of staff. HI88 was retained by Skills for Health following the last review as a competence that would also have wider application to health sector staff[3].

The NOS that have been given a GEN prefix were originally developed for Health Informatics but were found to be of wider use to other groups of staff and therefore included in the Skills for Health generic NOS. Subsequently there has been further refinement to these NOS based on feedback from individuals working across the health sector as a whole[4].

[3] There is no record of why this NOS is still numbered HI88.
[4] Such changes have sought to make the NOS more widely applicable (e.g. the removal of the phrase 'patient appointments' to enable GEN25 to be used for all forms of appointments).

Many of the existing HINOS have been 'imported' from the work of other Sector Skills Councils (SSCs) and Standards Setting Bodies (SSBs). These include NOS developed by:

- Management Standards Centre (MSC)
- Lifelong Learning UK (LLUK)
- Institute of Customer Service (ICS)
- Engineering Construction Industry Training Board (ECITB)
- ENTO
- Council for Administration (CfA)
- E-skills
- Skills for Justice

4 Revising the HINOS

There will be significant freedom within the Review Project to revise HI1 to HI20, and HI88, should this be required. These NOS are focussed on Health Informatics functions and wholly within the remit of this project. Such changes would be led by feedback from practitioners and key stakeholders from the Health Informatics domain.

There will also be some freedom to make changes to the GEN NOS, although these are also subject to review by others and may well have to be considered in the light of additional feedback. In this case, the Review Project team would make recommendations concerning changes to the GEN NOS to Skills for Health, who would then refine the NOS at an appropriate time.

There is no freedom to make changes to the 'imported' NOS as these cannot be changed within the remit of this project. However, many of these imported NOS have already been reviewed by the originating bodies. For this reason they will need to be up-dated with the latest versions and these will also have to be checked for relevance.

5 Drivers for change

In the last few years since the current HINOS were developed there have been many changes and developments in the ways in which Health Informatics is delivered. These drivers for change were researched in the early stages of the project and then discussed at a workshop in July 2009[5]. Workshop participants were provided with an overview of likely drivers for change including technological change, changes in the delivery of service and change in the scope of Health Informatics.

Workshop participants identified the following kinds of technological change:

- Increased use of mobile technology and tele health
- Development of Web 2.0 leading edge changes
- Use of electronic records
- Growth of e-commerce
- Integration of medical devices with systems
- Development of decision support technologies and systems
- Making technologies safe to use
- Recycling and green technologies

These technological changes have impacted on the delivery of services and the support required from Health Informatics practitioners.

[5] The workshop took place on 16th July 2009 in Solihull and was attended by practitioners and stakeholders from across the domain of Health Informatics, including UK wide coverage.

Workshop participants also identified a number of changes to the ways in which services are delivered:

- Shift from centralised care to local delivery
- Increase in patients taking responsibility for their care
- Integration of health and social care, and lifestyle
- Map of medicine
- Trainers working with patients to train them in the use of IT and medical technologies
- The use of information for clinical, management and financial purposes
- The increased need for Information Governance
- The need for health economists

A number of other drivers were also identified by workshop participants:

- Data warehousing
- Introduction of standards in Wales - "One NHS"
- Business intelligence
- Benefits realisation
- Patient information groups
- Portfolio management
- Research led NHS

The drivers for change identified by the desk research and workshop participants will have a number of implications for the knowledge and skills of practitioners, and therefore the content of the HINOS. These possible changes in the knowledge and skills of practitioners are shown in Table Two (below). There is likely to be an increased need for clinical and technological knowledge. There is also likely to be an increased need for specialist skills such as systems analysis, and a continuing need for generic skills such as communication and change management skills.

Table Two: Possible changes in the knowledge and skills requirements of HI practitioners

Knowledge and Understanding	**Specialist Skills**
• The health context • Clinical knowledge • The national framework • Ethics • Data warehousing	• Operating and maintaining technological devices from a distance • Clinical engagement • Facilitating the interoperability of technologies • Systems analysis • Software development • Information Governance • Information security (specialist to health) • Rapid application development
Awareness	**Generic Skills**
• Awareness of new and emerging technologies	• Change management skills • Communication skills • Keeping up to date with technological change • Aligning actions with business requirements • Developing a business case • Research and evaluation skills

6 Updating the 'imported' NOS

The imported NOS have themselves been subject to review by the originating bodies since the current HINOS were established in 2006. The nature and extent of the changes have been explored as part of this scoping stage and can be found in Annex One. The table shows that the following imported NOS have been revised and will therefore require up-dating in the HINOS framework:

- Customer Services – currently being revised
- Management and Leadership – revised
- Information and Library Services – revised
- Administration – currently being revised
- Learning and Development – revised
- IT Professionals – newly revised versions available September 2009
- IT Users – newly revised versions available September 2009
- Skills for Justice – revised
- Skills for Health GEN - revised

The Management and Leadership NOS have been revised to include new NOS on knowledge management which are likely to be of relevance to the HI practitioners. The e-skills NOS for IT practitioners have also been revised to take into account many of the technological changes described in the previous section, since these are relevant to other sectors as well. The revised Information and Library Services NOS also take an up-to-date view of library and archive services with reference to information and knowledge management skills. Therefore, it is likely that the overall changes made to the 'imported' NOS should improve their relevance to Health Informatics.

7 New roles within Health Informatics

Although the development of NOS is mostly concerned with the functions or outcomes of work activities, rather than job roles, there have been a number of new roles emerge during the last few years that will need to be considered. The recently developed Health Informatics Career Framework (HICF) acknowledges the development of the following roles[6]:

- benefits realisation
- change management
- business analysis
- information governance
- health economists

It will be necessary as part of the review project to ensure that experts in these areas are actively involved in the consultation process.

8 Gap Analysis

Taking the outputs of the desk research and workshop as presented above it is possible to give an indication of the likely places where the HINOS will have to be revised, and also where there may be some gaps where further NOS are required.

Table Three (below) shows that refinements will be required to the knowledge and understanding contained within HI1 to HI20. It also shows that the ways in which the imported NOS have themselves been up-dated will be of importance to the project. It is very likely that revisions to the imported NOS have incorporated the issues identified in the table. If this is not the case then a different approach will be required, most likely looking at the development of new NOS.

[6] The Health Informatics Career Framework can be found at www.hicf.org.uk

Table Three also shows that the areas of information governance, health economics and the interoperability of technologies may constitute gaps that need to be addressed.

Table Three: Drivers for change and implications for HINOS	
Skills	**Implications for HINOS**
Clinical engagement	Likely to be of relevance throughout HI1 to HI20, particularly in HI13 to HI16
Facilitating the interoperability of technologies	A potential gap in the current HINOS, would need to check the recently developed HCS NOS
Operating and maintaining technological devices from a distance	A potential gap in the current HINOS, would need to check the recently revised e-skills NOS
Systems analysis	Should be covered by the revised e-skills NOS
Software development	Should be covered by the revised e-skills NOS
Information Governance	A potential gap in the current HINOS
Information security (specialist to health)	Should be covered by the revised e-skills NOS
Rapid application development	A concept and process for making improvements – should be covered in the e-skills NOS
Health economics	This is a new area and may constitute a gap in the current HINOS
Change management skills	Should be covered in the revised Management and Leadership NOS
Communication skills	Covered by GEN22, and other communication related NOS
Keeping up to date with technological change	Covered by GEN13 and other personal development competences
Aligning actions with business requirements	Should be covered in the revised Management and Leadership NOS
Developing a business case	Should be covered in the revised Management and Leadership NOS
Research and evaluation skills	Should be covered by the R&D NOS and also the recently developed HCS NOS
Knowledge and Understanding	**Implications for HINOS**
The health context	Likely to be of relevance throughout HI1 to HI20, particularly in HI1 and HI12
Clinical knowledge	Likely to be of increased relevance throughout HI1 to HI20
The national framework	Likely to be of increased relevance throughout HI1 to HI20
Ethics	Likely to be of increased relevance throughout HI1 to HI20
Data warehousing	Should be covered by the revised e-skills NOS
Awareness of new and emerging technologies	Covered by GEN13 and other personal development competences

9 Conclusions

It is likely that a number of changes will be required to up-date the HINOS. These can be summarised as follows:

- refreshing the list of imported NOS that are relevant to the Health Informatics domain
- revising and up-dating the content of the existing Skills for Health competences (HI1 to HI20, and HI88) based on the scoping report and further work with the project Reference Group
- revising the layout of the NOS to bring them into line with the latest Skills for Health template
- developing a small number of new NOS to cover the gaps identified in this scoping study

The process of refreshing the list of imported NOS should be the first stage of the review. It may be that other SSCs have revised and developed their NOS in such a way to provide improved coverage for Health Informatics. It may also be the case that some areas perceived as 'gaps' may be plugged by these new NOS. This will need to be evaluated with the support and input of the Reference Group.

Revising and updating the content of the existing Skills for Health competences (HI1 to HI20, HI88) is likely to focus on the knowledge and understanding component of the NOS. This is because many of the drivers for change identified in this report are about changes to the context within which practitioners work, rather than changes to the functions or purpose of the work. For example, an information management practitioner may still require HI4 'Collect and validate data and information' and this NOS is written in fairly broad terms. However, there may need to be more of an emphasis on working within a clinical information context and information security within the knowledge and understanding.

Skills for Health have now developed and agreed a new more user friendly presentation for their NOS. All Skills for Health NOS will be placed into this agreed layout. Therefore, the HINOS will also be revised and reformatted in accordance with this layout. The changes include removal of scope and the creation of an overarching Glossary of Terms.

A number of potential gaps have been identified as a result of the scoping of the project and at present these include the areas of information governance, health economics and the interoperability of technologies. Information governance has been a growth area over the recent years and this area warrants further exploration. Whether there are uniquely different functions involved in information governance, or whether this area brings together a different combination of functions should be discussed. This may be done through a focussed meeting with relevant experts in the field.

With regard to the area of health economics it is understood that such practitioners are few and far between. Their background is usually in economics which is increasingly being applied in a health context. Further exploration is required to identify the skills that are needed here and whether they are unique to health informatics. This can be done by using the Health Informatics Career Finder (HICF) in the first instance, which defines the role of health economist in terms of existing NOS and also includes an agreed job description. The project team will then gain access to one or two health economists via a telephone discussion.

With regard to the interoperability of technologies there appears to be a strong link with Healthcare Science here. It is understood that Health Informatics is increasingly aligned to Healthcare Science and the review project should have the opportunity to look at the recently revised HCS NOS from the perspective of Health Informatics. This is a gap that may well be plugged by the revised HCS NOS.

This report brings together the findings of the scoping study and gap analysis. As the work progresses there may be other issues and gaps identified in relation to the HINOS. However, the above actions should be initiated in the next phase of the project, during Sept to October 2009.

Annex One

Tracking Document – Imported NOS and notes on changes

Customer Services

2006		Revised 2006
ICS 3	Develop customer relationships	Subject to current review project
ICS 1	Give customers a positive impression of yourself and your organisation	

Procurement and Supply

September 2004		Unchanged	
PM 22	Select and agree a procurement strategy and procedure(s)	PM 22	Select and agree a procurement strategy and procedure(s)
PM 24	Develop contractual arrangements	PM 24	Develop contractual arrangements
PM 25	Review and select tenders	PM 25	Review and select tenders
PM 26	Verify contract arrangements are in place	PM 26	Verify contract arrangements are in place

Management and Leadership Standards

2006		2008	
A2	Manage your own resources and professional development	A2	Manage your own resources and professional development
A3	Develop your personal networks	A3	Develop your personal networks
B2	Map the environment in which your organisation operates	B2	Map the environment in which your organisation operates
B3	Develop a strategic business plan for your organisation	B3	Develop a strategic business plan for your organisation
B4	Put the strategic business plan into action	B4	Put the strategic business plan into action
B8	Ensure compliance with legal, regulatory, ethical and social requirements	B8	Ensure compliance with legal, regulatory, ethical and social requirements
C1	Encourage innovation in your team	C1	Encourage innovation in your team
C2	Encourage innovation in your area of responsibility	C2	Encourage innovation in your area of responsibility
C5	Plan change	C5	Plan change
C6	Implement change	C6	Implement change
D2	Develop productive working relationships with colleagues and stakeholders	D2	Develop productive working relationships with colleagues and stakeholders
D3	Recruit, select and keep colleagues	D3	Recruit, select and keep colleagues
D5	Allocate and check work in your team	D5	Allocate and check work in your team
D6	Allocate and monitor the progress and quality of work in your area of responsibility	D6	Allocate and monitor the progress and quality of work in your area of responsibility
D7	Provide learning opportunities to colleagues	D7	Provide learning opportunities to colleagues
E2	Manage finance for your area of responsibility	E2	Manage finance for your area of responsibility
E3	Obtain additional finance for the organisation	E3	Obtain additional finance for the organisation
F1	Manage a project	F1	Manage a project
F2	Manage a programme of complementary projects	F2	Manage a programme of complementary projects
F11	Manage the achievement of customer satisfaction	F11	Manage the achievement of customer satisfaction
F12	Improve organisational performance	F12	Improve organisational performance

Council for Administration (CfA)

September 2004		December 2006
103	Welcome visitors	Subject to current review project
209	Store, retrieve and archive information	
308	Monitor information systems	
310	Research, analyse and report information	

IT Users (e-skills)

2006		2009
216	Database software (IT User)	Subject to current review project
212	Use IT systems (IT User)	

Information and Library Services NOS

2006		2008
IL2/2	Identify and provide information and material required by users	The Information and Library Services NOS have been significantly revised and there is no one-to-one relationship to the new revised versions dated 2008. The revised NOS are called The Information and Library Services, Archive Services and Records Management NOS and include more focus on Knowledge Management.
IL3/1	Provide information and material to users	
IL3/2	Identify information and material required by user and its availability	
IL3/5	Organise information and material	
IL3/6	Index information	
IL4/1	Identify a strategy to meet a user's complex information needs	
IL4/2	Determine the requirements for information and material	
IL4/5	Educate users to make best use of the service	
IL4/10	Investigate the use of information and library services	
IL4/13	Abstract information	
R2/1	Provide authorised access to records	
R2/2	Protect records	
R2/3	Maintain the arrangement of records	
R3/2	Maintain and develop records classification system	
R3/5	Administer the current records system	
R4/9	Discover and organise information	

Employment NOS

September 2004		Revised	
G	Conduct an assessment of risks in the workplace	HSS6	Conduct a health and safety risk assessment of a workplace
A	Ensure your own actions reduce risks to health and safety	HSS1	Make sure your own actions reduce risks to health and safety
B1	Enable individuals to access and use information	-	*Removed by LLUK but retained by Skills for Health as HI88*
September 2004		**Unchanged**	
L3	Identify individual learning aims and programmes	L3	Identify individual learning aims and programmes
L4	Design learning programmes	L4	Design learning programmes
L5	Agree learning programmes with learners	L5	Agree learning programmes with learners
L6	Develop training sessions	L6	Develop training sessions
L7	Prepare and develop resources to support learning	L7	Prepare and develop resources to support learning
L10	Enable learning through presentations	L10	Enable learning through presentations
L11	Enable learning through demonstrations and instruction	L11	Enable learning through demonstrations and instruction

Employment NOS - *continued*

L12	Enable individual learning through coaching	L12	Enable individual learning through coaching
L14	Support learners by mentoring in the workplace	L14	Support learners by mentoring in the workplace
L15	Support and advise individual learners	L15	Support and advise individual learners
L16	Monitor and review progress with learners	L16	Monitor and review progress with learners

IT Professionals (e-skills)

September 2004	Subject to incremental review (largely unchanged)
Investigating and Defining Requirements at Level 3	Investigating and Defining Requirements at Level 3
Investigating and Defining Requirements at Level 4	Investigating and Defining Requirements at Level 4
Managing Software Development at Level 3	Managing Software Development at Level 3
Managing Software Development at Level 4	Managing Software Development at Level 4
Managing Software Development at Level 5	Managing Software Development at Level 5
Software Development - Component Creation at Level 2	Software Development - Component Creation at Level 2
Software Development - Component Creation at Level 3	Software Development - Component Creation at Level 3
Software Development - Design at Level 2	Software Development - Design at Level 2
Software Development - Design at Level 3	Software Development - Design at Level 3
Software Installation and Upgrade at Level 2	Software Installation and Upgrade at Level 2
Software Installation and Upgrade at Level 3	Software Installation and Upgrade at Level 3
Software Installation and Upgrade at Level 4	Software Installation and Upgrade at Level 4
System Management at Level 3	System Management at Level 3
System Management at Level 4	System Management at Level 4
System Management at Level 5	System Management at Level 5
System Operation at Level 3	System Operation at Level 3
System Operation at Level 4	System Operation at Level 4
Testing ICT Systems at Level 2	Testing ICT Systems at Level 2
Testing ICT Systems at Level 3	Testing ICT Systems at Level 3
Testing ICT Systems at Level 4	Testing ICT Systems at Level 4
Technical Fault Diagnosis at Level 2	Technical Fault Diagnosis at Level 2
Technical Fault Diagnosis at Level 3	Technical Fault Diagnosis at Level 3
Technical Fault Diagnosis at Level 4	Technical Fault Diagnosis at Level 4
Technical Fault Remedy Selection at Level 3	Technical Fault Remedy Selection at Level 3
Technical Fault Remedy Selection at Level 4	Technical Fault Remedy Selection at Level 4
Technical Advice and Guidance at Level 2	Technical Advice and Guidance at Level 2
Technical Advice and Guidance at Level 3	Technical Advice and Guidance at Level 3
Technical Advice and Guidance at Level 4	Technical Advice and Guidance at Level 4
Technical Advice and Guidance at Level 5	Technical Advice and Guidance at Level 5
Security of ICT Systems at Level 3	Security of ICT Systems at Level 3
Security of ICT Systems at Level 4	Security of ICT Systems at Level 4

Skills for Justice NOS

September 2004		December 2006	
A215	Evaluate, prioritise and review demands for services	HF27	Evaluate, prioritise and review demands for services
F402	Develop, sustain and evaluate collaborative work with others	AD2	Develop, sustain and evaluate joint work between agencies
F403	Develop and sustain effective working relationships with staff in other departments/organisations	AD1	Develop and sustain effective working relationships with staff from other agencies
F301	Develop and maintain a strategic overview of developments in knowledge and practice	HI2	Develop and maintain a strategic overview of developments in knowledge and practice

Other SfH listed NOS to consider in this area:

GEN27	Develop, sustain and evaluate collaborative working with other organisations
M&L D17	Build and sustain collaborative relationships with other organisations
MH82	Develop and sustain effective working relationships with staff in other agencies
MH79	Enable workers and agencies to work collaboratively
MH80	Explore, initiate and develop collaborative working relationships
MH81	Sustain and review collaborative working
HSC399	Develop and sustain effective working relationships with staff in other agencies

