



Learning to Manage Health Information: a theme for clinical education

Making a difference

Acknowledgements

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What is Health Informatics?

The following definition is generally agreed to sum up the scope of the Health Informatics discipline as it is currently practised.

‘The knowledge, skills and tools which enable information to be collected, managed, used and shared to support the delivery of healthcare and to promote health.’

Making Information Count: A Human Resources Strategy for Health Informatics Professionals, Department of Health October 2002

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Foreword



Healthcare is undergoing a paradigm shift, from Industrial Age Medicine to Information Age Healthcare. Information and communication technologies will play a pivotal role in facilitating this change and as these technologies mature and are embedded in clinical practice they will influence future delivery models of healthcare. This in turn will lead to fundamental changes in the way that clinicians are expected to practice. Clinicians need to be prepared for a world where adaptability will be a key to career development.

This Framework is founded on the premise that it is necessary to embed relevant elements of health informatics within both the undergraduate and postgraduate curricula to ensure that graduates are prepared to embrace these changes. This preparation goes well beyond mere training in IT skills and demands that all clinicians are prepared, not only for the technological challenges, but also for the changing social relationships and ethical challenges that IT-supported access to clinical information will bring about.

The current generation of clinical students has the advantage of having been brought up in a digital world. Research indicates, however, that for many their understanding of how technology can support and improve healthcare is superficial. They may be competent users of technology in their daily lives, but their appreciation of the likely impact of information systems and IT on future clinical practice is often minimal.

Whose problem is this?

A Problem for Education Providers?

The General Medical Council requires graduates of medical schools to have received appropriate education to prepare them for safe and effective practice. In the draft consultation version of *Tomorrow's Doctors* (2009), the GMC identified the following four areas as essential practice for doctors in respect of information and technology:

1. Keeping accurate, legible and complete clinical records.
2. Making effective use of computers and other information systems, including storing and retrieving information.
3. Complying with the requirements of confidentiality and data protection legislation and codes of practice in all dealings with information.
4. Accessing information sources and using the information in relation to patient care, health promotion, advice and information to patients, and research and education.

The Nursing and Midwifery Council's code stresses various aspects of practice which are increasingly related to health informatics competencies. Nurses must: respect people's confidentiality; use the best available evidence; know how to share information with colleagues; keep clear and accurate records and keep their skills and knowledge up to date. Clearly the clinical schools have a direct responsibility as this is not a training problem; it is education that is needed.

An NHS Problem?

It is expensive to take qualified health professionals away from patient care to attend conventional training and development courses. Consequently, training is often of necessity brief and pre-supposes an understanding of the broader issues, such as the interdependencies between systems and people, what technology can and cannot achieve and the implications for patient safety. NHS organisations will need to invest in regular training in the use of new technology and new systems but this should not be seen as a substitute for effective education.

A Problem for Individual Practitioners?

Once they are trained, healthcare professionals need to keep their knowledge and skills up to date. Continuing Professional Development in health informatics will help them to manage information and improve patient safety.

To summarise, future clinicians will be expected to be more effective than is now the case in acquiring, managing, and utilising information for clinical decision-making. *Learning to Manage Health Information* provides a framework that consolidates learning outcomes in health informatics for clinicians which should be embedded into all clinical educational programmes.



Professor Michael Thick, Chief Clinical Officer, NHS Connecting for Health

Section 1.0

Introduction

Learning to Manage Health Information (LtMHI) was first developed in 1999 to establish a common educational framework in health informatics for all clinical professionals at pre- and post-registration levels, in all areas of healthcare. Its key purpose is to ensure clinicians have an understanding of health informatics; it is not about producing health informatics professionals, nor is it designed to provide a formal or “required” core curriculum.

LtMHI aims to provide guidance and assistance for those responsible for the development and review of national and local education programmes, whoever might deliver them. The 2009 edition of LtMHI has continued the process of modifying the preceding editions in light of developments in clinical practice and technology. The key assumptions and guidance have been reviewed in consultation with a wide range of stakeholders who are concerned with commissioning, developing and delivering clinical education programmes.

The framework covers eight main themes associated with health informatics considered to be most relevant to clinicians:

- Protection of Individuals & Organisations
- Data, Information & Knowledge
- Communication & Information Transfer
- Health & Care Records
- The Language of Health: Clinical Coding & Terminology
- Clinical Systems & Applications
- eHealth: the Future Direction of Clinical Care

Separate consideration is also given to the essential information technology skills needed to support these themes.

To summarise, the key features of this framework are that:

- it concentrates on essential learning outcomes that are recommended to be incorporated into educational programmes
- it gives guidance on the level of clinical education at which outcomes should be embedded (first health professional qualification, post first qualification level and Continuing Professional Development, clinical and related management)
- it offers suggestions for sources of good practice and further information on the topics covered.

A key benefit of the framework is its role as a reference standard and benchmark. It can be used to inform and influence workforce and course development and help commissioners in the specification and procurement of local programmes.

Section 2.0

Health Informatics and Clinical Practice

In the *NHS Next Stage Review (NSR)* for England (DH, June 2008), Lord Darzi stated that quality is the organising principle for all health services and summarised the challenges being faced as:

- rising patient expectations;
- demographic changes leading to new demands on healthcare system;
- the continuing development of the “information society”;
- advances in treatments;
- the changing nature of disease; and
- changing expectations of the health workplace.

The NSR was complemented by a parallel review of informatics across the NHS in England¹. In the Foreword to the review, Professor Sir Bruce Keogh KBE, NHS Medical Director pointed out:

“From a clinician’s standpoint it is clear that we need an infrastructure that allows us to transfer patient-related information efficiently and securely, and helps us to assess our performance so that we can continue to improve; this is essential to the delivery of a high quality service.

...the requirement for information is a constant theme – information for those who are providing care, information for patients and the public to make choices about their care, information for clinicians and other care providers who wish to assess and improve their performance, and information for researchers, planners, managers and regulators to improve services. In meeting these needs maintaining the security of personal data is paramount.”

The extent to which informatics is now an integral part of contemporary clinical practice can be illustrated by considering the three principal areas of activity in healthcare:

1. **Working with the patient:** for example GP consultations, surgical procedures, phlebotomy, making an appointment.
2. **Recording the patient contact:** this includes making record entries (demographic as well as clinical) and communications with colleagues about the patient.
3. **Reflection and learning:** this includes personal learning, audit, research and use of information for service development, quality monitoring and planning.

¹*Health Informatics Review Report, DH, 10 July 2008* http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_086073

Section 2.0

Health Informatics and Clinical Practice (*cont.*)

These areas of activity can apply to the individual clinician (i.e. anyone who interacts with patients), or to healthcare organisations or, indeed, the Service itself.

Figure 1 opposite demonstrates the relationship between these areas of activity and how they are set in today's information-rich environment.

"Contribution to Patient Care" encompasses:

- The changing dynamics of the professional / client encounter, when both have approximately equal access to raw information and the sharing of information with peers and colleagues in a multi-professional cross-sector environment.
- Using the computer as an information tool during the professional-patient contact: reading records or results, writing to templates, taking account of guidelines and decision support, following pathways. However, it is not just the ability to use the computer as a tool for current discussions but also the ability to use it for accessing and inputting into care pathways and accessing sources of knowledge.
- Shared access to the records: increasingly patients will have access to their own health records and personal health data, as well as health and lifestyle information through systems such as HealthSpace (in England) and via unconstrained access to web-based material from other sources. Increasingly, patients will want to see their care plan and check on their schedules and appointments.

"Contribution to Clinical Record" includes:

- Understanding the basic aims and structures of information for care delivery in order to prioritise data for coding e.g. diagnoses and / or problems and interventions and understanding the critical importance of accuracy and data quality in this context.
- Writing to the record, or other forms of 'written' communication about patients.
- Writing records for use by others in different contexts; understanding how coded information on records will spread around the records system in the locality and beyond and how the contextual background of records can be lost in this process.
- Using common clinical terms that are understood in a multi-professional, cross-organisation environment.
- Patients accessing and contributing to their own records, e.g. clinical data from self-monitoring. The most important person to have details in the record is the patient. It is often the patient who is able to turn up with the relevant information, if they have been allowed access to it, whereas the hospital or GP can lose or not receive relevant information.
- Information governance, confidentiality and privacy issues.

“Maintaining and Confirming Competence” incorporates:

- Continuing Professional Development (increasingly through e-Learning).
- Audit, reports and review – accessing sources of knowledge for the purposes of professional updating
- Secondary uses of data such as research and service management.
- Being able to specify the data required for research purposes and then knowing how best to collect, analyse, interpret and present it for a wide range of purposes including service development.

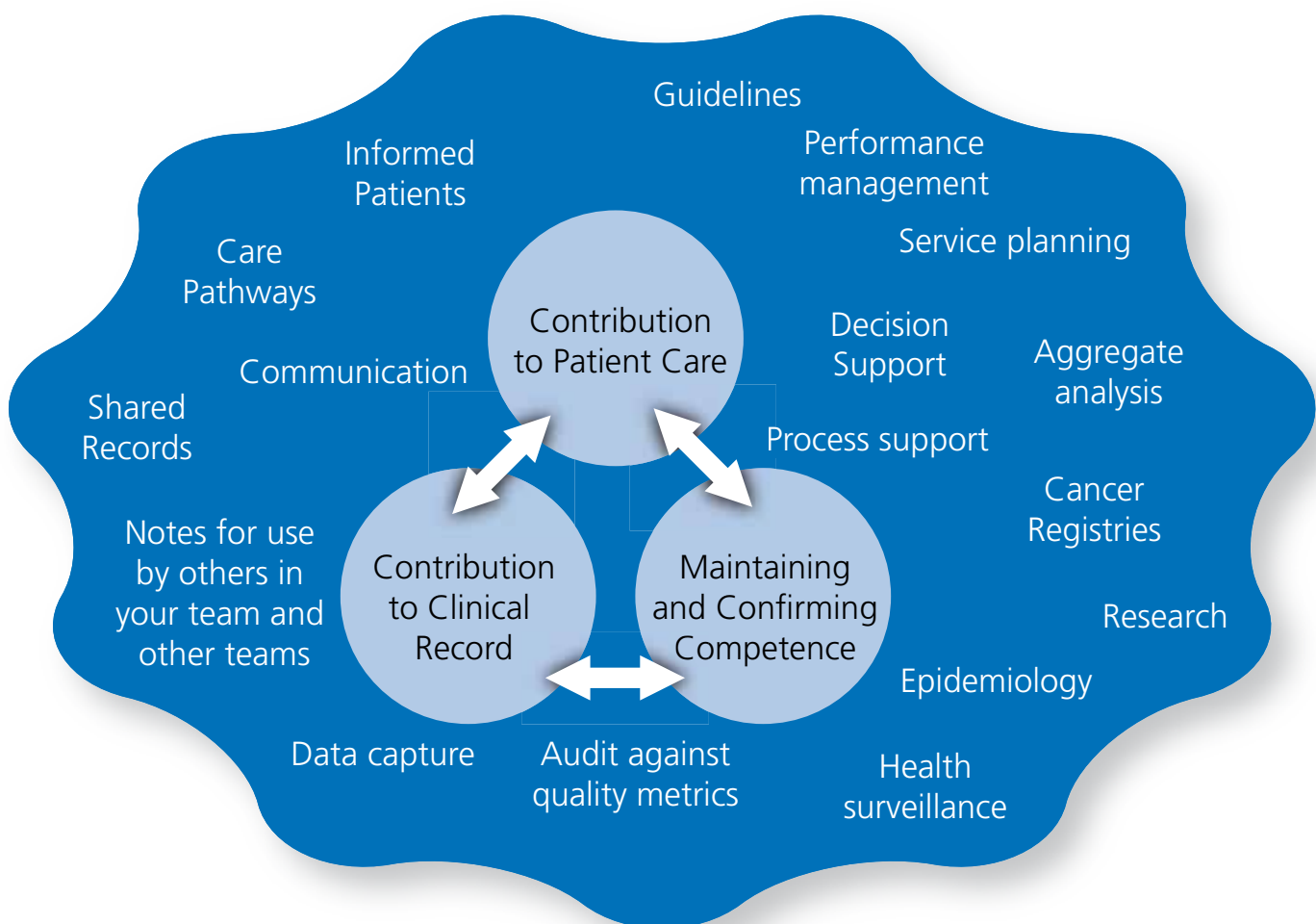


Figure 1: The Information-rich Clinical Environment

Section 2.0

Health Informatics and Clinical Practice *(cont.)*

- The main point of Figure 1 is to give an indication of how the various elements fit together and are inter-related. This is particularly true in respect of data quality, whether demographic (making the record in the notes of the right patient) or clinical (correctly representing the clinical status by appropriate clinical terminology). Team-working, use of care pathways, decision support and alerts, as well as review and reflection, all depend on this.

These elements of practice are reflected in Learning to Manage Health Information, which expresses the requirements in terms of learning outcomes for all clinicians. These skills and competencies are important today and will be increasingly so in the future.

Sources of further information

ABC of Health Informatics

Prof. Frank Sullivan & Prof. Jeremy Wyatt, Centre for Health Informatics, University of Dundee, April 2006, BMJ Books, ISBN: 978-0-7279-1850-5

Royal College of General Practitioners; curriculum statement on IM&T

http://www.rcgp-curriculum.org.uk/PDF/curr_4_2_IMT.pdf

Royal College of Nursing; eHealth

<http://www.rcn.org.uk/development/practice/e-health>

Royal College of Physicians Health Informatics Unit

<http://www.rcplondon.ac.uk/clinical-standards/hiu>

Modernising Allied Health Professions (AHP) careers: a competence-based career framework

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_086264

Allied Health Professions Federation

<http://www.ahpf.org.uk>

Section 3.0

Essential Information Technology Skills for Clinicians

In healthcare, the need for IT skills is now essential rather than optional. Clinical practice cannot be undertaken without accessing information systems and it is now expected that students and qualified clinical staff possess basic computer skills developed outside their professional lives. Most students at the start of their courses are familiar with email and internet search engines, whilst the use of social networking sites (e.g. Facebook) is popular. Today, all students use computers as an essential part of their studies.

It cannot be assumed however that *everyone* actually has acquired these essential skills, particularly older students and clinical staff, for whom IT may not have formed part of prior academic studies. Curricula therefore need to be flexible enough to ensure that all learners acquire the level of IT competence required to execute their professional duties, as soon as possible. (In some countries, an undergraduate student cannot enrol on a course until basic IT skills are confirmed.)

It is suggested that all learners are offered a self-assessment process to identify their IT training needs; opportunities must then be made available for the knowledge and skills gaps to be overcome. Proficient IT users may be used to provide peer support to less confident users.

Until early 2008 the NHS in England supported the European Computer Driving Licence (ECDL) as its referenced standard for IT competence. Two new qualifications have now been introduced to support the development of essential IT skills:

- **NHS ELITE** (NHS eLearning IT Essentials) covers essential IT skills, such as how to use a keyboard and mouse through to file management, web and email skills.
- **NHS Health** (NHS eLearning for Health Information Systems) covers essential information to ensure users comply with information governance, data protection and patient confidentiality requirements.

NHS Connecting for Health (NHS CFH) supports these qualifications through its Essential IT Skills Programme (EITS), offering access, testing and accreditation to NHS staff and non-NHS staff expected to work with National Programme for IT (NPFIT) systems and services, including students.

As a minimum, all clinical staff should attain the IT knowledge and skills provided by NHS Elite and NHS Health. (Additional details of the learning outcomes are included in Appendix 1.) However, it may well be that doctors, pharmacists, dentists and health scientists need to achieve a higher level of competence equivalent to that offered by ECDL. Indeed, these students should be encouraged to acquire the skills prior to undertaking clinical studies, as spreadsheets and databases are often part of research methods courses.

Section 3.0

Essential Information Technology Skills for Clinicians *(cont.)*

For student nurses, a dedicated programme to complement essential IT skills is scheduled to be available from late 2009. This has been developed by the British Computer Society Health Informatics (Nursing) Specialist Group, and Sheffield Hallam University Faculty of Health and Wellbeing. Systems of eCare will 'dock' alongside the current curriculum, made up of a self-taught series of six units, each equating to around 10 hours of study carried out on-line. The cost per student will be the responsibility of the Commissioning Agency (Strategic Health Authority / Primary Care Trust) and will be part of the contractual audit. The latest information about this and other related developments will be found on the ECDL pages of the BCS website listed below.

The other UK home countries have also recognised the importance of basic information technology skills and are addressing this in various ways.

Sources of further information

Essential IT Skills

<http://www.connectingforhealth.nhs.uk/systemsandservices/etd/eits>

European Computer Driving Licence (ECDL)

<http://www.bcs.org/server.php?show=nav.5829>

Section 4.0

Learning Outcomes and Sources of Further Information

The following sections provide a framework for the health informatics learning outcomes that are recommended for incorporation into clinical educational programmes.

Each section follows the same format:

- A description of the suggested learning outcomes for the relevant theme
- A recommendation for the level at which each learning outcome should be embedded into education programmes
 - Level A** First health professional qualification (undergraduate) level
 - Level B** Post first qualification (post-graduate) level or for Continuing Professional Development (CPD)
 - Level C** Clinical and related management development
- A brief discussion of the context for the particular learning outcomes of the theme
- Suggestions for sources of further information

All of the themes have a relevance and relationship to each other. For example, protection of individuals and organisations is dependent on the security of data, information and knowledge; health records are closely associated with coding and in themselves are used as the basis for communication with both patients and colleagues; clinical systems and applications provide the basis for eHealth initiatives.

The intentionally high-level approach, which describes generic learning outcomes mapped to key skills and knowledge should ensure consistent minimum standards across a range of educational programmes. This evolutionary approach provides an opportunity to incorporate and develop the generic learning outcomes into local curricula for each level, through appropriate QAA processes that include programme validation, to match individual educational programme objectives and design.

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- eHealth: the Future Direction of Clinical Care

Section 4.1

Protection of Individuals and Organisations

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate understanding of the conformance legislation, regulatory guidance and NHS protocols regarding the security and confidentiality of patient identifiable information.	A, B, C
2	Apply policies and practices in respect of requests from patients (or their representative) and clinicians for access to health records and related information.	A, B
3	Demonstrate understanding of the information governance and local "Caldicott Guardian" arrangements, and the implications for health record keeping.	B, C
4	Demonstrate understanding of the different arrangements and the associated responsibilities of clinical staff for security of all types of clinical information, especially electronically held, and for using such data for "secondary" purposes.	A, B
5	Demonstrate understanding of the purpose, principles and practice of clinical governance in health organisations, how patients can be involved and the implications of the emergence of the expert patient.	A, B, C
6	Explore the principles and practice of clinical audit and appreciate how this contributes to clinical governance, improving overall clinical practice, personal clinical practice and performance, and, if applicable, reaccreditation.	A, B, C
7	Demonstrate understanding of the various sources of information needed for effective clinical governance and audit, including access to appropriate evidence-based information.	A, B
8	Design and carry out audit with relevant supporting information.	A, B

The Relevance to 21st Century Healthcare

Ensuring the safety of everyone who comes into contact with health services is one of the most important challenges facing healthcare today. Central to this challenge is clinical governance, the process through which NHS organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care. Information governance is fundamental for addressing these requirements.

Information governance is about the structures, policies and practice necessary to ensure the confidentiality and security of information, especially clinical information, and the ethical use of that information for the benefit of the individual to whom it relates and for the broader public good. Whilst a key focus is the use of information about service users, it also applies to information and information processing in its broadest sense and underpins both clinical and corporate governance.

Information governance for health and social care is based on those elements of law and policy from which applicable information governance standards are derived, and the activities and roles which individually and collectively ensure that these standards are clearly defined and met. The ultimate responsibility for information governance in the NHS rests with the board and senior managers in every healthcare organisation. However, many professionally qualified NHS staff are bound personally by professional codes of conduct which reflect similar objectives.

Recent concerns about public sector data protection have resulted in the Cabinet Office mandating a range of standards for managing information risk, an important element of information governance. In healthcare these standards are reflected within the **NHS Information Governance Toolkit**, which all organisations are expected to complete annually. At the same time, any organisations that require access to IT applications or services provided by NHS Connecting for Health in England must sign the **Information Governance Statement of Compliance (IGSoC)** to provide assurance that they are meeting the relevant sub-set of security related information governance requirements. As a consequence, all staff in these organisations must be aware of and adhere to these standards.

Information sharing standards are at the heart of NHS business and clinical applications and access to electronic health records, whether by healthcare staff or patients, is a major information governance issue for all NHS organisations. The Care Record Guarantee sets out a national commitment to use patient records in ways that respect individual's rights and promote health and wellbeing.

Section 4.1

Protection of Individuals and Organisations (*cont.*)

All NHS users of NHS Care Records Service (NHS CRS) applications must be authenticated to an inter-governmental standard which requires a very high level of proof of identity based on two factors: a *Smartcard* bearing a unique electronic identification; and a *Passcode* known only to the user. All NHS organisations are required to set up a Registration Authority to operate this authentication process. The appropriate policies and use of smartcards and passcodes are fundamental to an organisation's ability to meet its responsibilities around the Care Record Guarantee and are central to its information governance responsibilities.

Sources of further information

Relevant legislation and any subsequent revisions including:

- Computer Misuse Act 1990
- Data Protection Act 1998
- European Directive on Data Protection 1995 (Directive 95/46/EC)
- Access to Health Records Act 1990
- Freedom of Information Act 2000

BMA Confidentiality Toolkit

http://www.bma.org.uk/health_promotion_ethics/confidentiality/ConfToolKit08.jsp

Care Record Guarantee

http://www.connectingforhealth.nhs.uk/crdb/docs/crs_guarantee

Confidentiality: NHS Code of Practice

<http://www.connectingforhealth.nhs.uk/systemsandservices/infogov/codes/confcode.pdf>

Healthcare Commission (from April 2009 the Healthcare Commission's work will be undertaken by The Care Quality Commission)

<http://www.healthcarecommission.org.uk>

<http://www.cqc.org.uk>

Information Commissioner's Office

<http://www.ico.gov.uk>

Information Governance Statement of Compliance

<http://www.connectingforhealth.nhs.uk/systemsandservices/infogov/igsoc/links/IG-Statement-of.pdf>

Information Governance Toolkit

<https://www.igt.connectingforhealth.nhs.uk>

Information Security Management: NHS Code of Practice

<http://www.connectingforhealth.nhs.uk/systemsandservices/infogov/codes/securitycode.pdf>

National Patient Safety Agency

<http://www.npsa.nhs.uk>

NHS Information Governance - Guidance on Legal and Professional Obligations

<http://www.connectingforhealth.nhs.uk/systemsandservices/infogov/codes/lglobligat.pdf>

National Care Records Service (England)

<http://www.connectingforhealth.nhs.uk/systemsandservices/nhscrs>

Patient Confidentiality and Access to Health Records

<http://www.dh.gov.uk/en/Managingyourorganisation/Informationpolicy/Patientconfidentialityandcaldicottguardians>

Registration Authority

<http://www.connectingforhealth.nhs.uk/systemsandservices/rasmartcards/stepguide>

Section 4.2

Data, Information and Knowledge

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate understanding of the relationship and differences between data and information and how both can be used to support clinical practice and service management.	A, B, C
2	Demonstrate understanding of the principles of effective quality control and validation of data and information in clinical practice.	B, C
3	Demonstrate understanding of the nature of decision support tools and how they are used to support clinical activity.	A, B
4	Summarise, evaluate, appraise and present information/evidence relevant to a particular healthcare issue obtained from accredited online and other sources.	A, B
5	Describe and demonstrate understanding of current key NHS initiatives and developments in the field of IT-based knowledge resources.	A, B, C
6	Demonstrate understanding of the implications of computerised care pathways and clinical guidelines for patient care.	A, B
7	Analyse sources of information about patient and public views and expectations for healthcare and related services.	B, C
8	List the range, purposes, benefits and potential risks of aggregating clinical data.	A, B
9	Outline the secondary uses of patient information for health research and managing & planning care.	B, C
10	Demonstrate an understanding of the use of patient data for research.	A, B
11	Understand how direct access to their records provides patients with evidence-based information to help them make decisions about self-care.	A, B

Data, Information and Knowledge Management

Getting the right data and information to the right people at the right time in the right form to inform decisions and make a difference is the essence of why patients consult with health professionals, whose ability to improve the health of the individual patient is paramount.

The consequence of not doing these things is suboptimal care, inefficient use of resources, preventable clinical errors, and limitations on the ability of patients and the public to take responsibility for their own health and care.

According to Ackoff²:

- Data consists of symbols that represent objects, events, and their properties.
- Information is data that has been made useful. Information answers the questions of who, what, where, when, and how many. Information is helpful in deciding what to do, not how to do it.
- Knowledge consists of instructions and know-how. Knowledge answers the how questions.

All clinicians need to appreciate the relationships and differences between data, information and knowledge in health, and how they each contribute to the effective delivery of care, patient safety and service management.

Data and Information Quality

Healthcare is increasingly an information-driven activity, and therefore, the quality of the underlying data assumes critical importance. Data are of high quality if they are fit for their intended uses in supporting processes, decision making and planning.

All clinicians need to be able to rely on the accuracy of information available in order to be able to provide timely and effective treatment for their patients. Consequently all healthcare organisations and their staff, including clinicians, have a responsibility to ensure the data and information they create and use is of the highest quality and fit for purpose, whether that is for local or national purposes.

²*Re-Creating the Corporation; Russell Ackoff, Oxford University Press, USA, ISBN 978-0195123876*

Section 4.2

Data, Information and Knowledge (cont.)

High quality information means better patient care and increased patient safety; it has to be:

- accurate
- contemporaneous
- free from duplication, (e.g. where two or more different records exist for the same patient), and
- free from confusion, (e.g. where different parts of a patient's record are held in different places, possibly in different formats, any fields that refer to the same entity need to be the same in each location and be maintained synchronously).

The learning outcomes for this theme bridge two activities:

1. creating and using patient-related data, and
2. accessing the 'knowledge base of health' (scientific research, guidelines, protocols, etc.).

The latter is commonly called Evidence-based Practice.

Evidence-based Practice

"Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research"².

Evidence-based practice is an approach to decision making in which the clinician uses the best information available, in consultation with the patient, to decide the option which best suits the patient. However, there is an increasing plethora of information sources available, both to clinicians and patients and these often disparate sources can make it difficult for decision-makers – both within and outside the NHS – to gain access to the information they need. There are also no guarantees that the information they do access is based on the best evidence available; even if it is based on the best available evidence there are so many gaps that the conclusions may not be perfect.

²Sackett, D., Rosenberg, W., Muir Gray, J., Haynes, R. Richardson, W. (1996). Evidence-based medicine: what it is and what it isn't. *British Medical Journal*, 312, 71-72.

From May 2009, a new service, NHS Evidence, established by the National Institute for Clinical Excellence (NICE) in response to the Next Stage Review, aims to ensure that health and social care practitioners have easy access to high quality information. It is a web-based service that will help people find, access and use high-quality clinical and non-clinical evidence and best practice. Built around a powerful search engine, the service will consolidate information from a wide range of sources in one central portal.

However, such information services do not replace the need for individual clinicians to develop critical appraisal skills, to help them to understand the methods and results of research and to assess the quality of that research. Clinicians need to be able to understand the value of different sources of information and their strengths and weaknesses. Most research is not perfect, and critical appraisal is not an exact science, but it can help in deciding whether a reported piece of research is good enough to inform a decision. These skills are essential to support the development and evaluation of clinical guidelines and care pathways, the making of informed decisions in individual patient circumstances, and the use of tools such as the Map of Medicine.

Secondary Uses of Information

Data and information are not just used for direct patient care. Clinicians also need to understand how aggregated data supports research, public health and the management of the health service. This is what is meant by 'secondary uses of information'.

The Secondary Uses Service (SUS) is the repository for information on NHS activity for performance monitoring, reconciliation and payments. The SUS is designed to provide data which is timely, "pseudonymised" (by allocating a consistent pseudonym to protect patient confidentiality), patient-based data and information for management and clinical purposes other than direct patient care. The "secondary uses" include functions such as healthcare planning, commissioning, public health, clinical audit, benchmarking, performance improvement, research and clinical governance.

Clinicians should be aware of the particular aspects of SUS, but more generally, should understand the implications, in terms of both the benefits and the risks, for producing quality data and of aggregating data and information.

Section 4.2

Data, Information and Knowledge *(cont.)*

Sources of further information

NHS Evidence

<http://www.nice.org.uk/aboutnice/nhsevidence/AboutNHSEvidence.jsp>

BMJ Best Treatments

<http://www.besttreatments.co.nz/btgeneric/home.jsp>

Department of Health; Information policy

The development and ongoing implementation of the Department of Health's IT strategy.

<http://www.dh.gov.uk/en/Managingyourorganisation/Informationpolicy/index.htm>

Health Protection Agency

<http://www.hpa.org.uk>

Information Centre for Health and Social Care

<http://www.ic.nhs.uk>

International Council on Medical & Care Compunetics

A knowledge centre making information on medicine and care available to patients and professionals, as well as distributing information on the use of compunetics in medicine and care.

www.icmcc.org

Map of Medicine

<http://www.mapofmedicine.com>

Medicines and Healthcare Products Regulatory Agency

<http://www.mhra.gov.uk>

NHS Connecting for Health Information Quality Assurance Programme (Data Quality)

<http://www.connectingforhealth.nhs.uk/systemsandservices/data/dataquality>

NHS Direct New Media

<http://www.nhsdirect.nhs.uk>

NHS Institute

<http://www.institute.nhs.uk>

National Institute for Health and Clinical Excellence

<http://www.nice.org.uk>

National Library for Health (part of NHS Evidence)

<http://www.library.nhs.uk>

National Patient Safety Agency

<http://www.npsa.nhs.u>

Research Governance Framework for Health and Social Care

<http://www.dh.gov.uk/en/Researchanddevelopment/A-Z/Researchgovernance/index.htm>

Secondary Uses Service

<http://www.connectingforhealth.nhs.uk/systemsandservices/sus>

Social Care Institute of Excellence

<http://www.scie.org.uk>

Health Informatics Learning Lab (at Swansea University)

<http://www.wales.nhs.uk/ihc/page.cfm?orgid=770&pid=33680>

Section 4.3

Communication and Information Transfer

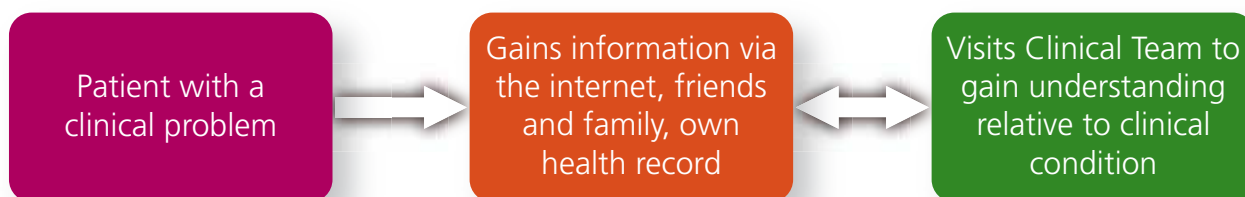
Description of Learning Outcomes		Applicable Level of Education
1	Explore and describe the information flows which take place between different sectors of health and social care.	A, B, C
2	Demonstrate understanding of different communication methods and technologies and their appropriate application in support of clinical practice.	A, B
3	Analyse why recorded information might vary between practitioners and understand the nature and importance of <i>shared meaning</i> for inter-professional communications.	B, C
4	Demonstrate understanding of, and evaluate the communications arrangements between different professionals in a team and with other professionals in related services.	A, B
5	Demonstrate understanding of the principles of acceptable, effective communications and information exchange with patients and carers and be able to demonstrate how this can be achieved in clinical practice.	A, B
6	Ability to effectively send and receive information from other professionals, in written or electronic formats within guidelines of confidentiality and security.	A, B
7	Review the current arrangements for electronic communications with patients or carers and the scope for further development.	B, C

Changing Practices of Communication in the Information Age

"In the past we've given knowledge to clinicians who've then passed it on to patients, now our principles are that we give knowledge to patients and give them the opportunity to discuss it with clinicians."

Sir Muir Gray – NHS Chief Knowledge Officer

The greater availability of and access to information has had a profound impact on the relationship between clinicians and patients. Clinical professionals are no longer defined by the knowledge they have and dispense in the consultation; the professional role is becoming more educative, interpretive and one of brokerage as far as knowledge and information are concerned. This concept is illustrated opposite:

Previously*Now and in the future***Figure 2: The Changing Professional Role**

Increasingly more patients (or their relatives) will have researched their condition, treatment, drugs etc before or after face to face communication with their clinician. Consequently, clinicians need to be aware of information to support patient communication from a variety of sources available both to the clinician and the informed patient; e.g. NHS Choices, NHS National Library for Health, NHS Scotland and NHS Wales e-Libraries, Map of Medicine, other consumer health websites, PubMed, etc.

Clinicians need not only to communicate appropriately with patients, but also with colleagues and teams of health professionals, for multi-disciplinary care or for inter-agency and cross-boundary information sharing and exchange and, indeed, for their own education, training and professional development.

To support all forms of communication, clinicians will need to be comfortable using a range of different technologies and to understand which might be appropriate to a particular communication, e.g. email, mobile phones/SMS, online meetings, live messenger and videoconferencing, and increasingly social networks, for example LinkedIn and Facebook. At the same time they must be aware of requirements for sensitive and secure data handling.

Section 4.3

Communication and Information Transfer (*cont.*)

Sources of further information

Communication with Patients: A Quick Reference Guide for Clinicians

http://www.arhp.org/upload_Docs/QRGcommunicating.pdf

Communication Skills Resources

A collection of resources has been setup by East Anglia Communications skills cascade facilitators to promote and support the teaching of communication skills in healthcare.

<http://www.skillscascade.com>

Health Communication Research Centre

Cardiff School of English, Communication and Philosophy, Cardiff University

<http://www.cardiff.ac.uk/encap/research/hcrc>

Journal of Health Communication

School of Public Health and Health Services, The George Washington University

<http://www.gwu.edu/~cih/journal>

Journal of Health Communication

Taylor & Francis, Inc., Philadelphia, PA 19106

<http://www.tandf.co.uk/journals/titles/10810730.html>

Patient Education and Counselling; Elsevier

http://www.elsevier.com/wps/find/journaldescription.cws_home/505955/description

Email Consultations in Health care

- Car J, Sheikh A (2004) Email consultations in health care: 1—scope and effectiveness. *BMJ*, Aug 2004; 329: 435 - 438.
- Car J, Sheikh A (2004) Email consultations in health care: 2—acceptability and safe application. *BMJ*, Aug 2004; 329: 439 - 442.

Section 4.4

Health and Care Records

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate understanding of the purpose, basic structures, use and storage of patient health records, including paper-based and electronic patient records, and patient held records.	A, B
2	Demonstrate an understanding of the differences and importance of both structured, coded records and free text.	A, B
3	Demonstrate understanding of the importance of the primary care sector in the creation and collation of electronic healthcare records.	A, B, C
4	Demonstrate understanding of the level of access required to different parts of the personal health record.	A, B
5	Demonstrate understanding of consent models, confidentiality and security to ensure appropriate individual and team access to patient records.	A, B, C
6	Understand and discuss the implications of patient held and patient accessible clinical information for inter-professional clinical practice and multidisciplinary care.	B, C
7	Demonstrate understanding of the implications of the integration of patient identifiable clinical information within the NHS.	A, B
8	Demonstrate how to support patients when accessing their full GP record, maximising the benefits and minimising the risks.	B

Health Records in the Digital Age: Implications for Clinical Practice

Health records serve many purposes in the modern healthcare environment, but fundamentally they are the foundation of high quality, safe patient care. All clinical practice in the UK increasingly relies upon the electronic storage and communication of patient records and electronic communication of records. Currently primary care leads the way in their use through, for example, GP2GP (the electronic transfer of records between Practices). The deployment of new clinical systems in the hospital sector will increasingly impact on acute care and parallel the changes already occurring in General Practice.

Use of health records can be divided broadly into primary and secondary functions. The record's primary function is to support direct patient care by acting as the basis of evidence for individual clinicians, supporting clinical decision making and providing an

Section 4.4

Health and Care Records (*cont.*)

important means of communication with colleagues and with the patient. The record's secondary function is to provide a legal record of care given and act as a source of data to support clinical audit, research, resource allocation, performance monitoring, epidemiology and service planning.

The need to monitor and improve the quality and safety of medical practice and services, along with widespread increasing expectations and the increasing costs of care mean the structure and content of the clinical record is becoming ever more important. Moreover the implementation of electronic patient records in the NHS critically increases the importance and need for structured records.

Structure and content standards are essential for ensuring that clinical data can be stored reliably, retrieved and shared between information systems. They need to be based on professional consensus that reflects best clinical practice and should facilitate, not hinder, the process of writing, communicating, retrieving and interpreting clinical information, so that care is safer and more efficient.

Record keeping standards can be sub-divided into two categories: generic standards for good practice and specific standards to define the structure and content in specific clinical contexts. Above all, standards are needed so that records are structured appropriately and clinical information is recorded in the right place, and account needs to be taken when writing the record that patients are able to have access either through the conventional Subject Access Request and / or through contemporaneous electronic access.

The health record is essentially a record of a very partial clinician view of the transaction between patient and clinician. However, we are entering a time when patients will be able to enter their own data and the record will become a more shared enterprise. Patients will be able to see their full or partial record at will and, ideally, this will be the whole accurate, contemporaneous record, available anywhere, any time.

It has been envisaged⁴ that the "Personal Medical Record" will comprise:

- **The Personal Healthcare Encounter Record (PHER)** – a detailed longitudinal record of the outcomes of encounters with healthcare professionals and healthcare institutions. This will comprise largely clinically coded information; both technical coding such as SNOMED, READ, ICD and OPCS and the jargon-based code of clinical language and terminology, including the recorded observations and comments of the clinicians in contact with the patient

- **The Personal Health Record (PHR)** – a record comprising the Personal Healthcare Encounter Record and a much wider range of personal health, social, demographic, financial, economic, family and social-network based data, information and knowledge resources.

Consequently, it will be increasingly important that clinicians understand the implications of patients being able to access their own health records and are able to provide support.⁵

In England, the NHS Care Records Service will offer a secure service that links patient information from different parts of the NHS electronically, enabling authorised NHS staff and patients to have the information they need to make care decisions. Detailed records (held locally) and the Summary Care Record (held nationally) will enable each patient's care records to be shared securely between different parts of the local NHS, such as the GP surgery and hospital. Currently the Summary Care Record contains:

- patient demographic information - name, address and NHS number.
- a summary of important health information - current medication, allergies and bad reactions to medication

Patients in England will be able to access their Summary Care Record using the HealthSpace secure website. Patients in Wales will be able to access their Individual Health Record as well as order prescriptions and book appointments with their doctor through the My Health Online secure website.

Other systems are also currently available in the UK to enable patients to see their full GP record online or through kiosks in the waiting room, or through a smartcard.

Sources of further information

EMIS/PAERS

A joint venture between EMIS and PAERS enabling patients to see their full electronic primary care record.

<http://www.paers.net>

⁴The web-based Personal Health Record – research implications for patients, consumers, health services and UK industry: Mark Outhwaite et al <http://hoipcic.ning.com>

⁵Patient record access - closer than you think; Dr Brian Fisher, GP <http://www.primarycareday.co.uk/lit/?pid=4216&lsid=4271&edname=22800.htm&ped=22800>

Section 4.4

Health and Care Records (*cont.*)

HealthSpace

A secure website providing access to the Summary Care Record for patients in England (requires registration to gain full access)

<https://www.healthspace.nhs.uk>

My Health Online

A secure website providing access to the Individual Health Record for patients in Wales

<http://www.wales.nhs.uk/IHC/page.cfm?pid=25814>

National Care Records Service (England)

www.connectingforhealth.nhs.uk/systemsandservices/nhscrs

Nursing & Midwifery Council

Guidance on record keeping

<http://www.nmc-uk.org/aFrameDisplay.aspx?DocumentID=4008>

Patient Confidentiality and Access to Health Records

<http://www.dh.gov.uk/en/Managingyourorganisation/Informationpolicy/Patientconfidentialityandcaldicottguardians>

Records Management: NHS code of practice

www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4131747

Royal College of Physicians, Health Informatics Unit

The Health Informatics Unit of the Royal College of Physicians has produced Generic Medical Record Keeping Standards that are applicable to any patient's medical record. The Unit has also developed, on behalf of the Academy of Medical Royal Colleges, standards for the structure and content of admission records and handover and discharge communications. These are available in '*A Clinician's Guide to Record Standards*'.

www.rcplondon.ac.uk/clinical-standards/hiu/medical-records/Pages/clinicians-guides.aspx

The Institute of Health Records and Information Management

www.ihrim.co.uk

Section 4.5

The Language of Health: Clinical Coding and Terminology

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate an understanding of the difference between terming, coding and grouping.	A, B
2	Demonstrate understanding of the basis, application and limitations of different clinical coding systems, classifications and related vocabularies.	A, B, C
3	Demonstrate understanding of the national standards and conventions used by the NHS in coding clinical data.	A, B
4	Demonstrate understanding of the use of clinical terms in preparing and updating records.	A, B
5	Explain why high quality coded clinical data is essential for the quality of clinical practice, the safety of patients and the communication of clinical information.	A, B, C
6	Discuss the importance of coded data for clinical research, epidemiology, Public Health and the conduct of national audit.	B, C
7	Explain how coding impacts on the information that patients are able to access.	A, B
8	Demonstrate understanding of the importance of coded data for supporting administration, Payment By Results (PBR), Quality and Outcomes Framework (QOF) and business models.	B, C

The Growing Importance of Coding and Terminologies

It is now vital that clinicians understand the purpose of coded clinical data, the uses to which it is put and the respective roles played by clinical terminologies, classifications and vocabularies in delivering safer patient care.

Accurate and searchable clinical records cannot be maintained without a good knowledge of clinical coding, the process whereby the care given to a patient as recorded in patient notes (usually diagnostic and procedure information) is translated into coded data and entered into a health information system. Consequentially, the quality of patient care is dependent on the quality of the data and information that authorised healthcare professionals can access via such systems.

Section 4.5

The Language of Health: Clinical Coding and Terminology (*cont.*)

A clinical terminology is a structured list of concepts and their associated descriptions for use in clinical practice. Clinical terminologies describe the care and treatment of patients and cover areas like diseases, operations, treatments, drugs and healthcare administration. They allow the detailed recording of treatment, either of a single incident or as a summary of the patient's full care record. If clinical information is to be transferred safely and exchanged electronically, a standard clinical terminology is a necessary component of clinical systems, enabling the clinician to record patient information in a consistent manner which is then able to be communicated efficiently and unambiguously between health and social care workers to cover, for example, prescribing, referrals, hospital discharges or business processes.

In the mid 1980's, a set of clinical terms – the Read Codes – were developed to enable GPs to capture, record and retrieve summary clinical data within computerised clinical information systems. In 1988 the Joint Computer Group of the Royal College of General Practitioners and the General Medical Services Committee of the BMA recommended that general practice clinical information systems standardise on the use of Read Codes. In 2001 however, a decision was taken to migrate to SNOMED CT (the Systematised Nomenclature of Medicine Clinical Terms) as the preferred standard terminology for the NHS Care Records Service. SNOMED CT incorporates all the concepts covered by the Read Codes and will be the common language used by computer systems throughout the NHS to facilitate communications between healthcare professionals. It is seen as being at the cutting edge of clinical vocabularies and although the Read Codes were innovative in their time, it was thought they no longer met the demands placed on clinical terminologies by modern medicine in an integrated electronic environment.

Both the Read Codes and SNOMED CT have a relationship to either the International Statistical Classification of Diseases and Related Health Problems (ICD-10) or the Office of Population Censuses and Surveys Classification of Surgical Operations and Procedures Fourth Revision (OPCS-4). The NHS uses these two standards to classify clinical data for a range of purposes including:

- Monitoring provision of health services across the UK
- Research and monitoring of health trends
- NHS financial planning and Payment by Results (PBR)
- Practice-based Commissioning
- Local and national clinical coding audit
- Integrated governance.

Although ICD-10 and OPCS-4 play an important role in managing healthcare, they are generally not of great interest to most clinicians. For example, ICD-10 is not intended or designed for point of care recording of data; it is a statistical tool and is effectively the classification that supports secondary uses of health information.

Sources of further information

NHS Connecting for Health Data Services, including:

- NHS Terminology Service: support for SNOMED CT, Read Codes and the Dictionary of Medicines and Devices.
- NHS Classifications Service: support and maintenance for OPCS4 and ICD-10 Classifications

<http://www.connectingforhealth.nhs.uk/systemsandservices/data>

Records Management: NHS code of practice

www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4131747

Royal College of Physicians, Health Informatics Unit

Top ten tips for coding - a guide for clinicians

<http://www.rcplondon.ac.uk/clinical-standards/hiu/Documents/Top-Ten-Tips-for-Coding-A-Guide-for-Clinical-Staff.pdf>

The Institute of Health Records and Information Management

Details of the National Clinical Coding Qualification (UK)

www.ihrim.co.uk

Section 4.6

Clinical Systems and Applications

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate understanding of how and why information technology is able to support clinical practice and new ways of working.	A, B, C
2	Demonstrate understanding of the functionality of the clinical systems and applications used in healthcare practice.	A, B
3	Demonstrate an understanding of the advantages and disadvantages of patient focused versus specialty, procedure or disease focused systems.	A, B
4	Demonstrate understanding of the key NHS national projects, initiatives and developments in the field of healthcare information technology.	B, C
5	Demonstrate skill in the use of clinical systems in a range of settings, including sharing the personal health record between clinician and patient.	A, B, C
6	Demonstrate awareness of clinical systems errors/reliability (e.g. transfer of data between platforms; data entry errors).	A, B, C
7	Demonstrate awareness of emerging information and communications technologies and their application in health.	A, B, C

What do professionals need to know and to be able to do?

All healthcare professionals should have a good understanding of the information systems available to support patient care and how to use those applicable to their own practice. In this context they need to understand the role, function, benefits and use of systems both in their local organisation and at a national level.

At a local level, whether in primary, secondary or community care, clinicians should be familiar with the purpose and relationships between the range of functions, benefits and uses of systems and services implemented across the NHS, for example:

In primary care:

- Comprehensive, problem-oriented clinical records
- Health screening
- Interactive, bespoke clinical guidelines.

In secondary care:

- Patient Administration Systems (PAS) - including their integration with other systems
- Order Communications, Test Requesting and Diagnostics Reporting - including pathology and radiology tests and tests ordered in primary care
- Letters with coding - discharge summaries, clinic and Accident & Emergency letters;
- Scheduling - for beds, tests, theatres etc.
- e-Prescribing - including 'To Take Out' (TTO) medicines.

In community and mental healthcare:

- Social Care systems
- e-SAP
- ContactPoint.

At the same time, health professionals need to understand the role and use of evidence-based decision support systems, which will become increasingly embedded in clinical systems, for example, alerts (as in Order Communications), algorithms such as the Map of Medicine, and expert systems.

At a national level in England for example, clinicians will need to understand the purpose of:

- the NHS Care Records Service
- the Choose and Book Service
- the Electronic Prescription Service
- the NHS Number
- GP2GP (electronic health records transfer directly and securely between GP practices).

In England, these applications are developed and managed by NHS Connecting for Health. Clinicians in Wales, Scotland and Northern Ireland will need to be aware of the development of national strategy and applications for health informatics in their respective home country.

Section 4.6

Clinical Systems and Applications *(cont.)*

Finally, clinicians will need to be aware of emerging technologies and how they are being applied in healthcare. Currently, some of these technologies include:

- The development of Personal Health Record systems, e.g. Google Health, EMIS/PAERS, Microsoft HealthVault
- The increasing capabilities of mobile telephones for inputting and delivering health information
- The use of PDAs, Tablets and wireless-enabled environments, e.g. at the point of care
- Instant messaging and web conferencing
- Virtual reality and simulation.

Web 2.0 technologies are of particular interest. The term “Web 2.0” describes the trends in the use of World Wide Web technology and web design to enhance creativity, communications, secure information sharing, collaboration and the functionality of the web. Web 2.0 concepts have led to the development and evolution of web culture communities and hosted services, such as social-networking sites, video sharing sites, wikis, and blogs.

Web 2.0 may be useful in a number of areas relevant to healthcare, for example:

- **The Personal Health Record (PHR);** typically a health record that is initiated and maintained by an individual
- **Personal Health Plans;** the patient side of Pathways of Care that are currently paper-based
- **Pathways of Care for Long Term Conditions;** structured care plans tailored to individuals, encompassing social care, where care may be spread over many organisations and needs to be managed by the patient
- **Patient empowerment;** whereby patients work with their clinicians in partnership, to make their own choices and be able to act on them
- **Communication;** between the patient and Healthcare Professionals / care providers or between different Healthcare Professionals / care providers

Sources of further information

NHS Connecting for Health

The agency of the Department of Health in England responsible for the National Programme for IT (NPfIT)

<http://www.connectingforhealth.nhs.uk>

Informing Healthcare

The national information programme of the Welsh Assembly Government

<http://www.wales.nhs.uk/IHC>

eHealth Directorate, Scottish Government Health Department

The eHealth Programme for Scotland

<http://www.ehealth.scot.nhs.uk>

Department of Health, Social Services and Public Safety, Northern Ireland

The Information and Communications Technology Strategy for Northern Ireland

http://www.dhsspsni.gov.uk/report_for_consultation.pdf

Google Health

<https://www.google.com/health>

Microsoft HealthVault

<http://www.healthvault.com>

EMIS/PAERS

A joint venture between EMIS and PAERS enabling patients to see their full electronic primary care record.

<http://www.paers.net>

Section 4.7

eHealth: the Future Direction of Clinical Care

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate understanding of the concepts, scope and practice of eHealth.	A, B
2	Demonstrate understanding of the implications of eHealth applications for patients and clinical staff, clinical practice and communications.	B, C
3	Demonstrate understanding of the patient experience and perspective of eHealth applications.	A, B
4	Demonstrate understanding of the main assistive technologies and applications currently available and in development and their applicability to local services.	B, C

Preparing Clinicians for the Future - eHealth and the Clinical Curriculum

In 2004, the late Professor Jean-Claude Healy MD, PhD, then Director in charge of the eHealth strategy at the World Health Organisation, stated that:

“eHealth is the instrument for productivity gains in the context of existing healthcare systems but also provides the backbone for the future citizen-centred healthcare environment”

eHealth is a relatively recent term for healthcare practice which is supported by electronic processes and communication. The term can be used inconsistently: some would argue it is interchangeable with healthcare informatics and a subset of health informatics, while others use it in the narrower sense of healthcare practice using the internet. What is clear is that these new and emerging technologies will play an important role in enabling health care providers to respond to a range of challenges:

- Changing demographics
- Changing disease patterns
- More informed and expert patients
- *The Wellness Paradigm* - with responsibility for well-being shifting into patients' hands
- The emphasis on healthcare delivery moving from secondary to primary care
- The search for cost containment.

Educators may query whether it is feasible to include eHealth in the clinical curriculum, given that the field is evolving so rapidly and it is impossible to predict what applications students will encounter in their placements or in their professional life. The summary below gives some examples of the range of services that are at the leading edge of medicine, healthcare and information technology.

- **Electronic Health Records:** enabling easy communication of patient data between different healthcare professionals (e.g. GPs, specialists, care teams).
- **Life-time Health Records:** aggregation of individual electronic health records capturing longitudinal healthcare events leading to population-based tracking of health trends resulting in prediction and anticipation of hostile disease trends and thus prevention.
- **Telehealth and Telecare:** including all types of physical and psychological measurements that do not require a patient to travel to a specialist.
- **Public Health Education & Information:** use of all media channels to inform citizens, both healthy individuals and patients, about medical and health topics and to increase self-help.
- **Personalised Healthcare Professional Continuing Education:** dissemination via both the internet and eLearning tools.
- **Health knowledge management:** specialist-oriented information provision (e.g. an overview of latest medical journals, best practice guidelines or epidemiological tracking).
- **Virtual healthcare teams:** healthcare professionals who collaborate and share information on patients, anywhere.
- **mHealth:** the use of mobile devices in collecting aggregate and patient-level health data, providing healthcare information to practitioners, researchers, and patients, real-time monitoring of patient vitals, and direct provision of care (via mobile telemedicine).
- **Medical research using eHealth Grids:** powerful computing and data management capabilities to handle large amounts of heterogeneous data.

The Case for Including e-Health in the Curriculum

An understanding of the technologies that support these fields and their application is increasingly necessary for clinicians. The Government's White Paper *Our Health, Our Care, Our Say: a new direction for community services* (January 2006) made it clear that use of assistive technology is set to grow as health and social care services move to provide people with more independence, choice and control, and deliver even better care to people with long term conditions. Today, such patients need not be mere recipients of care and can become key decision-makers in their treatment process. By ensuring that knowledge of their

Section 4.7

eHealth: the Future Direction of Clinical Care (cont.)

condition is developed to a point where they are empowered to take some responsibility for its management and work in partnership with their health and social care providers, patients can be given greater control over their lives. Self-management programmes can be designed specifically to reduce the severity of symptoms and improve confidence, resourcefulness and self-efficacy, whilst online communities of patients, sharing knowledge and information about specific conditions or providing mutual support are increasingly common.

In the near future clinicians will be dealing with the ePatient supported by eHealth. According to Dr Ron Merrell, Head of the Medical Informatics and Technology Applications Consortium at Virginia Commonwealth University, USA in October 2002:

“In the new world order, the ePatient will be in an electronic care continuum with global medical knowledge”.

Sources of further information

World Health Organisation; eHealth strategy and programmes

<http://www.euro.who.int/telemed>

European eHealth Research Area

<http://www.ehealth-era.org>

eHealth Nurses Network

<http://www.ehealthnurses.org.uk>

Royal Society of Medicine: Telemedicine & eHealth Forum

<http://www.rsm.ac.uk/academ/fortelem.php>

The Impact of eHealth on the Quality & Safety of Healthcare; eHealth Unit, Imperial College London, March 2008

<http://www1.imperial.ac.uk/resources/4565EF18-662B-448B-90C2-E7372B4C2E09>

The Telecare Services Association (TSA); the representative body for the UK telecare industry

<http://www.telecare.org.uk>

Telemedicine Information Exchange

<http://tie.telemed.org/default.asp>

Section 5

Guidance for Stakeholders

Constant change in the NHS demands the development of new skills to support new practices and processes. Health informatics is not exclusively the concern of technologists and enthusiasts but is a core requirement for all those who generate, retrieve and use information to support healthcare.

The ongoing challenge for commissioners and providers of clinical education is to embed health informatics into all clinical educational and vocational training programmes as far as possible, to help healthcare staff manage information better in a world that is expecting more “information empowered” professionals.

It is recommended that education commissioners include the learning outcomes set out in this framework in their specifications for clinical education; and that education providers look for opportunities with other providers for cross-educational opportunities.

Importantly, health informatics should not be taught as a distinct subject in its own right but should be woven and integrated into the wider clinical curriculum. It lends itself well to inter-professional learning which not only provides a wider perspective for learners, but also highlights the importance of inter-professional cooperation in the development, management and monitoring of all health information, especially that relating to patients or clients as individuals.

The opportunities for eLearning are increasing rapidly and there are growing possibilities for these methods to be used for effective teaching of many learning outcomes. The teaching of Informatics is highly compatible with virtual and online learning environments.

It is recommended that education providers regularly review their programmes to identify opportunities for additional distance and eLearning methods that can be used as feasible options for delivery of health informatics education.

In this document methods of assessment have not been specified for the different learning outcomes. Each provider will need to determine its own assessment arrangements according to local policy and practice.

However, it is recommended that there should be a very clear distinction made between the assessment and demonstration of understanding and knowledge and the assessment and demonstration of skills.

Section 5

Guidance for Stakeholders *(cont.)*

For education at post-registration / CPD and clinical management levels, the provision of academic credit is an effective way of attracting many healthcare professionals into continual learning and assists in their re-accreditation and revalidation arrangements.

It is recommended that commissioners and providers, in conjunction with professional and regulatory bodies, find ways of linking successful informatics learning to academic credit.

Many healthcare professionals continue to have limited or no education in informatics and yet the expectations of them to manage information effectively is a current and increasing requirement.

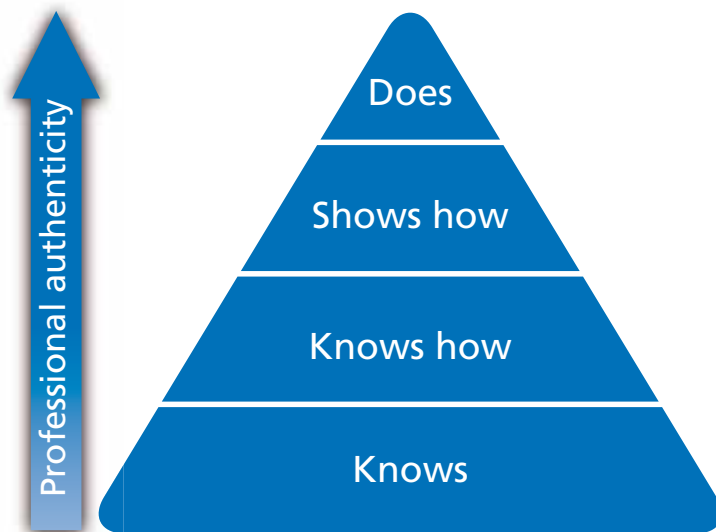
It is recommended that commissioners and providers consider the need for catch up or consolidation programmes, based on the guidance in this framework.

Finally, all those with a vested interest in the embedding of informatics in the clinical curriculum should commit to active membership of the on-line community designed to support knowledge capture and the sharing of lessons learned and associated tools and resources.

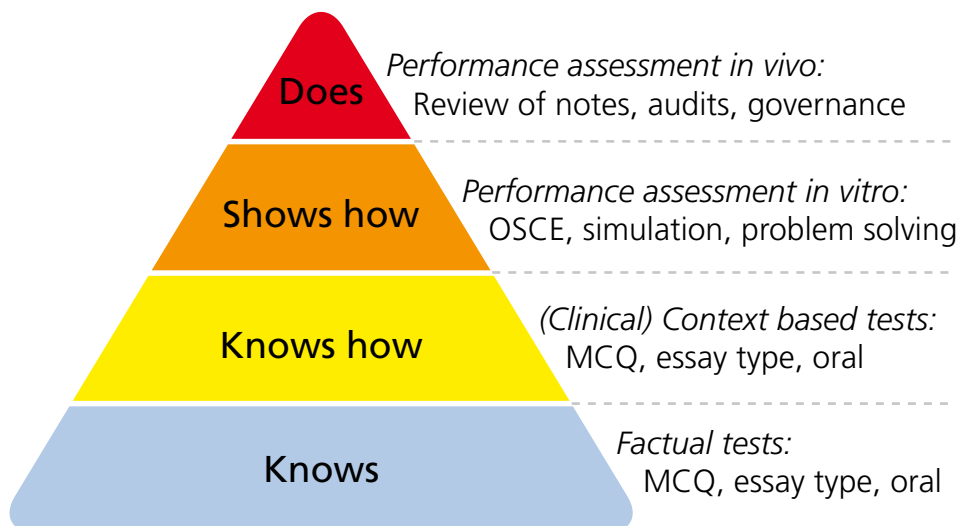
Appendix 1

Miller's Model of Learning and Assessment

Miller's model creates a hierarchy of learning and behaviour that is linked to the development of professional practice. In addition it provides a model for assessment with increasing professional authenticity as the learner moves from knowing facts about a topic, through knowing how to use those facts and showing how and when that knowledge may be used, to using the knowledge in every day clinical activity.



Different assessment tools are appropriate for each of these stages as shown below:



Appendix 2

Essential IT Skills Learning Outcomes

Full details of the NHS Connecting for Health Essential IT Skills Programme (EITS), including how to access the training can be found at:

<http://www.connectingforhealth.nhs.uk/systemsandservices/etd/eits>

The following tables summarise the learning outcomes of NHS ELITE and NHS Health, the two key elements of EITS.

NHS Elite	
Essential Skills	Description of Learning Outcome
Switching on and off	<ul style="list-style-type: none">• Know how to switch a computer on and off safely.• Know when it is appropriate to shutdown, restart, log off, and lock the computer and how to do so.• Be aware of the importance of choosing and changing login password to keep systems secure.
Mouse skills	<ul style="list-style-type: none">• Be able to control the mouse to select, open and drag objects on the screen.• Use the mouse to operate scroll bars and access context menus.
Keyboard skills	<ul style="list-style-type: none">• Input and edit text using the keyboard.• Be able to type text including numbers and symbols, using the Shift key appropriately to do so.• Be able to move the text entry cursor, use the backspace and delete keys to erase text, use the Return key to start a new line or submit information and use the Tab key when editing text or working with forms.• Know that pressing keys in combination can also be used to call up functions within an application.
Using Windows	<ul style="list-style-type: none">• Be able to work with the Windows desktop.• Be able to use the Start menu and desktop icons to open application windows.• Be able to manipulate windows by maximising, minimising, resizing, moving and closing them.

NHS Elite (cont.)	
Essential Skills	Description of Learning Outcome
Working with applications	<ul style="list-style-type: none"> • Use some of the common features of applications. • Be able to use toolbars and menus to access functions and work with dialogue boxes and task panes to make choices. • Be able to open, save and print files, access application 'Help'. • Be able to work with information (including tabular information) within applications, selecting information and using cut, copy, and paste to move it. • Be able to identify and exit non-responding applications using the Task Manager.
File management	<ul style="list-style-type: none"> • Manage and organise files and folders and know how to copy, move, delete and rename files and folders. • Be able to restore and empty files from the Recycle Bin.
Web skills	<ul style="list-style-type: none"> • Navigate web pages using the address bar, following links, using search engines and using web forms.
Email skills	<ul style="list-style-type: none"> • Open, send, reply and forward email messages. • Be able to organise messages; deleting them, moving them into folders and sorting them. • Be able to create contacts and address messages using the Address Book. • Be able to send and receive file attachments.

Appendix 2

Essential IT Skills Learning Outcomes *(cont.)*

NHS Health	
Essential Skills	Description of Learning Outcome
Basic concepts	<ul style="list-style-type: none"> Define the term 'Health Information System' (HIS) and know about the functions, benefits and constraints of a HIS.
Due care	<ul style="list-style-type: none"> Understand their responsibility for the information they access and use in the workplace. Know about the law as it applies to confidentiality and the Caldicott principles that govern the use of confidential information in the NHS. Know some of the practical measures they can use to keep information secure.
Freedom of Information	<ul style="list-style-type: none"> Understand the responsibilities with regard to the Freedom of Information Act. Know what types of information are covered by the Act, what to do if they receive a request under the Act and who is responsible for responding to requests.
User skills	<ul style="list-style-type: none"> Demonstrate some of the common skills that are required for working with Health Information Systems. Understand the importance of working with the correct record and be able to use the features of a HIS to input and save information safely.
Policy and procedure	<ul style="list-style-type: none"> Understand the common aspects of policy and procedure relating to Health information Systems. Know the importance of maintaining the audit trail Understand when it is and is not appropriate to amend data or create records.

Appendix 3

Historical Development of LtMHI

Learning to Manage Health Information was first published in 1999 by the NHS Information Authority with the aim of establishing a common health informatics framework for clinical health professionals at pre- and post-registration level. It included learning outcomes and standards for professional practice set out under eight themes covering areas of learning in health informatics.

The consultation process for developing the framework involved both professional and regulatory bodies. It was supported by 28 different organisations, and included a GMC endorsement to the effect that it would be a source of advice in support of the principles in the GMC's own guidance.

Learning to Manage Health Information: Moving Ahead was published in 2002, providing an updated edition with additional guidance and interpretation to take account of important developments since the original publication (in information, its management and educational approaches). It followed, with some small adjustments, the themes of that framework, and at the same time:

- consolidated, combined and simplified some of the descriptions and learning outcomes
- concentrated on essential learning outcomes that were recommended to be incorporated into educational programmes
- made a clear distinction between learning outcomes that improve understanding and knowledge and those that develop essential skills
- provided guidance on the appropriate level of education for each outcome.

Between 2001 and 2004 three universities in the UK were commissioned to undertake a series of research projects. Two of these were designed to further the evidence base about how health informatics education and training makes a difference to patient care and delivery of services. Two were designed to examine where the standards were in use (or not) in curricula and to look at issues and barriers. One study considered what clinical education tutors needed to support their teaching strategies in this area. These projects were completed and compiled into a four-part publication, *Health Informatics Education and Development for Clinical Professionals: Making progress?* (NHS Information Authority, 2004).

In 2006 a study was undertaken which considered the standards as described in *Learning to Manage Health Information: Moving Ahead* and took a snapshot of implementation activity in three different environments as examples of proactive practice:

1. education commissioning
2. higher education delivery, and
3. in-service education and support.



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