Royal College of General Practitioners
*Royal College of General Practitioners*
*Curriculum Statement 4.2*

# Information Management and Technology

*One in a series of curriculum statements produced by the Royal College of General Practitioners:*




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# Contents

# Acknowledgements

This curriculum statement has drawn on various national guidelines and policies, current research evidence and the clinical experience of practising general practitioners.

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## Key messages

- General practice in the UK increasingly relies upon electronic storage of patient records and electronic communication of records.
- Each year 1200 people die in England and Wales as a result of medication errors. General practitioners need to understand the principles of good electronic record keeping. They should be aware of potential consequences of inaccurate, incomplete or ambiguous health data.
- General knowledge regarding the use of computers is desirable to at least European Computer Driving Licence (or equivalent) standard.
- Accurate and searchable clinical records cannot be maintained without a good knowledge of clinical coding systems, currently Read codes.
- NHS Connecting for Health and similar initiatives in the other UK countries will have a major effect on general practice in the coming years as paper records systems become unworkable and are phased out.
- The sharing of electronic records across organisational boundaries, as envisaged by NHS Connecting for Health, demands new ways of working in terms of record quality and information governance.
- Fulfilling contractual requirements is difficult without the effective use of clinical computer systems.

# Introduction

## Rationale for this curriculum statement

Virtually all of UK general practices are now computerised.[1] More and more information is being stored and accessed electronically. Email and web-based communication (such as bulletin boards) are now an everyday part of how we communicate with colleagues and, increasingly, with patients. It is essential, therefore, for the modern general practitioner (GP) not only to be conversant with clinical software, but also with word processing, spreadsheets, presentation software, email and the world wide web.

Increasing numbers of practices are abandoning paper records entirely, using their GP clinical system as the primary record store. This is the only logical approach to the increased reporting requirements in general practice both locally and nationally. This trend will increase as GP computer systems become ever more sophisticated. Communication between primary care and other parts of the health service is quickly becoming electronic in nature as a result of initiatives in each of the UK's constituent countries.

Electronic media can easily be transmitted over distance and parts of a patient's record can be extracted automatically and used for different purposes. The context of a record, which frames issues of meaning and governance, is no longer local, and skills in record-keeping that have been learned in the paper-based paradigm will not be sufficient.

It is vital that the GPs entering general practice have the appropriate knowledge and skills to perform effectively in the modern NHS. Ideally, that would be when they are selected for entry into general practice training programmes, but that might take a few years to become reality. Specialty registrars (GP) should, however, have gained the appropriate knowledge and skills by the end of their GP training programme at the latest.

The standard of the European Computer Driving Licence (ECDL) is an appropriate standard for health professionals including GPs. It is an information technology qualification, which was first established in 1988, and is the only IT qualification to be endorsed by the EU member states as a European Award. In 1996 the British Computer Society decided to promote the ECDL within the UK. Since that time, the number of people registering has grown to just under 300,000 per year, achieving the one millionth registration in May 2004. The NHS (in England) adopted the ECDL as the reference standard for basic IT skills in 2001. NHS Connecting for Health manages the NHS Basic IT Skills (ECDL) Service and offers basic IT learning materials and testing to NHS employees across England, Wales and Northern Ireland.

## UK health priorities

The ongoing computerisation of general practice has occurred due to a mixture of government reforms and incentives, personal and practice-based administrative benefits, and societal expectations that began as UK initiatives with the Computer Reimbursement Scheme of 1987 and then the new GMS Contract of 2004[2] which gave primary care organisations (PCOs) rather than practices the responsibility in full for funding the purchase, maintenance, upgrades and running costs of integrated IT systems as well as links to branch surgeries and other NHS infrastructure and services. The ownership of information management and technology (IM&T) systems migrated to the PCO.

Across the UK, the new GMS contract makes the effective use of a clinical computer system essential, both to collect and to report Quality and Outcomes Framework health data. Increasingly the treatment of chronic diseases such as diabetes and asthma is facilitated by using effective software tools to both prompt for data and provide decision support.

The NHS in all four of the UK's constituent countries is committed to expanding the use of IM&T in health care through the increased use of practice systems and increased information exchange. Each country has plans to develop its IM&T infrastructure as an integral part of its aims of improving patient care and the health of its population generally.

In *England*, the *NHS Connecting for Health* was formed as an agency of the Department of Health on 1 April 2005 with the primary role of delivering the National Programme for IT (NPfIT). The programme has its origins in the 1998 Department of Health strategy *Information for Health*[3] which committed the NHS to lifelong electronic health records for everyone, with round-the-clock, online access to patient records and information about best clinical practice for all NHS clinicians. Following the development of the NHS Plan,[4] a supporting document, *Building the Information Core: implementing the NHS Plan*[5] published in January 2001, outlined the information and IT systems needed to deliver the NHS Plan and support patient-centred care and services. In March 2001, Derek Wanless, a commissioner with the Statistics Commission, was asked to examine future trends affecting the health service in the UK over the next two decades. *Securing Our Future Health: taking a long-term view*, published in April 2002,[6] had several key recommendations for IT in the NHS. These included: a doubling and protecting of IT spend, stringent, centrally managed national standards for data and IT, and the better management of IT implementation in the NHS, including a national programme. The Wanless report coincided with the publication of *Delivering the NHS Plan*,[7] which developed the vision of 'a service designed around the patient', offering patients more choice of where and when to access treatment. These papers led to the Department of Health's new strategy for developing IT in the NHS, published in 2002, *Delivering 21st Century IT Support for the NHS – a national strategic programme*.[8] This refined the information strategy, focusing on fewer targets and set out the scope and strategy of the NPfIT. The key developments are: the implementation of Contract Systems, NHS Care Record Service, Choose and Book, Electronic Transmission of Prescriptions, and Picture Archiving and Communications Systems, all of which will have a profound effect on how GPs work within the NHS. The introduction of a Summary Care Record has been controversial and has raised issues for patient consent to storage and access to key aspects of their clinical records.[9]

In 1998, in *Scotland*, the Scottish Office Department of Health published *Taking Action 1988–2002*[10] which set out the NHS in Scotland's vision for IM&T. This set priorities for supporting seamless care between GPs and hospitals through electronic communication, supporting consistent quality of care, linking the NHS in Scotland to a secure health service communication network while maintaining confidentiality and security standards. This was followed by the Scotland National Strategic Programme for IM&T, *Strategy for Information 2001–2005*.[11] This was an ambitious strategy that led the way for a number of initiatives including telemedicine, NHS 24, Smart Cards, Electronic Transmission of Prescriptions, the Electronic Patient Record and Scottish Care Information. Scotland is different from the other UK countries because it had a dominant clinical system (General Practice Administration System for Scotland – GPASS) although it is now being superseded. In 2004, NHS Scotland published the *National eHealth/IM&T Strategy 2004–2008*,[12] which introduced a vision based around core national Integrated Care Record systems. Scotland has introduced an electronic Emergency Care Summary, which means that 'Priority 1' (i.e. significant) medical history, allergies and repeat prescriptions and recent acute prescriptions information held in the GP's records can be accessed by out-of-hours, A&E, and ambulance personnel.

In *Northern Ireland*, the Department of Health, Social Services and Public Safety published its *Information and Communications Technology (ICT) Strategy Consultation*[13] in June 2002. It reviewed the state of GP systems and set out a strategy for future development. The systems in Northern Ireland have to meet NHS England specifications but they proposed that GPs should be encouraged to increase their use of ICT systems to record clinical data and that legislation should be passed to permit paperless records. This strategy has, however, been overtaken by the needs of the new GMS contract which is the main drive in practice for more effective IM&T. The main emphasis on IT in primary care at present is ensuring practices are connected to NHS.net and facilitating

links with hospitals for results of bloods and X-rays. Considerable work is also going into development of a unique patient identifier number to improve communication.

In Wales, the Welsh Assembly Government set out its strategy in 2003, called *Informing Health Care: transforming healthcare using information and IT*.[14] It proposes developments in five areas including what it calls 'The Care Process', including integrated care pathways, e-booking systems, transmission of clinical communications, e-test orders and results, e-prescribing and dispensing. It also addresses areas such as the Integrated Electronic Health Record for Wales, improved patient access to records and better use of information.

# Learning Outcomes

The following learning objectives relate specifically to information management and technology; the full range of generic competences is described in the *core* RCGP curriculum statement 1, *Being a General Practitioner*.

## Primary care management

All GPs must have appropriate information management and technology skills.

The RCGP recommends that specialty registrars (GP) should have reached the standard of the European Computer Driving Licence (ECDL) by the end of their GP training programme (and recognises that many doctors entering training will have already reached that standard).

The seven modules that make up the ECDL are:

- Basic concepts of IT
- Using the computer and managing files
- Word processing
- Spreadsheets
- Database
- Presentation
- Information and communication.

It is important that GPs should be able to:

- Demonstrate an ability to use the practice clinical system effectively and routinely for tasks such as prescribing, entering clinical data, processing pathology results and referrals
- Demonstrate awareness of coding systems in current use for effective record-keeping
- Demonstrate the effective use of templates including the management of chronic disease and assessing risk
- Demonstrate the use of call/recall systems within the practice to the benefit of patient care
- Demonstrate an understanding of the connection between good data entry and improved patient health outcomes
- Demonstrate how to use IM&T to share information and coordinate patient care with other health professionals.
- Demonstrate an understanding of the need for information recorded in the practice clinical system to be fit for sharing with different health professionals in different organisations
- Demonstrate an understanding of information governance, patient consent and privacy issues that relate to the sharing of electronic health records, and the central storage of health information (e.g. that is proposed by NHS Connecting for Health)
- Demonstrate an understanding of the power of reporting from clinical systems for personal/practice audit and data analysis; and for comparisons with other practices that assist in setting the agenda for improving quality of care and recording of care
- Demonstrate the use of the practice's computer system to improve the quality and usefulness of the medical record, e.g. through audit

- Demonstrate effective use of interagency systems such as pathology links and GP–GP record transfer.

## Person-centred care

**It is important that GPs should be able to:**

- Demonstrate how to use the computer in the consultation whilst maintaining rapport with the patient
- Demonstrate how to use NHS electronic booking systems to tailor healthcare provision to the needs of the individual patient
- Demonstrate how to facilitate patient access to their medical record and enhance patient understanding of privacy and consent issues concerning the shared electronic health record.

## Specific problem-solving skills

**It is important that GPs should be able to:**

- Demonstrate effective use of expert and web-based information systems, e.g. MENTOR and Map of Medicine.

## A comprehensive approach

GPs need to be able to address multiple complaints and co-morbidity in the patients for whom they care. They should also use an evidence-based approach to the care of patients. Coordination of care also means that the GP is skilled not only in managing disease and prevention, but also in caring for the patient, providing rehabilitation and providing palliative care in the end phases of a patient's life. The physician must be able to coordinate patient care provided by other healthcare professionals and care provided by other agencies. Effective use of IM&T will assist the GP in achieving these aims:

- Demonstrate an ability to use IM&T in the management of multiple complaints and pathologies, both acute and chronic health problems, e.g. by effective use of the medical record and by seeking the best evidence in practice.

## Community orientation

**It is important that GPs should be able to:**

- Demonstrate an ability to use IM&T to gain an understanding of the health needs of communities through the epidemiological characteristics of their population
- Demonstrate an understanding of the IM&T strategies put forward by the NHS in the country that they work and understand the implications of that strategy for their local health economy
- Demonstrate understanding of the importance of practice- and community-based information in the quality assurance of each doctor's practice
- Demonstrate the use of IM&T to access community-based resources, e.g. voluntary organisations and self-help groups.

## A holistic approach

Holism and patient-centredness are core values of general practice. Holism, described by Howie *et al.*[15] as the integration of physical, psychological and social components of health problems in making diagnoses and planning management, is well established as a central issue of good consulting practice.[16,17]

- Demonstrate understanding of the importance of the concept of holism in, and its implications for, the patient's care, and ensure that the use of IM&T does not conflict with their holistic and patient-centred approach to patient care.

## Contextual aspects

**It is important that GPs should be able to:**

- Demonstrate awareness of the different computer systems used in practices
- Demonstrate awareness of local and national IM&T initiatives and strategies
- Demonstrate awareness of the ways in which context affects the ways in which record entries are understood and interpreted.

## Attitudinal aspects

**Based on the doctor's professional capabilities, values, feelings and ethics it is important that GPs should be able to:**

- Demonstrate awareness of their own IM&T capabilities
- Demonstrate the ability to identify ethical aspects of clinical practice relating to IM&T, e.g. security, confidentiality, use of information for insurance company use, Data Protection Act, etc.

## Scientific aspects

**It is important that GPs should be able to:**

- Demonstrate the ability to search the internet for medical and scientific information including MEDLINE and the National Library for Health
- Demonstrate the ability to develop and maintain continuing learning and quality improvement by using IM&T.

## Psychomotor skills

**It is important that GPs should be able to:**

- Demonstrate the ability to use a computer to the standard of the European Computer Driving Licence.

# Further Reading

## Examples of relevant texts and resources


BANDOLIER. *Computer Systems Prevent Errors* (Bandolier systematic review), www.jr2.ox.ac.uk/bandolier/band73/b73-5.html [accessed January 2007]

DAVIS E. The future for primary care computing *Inform Prim Care* 2004; 12(4): 199–200

IRWIN T AND TERBERG J. *Perfect Medical Presentations: creating effective PowerPoint presentations for the health care professional* London: Churchill Livingstone, 2004

PREECE J. *The Use of Computers in General Practice* London: Elsevier, 2000

ROYAL COLLEGE OF GENERAL PRACTITIONERS, DEPARTMENT OF HEALTH, GENERAL PRACTITIONERS COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION. *Good Practice Guidelines for General Practice Electronic Patient Records (Version 3.1): guidance for GPs*, www.connectingforhealth.nhs.uk/delivery/programmes/gp2gp/docs/good_practice_guidelines.pdf [accessed January 2007]

RENNISON T. *Essential Primary Care Computing* Oxford: Radcliffe Medical Press, 1998

SHAW N. *Going Paperless: a guide to computerisation in primary care* Oxford: Radcliffe Medical Press, 2001

SULLIVAN F AND WYATT J. *ABC of Medical Informatics* London: BMJ Books, 2006


## Web resources

The *British National Formulary* (BNF) is a joint publication of the British Medical Association and the Royal Pharmaceutical Society of Great Britain. It is published bi-annually under the authority of a Joint Formulary Committee that comprises representatives of the two professional bodies and of the UK Health Departments. The BNF aims to provide prescribers, pharmacists and other healthcare professionals with sound, up-to-date information about the use of medicines.

The BNF provides ready access to key information on the selection, prescribing, dispensing and administration of medicines. Medicines that are generally prescribed in the UK are covered and those considered less suitable for prescribing are clearly identified. The website includes additional information of relevance to healthcare professionals dealing with medicines. Other digital versions of the BNF – including intranet versions – are produced in parallel with the paper version.
www.bnf.org/bnf/

### NHS Connecting for Health (England)

The National Programme for IT in England, which is being delivered by the new Department of Health agency NHS Connecting for Health, is bringing modern computer systems into the NHS to improve patient care and services. Over the next 10 years, the National Programme for IT aims to connect over 30,000 GPs in England to almost 300 hospitals and give patients access to their personal health and care information, transforming the way the NHS works. Their website gives details of the programme and its implementation.
www.connectingforhealth.nhs.uk/

### Doctors.net.uk

Doctors.net is the largest, most active medical network in the UK. It has over 119,000 doctors registered with

it and provides educational programmes for doctors in both primary and secondary care. Doctors.net supplies medical organisations such as the Health Protection Agency, the National Audit Office and the Royal Medical Colleges with communication services. These include educational modules, drug or device alerts, online conferencing services, discussion fora and interactive presentations that are used to deliver information, engage doctors and record their response.
www.doctors.net.uk/

**European Computer Driving Licence**

The European Computer Driving Licence (ECDL) is an information technology (IT) qualification. It was first established in 1988, and is the only IT qualification to be endorsed by the EU member states as a European Award. In 1996 the British Computer Society decided to promote the ECDL within the UK. Since that time the number of people registering per year has grown to just under 300,000 per year, achieving the one millionth registration in May 2004.

In the NHS (in England) the ECDL was adopted as the reference standard for basic IT skills in 2001. It consists of seven modules of learning:

Module 1: Basic Concepts of IT

Module 2: Using the Computer and Managing Files

Module 3: Word Processing

Module 4: Spreadsheets

Module 5: Databases

Module 6: Presentations

Module 7: Information and Communication.

NHS Connecting for Health manages the NHS Basic IT Skills (ECDL) Service. This offers basic IT learning materials and testing to NHS employees across England, Wales and Northern Ireland. It uses two suppliers to provide its services – Spring IT Training and BCS. The materials for this service (logbooks, training materials and tests) have been purchased centrally on behalf of the NHS. Local organisations do not have to pay for these products – but they still have to fund things like trainers, invigilators and accommodation or provision of these services by an external provider. The service also has a learning management system that learners and trainers can use to monitor and track all learning and testing.
www.ecdl.nhs.uk

**Gateway to Health Informatics for Teaching**

The aim of the Gateway to Health Informatics for Teaching (GHIFT) site is to act as a meta-guide to resources and information that support education and training initiatives in health informatics. The site provides basic details about a wide range of different resources that will be of use to students, clinicians, educators, researchers and others interested in the field of health informatics. GHIFT does not seek to replace or replicate existing material. Instead, it is a directory of existing teaching and learning resources.

As a UK-funded initiative the goal of the GHIFT project has been to compile a guide to resources and information that will reflect developments in health informatics in the UK. At the same time the site includes material from other European countries, North America and Australia. The criteria for including resources have been their usefulness to students and to teachers.
www.chime.ucl.ac.uk/resources/GHIFT/details.html

**Map of Medicine**

The Map of Medicine is a web-based visual representation of evidence-based patient care journeys covering 28 medical specialties and 390 pathways. As healthcare provision becomes much more specialised the need to plan and then benchmark clinical practice against national standards whilst incorporating local intricacies is key. Map of Medicine is freely available in the NHS in Wales and in selected locations in England.
www.mapofmedicine.com/

**National Library for Health**

The National Library for Health (NLH) is a tremendous resource for the specialty registrar. It is open to all health professionals. The main priority for the NLH is to help the NHS achieve its objectives. All resources on the site are free to use and the majority can be accessed by all users. However, some of the content has restricted access and users will need to register for an Athens password in order to use it. Part of the content of the NLH such as Clinical Evidence and Cochrane Library is licensed from commercial providers.
www.library.nhs.uk

**National Institute for Health and Clinical Excellence**

NICE is the independent organisation responsible for providing national guidance on the promotion of good health and the prevention and treatment of ill health. On 1 April 2005 NICE joined with the Health Development Agency to become the new National Institute for Health and Clinical Excellence (also to be known as NICE).
www.nice.org.uk/page.aspx?o=home

**Open Learning Unit at University College London**

The Open Learning Unit is part of the Department of Primary Care and Population Sciences at University College London. It was set up by Trisha Greenhalgh and Peter Toon in July 2000. They work closely with the Centre for Health Informatics and Multiprofessional Education at UCL (CHIME). The aims of the Open Learning Unit are:

- To promote and support lifelong, self-directed learning and professional development amongst healthcare professionals, especially those working in primary health care
- To develop and disseminate high-quality materials for open and distance learning in health care
- To provide opportunities for the creation of multidisciplinary, multiprofessional learning networks in health care
- To support effective teaching and learning in health care, with a specific focus on emerging disciplines and healthcare systems
- To identify and pursue new areas for research into teaching and learning in health care.

www.ucl.ac.uk/openlearning

**Primary Care Computing**

This is a Department of Health website that can be used as a portal to access information on a range of technology-related topics in primary care, from the electronic prescriptions pilot scheme to computerised learning and support tools for GPs.
www.dh.gov.uk/PolicyAndGuidance/OrganisationPolicy/PrimaryCare/PrimaryCareComputing/fs/en

**Royal College of General Practitioners**

The College website has a wealth of information and links. The Information Sheets are valuable resources for specialty registrars during their training programme and for qualified GPs too. The Information Sheet No.7 *Information Management and Technology in General Practice* is an excellent source of information for this Curriculum area.
www.rcgp.org.uk/pdf/ISS_INFO_07_Feb05.pdf

The main index for the Information Sheets can be accessed through:
www.rcgp.org.uk/default.aspx?page=2946

The main RCGP website:
www.rcgp.org.uk

RCGP Seven Days – current events newsletter – useful for hot topics:
www.rcgp.org.uk/default.aspx?page=498

**University of California, San Francisco**

This US site is useful for primary care providers. While it is US-based, it is also useful for specialty registrars because it provides a list of links to online textbooks and resources including guidelines.
http://medicine.ucsf.edu/education/resources/

## E-learning

**BMJ Learning**

http://learning.bmj.com/learning/main.html

**Global Family Doctor – Journal Watch**

www.globalfamilydoctor.com/journalalerts/journalalerts.asp

**GP Notebook**

www.gpnotebook.co.uk/homepage.cfm

# Promoting Learning about Information Management and Technology

## Work-based learning – in primary care

Work-based learning is most appropriate to developing skills in the use of GP clinical systems. Effective use of such systems will only result from entering data in real patient encounters. As well as live use there is much scope for group work – i.e. discussing the most appropriate Read code to use for a particular data item or deciding how clinical record information will be structured.

## Work-based learning – in secondary care

Specialty registrars, during their secondary care placements, are in a position not only to see how IM&T works in secondary care but also to gain experience of the datasets relating to particular chronic diseases. In the future they will also experience the secondary care end of new computerised initiatives such as Picture and Archiving Service (PACS), online booking systems and electronic referrals.

## Non-work-based learning

General computer skills are probably best learnt in a non-working environment such as a college or via the internet. The NHS Connecting for Health website has useful links for training resources and manages the NHS Basic IT Skills (ECDL) Service. This offers basic IT learning materials and testing to NHS employees across England, Wales and Northern Ireland.
www.ecdl.nhs.uk

## Learning with other healthcare professionals

Members of the primary healthcare team working in the training practice will all be expected to use the practice's computer system. The practice manager, secretary, nurses and receptionists will have gained experience in using the system from their perspectives. Some will have in-depth knowledge that they can share with the specialty registrar. Joint learning opportunities should be encouraged. This joint experience is often very effective in enforcing a consistent policy towards IM&T in the practice. In particular practice managers and their computer operators are often most experienced at extracting data from the system, and practice nurses are often very able to assist in the design of templates for chronic disease.

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17 Greenhalgh T and Eversley J. *Quality in General Practice: towards a holistic approach* London: King's Fund, 1999