Good Practice Guidelines for General Practice Electronic Patient Records

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1 Introduction

The NHS has undergone rapid changes in the last few years. We hope that the guidelines will be sufficiently generic to offer authoritative advice to all those involved in the development and use of general practice electronic patient records in the foreseeable future. Therefore, these guidelines concentrate on addressing the issues that have recently arisen as queries to and from the Department of Health (DoH), the Scottish Executive Health Department (SEHD), the NHS Connecting for Health programme in the NHS England (NPfIT), Primary Care Organisations (PCOs), GP system user groups, the Joint GP IT Committee and its parent bodies since the last version was published in 2003.

1.1 Why this work is needed

The guidelines needed to be revised and updated to reflect the changes brought about through the NHS National eHealth and IM&T Strategy and the 2004 General Medical Services Contract for GPs. New areas are emerging that require updated or additional guidance. In addition there was a requirement to adapt the original document, which was written primarily for an English NHS audience, to meet the specific legal and operational needs of Scottish primary care.

1.2 Purpose and scope

Custom, practice and IT standards have evolved rapidly in the last few years and these need to be incorporated into the revised guidelines. This is particularly true in the areas of;

- Information governance
- Electronic transfer of medical records between GP practices (GP2GP or GPEX)
- Electronic documents attached to the EPR
- Increasing inter-operability using electronic data interchange (EDI) standards
- Education and training

The Good Practice Guidelines were originally prepared at the request of the Department of Health in consultation with the Joint GP IT Committee of the General Practitioners' Committee of the British Medical Association and the Royal College of General Practitioners. This revision was undertaken on behalf of SEHD by Scottish Clinical Information in Practice (SCIMP http://www.scimp.scot.nhs.uk).

The main purpose of the guidelines is to provide a framework within which general practices can move from paper-based patient records to electronic patient records. They are intended as a source of authoritative guidance for practices, primary care organisations and other organisations supporting or advising general practices in the development and use of electronic patient records.

The Good Practice Guidelines (GPG) reflect the Joint GP IT Committee view of "best information practice" after consultation with stakeholder groups (see appendix 1). These guidelines draw on the experience gained since the last guidelines were published (Good Practice Guidelines v3 July 2003) and reflect developments in NHS structure, policy and practice since that time.

Where appropriate, specific references to English legislation or policy which do not apply in Scotland have been removed or replaced with their Scottish equivalents.

The original document from July 2005 is available on the Department of Health web site.[1]

[1] Good practice guidelines for general practice electronic patient records: Guidance for GPs (version 3.1) - July 2005 (PDF, 1474K)
http://www.dh.gov.uk/assetRoot/04/11/67/07/04116707.pdf
Last accessed September 2006

2 Modernising information management and technology in general practice – the policy perspective

2.1 Future Information Systems - eHealth

A comprehensive health information system built around an Electronic Health Record is vital to achieve the shift away from reactive, crisis-management, acute-oriented care towards anticipatory, preventative and continuous care.

Delivering the eHealth agenda will be extremely challenging. Many changes will be necessary, such as adhering to more rigorous record-keeping standards and ensuring that communications are marked properly with the patient's Community Health Index (CHI) number to enable clinical information to be safely and securely shared in an electronic environment. Wherever possible, clinical staff will record their interventions directly into Electronic Health Records, rather than transcribe to written records. Adherence to security standards will require to be built in so that patients and clinicians can be confident that records remain confidential.

Clinical staff will be increasingly involved in agreeing the criteria for Electronic Health Records. A degree of local configurability is necessary, but only the adoption of rigorous technical and information standards will ensure that patient information is available and reliable at the point of need. Previous freedoms to procure and implement systems locally will be curtailed to ensure that local systems align with the move to Electronic Health Records.

2.2 Accreditation and procurement

NHS Boards rather than practices now have overall responsibility for system purchase, maintenance, upgrades, support and training. This should deliver the following additional benefits to practices;

- Service level agreements (SLA) based on a national template, to ensure that practices will receive higher quality IM&T services whilst preserving choice
- Supplier management mechanisms will be put in place in case of supplier failure to deliver systems in line with the SLA
- Nationally accredited systems based on nationally agreed system requirements to support integrated healthcare
- Data confidentiality and security will be based on agreed protocols, assured by the NHS Board and must be in line with legal, ethical and also regulatory guidance.
- Liability issues will be managed by the NHS Board in line with national SLAs agreed with suppliers

Systems are being accredited against national standards and practices will have a guaranteed choice from a number of accredited systems that deliver the required functionality. A national template SLA has been implemented to support the development of future primary care IT systems providing practices with assurances on training, maintenance and support. Copies of the SLAs have been provided to practices and can be obtained on request from local NHS Boards if needed.

2.3 "E-commerce" and the NHS

Practices will become increasingly reliant on electronic record systems for clinical, non-clinical and additional purposes (see Chapter 3 of these guidelines). Priority areas for continuing training and education in information systems will include;

- Data entry and retrieval
- Clinical nomenclatures and classifications
- Ensuring data quality
- Information governance training
- Moving from paper-based to electronic record systems
- Risk management and disaster recovery as part of systems operational management
- Developing and implementing workforce strategies to manage clinical data flows into practices

Education, training and support in the use of IM&T systems will be managed and properly funded by the NHS Board as part of a continuing practice development programme.

The strategic move to national standards and accreditation of suppliers and systems should provide safeguards for NHS Boards so they can concentrate on developing, supporting and encouraging practices on the path to "paperless" EPRs. This should mean that practices and NHS Boards can agree on a package of IT suppliers and services accredited against the Scottish Enhanced Functionality (SEF), which will fit in with the Scottish e-Health Strategy and be able to support e-commerce and paperless practice. This should free practices to concentrate on developing their infrastructure to migrate from paper records to EPRs (see chapter 4 of these guidelines).

3 Patient record systems – purposes and characteristics

This chapter sets out the purposes and characteristics of patient record systems. These requirements underline existing good practice about the use of national, standard approaches. Integrated systems, with appropriate arrangements for sharing information, place even greater emphasis on the need for:

- Consistent standards through the use of the patient CHI Number (NHS Number in England) and agreed national coding schemes
- Excellent data quality.

3.1 Clinical purposes

General practices require a patient record system that has the following functionality;

- Facilitate the clinical care of individual patients by;
    - Assisting the clinician to structure his or her thoughts and make appropriate decisions
    - Acting as an aide memoir for the clinician during subsequent consultations
    - Making information available to others with access to the same record system who are involved in the care of the same patient
    - Providing information for inclusion in other documents (e.g. laboratory requests, referrals and medical reports)
    - Storing information received from other parties or organisations (e.g. laboratory results and letters from specialists)
    - Transfer the record to any NHS practice with which the patient subsequently registers
    - Providing information to patients about their health and health care
- Assist in the clinical care of the practice population by;
    - Assessing the health needs of the practice population
    - Identifying target groups and enabling call and recall programmes
    - Monitoring the progress of health promotion initiatives
    - Providing patients with an opportunity to contribute to their records
    - Supporting medical audit

3.2 Non-clinical purposes

Practices also need a patient record system that can be used to meet administrative, legal and contractual obligations by;

- Providing medico-legal evidence (e.g. to defend against claims of negligence)
- Providing legal evidence in respect of claims by a patient against a third party (e.g. for injuries, occupational diseases and in respect of product liability)

- Meeting the requirements of specific legislation on subject access to personal data and medical records
- Recording the preferences of patients in respect of access to and disclosure of information they have provided in confidence
- Providing evidence of workload within a practice or a PCO
- Providing evidence of workload to PCOs (e.g. to support claims and bids for resources)
- To enable commissioning of community and secondary healthcare services
- Monitoring the use of external resource usage (e.g. prescribing, laboratory requests and referrals)
- Assist with the completion and monitoring of certificates and reports for social, paramedical, legal and private purposes.

3.3 Additional purposes

Practices are increasingly likely to require a patient record system that can be used;

- To interact with a decision support/expert-system;
- To support teaching and continuing medical education.
- To support clinical governance activities
- To support professional appraisal and revalidation
- To enable;
    - Epidemiological monitoring
    - Surveillance of possible adverse effects of drugs
    - Clinical research

3.4 Electronic and paper records - characteristics

Most of the purposes described above are generic, applying equally to both paper-based and electronic patient records. However, electronic and paper based record systems do differ in several crucial characteristics. These are listed below;

3.4.1 General characteristics

3.4.1.1 Physical

EPRs depend for their existence on the presence of supporting hardware and software. In so far as EPRs have a physical presence, this exists at the point(s) of data storage on the machine(s), involved, though they may be accessed remotely. Paper records exist only where they are physically located (or copied).

3.4.1.2 Accessibility

EPRs may be available to the clinician at any point where electronic access is provided to the recorded data. Paper records have to be physically present at the point of use.

3.4.1.3 Resource

Paper records are generally cheap, EPRs are expensive. EPRs require investment in the necessary hardware, software, maintenance, upgrades and training. This may be offset against savings in other costs for the paper equivalents but there remains a different order of investment type and magnitude for computerised records.

3.4.1.4 Predictability

Paper records are generally predictable in their form and function. This is not necessarily the case for EPRs where the user interface, system architecture and functionality may vary considerably between suppliers. This has major implications for training, support and transfer of clinical information between systems (see chapter 5 of these guidelines).

3.4.1.5 Maintenance

Paper records require little maintenance beyond filing and internal ordering. EPRs have additional requirements in terms of technical maintenance, upgrades, and preservation of their integrity, which require quite different organisational skills and resources.

3.4.1.6 Training

Paper records are generally regarded as intuitive in their use. Although clinicians may receive some training in aspects of record construction, this is mostly to do with their semantic content rather than the specifics of the interaction between themselves and their records. Most EPRs are not usable without both basic IT skills and system specific training.

3.4.2 Record characteristics

3.4.2.1 Data entry

Data entry in paper records is relatively straightforward and usually consists of unstructured or semi-structured narrative, abbreviations and perhaps a diagram. The notes may make reference to other parts of the record and may be problem-orientated or summarised. Data entry into the EPR usually contains narrative and structured (coded) entries, together with attached files such as documents and images linked to specific records. Coded data entries can be searched quickly by computers and EPRs can present users with different information based on their level of access and the task in hand

Care must be taken to ensure that patients and records are correctly matched so that data entered into the EPR is for the correct patient.

3.4.2.2 Data retrieval

Data retrieval from EPRs is easier than from paper - not just because EPRs are physically more accessible to their users than paper records - but also because the ability to interrogate the content of EPRs for audit and analysis purposes is arguably their single greatest advantage over their paper equivalent.

3.4.2.3 Semantics

Paper records generally depend for their meaning on the intention and semantic competence of their author(s). There may be some additional organisational elements that affect semantics (such as the way the paper is ordered, the presence or absence of a meaningful summary etc.) but the crucial aspect of the paper record is that it provides considerable freedom of expression for its authors in communicating their meaning. EPRs, on the other hand, always constrain to a greater or lesser degree what is possible to be entered into them. However, a properly constructed EPR with narrative and clinical codes is less ambiguous than a paper record with abbreviations and personal shorthand. The design of EPRs in terms of the availability of coded information and the relationship between those codes and text entry as well as other elements of structure such as problem orientation, access to documents and the like requires particular semantic skills for good usage. This, in turn, contributes to the training requirement.

Furthermore, while electronic records carry advantages over paper ones in terms of processability (e.g. audit, automated decision support, warning of alerts etc.); the corollary of this is that in EPRs there is a "machine" element to the semantic which is not present in the paper record. In other words, computerised records will only give added value if they are provided with data in predictable ways. This is commonly paraphrased to "garbage in garbage out". This fact carries an additional training implication and may be crucially important in terms both of reliable organisational decision-making based on computerised information and, more importantly, for safe patient care.

Common standards across the professions for electronic patient records are a requirement for consistent high quality clinical records. In England, the Information Standards Board (ISB) has launched the NHS Health Record and Communication Practice Standards for Team-based Care - a standard which ensures that NHS staff from different healthcare professions record and communicate patient information consistently . Whilst useful as guidance, there is no formal equivalent organisation in Scotland and health care professionals in Scotland must continue to rely on individual guidance issued by their own professional body.

It is important to understand that transferring electronic patient data is not the same as transferring meaning and context.

3.4.3 Legal characteristics

For the most part the principles of behaviour that underpin legal and professional aspects of medical record keeping are similar for paper records and EPRs, there are significant differences in the effects of the law on principles of good practice for computerised records compared to paper records;

3.4.3.1 Medical confidentiality

There is no UK statute law that expressly asserts the obligations, commonly referred to as medical confidentiality. Information held in confidence is protected legally by common law, the Data Protection Act 1998 and professionally by the GMC.

3.4.3.2 Access to records

Access to electronic and paper records are covered by the Data Protection Act (DPA) 1998.

3.4.4 Security characteristics

There are several aspects of security that particularly relate to electronic records. Within this document, we use the elements of computer security as defined in the Open Systems Interconnection Model (of the International Standards Organisation). The baseline security standard for the NHS is BS7799. Aspects of security that need particular consideration in relation to electronic records are;

3.4.4.1 Availability

This refers to the extent to which a record is accessible and useable upon demand by an authorised entity.

Paper records are available if they are physically present. The availability of EPRs is more complex and does not depend upon their physical location, and they are more difficult to lose, destroy or alter.

3.4.4.2 Integrity

It is important that the data as stored cannot be altered or destroyed in an unauthorised manner either by deliberate intent or through errors in the computer software.

There are specific requirements for EPRs to ensure their integrity, including an audit trail of data entry and modification in addition to the physical security of the record.

3.4.4.3 Accountability

Any entity (whether machine or person) which is able to create, read, edit or delete from the record should be identifiable both from and to their activities.

For a paper record this amounts to a signature. In EPRs, this includes access logs, authentication and audit trails.

3.4.4.4 Confidentiality

The property that information is not made available or disclosed to unauthorised individuals, entities or processes.

Medical confidentiality should not be compromised by the type of record system used. This means that EPR systems should include access control measures, physical security and privacy of systems and secure communication between systems.

The legal and security characteristics of EPRs are considered in greater depth in Chapter 3 of these guidelines.

Information governance

3.5 Introduction

3.5.1 Definition

Information Governance provides a framework for handling personal information in a confidential and secure manner to appropriate ethical and quality standards in a modern health service. There are a number of tensions (such as the need to balance the requirement for communication between clinicians against a patient's right to confidentiality) which render this a complex area, but it is not an area that clinicians can afford to neglect.

Information quality, whilst a key element of information governance, is particularly important in the context of these guidelines and is considered separately in chapter 4.

3.5.2 Rationale

NHS organisations in general and primary care teams in particular are increasingly expected to work in close collaboration with other organisations both within and without the NHS family. It is expected that NHS organisations will endeavour to ensure that services delivered are appropriate to the needs of patients and of high quality. This implies that NHS organisations and other involved bodies should communicate all relevant information between themselves in order to ensure that services delivered are both consistent and fully compatible with patient needs. However, the delivery of services to patients must remain within the legal, ethical and policy framework. This framework needs to be understood by all involved in sharing patient information.

3.5.3 Scope

Information governance encompasses the principles that apply to the processing and protection of information in whatever form it is processed and utilised. Inclusion of this topic in these guidelines should not obscure the fact that these principles apply equally to written records, oral communications and other media e.g. photographs and x-rays.

3.6 Legal aspects

Important elements of information governance for NHS bodies are derived from legislation and common law. Some of these elements are clear-cut but many others need interpretation. NHS service delivery requirements, an understanding of acceptable ethical practice and applicable SEHD policy and standards will all impact on this interpretation. The relevant areas of law are listed below, with an indication of the implications of each.

3.6.1 Common law duty of confidence

The common law in Scotland is based on precedent. As a result its impact is not always clear and it may change over time. Whilst various interpretations of the common law may be possible, there is widespread acceptance that it reinforces the

need to obtain consent from patients before sharing information about them. This duty is not absolute and there are a range of bodies, such as the courts and NHS Boards that have statutory powers to require disclosure of information.

3.6.1.1 Key attributes

Confidential patient information may only be disclosed:

- with a patient's consent, or
- where it is required or permitted by law (statutory instrument or Court Order), or
- where the public good achieved by disclosure outweighs the individual's right to confidentiality.

3.6.1.2 Key guidance

- Confidentiality: NHS Scotland Code of Practice
  http://www.confidentiality.scot.nhs.uk/publications/6074NHSCode.pdf
- GMC Confidentiality: protecting and providing information
  http://www.gmc-uk.org/guidance/library/confidentiality.asp
- SEHD confidentiality website
  http://www.show.scot.nhs.uk/confidentiality

3.6.2 Computer Misuse Act 1990

The Computer Misuse Act identifies a range of offences relating to unauthorised access to or unauthorised modification of computer records. It may apply where an unauthorised third party accesses information being transferred. Enforcement is difficult and prosecutions uncommon under this Act.

3.6.2.1 Key attributes

Where systems are used other than by authorised staff for approved purposes it is likely to be a criminal offence.

3.6.2.2 Key guidance

- Computer Misuse Act 1990
  http://www.opsi.gov.uk/acts/acts1990/Ukpga_19900018_en_1.htm

3.6.3 Access to Health Records Act 1990

The Access to Health Records Act provides a qualified right of access to the health record of a deceased individual where the person seeking access has an interest in the estate of the deceased. It only applies to records created after 1st November 1991.

3.6.3.1 Key attributes

Permits those with an interest in the estate of a deceased individual to have access to that individual's health record unless the individual concerned has provided advance notification that they don't want this to occur.

3.6.3.2 Key guidance

- Access to Health Records Act 1990
  http://www.opsi.gov.uk/acts/acts1990/Ukpga_19900023_en_2.htm
- Scottish Executive Health Department
  http://www.confidentiality.scot.nhs.uk/access_medical_records.htm
- Dept of Health, patient confidentiality and access to health records
  http://www.dh.gov.uk/PolicyAndGuidance/InformationPolicy/PatientConfidentialityAndCaldicottGuardians/fs/en
- BMA Ethical Committee - Access to Health records by Patients (Dec 2002)
  http://www.bma.org.uk/ap.nsf/Content/accesshealthrecords

3.6.4 Data Protection Act 1998

The Data Protection Act sets out eight principles which define the conditions under which processing (including recording, storage, manipulation and transmission) of personal data can be determined to be legally acceptable or otherwise. The act also identifies the sensitive nature of health information and particular needs of health professionals to communicate that information between themselves. The Act gives patients rights of access to their medical records and applies to electronic and paper-based record systems. The eight principles are listed below:

1. Fairly and lawfully processed
2. Processed for limited purposes
3. Adequate, relevant and not excessive
4. Accurate
5. Not kept for longer than is necessary
6. Processed in line with subjects' rights
7. Secure
8. Not transferred to countries without adequate protection

3.6.4.1 Key attributes

The Act requires that patients are told about who will see their personal data and for what purposes. It does not prevent clinical data being used for NHS purposes but other uses may require explicit patient consent. N.B. the common law requirement for consent applies to all uses of confidential patient information.

3.6.4.2 Key guidance

- Data Protection Act 1998
  http://www.hmso.gov.uk/acts/acts1998/19980029.htm
- Data Protection Act 1998: Legal Guidance
  http://www.ico.gov.uk/
- UK Information Commissioners Office
  http://www.ico.gov.uk/

- Use and Disclosure of Health Data
  http://www.ico.gov.uk/documentUploads/Use%20and%20Disclosure%20of%20Health%20Data.pdf
- Health Rights Information Scotland – How to see your Health Records
  http://www.scotconsumer.org.uk/hris/leaflets/athr/index.htm

3.6.5 Human Rights Act 1998

The Human Rights Act is based on the European Convention of Human Rights. The act identifies 15 human rights in Schedule 1 and requires 'public authorities' to ensure that their activities do not violate these rights. Individual doctors working within the NHS are almost certainly public authorities under the HRA and are therefore required to observe the Convention rights in their decision making, and demonstrate that they have done so.

3.6.5.1 Key attributes

The Act provides a right to respect for privacy (article 8) that can only be set aside in accordance with the law when considered necessary in a democratic state. The advice from Government is that this right is respected fully where the requirements of the Data Protection Act 1998 and the Common Law duty of confidence are complied with.

3.6.5.2 Key guidance

- Human Rights Act
  http://www.hmso.gov.uk/acts/acts1998/19980042.htm

3.6.6 Freedom of Information Act (Scotland) 2002

The Freedom of Information Act gives a general right of public access to all types of recorded information held by public authorities (including GP Practices), sets out exemptions from that general right, and places a number of obligations on public authorities.

3.6.6.1 Key attributes

Whilst there are a number of exemptions, the main one that will apply in a primary care setting relates to confidential patient information. Requests have to be dealt with within 20 working days.

3.6.6.2 Key guidance

- FOI Scotland 2002
  http://www.opsi.gov.uk/legislation/scotland/acts2002/20020013.htm
- Scottish Information Commissioner
  http://www.itspublicknowledge.info/

3.6.7 Electronic Communications Act 2000

This Act sets in place an approval scheme for businesses providing cryptography services, such as electronic signatures and confidentiality services, and the processes under which electronic signatures are generated, communicated or verified. An NHS

order made under the Act allows for the creation and transmission of prescriptions by electronic means in cases where specified conditions are met.

3.6.7.1 Key attributes

An NHS order made under the Act allows for the creation and transmission of prescriptions by electronic means in cases where specified conditions are met.

3.6.7.2 Key guidance

- Electronic Communications Act 2000
  http://www.hmso.gov.uk/acts/acts2000/2000007.htm

3.6.8 The NHS (General Medical Services Contracts) Regulations 200411, the NHS (Personal Medical Services Agreements) Regulations 200412 and the APMS Directions

These Regulations, which came into force in support of the new GP contract, include provisions relating to patient records, the confidentiality of personal data, rights of access to, and the provision of patient and practice information held by contractors.

3.6.8.1 Key attributes

The Regulations provide NHS Boards with the power to require patient, and other, information to be provided by practices where this is necessary in order for them to discharge their responsibilities. These Regulations override common law confidentiality but the use of these powers must be governed by a Code of Practice.

3.6.8.2 Key guidance

A Code of Practice is currently being drawn up by the Department of Health in consultation with the GPC. This Code aims to ensure that the powers are invoked only where strictly necessary and that anonymised data is used wherever practicable.

3.7 Standards

In addition to the requirements of law, there are a range of standards that contribute to the information governance framework.

3.7.1 ISO17799:2000 and BS7799-2:2002 Information Security Standards

BS7799-2:2002 is a British standard, and BS7799-1 has been adopted internationally as ISO17799:2000, which expresses a code of practice for information security management. It is the standard adopted by the NHS for information security management.

3.7.1.1 Key attributes

Information security needs to be based upon an assessment of risk and covers issues such as access controls, physical security (doors and locks etc), business continuity planning and disaster recovery, capacity management, and the storage and disposal of records

3.7.1.2 Key guidance

- British Standards Institute
  http://www.bsi-global.com/index.xalter
- NHS Scotland IT Security Policy and Manual
  http://www.security.scot.nhs.uk/

3.8 Other relevant publications

3.8.1 Caldicott Report 1997

The Caldicott review was commissioned to examine the ways in which the NHS used information. The report lists 6 principles to apply to indicate the appropriateness of a proposed communication. The report also carries 16 recommendations for changes in communication processes and practices employed by the NHS. The recommendations focus on the adoption of a strict 'need to know' approach to the transmission of identifiable information and the establishment of an educational and supervisory framework to ensure its implementation. Although much of the work recommended by the Caldicott Committee has been superseded by the NHS Information Governance initiative, the underlying Caldicott principles and the requirement for senior clinical involvement in confidentiality management remain highly relevant.

3.8.2 Confidentiality: NHS Code of Practice2

The NHS Code of Practice on Protecting Patient Confidentiality was published in August 2003 by the Scottish Executive Health Department. All NHS Scotland staff are contractually obliged to adhere to it.

The Code of Practice sets out individual and organisational responsibilities in a clear and coherent way, covering both confidentiality and aspects of the Data Protection Act 1998.

3.8.3 Medical Ethics Today: The BMA's handbook of ethics and law

The second edition of this book, published in 2004, provides in depth consideration of a range of information governance (and many other) issues where interpretation and judgement is called for.

3.8.4 Protecting Patient Confidentiality: Confidentiality and Security Advisory Group for Scotland (CSAGS)

This Report to Scottish Ministers was prepared by the Confidentiality and Security Advisory Group for Scotland (CSAGS). CSAGS was set up in September 2000 as an independent committee, supported by the Scottish Executive Health Department (SEHD), 'to provide advice on the confidentiality and security of health related information to the Scottish Executive, the public and health care professionals'.

3.9 Key information governance issues and developments

3.9.1 Informed consent

Other than when there is a clear legal basis for overriding confidentiality or, exceptionally, when the public good that would be served by breaching confidentiality is sufficiently great, the basis for use and disclosure of confidential patient information must be informed consent. A patient's consent can be implied (from their actions) or expressed (e.g. verbally or in writing) but must be based upon information and awareness that there is a choice.

The policy position established by the Department of Health, endorsed by the BMA, GMC and Office of the Information Commissioner, is that where the information sharing needed to support the care process and to assure the quality of that care has been explained to a patient and he/she has been offered the choice of refusing to permit this, then consent can be implied. In other circumstances, specific and expressed consent must be sought.

Health professionals must take particular care not to disclose information about any third parties when they share or disclose health information without the specific informed consent of any such third parties. An electronic record of any such disclosures must be kept and linked to the originating record.

Detailed consideration of consent issues, including those relating to children and those who lack capacity, can be found in Confidentiality: NHS Code of Practice and Medical Ethics Today. With the bulk of patient contacts taking place within primary care settings, the effective informing of patients is a key primary care responsibility.

3.9.2 Anonymisation and pseudonymisation

Data that cannot identify an individual patient either directly or through linkage with other data available to a user does not need to be regarded as confidential. Whilst there may remain ethical and policy restrictions on the use of anonymised data, e.g. the requirement for all research to have ethics committee approval, the use of such data will not breach confidentiality or other legal requirements.

There are two categories of anonymisation:

a) Anonymised (unlinked) information has been stripped of any elements that would allow identification of individual patients.

b) Pseudonymised (linked) information has had any element that could lead to the identification of a patient removed (including the NHS or CHI number) but individual records are tagged with a reference or pseudonym which is unique for each patient and allows linkage back to the original patient data. An important aspect of pseudonymisation is that no one can access the lookup table apart from the originator who has a responsibility not to give anyone else access to this table. Where those who are using data have no means to reverse the process, and so no way to identify an individual from the data they have (or from the data they have and any they may acquire), the data may be treated as anonymised and there is no common law requirement to seek consent for their use. Processing should still meet at least one of the requirements in each of Schedules 2 and 3 of the Data Protection Act, however, since it is possible that pseudonymised data fall within the Act's definition of personal data. This point has not been tested in court,

although the Information Commissioner advises NHS bodies and clinicians to apply the Act in these circumstances. For those who have access to both pseudonymised data and the means to reconstitute them, on the other hand, they should be treated as identifiable.

As a general rule, for purposes other than direct care or the quality assurance of that care it is advisable to work to the principle that:

a) wherever possible anonymised information will be employed,

b) that the use of pseudonymised information will only be considered where anonymised information cannot satisfy requirements, and that

c) patient identifiable information will only be made available where neither of the other categories can provide what is needed and it is lawful to do so.

3.9.3 Data ownership and control

GPs act as data controllers with their patients the data subjects. Debates about 'who owns the data' occur when a party wants to gain access to information held in patient records and there is uncertainty or disagreement about what category of information should be provided, whether the enquirer has any right of access, whether patient safety and/or privacy is at risk, or whether patient consent is required. It is generally more important to resolve these issues than the question of ownership as such and important to remember that "ownership" does not give rights of access or control to personal data.

3.9.4 Research

No disclosure of data should be allowed without the approval of the relevant patients, clinicians and research ethical committee(s). There may be legitimate reasons for extracting patient identifiable data from a GP system, other than for routine clinical care. However, such extraction should;

- Be with the knowledge and informed consent of the guardian of the record (in this case the GP)
- Follow approval from a Research Ethics Committee
- Follow approval from the responsible PCO
- And it should be with the informed consent of the patient

There should be both an audit trail for the data extraction and retention of the research database in order for both patients and health professionals to satisfy themselves, if necessary, that the data have been handled ethically and legally.

Provided both the patient and the practice have given informed consent, the ethics committee and PCO have approved and the data are handled according to the strictures of research governance, then the process should gain professional and public approval. However, researchers extracting these data would be well advised to;

- Inform a professional and public body and, if appropriate, seek endorsement from that body
- Only handle the data through a Trusted Third Party (TTP)

A Professional and Public Body could be a single body, or one could be set up for specific projects extracting data from general practice computer systems. Such a body should;

- Represent firstly the interests of patients and secondly the interests of the health professionals and practices
- Include independent lay people
- Include independent representatives of the medical, nursing and other relevant health professions in primary care
- Have full access if requested to the (anonymised) dataset, the extraction and use audit trail and the resulting analyses if necessary to satisfy themselves that the data are being used ethically and properly
- Have full access to agreements concerning the use of the data
- Be bound by rules and standards of patient confidentiality and data quality within the law

A TTP is an organisation or institution of reputation, that is independent of the SEHD, the National Health Service or commercial ownership or control, and that uses its reputation as a guarantee of the security and processing of the data. The essence of such a body is that it earns and maintains the confidence and trust of the public, the health professions and stakeholder organisations through integrity, transparency and equity. In future NHS Trust Service Providers (TSPs) may assist with the provision of "trust" services such as anonymisation and pseudonymisation.

3.10 Electronic communication and information governance

3.10.1 Clinical messaging

The scope of clinical messaging is planned to extend significantly. Plans include:

- Facilities to request and receive reports for the full range of laboratory and diagnostic imaging procedures;
- To receive notifications of hospital admission, of casualty and of OOH attendance;
- Electronic transfer of prescriptions from GP practices to pharmacies
- GP to GP electronic transfer of records

3.10.2 NHS e-mail "Contact"

The current version of NHS email provided by Cable and Wireless, known as "Contact", provides security for messages sent between two Contact email addresses. Contact email addresses can be identified by the suffix '@nhs.net'. Patient identifiable information can be safely sent from one Contact email address to another. If either the sending or receiving address is not a Contact address then separate encryption will be needed for sending confidential information including Patient Identifiable Data.

3.11 Other systems issues

PCOs rather than practices are now responsible for practice system purchase, maintenance, upgrades, support and training. Systems and suppliers will be accredited against National Templates and Service Level Agreements. Practices may not need to be so concerned in future with hardware issues, but the following headings still need to be considered;

3.11.1 Risk management

Practices should get help and advice about this from their PCO and National User Group.

3.11.2 Accessibility

Practices need to ensure that they have an adequate number of workstations at each point within the organisation where staff need to have access to the EPR or other supporting applications.

3.11.3 Capacity and storage

The system must have adequate data storage capacity to meet likely current and medium term future needs for storing their EPRs and supporting applications securely.

3.11.4 Physical security

The system must be sited in a safe and secure location. Backups must be performed regularly and stored securely (e.g. fire-proof safe designed to protect electronic media). You should take physical security measures to prevent loss or failure of the system due to;

- Theft
- Fire, flood and other disasters whether natural or man made.
- Mechanical, electrical or magnetic damage
- Power failure
- Failure of external systems or dependencies (cables, remote servers).
- Exposure to environmental factors outside the manufacturers' specification (e.g. excess heat, cold, humidity or dust)
- Deliberate tampering
- Computer viruses
- Staff problems (e.g. illness or absence of system manager)
- Access control
- Damage or destruction of the physical building in which IT systems are held.

Practices must ensure that access to clinical information is controlled so that only those authorised to do so can have access to some or all parts of the clinical system.

3.11.5 Security policy

The practice should develop and implement a security policy in collaboration with their PCO.

3.11.6 Disposal

Practices and PCOs should ensure that they properly manage computers and storage media (e.g. hard discs, cd-roms, tapes, floppies etc) that are no longer required, ensuring that no such hardware contains any personally identifiable patient information before disposal. All storage media should be re-formatted to delete any personal information as per your supplier's instructions before disposal. If there is any possibility that such information might remain accessible on the storage medium after formatting, then you should physically destroy the hardware before disposal.

3.11.7 Disaster recovery

Practices should prepare a detailed disaster recovery plan before they are able to move to paperless practice. To be effective the elements of a disaster recovery plan should include the following:

- Backup of the system to a suitable medium (usually magnetic tape) at regular intervals with a frequency of no less than once per day.
- A system of cycling multiple media such that a single failed backup cannot render the plan ineffective (e.g. using different tapes for each day in a weekly cycle).
- Secure storage of backup media to protect against accidental damage (e.g. flood or fire) or theft.
- A system to ensure that at least one recent backup is retained off-site to provide additional resilience against accidental destruction or theft (e.g. taking the previous day's backup off-site each evening).
- A system to ensure that any warnings or messages produced by the backup system are noted and acted upon.
- Regular replacement of backup media in accordance with the manufacturer's instructions.
- Periodic submission of a specimen backup to an external verification service (where available) to ensure that backups obtained are able to be used to restore a functioning system.

However traumatic it may be, hardware can easily be replaced, but years' worth of patient data cannot, unless it has been properly and verifiably backed up, securely stored and recovery-tested.

3.11.8 Business continuity planning

Many practices are in vulnerable locations and are subject to higher than normal physical risks, such as burglary and arson. Organisations should consider the impact that loss of premises would have on their operations. Modern businesses typically dovetail their arrangements for disaster recovery with a business continuity plan.

4 Migration towards paperless practice

4.1 Introduction

This chapter documents the path towards "paperless practice", but recognises that pragmatically paper and electronic records should work in concert and that organisational processes should make optimal use of both. This optimised balance between paper and computerisation is crucial to effective practice, but of course that balance will change with time and vary between practices. There are very few practices that are "paper only" and probably none that are truly "paperless". The vast majority of practices have travelled some way on the journey towards a "paperlight" EPR.

The pathway cannot begin without recording demographic (registration) data for all patients, so for the purposes of this section, it is assumed that the practice uses Partners Links (GP/HA Registration Links in England), and records all standard demographic details and their changes on the computer.

4.1.1 Pathway to paperless practice

1. Data download from other systems e.g. cervical screening or childhood immunisations (only worth doing when processes in place to keep data up to date)
2. Repeat prescribing[#]
3. Acute prescribing[#]
4. Clinic based chronic disease management (using templates and/or protocols)
5. Consultations maintained in full on the computer
6. Disease/problem registers routinely added to from incoming reports (letters discharge summaries etc.)
7. Historical paper records summarised in electronic format
8. Pathology messaging (Electronic Data Interchange)
9. Radiology messaging (Electronic Data Interchange)
10. Scanning of incoming letters stored as attachments to the record or integrated within the clinical record (see chapter 6 of these guidelines)
11. Production of electronic reports for referrals and electronic General Practitioner Reports for insurance companies
12. Images such as ECGs and dermatology pictures routinely attached to the clinical record (see chapter 6 of these guidelines)
13. Online bookings/referrals
14. GP2GP record transmission[*]
15. Electronic hospital discharge letters for GP

May include services provided through the ePharmacy Programme.

* See Appendix 2

Before considering the detail of each step in the pathway towards paperlight practice, it is useful to recognise the potential benefits, the standards and principles that are necessary.

4.2 Benefits of effective computerisation of practice record systems

4.2.1 Benefits for the practice

- Helps to improve patient care, for the individual patient and for groups of patients
- Raises awareness of the needs of the practice population as a whole – allowing the practice to look at the needs of specific groups of patients as well as the individual
- Support for the legal requirement to have an accurate historical record of care
- Makes it easier to identify groups to target for particular interventions and packages of care (e.g. chronic disease register)
- Supports the decision-making process and can offer automated decision support
- Motivates and encourages practice staff
- Audit of better data gives a more accurate reflection of the care provided and feedback of the data will be more meaningful
- Encourages the practice to work as a team – can be used as a communication tool
- Stimulates discussion
- Supports practice development, appraisal and continuous professional development
- Facilitates proactive (rather than reactive) work by practices
- Reduces duplication of work and increases efficiency within the practice
- Gives confidence to move away from duplicate systems (e.g. paper and computer)
- Gives supporting evidence when bidding for funds/services

4.2.2 Benefits for the primary care organisation

- Support greater integration of care
- Helps monitor progress towards NSF objectives
- Facilitates the process of clinical audit and governance
- Enhances evidence-based practice and performance targets
- Improves commissioning and resource planning
- Supports epidemiological monitoring and public health services
- Improves and extends capacity for research

4.2.3 Benefits for the patient

- Helps to improve patient care
- Increase patient confidence in the service being offered
- Improves speed and reliability of patient centred communications across NHS boundaries e.g. pathology EDI
- Increases access to and enriches information for patients

4.3 Recording standards – data quality

It is stages 2 to 7 in a practice's pathway to paper-light that comprise the greatest workload for practices and requires the greatest change in their ways of working and organisation. Central to this are their recording standards.

To be useful for clinical care, clinical audit, research, epidemiology, health care planning and commissioning, data should be of high-quality.

The PRIMIS (http://www.primis.nhs.uk/) project and GPRD database (http://www.gprd.com/) have been instrumental in defining standards and procedures for improving data quality in Primary Care in the UK. PRIMIS has implemented training programmes for PCOs in support of this. Much of the following advice has been derived from guidance in the PRIMIS Facilitators Handbook. PRIMIS services are only available to primary care organisations in England.

In Scotland the Scottish Health Statistics website of the Information and Statistics Division provides support material and guidance on data quality issues.[1]

PRIMIS suggest that high-quality data should be

- Complete
- Accurate
- Relevant
- Accessible
- Timely

4.4 General principles of recording clinical data

In recording clinical data on computer, the ultimate aim must be electronic records that can be relied on for clinical practice.

This implies that all clinicians record their actions taken in response to problems presented at all patient contacts.

This may be difficult initially, but is the ultimate aim for a safe transition to paperless practice. The principles listed below can help guide practices in the right direction.

[1] http://www.isdscotland.org/

follow links to "Collecting Information";"Managing Data Quality"
The full URL is:
http://www.isdscotland.org/isd/collect2.jsp?p_applic=CCC&p_service=Content.show&pContentID=785
Last Accessed September 2006

4.4.1 Support Patient Care

The primary purpose of recording information is to support patient care. If the information recorded is not required routinely for patient care, it is unlikely to be recorded consistently or completely, particularly in the longer term.

4.4.2 Everyone Takes Part

All clinicians participate in data recording, so that the full practice population is available as a denominator. Without this, clinical audit, practice planning and commissioning is very difficult and it is difficult to calculate rates of incidence and prevalence of disease

4.4.3 Data is entered at the time

All clinicians enter their own data directly into the computer system, this reduces problems of transcription error and legibility. Where individual clinicians do not enter data themselves onto computer, procedures should be established for capturing and inputting the information.

4.4.4 Every Encounter is Recorded

Practices record all occurrences of the data set to ensure completeness, to obtain a full picture of practice morbidity. This implies capturing data from locums, trainees, phone calls and from encounters outside the consulting room, such as home visits and contacts with out-of-hours centres.

4.4.5 Code Consistently

Practices record problems consistently. Each episode of illness should be coded with only one diagnosis code, to avoid multiple diagnoses being counted, so clinicians should not record asthma in one instance and asthmatic bronchitis in another, unless the diagnosis has actually changed.

4.4.6 Use Code Lists

Consider using a clinical code list which can be helpful in ensuring consistency within the practice. This does not imply strict adherence to particular diagnostic criteria, as their use is frequently impractical given the nature of primary care. However, where they have been agreed either locally or nationally, they will aid data consistency and accuracy. The use of templates can help ensure consistent data entry.

4.4.7 Feedback and Audit

Regular feedback and audit of data quality is carried out. Unless data quality is regularly audited and the findings of the audits acted upon, the data will lack credibility in analyses.

4.5 Processes to support these principles

- Training for general practitioners and other practice staff involved in data capture. This will normally be available from an IT Facilitator or system supplier.

- Identifying someone to lead on preparing the practice for participation in IT implementation and development.
- Undertaking a baseline assessment which will enable the practice to understand what changes need to be made to improve the quality of data recorded and what changes need to be made to data recording procedures.
- Reviewing and changing procedures to ensure completeness and consistency of data capture. A practice needs to look at data quality improvement within the overall context of improving the use of the computer system to support patient care. This may imply major changes in the way that data are recorded and there may be specific problems or issues that need to be resolved, such as differences in the terminology or definitions used by individuals within the practice.

The primary care team will need to decide how they can best capture information consistently and completely.

The following should be considered in particular:

- Can any data such as demographic information be downloaded to populate the clinical system?
- What data is not currently recorded consistently on computer by some or all clinicians?
- What data comes from other PHCT members and how should it be captured?
- How to capture data from locums, registrars and home visits?
- How is data gathered when new patients register with the practice?
- How will protocols of care and/or diagnostic criteria (where available) be used and made acceptable to the practice as a whole?
- Who will design, develop and implement templates or protocols? (where available)
- How will data obtained from elsewhere (such as hospital discharge letters) be managed?
- What will the practice do when the IT system goes down?
- How will data quality be monitored?
- Is EDI for pathology, radiology etc available from local hospitals and how will the practice manage the implementation?

4.6 Recording clinical information

4.6.1 Data downloads – getting a head start

Before embarking on entering retrospective smears and childhood immunizations, contact your supplier and PCT to see if data downloads are available. Such downloads can automatically update hundreds of records with cervical cytology and child vaccine records.

4.6.2 Prescribing

Most practices use their computer systems for prescribing and this is a logical starting point on the paper-light pathway. Not only are scripts recorded exactly as printed and given to the patient, but there is the potential for automatically identifying interactions, warnings and allergies.

The prescribed drug may be linked to a problem title on some systems. In addition, systems should allow the recording of the following medication features;

- Approved drug name
- Clear dosage instructions
- Whether issued as an acute prescription or authorized as a repeat prescription
- Quantity and form of the medication
- Date of prescription
- Drug code - Use coding system provided with the clinical system
- Route e.g. oral, topical, intramuscular
- Cost - Generated automatically by the system
- ID of prescribing GP which is usually generated automatically by the system and based on login identifier.

Medication from home visits, or on other occasions where a prescription is not printed, should also be entered on the system to provide a complete picture.

Where third parties have initiated new medications, this information should be entered from the hospital or other notification, where the GP has continuing responsibility to prescribe.

4.6.3 Retrospective data recording – including historical information

This may involve updating the data on the computer system to include retrospective information on conditions of interest to the practice (e.g. chronic disease management as part of the GMS contract).

It is recommended that this should be done condition by condition and at the same time as processes are introduced to record future data consistently. The alternative is to build up this information opportunistically as patients attend the surgery (most patients with a chronic condition should attend within a year).

Where new patients join the practice data may be entered from a form completed by the patient, consultations with the patient, from the historic record when received or more typically from a combination of all of these.

Retrospective data can be entered in the following ways;

- Transcription of data from paper/manual chronic disease/morbidity registers
- Going through the paper records, searching for patients with conditions of importance. This is time-consuming, but the most thorough approach. It will be quicker if the practice has summarised its records and summaries are kept up to date. It involves planning, agreement of protocols, training of an

individual to input the information, availability of a GP to answer queries, and monitoring of quality of recording.

- Where drugs are prescribed for specific conditions (e.g. insulin for diabetes). A listing is obtained from the practice system of patients on the specific drugs, the list is checked with a doctor and if the diagnosis is appropriate, the patient's record is checked for diagnosis and a diagnosis added if not already recorded.
- Selecting records for specific groups of patients, for example, patients with chronic diseases or those attending other clinics, such as over-75 checks.
- Preparing a list of patients with a specific condition and asking GPs and nurses whether they remember any other patients with the condition.

When updating retrospective data, it is important to remember to record the date of the first diagnosis, as many systems will otherwise default to the date of entry of the data.

4.6.4 Prospective data recording - recording at all consultations

Practices should have procedures in place to capture all patient contacts and other significant health events such as referrals, test results and discharge information. Data should be recorded at or immediately after all consultations and patient contacts. Practices should have agreed policies for allocating terms and codes so that all staff use them consistently.

Where a practice is relying heavily on computerised records, it is important to establish a role, and designate a person responsible for, procedures relating to data management and quality within the practice.

It is important that at each consultation the GP/clinician should make a basic health record entry.

The following data items should be recorded as a minimum;

- Date of consultation, usually generated automatically by the system. Care should, therefore, be taken to ensure that the default is not used inappropriately; for example, for a home visit entered later.
- Author, usually generated automatically by the system and based on the identifier used to log in to the system. Used for queries and audit.
- Morbidity or problem, coded – Clinical code 4-byte or Clinical code Version 2 depending on practice system.
- Risk factor, coded – Clinical code 4-byte or Clinical code Version 2 depending on practice system
- Narrative – free text that places the coded information within the context of the patient's story.

Other information may be recorded; for example, additional Clinical codes, location, referral, and so on, where it is useful to the practice. Morbidity would need to be recorded at each consultation, unless a morbidity monitoring code was used; for example asthma monitoring using the Clinical code '663.' in the 4-byte set or '663..' in Version 2. The 'Author' is technically defined as the responsible clinician, even

when data are entered by others. If permitted by the clinical computer system, entries should indicate both the responsible clinician and the person making the entry.

4.6.5 Recording clinical codes

The following questions may help in deciding on the most appropriate Clinical code to record the relevant clinical diagnostic term;

4.6.5.1 What problem is the patient consulting about?

Where a diagnosis can be made, an appropriate Clinical code should be entered from the diagnosis chapters in the Clinical codes; Chapters A–O in the 4-byte set and Chapters A–Q in Version 2. 'Symptomatic' diagnoses may be recorded using Clinical code chapter R (Symptoms, Signs and Ill-defined Conditions).

Where a diagnosis is uncertain, and no suitable diagnostic Clinical code exists, symptoms and signs should be recorded.

4.6.5.2 Are there other significant problems that are the subject of this consultation?

If there are, these should also be recorded.

4.6.5.3 Does the consultation contain no morbidity or are there any additional components?

For example, where a tetanus booster is given, the immunization code from Chapter 6 (Preventive Procedures) should be entered. Other procedures can be recorded using Chapters 3 (Diagnostic Procedures), 6 and 8 (Non-operative Procedures and Therapies).

Many systems provide computer forms and picklists to enter such structured data.

4.6.5.4 Is the consultation to provide health education?

Where a consultation relates to management of a specific disease, such as advice on smoking to an asthmatic, the appropriate morbidity (asthma – diagnosis or monitoring code) should be entered. However, if health education is provided without related morbidity, a health education Clinical code from Chapter 6 should be used; for example, advice on exercise (6798 in the 4-byte set and 6798. in Version 2).

4.6.5.5 Is the consultation for administrative purposes?

Some consultations are purely administrative (for example, the signing of a private form), and should be recorded with suitable administrative Clinical codes from Chapter 9.

It is normally possible to find clinical codes in the Read Dictionary which describe the form completed, e.g. Med 3

4.6.6 Direct data entry

Direct entry is the most accurate method as it involves the clinician entering information about a patient during or after the clinical encounter. In deciding what to record on computer, practices should clearly base their decisions on what is regarded as necessary to support patient care, but other factors that might be important include;

- Some systems allow users to set up their own synonyms; caution is recommended to practices wishing to do this, to ensure that local synonyms are appropriately linked and fully understood by all users.
- Try to be consistent in the Clinical code used for the same condition.
- Identify an individual in the practice who is the most proficient at and interested in using Clinical codes to become an adviser for the rest of the practice.
- Build data quality audit into the practice routine to monitor use of Clinical codes.
- Where a patient is seen at a branch surgery or during a home visit, the doctor will need to enter the data on return or establish some other procedure for data entry.
- Where information is obtained from elsewhere including previous GPs it will be necessary to establish a procedure for entering the data onto the computer.
- Involve the patient! Ask your patient to review the on-screen data and verify the entry

4.6.7 Indirect data entry

Where both direct and indirect data entry is happening within the practice, it is important that the same rules are being applied by all members of the practice team.

It is important to ensure that all clerical staff have adequate training and support. In particular, a clinician should be identified to whom coding queries can be addressed, and a time agreed when these issues are dealt with.

It is important for the practice to develop an accurate recording system to ensure that potentially important data are not missed. Practices using indirect data entry as the norm may find that data quality is at risk; for example, through legibility or transcription errors. The following advice is provided to try to reduce these problems, though data entry by clinicians at the point of care is recommended wherever possible;

- Checking back in the notes to make sure that the same name is used for a condition that has been recorded previously.
- Using templates or protocols to assist data entry
- Providing a list of Clinical codes, where the clinician can simply record the appropriate code or term.
- Using the diagnosis symbol (D) or highlighting problems to identify within the notes relevant information for recording
- Writing the details to be recorded on a separate form, such as an appointment list, with space to add problems.
- Dictating problems during or after consultation.
- Once data have been entered, a highlight pen or red tick can be used to identify it as having been entered.

- Where a diagnosis needs to be changed, the patient's notes should be clearly amended.
- To identify that data have been entered on behalf of a clinician by clerical staff, the login identifier should be set up to identify the clerk concerned with the clinician identified separately in the consultation details.
- Setting data capture targets along the lines of "all information placed in the box for data entry by the end of the day will be entered into the system by the end of the next day" is strongly recommended to avoid backlogs developing.

4.7 Non-routine data capture

Practices will need to consider how best to capture data in the following circumstances;

- For other members of the PHCT, who may not routinely use the system
- For locum staff who are unfamiliar with the practice computer system
- For home visits, out-of-hours consultations and consultations at branch surgeries
- If the computer system goes down
- Information generated by other organizations (for example, test results, hospital admissions until these are transmitted electronically)

Many practices use clerical staff to capture information from paper notes. However, the accuracy of patient data on the system is a clinical responsibility. Therefore, clinicians should have in place a system for checking data entry quality and consistency and encouraging access and use of the system by primary care team members.

Procedures should be established by the practice for recording such data which should include;

- Defaults may be set up for location (surgery), date (today) and author (login identifier). Care should be taken that the correct details are entered where the default does not do so.
- Locum cover. Data capture requirements should be made clear to locums, who may need some training or guidance. Pre-printed data collection forms may be provided, and/or guidance on highlighting data to be entered in the notes.
- Home visits.
- Clinical letters (e.g. outpatient attendances, admissions, laboratory results)
- System failures; These should include contingency plans to use alternative clerical recording methods if the system fails. Data collection forms could be used, with agreed places to store completed forms, and staff identified to enter the data once the system is running again.

4.8 Use of templates and protocols

Templates and protocols are available for many of the GP systems. They can be very useful for ensuring fast, reliable data entry for coded information into the EPR.

4.8.1 Templates

A template provides a screen form with data entry fields displaying a related set of Clinical codes or terms. Templates can be used to speed data entry, to ensure that all appropriate information about a patient is obtained and that information is recorded consistently across the practice. Templates can also provide 'picking lists' of appropriate Clinical terms to simplify selection. SPICE screens on GPASS in Scotland are an example of this.

4.8.2 Protocols

Some GP systems provide decision support tools to help GPs to diagnose and decide on appropriate treatment for specific conditions (e.g. PRODIGY)

Systems vary in the way in which templates and protocols are provided;

- Some systems allow templates or protocols to be 'linked' to a particular Clinical code, so that when that code is entered, an appropriate template or protocol is displayed as a reminder of the information required.
- Some systems provide standard templates and protocols, whilst others also enable users to develop their own. Templates and protocols are also often available from system User Groups.

A practice can generate its own templates or protocols, either based on standard ones provided by the supplier or obtained from other practices or system User Groups, or new ones developed by the practice.

In setting up local templates and protocols, great care should be taken in choosing Clinical codes to ensure that data errors are not systematized. For example, using a diagnosis code for ischaemic heart disease (from Chapter G) in a template or protocol by mistake when what was intended was the entry of information about family history (from Chapter 1) for an individual will lead to large numbers of patients apparently suffering from heart disease when the data are extracted and analyzed, and will mean large-scale correction of data entries.

4.9 Diagnosis refinement and amendment

Practices need to be able to handle diagnostic amendments to ensure that patient records are accurate.

There is a difference between a diagnosis that is refined over time as it becomes clearer, and a diagnosis that is recorded inaccurately or subsequently found to be incorrect. They should be handled as follows;

4.9.1 Diagnostic improvement.

In this case, a patient presents on several occasions and the diagnosis is refined over time. New morbidity codes would be added over time as the diagnosis 'emerged' but there would be no need to amend the initial diagnosis as it was not factually incorrect.

4.9.2 Amendment.

There is no ethical difficulty with removing or correcting inaccurate or misleading information, or making a clear addition to incomplete information. It is important that records do not contain information which may mislead another health professional

using them. Indeed, the Data Protection Act 1998 gives patients a right to have inaccurate records amended. It is inadvisable to remove medically relevant information from patient records. It is important that notes provide a contemporaneous record of consultations and information gained about patients. Removing relevant medical information may give the impression that the notes have been tampered with, and may make later treatment and care decisions seem unsupported. It follows that doctors should take care to ensure that the records show all significant aspects of care, and clearly identify any decisions that were later found to have been inappropriate so that in the future carers do not misinterpret the patient's medical history.

If there is dispute about the accuracy of information, for example that was recorded in the past by a previous GP, doctors should take reasonable steps to ascertain the accuracy of information in the records. If this is not possible, a note explaining the patients' views should be appended to the records. This allows health professionals using the records in the future to be wary of placing undue weight on disputed information.

4.10 Clinical codes

The Clinical codes are the current recommended national standard in General Practice and most GP systems use them for recording clinical information. We recommend that the IT lead clinician within the practice develops particular knowledge of Clinical codes.

Clinical codes are arranged hierarchically, with the level of detail increasing down the hierarchy. The hierarchical approach is intended to help users to find related terms and decide on an appropriate level of detail easily. Each concept identified has a preferred term and may have any number of synonyms, acronyms and abbreviations linked to the preferred term. Each preferred term also has a unique code. For example;

- Preferred term; Myocardial infarction
- Synonym; Heart attack
- Acronym; MI
- 4-byte Clinical code; G41.
- Version 2 Clinical code; G30..

Generally Clinical codes can be entered on a GP system by;

- entering the first few letters in the diagnosis
- entering a synonym or acronym, for example; DM for diabetes mellitus
- entering the code, such as C10, if known
- searching through the hierarchy step by step

An understanding of the Clinical code structure is essential for those recording, extracting or analyzing data, as similar terms may have different meanings depending on where they are located in the structure. For example, to record a patient with asthma using Version 2, there may be a choice of (among other codes);

- Asthma – cardiac (G581. [synonym for LVF] – circulatory diseases chapter)

- Asthma (H33.. – respiratory diseases chapter)
- Exercise-induced asthma (173A. – history/symptoms chapter)
- Moderate asthma (663V2 – preventive procedures chapter)

Diagnosis codes all start with a letter rather than a number – number chapters cover symptoms, signs, investigations, procedures and administration. Generally it is wise to restrict use of diagnosis codes to conditions where there is reasonable diagnostic certainty. A diagnosis code should never be used where a recording of a diagnostic exclusion is being made (e.g. qualifying a coded entry of Diabetes mellitus with not present) – this should be done in free text (e.g. "no evidence of diabetes mellitus found".

SNOMED CT (Systematised Nomenclature of Medicine – Clinical Terms) has been selected as the standard terminology scheme for the NHS in Scotland and the rest of the UK and will eventually replace the current Clinical (Read) codes. The use of SNOMED will greatly enhance consistent recording and communication of clinical information. There are however considerable challenges in the training of staff and migration from current systems.

SNOMED-CT employs a structure of concepts linked by relationships which provides a powerful model for coding medical care. More information is available from the SNOMED-CT web site http://www.snomed.org/snomedct/index.html and at the Connecting for Health SNOMED-CT site http://www.connectingforhealth.nhs.uk/technical/standards/snomed/

4.11 Morbidities, symptoms and signs

The following principles for recording morbidities will help ensure data consistency;

- Clinical codes should be used in preference to locally defined codes, as these are less amenable to comparative analyses.
- Clinical codes should be recorded to a clinically useful level of detail.
- Practical working diagnoses are adequate
- The same Clinical code should be used consistently for the same condition during the course of an episode of illness.
- Where a patient is being referred for an opinion, the symptom should be recorded ('breast lump'), rather than the possible diagnosis ('breast cancer').

The following examples of common errors should be avoided;

- Recording family history of disease as a patient's disease.
- Recording exclusion of a diagnosis using the Clinical code for that diagnosis. This should be recorded in free text, for example, from Version 2, "chronic bronchitis [H31..], not asthma", rather than "chronic bronchitis [H31..], not asthma [H33..]".
- Recording H/O (history of) a disease rather than a definitive morbidity with a date
- Recording a diagnosis instead of a procedure screening for that condition.

- Recording a procedure (syringing the ears) instead of a morbidity (excess wax in the ears).
- A morbidity entered instead of an immunization or test; for example, tetanus, rather than the tetanus immunization.
- Recording neonatal problems to a mother's record, especially where the baby was not yet registered. Or recording birth details in the baby's record (e.g. Caesarian section)

4.12 Lifestyle and risk factors

Recording data on lifestyle and risk factors can provide a powerful tool for targeting health promotion activities and for predicting morbidities; for instance, smoking, weight, blood pressure and cholesterol levels are all predictive of heart disease. Practices are already likely to be recording some data on risk factors. New Patient questionnaires and medicals offer an opportunity to gather information on lifestyle and risk factor data.

4.13 Linking data items

A morbidity may be directly associated with one or more of;

- Treatment
- Medication
- Referral
- Treatment or investigation carried out outside the practice

Linked data can be used to obtain information on;

- Actions taken in response to specific morbidities
- Effectiveness of treatments provided
- Outcomes for specific morbidities

Linked data is most commonly employed in systems using a Problem Orientated Medical Record (POMR). For example:

Asthma (H33..) may be defined as a "Problem" and be linked within the record by the system to all related medications, associated episodes of care and referrals.

This normally requires an element of structuring the record which the Clinical Information System may not support. Typically it also requires some active data hygiene to be done by the clinicians.

Outside the POMR the most common use of linkage has been to attach a new repeat prescription to a clinical code describing the reason for the prescription. This is part of the Quality and Outcomes framework of the GMS Contract 2004.

4.13.1 Contacts or encounters outside the surgery

To obtain a complete picture of the care provided to a patient, it is necessary to capture contacts or encounters taking place outside the surgery. Systems are able to record contacts or encounters which take place other than during a surgery consultation; for instance, a home visit. Generally, location codes are user-defined,

and so will be practice-specific. They may, therefore, refer to a number of different things in addition to location, such as type of practitioner, reason for contact, and so on. The default location is generally surgery attendance, so it would usually be necessary to overwrite this with the appropriate location code.

As the login identifier is used by systems to identify the individual making the contact, the member of staff involved in the contact ideally should enter the data. If not, the identifier should identify the individual entering the data, and the clinician on whose behalf the data are being entered should be recorded in the consultation details.

4.13.2 Referrals

Any type of referral can be recorded, such as consultant outpatient referrals and referrals for investigations. Where a patient is referred for a diagnosis, the symptom should normally be recorded, rather than the possible diagnosis (which can be entered in free text if needed to provide clarification).

The following data set is recommended for practices recording referrals;

- Data Item Comments
- ID of GP referring usually generated by the system and based on login identifier
- Date of referral
- Diagnosis or symptom Clinical-coded using the code which best describes the clinical situation, e.g. breast lump
- Referral type Clinical code combines type (e.g. emergency, consultation) with specialty (e.g. orthopaedics) in one code, e.g. 8H58
- Provider ID/Hospital name and code
- Reason for referral, confirmation of diagnosis, further investigations, etc.

4.14 Interventions carried out elsewhere

Community care terminology (e.g. district nursing) is not always well represented in the Clinical codes, so it may be difficult to code this information on GP systems currently. Care provided outside the surgery, for instance in hospital, should be recorded as a consultation, but in a way that identifies it separately; for example, by using an appropriate location code other than surgery. Care provided in the surgery but by someone from outside the practice, such as a hospital consultant holding an outpatient clinic, should also be recorded as a consultation, but identified separately, by using a different personal identifier.

The following data set is recommended for treatments and investigations;

- Data item comments
- Date of event
- Author identifier of individual entering the data
- Confirmed diagnoses as reported, entered as Clinical code
- Results of investigations/tests as reported, entered as Clinical code

- Procedures as reported, entered as Clinical code
- Location where the procedure or investigation took place
- Medication as reported
- A link to the relevant scanned or electronic discharge or outpatient report where available

There are different issues involved in capturing data from outpatient letters and discharge summaries and test results, so they are considered separately below. In addition, the following general advice is given;

- Whilst information provided by hospitals is generally recorded in free text, some may be coded using ICD or OPCS codes, rather than Clinical codes. There is no exact map between these coding systems and Clinical codes, so decisions will need to be made by a clinician as to which Clinical code is most appropriate.
- Whilst data are often entered by clerical staff, clinical responsibility is essential. A consistent approach needs to be employed across the practice and monitoring processes should be implemented.

4.15 Clinical letters

Treatments and procedures are generally obtained from a hospital discharge summary or outpatient letter.

- Date should be recorded as date of letter, not the date of entry onto the clinical system.
- Where care was provided in hospital, location should be hospital or similar, not surgery.
- Medication should be recorded where the GP continues to prescribe it and in case of possible contraindication or allergy.

4.16 Investigations

Investigations and results can be entered from paper reports but their capture is both less time-consuming and more accurate if electronic links are used to transfer the results from the laboratory to the GP system.

Specifications on managing pathology messaging are available from your computer system supplier and from the Scottish Care Information (SCI) website (http://www.show.scot.nhs.uk/sci/).

4.17 General practitioner reports (GPR)

The questions asked by insurers of GPs and the content of the reports produced in response are governed by agreements struck between the Association of British Insurers (ABI) and the BMA, most recently revised in Nov 2003. The major GP system suppliers have written specific extraction routines for these reports (GPRs) and it has become common practice for GPs to use these, edited as needed, for their responses to insurers. Recently, the facility to convey the finished reports electronically to the insurers (eGPR) has become available.

For both GPR and eGPR:

- GPs should be aware that they have the option to decline to complete a GPR in any form.
- The responsibility for ensuring the appropriateness, correctness and completeness of a GP report remains as firmly with the GP as if he/she had hand-written the whole of it personally.
- In fulfilling this responsibility, GPs must be aware of the fundamental difference between electronic and paper GPRs. A paper GPR is an empty document that the GP populates by adding data to it. The electronic GPR is automatically loaded with data by the GP's computer system and the GP then has to take out (i.e. edit) any information that need not or should not be included:
    - Negative HIV, Hepatitis B or Hepatitis C test results;
    - Instances of sexually transmitted disease without long term health implications;
    - Genetic test results which are unfavourable for the patient;
    - Information about third parties which was not supplied by the patient.
- The patient's consent for release of the information must be confirmed in every case. This also applies to any third parties identifiable in the report.
- Each draft report needs to be scrutinised and edited where necessary by the responsible GP.
- When GPs are editing a report to remove inappropriate material, they should be aware that the same information may appear in more than one place in the medical record, and therefore also in the extract that forms the draft report (e.g. in problem list and in consultation record(s).
- Practices should keep a copy of the report which is submitted to the insurer (i.e. the last version after any editing) together with a record of who was responsible for it and when it was sent. An outline of suitable storage formats (such as TIFF) can be found in Section 6.4 of these guidelines
- The obligation to observe the 21 day rule remains, regardless of the form of the report.

Specifically for eGPR:

- The eGPR service should be treated solely as a mechanism for swiftly dispatching a completed report, and not as a further opportunity for editing it.

GP system-specific information on how to use eGPR is available on the eGPR Website (http://www.egpr.co.uk). Each individual GPR[1] request form contains an explanation of the information required for that report. Comprehensive guidance on such issues as: access to GPRs, sexually transmitted infections, HIV, hepatitis, genetic testing, family history and third-party information is available from both the

[1] GPR request form www.bma.org.uk/ap.nsf/Content/GPR
Last Accessed September 2006

ABI[1] and BMA websites, in a document agreed between the two organisations in December 2002. The ethical considerations which are provoked by an insurer's request for a GPR are outlined in a paper on the RCGP website[2].

4.18 Role related issues

4.18.1 Clinical IT lead

A clinical IT lead for the practice helps to provide an in-house source of expertise in the use of the practice clinical information systems and to give direction to the development of the system. Their role includes;

- Leading the production of the strategy for development of the practice clinical information system
- Developing audits of the information system usage by the practice
- Develop a rolling practice data quality audit
- Developing knowledge of the Clinical Code system sufficient to ensure accurate coding systems within the practice and to support and oversee non-clinical coders
- Establish procedures for direct, indirect and non-routine data entry.

4.18.2 Locums

A locum's knowledge of the IT system in the practice should be established when engaging the locum. If the locum is likely to be a regular at the practice or filling a prolonged absence such as maternity or sabbatical leave then it is good practice to offer the locum training in the practice IT system prior to them taking up their engagement if they are unfamiliar with the system used in the practice. This should include the opportunity to become familiar with practice guidelines for clinicians on use of the IT system and coding as well as practicalities such as how to log on and log off. For temporary locums, such guidance should be part of the locum information pack and its presence in the pack should be drawn to the locum's attention.

In England locums will need a smartcard and PIN to access Spine-enabled clinical systems. In Scotland, the common logon method (if any) has yet to be determined.

It is good practice to ensure that Locum and other temporary staff are given unique logins to networks and clinical systems, with the emphasis on the latter. In a paperlight environment it may be impossible to determine who the locum doctor was in future years if they are only supplied with a generic login. Logins should only be activated for the period for which the locum is present in the practice, and deactivated or deleted after the locum's term of engagement ends.

Paperlight practices should remember that locum doctors may not be familiar with their clinical system. Brief training to familiarise the locum with the practice's

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[1] BMA/ABI, Medical information and insurance www.bma.org.uk/ap.nsf/Content/MedicalInfoInsurance or www.abi.org.uk/Display/File/Child/106/Blue_Book.pdf
Last Accessed September 2006

[2] RCGP website http://www.bma.org.uk/ap.nsf/content/medicalinfoinsurance
Last Accessed September 2006

clinical system may be required. Contracts with locum doctors should specify the required competencies on clinical software use wherever possible.

If the practice uses a transcription method (after the event) of capturing written input, the locum doctor should be made aware of this and advised on what will happen to their original clinical note.

Locum doctors should be provided with clear guidance on where the clinical note is to be made, what information should be entered in a structured fashion and if any information is not available through the computer record.

4.18.3 Attached staff

The information requirements created by the clinical staff attached to the practice should be identified through interview and audit. Where such individuals are regular contributors to the patient record appropriate training in use of the IT system should be undertaken. For some personnel such as midwives the data entry is very structured and the use of templates or protocols can dramatically facilitate data entry. The member of attached staff should be provided with their individual password and a security level commensurate with their role in the practice. Regular visiting clinicians can be treated in the same way as attached staff.

4.19 Maintaining an electronic medical record system

A change to the GPs terms of service effective from August 1999 (PCA(M)199911) allowed for GPs in Scotland to maintain part or all of their patient medical records on a computer system if they so wish. Responsibility for approval of such requests now rests with Primary Care Organisations and the practice must have this approval in writing (see chapter 8 of these guidelines).

4.19.1 Where practices might go for help.

There are a number of sources of help available to practices to support the move towards becoming paperless.

All PCOs in Scotland have an IT Facilitators team with documentation, training and advice with a local emphasis. They can be contacted directly by practices and can also help put you in touch with other local practices using the same clinical computer system to share ideas, and processes. Contact details can be obtained from their website http://www.show.scot.nhs.uk/gmsimt/training.htm.

SCIMP also provides guidance available through the website http://www.show.scot.nhs/scimp. General guidance on moving to paperlight working is available for download, as well as a checklist to assist the process.

The clinical system suppliers also provide training, documentation and help screens that cover many of the specific areas mentioned above. Part of the SLA required by the NHS ensures that suppliers provide documentation and training packages to support their clinical systems in clinical practice. The suppliers will often have material available for download from their websites.

Supplementing this information are the GP system user groups which usually operate at national and regional levels. The User Groups may have conferences, training programmes and web based packages suitable for the practice clinical system.

Additionally, the user groups may run email lists where users can post questions or observations, and have answers from other users around the country.

4.19.2 User group contact details

4.19.2.1 EMIS National User Group

Unit 12, Enterprise House
Kingsway North
Team Valley
Gateshead
NE11 0SR

Tel: 0191 4874571
Fax: 0191 487 5471

Email: bward@emisnug.org.uk

www.emisnug.org.uk/

4.19.2.2 National Vision User Group

Administrator: Mr Richard White

Tel: 087087 44040

Fax: 087085 55272

E-Mail: admin@nvug.org.uk

www.nvug.org.uk/

4.19.2.3 iSOFT User Group (Primary Care)

Judy Hayes (administrator)

Amicus Conferences
3 Beech Avenue
NorthWorcester
WR3 8PX

Tel: 01905 756826

Fax: 01905 454791

www.tug.uk.com/

4.19.2.4 GPASS User Group

Cath MacDonald
3 Crescent Road
Nairn
IV12 4NB
http://www.gpassusersgroup.scot.nhs.uk/

5 Data transfer

Electronic medical records typically consist of a combination of text and coded entries which are organised "architecturally" by a variety of other structural features which may include clinical headings, encounter groupings, problem linkage, templated entries, and a number of clinical qualifiers such as "uncertainty" (e.g. definite, possible, definitely not), "temporality" (e.g. first, ongoing, last etc.), or "currency " (e.g. active, inactive, dormant, past etc.).

Throughout the rest of this section, data transfer refers to the transfer of such structured data and not, for instance, the transfer of e-mail information or attached word processor documents. These areas are covered in Chapter 6 of these guidelines.

When such record data is transferred, it is possible that clinical meaning may be corrupted or even fundamentally altered as a result of the transfer process. This in turn may have an adverse effect on clinical good practice or patient safety. It is the intention of this section of the good practice guidelines to reduce or eliminate the potentially adverse consequences of imperfect data transfer.

5.1 Categories of data transfer

Transfer of clinical data may occur in a number of different ways each of which has different potential consequences for the integrity of that data. In principle, the following sorts of data transfer may occur;

- Transfer of data when migrating to a new software system
- Transfer of data when moving to a new version of the same software system
- Transfer of data by electronic messages between different systems
- Transfer of data by incorporation of information from a remote system

All of these categories of data transfer carry risks of loss of data integrity but their effects on good practice are somewhat different. Each is discussed separately in what follows;

5.1.1 Transfer of data when migrating to a new software system

When practices change their software suppliers either as a result of their own choice or of wider PCO policy, there will inevitably be some loss or modification of information as a result of incorporation of the old data into the new software system. That loss will occur as a result of one or more factors which include;

5.1.1.1 Code mapping

If the coding schemes used on the old system are different from those on the new one (e.g. 4-byte and 5-byte Clinical codes or different medication codes), there will normally be a requirement to map the old codes into the new versions. Such code maps may be imperfect particularly when performed as a "one-off" exercise at the time of migration (as opposed to using tried and tested mapping tables). This may result in historical information present in patient's records being given new and inaccurate meaning.

It is also important to recognise that the existing "historical" information may itself be inaccurate (if, for instance, it had already gone through one erroneous data mapping

exercise) and the process of mapping a historical code with an erroneous attached rubric produces a new "correct" version which, nonetheless, was not what was originally entered into the record. In either case the result may be, for example, that a patient is recorded as having a coded diagnosis that is incorrect, or as being on medication that has not really been prescribed.

In the case of GPASS many of the “comments” will not be associated with any Read Term. Where such data is converted to an alternative system, suppliers may opt to attach all “comments” to a generic Read Term. Alternatively it may sometimes be possible for the practice to “map” comments text to Read Codes although this can be very labour intensive.

5.1.1.2 Alteration of data view

It will almost always be the case that data transferred from an old system to a new one will appear different to the old information at the point of viewing. This is because no two existing systems are exactly the same in the way they organise that data in the user interface. This may make it difficult for a reader of that information to interpret it in the same way as was intended by its original author. Occasionally it may be difficult to make any sense of the new data.

Furthermore, "navigation" through such a new record will not normally be similar to that in the old and there is no guarantee that, for instance, information that would previously have been reliably present on "screens" in the old system will still be present on "screens" on the new one even if those screens are apparently for similar purposes such as the aggregation of laboratory results or medication allergies.

Similarly, the internal management of problem orientation or encounter grouping varies from system to system. This may result in record information being presented in unfamiliar ways or in that information being "lost" to a user who is unable to navigate through the new interface.

5.1.1.3 Alteration of data meaning

This may occur in a number of ways other than those of flawed code mapping or alteration of view. If, for instance, the old record system allowed for the qualification of coded diagnoses as uncertain or negative (e.g. possible Myocardial Infarction or Myocardial Infarction excluded) and those qualifying codes are not recognised or supported on the new system, then this may result in diagnoses previously qualified as only possible or definitely not present appearing as if had been confirmed or asserted at the time.

Similarly, it is possible on some systems to qualify coded information with text which is spatially associated with the code meanings (e.g. Text "Father has" Code; Diabetes Mellitus) That visual association between text and code meaning may not be preserved on transfer thus giving the impression in the case of this example that the patient rather then the patient's father has diabetes.

Finally, information that had been marked as "deleted" or inaccurate on the old system may be carried forward into the new system without that marker being recognised, thus making apparently live and current what had previously been deemed to be irrelevant or erroneous.

In all the above cases, computer generated reports on the new system will tend to misrepresent the incidence of such coded information as a result.

5.1.2 Transfer of data when moving to a new version of the same software system

New software versions do not normally affect the meaning of information present within existing patient records since they normally deal only with things like software bugs or new functional modules. Indeed, most changes to software version are typically unnoticed by the average user. However, if the new software versions specifically include changes to the internal record structures such as a new coding scheme (e.g. upgrading from 4 to 5-byte Clinical codes) or a change in the way record information is presented to the user, then similar difficulties may arise to those that may be found on transferring from one system to another. The NHS plans to move its main coding system from Read to SNOMED CT in the next few years and this will affect all system users, even if they are not changing system. A mapping exercise will be undertaken to try to ensure that Read terms are substituted with the most appropriate SNOMED concept, but this process risks changing meanings as understood within practices. These risks should be lessened by the scale of the migration which should help to ensure well planned mapping tables, but it illustrates that simply staying with the same software supplier does not necessarily mitigate the risk to practices' data.

5.1.3 Transfer of data by electronic messages between different systems

Clinical data transfer by means of electronic messaging is not yet a widespread means of conducting business in the NHS. With the exception of pathology results messaging, few practices receive information from outside their own organisations by these means. However, the intention is to introduce electronic commerce into the wider organisation so that GPs can expect to see the development of electronic information flows such as referral and discharge messages, radiology reporting, electronic prescribing and GP2GP record transfer in the near future.

When clinical information is received electronically by a practice from an external source and in a "structured" form (i.e. the inclusion of codes, qualifiers and other organising information) then, in principle, the same potential difficulties may present themselves as when data is transferred as part of a software migration. For instance, if a hospital department codes its own records using a scheme such as OPCS4 and passes such coded information to a general practice as part of a discharge message, then those codes will currently need to be mapped to the Clinical code thesaurus if they are to be of any use to the receiver. Such a mapping will be performed either on the sending hospital system or in the receiving practice. In either situation, errors may occur.

Similarly, if the hospital system organises its information in a particular fashion (such as the spatial display of antibiotic sensitivities in a microbiology report, or the organising of categories of information in a discharge letter under particular clinical headings) there is a risk that that organisation may not be faithfully transferred within the message.

Furthermore, in the case of data transfer by electronic messages, there is a need to ensure that patient identifiable information in such messages is kept confidential. This will normally entail the encryption of such information while in transit.

As a general rule, the introduction of clinical message flows are based on standard specifications which are supported by a set of rules for communicating systems as to how to populate and translate such messages, and what communicating systems should and should not do when processing the information concerned.

However, it is always possible – particularly in the early stages of an implementation - that such rules may not be faithfully followed or may have been inadequately specified. Furthermore, some clinical message flows have been implemented historically without complete specification or adequate guidance being given - resulting in the passage of corrupt or ambiguous information.

The responsibility for adherence to these rules rests with the system supplier concerned and the responsibility for their formulation and conformance testing has historically sat with the NHS itself. However, it remains unclear where liability sits in the case of an adverse event arising from judgements based on flawed information – this is discussed further below under Data Transfer Liabilities.

Note; The case of GP2GP record transfer presents particular issues which are addressed specifically as appendix 2 of these guidelines, following work undertaken as part of the GP2GP record transfer project.

5.1.4 Transfer of data by incorporation of information from a remote system

The last category of data transfer consists of the active incorporation of clinical information from a remote system into a patient record by, for example, accessing a hospital system across the NHSnet for the purposes of reviewing a pathology result and then potentially "downloading" that result into the native record within the practice itself. As with clinical messaging, this is not currently a common way of supporting business for the majority of general practice. However, in some parts of the U.K. such services are made available by hospitals to their local general practices. For the most part, such remote access does not also entail incorporation by "downloading" of the information. Clearly, in such cases there can be no risks associated with data transfer since no data is being transferred.

However, it should be noted that such remote access on its own will not support the maintenance of the completeness of the patient records concerned unless there is some additional process (such as transcribing the content of a paper version of a report or an additional supporting clinical message flow). Without such a supporting process, readers of that patient record may not be able to tell that that information should be present within it. This will particularly be the case if the record is transferred to a new practice when a patient moves.

On those occasions where remote access also includes electronic incorporation of structured clinical data, the potential difficulties are the same as those that pertain in the case of clinical messaging in terms of code mappings, preservation of organisational structure and meaning qualifiers.

5.2 Data transfer liabilities

The issue of liability for the consequences of an adverse event following a corrupt or flawed data transfer is a complex one and the rules for determining such liability are not set either in general legislation, NHS terms and conditions, or in common law (although the latter is likely to be the arena in which such rules are formulated). For

each of the above categories of transfer, the process includes a technical specification (formal or otherwise), an implementation of that specification (against which there may or may not be accreditation or conformance testing), a decision to procure the particular solution, and the resulting use of the solution by primary care team members for the purpose of care of their patients. Adverse events may occur as a result of a failure of any one or a combination of more than one of these factors. From the patient's point of view, the final link in this chain is the set of clinical decisions made in support of their own care and an associated assumption in their competence.

The last part of this section of the good practice guidelines is therefore not based on any particular liability assumption other than the general clinical obligation entailed under the "First do no harm" principle.

5.3 Data transfer guidelines

5.3.1 Software system migration

Practices will need to be prepared for the different look and function of a new software system. To that end, at least one responsible member of the practice will need to have a more detailed understanding of the consequences of migrating patient records from the old platform to the new one in terms of;

- Any consequences of coding migration – particularly for medication codes or migration of any old local codes
- Any consequences for the management of the routine business of the practice such as call-recall schemes/ payment claims/internal practice audit reports
- Any consequences from a change in record architectures particularly those relating to meaning qualification, problem orientation or record navigation.

In addition, practices will need to ensure that all users of the new system receive adequate training in advance of the formal migration. Adequate training in this context should mean achievement of a high level of confidence that critical business processes such as consultation management, repeat prescribing and secretarial support may continue reliably immediately post-migration.

Clinical users of the new system should be aware in principle that old data will look different and be prepared to exercise a degree of caution when exercising judgements upon it. In particular, it should never be assumed that prescribing records can be carried forward in an active state from the old platform to the new one and all prescribing decisions, particularly for repeat medication, should be reviewed following the migration to the new system.

Practice computer based reports for internal consumption or routine business management should be reviewed for fitness for purpose based on the data structures on the new system.

Practices must remember that audit trails are not transferable between different clinical systems. Therefore they should create and maintain a verified backup of the clinical data from their old system, an initial backup post conversion, as well as regular back-ups from their new system.

Whilst this is best practice, it may be impossible in the future to recreate the record as it was originally, even with a verified backup at the time of conversion. As technology and software versions change restoring the original clinical system using

the backed up data may become impossible due to loss of compatible hardware or software; lack of expertise with legacy systems; degradation or loss of the storage media. Practices should seek advice from their system suppliers (old and new), their PCO and medico-legal advisors on limiting the risks associated with system change. It should be noted that, from a patient's perspective, the benefits and advantages of moving systems must outweigh the risks for the process of changing systems to be viable.

5.3.2 External electronic clinical data

5.3.2.1 Engaging in electronic commerce/transferring clinical data

As has been detailed above, the transfer of structured clinical information between systems is a process that has a number of potentially serious pitfalls. Before engaging in any particular electronic commerce activity that involves such a transfer, practices should take steps to ensure that the process is one of reasonable safety.

This does not amount to the unreasonable expectation that practices should have sufficient internal expertise to make judgements on the technical mechanisms to be used to support the process. However, the practice should be satisfied that appropriate mechanisms are in place to maintain the privacy of any patient-identifiable data concerned and that there is some form of accreditation or conformance testing of the technical mechanisms to be used that is designed to preserve the integrity of the data being exchanged. It will normally be the case that such conditions will be met where the electronic commerce is instituted as part of a formal NHS initiative but practices should exercise appropriate caution when engaging in informal initiatives or with the non-NHS sector.

It is vital that practices have documented robust procedures to ensure that all received external clinical data are brought to the attention of the appropriate clinician and acted upon.

5.3.2.2 Receiving external data

GP systems engaged in clinical electronic data interchange are required to provide functionality that allows GPs and other PCT members to review the content of external clinical reports such as pathology results or discharge messages before their incorporation into the relevant patient record. It is also a requirement on systems not to allow the filing of such reports into the record until they have been marked as viewed by a member of the practice. The rationale for these requirements is partly to support existing good practice for paper information flows (namely to ensure that a responsible clinician is aware of incoming patient information and able to take appropriate action upon it) but also to allow an informed human judgement as to whether or not the content of such incoming information is valid.

It is therefore important that responsible clinical users of systems review incoming electronic data not just for its impact on patient care but also to ensure as far as possible that it is not corrupted in some obvious way and to reject it if it appears so.

5.3.2.3 Retention of external data

GP systems are also required not to allow deletion or modification of incoming clinical messages without first creating a fully restorable archive of that message.

Notwithstanding that technical precaution, practices should think carefully about the consequences of deletion of incoming clinical data from the record.

In addition, practices that use externally accessed record information for patient care (as in " Transfer of data by incorporation of information from a remote system" above) should take steps to ensure that this information will be available to any practice subsequently involved in the care of that patient. Paper copies of EDI transmissions (e.g. pathology results) do not need to be retained by practices.

Record retention and integrity issues are covered more generally in the Information Governance and Electronic Documents (Chapter 3) of these guidelines.

5.3.2.4 GP electronic record transfer

In the case of the receipt of electronic records from another practice, special considerations apply which are covered in appendix 2. Specific advice on GP2GP transfer will be made available as a supplement to these guidelines at www.connectingforhealth.nhs.uk/programmes/gp2gp/.

GPEX was the original title for the project in Scotland looking at GP to GP record transfer, particularly between GPASS practices. GPEX is now part of the GP2GP project, which should allow electronic transfer between all commonly used UK clinical systems.

5.3.3 Prescribing and data transfer

Current GP systems use a variety of coding schemes to store and represent medication information and a variety of idiosyncratic methods for allowing repeat prescribing management. Although it is not currently the case that practices are routinely in receipt of structured prescribing information from outside their own organisation (e.g. as part of a discharge message), this problem will be compounded when they are. This means that it is not currently technically possible to fully re-create prescribing records with 100% safety following data transfer of medication information.

Therefore, as a general rule, if data transfer from any of the above categories involves the transfer of medication information;

Following data transfer, medication information should never be included in an active prescribing record without review by a responsible clinician.

6 Electronic documents (E-documents)

This chapter considers the issues around document storage and disposal in relation to electronic patient records.

6.1 Retention periods, audit trails and persistence

The Principles of the Data Protection Act 1998 makes it a requirement that data should not be held inappropriately, or for longer than is necessary. In the context of an electronic patient record for a GP this would reasonably be interpreted as meaning that when the patient moves away and/or registers with a new GP the electronic records held by the former GP should be deleted.

Unlike their paper record however, a patient's EPR cannot at present be transferred from one practice to another. Although work on the electronic transfer of electronic records is going on (see chapter 5) implementation is not expected to be widespread before the end of 2007. Another aspect for consideration is the dynamic nature of EPRs. They change over time and there are justifiable reasons why entries in the record may need to be changed, amended or in some cases removed from the viewable record (commonly described as deletion although what in fact happens is that the unwanted record is merely flagged so as to not be displayed, it is not actually deleted from the system). The tracking of these changes is captured in what is known as the "audit trail". This is a separate chronological record held alongside the current patient EPR. It acts as a log of all additions, changes or "deletions" to the patient's record. It is the audit trail that enables a record to be taken back to any date and viewed as it was on that date. Audit trails are of great medico-legal importance in determining the true state of entries in the EPR at any time in the past. Without its associated audit trail, there is no reliable way of confirming that an entry is a true contemporaneous record for that patient. Patients and GPs therefore have an interest in ensuring that EPRs and their associated audit rails continue to be maintained.

Projects to allow exchange of records between systems such as GP2GP and GPEX aim to ensure that EPRs can be sent from one practice to another (see chapter 5 and appendix 2 of these guidelines). However, because of differences in design between different systems, the receiving system may not be able to retain the structure and inter-relationships of the data elements of the transferred record.

Neither will it be possible to transfer the EPR audit trails between systems in the foreseeable future.

With this in mind the GPC has reached an interim agreement with the Information Commissioner that aims to preserve patient EPRs with their associated audit trails. Until such time as electronic transfer of GP EPRs is able to include the associated audit trails, GPs are exempted from complying with the Fifth Principle of the Data Protection Act 1998 and are not expected (or advised) to delete the records of ex-patients. Ideally the EPR should be 'deactivated' on the system so that it is not readily accessible to GP practice staff. It should be possible to 'reactivate' the EPR, but only in limited circumstances (e.g. in order to defend a legal claim etc). Where a record is reactivated, a robust audit trail should show the following;

- who reactivated the record;
- when the record was reactivated;

- why the record was reactivated.

Practices and PCOs should carefully consider the issues around preservation of EPR audit trails before planning changes to GP clinical systems or suppliers (see previous chapter of these guidelines).

The current recommendations from the NHS in Scotland are contained within NHS MEL(1993)152 (http://www.show.scot.nhs.uk/sehd/mels/1993_152.htm) advise that medical records should be retained for the following periods;

- Obstetric records – 25 years after ther birth of the child
- Records relating to children and young people (including paediatric, vaccination and community child health records) – retained until the individual reaches the age of 25 years or 3 years after death if this is earlier.
- Mental Health information recorded before 31st December 1960 is to be kept indefinitely, and that from 1st January 1961 is to be kept for the lifetime of the patient and then for a period of 3 years after death.
- GP records must be retained for the lifetime of the patient and for three years after death. Where a patient cannot be traced the records are normally held for 6 years by practitioner services.

Understandably, confusion can arise because of the conflicting demands of the Data Protection Act, medico-legal requirements and SEHD recommendations. In view of this, the agreement between the profession and the Information Commissioner is paramount and GPs must not destroy or delete their electronic patient records for the foreseeable future. (Unless and until such time as these records are transferable in their entirety (including the audit trail) between clinical systems).

The rules regarding retention of medical records in Scotland are currently under review and a consultation paper is available from September 2005.

6.2 Summarising and shredding

With the move to EPRs attention needs to be given to the 50 years of paper records currently held by GPs, PCTs and Practitioner Services Division (PSD).

Practices that wish to be paperless need to develop and implement a process by which records can be moved from paper to electronic format (see chapter 4 of these guidelines). For the purposes of legal admissibility, GPs should obtain and keep written evidence (which may be incorporated into the EPR) of the destruction of the original document. This means;

- Identifying each file or document to be destroyed
- Recording that the complete file or document has been stored electronically
- Ensuring that the electronic version is a true and accurate copy of the original or stating how it is different

It is potentially dangerous for both paper and electronic records to co-exist and this raises issues about keeping both sets of records up to date. It is preferable to have a patient's record as either paper based or electronic. However the reality is that parallel records will remain for some time until practices can summarise their records onto their computer systems. This is a complex and sizeable task. Until a patient's records are summarised then it may be acceptable for elements of the records to be either

paper or electronic; such as prescribing records, immunisation, cytology and biometric records. The guidelines below for scanned documents also hold true for summaries of other records or documents in terms of coding and attribution.

The Medical & Dental Defence Union of Scotland (MDDUS) reminds its members that medical records play a major role in medico-legal defence. They advise members to ensure they have taken steps to manage the risks before shredding any scanned information.

The steps should include:

a) A robust backup procedure which includes tape verification

b) A check is made to ensure that there is actually data on the tape

c) A check is made to ensure that scanned documents/data can be reproduced and are legible

The important point is that practices have taken steps to ensure they have a robust system of backing up, verifying and restoring information before shredding the original documents.

6.3 Attachments to the EPR

Clinical systems are becoming more and more sophisticated allowing both export and import of records as well as the incorporation of increasing amounts of external material. Examples include;

- Clinical photography
- Scanned Images from paper
- emails
- Images from diagnostic equipment
    - ECG, Ultrasound scanners
- Clinical communications (e.g. referral letters)
    - Word-processed Documents, Email
- External Hyperlinks
- Numeric Data

An ‘attachment’ should always be linked to an appropriately coded entry indicating content. Examples include (table 6.3.1)

6.3.1 Table

Version 2 Clinical Code	Rubric	Note
9N36.	Letter from Specialist	Document in appropriate format
3215.	ECG normal	May be a scanned image of the printed ECG or an electronic version in a variety of formats as below

3395.	Peak Flow Rate	Attached numeric information with appropriate units recorded as well

6.3.2 Legal status

Any attachment to an electronic clinical record should be regarded as having equal medico-legal weight as a notes made within the system and should be accorded the same stringencies around audit trail and backup (see previous chapter of these guidelines). It should also be possible to extract these attachments and send them to the requesting practice either electronically using GP2GP transfer or as a printout or secure file archive. (see chapter 5 and appendix 2).

Before starting to use such facilities a practice should satisfy itself that the system does meet these requirements. Wherever possible all attached data should be stored on the clinical server and not on a separate server. If a separate server is used to store attached data the practice must ensure adequate and appropriate backup provision to ensure seamless continuity should failure occur on either clinical or attachment serving system. Normally practices should expect a system supplier working in conjunction with a PCO to install, configure and test any scanning system.

6.3.3 Attribution

As with any clinical record it is vital that the attribution of the attachment is captured so that date, time and where appropriate clinician or operator are available as well as the date and time and operator making the attachment.

6.4 Format of attachments

Modern operating systems allow the attachment of almost any file and its viewing providing the viewing software is installed on the client machine. Normally these functions are provided by the use of approved software such as Docman, as supplied nationally for all new paperlight practices in Scotland. This provides a standard Index for the filing of the attached records that is transferable with the main clinical record.

If use of this is not possible then, wherever possible, the following rules should be followed for the storage of clinical attachments (table 6.4.1).

Practices should take care to make and save a close facsimile of the original document, retaining colour information where it is important to do so (e.g. highlighted information in a letter). File formats and viewing applications should be industry standard rather than proprietary.

A major distinguishing feature between TIFF and JPEG formats is that TIFF can store a number of images in a single file whereas JPEG, in its standard form, can only store a single image per file. This means that a multi-page document stored in JPEG format, consists of a number of files. Medico-legally it may be important to be able to identify these as a single entity.

6.4.1 Table

Word-processed documents	Microsoft Word 97 and above.	Any changes after attachment must be

		represented in the clinical system's audit trail.
	Adobe Acrobat 4 (or higher)	Use of the ability to lock the document, control comments and printing should be considered. Audit trail comments as above
	Rich Text Format Version 1.5 and above	Audit trail comments as above. For compatibility with non-Microsoft viewers images and graphics should not be embedded. Complex layout may also not be retained
Clinical Photography	Tag Image File Format (TIFF) v6 http://partners.adobe.com/public/developer/tiff/index.html	This is an old but well tested and legally admissible file format that will handle colour and black and white images. It is difficult to edit but still must be covered by the audit trail of the clinical system. Care should be taken if the TIFF file is compressed as not all viewers will handle compression. Audit trail comments as above
	JPEG (Joint Photographic Experts Group)	A popular standard supported by the web. The format specifies a compression and hence loss of original data. It works well with natural pictures and less well with line drawings Audit trail comments as above

Scanned Images	Tag Image File Format (TIFF) v6 or JPEG Resolution of 150x150dpi is suitable for document archiving but not for diagnostic images.	For documents for which monochrome representation is sufficient, use TIFF with compression scheme 4 (COMPRESSION_CCITTFAX4) at a minimum resolution of 150x150dpi. For documents that need to be rendered with the original colour information, JPEG is recommended with a minimum resolution of 150x150dpi and a compression quality >=50%. Audit trail comments as above Data loss comments as above
Images from diagnostic equipment	Proprietary	Wherever possible this should be avoided for reasons of future legibility. Where this is not possible clear reasons for recording in this way should be retained along with a CD containing the viewing software
	JPEG	Still image – As above for clinical photography
	TIFF	As above for clinical photography
	High Quality Diagnostic moving images	Most modern X-ray and Ultrasound devices will produce high *diagnostic quality* images. They are generally out of the scope of this document but potential users in General Practice

		should satisfy themselves that the system's storage conforms to the clinical system's audit trail requirements as well as published standards such as DICOMM (http://medical.nema.org)
	AVI, QuickTime and MPEG2	Moving image These are all popular methods of delivering moving information. Both may involve significant compression and data loss and should be used for thumbnail and aide-memoire purposes. They should not be generally used for diagnostic purposes.
Email	Plain text	Preferred
	HTML	Should not include external references, hyperlinks, backgrounds or fonts which may not be available on other systems
External hyperlinks	http://<resource URL> ftp://<resource URL>	The resource should be available to all potential users of the clinical record and should not link to resources only available at the practice. Commitment to the continued maintenance and backup of these resources must be assured.

6.5 Scanning content

When a practice makes the decision to scan incoming patient specific data, several aspects of the process as well as the physical act of scanning should be formalised and controlled. Scanning is an area where many potential gains can be made within a practice. It is also an area where most diversity has occurred. This diversity unfortunately has led to both loss of transferability as well as loss of clinical data; although both of these will be improved with uptake of the new National Index for filing, there is already a substantial number of records to which this has not been applied. . The following guidance should reduce these risks

6.5.1 Workflow

The movement of paper around a practice is complex and specific to each organisation. The move to scanning should ensure that the following issues are covered;

- All appropriate people see and comment upon the document
- Actions are achieved
    - Patient follow-up / Appointments made
    - Prescriptions issued / medication altered
    - Letters written
- Exceptions are covered
    - Holiday absence – who actions documents and how is this logged?
    - Holiday absence – how is catch-up achieved?
- Comments and content are added to the clinical record as coded data to ensure clinical system functionality

6.5.2 Specific details surrounding the scanning of a document

When a document is scanned there are two possible outputs;

1. An image of the document – quite simply this is an electronic photograph. Many formats are possible. From the point of view of the Electronic record only the formats detailed above in table 6.4.1 will normally be acceptable.
2. An image is created as above. The computer then attempts to ‘read’ the document as best it can and turns the image into a word-processed document. This process is known as Optical Character Recognition (OCR). The original image may or may not be kept in this process.

The following table (6.5.3) clarifies which processes are acceptable. It should be noted that a document should also be attached to an appropriate clinical note within the electronic patient record and stored under the same circumstances as any other attachment. The identity of the original author of any document (attribution) must be preserved in the scanned document.

Once a document has been scanned and stored in an appropriate format, and subject to the appropriate system safeguards detailed in these guidelines, then the paper original can be shredded.

6.5.3 Table

Method	Acceptable?	Notes	Dispose of paper?
Storage of image file	Yes	Image be in accepted format Practice must code enclosed data and assure proper attribution for scanned document	Yes
OCR with no storage of original image	No	OCR is never 100% accurate. For medico-legal reasons where the transposition of a single character or number can result in catastrophic errors this mechanism is not acceptable. Clinical decisions should not be made on the basis of OCR'd documents. Previously when disk space was at a premium some practices used this method to capture text from the document for the electronic record while retaining the original paper. This method is no longer acceptable.	No
OCR with storage of original image file	Yes	Image must be in accepted format Practice must ensure that data extracted from the record by OCR matches the original text. Practice must code enclosed data and assure proper attribution for scanned document.	Yes

6.6 Other documents

Practices maintain many different forms and documents about patients that are essential to their day to day operations. Some of these do not form part of the patients' records but carry information about patients, carers and others. Below, we give some examples of these documents and advice about their retention and disposal.

- Notification of infectious disease – no need to retain counterfoil providing there is an appropriate entry in the relevant EPR
- Message books/logs – ensure any action taken (e.g. phone call/consultation/visit) is recorded in the EPR. No need to retain these books/logs
- Ambulance request logs – ensure any action taken is recorded (as above)
- X-ray films. These should be retained in line with the DoH guidance above (see section 6.1)

Most of these are "process" forms but may be important medico-legally. If practices are in any doubt about retaining a document we recommend that they scan and store an image of the document in an appropriate format (see table 6.4.1) and then shred the original document. However, where any records relate to patients where there are

known medico-legal issues (complaints, civil or criminal law) then practices should keep all relevant records pending further advice from their medical defence organisation, NHS Board or LMC.

6.7 Record completeness on patient transfer

The GMS Contract terms require general practices in Scotland to send "the complete records relating to a patient to the Health Board" upon the patients death or transfer to another practice.

The regulations state that where such records are computerised a copy of records can be returned either on paper or in any other format agreed with the Health Board. Written consent is required from the HB to return records in any format other than "written". Practices with records incorporating attachments must be able to gather these together into one place – either paper or electronic formats – for transmission to the next practice. Where the receiving practice requests paper formats the sending practice is obliged to provide records as a printout.

The use of compact discs (CDs) to exchange attachments or other electronic records is not currently formally supported by the NHS in Scotland. Any such arrangement should be agreed on a per-case basis between sending and receiving practices

7 Education and training

7.1 Introduction

There are two contrasting world views that apply to information technology and its implementation. One is that computers and the modern communications infrastructure change everything. The other is that the really important developments in this field are the printing press and the typewriter, the telegraph, the telephone and broadcasting; these inventions represent step-changes and modern IT represents no more than refinement and development. As ever, the truth contains elements of both world views.

This section is about the education and training needs that flow from the introduction and implementation of paperless records in general practice. Reflecting the first world view, it considers how mass-storage, rapid retrieval and communication of information in the electronic record impact on different parts of the General Practice team. These are new phenomena and they require the development of new systems in practice and the acquisition of new skills. Reflecting the second world view, it also considers how the attention given to the importance of information quality and information flows in electronic media can be applied to traditional information handling too. In other words, along side the development of the new, there is a revision of the old.

These themes will be applied across three dimensions of clinical informatics. These are;

1. how to use the technology
2. data, information and meaning
3. integrating electronic and interpersonal communication of information

Finally, one of the main drivers supporting the implementation of electronic health records across the NHS is the notion that an integrated record system can be used to support multiple functions that may be clinical, administrative or educational. This notion will be examined in more detail in the section on data, information and meaning.

7.2 Three dimensions of clinical informatics

7.2.1 How to use the technology

The power of technology comes from the way in which it replicates many processes that have previously been done physically. Inasmuch as scanning in a hospital letter, or attaching a laboratory report to an individual's record, replicates the task of filing them in a records envelope all that needs to be learnt is the mechanical process. It's a question of learning to make the correct keystrokes in the right order.

A general training, such as ECDL(http://www.ecdl.com/) is appropriate here; there will also be the need for on-site system specific training too.

Clinical systems, like other software, are flexible and can be used in many different ways. Individual practices need to coordinate their training so that there is consistency. However, the electronic record, by virtue of its portability is part of a

much wider system. This means that every member of staff who is able to create, update, or delete records understands the consequence of these actions. This understanding has to be in the context of the NHS as a whole, in the context of the locality (PCO/ Health Board) as well as in the local context of the practice.

7.2.2 Data, information and meaning

Data on their own are meaningless. Data only becomes useful as information when the context is known. For data and information to acquire meaning requires the addition of a social and a cognitive perspective. For example, "160/90" as written is a mathematical ratio. Most medical people may assume that it represents a blood pressure reading, but the numbers are only useful as information in the light of contextual factors such as what sort of sphygmomanometer was used, what was taken as the diastolic endpoint, who is the patient, in what condition, what are previous readings, what medication is s/he on? That information is then only meaningful in the context of medical scientific custom and knowledge.

7.2.3 One record, multiple uses

Records in health care have a number of different purposes. These include a variety of clinical, administrative and educational uses at a variety of levels; individual, practice, and locality. The Scope EPR report[1] outlines these in detail, and shows how a single EPR can (could possibly) fulfil all these functions. This contrasts with paper systems, where quite separate records are required to provide aides-memoire for clinicians and data for audit for example.

The EHR's potential to support multiple functions underlies these extracts from Information for Health[2] in England,

'NHS managers and planners at every level of the service must have information that helps them better target and use the considerable resources deployed in the NHS to improve the quality of life for patients…. Such information forms a natural by-product of the clinical systems required to support the day-to-day care of patients….

EPRs and EHRs provide the source of the base of anonymised and aggregated data to support the clinical audit process and over time they will contribute to the growing knowledge base informing the development of local and national guidelines.'

Information for Health 1998 p63 & p68

And in Scotland the white paper "Partnership for Care"[3] stated:

"Integrated Care Records will take time to reach, but each step in their development will bring immediate benefits to patients, carers and healthcare professionals by enabling:

- *greater patient involvement in their own care;*

[1] SCOPE EPR Report: http://www.schin.co.uk/rcgp/scopeEPR/report/index22.htm
Last Accessed 16th Feb 2006

[2] *Information For Health*. Department of Health. London. 1998 p63, 68.

[3] http://www.scotland.gov.uk/Resource/Doc/47032/0013898.pdf

Last Accessed September 2006

- *service redesign and the shift in the balance of care provided in different settings;*
- *quicker exchange of information between professionals;*
- *quicker access to patient records (with built-in patient confidentiality); and*
- *continuous improvement by providing routine monitoring of quality standards.*"

Which was expanded upon in the current eHealth Strategy (2004)[1]:

"The Integrated Care Record is a holistic patient record that is accessible to those who require the information, including patients and carers. Currently many professionals in many settings hold fragments of the record but none have access to the whole record. This does not mean that all information about a patient will be held in one place but it does mean that health professionals can access the information they need that is held about a patient. Such access will be within a secure environment and defining access rights of users will ensure that it is limited to what any given professional needs to know."

The following abstract from the International Journal of Medical Informatics[2] agrees that secondary information can flow from clinical systems, but that this process is active and requires work, rather than being a natural by product as claimed in Information for Health.

"Successful design of information systems in health care starts with a thorough understanding of the practices in which the systems are to function. In this paper, we discuss the nature of 'medical information' from a sociological perspective. We focus on the (im)possibilities of the utilization of primary health care data for secondary purposes such as research and administration. In much of the literature on EPRs, this secondary utilization is only seen to depend on the question whether the IT connections are in place. It is then simply a matter of selecting which information to transport and to where. In this article, we argue that this view of medical information is mistaken. Information should be conceptualized as always entangled with the context of its production. The disentangling of information from its production context is possible, but that entails work. We propose the following 'law of medical information': the further information has to be able to circulate (i.e. the more diverse contexts it has to be usable in), the more work is required to disentangle the information from the context of its production. The question that then becomes pertinent is; who has to do this work, and who reaps the benefits?"

These issues are highlighted by the GMS contract from 2004, which bases many practitioner payments on the basis of information derived from clinical records.

7.2.4 Context

The important element in the last few paragraphs is context. While data can be transmitted with ease in electronic systems, context is more problematic. This is particularly so as so much of social context is tacit. The sender of a message may not

[1] http://www.ehealth.scot.nhs.uk/pdfDocs/National%20eHealth%20IMT%20Strategy%20April%2004%20final%20draft.pdf Last Accessed 16th Feb 2006

[2] Berg & Goorman. The contextual nature of medical information. *Int J Med Inf* 56 51-60, 1999

be aware of the assumptions they make about the content of the message, nor the receivers' abilities to decode it.

Data that is presented in tables and graphs that are produced by computers gives the appearance of being "hard". Much of the content of Primary Care is "soft". For example a Clinical code for depression may be applied to a record as the result of using a formal symptom rating scale, but is more likely to be applied in response to recognition by the GP of a pattern of symptoms and appearance of the patient. This judgement is bound to be affected by the GP's own mood and personality, among other factors. Whereas a close colleague may be able to interpret the coding correctly, based on knowledge of the GP, the practice and possibly the patient; a health (or social) worker in a different discipline in a different part of the country may have more difficulty.

7.2.5 One record, multiple readers

A key difference between paper and electronic records is to do with the ease by which they may be read. Legibility, or rather illegibility, of doctors' handwriting is legendary. Combined with the physical constraints of the building and filing cabinet in which the record is stored the legibility of hand-written records severely restricted the potential readership of the record.

Electronic records are relatively legible and highly portable. As well as the issues of context described in the previous paragraphs, this also raises the questions of propriety that are explained in detail in chapter 3 of these guidelines (Information Governance).

7.3 Integrating electronic and interpersonal communication of information

The move towards electronic records has two different effects on the practitioner – client interaction. The first is largely due to the different medium, which allows rapid retrieval of diverse parts of the patient's medical record via a computer screen. That is the same information as is available in paper records, but now available in a different way. The second relates to decision support, guidance, and information support that may be embedded in the electronic record (for example in templates), may be triggered by entries into the electronic record (e.g. SPICE http://www.spice.scot.nhs.uk/index.htm, PRODIGY (http://www.prodigy.nhs.uk), or may be accessed from the desktop computer (e.g. eBNF (http://www.bnf.org) or internet resources such as NES e-library (http://www.elib.scot.nhs.uk/). This is a new range of information and knowledge that is available to the practitioner as a direct result of using electronic records rather than paper.

The iiCR project (http://www.schin.co.uk/iiCR/) has studied the effect of computer use in the consultation, and produced a teaching package that delivers the key messages from the project. It shows that computer use, even for "old" tasks such as looking up a test result on screen, can be distracting and engaging and carries the potential risk of losing rapport with the patient or not hearing what the patient says. The project also shows how the teaching of simple communication skills can minimise this risk. Using an electronic record makes it easier to share parts of the record with the patient. Again, it was found in iiCR that there is a set of communication skills that facilitate shared reading from a computer screen.

The huge range of accurate and context-sensitive information and knowledge that can be accessed in real time during the consultation is beginning to change the nature of the practitioner-patient relationship. Whereas the professional used to have knowledge that was not available to the layperson, useful knowledge now resides in the computer system; it is available to both, and the client may observe the professional in the process of learning. This changes relationships; it requires the practitioner to display educational and facilitative skills rather than knowledge and power. It makes it easier to involve the patient in the decision making process.

7.4 Learning needs

This list of learning needs is a high-level summary. It is mapped in more detail to the specific items raised earlier in this report in the table in appendix 3.

7.4.1 How to use the technology

Keyboard and mouse skills

- Using office programmes
- Using the clinical system
- Conforming with local practice
- How to get help if the system fails
- Basic system management/maintenance

7.4.2 Data, information and meaning

- How to use coded and free text entry appropriately
- Understanding how context affects the interpretation of data
- How to apply that understanding when receiving or sending messages
- Awareness of the purposes to which a particular entry may be put
- Understanding the issues of information governance, particularly relating to the law, consent and confidentiality
- Understanding the importance of consistency and accuracy in data entry
- Conforming with local practice

7.4.3 Integrating electronic and interpersonal communication of information

- Awareness of how computer use affects the consultation
- How to use communication skills to relate to the patient while using the computer
- How to facilitate shared reading from the computer screen
- How to incorporate outside knowledge (from the computer) into the consultation; learning, teaching, facilitating.
- How to share information and decision making

7.5 Meeting these needs

The learning and training needs described above fall into four categories of skill;

1. Mechanical and technical; using the technology; general skills and system specific skills
2. Cognitive; data, information and meaning; accessing and interpreting knowledge from outside sources
3. Social; teamwork and working within the local system; doing things the way we do them
4. Communication and teaching; managing the inter-personal communication while using the computer; relating and sharing computer-derived information with the patient and with colleagues

These four domains of skill require different teaching and training methods, though this does not necessarily mean that they require different teachers or different providers. Mechanical and technical skills are best learnt in a hands-on environment. The important thing is for the learner to be doing and not just watching.

The cognitive skills referred to have, up to now, been offered to doctors in evidence based health courses, or modules on higher degrees such as an MSc. Here they are delivered through a combination of presented material, individual study and assignments. This is delivered either in taught courses or by distance learning. There is no reason why these approaches could not be used at a practice or PCT level.

The social skills referred to relate to social learning as described by Etienne Wenger[1] in his book "Communities of Practice". This is closely related to knowledge management within an organisation and organisational learning. The learning is supported by facilitation and the provision of environments that enable the sharing of ideas by participants.

As the iiCR project has shown, standard methods of consultation and communication skills teaching can be adapted to deliver this training. The key messages can be dealt with in a 2-3 hour session in a facilitated group.

7.6 Conclusion

The need for education and training in the introduction and implementation of electronic records has been long recognised, but is not yet satisfactorily addressed. In the days of paper records little attention was paid to education and training in record keeping. While this is an opportunity missed, damage was limited by the lack of portability of the paper record.

Electronic records replicate the functions of paper records and offer many new additional uses. However, the nature of the electronic record – its portability and issues of context – means that it is not sufficient to replicate the previous methods of training. New skills are required both for traditional functions of records and the new functions that are specific to electronic records.

These learning needs apply across the different members of the primary care team. Everyone who works in a Practice needs to be able to operate the equipment,

[1] Wenger E. Communities of Practice. Cambridge University Press, Cambridge. 1998

understand the consequences of making an entry in a record, be able to follow local practice, and be able to discuss with a patient or a colleague what is on their computer screen.

The penalties for failing to meet these needs are dire. The consequence of poor practice in terms of data quality is meaningless data. This would invalidate the considerable investment in IT infrastructure. The consequence of poor practice in terms of consultation skills is that computer use will hi-jack the consultation and impoverishes the doctor-patient relationship.

Finally, the issues of consistency, conformity and standards have been mentioned several times in this section. The communities of practice model, which seems most appropriate educationally, is by definition a local solution. By its nature the EHR is not local. There are, thus, three aspects of scale and scope to consider; the range of skills required to use electronic records effectively; the range of staff who need these skills; the local and national contexts.

Appendix 3 maps learning needs to various chapters and sections within these guidelines

Appendix 6 provides a list of learning resources to support para 4.43 of the New GP Contract

8 Accreditation of paperless practices

8.1 Introduction

In May 1999, the Scottish Executive changed GPs' terms of service to allow them to maintain part or all of their patient medical records on a computer system if they so wished. The change in regulations covers GPs working under both GMS and PMS contracts.

8.2 National guidance

The changes to GPs' terms of service are permissive, allowing practices to keep computerised patient records instead of paper records. PCO approval is required when practices plan to keep computerised patient records in whole or in part. The legislation which covers the use of electronic records is contained within paragraph 66 of Schedule 5 to the National Health Service (General Medical Services Contracts)(Scotland) Regulations 2004 (SSI 2004 No 115) and can be found at:

http://www.opsi.gov.uk/legislation/scotland/ssi2004/20040115.htm

Practices need apply for paperless status when they propose to keep some or all of their records in electronic format only. Approval is permissive - practices maintaining EPRs can still maintain paper records if they so wish - but a practice may only maintain wholly electronic records if approved. Keeping duplicate paper and electronic records, however, introduces the potential risk that the two record systems may lose synchrony, information held on one not always being transferred to the other.

There are no mechanisms for penalising practices that are "paperless" but not approved although this would not be a wise position for a practice to find itself in. GPs who maintain EPRs must be able to generate a paper printout of the entire patient's records (including any scanned or linked documents) to be forwarded to their PCO on request.

Although the PCO cannot make any determination as to the content or adequacy of the record, it has an obvious duty to satisfy itself that any EPRs are being properly maintained and held securely.

In Scotland, the clinical systems which are supported by PCOs are accredited against the requirements of the Scottish Enhanced Functionality. GPs and PCOs should try to ensure that clinical systems are fit for purpose within the overall NHS strategic direction outlined in the policy section of these Guidelines.

8.3 Implementation - PCOs and LMCs

The guidance to PCOs makes clear that "individual practices will decide how to implement electronic record keeping locally". PCOs have a key role in satisfying themselves that practices are ready to safely maintain EPRs, but there is no requirement for them to use any pre-determined process before giving consent. Indeed, PCOs are strongly advised to agree suitable processes locally with their LMCs. PCOs do not have any requirement to monitor ongoing standards of record keeping in practices but they can withdraw consent in exceptional circumstances. Once again, a procedure for dealing with this situation should be agreed between the PCO and the LMC. The PCO's main role is to approve appropriate applications and

to ensure that practices receive the support they require to safely make the transition from paper to electronic records. Experience to date strongly supports the development of a joint approach to practice approval by PCOs and LMCs.

8.4 Proposed generic schema for the approval process

1. PCO to implement, in consultation with their LMC, the mechanisms to provide written approval in response to requests to introduce electronic record keeping.
2. PCO to implement, in consultation with the LMC, the procedures that will operate should they wish to remove their approval to allow a GP(s) to maintain electronic records.
3. PCO to identify a senior officer who will have responsibility for approving requests to maintain electronic records.
4. The practice makes a formal written request to the health authority to be paperless (see draft letter below). All the partners (PMS and GMS) should sign the application
5. The designated person at the health authority reviews the application.
6. Where there is no doubt as to the readiness of the practice to become paperless, based upon the information known to the PCO, approval should be granted.
7. This acceptance is then formally acknowledged by the practice that must also agree to inform the PCO of any future changes that could affect the approval.
8. Where the PCO has any doubt as to the readiness of the practice to be paperless, based upon the information about the practice known to them, they should consult the LMC.
9. If, after input from the LMC, there is no doubt as to the readiness of the practice to be paperless, approval should be granted as above.
10. If, after input from the LMC, doubt remains as to the readiness of the practice to become paperless, an accreditation visit should be arranged. The purpose of such a visit is to address any concerns the PCO may have.
11. If the LMC and PCO are satisfied, following the accreditation visit, approval should be granted as above.
12. If the LMC and PCO are not satisfied following the accreditation visit, the PCO should work with the practice to make any necessary changes to enable it to seek approval at a later date.
13. If at anytime after approval has been granted the PCO has reasonable concerns as to the practices' ability to maintain adequate EPRs, the PCO should notify the practice and the LMC immediately, that it is reviewing approval and provide details of any concerns to the practice and the LMC. The PCO should bear in mind that withdrawal of approval is appropriate only as "an extreme course of action".

8.5 Implementation - practices

Practices need to understand that the decision to become paperless must be supported by the whole practice team and that all clinical team members will require access to the practice clinical system. Practices will need to carefully consider and plan for the

transition from paper-based to electronic patient records. Practices should continue to provide the full patient record to their PCO as now, with the existing A4 records and a printout of any electronic records that make up the totality of the patient record. This requirement will be reviewed in the light of technical developments.

Issues for practices to consider will include

- Is the practice system (hardware and software) up to the task?
- What are their training requirements?
- How will they process the paper?
- How will they manage the transition period? (see the pathway to paperless practice - chapter 4)

Practices wishing to apply to become paperless should review chapter 3 of these guidelines in preparation for their application. In their application, practices are required to confirm;

- The practice computer system is fit for purpose
- The computer system security measures and audit functions are enabled.
- The practice will not seek to disable the security and audit functions.
- All the GPs in the practice are aware of and undertake to have regard to the Good Practices Guidelines for General Practice Electronic Patient Records v3.

Furthermore, we recommend that the practice provide the following additional information;

- Practice computer system name and version
- Practice registered name and number under the Data Protection Act
- Confirmation that the practice have a disaster recovery plan verified by their system supplier
- Confirmation that the practice has in place a security policy that complies with these Guidelines

Appendix 4 is a proposed standard checklist for practices to work through as part of the process of preparation for making a paperless practice application.

In appendix 5 we provide a proposed standard letter for practices to use when applying to become paperless.

9 Appendix 1 – List of stakeholders consulted (v3/v3.1)

- The Department of Health
- The General Medical Council
- General Practitioner Committee (GPC) of the British Medical Association (BMA)
- The Royal College of General Practitioners (RCGP)
- The Joint GT It Committee (GPC and RCGP)
- The BMA Ethics Committee
- The BMA IT Committee
- Office of the Information Commissioner
- National Vision User Group
- National iSOFT User Group
- National EMIS User Group
- National GPASS User Group
- The Medical Defence Union
- The Medical Protection Society
- The Medical and Dental Defence Union of Scotland

10 Appendix 2 – GP to GP record transfer

This appendix is a supplement to the Good Practice Guidelines and particularly to the section on Data Transfer whose general provisions and discussion provide throughout the following part. The appendix was constructed on the basis of the experience of the GP2GP record transfer project validation exercises and the clinical involvement therein. It is to be expected that this appendix will form a core part of the good practice guidelines (following any necessary modifications) after the actual introduction of widespread GP electronic record transfer. Specific advice on GP to GP transfer will be made available as a supplement to these guidelines at www.connectingforhealth.nhs.uk/programmes/gp2gp/.

10.1 The rationale for electronic GP-GP record transfer

The overwhelming majority of U.K. general practices (>96%) are computerised in some way or other. A sizeable proportion of these practices (probably the majority – but there is no evidence more recent than 1996) use their computer systems for recording patient record information in whole or in part. The GP electronic record was "legitimised" in 2000 following the construction of a previous version of these Good Practice Guidelines and by Scottish Statute needs date.

Paradoxically, the widespread use of electronic patient records has resulted in deterioration in the completeness and integrity of patient record information at the point of transfer of care between practices. This results from a variety of causes whose main headings are;

- Patient records that are an unpredictable mix between paper and electronic.
- The inability to transfer the electronic part of the record except as a print-out and the consequent need to re-key information (with its associated error factors). Until recently, with GPASS Clinical as supplied in Scotland it has not been possible to print out the complete electronic medical record.
- Variable professional skills and assiduity in recording information within both paper and electronic versions of the record.

The net effect of the above is to place difficulties on new practices in identifying salient information in transferred records and in incorporating that information within the new record. This is to known to have significant (but unquantified) resource implications for practices. There is also widespread anecdotal evidence of resulting adverse effects on patient care.

The rationale for the electronic transfer of records is therefore;

- As a support for electronic records in general practice and their general benefits in terms of decision support and audit/governance abilities.
- To obviate the need, as far as possible, for re-keying of paper-based information for new patients and thus reduce resource implications
- To reduce the risks to patients arising from the transfer of confusing records

10.2 The nature of electronic GP-GP record transfer

Electronic patient record systems in general practice in England are provided by the commercial sector and in Scotland by a mixed economy of commercial and state

suppliers. At the time of writing this annex to the Good Practice Guidelines, eleven different commercial suppliers are known to be involved in this provision. Scotland appears limited to four commercial clinical systems suppliers and GPASS, the SEHD provided system. In addition, in Scotland, the document management system has been standardised on a single commercial supplier with an agreed file and naming structure.

Each of the systems so provided is designed differently and, until recently, none of the systems was constructed with the requirements of clinical data interchange in mind. In consequence, the data structures and data views are heterogeneous (see discussion in the Data Transfer chapter) and so there is no single simple mechanism that can be constructed that will allow the passage of structured clinical data of 100% accuracy and integrity between these different systems.

GP-GP record transfer is carried out using an electronic message which specifies a common "architecture" into which the various systems concerned may map their data structures in a form which is mutually comprehensible. What this means in simple terms is that there is a common convention for the representation of;

- Record Encounters; what constitutes a single transaction with the record such as a surgery consultation, a letter received from outside the practice, an investigation result etc.
- Names for these encounters; e.g. Home Visit, OOH Consultation, Surgery Consultation etc.
- Headings within these encounters
- Complex clinical constructs; e.g. Investigation batteries, Blood Pressure Results etc.
- Code mappings; e.g. from various sets of medication codes
- Codes and associated text
- Major modifiers of clinical meaning; e.g. Uncertainty, Allergy, Family History In addition, there are rules which require the degradation of structured clinical information to text where, in any instance of a record transfer, it is not possible for a system to safely map into or out of this common structure.

The net effect of the above is to allow records to be transferred in a form which is 100% human readable and preserves as much of the structure of the record as possible thus reducing the need to re-key information.

There remain, however, some elements of current electronic records which cannot currently be transferred in completely structured form in every case because of different conventions for describing them on different systems or different coding schemes used.

10.3 The limits of electronic GP-GP record transfer

There are four particular aspects of current GP-GP records where the transfer process of that record information needs to be supported by additional rules or processes if fully safe and usable records are to be reconstituted on receiving systems.

10.3.1 Medication information

There are currently three different coding schemes for the representation of medication information on G.P. systems. Transfer of that information can be achieved by adherence to a combination of rigorous mapping rules and associated automated machine checks against those rules. Experience within the GP-GP record transfer project showed that adherence to those rules allows for a very high degree of reliability of transfer – approaching 100% but, crucially, not actually reaching that point.

The principal reasons for failure to reach 100% reliability are;

- The multiple coding schemes used and
- Failure of previous code mapping exercises (see Data Transfer chapter)

The multiple coding scheme problem cannot be overcome until the NHS implements a common coding scheme for drug information on all electronic record systems. Even then, however, there can probably never be a guarantee that legacy medication information held on computer systems was always reliably coded, particularly when those codes resulted from a historical code mapping exercise. While this is a problem that will reduce over time following the introduction of a common coding scheme, it has effects on record transfer expectations and associated good practice which are discussed below. The standard NHS Dictionary of Medicines and Devices (DM&D) is under development and can be accessed from at http://www.dmddownload.nhs.uk/.

10.3.2 Allergy (Adverse Reaction) information

Partly as a result of the multiple medication coding scheme problem and partly because different suppliers represent medication allergies differently for the purpose of prescribing decision support, it is not currently possible to exchange this information in every case in a way which allows for different systems to mutually understand it.

Within the GP-GP record transfer project a set of rules have been constructed which allow for every instance of a recorded allergy to be clearly identified as such and, when the associated information cannot be incorporated directly into a different receiving system, for this information to be presented to the user so that they can modify it into a form which conforms to that on their own system – thus preserving the ability to use that allergy information as a warning during future prescribing events.

This has effects on good practice which are discussed below.

10.3.3 Business specific information

There are and will be from time to time, aspects of G.P. electronic record keeping that are designed to support specific business processes relating to terms and conditions of service and/or remuneration such as, currently, IoS payments and cervical cytology call/recall/targets.

For most of such processes, either different systems have different conventions for their representation or users create idiosyncratic methods for handling them or both. This has two broad consequences at the point of transfer of the information.

Firstly, while it is always possible to transfer the raw data that supports, for instance, cervical cytology call and recall between systems, it may not be the case that that information can be recreated on a receiving system so that it supports that system's own call and recall functions. During the course of the GP-GP record transfer project, a general template for handling cervical cytology information was proposed but this has not yet been implemented and, until such a common view is held, practices will continue to have to do additional work to make such information completely useful when received from a different system.

Secondly, individual practices may create internal reports to support things like target payments based upon an internal practice agreement as to what codes will be used. These code-lists will not necessarily be the same as those used by a receiving practice following transfer.

The good practice effects of this are discussed below.

10.3.4 General record view

As discussed in the Data Transfer chapter, transfer of information between different systems will result in an alteration in the way that information is viewed and navigated by the receiving system. This does not necessarily have any adverse effect upon the process of patient care, provided that clinical users of the systems understand that this is the case and interpret the record accordingly. Once again, this is discussed below.

10.4 General clinical safety

Systems engaging in GP-GP record transfer will be required to adhere to some processing rules on receipt to reduce the potentially adverse effects of the above limitations.

10.5 Electronic and paper GP-GP record transfer

The transfer of paper G.P. records alongside electronic ones will continue for the foreseeable future for a variety of reasons which include;

- The variable penetration of use in general practice of electronic records for direct patient care
- The majority of patient information from outside practices remains paper-based
- The variable degree to which such external information is incorporated into the electronic record
- The variable degree to which historical patient information native to practices has been incorporated into electronic records

The net effect of this is that, while electronic record transfer will reduce the need to re-key information, it will not remove the onus on practices to enter historical information present in old paper records.

10.6 GP electronic record quality

However assiduously electronic records are kept, errors in their content will sometimes be present. The following examples are already known to have occurred;

- Erroneous codes added by a secretary from an inbound letter
- Erroneous diagnostic code added by a doctor on “hearsay” from a third party
- Erroneous codes added as a result of a flawed data transfer mapping exercise
- Automatic code entry as a result of software misinterpretation of inbound electronic messages
- Missing or incomplete significant data
- Data summarised from Lloyd George notes that relates to a different patient's clinical information

The general issue of good record keeping is detailed elsewhere in these guidelines. Some particular matters relating to transferred electronic records are discussed below.

10.7 GP-GP record transfer good practice guidelines

The following guidelines apply to the electronic transfer of GP records in current technical and organisational circumstances. As practices increasingly move to full electronic records, the NHS moves to an e-commerce basis, and NHS computer systems are supported by common terminologies and architectural principles, these guidelines will change (and will become less onerous).

10.7.1 Workflow

The precise workflow mechanisms for delivery of G.P. electronic record transfer by the NHS remain unclear at the time of writing this appendix. However, there are some general workflow principles that will apply which are as follows;

- The originating practice should at a minimum of once daily respond to requests for the transfer of electronic records
- The receiving General Practice should at a minimum of once daily collect and process requested electronic records
- The received record should be held in an “in tray” until reviewed by a GP or other appropriately trained member of staff and authorised, matched and filed within the clinical system as the accepted patient record
- All associated paper records should be sent to the responsible authority (PCT or common service agency) as soon as possible after receipt of a request for those records
- The practice should have a procedure in place for dealing with electronic records received that relate to patients not currently being cared for by the practice.

10.7.2 General Organisational

When practices receive electronic records, they will be provided with functionality on their systems that will allow them to review and, in some cases alter the information in those records at the point of filing. When doing so, the responsible user should ensure that;

- Any interim record information on the receiving system is checked against the incoming record

- Any current medication or allergy information is checked for accuracy
- Incoming record information is not modified beyond what is necessary to make it safe and usable on the receiving system
- Incoming record information is never deleted unless deemed to be unsafe in terms of its accuracy or comprehensibility.

Notwithstanding the above, practices will need to ensure that business specific information (such as cervical cytology call/recall information) is modified on the host system to allow for its use by host reporting functions.

When paper records are received they should be reviewed by a GP or other appropriately trained member of staff and amendments made to the electronic record where appropriate

10.7.3 Training

- A responsible member of staff and a deputy should be identified and trained in the processes involved in GP to GP record transfer
- All users of the practice system should be trained in what to expect from electronic record transfer and, in particular, from the limitations outlined in section 1.3 of this Appendix.
- More generally, all members of the clinical team and relevant members of the administrative team should be familiar with these good practice guidelines prior to commencement of GP to GP record transfer
- Practices should identify a date from which they will implement GP to GP record transfer
- All members of the practice should be informed of the date of commencement of GP to GP record transfer

10.7.4 Non-computerised practices

At the time of writing this appendix, it is not clear how many, if any practices remain non-computerised. Clearly, such practices will not be able to receive external electronic records. In such cases, practices will need to liaise with their PCOs to ensure that, at the very least, a system is put in place that will allow them to receive external electronic record transfers in their textual form which can then be printed and included in their own paper records.

It should also be noted that practices whose system suppliers have not made themselves capable of delivering full electronic record transfers will only be able to receive the textual versions of external electronic records in a similar fashion.

10.7.5 Validation

The quality issues identified in section A2.6 above require practices to have in place mechanisms aimed at reducing or eliminating the impact of externally received erroneous data. The following guidelines are suggested;

- The practice's native record should be maintained in line with these "Good Practice Guidelines for General Practice Electronic Patient Records".

- Practices should follow the guidelines identified in section A2.7.2 of this appendix on receipt of an external record.
- When the patient consults for the first time their past medical history and medication history should be reviewed and verified against the received electronic patient record.
- Practices should recognise that patients themselves are generally the most competent to judge the accuracy of their own historical information, and should consider making a printed version of the record available to their patients for comment at specific points in their experience such as their first visit after registering, on the point of referral to hospital etc.

Further information on GP2GP record transfer will be available as an update to these guidelines from the GP2GP website.

11 Appendix 3 – Learning needs map to GPG

Learning needs	Relevant chapters of GPG	Paragraphs in GPG
1. How to use the technology		7.2
Keyboard skills		3.4.1
Using office programmes		6.1 6.2 6.3 6.4 6.5
Using the clinical system		2.4 4.6 to 4.19
Conforming with local practice		4.5 4.6.7 4.18 4.19
How to get help if the system fails		3.10 4.20
2. Data, information and meaning		7.3
How to use coded and free text entry appropriately	Patient records systems (2) Migration towards paperless practice (4)	2.4 4.6 4.7 4.8 4.9 4.10 4.11 4.12 4.13 4.14 4.15 4.16 4.17
Understanding how context affects the interpretation of data	Migration towards paperless practice (4) Data transfer (5) & appendix 2	4.6 4.7 4.12 4.13.4.14.4.15 4.16 5.1.3 5.1.4 5.2 5.3
How to apply that understanding when receiving or sending messages	Data transfer (5) & appendix 2	5.1.3 5.1.4 5.2 5.3
Awareness of the purposes to which a particular entry may be put	Patient records systems (2) Migration towards paperless practice (4)	2.1 2.2 2.3 2.4 4.4 to 4.17
Understanding the issues of information governance	Information governance (3) Electronic documents (6)	3.1 to 3.10 6.1 6.2 6.3
Understanding the importance of consistency and accuracy in data entry	Migration towards paperless practice (4)	4.3 4.4 4.5 4.18 4.19
Conforming with local practice	Migration towards paperless practice (4)	4.5 4.6.7 4.18 4.19
3. Integrating electronic and		7.4

interpersonal communication of nformation	
Awareness of how computer use affects the consultation	2.4 7.4
How to use communication skills to relate to the patient while using the computer	7.4
How to facilitate shared reading from the computer screen	7.4
How to incorporate outside knowledge (from the computer) into the consultation; learning, teaching, facilitating.	2.1 7.4
How to share information and decision making	2.3 7.4

12 Appendix 4

12.1 Proposed standard checklist for paperless practice preparation

Issue	Comments
Computer system	Is the system fit for purpose? (approved by SHED and meets SEF requirements) Future systems and suppliers will be accredited against national level SLAs and templates (Ch. 1 & 2)
Support	Is there a signed support contract? What is the contracted response time for a critical failure? (Ch. 3)
Disaster recovery	Do you have a disaster recovery plan, verified by your system supplier & PCO? (Ch. 3)
Backups	Do you have a proper backup strategy including backup verification? (Ch. 3)
Security	Do you have in place a proper security policy including virus protection, firewall & access control (Ch. 3)
Insurance	Are the system and all necessary peripherals adequately insured? (Ch. 3)
Legal	Are you properly registered under the Data Protection Act? Do you comply with the provisions of the Act? (Ch. 3)

Information Governance	Have you read and understood the implications of the Information Governance chapter of these guidelines? (Ch. 3)
Paperless practice	Have you read, understood and developed procedures for your migration to paperless practice? Does your practice comply with the appropriate NHS regulations for paperless practice (GMS or PMS)? (Ch. 4 & 8)
Transfer of patient data	Have you read, understood and developed procedures for the transfer of patient data? (Ch. 4 & 5)
Clinical code policy	How will you achieve consistency of coding? Do you have an agreed policy on record content and management? (Ch. 4)
Electronic documents	Have you read, understood and developed procedures for handling electronic documents and safely disposing of paper documents? (Ch. 6)
Training and education	What are your education and training needs likely to be? How will these be achieved? (Ch. 7)

13 Appendix 5

13.1 APPLICATION FOR GP PRACTICE TO BECOME PAPERLESS

To: _____ NHS Board

From: _____ Practice

I/we the undersigned wish to apply for consent to keep our NHS patient medical records in
electronic format. Furthermore, I/we confirm that:

1. the practice computer system is fit for purpose;
2. the computer system security measures and audit functions are enabled;
3. the practice will not seek to disable the security and audit functions;
4. all the GPs in the practice are aware of and undertake to have regard to the Good Practice Guidelines for General Practice Electronic Patient Records v3 (Scottish Revision Version 1.0), prepared by the Joint Computing Group of the General Practitioners Committee and the Royal College of General Practitioners (sponsored by the Department of Health).
5. the practice has IT recovery arrangements verified by their system supplier; and
6. the practices has in place a security policy that complies with current good practice.

Practice computer system name and version:

.....

Practice registered name and number under the Data Protection Act:

.....

I/we agree that a full patient record will continue to be forwarded when requested to the NHS
Board and that will contain all relevant records including a printout of the entire computer
record, including word-processed or scanned documents.

I am/we are aware that compliance with these conditions can reasonably be audited by the
NHS Board.

Signed by all GMS list principals or Sections 17C practitioners at the practice.

14 Appendix 6 – Learning resources (to support para 4.43 of the New GP Contract)

Para 4.43	Issue	What does this mean	Support
I	Use and manage clinical and administration information systems including data entry and retrieval	Staff member has ICT skills appropriate to their job. This will differ for: a) receptionists b) medical secretaries c) clinicians	Primary Care Information Service (PRIMIS) modules www.primis.nhs.uk There are various methods of training e.g. systems based, identifying skills gaps by the use of tools such as e-skills passport. These are approaches used for end user skills/competency development – see notes ii and iii (below) e-skills uk –(IT sector skills) www.e-skills.com European Computer Driving License (ECDL) www.ecdl.nhs.uk IBT/OCR – see note i (below) www.ocr.org.uk/OCR/WebSite/docroot/qualifications/qualificationhome/showQualification.do?qual_oid=2102&site=OCR&oid=2102&server=PRODUKTION ITQ2 www.e-skills.com/cgi-bin/wms.pl/556 Clinical classification training (NPfIT) www.connectingforhealth.nhs.uk/training/sas Local further/adult education colleges.
II	Understand clinical nomenclatures and classifications	This may be most appropriate for any member of staff dealing with the coding of clinical information	PRIMIS www.primis.nhs.uk Information about Clinical codes can be accessed via NHS Information Authority (NHSIA) website www.nhsia.nhs.uk. A Health Informatics degree is being developed by the NHSIA and the Modernisation Agency which will, in due course, be run by the Standards and Professionalism arm of the emerging Health and Social Care Information Centre, the latter which comes into being on 1 April 05.

III	Ensure data quality	This covers: a) location of data entry b) preparation interpretation storage retrieval and presentation	PRIMIS www.primis.nhs.uk Information Governance Toolkit http://nww.nhsia.nhs.uk/infogov/igt/ The Information Governance Education Recognition (TIGER) www.tiger-infogov.org/ Changing workforce - 'clinical coders' to take on audit, quality assurance/ training and development www.nhsia.nhs.uk/clinicalcoding/pages/nccq.asp Health Social Care Information Centre (http://www.ic.nhs.uk/) Health Informatics National Occupational Standards www.skillsforhealth.org.uk National Clinical Coding Qualification www.nhsia.nhs.uk/clinicalcoding/pages/nccq.asp Professional awards in IM&T (Health) www.nhsia.nhs.uk/informatics/pages/dprofessionalism.asp

IV	Implement change management strategies to enable a move from paper to electronic records	This will include: Summarisation prep for entry Timescales, arrangements etc. storage for paper records,project management, leadership	PRIMIS www.primis.nhs.uk ECDL www.ecdl.nhs.uk Professional awards www.nhsia.nhs.uk/informatics/pages/dprofessionalism.asp Annual Accolade Awards www.nhsia.nhs.uk/informatics/pages/dprofessionalism.asp Sharing Best Practice www.nhsia.nhs.uk/def/home.asp?
V	Manage risks associated with IT dependant environment including disaster recovery, operational continuity	Conducting risk assessment Security of practice Back up arrangements Scenarios "what to do if…" etc Responsibility	PRIMIS www.primis.nhs.uk Information Governance Toolkit http://nww.nhsia.nhs.uk/infogov/igt/ ECDL www.ecdl.nhs.uk Information Business Technology (IBT) – see note i (below) Y2K contingency planning – see note v (below) Health Informatics National Occupational Standards on Skills for Health Website – see note iv (below) NHS Knowledge and Skills Framework – Department of Health Website www.dh.gov.uk
VI	Develop and implement workforce strategies for summarisation etc.	Identify workforce requirements Liaison with PCT etc	A number of skills gap analysis toolkits are available including PRIMIS www.primis.nhs.uk ECDL www.ecdl.nhs.uk

VII	General	Para 4.43 training and development opportunities will vary nationally but the support listed (see right) should be able to assist with developing para 4.43 skills	Where available, PCT ICT helpdesks/departments Clinical system suppliers £150 Individual Learning Accounts – see note viii (below) PCT funded IT courses Adult/further education colleges Multi-disciplinary team working GP practice team building, developing new partnerships through a focus on improving data quality: ensure sharing of GP and administrative data management skills perhaps linking to clinical priorities. Utilising practice staff knowledge and experience to spot errors in recording of data etc. Agenda for Change www.dh.gov.uk/AgendaForChange/fs/en Knowledge and Skills Framework www.dh.gov.uk/KnowledgeandSkills Core Dimensions as well as Information and Knowledge Dimensions can be used effectively as part of the PCT/Practice development These guidelines

14.1.1 Notes

14.1.1.1 (i) Information Business Technology (IBT) user qualification by OCR

www.ocr.org.uk/OCR/WebSite/docroot/qualifications/qualificationhome/showQualification.do?qual_oid=2102&site=OCR&oid=2102&server=PRODUKTION

14.1.2 (ii) e – skills describes itself as –

"e-skills UK acts as the voice of employers on IT, Telecoms and Contact Centres to create the skills environment that businesses need to be productive and competitive. The job of e-skills UK is to ensure that the skills employers need are the skills employers get" www.e-skills.com/

14.1.3 (iii) e-skills – skills and qualifications

http://www.e-skills.com/cgi-bin/wms.pl/139

14.1.4 (iv) www.skillsforhealth.org.uk/

Skills for Health – Health Informatics National Occupational Standards

14.1.5 (v) Year 2000 – contingency planning.

An electronic copy is not available but a paper copy can be order with the information provided on the web-site.

www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4009770&chk=lfiz%2Bh

14.1.6 (vi) Qualities and Outcomes Contract – link to DH website, which leads to electronic pdf.

www.dh.gov.uk/PolicyAndGuidance/OrganisationPolicy/PrimaryCare/PrimaryCareContracting/PrimaryCareContractingArticle/fs/en?CONTENT_ID=4088692&chk=pPhvrh

14.1.7 (vii) SNOMED CT

www.nhsia.nhs.uk/snomed/pages/ct_snomed.asp

14.1.8 (viii) Individual Learning Account

www.dh.gov.uk/PolicyAndGuidance/HumanResourcesAndTraining/LearningAndPersonalDevelopment/PrePreRegistration/PrePreRegistrationArticle/fs/en?CONTENT_ID=4031393&chk=eOXoXa