A Language of Health in Action: Read Codes, Classifications and Groupings

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A cornerstone of the Information Management and Technology Strategy of the National Health Service's (NHS) Executive is fully operational, person-based clinical information systems, from which flow all of the data needed for direct and indirect care of patients by healthcare providers, and local and national management of the NHS.

The currency of these data flows are firstly Read-coded clinical terms, secondly the classifications, the International Classification of Disease and Health Related Problems, 10th Revision (ICD-10) and The Office of Population Censuses and Surveys Classification of Surgical Operations and Procedures, 4th Revision (OPCS-4), and thirdly Healthcare Resource Groups and Health Benefit Groups, all of which together are called the "language of health", an essential element of the electronic clinical record.

This paper briefly describes the three main constituents of the language, and how, together with person-based, fully operational clinical information systems, it enables more effective and efficient healthcare delivery. It also describes how the remaining projects of the IM&T Strategy complete the key components necessary to provide the systems that will enable the flow of person-based data, collected once at the point of care and shared amongst all legitimate users via the electronic patient record.

INTRODUCTION

In the last year the NHS in the United Kingdom has seen a number of developments significant to the pace of development and sharing of an electronic record for NHS patients. Most notable among these is the "Patients not Paper" initiative[1] which focuses on reducing the administrative burden of the NHS by reducing, and in some cases eliminating paper transactions, in order to enhance the efficiency and effectiveness of care delivery.

As a result, the seminal paper in this series, which was presented at the IMIA World Congress, Vancouver in 1995[2] and which described and explained what the Read-coded clinical thesaurus, the ICD and OPCS-4 classifications and Healthcare Resource Groups (HRGs)[3] are, and the relationship between them, has been updated here. This paper describes how these different but complimentary data tools are, in practice, being applied by the NHS, as the pace of progress towards shared electronic records accelerates.

BACKGROUND

As described in the original paper, a cornerstone of the NHS Executive's Information Management and Technology (IM&T) strategy[4] is fully operational, person-based clinical information systems, from which will flow all of the data needed for direct and indirect care of patients by healthcare providers, and by local and national managers of the NHS. This consists of three elements. The first is Read-coded clinical terms[5], designed for the recording of the clinical details of patient care. The second is the classifications ICD-10[6] and OPCS-4[7], designed for statistics and specific healthcare management purposes. The third is Healthcare Resource Groups (HRGs), groupings of treatment episodes, for costing and other specific healthcare management purposes. These combine to form the "language" that is the essential element of the electronic clinical record.

In summary of the key sections of the first paper, "Read" is a coded thesaurus of those clinical terms most commonly used in medicine, surgery, nursing and the professions allied to medicine. It is comprehensive and highly detailed and has been recommended by all the clinical professions as the preferred terminology for clinical systems in the NHS.

The paper also described the ICD-10 (implemented in the NHS in England for morbidity purposes in April 1995) and OPCS-4 classifications, as appropriate for summarising relevant elements of the Read Codes, for those local, national and international service management purposes requiring statistical analysis.

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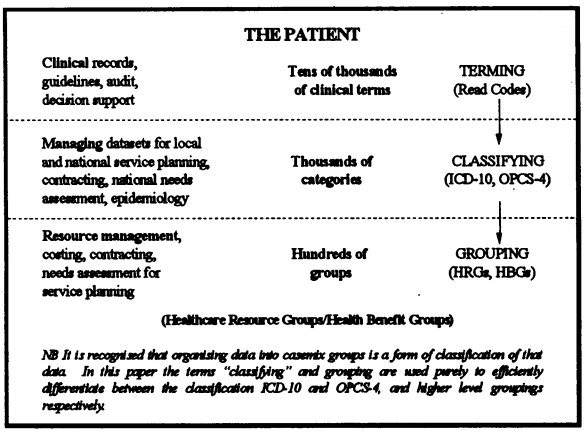

Healthcare Resource Groups were described in terms of their relevance to those business processes requiring knowledge and analysis of casemix.

Lastly, the maps between these three information tools, which enable transformation of Read-coded data to the classifications and then to the groups, were discussed in the original paper.

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Significant changes and challenges face the NHS in the 1990s. The incentives to use resources more efficiently has never been greater. An ageing population, increasing expectations for health outcomes and rising costs of applying technological innovation in patient care present real challenges.

In addition, commissioners and providers of healthcare are faced with increasing demands for improved quality, greater volumes of service and more effective use of resources. The NHS Executive has developed a number of strategies to address these issues, among which is the Information Management and Technology Strategy. This strategy responds to the business need of the NHS to see best benefit and value for money from IM&T investment and is founded on the business goal of the NHS Executive, which is to create a better health service for the nation. This strategic vision, therefore, will be realised by supporting better care and communication through the appropriate use of IM&T, and a key to this will be electronic communications between primary and acute care sectors, as detailed below. The strategic vision is guided by four key principles:

1. Information will be person-based and person-based systems will hold a healthcare record for each individual, which can be uniquely referenced by that person's NHS number.

2. Information will be derived as a by-product from operational systems; i.e. it will be obtained from systems used by healthcare professionals in their day to day work.

3. Information will be secure and confidential; great care will be taken to ensure that the information held on computers will be available only to those who need to know it and who are authorised to know it.

4. Information will be shared across the NHS; common standards and NHS-wide networking, together with a structured, electronic patient record will allow computers to communicate information that can be shared, subject to the afore-mentioned security and confidentiality safeguards.

This strategic vision requires a particular infrastructure to be developed. The basis of this is the NHS-wide network. This will be the highway along which shared information will flow, the foundations of which have now been laid to the extent that testing and implementation are taking place. It also includes national standards to enable inter-computer communication. It includes a framework for confidentiality and security and appropriate, related mechanisms, all of which are in advanced stages of preparation. It includes an NHS Administrative Register, which will hold administrative details about each patient, and the development of unique, NHS-wide patient identification numbers. The latter is now being implemented for every new-born in the NHS. Numbers on existing records are also now in the process of being converted. Lastly, it includes development of a structured clinical record, and associated definitions, work on which is also well-advanced with the clinical professions.

For this infrastructure to be useful, it must carry information which is fit for the purposes of the healthcare industry. This is where Read, ICD-10 and OPCS-4 and groupings become relevant, with Read being the most fundamental building block for any set of data, classifications offering an intermediate level of aggregation which is useful for statistical analysis of incidence and trend, and groupings offering a higher level of aggregation for contracting and management planning purposes.

HRGs provide groupings of treatments for costing

purposes. Health Benefit Groups (HBGs), still in their development phase, are groupings of patients with conditions for the purposes of needs assessment. Use of these two groupings together will provide a powerful way to analyse the needs of the population, the care packages required, and the appropriateness, costs and outcome of the care provided.

PRIMARY CARE

85% of General Practitioners (GPs) in the NHS are now computerised. 70% of those use Read Codes[8] (covering over 70% of the UK population), many of them to record a detailed summary of patient encounters. Read Codes are capable of recording all of the detail GPs find necessary in this regard. A number of GPs now use the Read Codes, supplemented by free text, entirely to replace the traditional written record. This data is used to support direct and indirect patient care via a range of processes. These include patient consultations, when detailed patient records can quickly and easily be retrieved for review and analysis. They are also used to support the best possible decisions about referring, prescribing and investigating. They are also beginning to be used for their ability to provide morbidity information about the primary healthcare sector, which is recognised as being of substantial value, particularly to commissioners of healthcare. Some commissioners have been able to re-negotiate contracts with healthcare providers by demonstrating from such data that the needs of their local population differ from the national or regional norms previously used for contracting. Read-coded records are also used in audit, research, outcomes work and the development and application of clinical guidelines.

The vast majority of contact with the NHS is through GP practices in the primary care sector, and this will become increasingly so as the NHS becomes Primary Care led. To enable this a number of electronic communications are being developed and implemented and all will be directly supported by the language of health:

Those enabled directly by Read Codes are:

a. The sharing of records between integrated Primary Healthcare team members, enabling the shift from care in the community to primary healthcare teams.

b. Electronic messaging enabling referral and discharge letters, and pathology and radiology investigation requesting and reporting between GPs and acute hospitals.

c. Cost effective and efficient prescribing, with Read Codes providing the link between the prescription, the pharmacist and the payment agency.

d. Links between GPs and Health Authorities, allowing more efficient registration of patients, monitoring of services and more accurate and efficient billing and payment.

e. On-line access to clinical and prescribing decision support systems and to protocols of care based on professionally-derived clinical guidelines, with Read Codes providing the "hook" into these systems.

Management data sets are produced as a by-product of the Read-coded clinical Primary Healthcare Team record. The purchasing of care by General Practitioners is, at present, based on OPCS-4, supported by the "maps" between Read Codes and OPCS-4. The currency of care purchased between Primary Care (GP Fund-holding) and the acute sector will be Healthcare Resource Groups, again produced as a by-product of the Read-coded Primary Healthcare Team record, via an intermediate transformation through the classifications.

Much of the above has been happening in General Practice in the UK for a number of years, well supported by the older versions of the Read Codes. During 1996/97, the NHS Centre for Coding and Classification will be working to ensure that the latest version of the Read Codes, Version 3, is fully ready to provide added richness to the GP's clinical record, while retaining the functionality of older versions. Added value is available with features such as a flagged subset of the full thesaurus for GPs.

ACUTE CARE AND COMMISSIONING

Read terms are also beginning to be used more widely in acute care hospitals, to create electronic patient records, from which flow all of the data needed for direct and indirect care of patients by healthcare providers, and local and national managers of the NHS. Again, these uses can be divided into those directly supported by Read, those supported by transformations to the classifications, ICD-10 and OPCS-4, and those that are further transformed into HRGs as groupings of care provided. These are

viewed here firstly by those uses of the language supporting direct patient care and then those supporting indirect patient care.

Direct patient care uses of the language of health:

a. The creation of clinical records using the natural language of healthcare professionals. The terms are found to be particularly useful in the development of shared care plans to support the increasingly multidisciplinary approach to care being taken and electronic communication between carers in different sectors

b. The clinical professions are developing guidelines for the treatment of specific conditions. These are so numerous that computer prompting is essential to their efficient and effective use. Read-coded clinical terms serve as the prompt to trigger the appropriate clinical guideline.

c. At the level of the individual carer and patient, the content and structure of the Read Codes allow accurate and efficient retrieval of data relevant to clinical audit and outcomes studies. In addition, the adoption by the clinical professions of Read as the preferred clinical dictionary for recording the details of patient care allows peer comparison locally and nationally to take place for the first time.

d. The interactive, dynamic, software-based nature of the Read Codes enables on-line access to clinical and prescribing decision support systems.

Indirect patient care uses of language of health:

a. Transformation of Read-coded data into ICD-10 and OPCS-4 allows more accurate, statistically useful subsets of the original patient data - more accurate as they are termed as a by-product of operational clinical information systems. Although these could be used locally for assessment of population health needs, their most widespread use is in producing management reports, national returns and minimum data sets, for the purposes of contracting and local and national service planning and management. Many new data sets will, however, rely on Read Codes for essential data elements outside the scope of ICD and OPCS-4.

b. Further transformation, using automatic mapping tables, assigns each episode or care package to the appropriate HRG group. Data organised in this way is now being used to inform the contracting process by forming the basic unit for costing and informing more generally about levels and implications of casemix. It is also used at the level of clinical directorates to predict, monitor and explain resource use. HRGs based directly on Read Codes, for those clinical specialities not covered by the classifications, like radiotherapy, are in the course of development. In due course HRGs classifying treatment activity across the whole spectrum of care will be developed.

A fundamental aspect of the IM&T Strategy, however, is that information should be shared. As described above, the infrastructure exists to enable this, as does the "language of health" with which to populate it.

There are, however, a number of historic versions of Read Codes in use. Most GPs use the GP 4-byte set, which meets their needs for traditional short clinical notes. Its scope is broad and limited in detail to that needed by GPs. Many hospitals (and some GPs) use the Unified 5 byte set (often known as Version 2), which was the first attempt to meet the needs of the acute care sector, by expanding the disorder and procedure chapters and providing maps to the classifications, ICD-10 and OPCS-4. Both of these versions have a fixed hierarchical structure, limited to four or five levels.

Version 3[9] is the latest, largest and most comprehensive version. This was the result of the Clinical Terms Projects[10] between 1992 and 1995. The projects involved 55 working groups from all of the clinical professions. Version 3 allows concepts to be placed in more than one part of the hierarchy, provides many more levels of hierarchy and, in addition to an even broader scope, supports the detail that specialists require. The addition of detail is achieved sometimes within the main terms but also by a mechanism of Read-coded "qualifiers". Version 3 serves to unify the "family" of many thousands of Read Code users by including the full contents of all other versions within it.

It is recognised that migration to Version 3 must be driven by local business needs and is likely to happen progressively over the next five years. Users of different versions must be able reliably to transmit healthcare data amongst them. There is a need, therefore, to continue support for all versions and also to enable reliable inter-version communication. Work on this is currently in progress.

In addition to the 150 or so acute hospitals where Version 2 is used, there are now a dozen acute hospitals actively implementing Version 3 with another 30 expressing interest in doing so. These active implementations are in a number of different settings, from pathology messaging to the creation of discharge summaries with contracting data generated as a by-product. Such hospitals are basing the generation of their income on the Read Codes. Some have made use of the full functionality and richness of Version 3, while others have put in place a basic implementation, while still others are using optical mark readers to capture detailed but restricted data sets in Version 3 Read Codes. Some are analysing their data via Version 3 while others have yet to explore this avenue and are using the maps to obtain classification data for statistical analysis.

DATA QUALITY

For a number of the above-mentioned applications, production of data which is consistent and comparable across time and between sources is essential. Current initiatives in place to address this issue include:

a. Clinical coding standards development and promulgation, and national standard trainers, training courses and materials, which are designed to ensure the NHS consistently applies the classifications.

b. A national data quality initiative, which establishes baseline standards for quality of data nationally. This enables identification of and corrective support in areas of poor performance.

c. A data accreditation project, which assesses both the organisational arrangements surrounding local data collection and the quality of data itself, again with the objective of enabling improvement and of providing a measure of confidence to data users.

d. A national coding query help-desk and reference database.

SUMMARY

Development and implementation of the NHS IM&T Strategy has only been possible because of the uniquestructure, size and environment of the NHS. This created the situation where the clinical professions could come together, in a spirit of true collaboration, with the Department of Health's NHS Executive Information Management Group. All of these parties recognised the potential power of clinical information systems, and the information therein, to create a better health service for the nation. The clinical professions have taken a major part in an unprecedented partnership to produce Version 3 Read Codes, Healthcare Resource Groups, and Health Benefit Groups, created for the "Language of Health".

References

1. NHS Executive. *Patients not Paper - Report of the Efficiency Scrutiny into bureaucracy in general practice*. England: Department of Health, 1995.
2. Read JD, Sanderson HF, Sutton YM. Terming, Encoding, Grouping, The Language of Health. *Proceedings International Medical Information Association's 8th World Congress on Medical Informatics*. Vancouver: 1995.
3. HF Sanderson, P Anthony, LM Mountney. Healthcare Resource Groups - Version 2, *Journal of Public Health Medicine*, 1995; **17**(3): 349-354.
4. NHS Management Executive. *An Information Management and Technology Strategy for the NHS in England*. London: HMSO, 1992.
5. Chisholm J. The Read Classification. *British Medical Journal*, 1990; **300**: 1092.
6. *International Statistical Classification of Diseases and Related Health Problems, 10th Revision*. Geneva: WHO, 1992.
7. *Classification of Surgical Operations and Procedures (4th revision)*. Office of Population Censuses and Surveys. London: HMSO, 1990.
8. NHS Management Executive. *Computerisation in GP Practices 1993 Survey*. England: Department of Health, 1993.
9. O'Neil MJ, Payne C, Read JD. Read Codes Version 3: A User Led Terminology. *Meth Inform Med* 1995; **34**: 187-192.
10. Severs MP. The Clinical Terms Project. *Bulletin of the Royal College of Physicians* (London) 1993; **27** (2): 9-10.