The use of information technology in managing patients with coronary heart disease

David Simpson MSc PhD
IT Co-ordinator, Primary Care Informatics, Newlands Medical Centre, Middlesbrough, UK

John Nicholas MA BChir MB DCH MRCGP
General Practitioner, Queen’s Park Medical Centre, Stockton-on-Tees, UK

Kevin Cooper
IT Support Officer, Primary Care Informatics, Newlands Medical Centre, Middlesbrough, UK

ABSTRACT

The publication Information for Health provided a detailed exposition of the government’s requirements for modernising the NHS from an information point of view.

Furthermore, it described how information technology (IT) can be harnessed to support the process of patient care, involving the use of both the Electronic Patient Record (EPR) and Electronic Health Record (EHR). However, it is widely recognised that clinical computer systems in primary care are dramatically underutilised, and computerised patient records are of variable quality and reliability. One important factor has been the lack of training and support available to ensure greater use of IT (i.e. the clinical computer systems).

Steps are being taken in Teesside to address this problem; the prime objective of which is to support practices to make greater use of their IT investment, and with particular reference to the national service framework (NSF) on coronary heart disease (CHD).

Keywords: coronary heart disease, information technology, patient care

Background

A great deal of data are collected and recorded in primary care. These data can be used for a range of things, including clinical audit, health needs assessment, commissioning and research. However, it is clear that much of the data held on clinical computer systems are of variable quality. This needs attention. Furthermore, as clinical governance assumes greater importance, the ongoing monitoring and evaluation of the care provided will become a necessity. Paper-based systems lack the immediacy required to deal with this efficiently. However, as practices increasingly computerise their day-to-day care, by employing standardised approaches to clinical coding, it should be possible to extract the same data as would be collected from a paper-based system in minutes, rather than days.

The national service framework on coronary heart disease (CHD)

CHD is the cause of 25% of deaths in the UK and is the biggest single cause of premature death. In England, the death rate from CHD has declined by 38% between the early 1970s and 1990. However, despite this improvement, the national rate is still one of the highest in the world and a reduction in CHD remains a significant target of the government. The aim is to reduce the death rate from CHD and stroke-related diseases in people under the age of 75 by at least two-fifths by 2010 – saving up to 200 000 lives in total.

The NSF on CHD is built around 12 standards that cover the whole of the morbidity, from smoking cessation to rehabilitation after a heart attack. Within
primary care, the first step was to establish comprehensive, accurate data registers of people aged 35 to 74 with recognised CHD, ischaemic stroke, transient ischaemic attack (TIA) and/or atheromatous peripheral vascular disease (PVD) by April 2001. This is to be followed by practices providing 12-month auditable data based on said registers by April 2003.

Methodology

Within Teesside there are 81 practices and numerous different clinical computer systems. Each has its own idiosyncrasies and, accordingly, support is being provided to enable the development of fully maintainable and auditable electronic CHD disease registers, based on specific requirements, and in such a way that skills learnt are transferable to other areas of morbidity. Furthermore, practices are being supported to capture a minimum data set (MDS) for CHD to ensure that later targets (see above) are reached.

Practices vary widely in the extent and quality of their computer-based disease registers. Some have registers of sorts; others have very little morbidity data on their systems. Whatever the starting point, the ultimate goal is to provide a means of easily identifying and managing patients with CHD. To assist the overall process and to ensure a structured developmental mechanism, a flowchart of the requisite stages has been drawn together and utilised in all practices. Amongst other things, this process covers an assessment of each practice’s specific training needs, the identification of those patients appropriate for inclusion in a CHD data register (using both electronic and paper-based systems) using a series of morbidity and medication data searches, the ‘tagging’ of patients on the different clinical computer systems using appropriate Read codes. Additionally, it includes the provision of training in procedures relating to the best use of the clinical computer systems, data register maintenance techniques, protocols and templates to enable the effective collection of the MDS for CHD, and the creation of supportive material to enable effective auditing and monitoring of data quality.

Summary of data

Teesside has a population of more than 500 000, of which nearly 270 000 are aged 35 to 74 (see Table 1). After running searches on the clinical computer systems of all the practices, more than 20 000 patients with a CHD morbidity (as defined by the NSF) were identified (prevalence 7.09%). Nearly 2000 patients with an inappropriate Read code were identified – in most cases this was ‘History of’ codes – of which 1175 were confirmed as having CHD following audit of the paper-based records. Nearly 15 000 patients were found on the clinical systems with an appropriate issue of medication but without a CHD diagnostic code. These patients had their paper-based records audited and 2916 were found to have CHD. The reason why a patient was on a CHD medication was inconclusive in the case of 243 patients, and clinicians in the appropriate practices were asked to complete a clinical assessment of the patients’ notes. Of these,
61 were confirmed as having CHD. On reaching the first deadline, an additional 4152 CHD patients had been identified (total 24 306/prevalence 9.09% – see Figure 1). These patients have since had the correct Read code added to their records on the clinical computer system.

Ongoing steps

The first deadline of the work detailed herewith (that is, CHD data registers in place in all practices by 1 April 2001) has been successfully met. The following steps are currently under way:

- **Continue ‘tagging’ patient computer-based records where appropriate** The ‘tagging’ of computer-based records is being used as an ongoing training opportunity in those practices that have recently changed their clinical computer system.

- **Broaden drug search strategy** Practices with a lower than reasonably explainable CHD prevalence are being offered support to (potentially) enrich their registers by broadening the drug search criteria initially used to identify the appropriate patients.

- **Secondary derived data comparison** Practices are being given the opportunity (with support) to compare their register data against those derived from hospital computer systems. Again this may increase the richness of the registers and, furthermore, will help to validate their accuracy.

- **Chronic disease register maintenance mechanisms** This area covers numerous areas and includes investigating in greater depth all internal information flows, and supporting the capture and recording of consultation data at point of contact.

- **Training** It is rarely possible to access practice teams away from the surgery. Accordingly, methods are being put in place that minimise disruption whilst maximising learning. This is being achieved by working directly with practice teams in the surgery, using their own clinical computer systems, and their own extracted data to demonstrate and support training mechanisms.

- **Clinical computer systems** Practices are being supported to optimise the use of their clinical computer systems and encouraged to see them as the prime source for data entry and access. However, there is little point improving data collection processes if the data are inaccurate or incomplete. A significant component of the ongoing work is improving data quality, which is the first stage of an educative process and culture change in many practices.

- **Read codes/data quality group** Equal access to training to facilitate improvements in data quality and standardisation is being provided. Areas of note include dedicated Read code training and support to establish and maintain practice-based data quality groups.

- **Supportive material** Training material and supportive documentation is being developed and disseminated as appropriate.

- **Protocols and templates** The collection of the MDS for patients with the recognised morbidity is being supported through the development and use of appropriate system tools.

- **Chronic disease register monitoring** Tools and techniques to assist with comparative analysis to assess local standards, and to drive quality and efficiency are being provided. This includes using both the clinical computer systems’ reporting functions and the data extraction tool MIQUEST. Additionally, it involves developing a close working relationship with the nationally supported project PRIMIS.

![Figure 1 CHD NSF prevalence data as of 1 April 2001 in different primary care organisations (PCOs) in Teeside (all practices)](chart)

**Conclusion**

Primary care in the UK has had to deal with the arrival of computer systems, along with all the disruption caused, whilst coping with ever-increasing demands. Training and support, as well as software

---

4An acronym for ‘Morbidity Information Query and Export Syntax’. A set of protocols for the collection of health data from GP computer systems in a common format.

5Primary Care Information Services (PRIMIS) is a training and support service designed to help primary care improve information management and data quality using their clinical computer systems. See [www.primis.nhs.uk](http://www.primis.nhs.uk)
provided by system suppliers, is often poor, which has made the introduction of electronic records difficult. Across Teesside, the provision of IT training and support has been inconsistent and fragmented, and the infrastructure needs considerable investment because currently it inhibits technology being used to its full benefit. Efforts are being made to engender a change of culture in primary care and to create an environment in which data are valued, and processes developed to improve and maintain their quality. This has been dealt with in many ways through the formalisation of a new organisation in the region – the Primary Care Informatics Service – on 1 October 2001 with the fundamental remit to support practices to optimise the use of their clinical computer systems whilst concentrating on data quality.

The ongoing work described in this document has concentrated on the development of CHD electronic data registers in such a way that skills developed within practices will be transferable to other areas of chronic disease management as and when necessary. Through this work, each practice and its patients will gain from having an important area of medicine computerised, through ease of access to data, and the potential for improved quality of patient care. In addition, this initiative will assist practices in undertaking some of the work associated with a national strategy. This will facilitate both quantitative and qualitative benefits linked to performance assessment frameworks and have a benefit across the natural community in support of clinical governance.

ACKNOWLEDGEMENT

This paper was delivered at the PHCSG Annual Conference at Downing College, Cambridge, in September 2001.

REFERENCES


ADDRESS FOR CORRESPONDENCE

Dr David S Simpson
IT Co-ordinator
Primary Care Informatics
Newlands Medical Centre
Borough Road
Middlesbrough TS7 0PN
UK
Tel: +44 (0)1642 249492
Fax: +44 (0)1642 244072
Email: david.simpson@gp-a81055.nhs.uk

Accepted June 2001