

A case study from a Sussex Primary Care Group: improving secondary prevention in coronary heart disease using an educational intervention

The authors discuss how the creation of an appropriate learning environment within primary care organisations can help them achieve their clinical government agenda, which in turn can help improve clinical care – in this case in the secondary prevention of coronary heart disease.

Abstract

An educational intervention was developed to try to raise both data quality standards and those of clinical care in the secondary prevention of coronary heart disease. The intervention was used within primary care organisations utilising their own clinical data and with primary care professionals learning from each other.

A special tool (MIQUEST) was used to extract the clinical data. Anonymised data were then shared with the whole primary care organisation at six-monthly data quality workshops. Patients needing interventions were identified in individual practices and these practice visits were also used as learning opportunities.

At the end of the study there was an increase in the recording of the diagnosis of ischaemic heart disease (IHD). The recording of blood pressure and its control also improved. The number of IHD patients not on aspirin was reduced. Measurement of cholesterol, prescription of statins and the giving of advice to smokers all increased. The increase was largest in the practices with the lowest baseline data.

The study concluded that this primary care data quality programme could provide an educational environment within which primary care organisations could improve secondary prevention in coronary heart disease.

Key words: general practice, ischaemic heart disease, clinical data quality, MIQUEST.

Introduction

There is strong evidence that a number of interventions in cardiovascular disease have the potential to significantly prolong life and improve health. Often only a small number of patients need to be treated for this benefit to be seen.¹ This and other evidence are included in the National Service Framework for Coronary Heart Disease,² which Primary

which data quality is improving in primary care (in the South Thames Project on Morbidity, Information Query and Export Syntax [MIQUEST]),⁴ which led to an interest in understanding what might be constraining moves towards improving the quality of medical records.

Our next step was to design a programme to create a learning environment that would facilitate change in an area where the potential clinical benefit to patients would be greatest. This resulted in the Primary Care Data Quality (PCDQ) programme,⁵ an educational intervention to help PCOs achieve their clinical governance agenda in coronary heart disease. The PCDQ programme has been designed to facilitate members within a PCO to learn from each other (termed a 'learner-centric' approach to knowledge management). A forum to stimulate learning is created in which lessons from the primary care professionals' own data and experiences can be presented and learnt from. Indeed membership of this programme is the first step towards a PCO becoming a learning organisation.⁶ We believe that a knowledge management approach – through which a PCO seeks to exploit all the knowledge held by its professionals – is the most likely to achieve benefit.⁷

Educational aims of the programme include the attainment of attitudinal, skill and knowledge objectives. Most importantly, those involved must have a positive attitude towards their clinical

'In primary care ... there is no clear evidence base on which implementation methodology should be used'

Care Organisations (PCOs) throughout the country are trying to implement. Whilst many in primary care are well aware of what evidence-based medicine they should be implementing, there is no clear evidence base on which implementation methodology should be used.

We identified this considerable unmet need in an audit of our own cardiovascular disease patients.³ We had also looked previously at the rate at

data, be willing to share this and to learn alongside their colleagues exactly what is effective and what is not. The programme can also create further learning opportunities within individual practices to acquire the skills necessary to collect data. How the creation of this learning environment affects the way practices record their clinical data on secondary prevention is also discussed in this paper.

The science of looking for problems relating to clinical data is called medical informatics (see table 1). Our programme has been developed within a primary care informatics group.

We report here a case study from a West Sussex PCO using the PCDQ programme for four cycles of data collection and feedback.

‘We designed a programme to create a learning environment that would facilitate change in an area where the clinical benefit to patients is greatest’

Aim

To develop an educational intervention which enables the implementation of clinical governance (and the National Service Framework) in coronary heart disease.

Objectives

The objectives of the PCDQ programme are:

- to facilitate the use of knowledge contained within a Primary Care Organisation to improve clinical care.
- to develop a positive approach to sharing clinical data across the PCO and to try to interpret what this may mean in terms of patient care delivered – i.e. does no data mean no care, or simply that the care is not recorded in a Read-coded form in the computer.

Table 1. What is medical informatics?

To ‘informate’

The term to ‘informate’ was coined by Zuboff to describe a process. In automating the flow it became possible to capture and analyse the data. The information can then be used to refine or re-design the process.

From: Zuboff S. *In the age of the Smart Machine. The future of work and power.* New York: Basic Books, 1988.

Medical informatics

There is no agreement as to its precise definition. However, useful definitions are:

Informatics: the science that studies the use and processing of data, information and knowledge

Medical informatics: informatics applied to medicine, health care and public health.

From: van Bommel JH, Musen MA eds. *Handbook of medical informatics.* Heidelberg: Springer-Verlag, 1997.

Table 2. PCDQ educational aims

Attitudinal objectives

- To value clinical data
- To address the clinical governance agenda through learning across the PCO; the PCO’s own data and the knowledge and experience of primary care professionals being the chief learning media
- To encourage openness and sharing of clinical data and methodologies that offer solutions as well as acknowledging those which have failed

Skill objectives

- All clinicians should be able to code effectively within their clinical system
- The ability to download or be supplied with the MIQUEST processor
- The skills to run queries within individual practices, supported by the PCDQ team
- To develop skills to give feedback, both within individual practices and within large group meetings
- To understand the principles of data validation

Knowledge objectives

- To be able to describe the clinical governance cycle (an adaptation of the audit cycle where the standards are set outside the group – within the national targets)
- To define the key elements of the core data set
- To understand Read clinical terms and its migration to SNOMED/CT (Systematised and Nomenclature of Medicine – Clinical Terms)
- To have a knowledge of key targets within the National Service Framework for Coronary Heart Disease
- To understand the concept of numbers needed-to-treat and confidence intervals as methods for describing absolute risk
- To understand MIQUEST functionality, and how data is anonymised and patient confidentiality is protected
- To have a knowledge of some of the relevant theories about change management

Key: PCO = primary care organisation

- to learn what interventions carried out within the PCO do or do not lead to a rise in clinical standards and data quality.

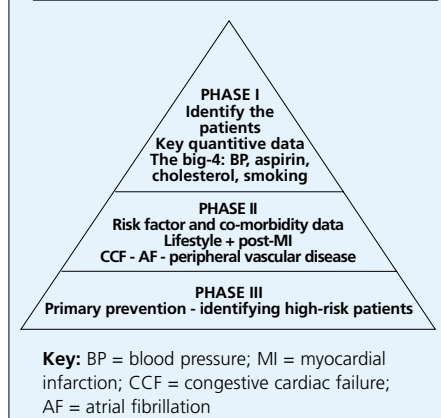
Educational objectives of the programme are summarised in table 2.

Method

The PCDQ programme can only extract data from MIQUEST compliant prac-

tices. MIQUEST (Morbidity, Information Query and Export Syntax) is a special tool used in the National Data Quality Project to extract data.⁸

The programme can also only work alongside an enthusiastic local lead. Its key event is a six-monthly data quality workshop where every practice is represented and pooled anonymised data are presented. The aim of these work-

Figure 1. The phases of the PCDQ programme

shops is to draw out knowledge from the participants about what has been done to achieve better data quality.

In addition, the programme allows input into individual practices. Lists of patients needing interventions are identified and left in the practice. Read code training is provided along with guidelines on how and why to code information. These are customised for each of the major versions of the GP computer suppliers (and are also available from the website: www.pcdq.org).

The programme is designed to run over three years. It is vital that this is done at the pace that the PCO is happy with and that the programme is non-judgemental about baseline levels of data. The programme is divided into three phases, which are illustrated in figure 1.

Specific techniques have been developed to give the data feedback impact. Different visual images are created for each part of the dataset. The approach used in the case study below in West Sussex did not differ from that used elsewhere within the programme.

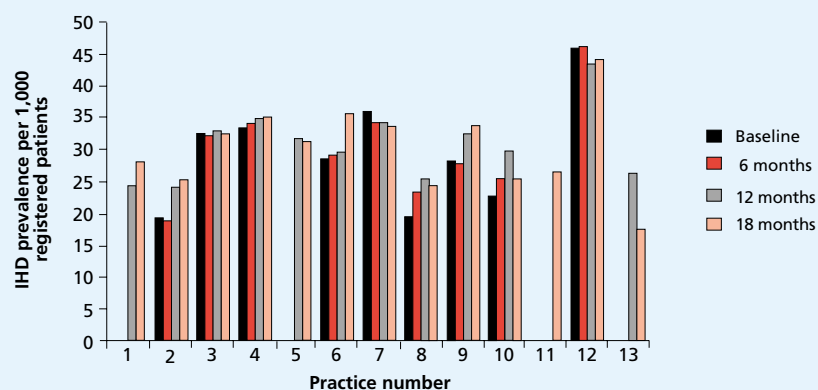
Results

The results from the West Sussex practices were taken from a base practice population of 100,000 patients. Eleven practices initially joined the study, two were lost, but the number had expanded to 12 by the end of the first year. A practice updating to a more modern

Table 3. Improvement in the data quality for secondary prevention of IHD. Aggregated data for the whole primary care organisation

	Baseline	6 months	12 months	18 months
Number of practices	11	9	12	14
Total registered population	103,368	92,149	114,760	122,617
IHD subset of population (%)	2,945 (2.8%)	2,672 (2.9%)	3,487 (3.0%)	3,392 (2.8%)
IHD patients with BP record (%)	2,610 (89%)	2,493 (93%)	3,330 (96%)	3,195 (94%)
IHD patients on aspirin	2,015 (68%)	1,892 (71%)	2,816 (81%)	3,011 (89%)
IHD patients with cholesterol record	905 (31%)	851 (32%)	1,791 (51%)	2,321 (68%)
IHD patients with cholesterol >5 mmol/L	531 (18%)	492 (18%)	983 (28%)	1,126 (33%)
IHD patients with cholesterol >5 mmol/L not taking a statin	259 (57%)	289 (54%)	487 (50%)	679 (60%)
IHD patients taking a statin	No data collected	931 (35%)	1,484 (43%)	1,642 (48%)
IHD patients with smoking habit recorded	300 (10%)	2,219 (83%)	2,943 (84%)	2,686 (79%)

Key: IHD = ischaemic heart disease; BP = blood pressure

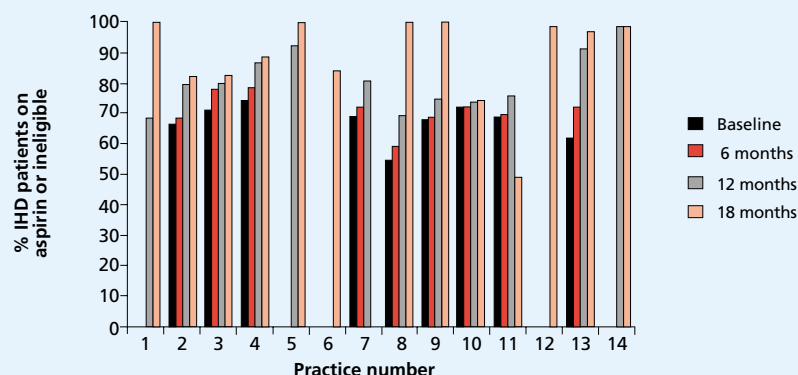
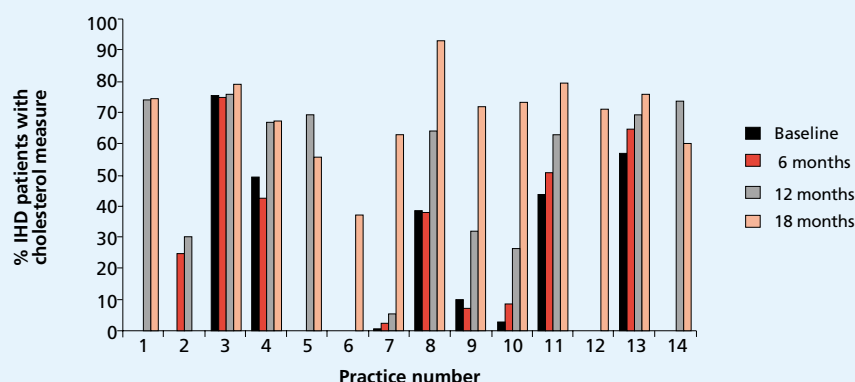
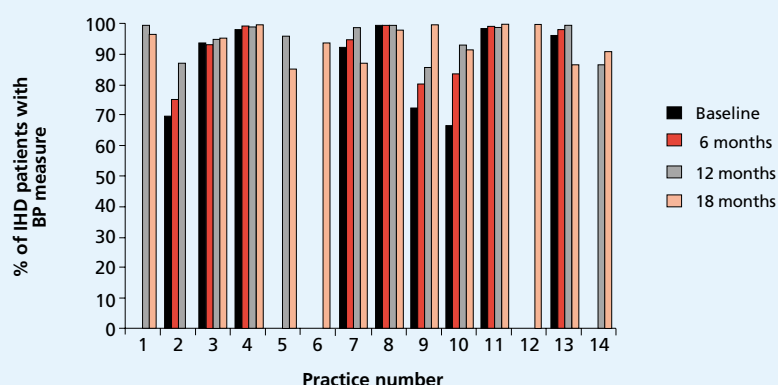
Figure 2. Changes in the recording of IHD prevalence during the study

version of a computer system was lost to the programme; another practice withdrew after the first data collection. Three practices joined the scheme at the one-year point. Of 15 practices in the PCO we have data from 14 and these are reported.

The variation in the use of the practice computer system for clinical recording in the PCO was already known to vary greatly within the practices but all the practices, irrespective of their data quality, that had the ability for their system to be interrogated, entered freely into the project.

Table 3 shows the improvement in the data quality for the secondary prevention of ischaemic heart disease (IHD). The data are aggregated for the whole primary care organisation.

The recording of phase I data improved in all areas. Figures 2-5 show the changes in the recording of IHD prevalence, aspirin prophylaxis, serum cholesterol level and blood pressure, respectively, as a percentage of the IHD population for each practice. Most pronounced was the recording of aspirin prophylaxis, serum cholesterol level and smoking habit. The improvement hap-

Figure 3. Changes in the IHD population receiving aspirin prophylaxis during the study**Figure 4.** Changes in the IHD patients with a cholesterol measure during the study**Figure 5.** Changes in the recording of blood pressure during the study

pened across all practices with the low starters improving the most.

Discussion

We discuss here the main findings from our study with additional comments from individual practitioners about the programme (to MH).

This programme was found to be acceptable to local practitioners and resulted in increased recording of clinical data. The improvement appeared to have been sustained, if not accelerated, in the second six months of the programme. Feedback from the PCO was that the programme had enabled this work to be carried out cost-effectively. "The cost of running the programme for a year is about half the cost of employing a data collector/facilitator and appears to have resulted in a lot of change and raised awareness," said one practitioner.

The use of an external, efficient academic centre proved more successful than data collecting schemes that the PCO had tried before. The educational and quality improvement approach was readily acceptable to practices. Although it followed the same health improvement agenda as the Health Authority, the PCDQ programme was perceived differently. "The workshops have been non-judgemental, taking an anonymised approach to the results produced, but practices have found it a valuable method of learning," one practitioner commented.

The approach of the project is not centred on its technical adeptness at extracting, processing and presenting data but rather on the creation of an environment where what might work in the locality is discussed and then reflected upon. Much of this knowledge is only shared when the appropriate opportunity presents itself.⁹ "There has been a learning curve for every practice, in the functionality of MIQUEST, in the use of the computer as a more valuable clinical tool, and in the sharing and use of data."

The value of the workshops in aiding the sharing process, and the creation of the 'local' data lists, have been



Key messages

- Primary Care Organisations do not always know how to improve the quality of their data collection
- Improved data collection can lead to improved clinical care
- The Primary Care Data Quality programme can help primary care organisations achieve this

seen both as constructive tools in the improvement of patient care, and in aiding clinical audit requirements of the NSF since its inception. One practitioner commented: "We hope to include all the practices in the Primary Care Trust in the near future and look forward to the project being able to expand in the area of additional NSFs as the audit requirements are established."

The PCDQ programme has been expanded to 22 PCOs; representatives from each meet regularly as a 'users forum' to monitor the progress of the project and to aid in its development.

"The programme was acceptable and resulted in increased recording of clinical data"

One practitioner summarised: "The forum sees PCDQ as both a valuable research project but also an invaluable tool in the monitoring of clinical practice, learning the value of recording clinical data accurately and uniformly, and the progress towards the audit requirements of the NSFs."

"Through the forum we have realised the need for local facilitators in each PCO, but without the need for in-depth expertise locally in the production of MIQUEST queries."

The weakness of the methodology is that this PCO had self-selected to join

the programme and had a local lead who could empower change through the learning environment created. The baseline data for statin prescribing was higher than the 'background' level of 16% reported in a large survey.¹⁰ The programme should also be developed over a longer time than its three-year time-scale.

There were technical problems with the MIQUEST interpreter, especially in the non-delivery of an effective interpreter for one of the major and several of the minor computer systems.

We would be extremely interested to discover whether this methodology could be as successful in other disease areas, particularly those without such a strong evidence base and the low numbers to need-to-treat, such as is found in cardiovascular disease.

Conclusion

This case study in West Sussex has been successful in being acceptable to the practices involved as well as in improving data quality. During their participation in the programme, the primary care professionals involved have improved their use of practice-based information systems and the clinical care of their patients, as well as learning how to share their knowledge and expertise. Success in this clinical area, and delivery of national targets, is a positive step for this primary care organisation in learning together.

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