CHAPTER TEN

Managing information

Alan Gillies and Beverley Ellis

This chapter explores the provision of good data for monitoring the quality of primary care. Three issues need to be addressed - the kit (IT infrastructure), the way it is used, and the capability of the people using it.

Introduction

Clinical governance and managing information are inextricably linked. And information is not simply what gets recorded in electronic or paper based health records. In its broadest sense information is a crucial part of the clinical process, as can be seen for example from the conclusions of the Bristol Inquiry.

For, if inadequate quality of care was the symptom in the Bristol case, then arguably inadequate management of information was the root cause that affected each critical stage in the process of care:

- Inadequate information was provided for the parents of patients.
- There were inadequate mechanisms for communicating concerns i.e. the whistle blowers found there was no system for facilitating disclosure.
- There was insufficient information to benchmark performance. There were inadequate systems in place to highlight the problems, and even at the point when it was recognised that something was wrong it was not possible to compare success rates at Bristol with other places.

Interestingly these same issues have arisen in adverse healthcare events elsewhere in the world.[1]

The Chief Medical Officer, Sir Liam Donaldson, highlighted the problems that whistle blowers experience:

> *In the past the health service whistleblower would blow but no-one would hear or listen. The dog couldn't bark so even though the dog was running in their midst to the tune of the silent whistle no-one acknowledged its presence. The problem was there but it wasn't recognised. If it was pointed out, it wasn't acknowledged.*[2]

And the need to protect whistleblowers has now been recognised with the 1999 Public Disclosure Act.[3] Under the act and associated guidance, all NHS trusts and health authorities are expected to:

- designate a senior manager to deal with employees' concerns and protect whistleblowers,
- have in place local policies and procedures and set out minimum requirements,
- provide guidance to all staff so they know how to speak up against malpractice,
- provide whistleblowers with adequate protection against victimisation, and
- prohibit `gagging' clauses in contracts of employment.

However, Donaldson went on to say that the need is not to make whistle blowing easier, but rather to establish cultures and systems within organisations that remove the need for whistle blowing, through systematic monitoring of clinical care. This chapter explores the provision of good surveillance data in primary care.

Historical developments

Clinical audit was introduced in the 1989 White Paper *Working for Patients*,[4] and was defined at the time as:

> *The systematic critical analysis of the quality of medical care, including the procedures used for the diagnosis and treatment, the use of resources and the resulting outcome and quality of life for the patient.*[5]

This limited scope can be compared with the more all-embracing definition that is clinical governance.[6] There were also a number of aspects of the way that clinical audit was carried out, which precluded it from providing the safeguards that might have prevented the events at Bristol. For example:

- Clinical audit did not of itself question clinical practice. In general clinical audit examined process and procedure, and did not question the professional attributes of individual clinicians. The emphasis was on the audit of cohorts of patients, rather than on the care of individuals.
- Clinical audit was applied to topics chosen by clinicians. There was scant involvement of managers or patients.[7] Clinical governance is intended to be more comprehensive and systematic. It covers all aspects of care, and the Commission for Health Improvement monitors the organisations and their systems.
- Clinical audit was seen as an add-on and was based on data specially compiled for the specific audit. It was rarely possible to use routinely collected data.

As early as 1992, the NHS Information Management and Technology (IM &T) strategy stated that:

> *Subject to safeguards to maintain the confidentiality of personal health information, data will be obtained from systems used by healthcare professionals in their day-today work. There should be little need for different systems to capture information specifically for management purposes.*[8]

In the event, the infrastructure did not provide the required information directly, and each audit required its own data collection usually by trawling through paper records to provide data for entry on to a personal computer for analysis. Indeed the statement that it was expected that by the year 2000 all large acute hospitals would have ' a set of integrated systems' now looks rather naïve. Nevertheless systems are now being implemented that allow audits to be carried out directly on clinical data. This means that clinical audit can be both routine and integrated into operational patient care for the first time. To achieve this we need not only appropriate information systems but also appropriate working practices and human capability.

Implementing effective information systems

Although the focus here is primary care, the same principles apply in all areas of care. There are three essential elements in any effective information system:

- *Infrastructure.* This includes, the computer hardware, infrastructure including networks, and software systems.
- *Working processes.* This includes the way that data is entered into the system to ensure that it can be retrieved and analysed.
- *People.* All staff must be capable of carrying out what they need to do.

The Department of Health has set infrastructure standards for clinical systems - the rules for the accreditation of GP systems. In the past these were quite permissive in their definitions and requirements, but there is now a movement towards greater prescription to encourage easy communication between systems.[9] In practice, this means that local primary care trusts (PCTs) will have much less control and choice over IT infrastructure. However, they will have the job of making sure that the internal processes and human capacity are adequate to deliver the required information for clinical governance and other management functions.

In the past computerisation in primary care has been largely unplanned. Practices have been free to select the type and timing of computer installation, and have geared up to use the system at their own pace. A more systematic approach is now possible, by combining two well tried management techniques:

- A 'maturity model' to define the processes needed to produce effective information
- A training needs model to ensure that staff are equipped to operate the processes.

A maturity model

The idea of a maturity model is based on the capability maturity model (CMM) developed by the Software Engineering Institute of Carnegie Mellon University. Their CMM was developed for the US Department of Defence, and defined a five-level framework for how an organisation matures its software processes from *ad hoc* chaotic processes to mature disciplined software processes.[10] The key characteristics of the CMM that can be used in primary care are:- definition of the characteristics of key stages of maturity; definition of the key actions required to move from one stage to the next; and, use of a questionnaire survey to facilitate the analysis of current maturity.

Thus the General Practice Information Maturity Model (GPIMM) model describes information management maturity levels for primary care. In simple terms it is a snapshot of how well developed are the organisation's information processes. It is similarly based around five maturity levels, with an additional zero level for non-computerised practices. The maturity levels are summarised in the table 10.1. Even after more than ten years of computerisation many practices still operate at the lower levels of the model. This is a significant barrier to effective clinical governance. The reality is that unless practices have procedures at level 4 or above, they will not be able deliver useful information for clinical governance from their systems.

Table 10.1 Levels of the General Practice Information Maturity Model

Level	Designation	Summary Description
0	Paper based	The practice has no computer system
1	Computerised	The practice has a computer system. It is used only by the practice staff
2	Computerised PHCT	The practice has a computer system. The practice staff and the primary health care team (PHCT) including the doctors use it.
3	Coded	The system makes limited use of Read Codes
4	Bespoke	The system is tailored to the needs of the practice through agreed coding policies and the use of clinical protocols
5	Paperless	The practice is completely paperless, except where paper records are a legal requirement.

The GPIMM framework provides a means for helping practices develop further to improve their use of their systems. It should be noted that development will not, in many cases require investment in new systems, but in extracting greater benefit from existing systems.

At level 0, the practice is entirely based upon paper records. According to official statistics, by 1998, this was less than 2% of practices.

At level 1, the computer has arrived. Typically, it is used in a limited way by administrative staff to assist in income generation by monitoring items, which attract practice reimbursement. Crucially, it is not used by clinicians in the consultation.

At level 2, the computer is used by clinicians in a limited way. The practice has started to use the computer to store clinical information. However, the information is stored in free text, making it simply an electronic notepad. None of the potential advantages can be realised whilst information is stored in this way.

At level 3, the practice has started to code clinical information. Coding will be limited. The practice may not yet have fully formed policies to ensure that coding is consistent. Some benefits may be realised, but much work remains to be done.

At level 4, coding is well established as are policies to ensure codes are consistent and compatible with PCT standards to allow the practice to take part in local initiatives with other practices. At this stage, the system starts to deliver benefits greater than the effort required to make it work, and can support clinical governance as a routine activity.

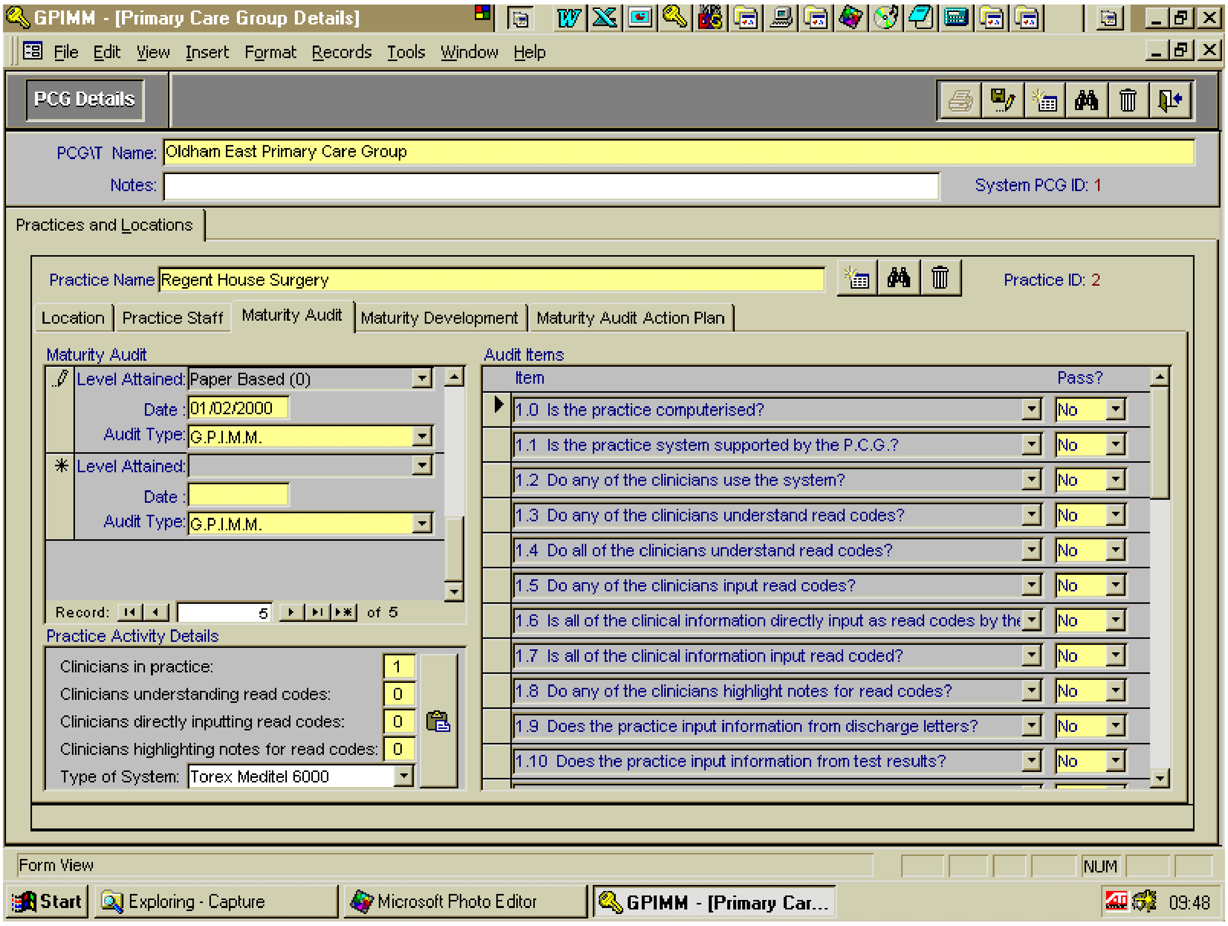
At level 5, the practice is effectively operating in electronic fashion. Future developments are in the areas of continuous improvement and links with other agencies.

The GPIMM framework allows the PCT to survey practices and to define information strategies for each one providing a structured improvement process to get practices to the required level. The maturity level may be assessed through a computerised questionnaire. The questionnaire covers five areas to assess maturity:

- *Computerisation* – this is simply a filter to identify those practices that remain paper based.
- *Personnel usage* – this section examines the impact of the system on the practice. Any system's potential usefulness is severely limited, if only used by practice staff.
- *Coding* – this section is crucial. It considers not just the extent of coding, but the quality of coding through examining the policies and internal consultation underpinning coding practice.
- *System usage* – this section is concerned with the impact that the system has on the working methods of the practice. It measures the extent to which the system works for the practice and not the other way around.
- *Electronic Patient Records* – this section reviews how far the electronic patient record is realised both inside and outside the practice.

The GPIMM is a model designed for PCTs to use as a computerised tool to survey practice computerisation (*see* figure 10.1). (More information can be obtained from bsellis@uclan.ac.uk).

Figure 10.1 Survey of practice computerisation



PCG\T Name: Oldham East Primary Care Group

Notes:

System PCG ID: 1

Practice Name Regent House Surgery

Practice ID: 2

Maturity Audit

Level Attained: Paper Based (0)
Date : 01/02/2000
Audit Type: G.P.I.M.M.

Level Attained:
Date :
Audit Type: G.P.I.M.M.

Record: 5 of 5

Practice Activity Details

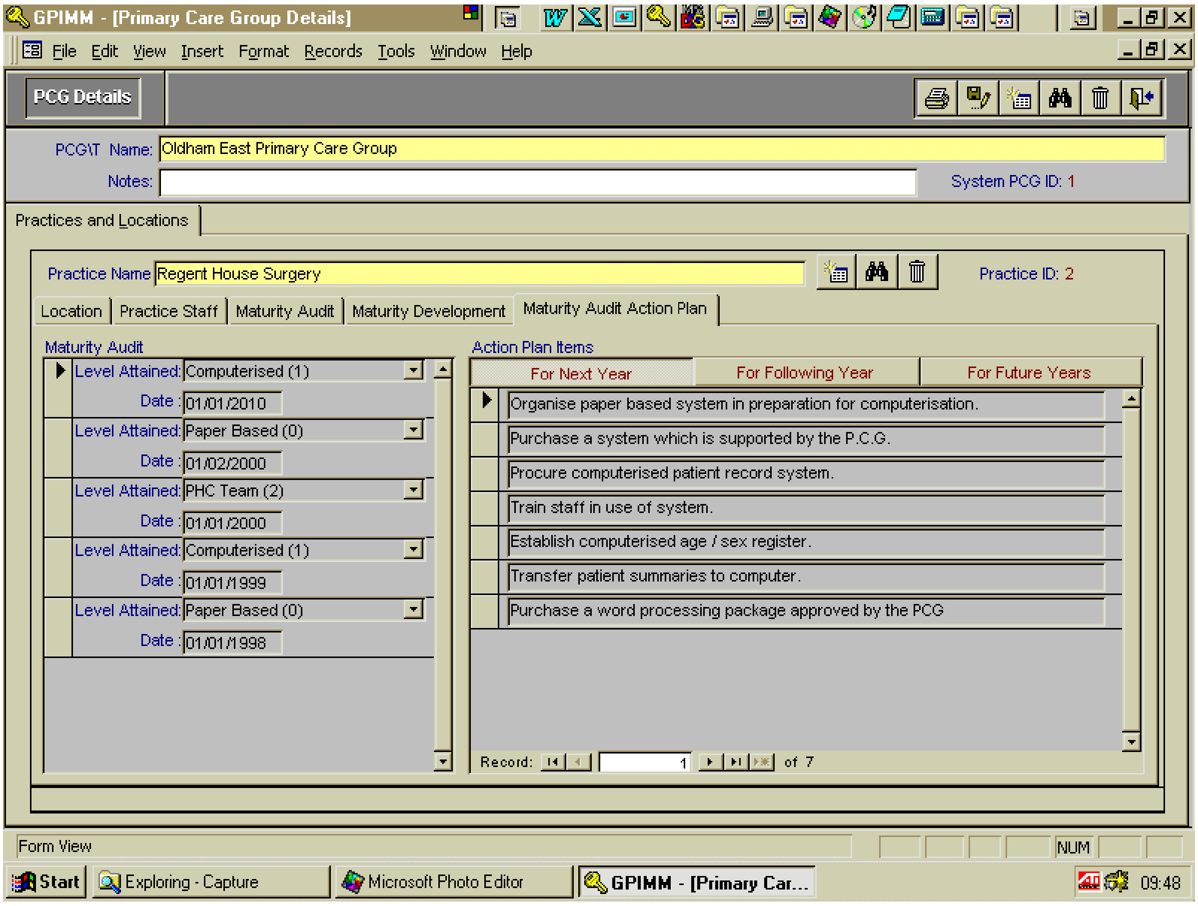
Clinicians in practice: 1
Clinicians understanding read codes: 0
Clinicians directly inputting read codes: 0
Clinicians highlighting notes for read codes: 0
Type of System: Torex Meditel 6000

Audit Items

Item	Pass?
1.0 Is the practice computerised?	No
1.1 Is the practice system supported by the P.C.G.?	No
1.2 Do any of the clinicians use the system?	No
1.3 Do any of the clinicians understand read codes?	No
1.4 Do all of the clinicians understand read codes?	No
1.5 Do any of the clinicians input read codes?	No
1.6 Is all of the clinical information directly input as read codes by the	No
1.7 Is all of the clinical information input read coded?	No
1.8 Do any of the clinicians highlight notes for read codes?	No
1.9 Does the practice input information from discharge letters?	No
1.10 Does the practice input information from test results?	No

The tool also provides a structured improvement route and a progress report (*see* figure 10.2)

Figure 10.2 Structured action plan



PCG\T Name: Oldham East Primary Care Group

Notes:

System PCG ID: 1

Practice Name: Regent House Surgery

Practice ID: 2

Maturity Audit

Level Attained:	Computerised (1)
Date :	01/01/2010
Level Attained:	Paper Based (0)
Date :	01/02/2000
Level Attained:	PHC Team (2)
Date :	01/01/2000
Level Attained:	Computerised (1)
Date :	01/01/1999
Level Attained:	Paper Based (0)
Date :	01/01/1998

Action Plan Items

- Organise paper based system in preparation for computerisation.
- Purchase a system which is supported by the P.C.G.
- Procure computerised patient record system.
- Train staff in use of system.
- Establish computerised age / sex register.
- Transfer patient summaries to computer.
- Purchase a word processing package approved by the PCG

Record: 1 of 7

A training needs model

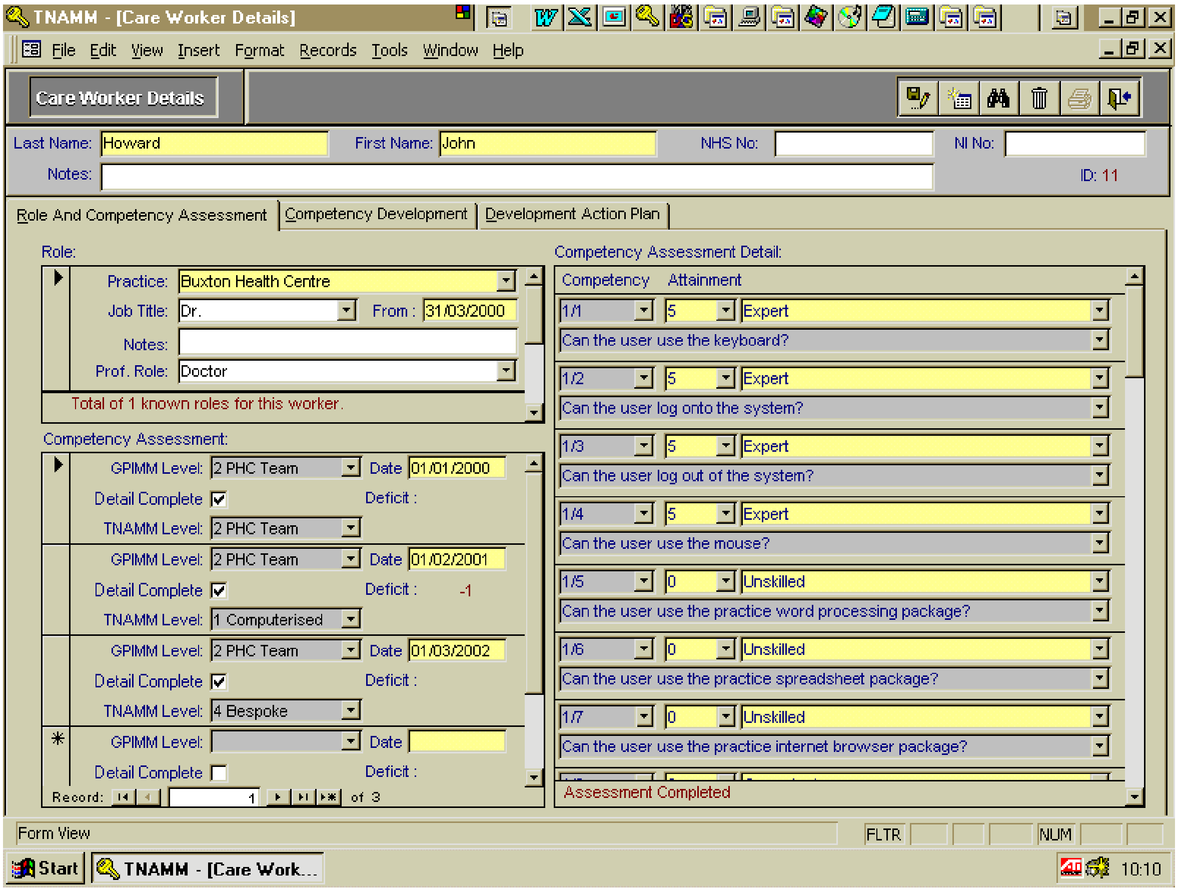
To deliver the process improvement defined by GPIMM it is also necessary to ensure that the personnel involved have the required skills. For each level of GPIMM, required levels of competency have been defined for the key players in primary care, GPs, nurses, managers and administrators. Competencies are defined at one of five levels - novice through to expert - building on the classification developed by Dreyfus and Dreyfus.[11] In this way, a training needs matrix may be defined for each GPIMM level (*see* table 10.2).

Table 10.2 Training needs matrix

Role	GP	Nurse	Manager	Administrator
Competency 1	Required level	Required level	Required level	Required level
Competency 2	Required level	Required level	Required level	Required level
Competency 3	Required level	Required level	Required level	Required level
Competency 4	Required level	Required level	Required level	Required level
Competency 5	Required level	Required level	Required level	Required level

The skills of the staff may then be audited against that required for the current or target GPIMM level, and training can be tailored to ensure that the capability of each person is that required to meet the needs of the organisation. A similar computerised survey tool can be used to survey training needs (*see* figure 10.3), and to construct a training programme (*see* figure 10.4).

Figure 10.3 Survey of training needs



Last Name: Howard
First Name: John
NHS No:
NI No:
Notes:
ID: 11

Role:
Practice: Buxton Health Centre
Job Title: Dr.
From : 31/03/2000
Notes:
Prof. Role: Doctor
Total of 1 known roles for this worker.

Competency Assessment:
GPIMM Level: 2 PHC Team
Date 01/01/2000
Detail Complete ☑
Deficit :
TNAMM Level: 2 PHC Team

GPIMM Level: 2 PHC Team
Date 01/02/2001
Detail Complete ☑
Deficit : -1
TNAMM Level: 1 Computerised

GPIMM Level: 2 PHC Team
Date 01/03/2002
Detail Complete ☑
Deficit :
TNAMM Level: 4 Bespoke

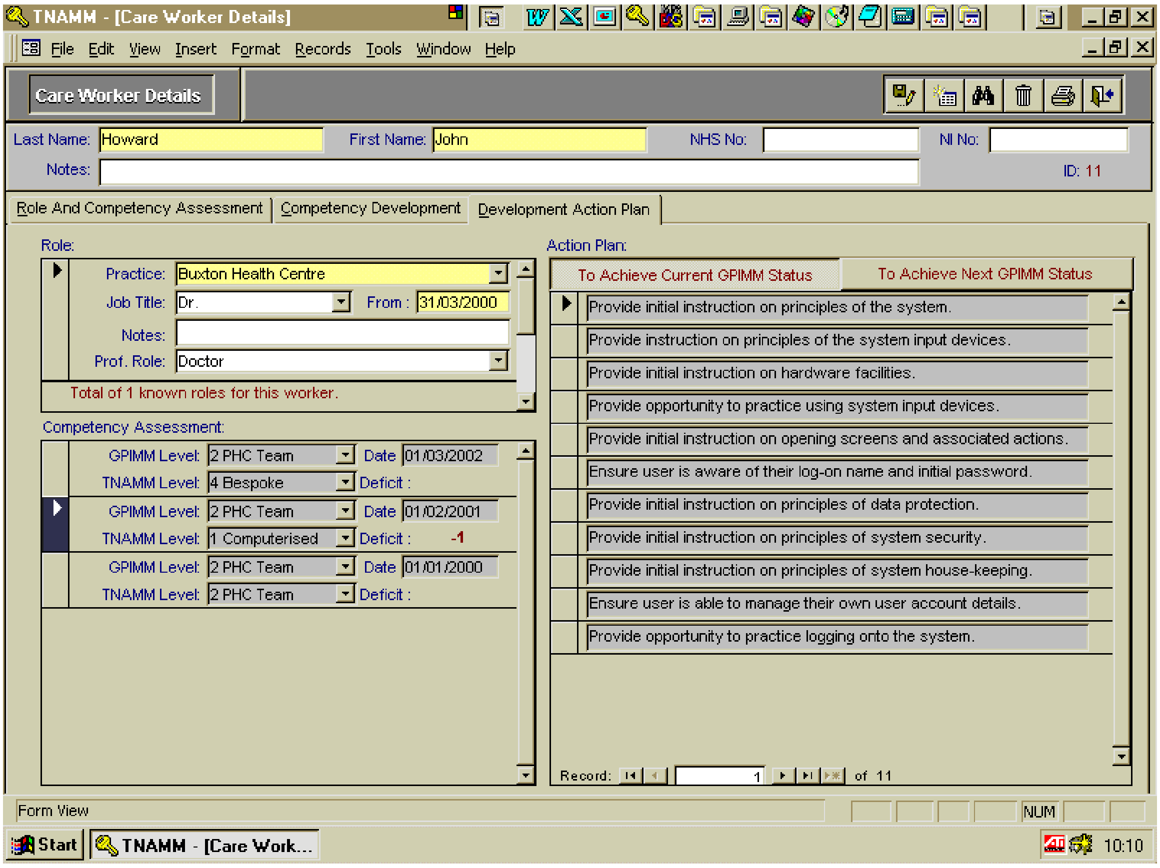
GPIMM Level:
Date
Detail Complete ☐
Deficit :
Record: 1 of 3

Competency Assessment Detail:

Competency	Attainment	
1/1	5	Expert
Can the user use the keyboard?		
1/2	5	Expert
Can the user log onto the system?		
1/3	5	Expert
Can the user log out of the system?		
1/4	5	Expert
Can the user use the mouse?		
1/5	0	Unskilled
Can the user use the practice word processing package?		
1/6	0	Unskilled
Can the user use the practice spreadsheet package?		
1/7	0	Unskilled
Can the user use the practice internet browser package?		

Assessment Completed

Figure 10.4 Training action plan



Last Name: Howard
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Role:
Practice: Buxton Health Centre
Job Title: Dr.
From : 31/03/2000
Notes:
Prof. Role: Doctor
Total of 1 known roles for this worker.

Competency Assessment:

GPIMM Level:	2 PHC Team	Date	01/03/2002
TNAMM Level:	4 Bespoke	Deficit :	
GPIMM Level:	2 PHC Team	Date	01/02/2001
TNAMM Level:	1 Computerised	Deficit :	-1
GPIMM Level:	2 PHC Team	Date	01/01/2000
TNAMM Level:	2 PHC Team	Deficit :	

Action Plan:
To Achieve Current GPIMM Status
To Achieve Next GPIMM Status

Provide initial instruction on principles of the system.
Provide instruction on principles of the system input devices.
Provide initial instruction on hardware facilities.
Provide opportunity to practice using system input devices.
Provide initial instruction on opening screens and associated actions.
Ensure user is aware of their log-on name and initial password.
Provide initial instruction on principles of data protection.
Provide initial instruction on principles of system security.
Provide initial instruction on principles of system house-keeping.
Ensure user is able to manage their own user account details.
Provide opportunity to practice logging onto the system.

Record: 1 of 11

What can be achieved

The key to using information is to integrate it as part of the interactive process of care.[12] Roper and Cutler suggest there are three requirements for systems to work effectively:

1. They should produce information that is valued by healthcare consumers, purchasers and providers.
2. There should be sufficient standardisation in measurement so that valid comparisons can be made.
3. The measures should be amenable to efficient data collection processes in order to minimise costs.

There are two types of obstacle to achieving these aims - technical and procedural. There needs to be a balance between measuring the (technically) measurable and measuring the (procedurally) meaningful.

Primary healthcare professionals have traditionally organised their clinical communications in different ways, including free text, coded data e.g. Read codes, and against structured templates facilitating data entry e.g. for hypertensive patients. And there has been no widespread agreement about what should be recorded, how or why. There is thus considerable variation in the way clinical information is structured and stored. These variations can be categorised into two main types:

- *Structural* - how the information is organised e.g. free text, coded, coded and supplemented by free text and so on.

- *Behavioural* - the consistency with which the information is organised and recorded.

The use of standard coding policies needs a developmental approach to ensure changes in behaviour and ultimately consistency amongst multi-professional groups so that the various and multi-faceted requirements can be met over time. Here we consider what might be involved in developing the consistent organisation and sharing of information about health and management of a given condition at a given point in time. With an increasing emphasis on monitoring the quality of patient care, and the development of more complex forms of multi-professional working the need for consistency in the recording and extraction of data is self-evident. Equally education and training to support improvement in clinical communications is essential, if PCTs are to satisfy individual and organisational information needs.

To be fit for purpose any framework for managing information should be determined by the requirements of clinical care ensuring that core clinical information is recorded during individual interventions. The time taken to find information in individual records should decrease as standardised data recording ensures the immediate availability of core information. It is important to note that seamless methods of data extraction do not remove the clinical responsibility to validate the information, and to develop trust and understanding of roles across professional boundaries.

Effective communication is the essential ingredient for developing a culture conducive to quality improvement, and should be two-way, open, and designed to generate trust. The care of the patient or client should be paramount regardless of organisational structures. Ultimately information should be available from systems to meet core requirements to support the following related processes:

- Clinical audit
- Performance improvement and review
- Accountability
- Public health data for monitoring health improvement, needs assessment and service planning
- Electronic health records to support the 24 hour provision of care.

The development should be based on team decisions, clearly identifying the necessity for commitment within teams to manage their own performance. The next section examines the processes involved in establishing a coding policy in a PCT to allow the measurement, monitoring, benchmarking and evaluation of service delivery, in line with national priorities and standards whilst being responsive to local needs. Communication channels should be established creatively and simply to ensure inclusivity. Dedicated facilitation and support is necessary for clinical staff to gain ownership of the development of the process.

Developing consistency in recording

The development process begins with multidisciplinary dialogue to allow the identification and agreement on the standards to be adopted for monitoring purposes. Discussion should start with the care the team feels should be provided for their patients or clients. The professionals must feel they have been instrumental, in partnership with patients and carers, in describing the appropriate care and standards of service for their patients and clients if there is to be confidence in subsequent extraction of information for monitoring, benchmarking or the evaluation of clinical performance. Ideally data extraction should use the potential of technology so that system users can access, assemble, aggregate, and analyse data held within electronic patient records maintained through the routine provision of care.

The reliability of information derived will depend on the consistency and completeness of the records. It is important that systems provide facilities to offer suitable data entry at the point of care delivery. The true benefit of electronic health records can only be delivered if the record plays an active role in the delivery of care. The aim should be to work smarter, not to duplicate effort by providing information more than once. If structured data has been recorded, suitable software should enable the extraction of that data to provide information to those who require it. Health professionals should be encouraged to take ownership and harness the potential of emerging technology effectively.

Different practices or teams will have different approaches, skills, interests and mix of patients. They will need to be facilitated and guided ensure consistency of core data components, while allowing each to develop an individual response to implementation to suit their working environment. The elements include:

- Dialogue between multi-disciplinary team to determine specific selection criteria and content of the information to be extracted from individual patient records
- Identification of the prevalence of particular morbidities and changes over time
- Monitoring of levels and types of activities
- Progress towards health gain targets for specified patient groups
- Compliance with National Service Frameworks
- Review of the achievement of expected outcomes

The process should be dynamic and capable of being reviewed and refined as necessary. Comparison of types of measures between clinicians, practices, PCTs benchmarked against local and national data will highlight areas for investigation or action. MIQUEST is a tool for extracting data from primary care clinical systems.[1]

Managing information across a PCT

Healthcare professionals have traditionally organised their clinical communications in a multitude of different ways. To create a robust PCT wide information standard the following factors should be considered:

- Appreciation of the way in which professional groups and organisations behave and communicate
- The characteristics of paper and computer based health record systems
- Standards of system design and architecture

And ideally the PCT should use an improvement programme consisting of the following steps repeated at intervals:

1. An initial survey to establish a baseline of current activity and consistency of recording standard codes.
2. Validation of results by individual practices
3. The production of an improvement plan for each individual practice

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[1] Support for the use of MIQUEST is provided by the PRIMIS project. PRIMIS is an NHS Information Authority funded project that provides training and support to local information needs. See http://www.primis.nhs.uk/

4. A repeat survey to determine to what extent the plan has succeeded and subsequent repeat of the whole process to ensure continuous improvement.

Practices will need to provide information about their populations; to identify specific target groups of patients; to describe their current delivery of care including which staff perform which tasks; and, to identify areas they feel they need to address. In particular they will need to specify:

- Which staff will do the work?
- What extra time this will take?
- What additional administration will be needed?
- Whether the tasks be undertaken in formal clinics or opportunistically?
- How will the information be recorded and how will the practice ensure that the information is accurately and consistently coded?
- What systems of recall will be developed?
- Which guidelines or frameworks will be used?

The following diagrams set out a three-step approach.

Figure 10.5 Step 1 - Setting the Scene

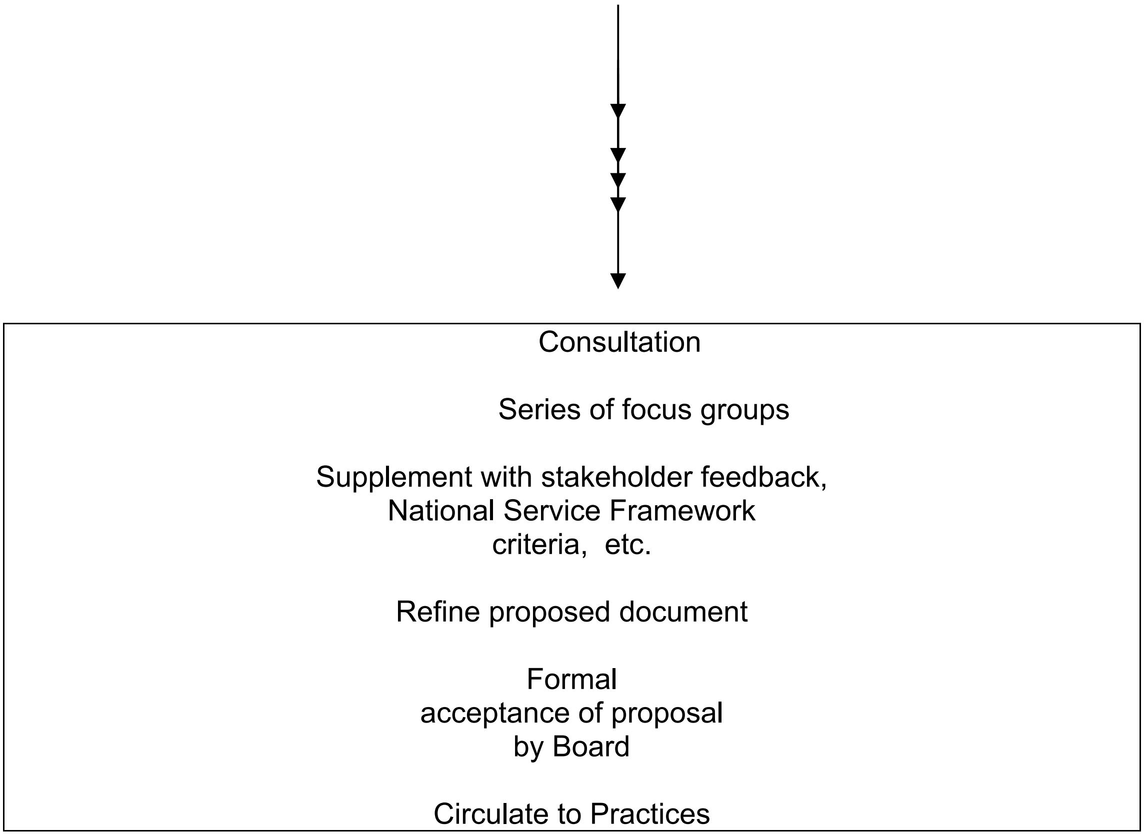
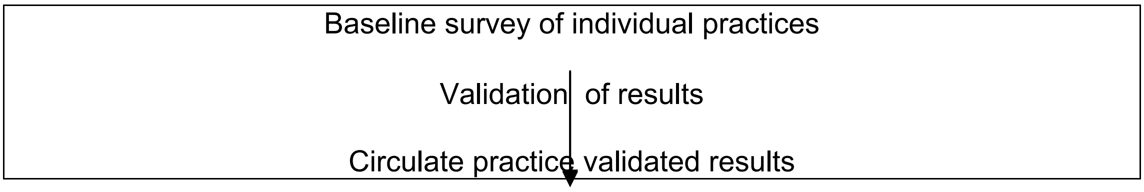


Figure 10.6 Step 2- Audit/Benchmarking/Improvement Plan



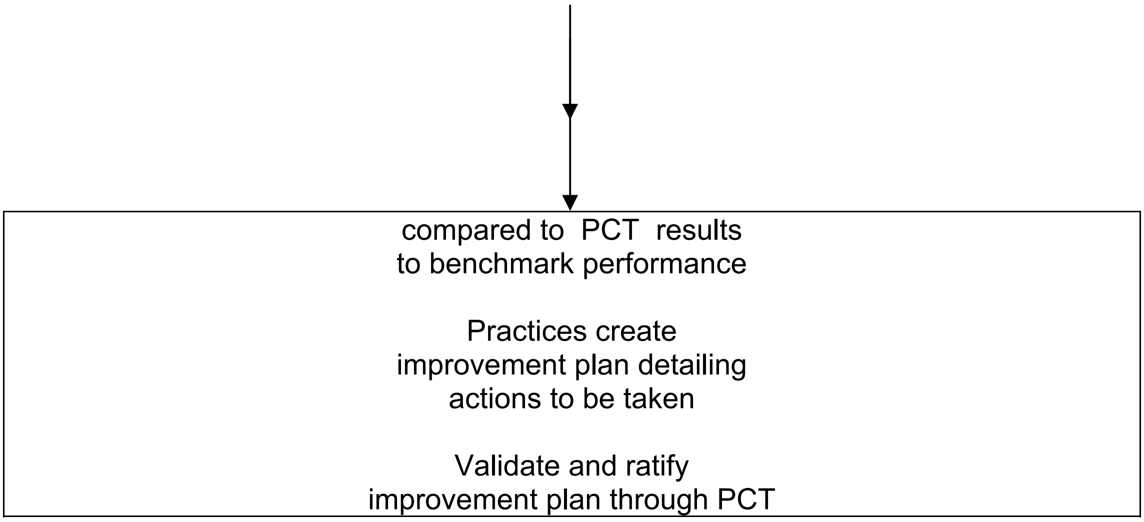
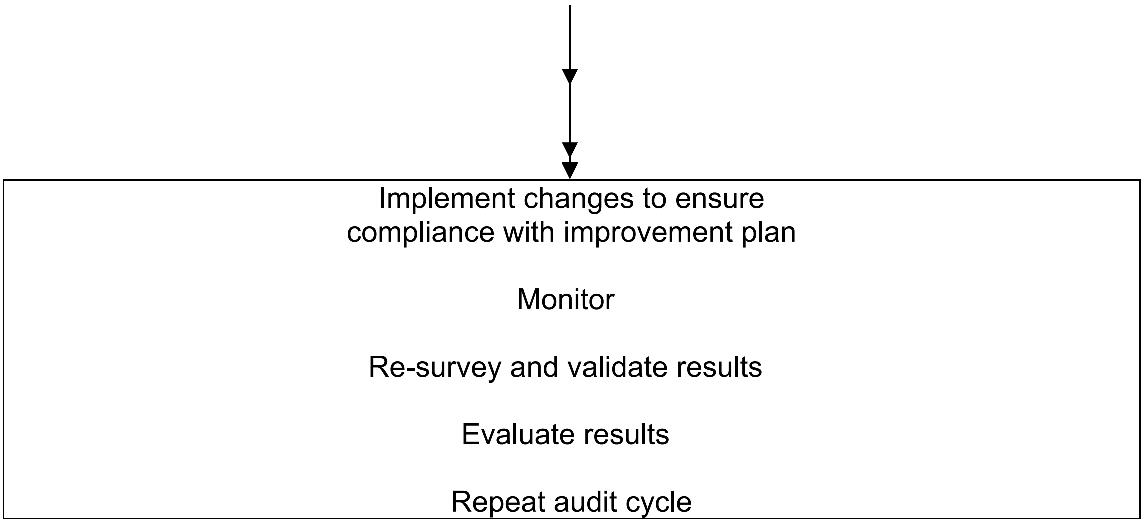


Figure 10.7 Step 3 - Implement, monitor, evaluate and repeat



The next two tables are examples of a survey of a practice (table 10.3) and of a PCT, Fylde PCT (table 10.4).

Table 10.3 - A practice survey

Practice Audit Results	**Age Range**	**<45yrs**	**46-60**	**61-75**	**>75**	**Total**
	Read/BNF Code					
1. All patients in practice		6405	2280	1333	706	10724
2. All patients with CHD or Atrial	G3/G573	5	71	191	141	408
Fibrillation						
From this sub-group:						
3. Patients with recorded MI	G30/G31/G32	3	27	76	54	160

4. Patients with recorded Coronary	792	2	15	39	8	64
Artery Surgery						
5. Current Smokers	137R	1	17	25	11	54
6. Current Non-Smokers	137L	3	53	163	126	345
7. Aspirin prescribed in last 2 months	BNF2.9/4.7.1			124	87	211
8. Anticoagulant prescribed in last 2 months	BNF 2.8	1	7	31	11	50
9. Adverse reaction to Aspirin	TJ53.1					
10. Ever had cholesterol test recorded	44P	4	66	186		256
11. Ever had LDL cholesterol > 3.1 recorded	44P6	0	14	44		58
12. Latest LDL cholesterol recorded <3.1	44P6	2	13	21		36
13. Lipid-lowering drugs prescribed in last	BNF 2.12	3	44	115	24	186
2 months						
14. Ever had Blood Pressure Recorded	2469/246A	5	71	191	140	407
15. Ever had Systolic Blood Pressure >140 or Diastolic Blood Pressure >85mmHg	2469/246A	3	67	187	140	397
16. Latest Systolic Blood Pressure <140 and	2469/246A	5	21	52	28	106
Diastolic Blood Pressure <85mmHG						
17. Nitrates and/or Digoxin prescribed in last 2 months	BNF 2.6.1/2.1	2	26	96	106	230

Table 10.4 - Survey of Fylde PCT

Fylde PCT Initial Audit – Average %	Age Range	<45yrs	46-60	61-75	>75	Total
	Read/BNF Code					
All patients with CHD or Atrial	G3/G573	0.10%	2.70%	12.90%	18.30%	4.90%
Fibrillation						
From this sub-group:						
Current Smokers	137R	39%	19.60%	10.50%	5.50%	9.80%

Current Non-Smokers	137L	42.30%	59.50%	72.20%	66.50%	68.30%
Aspirin prescribed in last 2 months	BNF2.9/4.7.1			60.20%	55.70%	58.20%
Ever had cholesterol test recorded	44P	51.80%	66.40%	63.60%		63.70%
Ever had LDL cholesterol > 3.1 recorded	44P6	5.60%	12.50%	13.30%		12.70%
Latest LDL cholesterol recorded <3.1	44P6	7.50%	12.60%	12.60%		12.90%
Ever had Blood Pressure Recorded	2469/246A	85.70%	92.80%	89.20%	82.10%	86.40%
Ever had Systolic Blood Pressure >140 or Diastolic Blood Pressure >85mmHg	2469/246A	41.60%	61.50%	70.80%	67.20%	67.60%
Latest Systolic Blood Pressure <140 and Diastolic Blood Pressure <85mmHG	2469/246A	68.20%	43.70%	40.70%	32.80%	38.30%

The aims of the exercise with Fylde PCT were:

- To recognise patients with pre-existing cotonary heart disease (CHD) as a percentage of practice population (G3) and to show a reduction in the levels of those risk factors where they have been proven to reduce disability and death, and an increase in treatments proven to do likewise.
- To provide accurate and comparable computer-coded information, regarding the treatment of patients with CHD.[14]

The ways that practices make improvements varies from practice to practice, for example:

- Implementing a disease management framework, which satisfies national service framework (NSF) criteria and local health need requirements.
- Focusing on specific coded disease topics e.g. G3
- Standardising risk factor coding e.g. ex-smoker, heavy smoker, aspirin prophylaxis (to include those patients who purchase their prescriptions over the counter from a pharmacist)
- Using electronic laboratory links for comparable coding and sharing of cholesterol results across primary and secondary care.

National Policy Developments

The NSF for CHD was published, after the work with Fylde PCT had been completed. It provided national standards for the first time to support integrated care. Successive NSFs have increasingly defined common information requirements for the key clinical areas.

The recent draft national specification for integrated care records service provides further detail and a vision for the future.[15] It defines the following principles for information management and clinical governance:

- Clinical governance and audit of processes and outcomes will take place within individual service providers, with comparisons at practice, PCT, care community, strategic health authority, and national levels. Audit will also take place of multi-disciplinary care pathways and processes, which span individual service providers within a care community. Services must enable data to be abstracted from the individual patient records supporting direct care and analysed at all of these levels.

- Systems should enable information to be abstracted from individual patient records to enable audit of each service component's own population of people with, for example, diabetes i.e. by individual practices, departments within trusts and specialist services.

- Systems should enable data to be abstracted and assembled on a pan-community basis to enable clinical governance and audit at PCT level. Systems should be able to maintain and manage data, enable analysis, and have the functionality to present and deliver information to individuals within organisations with a clinical governance role and to feed back information to clinicians about their own services.

- Access to comparative information is needed such as national and other relevant baseline trends and rates, to enable benchmarking of results. Systems should support audit of both processes and outcomes**.**

Realising such a vision presents an enormous challenge.

Practical points

- Information has a vital role to play in clinical governance.
- The information component must be integrated into the entire process from patient consultation through to monitoring and improvement.
- To deliver this information it is necessary to have appropriate technology, processes and human capability.
- Current strategy should deliver technology to support this activity over the next five years across the NHS.
- It remains to be seen if the organisational systems and human capacity can match the vision for the benefit of patients.

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