University of Nottingham

PRIMIS+

Entry for the PHCSG John Perry Prize

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Contents

Where did PRIMIS+ come from?

Parallel tracks

PRIMIS+ developed from the health informatics interests of a number of people who all started working on different aspects and discovered how their interests and skills intersected and complemented each other. Sheila Teasdale came to health informatics through psychology, practice management and clinical audit; Mike Bainbridge started out combining the clinical and technical aspects while working with a system supplier; Pete Horsfield, after designing a system for his own practice, developed skills in terminologies and data extraction; and Mike Pringle brought research and management skills as well as being a GP and academic.

A team effort

It is not possible to name every individual who has worked to develop and support the PRIMIS+ service, but we need to mention at least some by name: in the early 1990s: the team who created the MIQUEST data extraction tool[1] (including David Markwell, Andrew Perry and Nick Booth); those who helped create the Clinical Audit days at Primary Health Care Specialist Group (PHCSG) conferences in 1992, 1993 and 1994[2] (including John Williams and Cheryl Cowley); those who funded the development of the JIGSAW curriculum specification – the NHS Training Division; those involved in the creation of the JIGSAW curriculum specification[3] in 1995 (including John Williams and Louise Simpson [now Wilson]); those who decided to fund the pilot stage, Collection of Health Data from General Practice (CHDGP), from 1997–2000, the PRIMIS service from 2000–2005, and PRIMIS+ (from 2005 to date). Every member of the CHDGP team, the PRIMIS team, and the PRIMIS+ team has contributed something new and positive to the development of the service.

National contributions

The JIGSAW curriculum specification was extensively used in 1998–99 to create the curriculum outlined in *Learning to Manage Health Information*[4], designed to incorporate health informatics concepts into medical and nursing under- and postgraduate education. (It also formed the basis of Sheila Teasdale's Master's dissertation in 1997, an examination of the role of education and training in improving data quality in primary care clinical computer systems.[5])

Almost all of the above-mentioned then worked together in 1996 on what has become known as JIGSAW 2[6] – an options appraisal for the electronic transfer of clinical data between GP clinical systems; this work was extensively used in the development of the GP-to-GP transfer project[7].

The Pilot Stage

CHDGP

One of the justifications for the development of MIQUEST was the possibility of extracting data from GP systems regularly and routinely; a programme of work was being considered in 1993–94 called *Continuous Morbidity Data Collection from General Practice*. Over the next couple of years, this metamorphosed into the *Collection of Health Data from General Practice* (CHDGP)[8]. In early 1997, Mike Pringle, Mike Bainbridge, Pete Horsfield and Sheila Teasdale won the contract to carry out the pilot study, designed to devise and test educational methodologies for improving data quality and information management, to test and improve MIQUEST software, and to devise and test information feedback mechanisms. This work ran for a total of three years – the final year was somewhat hand-to-mouth, with three short-term contracts while the business case for the national rollout was developed. We won the contract to deliver this too, against some stiff opposition.

The adult learning approach[9,10] to education is at the heart of the work trialled under CHDGP: adult learning envisages a collaborative relationship between the tutor and the student; it requires the tutor to recognise that the student will already have prior knowledge and experience in many areas of the curriculum; they must be involved from the start in planning their learning programme and in designing the activities to be used for assessment of competence based on portfolios of evidence; rapid feedback is also an important feature of this method. CHDGP provided education and training to local information facilitators, thus providing a local educational resource for practices; it also provided ongoing support for those facilitators, together with a range of tools and techniques to enable them to support practices, ranging through in-practice data and information exercises that provide practical solutions to practice problems at the same time as providing educational input, to data extraction and analysis services to enable practices to assess and improve the quality of their data and their information management skills.

The National Rollout

PRIMIS and PRIMIS+

From April 2000 to October 2005, a team of 30 rolled out and further developed Primary Care Information Services, known as PRIMIS; this service was designed for the new primary care groups and trusts in England, and was funded initially by the NHS Information Authority (NHS IA), and latterly by NHS Connecting for Health (NHS CfH).

Since the award of the PRIMIS+ contract in November 2005, the team has almost doubled in size, to over 50 people; it continues to deliver the core service but also increasingly undertakes support to Department of Health and NHS CfH initiatives such as practice-based commissioning, SNOMED-CT, GP2GP, the IM&T DES, and the rollout of the Spine Summary Care Record; data migration will be the next major piece of work for the team. The team also provides a number of query sets supporting national primary care information requirements, and some sophisticated software tools to enable best use of the resulting extracted data at all levels: practice, PCT, SHA, and national agencies.

High-quality data in new systems supporting better information management are vital to the delivery of high-quality care. This view was endorsed by Richard Granger, Director General of NHS Connecting for Health, in his comments to the 2005 PRIMIS Conference, when he said: "What this group of people [information Facilitators] do is really at the bedrock of digitising the NHS, getting data right at source."

The IM&T DES

The implementation of the IM&T DES relied heavily on the work of the PRIMIS+ service; practices are now fully understanding the importance of data quality, information governance, and information management, and it is a requirement that practices are accredited under the process and using the tools designed by PRIMIS+ before they can upload records to the Spine Summary Care Record.

The PRIMIS+ philosophy

Underlying all these activities is a belief that education and training on the need for good data quality and information management skills is essential for general practice (and increasingly for other health sectors as they take on clinical applications). Without high-quality data, the edifice being constructed by the NHS Care Records Service will be built on sand.

We believe that it is important not merely to transfer knowledge to facilitators, but also to give them the skills they will need to help practices introduce and adopt new processes and ways of working. The "cascade" of skills from Learning Consultant to facilitator, and from facilitator to GPs and practice staff is at the heart of the training programme that we have developed over the last ten years. It is a fundamental strength of the current service, and its effectiveness has been well-proven.

Feedback of analysed data in a comprehensible (and preferably comparative) manner is a powerful spur to beneficial change. Practices with a number of tools enabling them to see both data quality and clinical quality issues are given the ability to consider and act on them. In turn this will have a beneficial effect on patient care. The data quality improvement demonstrated over the life of these services is now proving beneficial to the rest of the NHS as patient records are increasingly shared electronically.

Feedback from users indicates that comparative analysis is key to the overall service aims and objectives in a number of ways:

- it provides a relevant context for the training and support activities of the service;
- it encourages participants to recognise the value of clinical data as a resource to support both data quality and clinical quality improvement;
- it demonstrates data quality improvement through time trend analysis;
- it encourages participation in clinical audit and quality improvement programmes;
- it demonstrates methodologies that can be exploited to support clinical quality improvement;
- it enables demonstration of achievement through quality improvement programmes.

Over the last ten years, we have developed an approach to service delivery that has fully used the skills and expertise of individuals by placing them in integrated non-hierarchical teams that work across functions to achieve the maximum benefit of synergy. This model has applied not only to the way in which the PRIMIS+ team works, but also to the approach we have adopted with facilitators and other information professionals working in primary care. By involving others in planning the service, sharing good practice and working in partnership towards a common goal, we have been able to realise benefits from the resulting synergies.

We try wherever possible to build partnerships with the users of our services, while emphasising that ours is in no way a 'policing' or auditing role. We believe that it is essential to build relationships with end users that are based on trust. We also endeavour to make learning and managing change a positive experience. We combine professionalism with enthusiasm, using this to overcome the inevitable inertia that can occur in organisations facing great change.

We are always working on ways to use new media and technology to improve the service we offer in the areas of training, data analysis and communications. In training, this is

now involving the use of e-learning and multimedia tools in a blended learning approach. New methods of communication are being explored, including web-based seminars and interactive forums, in order to build and exchange knowledge and information in primary care, ensuring that no-one is excluded through problems of accessibility. In the analysis service, increasing use is being made of web-based transmission of data and automation of analyses so that more time can be devoted to offering a bespoke service to meet user needs.

In spite of the inevitable uncertainties caused by a series of short-term contracts for CHDGP and PRIMIS, staff turnover has been remarkably low. We have been able to continue to recruit even in uncertain conditions. Measures that have aided retention are education, training and support, strong management skills, a matrix rather than hierarchical structure, innovation involving all members of staff, and the promotion of a team culture where all staff are valued as individuals.

Stakeholder engagement

We regard it as vital to maintain relationships with the many stakeholders in the environment of primary care informatics; not only do they need to know what PRIMIS+ is doing – we also need to ensure we keep up-to-date with current and new developments in the NHS in general and in primary care in particular, so that we provide appropriate and timely education, training and data analysis services to our users without duplicating those provided elsewhere.

Organisations and groups with which we work closely include: NHS Connecting for Health (Information Quality Assurance Programme, Secondary Uses Service, Data Standards & Products, Common User Interface, GP2GP, GP Systems of Choice, etc.), NHS Faculty of Health Informatics, Department of Health, Health Protection Agency, Information Centre, National Patient Safety Agency[11,12,13], GP system suppliers, GP system user groups, Strategic Health Authorities, PCTs, Information Standards Board, Audit Commission, Royal College of General Practitioners, Royal College of Nursing, Practice Manager and Practice Nurse national groups, British Computer Society Health Informatics Forum, and UK Council for Health Informatics Professions.

The PRIMIS+ Service

Training and support

The overall aims of the training and support services are to equip each PCT facilitator (and increasingly other PCT staff supporting practices' information needs) with the skills and knowledge they need to fulfil their role in assessing and improving primary care data quality and information management, and to support their role as change agents, consistent with their PCT's action plan.

We employ a team of 20 Learning Consultants, grouped into five regional teams, to deliver these services.

Identification of training needs

We provide an initial assessment of the competencies and training needs of new PCT facilitators, and are in the process of making the Training Needs Assessment tool available in electronic format for completion online (the eTNA); this will create an individual training plan linked with the competencies in the Health Informatics National Occupational Standards, and through to the Knowledge and Skills Framework.

Curriculum development

Current training topics are listed in Appendix 1. The content of the training curriculum is subject to continuous review, to ensure that it meets the requirements identified by the individual's training needs analysis process, as well as addressing the needs of the National Programme and the changing agenda within primary care. Since November 2005, we have produced training modules on SNOMED-CT awareness, Communicating Clinical Data (outlining the synergies between GP clinical systems and data, and national initiatives such as NCRS, Choose and Book, Electronic Transmission of Prescriptions, GP2GP, etc.), Practice Based Commissioning, GP2GP record transfer (including some e-learning tools), and three modules and tools to support the IM&T DES: training modules for facilitators, assessors, and PCT staff; tools to support creation of Component 1 plans, training needs analysis for practices, self-assessment of prior knowledge, and a progress tool to enable PCT to manage the logistics of the assessment process.

The Learning Consultants are currently carrying out an analysis of all 25 modules and breaking them down into topic areas, components and elements, prior to reconstructing the training agenda to remove duplication and use new training modalities in a blended learning approach, where prior learning can be achieved through use of website materials before delivery of face-to-face training. In September we will begin testing the GP2GP e-learning module.

Evaluation of our training is uniformly positive, with scores averaging 4.5 out of a maximum of 5 consistently over the ten years of our existence.

Provision of training

We deliver the PRIMIS+ training curriculum using one-to-one or very small local group training for core subjects, with additional subjects provided through larger group workshops. The core modules, which usually involve ten days of training, are usually delivered over a period of four weeks. Facilitators are then able to select from the remaining training modules and undertake them at times convenient to them and as indicated by the PCT action plan.

Data quality analysis and reporting

The team has unrivalled experience of using MIQUEST and related software products to generate data quality feedback and comparative clinical feedback. As part of the PRIMIS+ service, the team has developed a large number of different query sets for both data quality assessment and comparative analysis, and has processed data from over 5,000 practices in England. We undertake further development and maintenance of standard query sets for MIQUEST in line with requirements arising, for example, from new National Service Frameworks (e.g. Diabetes), or specific requests from the Department of Health (e.g. Smoking and Obesity, Influenza Vaccine Uptake reporting) or from PCT Facilitators. All query sets are subject to a regular cycle of review and revision, including maintaining alignment with current versions of clinical terminology products in use by the client base and with the changing needs of clinical practice.

We use MIQUEST because it is currently the only generic data extraction facility that is widely available for use with GP practice systems; however, we are currently providing input to the creation by the Information Centre of a business case for a replacement.

The team is well versed in the issues involved in obtaining the necessary authorities and approvals for data sharing and maintaining patient confidentiality, having successfully maintained compliance with all legal and ethical requirements relating to the confidentiality of clinical data since CHDGP started in April 1997. We have also been able to reassure practices as to the safekeeping of their data, and that suitable procedures are in place to ensure that analyses are distributed only to those entitled to receive them.

Data quality analysis

We have developed our analysis services in a number of ways:

1   We continue to use the method started in CHDGP: data extracted by MIQUEST query sets are sent to PRIMIS+ for storage in a secure database; the data are then analysed and returned to the facilitator via the web (or CD if preferred) for import into the *Rush* display tool. *Rush* provides comparative feedback across all contributing practices in a PCT, showing achievement on a number of data quality and clinical care measures. This feedback is used in a training session with a Learning Consultant, to help the facilitator understand how to use the tool in discussions about the data with the practices that have submitted them. Data quality is measured along a number of dimensions: recorded prevalence against expected prevalence; recorded prevalence against potential prevalence; recording rates of lifestyle markers (e.g. smoking, alcohol consumption, etc.); recording rates of screening investigations (e.g. cervical smears, BP recording, etc.); recording of gender-inappropriate or age-inappropriate conditions (e.g. males with hysterectomy codes, etc.).

2   Prevalence tool: this tool enables practices to see immediately where their diagnostic data quality 'gaps' are, by showing recorded prevalence (e.g. all patients recorded as having diabetes) against potential prevalence (patients with either a diagnostic code recorded OR one indicating the presence of the condition, e.g. prescribing of insulin). This method is also used in the IM&T DES e-audit queries.

3   Individual practices can also use the CHART tool, which provides intra-practice analysis, enabling practices to "see how they are doing" but also to identify rapidly any patients needing intervention – either to update their records or to provide clinical services.

4   Finally, CHART can upload data across the web to CHART Online, which then provides rapid comparative analysis and feedback over the web as well as time trend analysis for the individual practice. CHART Online has been developed using the PIANO tool originally created by the NHS Information Authority Winchester team; its use by PRIMIS+ for the IM&T DES assessment process is the latest example of our track record of innovative development of feedback and comparative analysis tools using inexpensive and not particularly 'high-tech' tools, better suited to the environment of general practice than Oracle databases or Business Objects software.

Data quality reporting

Data quality reports provided in a comprehensible (and preferably comparative) manner have been demonstrated to be powerful levers for change. Our Learning Consultants provide advice in relation to the interpretation of data quality reports and meeting national reporting requirements, as part of the education and training agenda, mainly via the two training modules, 'Data Analysis, Interpretation and Feedback' and 'Action Planning for Change'. We also provide an integrated support service for relevant national reporting requirements comprising query sets, Learning Consultant support, training modules, Facilitator Forum sessions, annual conference sessions, and analysis and display tools.

Data quality promotion

The value and impact of data quality are promoted through a range of communications activities designed to demonstrate the benefits of good data quality, as well as the risks associated with data of poor quality. The PRIMIS+ Guidelines[14] have been used extensively in the creation of the RCGP *Good Practice Guidelines*[15], and are seen as a definitive source of information on all aspects of data quality. In addition, the practical benefits of improving data quality and information management skills are promoted through the production of 'best practice' case studies for dissemination through press articles, printed materials, on the website, and in presentations at conferences and other events.

**Analysis and feedback tools**

The PRIMIS+ team has an established track record of innovative development of software products in support of feedback and comparative analysis. We have developed or commissioned a range of software products in support of these activities:

- Rubase: a database to support storage and processing of data derived from practice systems;
- *Rush*: a data presentation and analysis tool to support feedback of aggregate data derived from participating practices in graphical and tabular format;
- Prevalence tool: a data presentation and analysis tool to provide graphical feedback of potential gaps in diagnostic recording
- CHART: a data presentation and analysis tool to provide feedback at practice level of patient-level data in graphical, tabular and summary formats; it also permits web uploads to remote databases (including CHART Online);
- CHART Online: a web-enabled data presentation and analysis tool based on the PIANO toolkit, providing enhanced comparative analysis functionality via a web interface.

CHART and CHART Online

We are increasingly moving to use of CHART and CHART Online, as they provide individual and comparative feedback rapidly and direct to the practice; this 'real-time audit' has been a long-term aspiration of a number of team members going back to 1992.

Figure 1: Schematic of the CHART–CHART Online Process
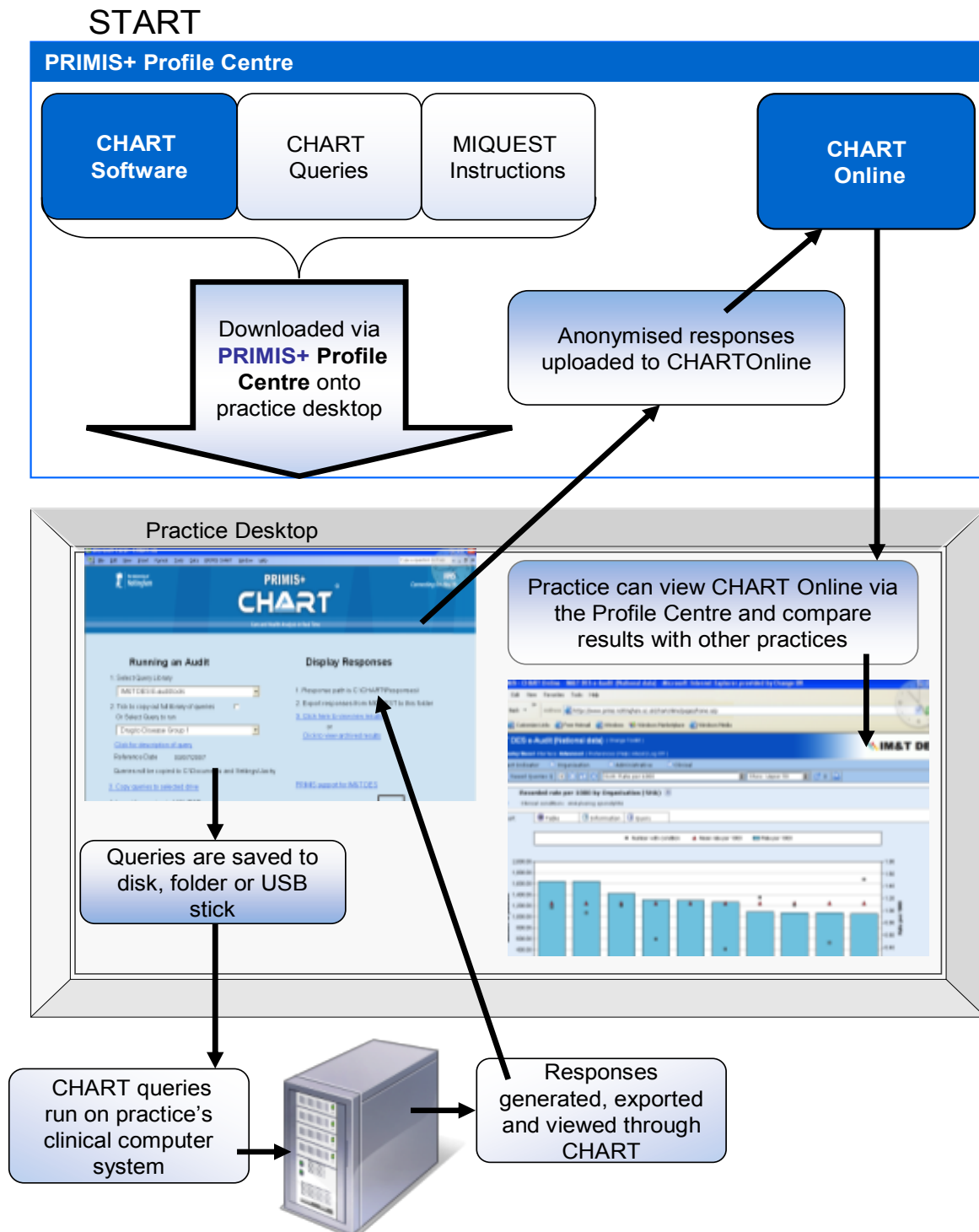
CHART

CHART software is an audit toolkit based on Microsoft Excel. It is designed to hold libraries of MIQUEST queries; these can be run whenever a practice chooses and will automatically update date ranges and practice details. There are always two options, patient-identified and pseudonymised response files. The resulting response files are loaded into the CHART software and are processed and manipulated to produce a display with three views:

- A *Datasheet* with individual patient data on each row, and audit fields in each column. Columns can be post-processed from the data extracted to show calculations or derived results.
- A *Summary* sheet, which displays aggregated summary data. It also has the capability of importing data from other sources, such as System Suppliers' Reports.
- Finally there are a series of predefined *Graphs*. These are driven from a drop-down menu. It is possible to select any bar in any graph and then double-click to drill down to the individual patients beneath it. Using the datasheet or the drill-down feature, the practice can identify individual patients whose care (or data quality) needs attention. These can then be dealt with, improving patient care and safety.

From the Summary sheet it is possible to send a predefined string of data to any URL. This process is used in uploading Influenza returns to the Health Protection Agency and in loading data to CHART Online for national comparisons to be made. Thus it provides both the microscopic and the macroscopic view of the data, allowing practices to identify patients with specific care needs and to compare their performance with other practices nationally.

CHART Online

CHART Online allows practices to see their data in comparison with their peers. This is beneficial in that it provides a context for their individual results and is often an impetus for change. The whole process of receiving, processing and displaying data is fully automated and scaleable, allowing potentially many thousands of users to take part without requiring a concomitant increase in central resources. Over 2,300 practices have already uploaded summary data from the IM&T DES e-audit queries with no loss of performance.

In order to provide comparative analysis, PRIMIS+ maintains a data warehouse fed directly from data in GP systems. The simple, secure and efficient transfer of data from GP systems to PRIMIS+ over the internet is fully automated and managed by a system called Synapse.

Data upload
Once a practice has loaded the MIQUEST response file into CHART they can at a click of a button transmit a summary of those results over the internet to the PRIMIS+ data warehouse. Data are transmitted securely using SSL (Secure Sockets Layer) and the practice user is authenticated using a username/password combination before any data can be sent. The actual datastring to be sent is shown to the user prior to transmission so the user is in control at all times. The data upload takes a second or so and the user receives immediate feedback as to the outcome. In this short time, the datastring is transferred across the internet, simple validation takes place (for example, a practice user can only send in data for their own practice), and the data are stored in a staging area of the PRIMIS+ data warehouse. Only when all this has taken place is a success message shown to the user.

All records sent to CHART Online are viewable over the internet showing the actual data received, the upload date, and the name of the user responsible for sending the data. A user can only see data uploads that belong to their practice. The progress of the data through the data warehouse and into CHART Online is also shown.

The PRIMIS+ data warehouse
Periodically, records in the staging area are collected and further validated to ensure all required fields are present, with additional internal consistency checks made where possible. If a record fails, the data it contains take no further part in any comparative analysis, and the fail status can be seen by the user over the internet. If the system detects that a record has been received before (by checking the run date of the query), then the old record is archived automatically and the new record takes its place. All validated records are then transferred into the main data warehouse where they are processed and then loaded into the multi-dimensional OLAP cubes used by CHART Online.

Currently the above process is done once every 24 hours, meaning that data uploaded one day is available for comparative analysis the next. We are currently testing reducing this time to one hour, thus providing users with almost immediate comparative analysis feedback.

The CHART Online tool
CHART Online is a web-based analytical tool for visualising and browsing data. It utilises the PIANO analytical engine developed by the NHS Information Authority Winchester team. The aim is to allow end-users to "see" and "explore" their data, especially in comparison with similar data from other users. The features of CHART Online are:

- Clear concise charts showing deviation from peer averages
- Fast, consistent response times – this allows users to ask questions based on what they see – hence "exploring" their data
- Accessible and informative to end-users as well as information experts
- Requires only a browser and an internet connection – no software needs to be installed on the client machine
- Secure logon using standard Microsoft web security mechanisms – uses same login as data upload process.

CHART Online shows analyses at three levels of organisation – SHA, PCT and GP practice. By default, at the practice level, all practice national codes are anonymised, making it very difficult to identify individual practices. Practice users, however, can see the national code of their own practice, and non-practice-based users can apply for permission from a practice to see their national code in CHART Online. A practice has complete control therefore over which named individuals can identify their results in CHART Online.

Figure 2: A typical CHART Online view showing clearly (in dark blue) those patients on a drug but without a related diagnosis
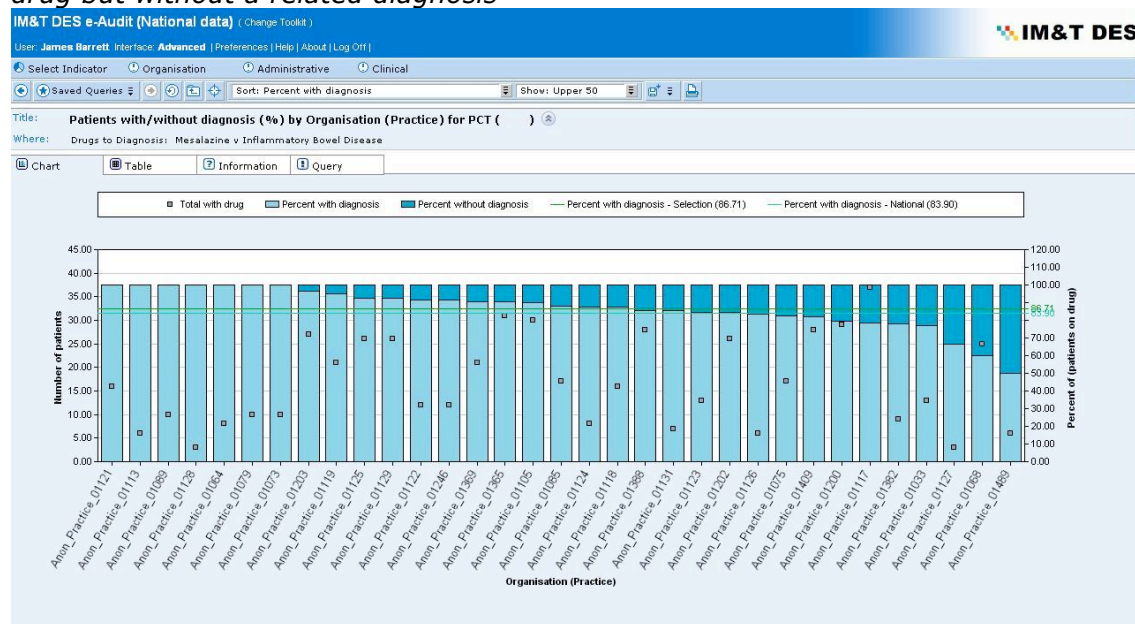

In order to aid comparative analysis, as well as showing an organisation's actual result, CHART Online can be set up to show its quartile ranking. Quartiles can be calculated with reference to an organisation's peers (e.g. for a practice, its peers are all the practices managed by the same PCT), or with reference to all organisations in the system. This enables a practice to see on one graph how it is doing for a number of results compared with other organisations, both at a local and a national level.

Figure 3: A graph showing a single practice's drug-to-diagnosis results in relation to the national quartiles for all practices
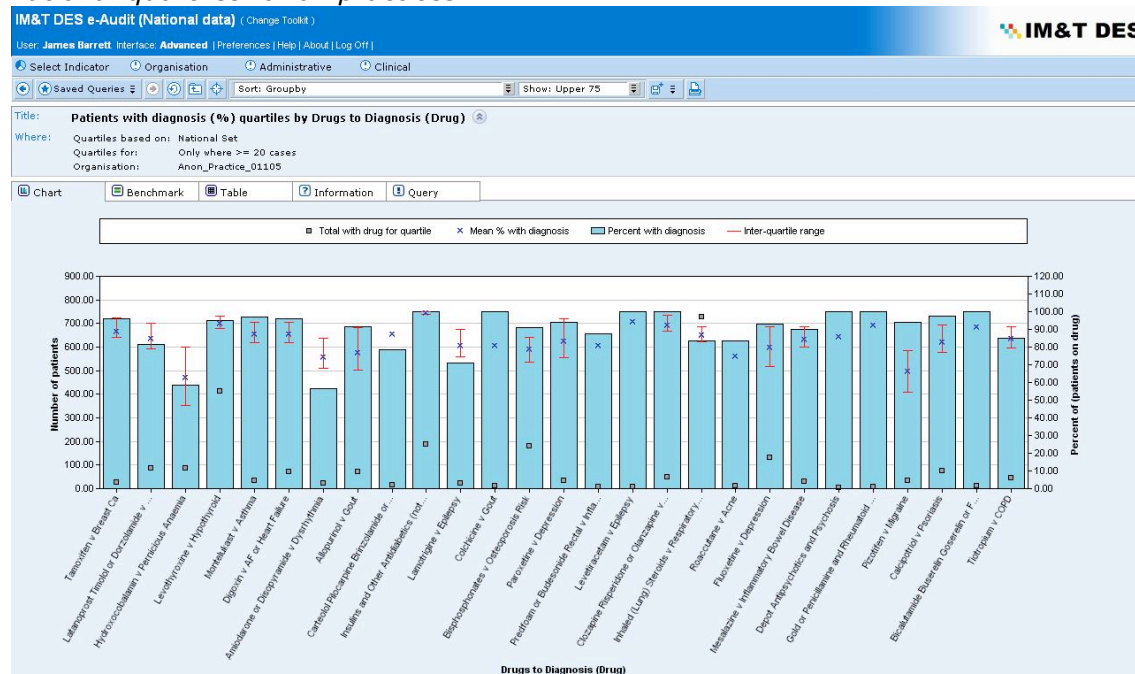
Practices are encouraged to send in a baseline set of data and then send in new data at regular intervals. Each set of data is individually stored in the data warehouse, allowing an organisation to see a "time trend" view of their results in CHART Online. In this way progress can be demonstrated and standards maintained.

Figure 4: A time trend view showing the improvement by one practice in recording related diagnoses for a range of drugs
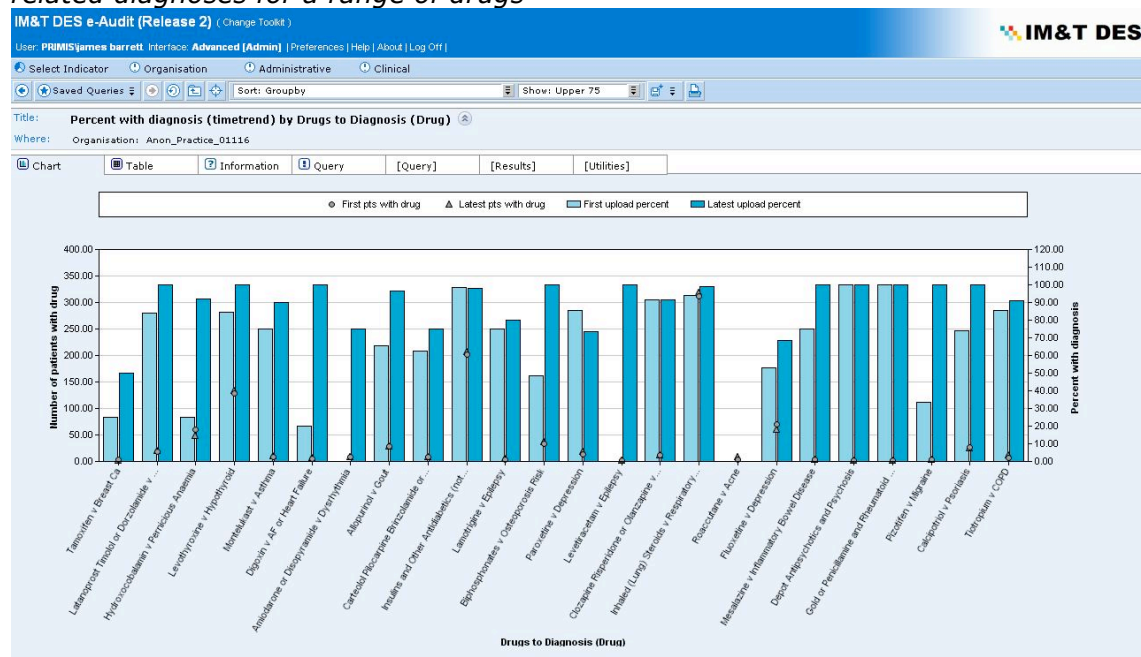
The PRIMIS+ team continue to develop these and similar products. In support of this we undertake:

- continual 'horizon scanning' by the team to identify innovative and useful techniques of data manipulation and presentation;
- careful specification of precise requirements for software products to support the needs of the service;
- identification of existing external sources or alternatively in-house commissioning of products to support specified requirements;
- iterative product development based on both in-house experience and user feedback.

Communications

Planning and promotion

The communications activities of PRIMIS+ are designed to raise awareness of and to market the service to its clients, promulgate examples of good practice and facilitate information exchange between PCT staff. They are undertaken by a specialist Communications team. We focus on promoting the benefits of good data quality to as wide an audience as possible, via the service website, events, published material, and personal contact.

Website

The website is content-rich, with many documents and resources freely available for download. There is also an IM&T DES portal, which has over 5,800 registered users, as well as the provision of access to self-assessment tools, the e-audit toolkit and CHART Online, and IM&T DES assessor resources. The closed area of the website is available to facilitators only and provides a means of submitting electronic data collection agreements and data for analysis in a secure way. We are just about to launch a GP2GP web portal to support the national rollout of GP2GP record transfer software.

There are two well-used web-based Discussion Boards, one for general data quality topics and the other specifically for the IM&T DES; these facilitate networking and sharing between PCO facilitators and others.

Events

We hold quarterly facilitator forums around the country, to provide clinical presentations and best practice guidance as well as networking opportunities for facilitators and others in their PCTs with interests in data quality. We also provide a mentoring scheme for facilitators, as well as PRIMIS+ 'Stars' (facilitators who are experts in a particular topic area offer advice and assistance to others to augment the support provided by Learning Consultants). A well-attended annual conference is held, to which all facilitators and relevant stakeholders are invited. PRIMIS+ also exhibits and presents at relevant national and regional exhibitions and conferences, as well as attending local and regional IM&T events.

Helpdesk

The PRIMIS+ team provides a comprehensive helpdesk service including a technical helpdesk for enquiries and problems on data extraction, analysis, clinical coding, the use of MIQUEST and analysis tools, and the interpretation of analyses provided. A training service helpdesk covers enquiries about training provided, course schedules, and events, the enquiries line deals with requests for general information, while dedicated staff are also available to solve login problems for the discussion board, facilitator area, and Profile Centre of the website.

Publications

Brochures, flyers, newsletters, case studies and press articles are also part of the communications tools provided; these ensure dissemination of best practice and awareness of new products, tools and services.

Some statistics

April 1997 – March 2000	Design and implementation of the Collection of Health Data from General Practice (CHDGP) pilot project: **training and analysis services** (pilot stage)
April 2000 – present	Design and implementation of Primary Care Information Services (PRIMIS) and PRIMIS+: **training and analysis services** delivered to primary care in England
	Achievements since April 2000: • Total number of Facilitators trained: 1,000 • Total number of trained Facilitators in post: 400 • Total number of trained Associates in post: 350 • Total number of engaged PCOs: 147 (97% of PCTs in England) • Total number of training modules developed: 25 • Total number of training sessions held: 11,500 • Total of over 21,000 query sets run by, analysed for and fed back to 5,176 practices • Total of 10,000 individual queries developed, covering three different data quality query sets, and five query sets covering individual clinical areas • IM&T DES data uploaded directly by over 2,300 practices since February 2007
	Operation of **helpdesk services**
	Achievements since April 2000: • A total of 17,000 helpdesk calls and emails dealt with and resolved, most immediately • Average time to resolution of enquiries referred to others is less than 24 hours
	Communications and networking
	Achievements since April 2000: • Website receives an average of 16,000 visits per month • Web-based Discussion Board has over 800 registered users • Dedicated IM&T DES web portal with over 5,800 registered users • Six national conferences held • Case studies published in printed and electronic form • Networking and sharing of best practice established through Facilitator Forums, mentoring and a web-based Resource Centre

Conclusions

The clinical audit 'virtuous spiral' has come a long way since *Dynamic Data* was published in 1994[2]. As far as we are aware, the PRIMIS+ service is the first time in the world that an integrated service providing education, training, support, analysis and feedback services has been provided as a way of ensuring that clinicians at the point of care understand how best to use the sophisticated clinical computer systems at their disposal, and also appreciate the importance of data quality and information management in underpinning the clinical enterprise.

Decision support, patient safety, and more effective and efficient patient care management all depend on well-managed high-quality data, and the more those data are shared, both between practices and more widely across the health sector, and used by other clinicians and managers, the more essential it is that these lessons are learnt, understood, and practised.

Appendix 1: Training Topics

Core topics

What is PRIMIS+?
This module provides facilitators with an understanding of what PRIMIS+ is and why it is needed. The PRIMIS+ training, data quality analysis and comparative analysis services are described in detail. Facilitators gain an understanding of their role in improving data quality and the critical factors that can impact on the success of a PRIMIS+ scheme.

Training Needs Analysis
This module enables PRIMIS+ facilitators to assess their existing skills and knowledge, and to identify where additional training may be needed. Facilitators are provided with an understanding of the purpose of a Training Needs Analysis, who should be included, and what steps should be taken in developing one. In addition, facilitators learn what methods can be used in a Training Needs Analysis, and how the results can be used to develop an action plan for practices to improve information management and data quality by identifying gaps in training and understanding roles.

Scheme Management
PRIMIS+ provides facilitators with guidance on project management, obtaining resources and equipment, networking within organisations, and recruiting and carrying out baseline assessments with practices, including issues of security and confidentiality. In this module, facilitators are also provided with an awareness of the MIQUEST process, an understanding of issues surrounding confidentiality, and an understanding of how to construct an action plan.

Quality Data, Quality Outcomes
This module provides new PRIMIS+ facilitators with knowledge and understanding of the importance of data quality. Actual practice scenarios are used to demonstrate the difficulties that might confront practices in achieving data quality and recording data for Quality and Outcomes Framework indicators. Following this module, facilitators will be able to work with practices to improve data quality, identify high-quality data within practices, and help practices redeem poor-quality data. They will be able to encourage practices to use their GP clinical systems for recording data for quality outcomes, and apply change management theory to general practice.

Clinical Coding
In this module, facilitators are given a basic understanding of the history, principles and structure of Read codes, together with an understanding of the benefits of using Read codes for recording in primary care. Guidance on using Read codes to support quality and outcomes indicators is also provided.

MIQUEST – Query Manager and Response Manager
Facilitators are provided with an understanding of the distribution and importation functions of the MIQUEST Query Manager and Response Manager. The setting up of scheme details, data collection agreements, practice system types, and functions of the MIQUEST Query Manager are taught in a half-day training session, in which facilitators practise configuring sets of queries for their scheme/PCT. In the half-day MIQUEST Response Manager training session, facilitators practise importing response files, aggregating and anonymising response files and transferring them to disk for onward transmission. Facilitators also become familiar with the MIQUEST manual and PRIMIS+ MIQUEST User Guide for future reference.

MIQUEST Interpreter
Facilitators learn the functions of MIQUEST interpreters in a half-day training session, which includes practising running queries from different enquirers, with appropriate security safeguards, and exporting response files. In addition, they work with volunteer practices and the PRIMIS+ Learning Consultant to advise practice staff on the appropriate use of their MIQUEST interpreters.

Data Analysis, Interpretation and Feedback
This module provides PRIMIS+ facilitators with the skills to understand analysed data, identify questions raised by the data, and feed back to practices in a supportive way. Facilitators are provided with an understanding of the definition of clinical questions, the clinical audit process, legitimate uses of aggregated data, confidentiality issues relating to aggregated data, and the use of clinical systems' own search engines and comparison with MIQUEST outputs.

Action Planning and Supporting Change
This module gives facilitators an understanding of change management theory and techniques, enabling them to support the development, design, implementation and review of practice-based action plans.

CHART
In this module facilitators are trained to use CHART (Care and Health Analysis in Real Time), a clinical information feedback tool developed by PRIMIS+. CHART enables practices to analyse and view their data using a number of different libraries, including one for the new GMS contract.

Facilitation Skills
This module is run on a group basis and gives tools and techniques for identifying different behaviour and learning types, managing different situations, preparing and managing meetings, and provides guidance on various other facilitation skills, like listening and negotiating. Skills in working with small groups are emphasised, and help is given in identifying priority issues within a practice and using those issues to facilitate change.

Annual Review
Towards the end of the first year of a local PRIMIS+ project, it is advisable to review the main aims and objectives set down in the scheme's project plan. In reviewing the success of the project, interviews may take place with the project manager and individual facilitators. A group discussion may then ensue on a more strategic basis. This enables both the scheme and PRIMIS+ to remain responsive and to be proactive in making suitable changes.

Data Accreditation
The PRIMIS+ Information Management and Technology Directed Enhanced Service (IM&T DES) training is designed to support a) facilitators, b) assessors and c) practices (via facilitators) and consists of three separate training packages, one for each group. The content of each training module is similar, but the focus varies between packages. Those taking part work through knowledge-based components before coming to a practical training session from PRIMIS+. A suite of free documents, information and tools designed to help facilitators, assessors and practices is also available for viewing and download from the Resources section of the PRIMIS+ IM&T DES web portal[16].

What is Primary Care?

In addition to providing PRIMIS+ facilitators with an understanding of primary care, this module covers the relationship between primary care and other NHS agencies. Facilitators also receive training on the structure of, and the relationships within, general practice. The training also provides an awareness of events that have brought primary care to its present position, an understanding of internal and external forces that can have an impact on data quality in primary care, and an understanding of how PRIMIS+ can support primary care in improving data quality.

Supporting Quality in the GP Contract

The aim of this module is to provide guidance and support to facilitators on helping practices to implement the Quality and Outcomes Framework. Following the training, facilitators will be able to understand the structure, process and outcomes for each of the clinical indicators and the ten disease areas in the clinical domain, together with an understanding of numerators and denominators. They will also acquire an overview of the recording and reviewing arrangements of the new GMS contract and an awareness of the data needed to support the reporting and verification process. Additionally, they will learn how to assist practices with the information aspects of directed and national enhanced services.

Primary Care Data: Uses and Abuses

This module aims to provide primary care staff with an awareness of the tools and resources available to interpret information effectively. Facilitators and other delegates will be made aware of the potential pitfalls when interpreting analysed clinical data and how to avoid them. They will be provided with practical ways to support an information strategy at PCT level to enhance the use of high-quality information from primary care to optimise health care delivery.

MIQUEST – Editor and Query Writing

Facilitators are shown the basic query specification and writing techniques of MIQUEST Editor, on which they may build their expertise when specifying and writing queries appropriate to their own scheme/PCT needs.

Path to Paperlight

The aim of this training module is to provide facilitators with an awareness of the background and history of electronic records in primary care, and to raise their awareness of the medicolegal considerations and protocols that they will need to support practices to make the transition from paper to electronic patient records. Facilitators will be given an understanding of the benefits, processes and legal requirements to notes summarising, and will understand the need for practices to have a data input and maintenance policy.

Information Governance

With the increasing emphasis on confidentiality and security in health care, this module gives facilitators an insight into the policy and legal context of Caldicott, the Data Protection Act and ISO27001. Facilitators gain an understanding of risk management and information governance, and how they interact with the PRIMIS+ process and agreements.

Data Quality and Patient Safety

In this module, facilitators learn about the role of the National Patient Safety Agency. They are given an awareness of the safety features inherent in GP clinical computer systems, and an understanding of the potential impact of data quality on patient safety. They will also be provided with a range of tools that can be used to identify areas of risk to patient safety.

Practice-Based Commissioning

This one-day training module provides facilitators with an understanding of the requirements involved in data collection for commissioning and contract monitoring. The module also covers related coding activity and forecasting requirements.

An Introduction to SNOMED CT

The SNOMED CT module, offered in a one-day format, provides an introduction to the new coding system and prepares facilitators in good time for its implementation.

Communicating Clinical Data

This module provides an understanding of the role facilitators can play in supporting practices to implement new NHS Connecting for Health programmes that enable data sharing and exchange, such as GP2GP Transfer, the Electronic Prescription Service and the National Care Records Service.

GP2GP Record Transfer

Transferring Electronic Patient Records (EPRs) from one practice to another using GP2GP requires careful management by general practice and a high level of data quality. Areas that are covered by this full day's training include: background and benefits, data quality and information management, the process of GP2GP, interoperability, drug allergies and adverse reactions, medications, pathology results, attachments, consultation structures, forms, qualifiers and modifiers, transfers between same and differing systems, and business processes and workflows. Attendees will be equipped to support and advise practices that are implementing GP2GP.

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