23

National strategy for information management

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Information management in the health services has been with us ever since we have had health services! As soon as one records patient details, there is some, albeit elementary, need to manage information. The use of information technology (IT) to manage information is of much more recent origin. With the advent and widespread availability of affordable mainframe computers in the 1960s, the health services, along with other major organisations, quickly used them for a limited number of tasks - in the first instance, mainly for the payroll. In the beginning information technology and computers affected relatively few administrative staff in the health services. Clinical and medical staff gradually developed their own departmental computing facilities and acquired the skills necessary to use computers as they went along.

In the last decade information, information management, and the use of IT to manage information affects over 90% of the workforce in health services. There is now a multi-billion dollars spend on IT in health services throughout the developed world. It is generally recognised that the health services are behind other sectors of business and industry (eg, airlines, service industries, some government departments) in the deployment of IT to assist in the management of information.

Education and training for the use of IT for information management has been relatively neglected, perhaps more so in the health services than in other sectors of the economy. But even outside the health services, for many decades education and training was usually the last line in the corporate budget; and in times of cut back and scarcity it was the education and training budget which suffered first.

It is now a familiar cry that there is an enormous wasted investment in IT in all sectors of the economy, particularly in healthcare. Stories about IT equipment lying idle, underutilised, and inefficiencies in its use are legion (Warden, 1993). It's paradoxical that the increasing amounts spent on IT, accompanied by increasing claims of IT suppliers about its efficacy and cost benefits, occurs at the time of documented studies on wastage and inefficiencies. We are still waiting for the definitive study that proves without doubt that investment in IT is cost effective! (Walker, 1993). At one extreme, most people would agree that the airline industry today could not function without the deployment of computers and communication technologies; and more recently the same can be said of some manufacturing processes. However, in many other service industries, in government departments, in the administration

of universities, and in the health services, the benefits that have been promised for so long have yet to be fully documented and substantiated.

For many, in complex administrative environments, investment in IT is still an act of faith and the take up of IT and EDI (Electronic Data Interchange) is slow (Pugsley, 1994). We live in a world in which computers are regarded as a good thing, an indication of modernity, and a necessity for us all to know about. We have been told for a long time that everybody will be effected by computers during their life time. Until about thirty years ago it was generally accepted that the learning of Latin at school was a good thing. We were told that it would help us learn other languages, help with spelling, and all sorts of other goodies were paraded. But there was little evidence to back up these claims. Universities demanded that all applicants had school leaving qualifications in Latin. Such demands are unthinkable today. The overselling and the over enthusiasm of the past decade for IT and computing will no doubt be unthinkable in twenty years time (Greenes & Shortliffe, 1990). In the future we shall not invest in IT unless there are demonstrable benefits to be gained. A better educated and trained workforce will ensure that this is so!

In the health services the public knowledge that now exists (see, for example, Warden, 1993) about the wasted millions of dollars on IT investment has had a beneficial effect. There is more caution about IT investment, a better planned approach to IT is absolutely essential for most of the healthcare workforce.

The information intensive health services

The provision of health services has always been an information intensive activity. Medical and healthcare knowledge, data and information continue to grow at a great pace; patients generate information, and more patients than ever continue to be seen each year in hospitals and within the community; the management of healthcare continues to grow in complexity. (For an overview of health informatics worldwide see MacDougall & Brittain, 1994).

There are many factors, both within and outside healthcare, that are influencing the generation, capture, processing and storage, and use of information for healthcare management and for clinical practice, as well as for accessing healthcare requirements and meeting the increasing sophisticated information demands of patients, their relatives, and, indeed, the general public (MacDougall & Brittain, 1992). Health promotion as an allied activity is also predominantly information intensive (Gann,1991).

Activities and factors of the last few years that have had a tremendous influence upon the development of new information systems for healthcare include:

- resource allocation formulae
- cost centre and accrual accounting for costing and cost modelling
- Relative Stay Index
- DRGs, and AN - DRGs
- Patient Classification: eg Nurse Dependency; Health Insurance; Nursing Homes (RC1)
- Medicare Benefit Scheme, and pharmaceutical Benefits Scheme
- medical audit
- assessment of healthcare needs of populations
- performance indicators

- Care Evaluation Program (CEP)
- Clinical Indicator (CI)
- Inaugural National Clinical Data Evaluation System (INCIDE)
- outsourcing/contracting.
- Health data dictionary
- Health information agreements between Commonwealth States
- Development of a National Health Information Plan

Performance indicators in medical audit, as well as assessment of outcomes, are all part of the new culture of quantifying activity and performance, both at the aggregate level and also in terms of individual performance. These activities form part of a new management culture which can only operate successfully with the aid of a new generation of information services. Many of the measures and performance indicators listed above are included in the Australian Council on Healthcare Standards (ACHS) Care Evaluation Program (CEP), which aims to improve the quality of patient care by measuring the processes and outcomes of patient care. Lawson and Callopy (1993) describe the progress made with the national Clinical Indicator (CI) and the CEP Inaugural National Clinical Indicator Data Evaluation System (INCIDE). All these measurements, indicators, and databases could have been recorded and constructed by hand, at least in principle, before the advent of computers and information technology; but in practice, it would have been impossible.

The long term value of the CEP and INCIDE systems (as indeed is the case with all performance indicators) is the potential to provide feedback to healthcare professionals about levels and efficacy of practice. The ultimate value to both practitioners and patients is the educational value of feedback: as McIntyre and Popper (1983) note "...knowledge grows more by the recognition of error than the accumulation of new facts." Healthcare professionals continue to be suspicious and resistant to new, so called, management information systems. Insights into the educational and training spin offs of new information systems have been played down. There are good reasons to support education and training programs aimed at the basics of data collection, storage, retrieval, and presentation, but if the programs can in addition address the spin offs for better and more informed practice, the value of information management education and training will be seen as essential, rather than desirable.

When education and training was still seen as an expendable resource that could be dispensed with in difficult economic times, this is just what happened. But when the skills, competencies, and knowledge in information management are seen to be part of the key ingredients of a successful healthcare strategy, training and education likewise are placed high on the corporate agenda.

Many senior managers in health have resisted the wide scale introduction of IT. But in recent years, in many countries, outsourcing and contracting of services (sometimes between sectors of the health services) have increased the perceived need for IT to facilitate the outsourcing and contracting processes. In the early days of outsourcing and contracting it soon became evident that inadequate information systems could be extremely costly. Thereafter, senior management that was formerly cool towards the information management and technology (IM&T) movement and a new generation of information systems, began to embrace them enthusiastically!

Why a strategy?

Strategies (of any nature) are often resisted by an organisation's workforce. It is necessary in such cases to enumerate the reasons for developing, and subsequently implementing a strategy. Some attractions of a strategy are given below:

- enables a detailed plan of activity to be agreed, facilitates financial planning, and allows progress to be assessed against objectives
- assists in justifying expenditure of large sums
- provides a vehicle for publicity
- helps develop local ownership and motivation
- reduces the chance of duplicated effort and wasted resources
- provides coherence to a national, state, or international activity
- helps plan for future direction

In many organisations the single most important aspect of a strategy is that it enables organisations to devote large amounts of money to specific plans, and sometimes to obtain considerable funds, which no government department would agree to allocate in the absence of a strategy.

Elements of an education and training strategy

A training strategy, in its most simple form, addresses the following factors:

- the skills, knowledge and competencies required of healthcare workers
- the existing distribution of skills, knowledge and competencies across the workforce
- the training needs, ordered according to priority levels, for different groups of employees
- training plans, over time periods; eg immediate, middle term and long term training plans
- delivery of training, both from within the health services, and also from outside
- types of training and education currently available
- evaluation of training and education
- evaluation of the strategy
- dissemination of information about the strategy
- the development of a local training infrastructure.

Strategies and plans range from the very general through to the very detailed and explicit. Certainly, at some stage in the implementation of an education and training strategy it is necessary to produce a detailed assessment of training needs and existing provision, and a detailed plan for the local delivery of training and education. In large organisations local ownership and local plans are essential. The task is too large to be operated at a national/federal level. However, a general strategy provides guidance and motivation, and can be instrumental in the development of a local training infrastructure, and also in the allocation of both central government funds and local health authority funds.

A case study - the IM&T training program of the UK National Health Service

The work is known as the IM&T Training Program for the NHS. (United Kingdom, 1989) The program addresses the training needs of clinicians, professionals allied to medicine, administrative and clerical, technical and auxiliary staffs, at all levels from the most senior to the most junior. There are over one million employees in the NHS and all are in some way affected by one or more aspects of the information cycle of data capture, storage, analysis, presentation and use for management and clinical purposes. The IM&T Training Program is part of the wider information plan known as the IM&T Strategy. In the discussion below it is important to note the difference between the IM&T Strategy and the IM&T Training and Education Strategy; the latter is designed to help implement the human resources aspect of the former.

The IM&T Training Program covers all awareness, training, education, and development needs relating to:

- collection, coding, storage, analysis and use of information for clinical, managerial, and operational purposes, and
- the procurement, operation and use of information systems in technology.

In addition to covering the major NHS workforce, it also addresses, for the 6000 specialists IM&T staff in the NHS, the issues of:

- workforce planning and supply
- graduate staff recruitment
- code of practice
- the development of nationally recognised qualifications which meet the needs of the NHS.

The work is guided by a Steering Group, chaired by the Executive Director of the Information Management Group of the NHS Management Executive and members include Chief Executives and Senior Management representation from NHS trusts, purchasing authorities, and family health service authorities. All projects are managed using PRINCE project management methodology, which provides clear mechanisms for ensuring that projects are completed to explicit time scales, cost and quality standards. All training packages and all major events from 1993 onwards are evaluated using specially designed questionnaires.

The program is financed in terms of a phased reduction in central funding, which makes explicit the need to build expertise delivery infrastructures at a local level, so the need for central development work will reduce. The policy also acknowledges that given the rapid pace of change for IM&T and the new skills needed, a residual level of activity at a central level will be required for the foreseeable future. Since 1989 the program has been funded to the level of approximately £4.5 million per annum, with expenditure in the 1993/94 year of approximately £4 million falling to £1 million in 1996/97.

The work of the IM&T training program is organised into five major program areas as follows:

- Training and awareness to support the IM&T Strategy.
- Program for managers.
- Education and training for doctors, nurses and professionals allied to medicine.
- IM&T specialist staff.
- Training infrastructure.

Each of the five parts are described briefly below.

Training and awareness to support the IM&T strategy

The aim of the IM&T Strategy is to help clinicians and managers make better use of information to achieve better patient care. The overriding principle is that management information must be derived from operational systems. The strategy includes major activities such as introducing a new NHS number for every person in the country, setting up a new IT network linking the whole of the NHS, introducing common clinical terminology and data standards, and providing guidance on data security and confidentiality.

As part of the training program it is necessary to:

- identify the implications and requirements for training, and also organisational development
- develop and disseminate materials to raise awareness of the IM&T strategy for all NHS staff - materials include videos, briefing packs, and overview guides
- for each major component of the IM&T strategy to 1) design specific awareness training materials; 2) produce good practice guidance in planning and implementing; 3) work with software suppliers to ensure that hands-on technical training manuals that they produce are of good quality and meet current standards of practice
- produce a handbook which details all training that is or will be available to support the IM&T strategy.

Managers program

The program consists of high profile briefing events for chief executives, general managers and non-executive directors. These provide an opportunity for the participants to hear about the latest developments in, and benefits of IM&T.

The program also consists of *Focussed learning sets*. These are a form of action learning aimed at top management teams. They have the opportunity to work on problems they have identified, experiment with solutions, evaluate progress and adopt new approaches. Typically, the management team might decide to devise an information strategy in support of the organisation's business plan. However, experience has shown that existing business plans are not usually robust enough for use as a basis for determining information requirements. As a result, much work is being done in management teams to help strengthen or refocus their business plan.

Also, as part of the program for managers, 'corporate strategy workshops' have taken place. They provide an alternative to the focus learning set approach, and enable top management teams to address information and IT issues in a more intensive and structured way.

The managers program is supported by a series of computer assisted learning packages. These include LEARN-IT (for the mental health and learning disability sector), and Spreadsheets for Managers. These packages develop managers' skills in information management, resource use, decision making, and planning. They can be used as stand alone packages by individuals, or delivered to groups of about ten managers by local trainers.

Education for training for doctors, nurses and professionals allied to medicine

The aim of the program is to ensure that IM&T is integrated into the education curriculum for doctors, nurses and professionals allied to medicine and becomes an integral part of their professional training.

IM&T specialist staff

There are approximately 6000 IM&T specialists in the NHS and two major initiatives have been taken as part of the IM&T training program.

First is the development of a *Statement of recognition* for IM&T specialists. This is a new professional qualification which has been developed by the NHS in conjunction with professional associations and educational establishments. There is a new professional association - ASSIST - which will take an increasing responsibility for awarding the *Statement of recognition*. (Le Maistre, 1994).

The second initiative is the *Code of practice* for IM&T specialists.

Training infrastructure

In order to ensure that the guidance, training materials and packages that are developed centrally reach the people they are aimed at, much effort has been given to the development of local infrastructures for training. This has taken place in three ways: first by setting up and supporting a network of IM&T training coordinators - currently one per regional health authority. Second by funding (on 50/50 basis) a wide variety of IM&T centres, usually based in local hospitals, and there are over two hundred centres now in operation. Third by producing and disseminating a range of guidance and support materials for trainers at the local level. These packages include:

- IM&T training resource pack
- a blueprint for setting up an IM&T learning centre
- case studies of a wide variety of local training activities
- directories of training available from commercial suppliers and the educational sector.

Overview

The IM&T Training Program for the NHS is centrally funded, directed and evaluated. No individual health authority or department (or indeed, university) could fund or operate such a wide ranging and extensive program. However, the emphasis has always been upon the eventual local responsibility for training.

The central program has been successful in stimulating, guiding and supporting training at the local level. It has done this by way of:

- identifying the key target groups for training
- helping to define training needs
- developing and designing training materials, courses, computer assisted learning packages and good practice guides, particularly where central development can achieve economies of scale
- building the training infrastructures at local level by part funding a wide range of activities, including local IM&T learning centres
- identifying examples of good and innovative training practice (not just in the health services), documenting the experience in the form of case studies and making it available throughout the NHS with the aim to spread good practice, and also to avoid wasteful duplications of effort
- providing information and advice, by way of directories and a computerised database, on the large number of training courses available from suppliers in the commercial and educational sectors
- supporting curriculum development in universities to meet the longer term IM&T training needs of the health services in IM&T

The IM&T Training Program began in 1986. At the time few people could have predicted that eight years later the total expenditure of approximately $50 million, with a further $10 million allocated for the 1994-1997 period, would be, forthcoming. The success has been due in large measure to the development of a viable strategy in the first instance. In the early years many said that a strategy without finance to implement it was useless: all agreed. The other cry that we hear so often 'we don't need a strategy, give us the money and we'll get on with it' would not have produced such an extensive and systematic program. The finance would have been dissipated and spread thinly across a large NHS: also it is inconceivable that a central government body would provide $10 million per annum in the absence of an agreed and documented program!

Many of the issues covered by the IM&T Training Program deal with generic issues; and those that do not could relatively easily be modified, at a fraction of the cost of the original development, to meet Australian needs. All the products of the IM&T Training Program can be made available to anyone (or any group) in Australia, at the normal selling price to the NHS. The selling price in no way reflects the development costs! For example, LEARNIT cost over $400,000 to develop and is sold, as a set of floppy disks, plus guidance and materials for trainers and trainees, for $90.

The delivery of training in the future will be an interactional activity, capitalising upon economics of scale, high quality training materials, and multimedia delivery of training through open and distance learning modes. Already the delivery of IM&T training and education for health services is a multifaceted activity, involving many suppliers both within and outside the health services (Brittain and Abbott, 1993; Brittain and Maggs, 1993).

The future?

The full impact of health informatics is only just beginning to be realised world-wide. The fact that so many activities in medicine and all forms of healthcare are extremely information intensive makes the implementation of information technology and communication essential in today's health services. A new generation of information systems specifically designed for

use in healthcare will be implemented during the next few years, facilitating increased efficiency and reducing costs of healthcare generally. The development and implementation of international standards for data exchange and definition, coding of medical terminology, and effective electronic networking will enhance global cooperation and sharing of expertise. Equally, the application of performance indicators for healthcare services will ensure the cost-effectiveness and consumer satisfaction now demanded by healthcare users and providers. These factors, together with new university courses in healthcare informatics offered world-wide, will guarantee the emergence of a critical mass of well-educated and experienced health informatics personnel over the next decade. These many and diverse developments will transform the delivery of healthcare at all levels, benefiting health consumers and leading to improve health for all.

References

British Journal Of Healthcare Computing 1994. Empire Of The Future : Déjà Vu. British Journal Of Healthcare Computing, 1994, 11(4), 12.

Brittain, J.M. And Abbott, W. Eds. 1993. Information Management And Technology Training And Education In Healthcare. London, England; Taylor Graham: 1993.

Brittain, J.M. And Maggs, J. 1993. Ships In The Night : Training And Education. British Journal Of Healthcare Computing And Information Management, 1993, 10(7), 20 - 22.

Gann, R. 1991. Consumer Health Information: The Growth Of An Information Specialism. Journal Of Documentation. 1991, 47(3), 284-308.

Greenes, R.A. And Shortliffe, E.H. 1990. Medical Informatics. Journal Of The American Medical Association. 1990, 263(8), 1114-1120.

Lawson, M.J. And Collopy, P.C. 1993. Australian Council On Healthcare Standards Care Evaluation Program. In Hovenga, J.S. And Whymark, G.K. (Eds.) Hic '93 :Proceedings Of The Inaugural National Health Informatics Conference, Brisbane, 2-3 August 1993. Health Informatics Society Of Australia, Melbourne, 1993.

Le Maistre, J. News: Grand Nationally. British Journal Of Healthcare Computing And Information Management, 1994, 11(6), 9.

Macdougall, J. And Brittain, J.M. 1992. Use Of Information In The Nhs. London, England: British Library Board, 1992. 70p. (Library And Information Research Report 92). Isbn 0 7123 3275 8.

Macdougall, J. And Brittain, J.M. Healthcare Informatics. In Williams, M (Ed.) Annual Review Of Information Science And Technology, 1994 (In Press)

Macintyre, N. And Popper, K. 1983. The Critical Attitude In Medicine; The Need For A New Ethic. British Medical Journal, 1983, 1919-1923.

Pugsley, W. Ready For Edi? British Journal Of Healthcare Computing And Information Management, 1994, 11(6), 26 - 27.

United Kingdom National Health Service Training Authority And Information Management Group. 1989. Imt Strategy For Training And Staff Development. London, National Health Service, Training Authority, 1989.

Walker, D. 1993. Editorial: To Succeed, Computers Need To Be “Irresistible”. Informatics In Healthcare Australia. 1993, 2(5), 5-6.

Warden, J. 1993. The Wessex Fiasco. British Medical Journal. 1993, 306, 1292.