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# Information systems for mental health care: uses, shapes and rhythms

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Mental health care is a complex undertaking. It involves care providers of many disciplines, administrative support staff, managers, funding bodies and of course carers and patients themselves. Each group has their own information needs; each, however, is primarily concerned with other things, and the importance of minimising the effort involved in amassing and accessing dependably accurate information cannot be stressed too highly.

Information systems have developed in a range of ways in the NHS. Wood *et al* (1992) identified 21 systems in the UK which met the criterion of facilitating clinical management. Half operated on stand alone micro computers. About a third were multi-user systems, designed to play a major role in clinical management. Forty-three operational implementations of these systems were active.

This paper surveys the information needs of various concerned parties, and considers the sources of information and the factors in the design of information system which make for greater or lesser usefulness.

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## Information users

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### *Health care professionals*

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The most obvious information needs are those of staff concerned with direct patient care. Probably the principal requirement for these staff is to have access to simple, accurate, up-to-date summaries of a patient's condition and care plan. Such summaries have a wide relevance. Communication

between members of specialist services or between specialist and primary care teams is essential for effective coordination of care. The sending of simple case summaries (Rohde & Taylor, 1992) is by far the simplest and preferred way to ensure appropriate communication (Wattis & Protheroe, 1990).

Patients with increasing degrees of chronic disability are being cared for in dispersed community settings. It is essential there should be effective machinery to ensure that someone is responsible for identifying and dealing with emerging problems and that patients do not get lost to follow up if they cease to attend for treatment, as this may signal relapse. This requires clarity of lines of responsibility and good information. Within the NHS the concept of the key worker has been developed. This is a senior nurse, social worker or doctor delegated to ensure the patient's care programme is delivered. Key workers need to be clear about which patients are in their care and the times and contexts in which they plan to see them. Written lists could be seen as a basic operational necessity for any key worker, though in practice memory and idiosyncratic notes in diaries have frequently substituted. For new staff or locums covering sickness absence, well regulated services need a more formalised approach to this requirement.

In addition to the specific area of key worker responsibility it is helpful to professional staff to have a written overview of their whole caseload and their expected involvement with them. These are of relevance for personal stocktaking or supervision sessions.

Taylor (1992) has described two more innovative approaches to the use of computerised information. Time series graphs of clinical state measurements

alongside therapeutic and other events can help elucidate which of the many elements in a patient's care are related significantly to wellbeing. Expert systems can help standardise drug treatment regimes, ensuring that the smallest doses and simplest administration routine compatible with the individuals personal best level of functioning can be maintained.

An example of the use of computerised information for clinical audit has been described by Bloor (1993).

The involvement of clinicians with computerised systems depends on systems containing reliable and clinically rich information. Unless the system is a central part of clinical activity, information derived from it will be of limited reliability and thus limited value. The significance of this is that if the clinical side of an information system is not right, all the other information users described below are 'flying blind'.

### *Local managers*

The management of health care within a provider unit occurs at many levels, from team manager to chief executive. Each faces similar tasks. Limited resources must be marshalled to address presenting tasks and the quality and outcome of work must be monitored. Resources of all sorts if adequate are unlikely to be generous. Thus efficiency is essential.

The first task is to identify the distribution of workload and to ensure that the allocation of clinical resources mirrors it as closely as possible. This requires quantitative information about the distribution of cases including detail about their nature and severity. On this basis it is possible to examine whether staff are being assigned realistic numbers of patients of clinical severity appropriate to their skill. This type of monitoring is needed to ensure that staff are not overloaded, making

effective care impossible and carrying the risk of burnout, and that patients are assigned to appropriately skilled staff.

The second task is to monitor outcomes. The simplest approach is the measurement of administrative outcomes, for example, relapse and readmission rates in patients discharged from hospital. Unnecessary relapses are not only clinically very undesirable, they also constitute a major source of inefficiency. A more fundamental outcome issue is the question of whether the psychiatric and social problems which lead patients to make use of mental health services are ameliorated. Assessment of this requires more sophisticated measures of the state of patients problems.

### *Local administrators*

The extent and complexity of the administrative work of running health care is often much underrated. The tasks of making and revising appointments, arranging admissions to hospital, producing and despatching correspondence with relevant agencies and a host of related tasks consume considerable administrative time. The problems of filing and locating clinical case notes are an essential component of this. Most of this work is information related.

### *Funders*

All health care has to be paid for. In the NHS at present, this task is delegated to health authorities and some GPs acting as purchasers. Their task is to assess the health care needs of the population or the list of patients for which they are responsible and, on the basis of the budget received from central government, to purchase appropriate health care. A key part of this task is to evaluate the effectiveness and efficiency of current services and to revise future purchasing decisions accordingly.

A number of the concerns of purchaser authorities are similar to those of managers. Are treatment rates similar between sectors across the district and how do they compare with those of comparable other districts? Where disparities are evident, can they be explained in terms of need or do they reflect varying accessibility of services? Do the clinical outcomes achieved by the services purchased match those achieved in comparable services? Is there evidence that minority groups within the population receive appropriate services? All of these questions depend on detailed activity data.

#### Box 1. Uses of information systems

##### Clinical uses

- Communication
- Caseload monitoring
- Safety net
- Audit

##### Other uses

- Targeting resources
- Monitoring outcomes
- Forecasting future needs
- Information for patients
- Assisting clerical tasks

In addition to these concerns, purchasers need to look some years to the future. Changes in the size and composition of the group in the population needing care depend on both demography and patterns of morbidity. Shifts in population size, age structure and ethnic composition can often be predicted years ahead. However it is only possible to identify the health care implications from detailed age/sex/ethnic group-specific treatment rates. Changing morbidity patterns may reflect secular changes in disease rates or the influence of changing treatment patterns. For example, the decision to stop placing new long-term patients in a large mental hospital will be associated with the steady development over a number of decades of a long-term chronically ill group of patients who have never been institutionalised. This type of influence introduces cohort effects into the patient group the implications of which can also be predicted, if sufficiently detailed information is available.

The speed with which health service configurations can be altered is in most cases comparatively slow. Staff recruitment may be straightforward, but if the requirement is for staff with special languages or relatively new clinical skills it may require active work. New facilities may be needed, budgets may require to be restructured. All these take time. Thus planning has to be a relatively long-term business and it is highly information dependent.

### *Patients and carers*

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Patients and carers have information needs. The simplest of these is to be clear about the care planned for them. In simple cases this may just be details of their next appointment. For patients with more complex care plans, simple but full statements of all planned care elements may help. At the very least, details of who they can contact if they feel things are going wrong should be supplied. A range of approaches has been tried to produce helpful information for patients; computerised clinical information systems can easily be adapted to this purpose.

### *Central government*

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Central government has a role in monitoring the state of the public health and the extent to which health services are addressing health problems. Population based surveys such as the recent OPCS national psychiatric morbidity survey (Meltzer *et al.*, 1994) are the most theoretically satisfactory approach. However their complexity and expense

mean that the alternative, monitoring mental health services activity, is likely always to be a key source.

In the UK, because of the institution of the NHS, the government has two additional functions requiring information about health care. The first is that of managing the NHS. The Secretary of State requires information to monitor the progress of policy initiatives set out by government. The second is the duty to answer to Parliament for the use of public money (about £3 bn per year is currently spent on mental health services). This answerability is served both generally, in the production of annual reports and through the Audit Commission's district inspection work, and particularly, in the answering of Parliamentary questions.

There are two major mental health policy initiatives requiring monitoring at present. The principles of mental health care delivery style were set out in Chapter 7 of the White Paper *Caring for People* (Secretaries of State, 1989):

"Since 1975 it has been the policy of successive Governments to encourage the development of locally based health and social services, working with the voluntary and private sectors, to meet the needs of people of all ages suffering from mental illness, including those with dementia." (para 7.2)

Subsequent paragraphs set out the main components of a proper locally based service, including provision for children and adolescents, services for the assessment of treatment of adults who require admission to hospital including those who require long-term hospital treatment, sufficient places in hospital and local authority hostels, sheltered housing and other supported lodgings for adults needing residential care outside hospital, and effectively coordinated arrangements between health and social services authorities, primary health care teams and voluntary agencies to provide treatment and support (including respite and day care) to people disabled by mental illness living in the community.

The Care Programme Approach (Department of Health, 1989) sets out the coordinating mechanism. All patients discharged from a psychiatric hospital or accepted for treatment by the specialist mental health services should have four key elements, namely assessment of their health and social care needs, a care programme designed to meet those needs, a key worker appointed to co-ordinate the care programme and periodic re-assessment.

The second major policy direction is in *The Health of the Nation* (Secretary of State, 1992). This set a series of targets for improvement of health in the population in a range of clinical areas. For mental health, the first target was "to improve significantly the health and social functioning of mentally ill people".

Across the whole of the White paper, the focus was on measurable quantified targets with dates for their achievement. A commitment to devise a strategy for permitting the measurement of this target was included.

The task of establishing the progress of these policy initiatives is fairly clear and would depend on detailed information about activity in the NHS. Specifically the Department would need to know how many mentally ill people are in touch with the services, the problems for which they are receiving care, what care they are receiving and with what result. The costs incurred would be an important additional dimension.

## Principles

There are a number of principles, common to many areas of information use, which determine whether information systems will address such complexity and diversity of requirement satisfactorily.

### Proximity

Information must be collected in operational settings. The primary information source should be the workers at the 'coal face'. They have the greatest possible understanding of the nature of the activity documented and are thus best placed to record it.

### Simplicity

The process by which information is recorded must be quick and easy. 'Coal face' workers are busy people and will not use systems which are not fast and simple. At its core, any satisfactory information system will be computer based. However, the extent to which the doctors, nurses and psychologists deal directly with the computer or through a paper and clerical interface may vary. The range of possibilities will be considered later.

#### Box 2. Attributes of good clinical information systems

Information recorded by care staff

Easy to use

Information readily accessible when needed

Secure against data loss and unauthorised access

System fits the pattern of clinical care

Staff adequately trained and supported

### Accessibility

Similarly, information collected should be easily accessible to front line clinical staff. The range of potential uses for information set out above is wide. Information can provide significant support to clinical staff, but only if it can be accessed easily and simply.

### Security

Ease of access brings the danger of inappropriate and unauthorised access. Particularly tight security protocols are required for the sensitive information recorded in psychiatric settings. In addition to preventing unauthorised access, security to prevent large scale information loss in the event of computer system failures are essential.

### Congruity

Information systems which reflect the pattern of clinical activity undertaken will more easily satisfy the criteria set out above. The current information recording framework for mental health care in the NHS is set out in the NHS Data Manual (Information Management Group, 1994). It includes extensive detail about admissions to and discharges from hospital, sketchy detail about out-patients, and simple counts of the work of community nurses, psychologists and occupational therapists. This offers a perspective which roughly describes psychiatry in the period following the 1930 Mental Treatment Act. Contemporary mental health care is predominantly concerned with the care of patients outside hospital by collaboration of a range of specialist agencies, acting in a multidisciplinary way, often for protracted periods. If any single activity is to provide a defining focus for data collection in this context it will be the point at which the activities of the various involved professionals is coordinated, namely the care review. This is discussed further below.

### Training

The development of any new administrative system requires extensive staff training. Any staff who will be required to use any part of the system, be it a computer or a new form, require training. This is an onerous task but necessary to success.

## Information content

Historically, information systems in the UK National Health Service have been predominantly

used for administrative purposes. Their content reflects this. A certain amount of sociodemographic information such as address, date of birth and marital status have been recorded. The systems have documented administrative detail of services provided such as dates of admission and discharge from hospital and, to a less detailed extent, number of attendances at out-patient clinics.

Clinical information included to date has been extremely sketchy. Diagnosis is recorded only about admissions. Frequently a clerk will obtain the information from clinical case notes. Clinical procedures are documented, although this is of major relevance only in highly procedure based clinical specialities such as surgery. Within mental health care the range of procedures for which codings exist is extremely narrow.

To allow data to be helpful to clinicians a much richer picture of the range and severity of a patients clinical and social problems is required. In addition a much more detailed perspective of the range of interventions offered including those supplied by social services departments and local voluntary agencies is needed.

Any data recorded can only be useful beyond the immediate clinical setting if it is recorded in a standardised way. Measurement of a patients clinical state exemplifies this. The first Health of the Nation mental health target (cited above) requires that national data about improvements in clinical condition be developed. The Department of Health has commissioned the development of a simple standard scoring mechanism for the health and social functioning of mentally ill people to permit this. The first scale in this work, HoNOS, has nearly completed its field trials and should be available for use from the autumn (Curtis & Beevor, 1995). This will permit a standardised recording of the clinical problems.

### *When should information be recorded?*

The issue of the defining point for information recording was discussed above. The care review is the most logical defining point for health care delivery, being as appropriate to in-patient as to out-patient phases of a patient's care. This recording point has two other major advantages. First, care reviews are undertaken when it is operationally necessary to review the patient's health and social functioning in order to plan the next phase of care. At this point the facts required to complete a HoNOS rating should all be available, making the task relatively quick and simple. Second, the care planning task undertaken at this

#### Box 3. Health of the Nation Outcome Scale (HoNOS)

##### Scale items

1. Overactive aggressive disruptive behaviour
2. Non accidental self injury
3. Problem-drinking or drug-taking
4. Cognitive problems
5. Physical illness or disability problems
6. Problems with hallucinations / delusions
7. Problems with depressed mood
8. Other mental or behavioural problems (specify)
9. Problems with relationships
10. Problems with activities of daily living
11. Problems with living conditions
12. Problems with occupation / activities

##### Severity points – each item is rated as:

- 0 – No problem
- 1 – Minor problem requiring no action
- 2 – Mild problem but definitely present
- 3 – Moderately severe problem
- 4 – Severe to very severe problem
- Rate 9 if not known

point should necessitate a stocktake of all aspects of care the patient is receiving, from whatever source. Thus this is probably the only realistic point at which information about care delivered outside the NHS could be collated.

## System structures

One of the major problems in designing computer systems to provide information support to mental health services is the geographically dispersed nature of the services. Computer systems to support pharmacy or intensive care are comparatively simple since all activities happen at a single geographic base. Software for computers to run on desktop consoles can relatively easily be designed to be very user-friendly. Staff are seldom alone in these settings, so cascade training approaches and peer support in using new systems are feasible. However, for the psychiatrist or community psychiatric nurse much of a day may be spent working alone, home visiting or in a range of different locations, such as GPs surgeries, unlikely to be linked to home base networks. The

practicalities of the relationship between staff members and computers need to be addressed carefully.

In general, some combination of paper and computer is arrived at. The two extreme ends of the spectrum could be defined as paper in, paper out (PIPO) or computer in, computer out (CICO). The work undertaken by staff can roughly be divided into care reviews (which set a care plan) and care events (patients' contacts or other activities which constitute the execution of care plans).

The PIPO approach is cheapest on computing facilities but most expensive on administration. Professional staff fill in forms which are sent to a central coding base where their content is typed into a computer. Review data can relatively effectively be captured. As long as the coding process happens quickly (ideally a one day turnaround) care event data can also be captured reasonably efficiently. Daily care event schedules are generated from the review data for each staff member. These are confirmed or amended and returned to the coding centre. Standardised output forms are generated and filed in patients case notes, sent to GPs, etc. Further requests for information have to be sent to the computer centre where they are handled appropriately. This approach is unimaginative but robust. Computerisation costs are low but administrative costs significant. The administration needs to be very tightly organised if the system is to be helpful rather than burdensome. There is an administrative filter between clinicians and computer at which inevitably coding errors may be introduced.

The opposite end of the spectrum is the CICO approach. This is extremely expensive as each staff member should have ready access to a computer console for data entry and retrieval at all times for both review and care event recording. Systems of this type often distinguish these two functions less effectively. For peripatetic staff, palmtop or laptop computers are required. The programming, systems security, hardware support and cost implications of this type of approach are substantial. Clerical staff costs and errors are minimised. Ideally clinical staff have the widest possible access to data relating to their patients – practically, this depends on their ability to use the systems. Staff training needs are high, since everyone needs to handle the computers. From a practical point of view many staff are unwilling to go out around some parts of their catchment area if it is known that they are carrying computers.

The PICO approach offers a simple compromise. Staff complete forms at the end of each clinical care review detailing the findings of the review. These are transcribed into the computer by clerical staff.

Care event data are probably captured in the same way as in a PIPO system. However computers are available to clinical staff at working bases. These allow staff easy access to any information they are authorised to see. The requirement for hardware purchasing is more modest than for systems of the CICO type. Staff training requirements are less and on a better footing since staff are only required to learn how to access data, as opposed to how they can work the computer.

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## Conclusion

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The practice of clinical psychiatry in an information-rich environment may be substantially enhanced. In districts where such systems have been introduced effectively, doctors report that their practice is modified. Systems necessitate greater clarity about the detail of the care plans and the allocation of responsibility. These changes could be considered as benign. However the practical complexities of setting up and maintaining information systems which will provide this level of functional support are considerable. Lack of attention to operational arrangements or training, or a lack of commitment of senior management and clinicians may turn opportunity into liability.

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