The SafetyNet project*

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SafetyNet is a computerised, networked patient care system currently under development in the South Camden sector of Bloomsbury Health Authority. The project is primarily targeted at the clinical monitoring of people suffering from schizophrenia and the system incorporates measures which can provide a basis for quality assurance of care and a clinically driven approach to audit. SafetyNet is being designed to help keep track of individual sufferers, chart their needs as they change over time, prompt the services to action and knit together the responses needed from different agencies. It is a modular system which can be adapted to the needs of people with different kinds of mental illness and to different community populations.

Who will be registered with SafetyNet?

Initially SafetyNet is directed at people with schizophrenia who live in the area of North London which is jointly served by Bloomsbury Health Authority and the Borough of Camden. Later it is hoped to extend the system to the whole of the area served by the Bloomsbury Health Authority. Detailed surveys have already been conducted on the initial target population as part of the groundwork for the Project. Over 1,100 people who suffer from schizophrenia have been identified in these surveys conducted in South Camden (Pantelis, Taylor & Campbell, 1988) and more recently in North Camden by Dr Carol Harvey. They were identified through their being known on a single census day, to health services, social services, the probation service and to general practitioners. The total number is very high in comparison with the national average and is particularly so in South Camden.

This area of London is one of four health districts which at present relies on Friern Hospital for many of its in-patient services for people with schizophrenia. The hospital, which still has over 700 beds for the mentally ill and 1,500 admissions a year, is currently scheduled to close in 1993. The dispersal of its services to the local community makes the need for SafetyNet particularly urgent.

*Based on a talk given at the Friern Hospital Computers in Psychiatry Study Day. Chairman Dr Patrick Campbell.

What role do computers pay?

All information on SafetyNet is based around individual people suffering from schizophrenia. Different mental health workers will provide key clinical, personal and administrative information at each contact which will then be input to the central SafetyNet computer. Because each contact is recorded (whether an individual attends or not) the system will alert all staff to individuals who have missed appointments or failed to attend medication clinics. Even when attempts to re-establish contact cannot quickly be successful, SafetyNet will keep the individuals in mind and see to it that their needs are followed up and their existence is not forgotten.

The SafetyNet system actively archives all data so that an immediately accessible longitudinal record is built up which follows each individual's progress over the years.

Computer hardware

The SafetyNet computer is an IBM compatible 386 microcomputer operating as a multi-user system running 386 Xenix (Unix 5) and currently allowing up to 16 concurrent users. The system is fully portable under Unix and Aix and can therefore be run on larger multi-user computers. It is proposed that the system be accessible from peripheral computers based in hospitals and health centres across the district – bringing together and helping to coordinate the input from different health workers such as doctors, psychologist, nursing services and occupational therapists.

Computer software

The system's software program is being written by means of Accell (Unify Corporation), a powerful fourth generation language, and will be very 'user-friendly'. Other languages were considered; the prime considerations were that the language should be relatively inexpensive, provide code that was easily understandable for future developers, incorporate a standard structured query language for easy interrogation of the database, have a facility for reconfiguration of the database (adding new items of data) without loss of previously stored data, use unix file permissions for powerful security features, and include a user-friendly interface such as windowing and a screen paint facility for drawing forms.

Data entry

Two different approaches to data entry are under development within SafetyNet. Data may be entered directly at a

peripheral computer via the keyboard or through the use of specially devised bar-coded forms. These forms can be read by a portable light pen (similar to those used by supermarket stores) which has memory to store information and can be carried in a pocket like a large fountain pen. This can then download data to the central computer permitting workers to store and input a day or more assessments (carried out in the community by, for example, a community psychiatric nurse or by busy psychiatrists working in out-patient departments) without having ready access to a computer or terminal keyboard.

The system also uses coded pickups whereby a user coming to a particular data item (field) can display a list of possible options for that data item and pick one (or more) from that list by one key press. The code for that item is then stored and the selected code and its associated text (the rubric) is displayed on screen. This not only speeds up data entry but helps validate information collection. Throughout SafetyNet we have opted for simple one or two digit numeric codes (with the exception of ICD-9 codes). Although we recognise that the Read coding system is gaining ground as a standard, it is still not firmly established in psychiatry. It was also decided that numeric codes were simpler to bar code in that all the codes can be produced onto one form with barcodes ranging from 0 to 9. We also selected numeric data because they take up little storage space and can be linked to SPSS (Statistical Package for Social Scientists) to produce graphical output.

Virtually all data items are associated with maintenance options whereby the codes and associated descriptors can be simply modified without programming thus allowing a high degree of customisation to individual district's requirements. To give one example, a list of options relating to the data item 'type of housing' can easily be modified to incorporate items that may be of specific relevance to a particular service.

Operational challenges

Many registers simply do not get into operation because of the amount of time required to input meaningful clinical data. Some systems reduce the dataset until it becomes purely an administrative one, while others attempt to collect a standard dataset for all mental health problems and as a result often end up with a 'diluted' clinical dataset which has no particular relevance for the management of any one patient group.

Generally speaking, the more focused the dataset and the more targeted the population, the more motivated a team is likely to be to collect and input information. The undertaking of an initial survey may also help to make a system operational in that it can be primed for use with relevant data. The dataset from the South Camden survey was developed in conjunction with other disciplines, another factor which may help to make the system operational. The problem of data entry is, however, the major stumbling block in successfully running a register. Although one approach to the problem is to employ data entry clerks to input detailed datasets collected by health workers, this solution is costly and may result in a backlog of forms which need to be processed. SafetyNet aims to reduce data input time by as far as possible reducing the amount of free text within the system. Unix systems are complex and any networked system will benefit from an administrator with Unix expertise. In due course a detailed evaluation of the system will monitor to what extent it has been successfully made operational.

Quality assurance measures

SafetyNet aims to record a minimum dataset at each contact with the mental health services. This dataset includes basic contact information, general action taken as well as next appointment details; in this manner a diary is built up on the system for each health worker. In addition the system incorporates patient based Körner information as well as ratings based on the Social Behaviour (Wykes *et al*, 1986) and Manchester (Krawiecka *et al*, 1977) mental state rating schedules, thus allowing detailed information to be collected either regularly or at key reviews and for individual progress to be followed over time, and related to dated interventions. This will provide a basis for quality assurance and clinically driven audit. Screen prompts giving information on the meaning of each rating will help to improve inter-rater reliability.

These outcome measures will help ensure that the allocation of services between different individuals is responsive to severity of need. It will enable a centralised review of service distribution and a constant updating of information about where money is being spent and what still needs to be done. In this way, even where needs cannot be met, either because the resources are lacking or because individuals cannot, for the time being, accept what is offered, the system will keep these deficiencies in the forefront of awareness.

How can SafetyNet help to prevent relapse?

All data on SafetyNet are time- and date-stamped and therefore all individuals who have not been reviewed by the mental health services over a given time period can be drawn from the system and attempts made to ensure their needs are, so far as possible, being met.

The system generates reports, both printed and on the computer screen, drawing up relevant current information on, for example, past psychiatric history, active problems, services engaged and management plans. This information can then be forwarded as a printed report to general practitioners or appropriate mental health workers.

Will SafetyNet adequately protect confidentiality?

The sensitive data collected by SafetyNet must be absolutely protected against non-authorised access. Accell uses Unix file permissions and offers very powerful security, allowing developers to restrict access to files, records or even individual items of data. Only professional mental health staff will have access to the system and this will be tightly controlled through passwords which will be changed regularly. Another key security measure is incorporated in the computer operating system which maintains a detailed daily log of who used the system and when.

SafetyNet is also being written under the database programme DBase IV (Ashton Tate) on computers using the MSDos operating system. This package offers very similar features to those already described and can be used as a stand alone package or on a small local area network around a 80386 IBM compatible computer (up to five users). This version will be made freely available to interested health workers. Users wishing to upgrade to the unix version will be able to transfer their data as the systems use comparable codings and datasets. Anyone interested in a demonstration of the system should contact Dr Jason Taylor at 309 Gray's Inn Road, London WC1X 8QF.

References

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Health Care Buzz Phrase Generator

Think of a random three-digit number – or you could generate it on your computer – and take the corresponding words from each of the three columns. When put together the three words form an expression which will not have any particular meaning, but it will provide the user with an authoritative, progressive and incisive ring to his debate.

0 Coordinated	0 Management	0 Potential
1 Integrated	1 Organisational	1 Options
2 Systematised	2 Logistical	2 Flexibility
3 Specialised	3 Monitored	3 Facility
4 Concerted	4 Incremental	4 Capability
5 Synchronised	5 Policy	5 Programming
6 Compatible	6 Resource	6 Philosophy
7 Functional	7 Control	7 Concept
8 Comprehensive	8 Review	8 Strategy
9 Optional	9 Proportional	9 Format

Thus 100 gives "integrated management potential" or 766 gives "functional resource philosophy".

Even cursory reference to any health planning or policy document will show just how much time would have been saved by the authors had they used the instrument.

R. G. S. PLATTS
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