

INFORMATION TECHNOLOGY

AND

THE HOSPITAL NURSE

By

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INTRODUCTION

In the past, information technology in the acute health services has been limited to such areas as patient administration, personnel and finance systems, however, a number of developments now suggest that the nursing profession will take a pivotal role in future computerised hospital clinical and management systems. Most importantly nurses attitudes are changing. Only five years ago, Scholes (1983) gave a depressing picture of nurses being slow to grasp the potential of computers for the profession but now more and more commentators, such as Reed (1987), are talking of information technology being poised to revolutionise central aspects of nursing care.

Undoubtedly there have been some in the profession with enough foresight to realise a number of years ago the potential for computers in assisting nurses with various aspects of their role. In 1970 the DHSS accepted a proposal to computerise nursing records as part of the Exeter Community Health Services computer project. A nursing orders system which encompassed admissions, discharges and medical tests was eventually in successful use on fourteen wards. However, in the early 1980's funding was not renewed and the project had to be disbanded. The problem of lack of resources is familiar to some of the other projects outlined in this report.

The important part nurses will play in hospital information systems is being realised by information scientists themselves. Windsor (1984) has pointed out that the comprehensive policy for NHS computing being constructed involves data collection at the lowest level from those in direct patient contact. Similarly,

Sweeney (1986) has stressed the importance of ensuring the full involvement of nurses who become the hands on users of most hospital systems. Perhaps, the major factor in influencing nurses to be involved in information technology is the Department of Health's Resource Management Initiative (RMI) (DHSS 1986).

It was in 1979 that the Royal Commission on the NHS (HMSO 1979) recommended the need to improve management information and financial control for effective healthcare management. Four years later, the so-called Griffith's Report (NHS 1983) called for the setting up of management budgeting sites. The resource management initiative developed from the lessons learnt at these sites. Basically the aim of the RMI is to enable the NHS "to give a better service to its patients, by helping clinicians and other managers to make better informed judgements about how the resources they control can be used to the maximum effect". As well as attempting to identify areas of waste and inefficiency and to highlight those areas requiring more resources the aim is to produce alternative policy options. A central principle of the initiative is to involve clinicians in both making management decisions and being responsible for the resources they use. With nursing representing the largest item of cost in patient care it is inevitable that the profession is taking a central role in the experiments. In order to make better judgements in the use of resources more comprehensive information is required. Understandably, the use of computers in producing that information is an important aspect of the strategy. Until recently the RMI has been restricted to six sites although in March 1989 an announcement was made extending the philosophy to fifty more hospitals.

In general, therefore, hospital managers are being encouraged to develop and purchase clinical and management information systems. Although, some, such as Ijebor (1987), have suggested that health service managers' expectations are too high when producing strategy documents which call for computer systems that will 'deliver all things to all men', others, such as Catterall (1987), have stated that 'we clearly cannot wait for the development of integrated systems for our information requirements'. In the light that more hospitals will be installing systems it is important that both general and nurse managers have information available concerning the merits and functions of each product in order to make the correct decision for their own specific needs. It has already been suggested that the NHS will waste £280 million on information technology over the next few years due to incorrect decisions (White 1987).

At present, information on the different systems is far from clear. This is so for a number of reasons. Some of the systems are still under development and their designers have not publicised fully their functions. Commercial companies can have a tendency to exaggerate the uses of their products. In-house developed systems from various sources in the NHS are not advertised strongly. It is essential that health service managers have available comparative data on which to judge systems in order to make a correct choice. It is also important that service managers in the UK are aware of developments occurring in other countries. The best of the American systems are now being introduced into Britain but a review of the literature suggests that there are a number of centres in Europe which are developing computerised nursing systems. In building up a database of nursing systems it would seem sensible to include these also.

AIM

The aim of the project is to compile comparative data on all the available computerised nursing systems. In assessing the systems the following criteria will be used:-

A. User Requirements

- Care Planning
- Workload Measurement
- Skill Mix
- Nurse Tracking System
- Quality Assurance
- Costing
- Decision Support

B. User Acceptability

C. Feeder Systems

D. Planned Developments

E. System Costs

The above criteria represent a broad outline of the assessment of the systems. It is not intended to formulate a league table of the systems as each has different functions. As the study tour progressed it was realised that in the time available a complete picture of all the systems could not be drawn. With

some sites only being able to provide a half day visit any impression formed is by necessity a result of the discussions undertaken and the opinions of the individuals met. At most sites I was unable to sit down with the system and analyse it in detail. As a consequence, therefore, the report attached here is more subjective than I had wished yet I hope and I am sure that it does not include any major misrepresentations of any system.

SITES VISITED

My interest in the subject of information technology has arisen from my appointment as senior nurse in North Gwent where I was responsible for the implementation of a computerised ward management system. I was surprised at the amount of interest shown in our three ward pilot study. Visitors ranged from Chief Officers in Wales to parties from the resource management pilot sites in England. It became obvious that many senior nurses were unsure of what they were looking for in a system and were unsure of the options available to them. It was because of this that I applied to investigate all the systems available and under development. I have visited North Derbyshire HA which is using more extensively the system I was implementing in Gwent. Knowing that one of the resource management sites had chosen Exelcare I thought that I should visit the site, Weymouth District Hospital, which had been using the system the longest. Similarly the Pilgrim Hospital, Boston had been using criteria for care for a number of years and so I thought that would be a good site to visit.

A number of sites in the UK had received central funds to develop nursing systems and so they were obvious choices: Elizabeth Garrett Anderson Hospital, London, Llanelli Hospital, East Dyfed, Wales and Ninewells Hospital, Dundee, Scotland. In addition, the use of an American nurse management system was spreading and so I decided to visit Evesham General Hospital which was the first to use it in the UK.

At various conferences concerned with nursing and computers numerous papers had been presented by nurses from the University Hospital, Leiden, Holland and The

University Hospital, Leuven, Belgium and so they were obvious choices to visit. After various discussions with senior nurses in the UK and in Europe it became obvious that other countries had no projects of note, however, I was recommended to visit the University Hospital, Antwerp while I was in Belgium.

Academisch Ziekenhuis Leiden (University Hospital, Leiden, Holland)

The oldest university in Holland is situated in Leiden. Attached to this institution is the 900 bed university hospital (AZL). Between 1972 and 1976 NOBIN (Dutch Organisation for Information Policy) and the Ministry for Education and Science provided funding for the development of an integrated hospital information system at AZL. During that period, computerised systems developed by the project were also implemented at other hospitals. In 1976 it was decided to form a central development and support group for the hospital information system (BAZIS) which now has 130 WTE staff. In addition to the further development and maintenance of the HIS this group became responsible for support, co-ordination and standardisation. At present, 32 hospitals in Holland, which total 15000 beds or 25% of beds in the country, have some of the 70 application software packages available from BAZIS. At AZL itself there are 3000 users who have access to 700 terminals and a database of 800,000 patients. Computer applications consist of approximately 1.5% of the total hospital budget. HIS runs on Digital VAX machines and although originally written in Fortran now runs in Pascal.

An outline of HIS and BAZIS is attached (No. 1). To give a brief summary of the system: it provides a total inpatient, outpatient and waiting list administration system; a large amount of medical data is stored such as laboratory tests, diagnosis, operational, medication, results of ECGs and EEGs, radiological tests etc; stock control (e.g. pharmacy); bloodbank administration, payroll and personnel; budgeting, invoicing and DRGs; word

processing. Of particular interest to the nurses are a care planning system (discontinued at AZL due to lack of support of nursing staff), a patient classification system, a procedure 'manual' consisting of 1200 procedures, a student allocation programme, computer assisted learning for nurses and doctors and an electronic mail facility.

In the early eighties it was recognised that with the HIS mainly providing support for the functioning of the ancillary departments emphasis needed to be replaced on providing support for the clinical areas. It was suggested that an integrated nursing information system be developed and in March 1987 the VISY project was commenced. Its aim is to provide an 'effective means of information processing to support the planning, performance and documentation of nursing care activities and the evaluation and utilisation of results'. With the goal being to provide support for the process of nursing the main aim is to design individual care plans, register orders from doctors and other disciplines, collect details of vital signs and medication used together with information on communication with other disciplines. From the care plan of a patient it is hoped that the nursing workload will be measured. It is intended to collect the data in the place and at the time it occurs and so it is proposed to have bedside terminals. A 32 bed general medicine ward has been chosen as the pilot site and at the time of my visit the bedside terminals were being installed.

Specifically allocated to the project are 4 WTE staff (by 1989 the plan is to have 10 WTE) - two nurses and two computer experts. Three teams have been formed. A Steering Committee, composed of the directors of the relevant departments, is charged with providing the conditions for the success of the

project. A development team will develop the software and implement it on the pilot site. As well as data processing specialists, this team comprises of the two project nurses, a doctor, the head nurse of the general medicine unit and staff nurses from the ward. The purpose of the third group, the implementation team, which consists of representatives from nursing administration, informatics and general medicine, is to guide and evaluate the activities of the project members.

As part of the preparatory work or Analysis Phase it was thought necessary to obtain a picture of the nursing organisation on the pilot ward. This was felt to be important for two reasons. First of all, the present organisation could provide a framework on which to build a computer system and secondly the data collected would provide information for a pre- and post-implementation comparison. A work sampling study was undertaken to have a picture of what nurses were actually doing on the ward with the percentage of time spent in direct and indirect care. An impression of the patient population was obtained by using a patient classification scheme (the San-Joaquin system - which is also used in Antwerp and Leuven). A measurement of the quality of care provided was undertaken using a tool designed at the Technical University, Eindhoven and, finally, a study was completed on the data handling and communication lines which exist on the ward. An example from the latter study clearly indicates the large amount of repetition in recording that nurses have to undertake. The request for say, a colon X-ray (attached - No. 2) may come during a consultants round. The nurse writes this on an order sheet. This is rewritten in the Kardex (or task sheet), the nurse looking after the patient may write it on her

worksheet and written instructions will occur for a special diet, the necessary transport, the actual X-ray form request, a drug prep request and a notice for a change in vital signs. Such a system results not only in much paper but also in a time lag between events so that information on file is not always up to date. Below the representation of the manual system is what a computer system would achieve. Only one request for the colon X-ray would result in all the relevant disciplines and departments being informed. The benefits of an integrated nursing information system would be to:

- 1.) reduce the rewriting and copying of data
- 2.) increase the availability of data
- 3.) give a clear presentation of the data
- 4.) give a signal when something is forgotten/contra-indicated
- 5.) give suggestions on what is to be done
- 6.) support contacts between nursing and other departments
- 7.) support planning and decision making phases of the nursing process
- 8.) support calculations (fluid balance summation etc.)
- 9.) support information giving to patients.

In connection with the last point it is planned to have patient access to the information base so that, for instance, a patient could order his own diet or he could check what is planned tomorrow for his care. As well as having general information on the system, such as the time the hairdresser is available, health education material would be available as a supplement to nurse/doctor - patient interactions.

After the analysis stage of the project a development stage has commenced. Firstly, nurses undertook a course on the principles of computers while the computer staff gained experience of nursing. Four sections of this stage have been identified: 1.) the introduction of the nursing process; 2.) the expansion of the sub-systems already available on HIS; 3.) the development of a 'VISY' demonstration model; 4.) the development of VISY software.

On the pilot ward the philosophy of the nursing process had not been introduced and so this was seen as the first priority and one of the two project nurses has taken responsibility for its implementation. To make nurses familiar with the existing HIS software the systems covering patient menu choice, nursing and medical procedures, specimen labels, electronic mail and radiology were introduced. The demonstration model of the VISY system involved accessing screens of the system so that nurses gained a knowledge of what was being devised so that their views could be incorporated into the final product. The working software is now being developed in the areas of patient assessment on admission and the vital sign collection system. The software was about to be piloted when I visited.

IMPRESSION

I think that it is true to say that AZL in conjunction with BAZIS has been one of the pioneer hospital sites using computer applications. It certainly is more advanced in computer usage than most British hospitals. Just like in Britain, however, it is only recently that attempts have been made to correct the comparative neglect of the computer needs of the clinical and nursing staff as

opposed to ancillary departments. The VISY project does seem that it will have much to offer nurses when it is complete. The VISY team are certainly aware of the importance of having nurses as key components of the project. They do not wish to see a repeat of the already available care planning software which has been rejected by nurses at AZL. The project does not seem to be behind target as a few years ago it was predicted that AZL would have bedside terminals by 1987 (Bryant 1986) and the first one was just about to be installed at the time of my visit (October 1988). With the VISY software not up and running, one can make little comment on the system. On the one hand, I received the impression that the standard care plans which the system will produce may not be acceptable to nurses who may expect more flexibility from the system. However, the philosophy of having only one data entry as shown in the example of the colon Xray is to be commended and the integration envisaged will certainly provide many benefits for staff. Nowhere have I seen such integration and so it will be interesting to be kept up to date with the work being undertaken at AZL.

General

In 1972, a start was made on the NOBIN-HIS project which was financed by the NOBIN (Dutch Organization for Information Policy) and the Ministry for Education and Science. This project ran until 1976.

The aim of the NOBIN-HIS project was the experimental implementation of a real-scale integrated application of the computer in a Dutch hospital.

The project was not concerned with the development of a complete HIS: the emphasis was on acquiring knowledge and experience. It was necessary to implement sufficient applications to be able to determine the technical feasibility and the acceptance of the system.

The aim was to improve the functions of the hospital by:

1. Increased efficiency

A more efficient use of the limited resources available to the health service through:

- better communication by way of the improved accessibility of data and faster reporting; as a result of which, the duplication of tests, for example, can also be prevented;
- relieving the staff of: clerical work involving copying data, a large number of forms and routine administrative work;
- better use of treatment capacity by means of an integrated reservation system. Being less timeconsuming for the patient as well;
- a better, more up-to-date picture for management.

2. Better quality

An improvement in the quality of the services offered to the patient resulting in:

- faster observation of the patient, as a result of which treatment can start earlier;
- more control over the carrying out of treatment and better follow-up;
- support for certain types of medical decisions through the use of decision schemes formulated by those concerned.

3. Research support

The possibility of supporting research projects by means of:

- information on the development of an illness;
- the results of treatment;
- investigation of unknown correlations which may have an innovating effect on medical science.

4. Education support

Improved accessibility of information for the purpose of training both the medical students (in the case of a university hospital or a hospital affiliated to a university) and nursing staff.

The development of the HIS started as an attempt to control the growing complexity of the supply of information in a large hospital. The philosophy is that all data should be stored in a correlated form in a central computer memory. The data will be put into this memory directly from the work area by means of terminals (visual display units). From that time, the data is available throughout the hospital for authorized hospital personnel.

Knowledge and experience gained with the development of this project should also be applicable to other hospitals.

The NOBIN-HIS was developed at the Leiden University Hospital (AZL). After the necessary equipment had been installed in 1972 and 1973, a first routine use started in February 1974 in the Central Patient Registration Department. The requirements put down at the start of the HIS project with regard to efficiency, reliability, availability, number of terminals connected and exotic peripherals deviated from the average to such an extent that no single existing operating system could be used to achieve a system of this type at an acceptable price. Consequently, it was decided to develop system software (BOS, Basic Operating System) in house, also in view of the attractive cost aspects.

In the period up to 1977, various user applications were developed (patient registration, clinical location, diagnosis registration, radio-diagnostics, outpatient information system, personnel information system, accounts receivable administration, stock administration, laboratory system, etc.).

In the middle of the 70's, some other (university) hospitals decided to implement the HIS and to share the efforts for further development with those of the AZL.

In 1976, it was decided to form a central development and support group (BAZIS). In addition to the further development and maintenance of the HIS, this group became responsible for central tasks in the area of support, co-ordination and standardization.

The group is resident at the AZL.

Interest was already being shown in the HIS before 1976 from various quarters. For example, in 1975, the Kliniek St. Jan in Brussels decided to use the system software.

User Applications

From the very beginning, a number of policies have been used in the development of the HIS which have greatly contributed to the success of the project:

- the users have always been intensively involved in the development
- the development (and also the introduction in other hospitals) has taken place in stages
- the HIS applications started in the support of service departments (laboratories, medical record, administration, kitchen)
- with the introduction of electronic data processing, only to change the organization when it is strictly necessary.

This approach, the scope and consultation structure of the present Co-operative guarantee that many parts of the HIS can be tuned also for a new member of the Co-operative, with relatively little effort. For example, there is a large variety of laboratory structures (central/decentral, with different combinations of services) which can be served by one sub-system (parameter driven).

Nowadays, within the HIS, 65 software packages are already implemented ("sub-systems" in HIS nomenclature), and deal with many types of data.

The data which is stored in the database of the HIS computer can be divided into two categories: patient-related data on the one hand and data on hospital facilities on the other (e.g. stocks, personnel, beds). Naturally, a number of sub-systems has also been implemented in the HIS for the "normal" management of the data arising from the latter category which are not specifically medical but are necessary for good management of the hospital.

Specific for the hospital environment are the sub-systems which concern the registration, provision and processing of data relating to the patient:

- demographic data (name, address, place of residence, date of birth, insurance, etc.)
- details on clinical admissions (when and at which department)
- visits to the out-patient departments (when and to which out-patient department)
- and a large number of purely medical data: results of various laboratory tests (chemical, haematological, bacteriological, pathological), diagnosis, operations, medication data, results of ECG's and EEG's, radiological tests, etc.

Applications for the provision of meals, for the registration and distribution of drugs and for the planning of appointments are also available.

A hospital information system which has to serve as many people as possible must have a high level of integration. Consequently, it has been realized for medical users in the hospital to retrieve all the medical data regarding a patient by means of one single program. This approach means that the users require little training to be able to retrieve these data.

The HIS offers supporting facilities for doing research: Doctors can organize "an electronic cardindex" with little difficulty. In which for example, they can store details of a patient being treated and have these details analyzed.

A "report generator" has been developed for this latter application: an application which can select, sort and print data on the basis of individual commands. There is also the possibility of looking through the data of all patients registered (now approximately 700,000 at the AZL, for example) for possible combinations of data.

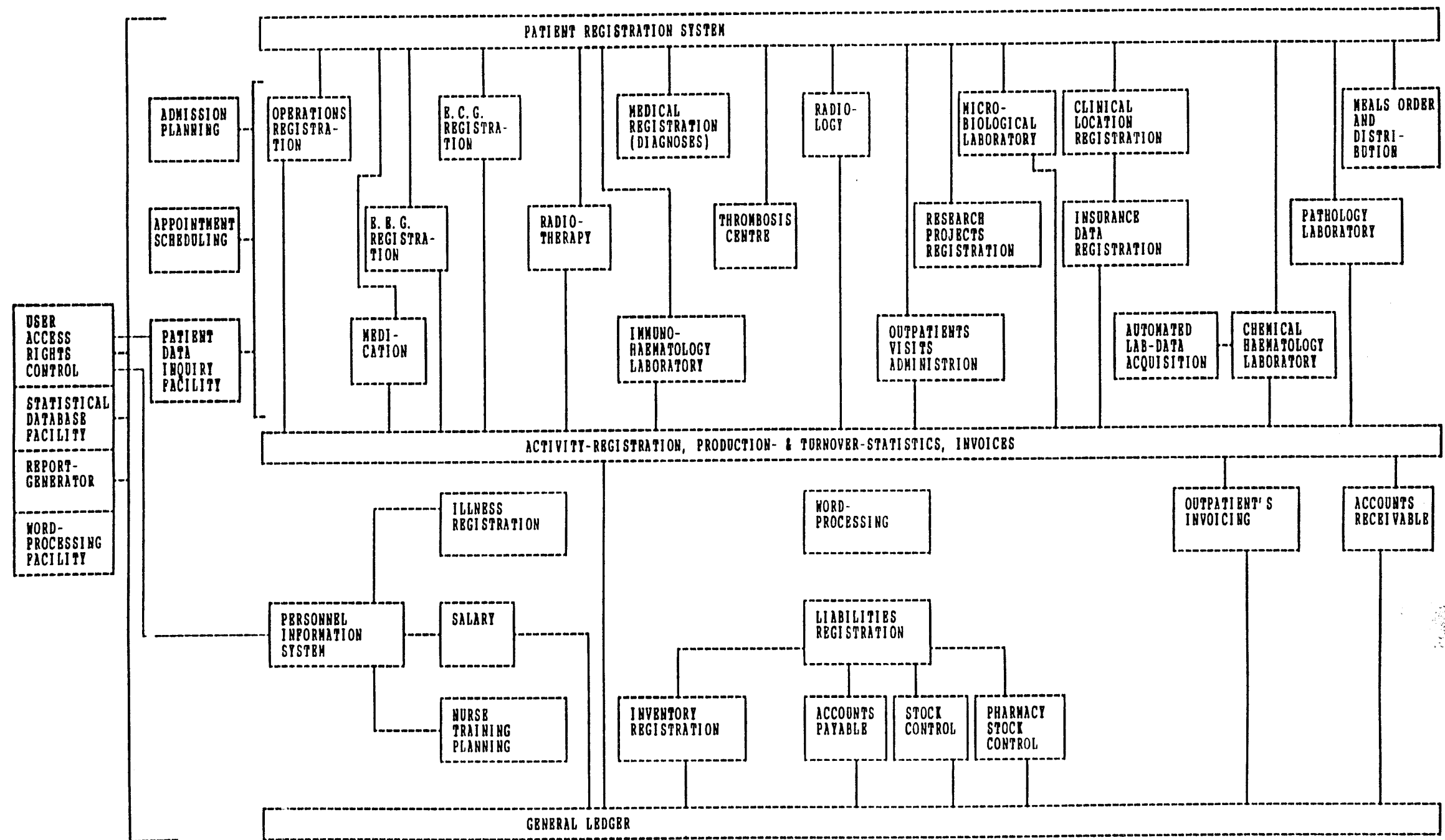
Whereas this work would take months or even years if done manually, the computer now gives the answer to questions of this type in a matter of hours or days.

Another integration aspect is specific to the HIS: the link between "routine" patient-related information and "management" information.

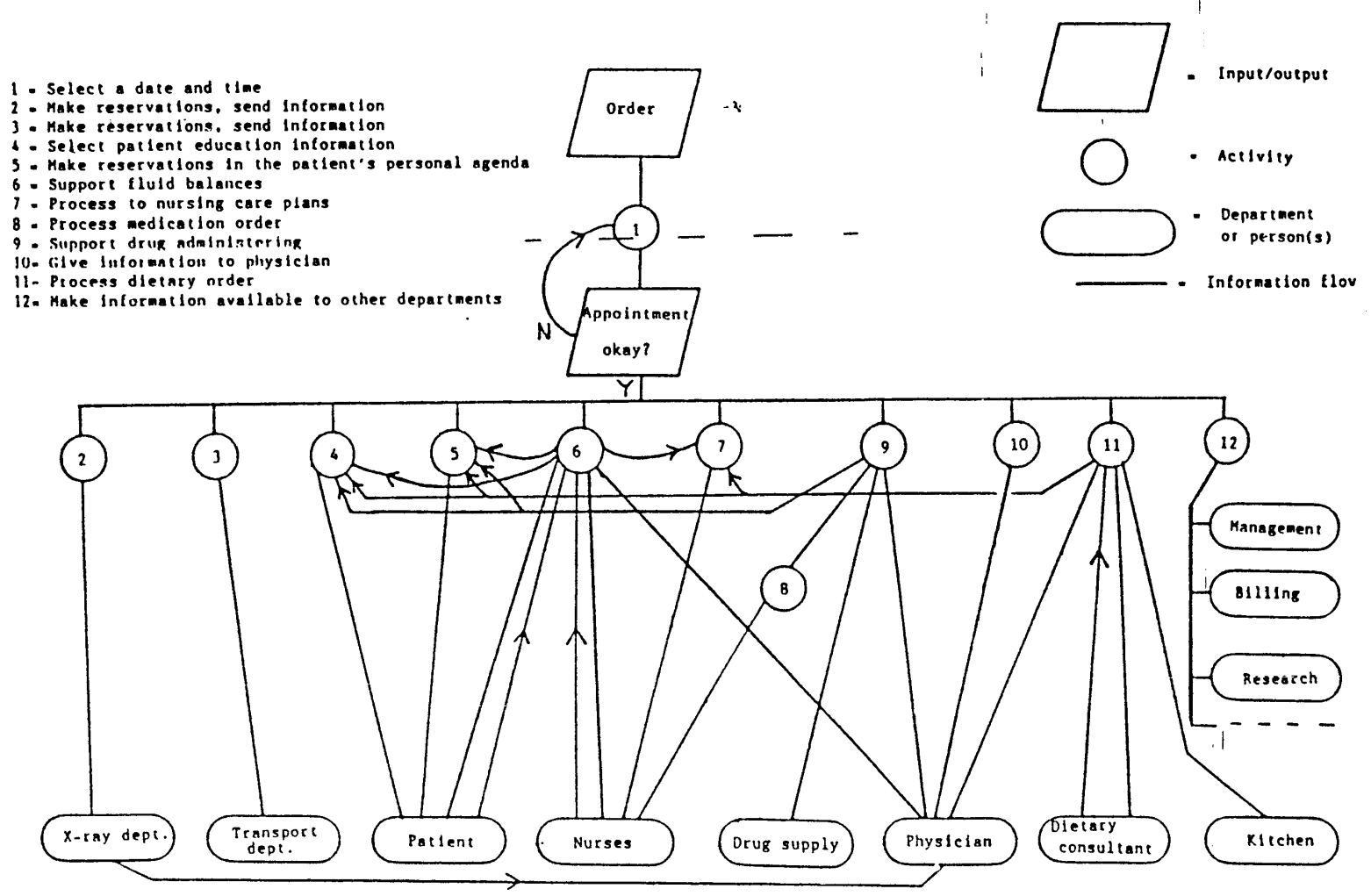
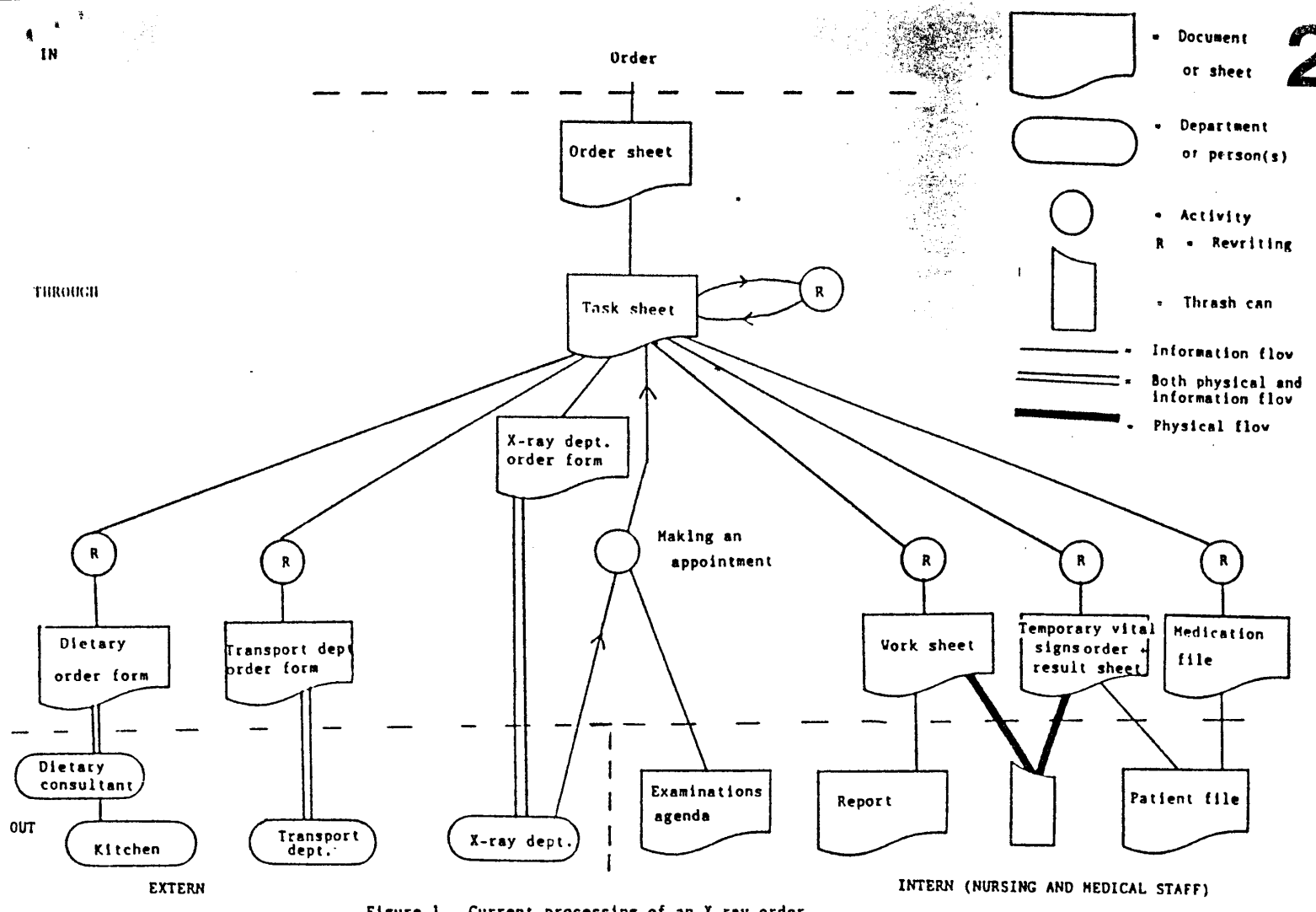
Based on the transaction data, the production and turnover statistics are generated, supplying the number of transactions and the financial consequences per applicant and department. In this way, adjustment in policy can take place on the basis of objective, recent and complete information on the extent of used hospital facilities.

The HIS looks after financial matters as well: the transaction data are recorded in the ledger, by way of journal entries, an invoice is prepared and the payment of that invoice is monitored via the Accounts Receivable system.

The integration of the sub-systems is shown in the next diagram.



OUTLINE OF THE HOSPITAL INFORMATION SYSTEM.



Universitaire Ziekenhuizen Leuven (University Hospital of Leuven, Belgium)

INTRODUCTION

Leuven (Louvain) is 24 kilometres east of Brussels and is famous for its University which is the equivalent of Britain's Oxford or Cambridge. The University Hospitals of Leuven comprise of four sites with around 1900 beds. Of the 5670 employees over 2300 are nurses (76% are qualified registered nurses; 24% are aides). Up to 600 nursing students are gaining experience within the four institutions. The hospitals have a long history of using computer applications starting in 1964 with personnel and patient administration functions as well as a number of scientific medical uses. During the following eight years a variety of systems became operational and in 1972 the decision was taken to integrate these and future developments into a hospital information system so that there was centralised processing of all hospital and patient management functions on a mainframe (IBM) and decentralised processing of various laboratory and scientific medical applications on a network of minicomputers (Hewlett Packard). The situation now is that an advanced state of integration has been achieved with each piece of information being recorded only once, near or at the source of origin and transferred automatically to the appropriate authorised user and systems. It was in 1981 that terminals were first introduced to the 130 ward areas with the whole system now supporting 750 terminals. At ward level there was a gradual introduction of functions commencing with bed census, laboratory requests and results retrieval. Indeed, most functions still available are of an administrative nature although

developments into the clinical nursing area have commenced and are ongoing. It seems that the main impetus behind computer applications is the way in which the Belgian Health Insurance scheme is organised. It is based on a reimbursement for all medical interventions, tests and therapy and on a daily allowance payment for hotel and nursing costs. Such a scheme has resulted in the need for precise collection of information at the patient level in order to facilitate a cost effective rapid billing system. This of course is not the sole reason for computerisation as it is also realised that automation can also result in reduced clerical effort, more efficient lines of communication and an accurate information base which allows more effective planning of care and resource usage to name but a few.

SYSTEMS NURSE

With the introduction of ward terminals at the beginning of the decade, the close involvement of the nursing staff was an essential part of the developing computer strategy. As the nursing staff comprised of over two thousand individuals it was decided to appoint a nurse to be responsible for computer issues. The role of the nursing information systems specialist has developed into five main areas:-

- 1.) Liaison work
- 2.) Orientation, update and training of nursing staff
- 3.) Support of nurses in the clinical units
- 4.) Development of a patient care information system in a HIS
- 5.) Activities associated with the general finding of the nursing service.

Briefly, liaison work involves the systems nurse being a member of the Interdisciplinary Hospital Computer Applications Steering committee. It also involves giving advice to users and listening to their views. This is conducted through a fourteen member computer applications in nursing group with representatives from all units. The systems nurse is also involved in the selection, testing and auditing of products, the co-ordination of hardware and software requirements and the maintenance of full data protection. Orientation and training of staff is a major element of the systems nurse's role and so far over 1900 nurses and 550 doctors have undergone a basic training programme. Advanced training sessions are also available as is a continuing education programme (for head nurses and working group members). The support of nurses includes keeping administrative data on each user as well as ensuring that profiles and directories are up to date. The systems nurse involvement in the development of a patient care information system involves identifying areas of priority for further developments. Future and ongoing developments are discussed later in this paper.

COMPUTER PROGRAMS

Since 1982 a number of nursing related computer programs have been written by in house computer staff in close co-operation with the systems nurse. The hospital now has the following systems fully operational. In the out-patients department, on line planning of appointments, registration of activities, laboratory tests, planning medical/scientific examinations and retrieving results are available. On the wards there is an index of bed occupancy, ordering laboratory tests and their retrieval, printing of labels, planning

medical/scientific examinations, registration of activities and assigning patient telephone codes (this enables the hospital to monitor each patient's outgoing calls so that each individual receives a correct bill). Medical/scientific departments can register activities, retrieve lab results, plan appointments and undertake statistical calculations on data. The operating theatre suite has a developing system which, at present, can be used for the planning of sessions. Data being collected includes occupancy of theatres, times of interventions, occupancy of recovery room, number and types of anaesthesia etc.

A programme is available which has a database of all nursing and medical procedures, examinations and specimen collections. Descriptions include the necessary pre- and post-test nursing care required as well as data on what actually occurs to the patient when undergoing the test so that the patient can be given all the necessary details as appropriate. The data base is constantly updated and at present consists of 3000 different types of tests/procedures. The system also has general information for both staff and patient benefit. For instance information includes times of the bus service to the hospital, how to order oxygen bottles, what to do in the case of a suicide etc.

A computerised patient classification system is also in operation to give a measure of the nursing workload. The system is that devised at the San Joaquin Hospital, Stockton, USA, which is also in use at the University Hospital, Antwerp. While at Antwerp nurses completed forms manually at Leuven nurses input the details into the ward terminal. At present a more advanced programme is being developed in order to increase accuracy in the workload calculation.

This work is being undertaken as part of the research project discussed in the future development section below.

IMPLEMENTATION

The introduction of these programs into the clinical area has not been a straightforward task. The necessity of a widespread training programme has already been mentioned. Existing software (e.g. patient administration) had to be adapted in order to make it more user friendly for both nurses and doctors who did not have the same skills as the existing users. These existing users also had to adapt their usual work practices to take account of clinical staff involvement. Existing information media (forms, documents etc.) were not conducive to automation. The whole administrative process had to be reviewed, revised and standardised. It is estimated that the programming requirements since 1981 have been 3.3 WTEs with two nurses required to co-ordinate and introduce the system. At present, (1984 figures) the computer network totals 2.2% of the hospital budget with the clinical applications being responsible for 34% of the amount.

BENEFITS

From studies undertaken since the introduction of computerisation a number of benefits have been realised. It has been found that administrative work in the out patients department has been reduced by 15-25% with medical records retrieval occurring much more quickly than in the past. Better planning of resources in the operating suite have occurred and pre-operative waiting time of patients in the theatre suite has been reduced considerably. On the wards,

time spent on clerical duties has been reduced by approximately two hours a day. Because laboratory results are available immediately it is suggested that more effective therapy is possible. It is claimed that more effective workload management occurs through the use of the patient classification system. Also it is felt that communication lines have improved with less time having to be spent on the telephone. The up to date test/examination database ensures correct procedures are carried out and delays in billing have been reduced by several weeks. Most interestingly, is that time saved in other departments such as medical records and laboratories has resulted in personnel saved in those departments being used to the benefits of nurses by the undertaking of collection of blood samples, bringing of medical records etc.

FUTURE DEVELOPMENTS

From the nursing point of view four areas are seen as the priorities for future developments: 1.) patient classification and nursing interventions; 2.) use of barcode technology; 3.) standard care plans; 4.) infection control. As the latter two areas are very much in the initial discussion phase and as work is ongoing in the first two areas it is only worth noting the progress here of the first two.

NURSING RELATED GROUPS (NRGs)

A working group has been formed to look at the system of registration of nursing activities in order to obtain a more accurate record of workload compared to the present classification scheme. The work being undertaken has expanded into a national project due to developments in the country as a whole.

Pioneering work is now being undertaken to look at patients' need for nursing care in the form of nursing related groups (NRGs). In September 1985 a research study was initiated to examine factors which influence the nursing requirements of patients. The nursing care of over 1200 patients was investigated from which a nursing minimum data set has been produced. It is proposed that certain patient characteristics influence the nursing care required. These include age, sex, length of stay, medical diagnosis and activities of daily living. It is also proposed that certain nursing interventions are appropriate to certain patient problems. Twenty three nursing interventions have been identified as indicative of the overall needs of a patient. The Belgian Ministry of Public Health now requires that all hospitals collect this data four times a year on a fifteen day random sampling period. This data will influence the budgets available to hospitals. Nursing care is seen by the highest level in government as one of main performance indicators of the hospital.

The concept of NRGs has evolved out of this nursing minimum data set and at present, due to the project being ongoing the concept is still fluid and evolving. It is essentially looking at the nursing problems (or nursing diagnoses) of the patient and the nursing interventions required. In a sense it may be interpreted as nursing's answer to DRGs (diagnostic related groups), a concept of American origin, classifying patients into groups which require similar amounts of hospital resources. A number of studies (e.g. Giovannetti, (1985)) have, however, cast doubt on the assertion that DRGs reflect the nursing care requirements of patients. Patients designated to one DRG have been shown to require varying amounts of nursing care. The aim of introducing the

concept of NRG is to group patients on the requirements of nursing resources. It would then be possible to see which nursing actions are needed for a particular problem and whether certain problems require similar nursing action. In Leuven it is hoped to produce standard care plans from NRGs. It is also realised that NRGs as well as encompassing the minimum data set mentioned above also have to take account of whether the care given is appropriate, whether the care reaches a desired standard and what is the outcome of the care. Further work in this area is proceeding at present.

BARCODE TECHNOLOGY

Two issues which have concerned the staff at Leuven are ensuring that there is only a small distance between care giving and the terminal and ensuring that quick, easy and accurate input of data occurs. As a consequence of these concerns the hospital is now experimenting with barcode technology. The advantages of barcode technology and hand held terminals are seen as the reduction in human error during data input, data processing is three times faster than keyboard input and input is not tied to one place. An obvious area for the use of barcode technology is stock management (CSSD supplies etc.), however, as well as material provision Leuven is investigating using barcode technology for direct patient care. In particular, areas being looked at are the planning and treatment of care, laboratory examinations, function examinations, drug prescriptions and the provision of meals. For instance, in the out patient department experiments are being conducted so that a doctor can use a light pen and hand held terminal to record his interventions together with therapy (examinations and drugs) required. The department has a file of

barcodes from which the doctor chooses the appropriate therapy. The therapy is allocated to a specific patient by using the barcode placed on the patients notes (on the ward, the barcode is on the patients wrist band). Information is down loaded into the hospital system so that the appropriate department know of tests and drugs required. At present research is being conducted to examine the reactions of staff and patients to this technology as well as investigating if better patient management occurs. Other areas of interest are whether time is actually gained by using this method of data input and whether there is a reduction in errors in data input.

IMPRESSION

As with Leiden I was very impressed with how the use of computers had become a normal part of the working environment. Undoubtedly this is due in part to the appointment and flair of the systems nurse. With its research in barcode technology and NRGs, Leuven is continuing its reputation of being at the forefront of developments in effective hospital management. Nurses are certainly benefitting from computer technology by having reduced administrative functions, however, as elsewhere, it does seem that the clinical nursing aspects of information technology have been given a low priority. It is only recently that care planning has been placed on the hospital's development programme and, as yet, no definite plans have been formulated. This situation is not unique to Leuven and if the hospital undertakes the computerisation of care planning in a similar manner as it has in introducing technology in other areas of the hospital then the nurses of Leuven ought to expect exciting times ahead.

Akademisch Ziekenhuis Antwerpen, Belgium (ANSOS II)

Evesham General Hospital, Worcs.

The University Hospital of Antwerp is a large modern teaching hospital situated on the outskirts of the city. The hospital runs a number of software packages on its WANG mainframe including patient administration, laboratories and X-rays. Individual wards do not have VDU's and there is no clinical nursing systems. Over the last year there has been great interest shown in the introduction of computerisation at the ward level and various plans are in the process of being formulated. The hospital hopes to become involved in W.H.O. sponsored projects as Belgium is one of that organisation's nominated collaborating centres in the area of health informatics. The hospital is also applying for assistance from the EEC AIM project. At present though the only nursing system in use is ANSOS.

Evesham General Hospital is a small nine ward hospital which is the first site for ANSOS in the UK.

ANSOS (Automated Nurse Staffing Office System) is a comprehensive management information system of American origin. It is a micro-based system and has been used for up to sixteen years in hospitals in the USA. It provides automatic scheduling in accordance with the hospital policies and produces management reports on the productivity, utilisation, deployment, costs and turnover of nursing staff. The system has four base modules (controller, scheduler, staffer and a reporter/grapher) as well as six optional modules.

The controller is used as necessary to maintain accurate files within the system. Each nurse is registered on the system with details such as skill level, career ladder, shift pattern etc. The controller compares filled to budgeted positions for Whole Time Equivalents (WTE's).

The scheduler produces four week off-duties. It allows the insertion of special requests and last minute changes of shift. For each 28 day period a skeleton off duty or plan sheet is produced (see attached - No. 1). This includes any set patterns such as fixed shifts, alternate weekends off etc that maybe set in the system by the hospital. The head nurse is given the plan sheet to write in any special requests, holidays, bank holidays etc. These requests are then entered into the computer which then produces a 28 day off duty using rules put into the system by the hospital (see attached 2). These rules will include desired coverage rates, only morning shifts prior to days off, no split days off etc. The resultant off duty will indicate both where desired coverage rates have not been fulfilled and where they have been exceeded. The off duty can be reviewed by the manager and altered if necessary. Schedule labels are produced if necessary (see attached No. 3) as is a house report (No.3) which indicates by skill level the numbers scheduled and whether this is over or under the desired coverage.

The staffer module can be run each day to input any adjustments to the duty rota (sickness etc), to input dependency details for the calculation of required staffing. The staffer can be used to produce various staffing and costing reports. Budgeted, target and actual staffing levels and costs can be compared (see attached 4). Absence reports are available.

The reporter/grapher is run at the end of each 28 day period to summarize activity for that period. Numerous reports can be obtained such as termination reports and analyses (see attached 5) and detailed unit activity for the period (see attached 6).

The six further modules can be purchased at extra cost. They include; budget modelling, which allows budget projections based on dependency figures; WTE control which assesses productive and non productive work; timesheet production on a weekly/bi-weekly basis; personnel system, which extends the base system's data; an automatic entry of dependency data by optical scanner; nursing costs by DRG.

IMPRESSION

At both sites, ANSOS had only just been introduced and so its impact on the management function could not be assessed. The system seems a very comprehensive management tool and at both sites the nurse managers were very enthusiastic at its introduction and had high expectations of the information that it will produce. There does seem to be some restriction on the rules each site can input into the system prior to it producing an off-duty. For instance, some of the off-duties being produced by the system are giving nurses split days off, a situation which the nurses do not want and which the hospital cannot rectify. The sales literature suggests that the system will accept dependency data from any patient categorisation system but this cannot be confirmed as neither site had begun to use this facility. The functions it provides are necessary parts of an overall nursing system but having no

clinical or patient based information components it seems that the one of the main issues in having this system is it's price. Evesham, a unit with nine wards had paid in the region of £22000 + VAT for the base system.

PLAN SHEET—ALL SHIFTS

1

ATWORK MEDICAL CENTER

6/W PLAN SHEET BEGINNING 1/ 5/86

UPGS	NAME	SK	S	R	WORK	L	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1
A101	JOHNSON, JANET	RH	D		5555	0	x						x	x						x	x					x	x						x	0000
A102	BONDAR, GEORGE	RA	D	2	5555	0	x						D	D					R	x	x	V	V	V	V	E	E						x	0055
A103	EATMAN, PRU	RC	D		4343	0	x			H			A	A					R	x	x					A	A						x	0000
A104	DENMARK, JUDY	RC	D		5555	1	D						x	x						D	D					x	x						D	0000
A105	TURNER, NATE	RS	D	3	5555	2	D						x	x						D	D					x	x						N	5005
A106	BERAER, FORBES	RS	D	3	5555	2	D						x	x						D	D					N	x						D	0550
A109	BROWN, MARTHA	RS	A	B	3333	0	x						X	X	Q	Q	Q	Q	Q	x	x					A	A						x	
A110	ROSS, FOOCH	RS	A		3333	1	A						x	x						A	A					x	x						A	
A111	STOVE, FRANKLIN	RC	D		5555	1	X	V	V	V	V	V	x	x	H					x	x					D	D						x	
A127	WEBSTER, BEVERLY	R	D	2	0000	0	x						D	D						x	x					x	x						x	0000
A202	WARREN, MARSHA	RC	E	1	3333	0	E						D	D						x	x					D	D						x	0000
A203	STRANGELOVE, DOC	RS	E		5555	3	E						x	x						E	E		V	V	V	V	x	x					E	
A204	PATE, JUDY	RS	E		5555	0	x						E	E						x	x					E	E						x	
A302	POST, HELEN	RC	N		4646	1						x	N						N	N					x	x						N	N	
A303	PORTER, PAM	RS	P		3333	0	x						P	P						x	x					P	P						x	
A304	DRENDAL, GEORGE	RS	P		3333	1	N		N	N			x	x			R			P	P		R			x	x						P	
D110	THOMSON, MARY	R	D	A	1111	0	d						x	x						d	d					x	x						x	

DAY	5	0	0	0	0	0	4	4	0	0	0	0	0	4	4	0	0	0	0	4	4	0	0	0	0	4	4	0	0	0	0	0	3
EVEN	2	0	0	0	0	0	2	2	0	0	0	0	0	2	2	0	0	0	0	2	2	0	0	0	0	3	3	0	0	0	0	0	2
NIGHT	1	0	1	1	0	0	1	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	1	3

A132	COONEY, JIMMY	LM	D		5555	1	D						x	x						D	D					x	x						D	
A133	GALE, NIGHT	LM	D	B	5555	3	D						x	x						D	D					x	x						D	
A134	CARPENTER, DONNA	L	D		5555	0	x						D	D						x	x					D	D						x	
A231	CAKE, CARLA	LM	E		5555	1	E						x	x						E	E					x	x						E	
A232	DONCHEZ, JOE	L	E	1	5555	0	x						6	6						x	x					6	6						x	0000

DAY	2	0	0	0	0	0	1	1	0	0	0	0	0	2	2	0	0	0	0	2	2	0	0	0	0	1	1	0	0	0	0	0	2
EVEN	1	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	1
NIGHT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

A166	BLUNT, KELLY	A	D	3	5555	3	D	.	.	.	.	.	x	x	.	.	.	.	N	N	.	.	.	.	x	x	.	R	.	.	.	D	0550
A167	HARRIS, BOBBI JO	A	D	3	5555	0	x	.	L	L	L	L	D	D	.	L	L	L	.	x	x	.	.	.	.	N	N	.	.	.	.	x	0055
A168	FRANKLIN, MARY	A	D	3	5555	3	N	.	.	.	.	.	x	x	.	.	.	.	D	D	.	.	.	.	R	x	x	R	.	.	.	N	5005
A261	RESTUCCIA, JOE	A	E	1	5555	0	x	.	.	.	.	.	D	D	.	.	.	.	.	x	x	.	.	.	.	E	E	.	.	.	.	x	0000
A264	KAHN, GINGER	A	E		5555	1	E	.	.	.	.	.	x	x	.	.	.	.	E	E	.	.	.	.	x	x	.	.	.	.	E		

DAY	1	0	0	0	0	0	2	2	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1
EVEN	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	1
NIGHT	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	1

D: 7AM-3PM E: 3PM-11PM N: 11PM-7AM X: OFF R: REQUEST L: LOA C: CONFER O: ORIENT M: MANAGE
I: 6AM-4PM J: 2PM-12M K: 10PM-8AM S: SICK V: VACATION H: HOLIDAY <: CHRISTMA ? : ABSENT B: BIRTHDAY F: LO CENS Q: JURY
A: 7AM-7PM P: 7PM-7AM &: SPLIT
T: 6A-10:30 6: 7P-11:30 Y: 11-3:30A

(Reduced from actual size)

SCHEDULE FOR REVIEW

ATWORK MEDICAL CENTER

6/W

SCHEDULE BEGINNING 1- 5-86

						5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1		
UPOS	NAME	SK	S	R	WORK	L	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	
A101	JOHNSON, JANET	RH	D		5555	0	X	M	M	M	M	M	X	X	M	M	M	M	M	X	X	M	M	M	M	M	X	X	M	M	M	M	M	X	
A102	BONDAR, GEORGE	RA	D	2	5555	0	X	D	D	D	D	.	D	D	D	D	D	R	X	X	V	V	V	V	.	E	E	E	.	E	E	E	X	6	
A103	EATMAN, PRU	RC	D	.	4343	0	X	D	.	H	.	D	A	A	.	D	D	R	X	X	D	D	D	.	.	A	A	.	.	.	D	D	X		
A104	DENMARK, JUDY	RC	D	.	5555	1	D	.	D	D	D	D	X	X	D	D	D	.	D	D	D	D	.	D	D	D	X	X	D	D	D	D	.	D	
A105	TURNER, NATE	RS	D	3	5555	2	D	.	M	M	M	M	X	X	D	D	D	D	.	D	D	D	D	.	D	D	X	X	M	M	M	.	M	M	9
A106	BERAER, FORBES	RS	D	3	5555	2	D	.	D	D	D	D	X	X	M	M	M	M	.	D	D	M	M	.	M	M	X	X	D	D	D	.	D	D	8
A109	BROWN, MARTHA	RS	A	B	3533	0	X	A	.	.	Ab	A	X	X	Q	Q	Q	Q	Q	X	X	.	A	.	.	A	A	A	A	.	A	A	.	.	X
A110	ROSS, FOOCH	RS	A		3333	1	A	.	A	A	.	.	X	X	A	.	.	.	A	A	A	.	.	A	A	.	X	X	A	.	.	.	A	A	
A111	STOVE, FRANKLIN	RC	D		5555	1	X	.	V	V	V	V	V	H	.	D	D	D	D	X	X	D	D	.	D	D	D	D	.	D	D	D	D	X	
A127	WEBSTER, BEVERLY	R	D	2	1100	0	X	.	.	.	.	.	D	D	.	.	.	.	.	X	X	.	.	.	.	.	X	X	.	.	.	.	.	X
A202	WARREN, MARSHA	RC	E	1	3333	0	X	E	E	.	.	.	D	D	.	.	.	E	E	X	X	E	E	.	.	.	D	D	E	E	.	.	.	X	4
A203	STRANGELOVE, DOC	RS	E		5555	3	E	E	.	E	E	E	X	X	E	E	E	.	E	E	E	.	V	V	V	V	X	X	E	E	.	E	E	E	
A204	PATE, JUDY	RS	E		5555	0	X	.	E	E	E	E	E	E	E	E	E	.	X	X	.	E	E	E	E	E	E	E	.	E	E	E	E	X	
A302	POST, HELEN	RC	M		4646	1	M	M	.	M	M	X	X	M	M	M	M	.	M	M	M	M	.	M	M	X	X	M	M	.	M	M	M		
A303	PORTER, PAM	RS	P		3333	0	X	P	.	.	.	P	P	P	.	.	.	P	P	X	X	.	P	P	.	.	P	P	.	.	.	H	H	X	
A304	ORENDAL, GEORGE	RS	P		3333	1	M	.	M	M	.	.	X	X	P	P	R	.	.	P	P	.	.	R	P	P	X	X	.	.	P	P	.	P	
D110	THOMSON, MARY	R	D	A	5555	0	Dd	D	Dd	.	D	Dd	X	X	Dd	.	Dd	Dd	Dd	Dd	Dd	Dd	.	Dd	D	Dd	Dd	X	X	Dd	Dd	Dd	Dd	Dd	X
D105	SMITH, SHIRLEY	R	D	2	5545		Dg	Dg	Dg	Dg	Eg	.	X	X	.	Dg	Dg	Dg	Dg	Dj	Dj	E	.	.	Dg	Dg	X	X	Dg	Dg	Dg	Dg	Dg	X	2

RNS DAY	4+	4	4	4	4	4	4+	4+	4	4	5+	4	3-	4+	4+	4	4	4	4	4+	4+	3-	4	4	3-	4	3	
RNS EVE	2-	3	3-	3-	2-	3	2	2	3	2-	2-	2-	3	2	2	2-	3	2-	2-	2-	4+	4+	4	4	3	3	4	2
RNS EVE	1-	3	2-	2-	2-	3	2	2	3	3-	2-	3-	3	2	2	2-	3	2-	2-	2-	3+	3+	3	3	3	4	3	2
RNS NIT	2	2-	2-	3	2-	2-	1-	2	3	3	2-	2-	2-	2	2	2-	2-	2-	3	2-	1-	2	2-	2-	2-	2-	2-	3+

A132	COONEY, JIMMY	LM D	5555	1	D	.	D	D	D	D	X	X	D	D	.	D	D	D	D	X	X	D	D	D	D	.	D					
A133	GALE, NIGHT	LM D B	5555	3	D	D	.	D	D	D	X	X	D	D	D	.	D	D	D	D	X	X	D	D	.	D	D	D				
A134	CARPENTER, DONNA	L D	5555	0	X	D	D	D	D	.	D	D	D	X	X	D	D	.	D	D	D	D	D	D	D	X						
A231	CAKE, CARLA	LM E	5555	1	E	.	E	E	E	E	X	X	E	E	E	E	.	E	E	E	X	X	E	E	E	.	E	E	E			
A232	DONCHEZ, JOE	L E 1	5555	0	X	E	E	E	E	.	6	6	.	E	E	E	E	X	X	E	E	E	E	.	6	6	E	E	.	E	E	X

[illegible]

A166 BLUNT,KELLY	A D 3 5555 3 D D D . D D X: X N N N . N N: N N N . N N X: X D R D D D D 10
A167 HARRIS,BOBBI JO	A D 3 0055 0 X . L L L L L L: L L L L L . X: X N N N N N . N: N . N N N N X 10
A168 FRANKLIN,MARY	A D 3 5555 3 N N . N N N X: X D D . D D D: D D D D D R X: X R N N N N N 10
A261 RESTUCCIA,JOE	A E I 5555 0 X E E E E . D: D . E E E E X:
A264 KAHN,GINGER	A E 5555 1 E . E E E E X: X E E . E E E:

AID DAY	1	1	1	0-	1	1	1	1	1	0-	1	1	1
AID EVE	1	1	2+	2+	2+	1	0-	0-	1	2+	1	2+	2+
AID EVE	1	1	2+	2+	2+	1	0-	0-	1	2+	1	2+	2+
AID NIT	1	1	0-	1	1	1	0-	0-	1	1	1	0-	1

```
Print +/- ? (Y/N) : Y
Print rotate count ? (Y/N) : Y
Want requests noted? (Y/N) : N
Want cumulative coverage? (Y/N) : N
Want charge coverage? (Y/N) : N
Want fractional coverage? (Y/N) : N
Show unit? (Y/N) : Y
Split Evening Coverage? (Y/N) : Y
```

D: 7AM-3PM	E: 3PM-11PM	N: 11PM-7AM	X: OFF
I: 6AM-4PM	J: 2PM-12M	K: 10PM-8AM	S: SICK
A: 7AM-7PM	:	P: 7PM-7AM	&: SPLIT
U: 6A-10:30	6: 7P-11:30	Y: 11-3:30A	

R:REQUEST L:LOA :
V:VACATION H:HOLIDAY <:CHRIS

(Reduced from actual size)

INDIVIDUAL SCHEDULE LABELS

A102 BONDAR, GEORGE RAD2 1- 5-86

S	M	T	W	T	F	S	S	M	T	W	T	F	S
5	6	7	8	9	10	11	12	13	14	15	16	17	18
X	D	D	D	D	.	D	D	D	D	D	D	R	X

S	M	T	W	T	F	S	S	M	T	W	T	F	S
19	20	21	22	23	24	25	26	27	28	29	30	31	1
X	V	V	V	V	.	E	E	E	.	Eb	Eb	Eb	X

A103 EATMAN, PRU RCD. 1- 5-86

S	M	T	W	T	F	S	S	M	T	W	T	F	S
5	6	7	8	9	10	11	12	13	14	15	16	17	18
X	D	.	H	.	D	A	A	.	.	D	D	R	X

S	M	T	W	T	F	S	S	M	T	W	T	F	S
19	20	21	22	23	24	25	26	27	28	29	30	31	1
X	D	D	D	.	.	A	A	.	.	.	D	D	X

A104 DENMARK, JUDY RCD. 1- 5-86

S	M	T	W	T	F	S	S	M	T	W	T	F	S
5	6	7	8	9	10	11	12	13	14	15	16	17	18
D	.	D	D	D	D	X	X	D	D	D	.	D	D

S	M	T	W	T	F	S	S	M	T	W	T	F	S
19	20	21	22	23	24	25	26	27	28	29	30	31	1
D	D	.	N	N	N	X	X	D	D	D	D	.	D

A105 TURNER, NATE RSD3 1- 5-86

S	M	T	W	T	F	S	S	M	T	W	T	F	S
5	6	7	8	9	10	11	12	13	14	15	16	17	18
D	.	N	N	N	N	X	X	D	D	D	D	.	D

S	M	T	W	T	F	S	S	M	T	W	T	F	S
19	20	21	22	23	24	25	26	27	28	29	30	31	1
D	D	D	.	D	D	X	X	N	N	N	.	N	N

HOUSE COVERAGE

ATWORK MEDICAL CENTER

ANSOS HOUSE COVERAGE REPORT

R DAY SHIFT PERIOD BEGINNING 1- 5-86

5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	
SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	
6/W	4+	5+	4	4	4	5+	4+	4+	4	4	6+	5+	3-	4+	4+	4	4	5+	5+	4	4+	4+	3-	4	4	3-	4	3
6/E	6-	7	7	7	8+	7	6-	6-	8+	7	7	7	7	7	7	7	8+	7	7	7	6-	6-	7	7	7	7	7	6-
6/N	4	4	4	4-	4	4	3	3-	4	4	4-	4	4	4+	4	4	4	4-	4	3-	3	3-	4	4	4-	4	3-	4+
*SUB	0	1	0	-1	1	1	0	-1	1	0	1	1	-1	2	1	0	1	0	1	-1	0	-1	-1	0	-1	-1	0	0

7/W.	2	2	3+	3+	2	3+	2	2	3+	3+	3+	3+	3+	2	2	3+	3+	2	3+	3+	2	2	3+	3+	3+	4+	3+	1-
7/E.	2+	3+	3+	3+	3+	3+	3+	3+	3+	3+	3+	3+	3+	2+	2+	3+	3+	3+	3+	3+	3+	3+	3+	3+	3+	3+	2+	
7/N.	3-	4+	4+	3	3	3	3-	3-	4+	3	3	4+	3	3-	3-	4+	3	3	4+	3	3-	3-	4+	3	3	4+	3	3-
*SUB	0	2	3	2	1	2	1	1	3	2	2	3	2	0	0	3	2	1	3	2	1	1	3	2	2	4	2	-1

MICU	7	6-	6-	4-	4-	3-	4-	4-	4-	5-	5-	5-	4-	5-	5-	4-	4-	4-	5-	5-	5-	5-	4-	5-	4-	5-	4-	5-
SICU	4	4-	4	5	4-	4-	5+	5+	4-	5+	4-	5	4-	5+	5+	5	5	5	4-	5+	5+	5	5+	5	5	4-	5+	
CCU.	6+	5	6+	5	5	5	6+	6+	5	6+	6+	6+	5	5	5	6+	6+	6+	6+	5	4-	4-	5	6+	6+	5	6+	
*SUB	1	-2	0	-3	-3	-4	0	-1	-4	0	-2	0	-3	0	-1	-2	-1	-2	0	-2	-1	-2	-3	0	-2	-1	-3	1

FLT.	3+	0	1+	0	0	0	3+	3+	0	1+	0	0	0	3+	3+	0	0	0	0	0	3+	3+	0	1+	0	0	0	4+
NET	4	1	4	-2	-1	-1	4	2	0	3	1	4	-2	5	3	1	2	-1	4	-1	3	1	-1	3	-1	2	-2	4

L

5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1
SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA
6/W	2	2-	2-	3	3	2-	1-	1-	3	2-	2-	2-	3	2	2	2-	2-	2-	3	3	1-	1-	2-	3	2-	3	2-
6/E	2	2	2	2	2	2	1-	1-	2	2	2	2	2	2	2	2	2	2	2	2	1-	1-	2	2	2	2	2
6/N	1-	2-	1-	2	2-	1-	1-	1-	1-	2-	2	2-	1-	1-	1-	2-	1-	1-	1-	2-	1-	1-	1-	2-	1-	1-	1-
*SUB	-1	-2	-3	0	-1	-2	-3	-3	-2	-2	-1	-2	-1	-1	-1	-2	-3	-1	-1	-1	-3	-3	-2	-2	-1	-1	-1

7/W.	2	4+	3+	3+	4+	3+	2	2	4+	4+	3+	3+	4+	2	2	4+	3+	3+	4+	3+	2	2	3	4+	4+	4+	3+	2	
7/E.	2-	2	3+	2	2	2	2	2	2-	2	2	2	3+	2	2	2-	2	3+	2	2	2	2	2	2-	2	2	2	3+	2
7/N.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
*SUB	-1	1	2	1	2	1	0	-1	1	2	1	2	2	0	-1	1	2	1	2	1	2	1	0	-1	0	2	2	2	0

(Available by Skill, and total)

(Reduced from actual size)

PERIOD PRODUCTIVITY REPORT

ATWORK MEDICAL CENTER
 PERIOD PRODUCTIVITY REPORT
 PERIOD 2 BEGAN 2- 2-86

UNIT	HOURS				UTILIZATION				PERIOD				YEAR TO DATE				HOURS PER PATIENT DAY				ACUITY DATA									
	BUDG	TARG	ACTL	VBUD	VTAR	-PER-	-YTD-	\$BUDG	\$TARG	\$ACTL	VBUD	VTAR	OVER	\$BUDG	\$TARG	\$ACTL	VBUD	VTAR	OVER	BUDG	TARG	ACTL	VBUD	VTAR	CEN	T1	T2	T3	T4	
6-W	4396	4132	4298	98	-166	96.1	102.1	59276	61054	58683	593	2371	177	237104	217353	222996	14108	-5643	479	5.00	4.76	4.95	0.05	-0.19	31.1	8.2	9.6	8.8	2.5	
6-E	3696	3714	3684	12	30	100.8	89.4	50400	49392	52920	-2520	-3528	0	201600	217325	218030	-16430	-706	0	5.00	4.74	4.70	0.30	0.04	28.0	7.3	10.2	6.4	4.1	
6-M	3136	3127	3287	-151	-160	95.1	97.3	51800	50246	52836	-1036	-2590	60	207200	205004	200777	6423	4227	129	5.00	4.14	4.35	0.65	-0.21	27.0	8.2	8.0	7.3	3.5	
+SUB	11228	10973	11269	-41	-296	97.4	96.3	161476	160692	164439	-2963	-3747	237	645904	639682	641804	4100	-2122	608	5.00	4.56	4.68	0.32	-0.12	86.1	23.7	27.8	22.5	12.1	
7-W	3920	3876	3814	106	62	101.6	97.2	65548	66859	66203	-655	655	55	262192	256738	254221	7971	2517	132	4.80	5.13	5.04	-0.24	0.08	26.9	8.1	7.9	6.3	4.6	
7-E	3920	4015	3879	41	136	103.5	101.3	73108	76032	69453	3655	6580	112	292432	295005	258364	34068	36642	87	4.80	4.94	4.78	0.02	0.17	27.1	9.2	8.3	8.6	1.0	
7-M	3360	3427	3457	-97	-30	99.1	89.9	52388	50816	51340	1048	-524	0	209552	209363	215629	-6077	-6266	56	4.80	3.95	3.98	0.82	-0.03	31.1	8.1	9.5	8.7	4.7	
+SUB	11200	11318	11150	50	168	101.5	96.1	191044	193708	186996	4048	6711	167	764176	761107	728214	35962	32893	275	4.00	4.65	4.58	-0.58	0.07	85.0	25.4	25.7	23.6	10.3	
OB	2800	2653	2781	19	-128	95.4	99.3	53592	51448	55736	-2144	-4287	32	214368	226373	229631	-15263	-3258	91	4.00	4.99	5.23	-1.23	-0.24	19.1	3.1	9.2	6.1	0.7	
L&D	1848	1891	1911	-63	-20	99.0	103.2	31472	32731	32101	-629	629	15	125888	136160	129690	-3802	6471	0	7.20	6.14	6.20	1.00	-0.06	11.0	0.0	5.0	5.5	0.5	
ICU	5600	5782	5671	-71	111	102.0	94.2	102228	100183	105295	-3067	-5111	156	408912	372682	412756	-3844	-40073	49	11.50	11.47	11.25	0.25	0.22	9.9	0.0	0.0	1.9	8.0	
+SUB	10248	10326	10363	-115	-37	99.6	98.9	187292	184363	193132	-5840	-8769	203	749168	735215	772077	-22909	-36861	140	7.21	7.68	7.71	-0.50	-0.03	40.0	3.1	14.2	13.5	9.2	
FLT	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	
TOTL	32676	32617	32782	-106	-165	99.5	97.1	539812	538763	44568	-4756	-5805	607	2159248	2136004	2142094	17154	-6090	1023	5.45	5.27	5.30	0.15	-0.03	211.1	52.2	67.7	59.6	31.6	

(Reduced from actual size)

TERMINATION/TURNOVER REPORTS

5

ATWORK MEMORIAL MEDICAL CENTER

TERMINATION REPORT

PERIOD 2 BEGAN 2- 2-86

UPOS	NAME	SK	SH	SERVICE	REASON
A113	WARREN, MARSHA	R	D	24	PROMOTION
A116	TAYLOR, LIZ	R	D	2	TO OTHER HOSPITAL
A214	LAWBER, KELLEY	R	E	1	PROMOTION
C320	SILVER, LJ	R	N	17	FAMILY RELOCATION
D122	OSBORNE, PORT	R	D	5	TO ANOTHER HOSPITAL
D321	JONES, MARY	R	N	17	TO ANOTHER HOSPITAL

ATWORK MEMORIAL MEDICAL CENTER

TURNOVER ANALYSIS

PERIOD 2 BEGAN 2- 2-86

	TOTAL		RATE		SERVICE		REASON1		REASON2		REASON3		REASON4		REASON5		REASON6		REASON7	
	PER	YTD	PER	YTD	PER	YTD	PER	YTD	PER	YTD	PER	YTD	PER	YTD	PER	YTD	PER	YTD	PER	YTD
6-W	3	4	100	80	9	11	2	3	0	0	1	1	0	0	0	0	0	0	0	0
6-E	0	1	0	18	0	22	0	0	0	1	0	0	0	0	0	0	0	0	0	0
7-W	1	1	32	16	17	17	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7-E	2	2	62	31	11	11	0	0	0	0	2	2	0	0	0	0	0	0	0	0
FLT	0	1	0	22	0	23	0	0	0	1	0	0	0	0	0	0	0	0	0	0
TOT	6	9	48	36	11	14	2	3	1	3	3	3	0	0	0	0	0	0	0	0

(This report is also broken down by skill level)

REASON 1 PROMOTION
 REASON 2 FAMILY RELOCATION
 REASON 3 TO ANOTHER HOSPITAL
 REASON 4 OTHER VOLUNTARY
 REASON 5 INACTIVE
 REASON 6 TERMINATED
 REASON 7 OTHER

(Reduced from actual size)

ACTIVITY REPORTS

ATWORK MEDICAL CENTER
INDIVIDUAL ACTIVITY REPORT

PERIOD 2 BEGAN 2- 2-86

		-- SICK LEAVE --		D		E		N		X		R		L		C		O		M		S		V		P			
NAME		S	M	T	W	T	F	S	X	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	
A101	JOHNSON, JANET	0	0	0	0	0	0	0	0	0	0	0	0	15	8	0	0	10	10	2	0	0	0	26	10	2	0	0	0
	BONDAR, GEORGE	1	0	0	0	0	1	1	1	14	6	12	8	0	0	7	3	6	4	0	0	0	0	0	0	5	3	4	0
	EATMAN, PRU	0	0	0	0	0	1	0	0	23	11	4	2	0	0	8	4	1	0	0	0	0	0	0	0	2	1	0	0
A104	DENMARK, JUDY	0	0	0	0	0	0	0	0	40	20	0	0	0	0	8	4	0	0	0	0	0	0	0	0	0	0	0	3
A105	TURNER, NATE	0	0	0	0	0	0	0	0	16	5	0	0	19	10	6	2	0	0	0	0	0	0	0	0	0	0	0	0
	BERAER, FORBES	0	0	0	0	0	0	0	0	12	0	0	0	8	0	4	0	0	0	0	0	0	0	0	0	0	0	5	5
A107	BROWN, MARTHA	0	0	0	0	0	0	0	0	13	4	7	2	0	0	10	4	1	1	0	0	2	2	0	0	0	0	0	0
A110	ROSS, FOOCH	0	0	0	0	0	0	0	0	23	12	12	6	0	0	8	4	0	0	0	0	0	0	0	0	0	0	0	0
	STOVE, FRANKLIN	0	0	0	0	0	0	0	0	9	5	3	3	0	0	9	5	0	0	0	0	4	4	0	0	0	0	5	0
	WEBSTER, BEVERLY	0	0	0	0	0	0	0	0	12	9	0	0	0	0	14	8	0	0	0	0	0	0	0	0	0	0	0	1
	COONEY, JIMMY	0	0	0	0	0	0	0	0	39	19	0	0	0	0	8	4	4	4	0	0	0	0	0	0	0	0	0	0
	GALE, NIGHT	0	0	0	0	0	0	0	0	37	17	0	0	0	0	8	4	0	0	0	0	0	0	0	0	0	0	3	3
A134	CARPENTER, DONNA	0	0	0	0	0	0	0	0	30	10	0	0	0	0	8	4	0	0	0	0	0	0	0	0	0	0	10	10

ATWORK MEDICAL CENTER

ACTIVITY SUMMARY REPORT

PERIOD 2 BEGAN 2- 2-86

UNIT	D		E		N		X		R		L		C		O		M		S		V		H	
	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER	YEAR	PER
6/W	432	205	353	172	218	100	265	130	26	18	20	10	16	13	40	40	26	10	19	4	42	25	13	9
6/E	292	42	192	38	108	24	238	120	0	0	0	0	2	2	0	0	54	26	0	0	0	0	0	0
6/N	226	46	225	47	92	22	240	120	0	0	0	0	0	0	0	0	40	20	0	0	0	0	0	0
\$SUB	950	293	770	257	418	146	743	370	26	18	20	10	18	15	40	40	120	56	19	4	42	25	13	9
7/W.	291	49	140	29	32	8	189	88	0	0	0	0	0	0	0	0	40	20	0	0	0	0	0	0
7/E.	240	40	112	22	40	8	152	76	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0
7/N.	116	24	124	20	76	16	128	64	0	0	0	0	0	0	0	0	40	20	0	0	0	0	0	0
\$SUB	647	113	376	71	148	32	469	228	0	0	20	0	0	0	0	0	80	40	0	0	0	0	0	0
MICU	175	42	172	40	214	46	208	104	0	0	0	0	0	0	4	0	40	20	0	0	0	0	0	0
SICU	287	64	232	51	210	53	257	128	5	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0
CCU.	220	48	142	34	128	28	216	108	2	0	0	0	0	0	0	0	56	28	0	0	8	0	1	0
\$SUB	682	154	546	125	552	127	681	340	7	0	0	0	0	0	4	0	96	48	1	0	8	0	6	0
FLT.	134	52	61	19	97	41	160	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
\$TOT	2413		1753		1215		2053		33		40		18		44		296		20		50		19	
		612		472			346	1017		18		10		15		40		144		4		25		9

Ninewells Hospital, Dundee (CANIS)

INTRODUCTION

In 1974 Tayside Health Board received funding from the Scottish Home and Health Department to investigate the possibility of computerisation of patient administration, nursing and pharmacy services. A decision was made to concentrate on clinical nursing and in March 1976 the Ward Computer Project was piloted on one ward. The initial system consisted of a simple patient administration system together with a nursing order system. Nurses were able to admit patients and list the nursing orders (e.g. bedbath), tests and specimen collections required by patients. The system became known as CANO (Computer Assisted Nursing Orders System) and was extended into a number of other nursing areas which included screens for recording reasons for admission, biographical details, pre and post operative instructions and discharge summaries. At the end of the 1970's the system was implemented on a number of wards.

With the advent of the nursing process it was realised that a nursing orders system did not fulfil all the needs of the nursing staff and so more software was added which enabled nurses to assess patient problems using the activities of daily living model, to set goals and to evaluate the goals. The system is now called CANIS (Computer Assisted Nursing Information System) and it is implemented on 17 wards in Ninewells Hospital as well as 6 wards at Crosshouse Hospital, Kilmaronock. The system at Ninewells runs on a Prime 2250 minicomputer. The program is written in BASIC under the PICK operating system. The software is crown copyright and is available to all NHS hospitals through the Directorate of Health Service Information Systems, Edinburgh.

OUTLINE

On accessing the system the nurse has a choice of entering patient administration or patient nursing services. To admit a patient the nurse will enter the former and input various details which include biographical details, next of kin details, social history, reason for admission and primary observations and patient belongings details. The patient administration option also includes the facilities to input pre-discharge details as well as discharge details. The primary observation screen and help facility is attached (No.1) as is a pre-discharge screen (No.2). From the patient administration option it is possible to output a number of prints which include biographical details (see attached - No.3), boarding out lists, episode summaries (see attached No.4), religion and consultant lists and long term care waiting lists.

The patient nursing services option includes sections on activities of daily living assessments, inputting current diagnosis, high priority conditions and theatre visits. Activities of daily living are assessed in 13 areas (see attached - No.5). The nurse chooses the areas from the 13 in which the patient has problems. For instance, if the patient has a hygiene problem the nurse will be asked to assess whether the patient can undertake bathing, showering, oral hygiene and dressing independently or requires aids, some or much assistance. The nurse will have to assess mouth, hair, skin conditions etc. Various options are available from which the nurse can either choose or use a free text facility. An example of mouth condition is attached (No.6). The nurse has then to set goals and review dates for the assessed problems. Options for the goals are set in the system being based on relieving, removing, maintaining

or achieving. Goals for the previous example of mouth condition are attached (No.7). When the assessment is complete it is possible to have a full print out (No.8).

After assessing the patient problems and setting goals the nurse then selects the nursing orders of the patient, repeating this on a daily basis. This involves inputting the relevant codes from a list of about 200 nursing orders. The nurse is also able to record the necessary specimens, tests and X-rays required as well as inputting the results of weights and urine tests. If the nurse wishes to record that the patient requires a barium meal, say, it is only necessary to insert 'B' and all the X-rays beginning with that letter will be displayed from which the nurse can make a choice. Details on theatre visits (pre and post operative requirements) and priority areas of care (e.g. pressure sores) can be inputted. From the details outlined above a plan of care required is printed (see attached - No.9). Nurses record on the plan when the care has been undertaken. These plans are printed each day and collected and stored for 6 months.

Nurses evaluate whether the goals set have been achieved on the review dates already input into the system. It is possible at any time to access the goals requiring review. Nurses choose the appropriate outcome for the problem (see attached - No.10) and can re-assess and re-set a different goal if appropriate. A history record of all problems, review dates and outcomes is available (No.11).

IMPRESSION

With most of the hospital wards running the system, and some wards having over a decade of experience with the system it was obvious that it had become a valued part of the nursing culture in Dundee. The nurses saw the system as a necessary and helpful part of their work. The clinical details recorded are certainly fairly extensive and I was impressed by the work undertaken to emulate the nursing process. The choice of goals is a little restricting with most of them being very general and somewhat nurse orientated. A free text facility on goal setting would be helpful for the formation of goals specific to the individual patient. This problem also applies to the evaluation part of the nursing process. Due to how the system has evolved from a simple nursing orders system the separation of problem assessment, goal setting and evaluation from the nursing interventions required is a problem. Nurses at Dundee realise it would be preferable to assess a problem, set a goal and then indicate the required nursing interventions rather than what happens at present assessing all the problems and setting all the goals and then going into a separate option to list all the nursing interventions. Discussions are underway to change the software in this respect but programming resources seem to be unavailable.

The system collects a mass of information that is not being used as it could be. For instance, detailed information is collected on the tests carried out for a patient but this is not linked to the laboratory system or a costing system. The potential of resource management with this system cannot be underestimated. Attempts have been made in the past to produce a workload

index, after all a great majority of the nursing work is being recorded on the system. However, due to the lack of resources, little progress has been made with the system as far as its management information potential is concerned.

Overall, I received the impression that the system is a well tested clinical system which needs some refinements. It has much potential if linked to laboratory, workload, management and costing systems being a central part of any comprehensive hospital information system.

Ward 6

Reasons for Admission/Primary Observations

PA12

WILSON ANNE 1206320065 Age : 56 Years Bay No. 1

Reason for Admission and Primary Observations

1 Reason for Admission a: Assessment

b: Treatment

c: ..

2 Primary Observations a: Breathless

b: Colour

c: ..

d: ..

e: ..

Primary Observations

1 Aggression 8 Convulsions

2 Allergies 9 Diarrhoea

3 Anxiety 10 Hearing Problem

4 Bleeding 11 Incontinent - Bladder

5 Breathless 12 Incontinent - Bowel

6 Colour 13 Mobility Problem

7 Confused 14 Oedema

15 Pain

16 Pregnant

17 Prosthesis

18 Shock

19 Sight Problem

20 Smokes

21 Speech Problem

22 Stoma

23 Unconscious

24 Vomiting

25 Other - specify

2

0Ward 6

Predischarge Details

PA29

WILSON ANNE 1206320065 Age : 56 Years Bay No. 1

1 Provisional discharge date: 05/07/88
2 Take home drugs? : Yes
3 Transport : Own Transport

On discharge refer to

4 Home Help : Yes

5 Meals on Wheels: No

6 District Nurse : No

7 Health Visitor : No

8 Social Worker : Yes

9 Day Care : No

10 Other - specify:

Out-patient appointment 1

11 Clinic date: 6 Weeks

12 Clinic name: MEDICAL

13 Consultant : DR SMITH

Out-patient appointment 2

14 Clinic date:

15 Clinic name:

16 Consultant :

Data O.K. ? (Y or Field No. to correct): Y..

3

Ward 6

Biographical Details

13:46:14 05 JUL 1988

PA26

WILSON ANNE 1206320065 Age : 56 Years

Address: 23 FERN AVENUE
DUNDEE
DD4 9LK

Telephone No. : DUNDEE 123456
Marital Status: Married
Religion : Church of Scotland
Occupation : HOME DUTIES

Own Doctor: BROWN
HEALTH CENTRE
DUNDEE

Next of Kin Details

Relationship: HUSBAND
Name : FRANK WILSON
Address : 23 FERN AVENUE
DUNDEE
Tele. Day : DUNDEE 55987 EXT 87
Tele. Night : DUNDEE 123456
Notification: Telephone message
Notified By : SISTER WARD 6 23/06/88 14:00

Patient's Belongings

Clothing a: Entered in clothing book
b: Kept by patient
Dentures : Full set
Spectacles : One pair
Contact Lenses: No

Hearing Aid : No
Jewellery : Yes
Electric Shaver : No
Locker Number : 26
Valuables Receipt No.: 55890

Social History

Housing

Home circumstances a: Lives with spouse
b:
Type of house : Bungalow
Access to house a: Stairs to house
b: All on one level

Support prior to admission
Home help : None
Meals on Wheels: None
Dist.Nurse/H.V.: None
Social Worker : None
Visitors : Weekly
Day Care a: None
b:

Admitted: 23/06/88 for : Assessment, Treatment,

Ward 6

Consultant Dr. D. Maclean

Admitted : 23/06/88

Source: Emergency

Discharged:

Dest. :

Ward 6

Episode Summary - Episode Display 13:44:02 05 JUL 1988

PA24

WILSON ANNE 1206320065

Hospital: Ninewells Hospital Admitted: 10/02/87 Discharged: 08/05/87

Ward 6	Consultant : Dr. D. Maclean
Admitted : 10/02/87	Source: Emergency
Discharged: 26/02/87	Dest. : Transferred to Ward 21

Ward 21	Consultant : Dr. D. Maclean
Admitted : 26/02/87	Source: Transferred from Ward 6
Discharged: 26/02/87	Dest. : Transferred to Ward 6

Ward 6	Consultant : Dr. D. Maclean
Admitted : 26/02/87	Source: Transferred from Ward 21
Discharged: 08/05/87	Dest. : Home

Diagnoses:
HAEMATEMESIS

Theatre Visits:
None Recorded

5

Ward 6

Activities of Living - New Assessments

NS13

WILSON ANNE 1206320065 Age : 56 Years Bay No. 1

Assessments

- 1 Breathing
- 2 Communication
- 3 Bladder
- 4 Bowel
- 5 Mobility
- 6 Personal Hygiene
- 7 Nutrition

- 8 Pain
- 9 Wound
- 10 Paralysis
- 11 Pressure Areas
- 12 Sleeping
- 13 Behaviour

Select Assessment(s) Required (or 'ALL'):

6

Personal Hygiene Assessment on 05/07/88 - Page 3 of 4

AL6N3

WILSON ANNE 1206320065 Age : 56 Years Bay No. 1

Mouth Condition

1 Assessment a: Coated tongue
b: Dry mouth
c: ..

2 Goal : ..

3 Review In: .. days

Hair Condition

4 Assessment a: ..
b: ..

5 Goal : ..

6 Review In: .. days

1 Normal	7 Infection present	13 Partial set of dentures
2 Furred tongue	8 Halitosis	14 Edentulous
3 Coated tongue	9 Tooth decay	15 Bleeding gums
4 Dry mouth	10 Dental caries	16 Hypertrophied gums
5 Coated mouth	11 Loose teeth	17 Cracked/Bleeding lips
6 Fissure	12 Full set of dentures	18 Other - specify

7

Personal Hygiene Assessment on 06/07/88 - Page 3 of 4

AL6N3

WILSON ANN 1206320065 Age : 56 Years Bay No. 4

Mouth Condition

1 Assessment a: Coated tongue
b: Dry mouth
c: ..

2 Goal : .

3 Review In: .. days

Hair Condition

4 Assessment a: ..
b: ..

5 Goal : .

6 Review In: .. days

- 1 Healthy mouth condition
- 2 Self care
- 3 Relief of mouth condition

00

Personal Hygiene Assessment on 05/07/88 - Current Assessment (Page 2 of 2)

WILSON ANNE 1206320065 Age : 56 Years Bay No. 1

6 Shaving :
Goal :

Assessed:
Review :

7 Mouth condition a: Coated tongue
b: Dry mouth
c:
Goal : Relief of mouth condition

Assessed: 05/07

Review : 07/07

8 Hair condition a: Normal
b:
Goal :

Assessed: 05/07

Review :

9 Skin condition a: Healthy but at risk
b:
c:
Goal : Prevention of skin breakdown
Confirm assessment details correct? (Y/N): Y

Assessed: 05/07

Review : 07/07

9

Ward 6

Patient Care Plan 13:54:58 05 JUL 1988

NS22

WILSON ANNE 1206320065 Age : 56 Years Bay No. 1

	Start	Initials						Night	Manual
		AM		PM				Staff	Backup
		8	10	12	2	4	6	8	Signature
Nursing Orders									
SHOWER WITH ASSISTANCE	27/06/88	----	----	----	----	----	----	----	----
HAIR CARE INDEPENDENT	27/06/88	----	----	----	----	----	----	----	----
MOUTH WASH AS ORDERED	23/06/88	----	----	----	----	----	----	----	----
TOILET WITH ASSISTANCE	27/06/88	----	----	----	----	----	----	----	----
PRESSURE AREA CARE - 4 HOURLY	27/06/88	----	----	----	----	----	----	----	----
4 HRLY TEMPERATURE:PULSE:BLOOD PRESSURE	24/06/88	----	----	----	----	----	----	----	----
UP WITH ASSISTANCE TO WALK	27/06/88	----	----	----	----	----	----	----	----
FLUID CHART	23/06/88	----	----	----	----	----	----	----	----
FREE FLUIDS	23/06/88	----	----	----	----	----	----	----	----
FEED BY SELF	27/06/88	----	----	----	----	----	----	----	----
LIGHT DIET	23/06/88	----	----	----	----	----	----	----	----
WEIGH WEEKLY	29/06/88	----	----	----	----	----	----	----	----
PHYSIOTHERAPY	23/06/88	----	----	----	----	----	----	----	----
ENCOURAGE DEEP BREATHING EXERCISES	23/06/88	----	----	----	----	----	----	----	----

Specimen Collections and Tests

URINE - DIP SLIDE 28/06/88

X-rays and Ultrasounds

No active X-rays/Ultrasounds

Theatre Instructions

For theatre tomorrow AM fast from 12 mid-night

Preparation: No preparations entered

0Breathing Assessment on 05/07/88 - Type of Breathing

AL1R2

WILSON ANNE 1206320065 Age : 56 Years Bay No. 1

Assessed on: 27/06/88

Goal: Maintain breathing pattern

Type was : Normal

By: 01/07/88

1 Evaluation a: ..
b: ..
c: ..

2 Assessment now a: ..
b: ..
c: ..

3 New Goal is : .

4 Review in : .. days

1 Achieved

2 Partially achieved

3 Ready to try next objective

4 Ready to maintain level of achievement

5 Progress delayed, changed physical state

6 Progress delayed, changed mental state

7 Patient not yet confident

8 More time required

9 Aid not suitable

10 Intervention not suitable

11 Patient not motivated

12 Other - specify

Activities of Living Assessments - Current Assessments

14:00:58 05 JUL 1988

ALCHEAD

WILSON ANNE 1206320065 Age : 56 Years Bay No. 1

Assessment	Assessed	Review	Goal	AL1C.HC
Breathing : Normal	05/07/88			
Rate per min.: 14	05/07/88	10/07/88	Maintain breathing pattern	
Colour : Pallor	05/07/88	07/07/88	Re-establish usual colour	
Breathless : None	05/07/88	10/07/88	Maintain condition	
Breathing aid: No	27/06/88			
Smoking habit Non-smoker	23/06/88			
Cough : Intermittent	27/06/88	30/06/88	Relief of cough	
Sputum : None	27/06/88	01/07/88	Maintain condition	

Assessment	Assessed	Review	Goal	AL3C.HC
Frequency x daily :				
Nocturia x nightly:				
Dysuria : During micturition	05/07/88	08/07/88	Reduced dysuria	
Haematuria : None	23/06/88			
Incontinence : Stress incontinence	05/07/88	07/07/88	Continence	
Retention : None	23/06/88			
Stoma : None	23/06/88			
Skin condition : Excoriated	05/07/88	07/07/88	Re-establish normal skin condition	
Other condition :				

Assessment	Assessed	Review	Goal	AL13C.HC
Type of sleep : Broken	27/06/88	30/06/88	Re-establish usual sleep pattern	
Disturbance factors: COUGHING	27/06/88	30/06/88	None	
Pattern of sleep : Early sleeper	27/06/88	30/06/88	Re-establish usual sleep pattern	
Early to wake				
Duration of sleep : APPROX. 4 HOURS	27/06/88	30/06/88	Re-establish usual sleep pattern	

Assessment	Assessed	Review	Goal	AL6C.HC
Bathing : Requires much assistance	05/07/88	08/07/88	Bathe with some assistance	
Showering : Cannot shower	05/07/88			
Oral hygiene : Independent	05/07/88			
Dressing : Independent	05/07/88			

North Derbyshire Health Authority (FIP Ward Nursing System)

In 1986 North Derbyshire HA undertook a detailed review of all the nurse manpower systems available and found that the FIP ward nursing system was most appropriate for its needs. It purchased the system and it is now installed on 18 wards in the district, covering a wide variety of specialties, including paediatrics and CCU, at the acute Royal Hospital, Chesterfield, four care of the elderly wards at Halton Hospital and one mental handicap unit at Whittington Hall Hospital. A psychiatric charge nurse has now been seconded to investigate the possibility of extending the system to the psychiatric field. The system is linked with the health unit's Trent patient administration system, running on the same DEC VAX machine. The program is written in MUMPS (a PICK version is also available). It has been announced recently that the Royal Hospital, Chesterfield has been nominated as an RMI site.

The FIP ward nursing system has emerged from a DHSS sponsored research and development project. The system is now in approximately fourteen health districts around the country, including Guy's Hospital, London, one of the original RMI sites. The remit of the Financial Information Project was to investigate the financial information required by health service managers to run an effective service and to develop computer systems to produce that information. A number of general operational management systems have been produced which have patient based costing as a by-product.

The system has three modules: activity, manpower and costing. For the activity module, each site is required to list the interventions different grades of

nurse undertake under the four headings: general nursing care, technical care, administration and miscellaneous (see attached - 1 for an example from general nursing care). For general nursing care, the system is based on nurses assessing their patients on their requirements for care using such factors as mobility, hygiene, psychological need etc. Each site completes files for the different divisions of each of these factors (for example see attachment 1). Individual technical activities are entered for the patient on a daily basis. Shared activities can be entered into the system in a number of ways depending on if they occur on a specific day of the week, on a daily basis, irregularly etc. The manpower module maintains a personal file on each member of staff in the hospital. The off-duty is put into the system each week and a facility enables adjustments to be made which can include any type of absence decided upon by the user. The module caters for both bank and agency nurses. For the costing module it is necessary to input mid point salary scales for all grades. It is possible to use a weighting factor for a particular ward if, say, all the nurses of a particular grade are receiving high increments.

Each day, all patients are assessed for their care requirements using a VDU on the ward. An example of a screen which nurses use to enter the appropriate codes is attached (No. 2). A 'help' facility is available which at the press of a button displays all the possible codes and their descriptions for the nurse to choose the relevant one. A thirty bed ward can be assessed in just over thirty minutes.

From the system, a number of outputs are obtainable. A daily workload print indicates whether there is a surplus or deficiency of qualified and/or

unqualified staff (see attached - No. 3). Long term information is stored and so actual and required establishments can be compared (No. 4). Due to individual patient information being in the system a care plan is obtainable (No. 5). A quality assurance module is part of the system. This allows an auditor to assess and record for a random sample of patients the quality of care given. The quality factors are decided upon by each hospital and set in files in the system. The results of an audit are input into the system so that an analysis of the results is available (No. 6). Numerous other prints are obtainable from the activity module: bedstate, average length of stay, analyses of technical care etc.

From the manpower module, the nurse manager is able to keep track of her/his staff. Individual nurse absence records (No. 7), manpower returns (No. 8), redeployment analyses and bank/agency nurse usage figures can be printed. From the costing module both planned and actual costs of nursing resources can be obtained for an individual patient (No. 9), by consultant, by specialty, by care group or by ward off-duty (No. 10).

IMPRESSION

Although I was in the process of implementing this system I thought it worthwhile to visit another site which was using the system more extensively. I was impressed by the enthusiasm of all grades of staff for the system, a situation certainly engendered by the project co-ordinator. The middle managers discussed their use of the workload outputs in the day to day running of their units. In the long term, information from the system had been used by both

nursing and medical staff to obtain an extra nurse in a particular unit. Nurses had begun to record all types of temporary absences from the ward (e.g. escort to X-ray department etc.) in order to gain accurate information on the time spent by staff away from their units. As the system lists the percentage of time spent on different activities nurses were beginning to question the amount of time they spent on certain interventions (e.g. taking temperatures).

Nurses on the wards were using the standard care plans from the system and the site had used some imagination in exploiting the small amount of flexibility in the system. The care plans are core care plans and nurses have to write on the prints to individualise them. The acceptance by nurses of the plans would seem to depend on their own particular stage of development in accepting the philosophy of the nursing process. The need to incorporate a problem solving approach into the care planning is accepted by FIP and plans are underway to change the software. In saying that the system does seem to provide detailed management information part of which is skill mix, an aspect missing from most systems. The quality assurance module is an important development and Chesterfield view it as an integral part of their present standard setting exercise and future auditing tool.

General Nursing Care

All nursing activities which are carried out relating to the mobility, hygiene, nutrition and incontinence needs have to be identified along with the appropriate grade of nurse which can undertake them.

Skill Levels for General Nursing Care

CODE	DESCRIPTION	1W	AUX	1YR	2YR	3YR	NEN	TRND
[1	[SIT PATIENT UP IN BED	[.5	[.5	[.9	[.9	[.9	[1	[1
[2	[SIT PATIENT UP IN BED	[.5	[.5	[.9	[.9	[.9	[1	[1
[3	[LIFT FROM BED-CHAIR/CHAIR-BED	[.5	[.5	[.9	[.9	[.9	[1	[1
[4	[ASSIST FR.BED-CHAIR/CHAIR-BED	[.9	[1	[.9	[.9	[.9	[1	[1
[5	[PRESSURE AREA CARE/TURN PAT.	[.5	[.5	[.9	[.9	[.9	[1	[1
[6	[CHECK/RECORD COND. OF P. AREAS	[.5		[.9	[.9	[.9	[1	[1
[7	[ENSURE PAT.MOVEMENT 2-4HOURLY	[.5	[.5	[.9	[.9	[.9	[1	[1
[8	[ASSIST/ENCOURAGE PAT. TO WALK	[.5	[.5	[.9	[.9	[.9	[1	[1
[9	[ASSIST PAT. TO WALK TO TOILET	[.5	[.5	[.9	[.9	[.9	[1	[1
[10	[CONDUCT PASSIVE LIMB EXERCISES	[.5	[.5	[.9	[.9	[.9	[1	[1
[11	[ASSIST PAT. ON/OFF COMMUNE	[.5	[.5	[.9	[.9	[.9	[1	[1
[12	[ASSIST ON/OFF COMMUNE	[.9	[.1	[.9	[.9	[.9	[1	[1

At present the system divides nurses into students on their first ward, auxiliaries, first, second and third year students, newly enrolled nurses and qualified nurses (the software is being amended to divide qualified nurses into more than one skill group). Each hospital decides whether each skill level should not be undertaking the activity (zero), requires help from a higher skill level (0.5), can do most of the activity but requires a final check from a higher skill level (0.5) or requires no help from a higher skill level (1).

Each of the general nursing care factors (e.g. mobility) is subdivided into a number of groups. For example, the codes used for mobility may be:

- 1 - Independent
- 2 - Requires one nurse assistance
- 3 - Requires two nurse assistance
- 4 - Chairfast
- 5 - Mobile in bed
- 6 - Immobile in bed

A list of activities to that subfactor is created with the total time taken to carry out the activity and the estimated frequency of the activity during the day and night. For example:

Mobility Factor 2

Code	Description	No. Nurses	Total Time	Day Freq.	Night Freq.	Sex
[3	[ASSIST FR.BED-CHAIR/CHAIR-BED	[1	[1.8	[3.5	[.5	[
[7	[ASSIST/ENCOURAGE PAT. TO WALK	[1	[6	[1	[[
[8	[ASSIST PAT. TO WALK TO TOILET	[1	[7	[3	[1	[
[10	[ASSIST PAT. ON/OFF COMMUNE	[1	[6.8	[	[1	[F
[12	[GIVE/REMOVE URINAL	[1	[1.4	[	[2	[M
[31	[MAKE UNOCCUPIED BED	[2	[7	[1	[[
[33	[STRAIGHTEN BED (AS REQUIRED)	[1	[1	[	[1	[
[34	[MAKE COMFORTABLE FOR THE NIGHT	[1	[1.5	[[1	[
[48	[COLLECT/REMOVE PATIENT'S CHAIR	[2	[1.5	[2	[[

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[33	[STRAIGHTEN BED (AS REQUIRED)	[1	[1	[]	[1	[]
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[34	[MAKE COMFORTABLE FOR THE NIGHT	[1	[1.5	[]	[1	[]
[48	[COLLECT/REMOVE PATIENT'S CHAIR	[2	[1.5	[2	[]	[]

USING THE SYSTEM

Every day on the ward, each patient is assessed according to their needs using a VDU situated on the ward. The names of patients on the ward the previous day are automatically displayed. The system will either stand alone or link to a Patient Administration System (PAS) which means that patients registered using the PAS are automatically displayed each day for assessment. The patients are assessed for their general nursing care requirements by entering codes relating to their dependency on nursing staff for the assessment factors Mobility, Hygiene, Meals, Psychological Need and Incontinence. The patients actual technical care requirements are also entered onto the screen (with their previous days technical care displayed for amendment). A 'help' facility is available which at the press of a button displays all the possible codes and their descriptions for the nurse to choose the relevant one. There is a different screen for each specialty reflecting the different technical care procedures between specialties. The screen displayed will depend on the patients main specialty. An example screen for a general medical ward is shown as an example:-

GENERAL MEDICINE

Assessment for: 17 DEC 88

SPEC 01 100 MARY THOMAS

PREVIOUS C. GROUP 4
TODAYS C. GROUP

MOBILITY [6]
MEALS [5]

HYGIENE [5]
PSYCHOLOGICAL NEED [2]

INCONTINENCE []
PATIENT FOR THEATRE []

FLUID/MONITOR	MEDICATION	IM	O	OBSERVATION	SPECIALTY/OTHER
IV Fluid []	Contr'd Med []	[]	[]	TPR [D]	Education []
Unit of Blood []		HEP	ANB	BP [D]	[] NG Tube Insert []
IV Feeding []	IV Injection []	[]	[]	Apex/Pulse []	Venesection []
IV Additives []	IM Injection []	[]		Neuro Obs []	Barrier Nurse []
IV Plats/Ser []	SC Injection []	[]		Peak Flow []	Prep Spec Bed []
IV Chemoth'py []	Syringe Pump []	[]		Calf/Girth []	Prep X-ray/Ultrasound []
Insert CVP []	Nebulizer [6]	[6]		Weight [Y]	Prep for BA Enema []
Read CVP []	Oxygen [Y]	[Y]		SPECIMENS ROU	DIA Fit Elas Stocks/Tubgrn []
Fluid Balance [Y]	ASEPTIC PROCEDURES []			Urinalysis []	[] Chest Aspiration []
Cardiac Montr []	Minor Dressing [1]	[1]		MSU/CSU []	Chest Drain []
ELIMINATION []	Inter Dressing []	[]		Stool/OBT []	Bone Marrow Puncture []
Stoma Care []	Major Dressing []	[]		Sputum []	Endoscopy []
Suppositories []	Catheterisation []	[]		BM/GM Stix []	Liver Biopsy []
Enema []	Bladder Washout []	[]		Swabs []	Lumbar Puncture []
Man Evac Rect []	Oro Trach Suct []	[]		24hr Urine []	Applic of Cream []
RESEARCH [] []	NURSE INITIALS []				Sigmoidoscopy []

Assessments can be completed in approximately one minute per patient if the patients needs are known by the nurse.

From this information, patients can be assigned to a care group to indicate their dependency on nurse time i.e care group 1 patient - mobile with minimal nurse care, to care group 5 patient - requires 24 hour specialling. These dependency figures can be used as performance indicators in management review exercises.

Examples of screens for other specialties are shown overleaf.

Workload Prints

When all the patients have been assessed on the ward the nurse is asked for the likely day cases, ward attenders, admissions, discharges and transfers over the next 24 hours. It is then possible to obtain a printout indicating the nursing workload and manpower required for the next 24 hours.

If students are working on the ward from a skill levels calculation their effective hours are shown to allow time, dependent on the work required on the ward each day, for them to observe and learn. A sample print is shown as an example:-

AS ASSESSED AT 7:45 ON 17/12/88 GENERAL HOSPITAL WARD 5B

CARE GROUP	No. PATIENTS FOR THEATRE	No. PATIENTS IN C. GROUP
1	0	6
2	0	10
3	0	6
4	0	4
5	0	0
TOTAL NUMBER OF PT'S		26
EXPECTED ADMISSIONS		7
EXPECTED DISCHARGES		-3
EXPECTED TRANSFERS IN		0
EXPECTED TRANSFERS OUT		-1
-----		-----
TOTAL PLANNED PATIENTS		29
-----		-----
DAY CASES/WARD ATTENDERS		1

STAFF GRADE	HOURS AVAILABLE	
	DAY SHIFTS	NIGHT SHIFT
TRAINED STAFF	43.0	30.0
3rd YEAR LEARNERS (EFFECTIVE)	8.0 (6.8)	
2nd YEAR LEARNERS (EFFECTIVE)		
1st YEAR LEARNERS (EFFECTIVE)	16.0 (7.8)	
NURSING AUXILIARIES	8.0	10.0
TRAINED BANK/AGENCY NURSES	0.0	0.0
UNTRAINED BANK/AGENCY NURSES	0.0	0.0
TOTAL HOURS AVAILABLE (EFFECTIVE)	75.0 (62.8)	40.0 (38.0)
MORNING/AFTERNOON/EVENING	5/8/5	
TOTAL HOURS REQUIRED (MINIMUM HRS)	64.7	21.8 (34.5)
=====	=====	=====
SURPLUS/DEFICIENCY		
TRAINED STAFF	0.0	3.5
AUXILIARY GRADE AND ABOVE	-1.9	0.0
-----	-----	-----

The system will calculate the effective hours of students by looking at what activities are required that day and by searching the skill level files to see if the different students can or cannot undertake those activities. In effect, students are not treated as 'pairs of hands' but are given time to observe care being given by qualified nurses. The print indicates whether there is a surplus or deficiency of qualified and/or unqualified staff.

Any alterations made during the 24 hour period can be noted whether it is sickness or the allocation of bank nurses. This information can be entered straight into the computer and from this data a monthly summary of hours required and available is produced together with a required establishment calculation.

MONTHLY WARD REPORT =====

WARD : H

DATE : 1-31 DEC

WORKLOAD

	Care Group					Total
	1	2	3	4	5	
Average number of Patients in each Care Group	3	2	0	2	0	6
Percentage of Patients in each Care Group	41	32	1	26	0	

% Bed Occupancy was 30.32 %

Total Number of Planned Admissions	47	Discharges	34
Transfers in	0	Transfers out	0
Day Cases	29	Ward Attenders	0

	DAY	NIGHT
Average Nurse Hours required	31.97	17.42
Average Effective Hours available	29.97	17.07
Average Surplus/Deficiency after adjustments		
Trained Staff	1.17	-0.17
Aux Grade or above	-3.75	-0.17
The hours Required fell below the minimum for Safe and practical running of the ward on	21	31 occasions

MANPOWER

The Hours Available fell below the minimum for the safe and practical running of the ward on	15	0 (occasions)
Total Hours Lost from Ward were (Unplanned only)	24.0	0.0
Total Hours Gained by Ward were	6.0	0.0
Bank Nurse Hours used were	6.0	0.0
Agency Nurse Hours used were	0.0	0.0
Hrs of staff redeployed into Ward (occasions)	0.0 (0)	0.0 (0)
Hrs of staff redeployed out of Ward (occasions)	24.0 (8)	0.0 (0)

ESTABLISHMENT

The students on the Ward this month in Whole Time Equivalents were :

	Allocated	Effective
1st Warders	0.0	0.0
1st Years	0.0	0.0
2nd Years	0.0	0.0
3rd Years	2.4	0.5

Ward Establishment, including effective students is (in WTE)

	Day	Night
Trained	4.3	3.0
Untrained	3.2	3.0

The required establishment this month was (in WTE)

	Day	Night
Trained	4.9	2.0
Untrained	2.5	2.0

CARE PLANS

This option allows the user to print off a patient's individual care and Theatre profile based on the patient's assessment for the day specified. The following pages provide examples of the format the care plan may take.

184 ANN PARRY

Age:60

Cons:CG

Day:18

Assessed by:LL on 6/11/88

ASSESSMENT/PROBLEM	EXPECTED OUTCOME/GOAL	PLANNED INTERVENTIONS
Patient immobile in bed	Patient does not develop any complications from bedrest	1)Ensure adequate toileting - offer urinals/bedpans ___ hr 2)Change position of patient every 2 hours 3)Check/record condition of pressure areas 4)Record Norton score daily 5)Consider an Ardo/Dyson mattress 6)Record frequency and consistency of bowel motions 7)If eating, encourage a high fibre diet 8)If constipated, give aperient after 3 days 9)Encourage to cough every 2 hours 10)Teach deep breathing exercises 11)Assist with limb exercises 12)Consider the use of TED stockings 13)Provide a call bell within easy reach of patient 14) 15)
Patient needs feeding	Patient is satisfied with meals and maintains steady body weight	1)Ensure that the patient is in a comfortable position prior to meal time 2)Take time while feeding the patient, make it a social occasion 3)Make use of any feeding skills the patient has 4)Record how much the patient eats/drinks 5)Weigh the patient at least once a week 6)If necessary, for advice consult the dietician 7)Check/maintain oral hygiene ___ times a day 8) 9)
Patient requires Blanket Bath	Patient is comfortable and involved in own care as far as is able. Skin is clean and dry	1)Assess and agree how hygiene needs are to be met and assist appropriately 2)Encourage independence and maintain privacy 3)Observe mouth/eye condition and give appropriate care 4) 5)
Catheterised	Patient is comfortable and is infection free, the catheter is draining well and the urine is clear	1)Explain to patient why the catheter is needed and how it works 2)Ensure that the patient drinks ___ mls of fluid a day 3)Chart the input/output 4)Catheter care ___ times a day 5)Empty bag by safe technique 6) 7)

This allows an auditor to assess and record for a random sample of patients the quality of care given on a ward. The quality factors are decided upon by each hospital and set in files in the system. The results of the audit can be input back into the system so that an analysis of the results can be made available. The module allows nurses to monitor the service they are providing in order to both consolidate areas of good quality and improve aspects of care which are not reaching the stated standard. An example of an audit analysis is given

WARD : WARD TEN

Quality Assurance/Standards Report

Page 1

Number of patients in sample: 20

Start Date 6/01/89

Finish Date 6/01/89

BASIC CARE ASSESSMENT

Assessed/administered basic care:

80% of patients in the sample were assessed correctly.

90% of patients in the sample received the correct basic care.

Of the 20 patients assessed:-

	<u>OVER ASSESSED</u>	<u>UNDER ASSESSED</u>
Mobility	3	0
Hygiene	0	0
Meals	0	0
Psychological Need	0	0
Incont	Patients assessed as Incont' who were not	: 1
	Patients not assessed as being Incont' who were	: 0
	Patients assessed as being Incont' but with	
	incorrect assessment :	0

BASIC CARE QA INFORMATION

	<u>QA DESCRIPTION</u>	<u>% Of Sample</u>
Mobility	PATIENT NOT MOBILISED AS IN CARE PLAN	10
	PATIENT NOT CORRECTLY POSITIONED	5
	PATIENT NOT ENCOURAGED TO SELF CARE	0
	NEEDS FOR BREATHING NOT MET	0
	NEEDS FOR ELIMINATION NOT MET	10
Hygiene	NEEDS FOR SKIN CARE NOT MET	0
	NEEDS FOR MOUTH CARE NOT MET	5
	NAIL CARE NOT UNDERTAKEN	40
	PATIENT NOT OFFERED HAND WASH BEF.MEALS/AFT TOILET	15
	GENERAL HYGIENE NEEDS NOT MET	10
Incontinence	PATIENT NOT CLEAN AND DRY	0
	INCONTINENCE NOT CHARTED	10
	CONTINENCE ADVISOR NOT INFORMED	50
	NO EVIDENCE OF PROPER ASSESSMENT	50
Meals	NUTRITIONAL INTAKE OF PATIENT NOT RECORDED	1
	PATIENT NOT GIVEN THE FOOD ORDERED	50
	PATIENT NOT ALLOWED TO EAT AT OWN PACE	5
Psychological Need	PAT. NOT TOLD WHICH NURSE IS CARING FOR HIM/HER	5
	NURSING STAFF DO NOT CALL PAT. BY PREFERRED NAME	0
	PAT. NOT CONTENT WITH ACCESS AVAILABLE TO VISITORS	0

NURSING RECORDS QA INFORMATION

	<u>QA DESCRIPTION</u>	<u>% Of Sample</u>
Nursing history assessment		
	NO REFERENCE TO ALLERGIES	10
	NO EMERGENCY CONTACT NUMBER	5
	NO RECORD OF MENTAL EMOTIONAL STATE	50
	NO RECORD OF PATIENT'S UNDERSTANDING OF CONDITION	75
	NO RECORD OF RELATIVES UNDERSTANDING OF CONDITION	75
	FOOD LIKES/DISLIKES NOT RECORDED	10
	RELIGION NOT RECORDED	5
Problem identification		
	CERTAIN PROBLEMS OF PATIENT NOT IDENTIFIED	50
	PROBLEM(S) IDENTIFIED MEDICALLY ORIENTED	10
Goals/objectives		
	IDENTIFIED GOAL(S) UNREALISTIC	0
	IDENTIFIED GOAL(S) NOT PATIENT BASED	10
	IDENTIFIED GOAL(S) NOT MEASUREABLE	15
Evaluation		
	NO EVALUATION OF GOALS EVIDENT	50
	EVALUATION BASED ON INTERVENTIONS NOT GOALS	5

WARD ENVIRONMENT QA INFORMATION

	<u>QA DESCRIPTION</u>	<u>% Of Sample</u>
Organisation		
	WARD WELL ORGANISED	100

PATIENT SATISFACTION QA INFORMATION

	<u>QA DESCRIPTION</u>	<u>% Of Sample</u>
Environment		
	NOT ENOUGH PRIVACY BEEN PROVIDED	100
	BATHING/TOILET FACILITIES INADEQUATE	70
	WARD NOT QUIET ENOUGH AT NIGHT	50
Communication		
	ON ADMISSION, NOT TOLD OF WARD FACIL./ORGANISATION	0
	NOT FULLY INFORMED OF CONDITION	70
	PAT. THINKS RLAB. DISSATISFIED WITH COMMUNICATION	100
Support services		
	MEALS HAVE BEEN COLD ON ARRIVAL	70
	POOR QUALITY OF FOOD	0
	FOOD DIFFERENT TO WHAT ORDERED	50
	GENERAL DISSATISFACTION WITH MEAL SERVICE	50
Nursing care		
	NURSES KIND AND POLITE	100
	FULLY INVOLVED IN CARE	100
	NURSES RESPONDED PROMPTLY TO REQUESTS	60

Individual Nurse Absence

A detailed absence record for each individual nurse can be obtained. Types of absences used are decided upon by each site.

Individual Nurse Absence

Recorded Absence from 01/4/88 to 31/10/88

GRADE: SISTER

FORENAME:

SURNAME:

ANNUAL LEAVE	DAYS	BANK HOLIDAYS	DAYS	OVERTIME : 0	Hours
Allocated	25	Allocated	10		
Carried Over	0	Taken	9		
Taken	20		---		
	---		1		
	5				

ANNUAL LEAVE	Date Started	Date Finished	Hours Lost
	24/4/88	30/4/88	37.5
	05/6/88	11/6/88	37.5
	14/8/88	20/8/88	37.5
	23/10/88	29/10/88	37.5

			150.0

BANK HOLIDAY	Date Started	Date Finished	Hours Lost
	21/4/88	21/4/88	8.0
	26/5/88	26/5/88	8.0
	21/6/88	22/6/88	16.0
	21/7/88	21/7/88	8.0
	29/7/88	30/7/88	16.0
	10/10/88	11/10/88	16.0

			72.0

SICK LEAVE	Date Started	Date Finished	Hours Lost
	10/4/88	11/4/88	16.0
	12/6/88	16/6/88	37.5
	20/10/88	20/10/88	5.5

			59.0

STUDY LEAVE	Date Started	Date Finished	Hours Lost
	04/5/88	04/5/88	8.0

Manpower Returns

The Senior Nurse of a unit usually has to tabulate each month her establishments and compare them with those actually in post. A print automatically produces these figures together with both the types of absences which have occurred and the percentage absence by grade. An example is shown below:-

NURSING SERVICES MANPOWER RETURNS														
05 OCT														
UNIT 1 A/S UNIT														
From to DAYS														
	ESTAB- LISHED	STAFF IN POST					TIME OUT					TOTAL		
		WTE	FULL TIME	PART NO	TIME WTE	TOTAL WTE	WTE +/-	LEAVE					ABSENCE WTE	ACTUAL STAFF ABSENCE PERCENTAGE BY GRADE
								SL	AD	AL/BH	ML	CL		
SISTER	2.00	4	0	0.00	2.94	0.94	0.0	0.0	0.0	0.0	0.0	0.00	0.00	
S/N	3.00	1	1	0.70	1.70	-1.30	52.5	0.0	0.0	0.0	0.0	0.23	13.28	
NEW RGN	1.00	0	0	0.00	0.00	-1.00	0.0	0.0	0.0	0.0	0.0	0.00	13.28	
S.EN	2.00	0	0	0.00	0.00	-2.00	0.0	0.0	0.0	0.0	0.0	0.00	13.28	
EN	1.00	1	0	0.00	1.00	0.00	0.0	0.0	52.5	0.0	0.0	0.23	22.58	
POST REG		0	0	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.00	22.58	
N.AUX	3.00	1	0	0.00	1.00	-2.00	0.0	0.0	0.0	0.0	0.0	0.00	0.00	
N.NURSE		0	0	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.00	0.00	
SUB TOTAL	12.00	7	1	0.70	6.64	-5.36	52.5	0.0	52.5	0.0	0.0	0.45	35.86	
JOINS		0	0	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.00	0.00	
WD CLERK		0	1	0.80	0.80	0.80	0.0	0.0	0.0	0.0	0.0	0.00	0.00	
DAY TOTAL	12.00	7	2	1.50	7.44	-4.56	52.5	0.0	52.5	0.0	0.0	0.45	35.86	

Number of Full time SISTER's commencing within the specified period : 2
 Number of Part time S/N's commencing within the specified period : 1

PATIENT EPISODE COST REPORT

This report shows an individual patient's planned and actual cost for their episode of care.

PATIENT EPISODE COST REPORT

Patient Number: 01784
 Patient Name: DAVID E
 Age: 32
 Sex: M
 Ward(s): V
 Specialty: Ophthalmology
 Date of Admission: 26/6/
 Date of Discharge: 08/7/
 Length of stay: 13

COSTING FOR : DAYS

PLANNED COST					ACTUAL COST					Actual
					(Based on Average rates per Hr)					Minus
Indiv	Shared	Abse-	Staff	TOTAL	Indiv	Shared	Abse-	Staff	TOTAL	Planned
		Ince	Mand'tl				Ince	Mand'tl		Cost
£	£	Cost	£	£	£	£	Cost	£	£	£
1122.4	1133.6	1150.2	45.6	451.8	83.2	1104.8	1142.2	45.6	1375.8	-76.0

COSTS BASED ON AVERAGE STANDARD RATES PER HOUR (RATES EFFECTIVE ON 26/6/)

PLANNED COSTS BASED ON :-

GRADE	MID POINT STANDARD RATE £	GRADE	MID POINT STANDARD RATE £
3RD	2.22	EN	4.53
N/A	3.42	S/N	5.00
SEN	5.00	SISTER	7.02
WRD CLRK	2.22		

ACTUAL COSTS BASED ON :-

GRADE	WARD STANDARD RATE £	GRADE	WARD STANDARD RATE £
3RD	2.35	EN	3.33
N/A	2.62	S/N	3.59
SEN	3.58	SISTER	4.91
WRD CLRK	2.22		

BREAKDOWN OF STAFF COSTS BY WARD

WARD : 32
Print for : DAY & NIGHT

HOSPITAL : NEVILL HALL
From : 1/7/88 to 31/7/88

GRADE OF STAFF	PLANNED STAFF ON WARD					ACTUAL STAFF ON WARD					ACTUAL COSTS MINUS PLANNED COSTS
	TOTAL	PLANNED	TOTAL	PLANNED	TOTAL	TOTAL	ACTUAL	TOTAL	ACTUAL	TOTAL	
	HOURS WORKED	COSTS £	HOURS ABSENT	COSTS £	COSTS £	HOURS WORKED	COSTS £	HOURS ABSENT	COSTS £	COSTS £	
SISTER	286.0	2285.0	39.4	252.4	2537.3	296.0	2285.0	39.4	252.4	2537.3	0.0
S/N	637.0	3163.2	186.7	778.5	3941.7	640.0	3175.7	192.1	801.0	3976.7	35.0
EN	882.5	4129.2	377.8	1458.3	5587.5	897.0	4108.0	402.5	1553.6	5661.6	74.2
3RD.STUD	246.5	818.7	0.0	0.0	818.7	246.5	818.7	8.0	22.9	841.6	22.9
2ND.STUD	10.0	33.8	0.0	0.0	33.8	10.0	33.8	0.0	0.0	33.8	0.0
2ND.PUPL	174.0	551.9	0.0	0.0	551.9	166.0	531.1	21.5	55.9	587.0	35.1
1ST.STUD	543.0	1614.6	35.1	86.7	1701.4	575.0	1594.9	48.1	118.8	1713.7	12.4
N/A	650.5	2505.8	141.6	468.1	2973.9	680.5	2580.7	156.0	526.2	3106.9	133.0
W.CLERK	0.0	0.0	20.0	55.6	55.6	0.0	0.0	20.0	55.6	55.6	0.0
TOTALS	3429.5	15102.2	800.7	3099.5	18201.7	3511.0	15127.8	987.7	3296.5	18514.3	312.6

Weymouth and District General Hospital, West Dorset HA (Exelcare)

In November 1987 the implementation of Exelcare was commenced at the 161 bed Weymouth and District General Hospital. Funding was provided by Wessex RHA for the piloting of the system on a 15 bed male surgical ward and a 25 bed female medical ward. After an unsuccessful experiment in Riverside HA, this site is the first in the UK to implement the system. A number of other sites are now using the system (these include Huddersfield (RMI pilot site), Basildon and Powys).

Exelcare is a micro-based system providing decision support for the planning, documenting, staffing, evaluating and costing of nursing services. The sales literature claims that it is 'driven by the nursing process'. It is based on the formation of 'units of care' which relate to patients' nursing problems. Each site has to list the kind of problems specific to their patient population. Weymouth itself has listed 200 problems or units of care (see attached - 1). For each unit of care it is necessary to list the appropriate interventions that the nursing staff will be carrying out. Each site also has to designate a time, frequency and skill category to each of the interventions listed in each unit of care. Designating a skill category means deciding whether the intervention can be carried out by a registered nurse, an enrolled nurse or an unqualified nurse.

Every day, patients' problems are input into the computer from which a care plan is extracted. The nurse can further individualise the care plan after it has been printed. An example of a care plan is shown for a patient who is self

caring and has a potential for depression (see attached - 2). The care plan lists the interventions set into the system for the chosen patient problems. Next to the interventions are times based on the twenty four hour clock when nurses need to record that they have undertaken the activity. Any changes in care can also be recorded in the space provided. At Weymouth the nurses were assessing the patients late in the morning and generating the care plans around mid-day for the next twenty four hours. The care plans are stored in the medical notes but due to the large quantity of paper being produced, discussions were taking place about the microfilming of care plans.

For each unit of care the site can input related outcome standards. It is then possible to take a print of a Patient Evaluation Form which lists all the outcome standards of the units of care chosen for the patient throughout his stay in hospital (see attached - 3). On the list, next to each standard are columns for the nurse to tick whether the standards were met or not. At Weymouth, nurses were extracting a certain number of evaluation forms each month and checking whether outcomes were being achieved.

As the interventions in the system are assigned time and skill level values management information can be extracted from the system. It should be pointed out that non-patient based activities are assigned a set percentage of the overall time of patient based activities. The percentage is calculated from timing studies undertaken prior to the installation of the system. The system is then able to calculate the workload of the ward. This calculation is retrospective not prospective. At Weymouth, prior to assessing their patients for the next 24 hours, the nurses look at the off-duty, calculate the number of

hours of registered nurses, enrolled nurses and unqualified nurses that were available in the past 24 hours, work out what each of these three groups represented as a percentage of the total hours available and input the three percentages into the computer. The system not only calculates the workload of the ward but also prints out the individual patient care requirements in terms of hours and pounds sterling (see attached - 4).

IMPRESSION

Having the opportunity to discuss the system with one of the ward sisters I received the impression that the nurses welcomed the system. The production of care plans was seen as a great benefit compared to having to spend a great deal of time writing care plans. I was a little surprised at the sales literature contention that the system is 'driven by the nursing process'. This is clearly not so. It is my understanding that the nursing process is a system of planning care based on setting goals for the patient which are based on the assessment of problems. The evaluation of care is undertaken by checking whether the goals have been met. No where does the nurse set goals for the individual patient although there are standard outcomes, relating to the units of care, which are printed on the patient evaluation form.

This form, although helpful in aiding nurses to assess whether they are giving good care, has a number of drawbacks. The nurses seemed to be checking these forms once a month. For any individual patient, whose problems are going to change during his stay in hospital, the nurse will have to check the outcomes related to all the units of care which have been chosen throughout the hospital

stay, not just those which are relevant to the patient at the time. The patient evaluation form attached asks a nurse to assess such an outcome. I was also unsure of the benefit of just ticking whether outcomes had occurred or not. I would have thought that a more formal evaluation was required as is a facility to analyse the results of the evaluation.

The method of workload calculation based as it is on the care plan seems theoretically sound, however, I did become aware of a number of problems. As the management reports were not being used at the time of my visit I hope that the following observations are correct. The site had had difficulties in deciding whether to count students who worked on the wards as unqualified nurses as far as the system was concerned. There is no special category of student presumably due to the systems origins in the USA where all students are supernumary. In the UK, where they are part of the workforce to count them as unqualified staff results in not allowing them time to observe care being given by qualified nurses while not counting them as unqualified staff means that their contribution to the workload goes unrecorded. Weymouth had not resolved this problem at the time of my visit. Another issue of importance is the possibility of distortions in the workload calculation due to certain combinations of units of care chosen for a patient. As different units of care can and do hold the same interventions if two or more of those units of care apply to a particular patient too much time is allotted to that patient. It is also possible that conflicting interventions may result on a care plan due to the units of care chosen. For instance a patient may require 'nasogastric feeding' and have 'a potential for depression'. As the latter unit of care

includes 'give small frequent meals' it can be seen that inconsistencies can arise which distort the workload calculation.

Overall, the system produces care plans which are acceptable to the nurses although they can be seen to have some questionable characteristics. At this point in time the management aspects of the system require further adaptations to improve the accuracy of the reports.

Date: 31/10/88
Time: 12:16

EXCELCARE(tm) Unit of Care Summary Report
WEYMOUTH AND DISTRICT HOSPITAL
MAUD ALEXANDER

Page: 1

DC
Code

Description

100	ADMISSION-PREPARATION/ORIENTATION/ASSESSMENT
1101	DVT/PE.
1102	HEALTH TEACHING-GENERAL.
1103	JAUNDICE
1104	STANDARD ISOLATION
1105	PROTECTIVE ISOLATION
1106	HIV - ISOLATION.
1107	EPILEPTIC FITS
1109	SENGSTAKEN TUBE
1112	HYPERTENSION
1115	FLUID & ELECTROLYTE IMBALANCE.POTENTIAL
1116	SYRINGE PUMPS
1117	CENTRAL VENOUS PRESSURE-MONITORING
1118	PRE-OPERATIVE CARE.GENERAL
1119	LVF AND CCF
1123	FLACCID BLADDER.
1125	MYOCARDIAL INFARCTION.POSS/ACTUAL
1127	HEAD INJURY.
1130	WOUND CARE - DRESSING
1134	ISCHAEMIA OF A LIMB.
1136	POST-OP CARE.GENERAL
1139	DISCHARGE OF A PATIENT.
1140	INTRAVENOUS INFUSION.
1141	INCREASED INTRACRANIAL PRESSURE.
1142	ADMINISTRATION OF STEROIDS.
1144	G.I BLEEDING (DIAGNOSIS UNKNOWN)
1145	ANTICOAGULANTS
1148	CARDIAC MONITORING
1149	PERIPHERAL NEUROPATHY
1151	CHEMOTHERAPY - DURING ADMINISTRATION.
1153	PACEMAKER.
1154	CHEMOTHERAPY - PREP.& POST TREATMENT.
1155	EPISTAXIS
1156	MENINGITIS/ENCEPHALITIS.
1157	DECREASED WHITE BLOOD CELLS.
1158	DECREASED THROMBOCYTES (THROMBOCYTOPENIA)
1159	DECREASED RED BLOOD CELLS.
1160	APLASTIC ANAEMIA/BONE MARROW SUPPRESSION
1161	HYPOCALCAEMIA.
1162	LOW SERUM POTASSIUM.POTENTIAL
1163	DECREASED/UNCONSCIOUSNESS

Date: 31/10/88

EXCELCARE(tm) Unit of Care Summary Report
WEYMOUTH AND DISTRICT HOSPITAL
MAUD ALEXANDER

Page: 2

Time: 12:16

IC Code	Description
1164	ASSAULTIVE BEHAVIOUR.(POT.FOR).
1165	DIABETES MELLITUS.
1169	PATIENT TRANSFER
1170	VERTIGO (DIZZINESS)
1171	TOTAL PARENTERAL NUTRITION.
1174	BLOOD TRANSFUSION
1177	OWN DISCHARGE OF A PATIENT.
1178	NASO-GASTRIC TUBE-CARE OF.
1183	VENFLON
1184	ALCOHOLIC POISONING.
1185	CARDIAC ARREST
1186	WARD ATTENDERS.
1187	CONFUSION
1188	ARRHYTHMIAS
1189	FOR MEDICAL INVESTIGATIONS/TESTS
1201	ANXIETY-FAMILY
1202	APHASIA
1204	ANXIETY - PT.
1205	DEAFNESS .
1208	CARE OF THE BLIND.
1209	BLINDNESS-HOMONYMOUS HEMIANOPIA(IN 1/2 OF VISUAL FIELD)
1302	CHEST INFECTION
1303	BED REST
1305	MAINTENANCE OF UNDERWATER SEAL DRAINAGE.
1306	BRONCHITIS.
1308	CHRONIC OBSTRUCTED AIRWAY.
1309	ASTHMATIC EPISODE-ACUTE
1310	ATELECTASIS
1312	TRACHEOSTOMY CARE.
1313	DYSPNOEA ACUTE
1314	PNEUMONIA
1315	PULMONARY EMBOLISM.
1317	PULMONARY OEDEMA.
1318	DYSPNOEA ON EXERTION/CHRONIC DYSPNOEA.
1402	FEEDING THE PATIENT-ADULT.
1403	NASO-GASTRIC TUBE FEEDING.
1404	DYSPHAGIA
1405	DEHYDRATION
1406	RENAL FAILURE
1407	PEPTIC ULCER
1408	MOUTHCARE.

Date: 31/10/88
Time: 12:16

EXCELCARE(tm) Unit of Care Summary Report
WEYMOUTH AND DISTRICT HOSPITAL
MAUD ALEXANDER

Page: 3

DC
Code

Description

DC Code	Description
1410	ESOPHAGITIS/GASTRITIS & HEALTH TEACHING
1502	NAUSEA
1503	CONSTIPATION
1507	OSTOMY - HEALTH TEACHING.
1508	OSTOMY
1509	URINARY TRACT INFECTION -PREVENTION.
1510	INDWELLING URETHRAL CATHETER.
1511	BLADDER TRAINING.
1512	VOMITING
1513	FAECAL IMPACTION REMOVAL
1514	ENEMA
1515	DIARRHOEA.
1516	BOWEL TRAINING.
1517	BOWEL PREP.FOR EXAMINATION/INVESTIGATION.
1520	URINARY TRACT INFECTION
1601	PARTIAL CARE
1602	COMPLETE CARE.
1603	SELF CARE.
1701	PYREXIA
1801	RHEUMATOID ARTHRITIS
1803	TRACTION - GENERAL
1806	PLASTER OF PARIS-GEN.CARE.
1807	MAINTAIN FUNC.MUSCLES & JOINTS
1809	LEG ULCERS
1810	PERIPHERAL OEDEMA.
1814	DEEP VEIN THROMBOSIS
1815	PARALYSIS OF AN EXTREMITY.(SPASTIC/FLACID)
1901	SLEEP NEED FOR.
2101	PAIN
2102	ANGINA
2201	DEATH OF A PATIENT WITH INFECTIOUS DISEASE.
2202	LAST OFFICES
2203	FEAR OF DYING.
2301	CHANGE IN BODY IMAGE-ANXIETY DUE TO.
2302	REHABILITATION-PREP FOR FAMILY
2303	SUICIDE.POTENTIAL
2304	POT.FOR DEPRESSION.
2401	ACTIVITIES OF DAILY LIVING

DAILY

Patient: W71

WI CATH

Cons: D
Specialty: MED

Bed:

Care Plan Summary

1603 SELF CARE.
2304 POT.FOR DEPRESSION.

1603 SELF CARE.

1. EXPLAIN ALL PROCEDURES, PROVIDE PRIVACY & EMOTIONAL SUPPORT WHEN GIVING CARE. ALLOW EXPRESSION OF FEARS & ANXITIES FOR BOTH PATIENT/FAMILY/SIGNIFICANT OTHERS.

```

14  ..  ..  ..  ..  ..  ..  ..
22  ..  ..  ..  ..  ..  ..  ..
..  ..  8  ..  ..  ..  ..  ..

```

* * * * *

1.ADMINISTER MEDS.AS ORDERED.
OBSERVE RESPONSES & SIDE EFFECTS.NOTIFY DR.

```

14  ..  ..  ..  ..  ..  ..  ..
22  ..  ..  ..  ..  ..  ..  ..
    ..  ..  8  ..  ..  ..  ..

```

3. 1. PROVIDE PRIVACY WHILE GIVING CARE.

```

14  ..  ..  ..  ..  ..  ..  ..
22  ..  ..  ..  ..  ..  ..  ..
   ..  ..  8  ..  ..  ..  ..

```

1. ENCOURAGE & OBSERVE SELF CARE.
2. MAINTAIN SKIN INTEGRITY.
3. WEIGH TWICE WEEKLY.
4. OBTAIN SPECIMENS FOR THE LAB.
5. INQUIRE OF BOWEL MOTIONS DAILY.

```

14  ..  ..  ..  ..  ..  ..  ..
22  ..  ..  ..  ..  ..  ..  ..
    ..  ..  8  ..  ..  ..  ..

```

5. 1.RECORD VITAL SIGNS DAILY.REPORT CHANGES
2.ARRANGE FOR SPECIALISTS TO GIVE CARE.

10

2204 POT.FOR DEPRESSION.

1. OBSERVE FOR & REPORT TO DR:

```

14  ..  ..  ..  ..  ..  ..  ..
22  ..  ..  ..  ..  ..  ..  ..
   ..  ..  8  ..  ..  ..  ..

```

-LOSS OF APPETITE.

-SLEEP DISTURBANCE.

-LOSS OF WEIGHT.

-AGITATION.

-WITHDRAWAL.

-POOR CONCENTRATION.

-INCREASED DEPENDENCY.

-LOSS OF MOTIVATION.

-INDECISIVENESS.

-POOR MEMORY.

-FEELING OF UNREALITY.

-AMENORRHOEA.

-CONSTIPATION.

2. ASSIST WITH ACTIVITIES OF DAILY LIVING

3. ENCOURAGE TO INTERACT WITH OTHERS

* * * * *

10/1/88
DAILY

Supplemental Care Plan/Documentation
WEYMOUTH AND DISTRICT HOSPITAL

Page: 2

Patient: W71

WI CATH

Cons: D

Bed:

Specialty: MED

2. 1.GIVE SMALL,FREQUENT MEALS HIGH IN VITS &
NUTRITION.DIETICIAN TO SEE

.. 15 18
22
.. .. 8 12 ..

3. 1.SPEND TIME WITH PT.DISSCUSSING FEELINGS.
AT ALL TIMES PROVIDE TRUTH.

- 2.ASSESS INTERACTION PATTERNS WITH OTHER PTS
NURSES,FAMILY.

- 3.ASSIST FAMILY TO PROVIDE EMOTIONAL SUPPORT

- 4.ASSIST PT TO CLEARLY IDENTIFY PROBLEMS.

- 5.ASSIST PT IN USING STRENGTHS IN PROBLEM
SOLVING.

- 6.PROVIDE PT & FAMILY WITH INFO.RE.RESOURCE
& COMMUNITY SERVICES.

14
22
.. .. 8

Person Rendering Care (signature & title) _____

Date: 31/ /88
Time: 12:29

EXCELCARE(tm) Quality Assurance
WEYMOUTH AND DISTRICT HOSPITAL
Patient Evaluation Form

Page: 1

Patient: KATHLEEN Bed:

1410 DESOPHAGITIS/GASTRITIS & HEALTH TEACHING
1603 SELF CARE.
39 DISCHARGE OF A PATIENT.
1139 FOR MEDICAL INVESTIGATIONS/TESTS
1159 DECREASED RED BLOOD CELLS.
04 POT.FOR DEPRESSION.
74 BLOOD TRANSFUSION
1100 ADMISSION-PREPARATION/ORIENTATION/ASSESSMENT
01 PARTIAL CARE

Were Standards Met?

YES

NO

Standards

**** 1410 DESOPHAGITIS/GASTRITIS & HEALTH TEACHING
AT ALL TIMES THE PATIENT:

- 1.RECEIVES SMALL BUT FREQUENT PORTIONS OF FOOD.
- 2.IS ENCOURAGED TO CHEW & SWALLOW FOOD SLOWLY.
- 3.IS POSITIONED FOR OPTIMAL SWALLOWING.

**** 1603 SELF CARE.
AT ALL TIMES:

- 1.PATIENT APPEARS CLEAN.
- 2.IF SKIN IS DRY,APPROP.LOTION HAS BEEN APPLIED.
- 3.AFTER EVENING CARE,THE PATIENT STATES THAT SHE FEELS RELAXED & IS READY FOR SLEEP.
- 4.PATIENT'S DIGNITY & PRIVACY IS MAINTAINED.

**** 1139 DISCHARGE OF A PATIENT.

- 1.PATIENT HAS LEFT THE HOSPITAL SAFELY.
- 2.AFTER THE DISCHARGE ORDER WAS WRITTEN,THE PATIENT'S FAMILY OR SIGNIFICANT OTHERS HAVE BEEN NOTIFIED.
- 3.BEFORE THE PATIENT LEAVES,THE DISCHARGE FORMS ARE COMPLETED & ARE ACCURATE.
- 4.24 HRS. AFTER THE DISCHARGE,THE PATIENT'S NOTES & X-RAYS, NURSING CARE PLAN & RECORDS ARE ASSEMBLED IN DISCHARGE ORDER & MEDICATIONS ARE RETURNED TO PHARMACY.
- 5.BEFORE DISCHARGE,WRITTEN INSTRUCTIONS HAVE BEEN GIVEN TO THE PATIENT OR SIGNIFICANT OTHERS.

Date: 31/ /88
Time: 12:29

EXCELCARE(tm) Quality Assurance
WEYMOUTH AND DISTRICT HOSPITAL
Patient Evaluation Form

Page: 2

Patient: KATHLEEN Bed:

Were Standards Met?
YES NO

Standards

EXPLAIN DISCHARGE INSTRUCTIONS.

8.THE PATIENT IF ABLE UNDERSTANDS THE REASON FOR HIS/HER DISCHARGE.

**** 1189 FOR MEDICAL INVESTIGATIONS/TESTS

1.THE REQUIRED INVESTIGATIONS/TESTS ARE PERFORMED SAFELY.

2.THE PATIENT HAS BEEN GIVEN THE REQD.INFORMATION ABOUT THE PROC.

3.ANY COMPLICATIONS ARE REPORTED TO THE DR.

**** 1159 DECREASED RED BLOOD CELLS.

AT ALL TIMES:

1. PATIENT IS NOT DIZZY/CONFUSED.IF SO DOCTOR WAS INFORMED.

2. PATIENT IS NOT FATIGUED

3. WHEN ABLE STATES HIS /HER COMFORT.

**** 2304 POT.FOR DEPRESSION.

AFTER 4 DAYS:

1.THE PT'S ANXIETY IS DECREASED.

2.THE PT. HAS DECREASED FEELINGS OF HOPELESSNESS.

3.THE PT'S DECISION-MAKING ABILITY IS INCREASED.

4.THE PT.IS NOT EXPERIENCING INSOMNIA,CONSTIPATION & HEADACHE.

5.THE PT.HAS NOT INJURED HIM/HERSELF.

6.THE PT.IS PARTICIPATING IN ACTIVITIES.

7.THE PT.'S NUTRITIONAL INTAKE IS INCREASED.

**** 1174 BLOOD TRANSFUSION

1. DURING BLOOD TRANSFUSION THE PATIENT IS RECEIVING THE CORRECT UNIT OF BLOOD AT THE CORRECT RATE.

2. DURING THE BLOOD TRANSFUSION THERE IS AN ABSENCE OF:
CHEST PAIN/DYSNOEA/HYPOTENSION/SHOCK/BLOOD IN THE URINE/
UTICARIA.

IF ANY OF THESE SYMPTOMS OCCURRED THE TRANSFUSION WAS STOP

Date: 31/ /88
Time: 12:29

EXCELCARE(tm) Quality Assurance
WEYMOUTH AND DISTRICT HOSPITAL
Patient Evaluation Form

Page: 3

Patient: KATHLEEN Bed:

Were Standards Met?
YES | NO |

Standards

PED AND THE DOCTOR INFORMED.

3. ACCURATE DOCUMENTATION OF THE BLOOD BAGS IN THE LABORATORY AND WARD BOOKS AND ON THE PATIENTS FLUID BALANCE CHART.

**** 1100 ADMISSION-PREPARATION/ORIENTATION/ASSESSMENT

1. BEFORE PATIENT IS ADMITTED, BED AREA IS READY WITH ALL EQUIPMENT WORKING.

2. PATIENT HAS CORRECT IDENTIBAND.

3. 24 HOURS AFTER ADMISSION, PATIENT STATES HE HAS BEEN ORIENTATED TO WARD ROUTINE & STAFF.

4. PATIENT'S VALUABLES & LARGE SUMS OF MONEY ARE IN THE SAFE OR SENT HOME WITH THE FAMILY.

5. WITHIN 24 HRS AFTER ADMISSION, PATIENT HAS BEEN ASSESSED & THE DATA BASE COMPLETED.

**** 1601 PARTIAL CARE
AT ALL TIMES:

1. MAINTAIN PATIENT'S DIGNITY & PRIVACY

2. PATIENT IS CLEAN.

3. ABSENCE OF REDDENED AREAS ON THE BODY. SKIN IS INTACT.

4. AFTER EVENING CARE, PATIENT STATES FELT RELAXED & READY FOR SLEEP.

25/ /88
DAILYEXCELCARE (tm) Costs of Nursing Care
WEYMOUTH AND DISTRICT HOSPITAL

Page: 1

Bed	Patient	-- Required Time/Cost --			Adjusted Actual	Var
		Direct	Indirect	Total		
	VERA	9:42	4:22	14:04	10:49	-3:15
	RGN	68.12	30.65	98.77	68.29	-30.48
	JUDITH	2:00	0:54	2:54	2:14	-0:40
	RGN	14.05	6.32	20.37	14.08	-6.29
	KATHLEEN	1:27	0:39	2:06	1:37	-0:29
	RGN	10.18	4.58	14.76	10.21	-4.55
	MAUD	2:44	1:14	3:58	3:03	-0:55
	RGN	19.19	8.64	27.83	19.23	-8.60
	AUDREY	3:50	1:44	5:34	4:16	-1:17
	RGN	26.92	12.11	39.03	26.99	-12.04
	SYBIL	10:45	4:50	15:35	11:59	-3:36
	RGN	75.49	33.97	109.46	75.67	-33.78
		2:25	1:05	3:30	2:42	-0:49
	RGN	16.97	7.64	24.61	17.02	-7.59
	NORAH	1:18	0:35	1:53	1:27	-0:26
	RGN	9.13	4.11	13.24	9.16	-4.08
	MARY	1:08	0:31	1:39	1:44	0:05
	RGN	7.10	3.20	10.30	9.84	-.46
	JEFFERY	3:39	1:39	5:18	4:04	-1:14
	RGN	25.63	11.53	37.16	25.68	-11.48
	ELIZABETH	2:17	1:02	3:19	2:33	-0:46
	RGN	16.03	7.22	23.25	16.07	-7.18
	VIOLET	9:29	4:16	13:45	10:34	-3:11
	RGN	66.60	29.97	96.57	66.77	-29.80
	PATRICIA	7:01	3:09	10:10	7:49	-2:21
	RGN	49.27	22.17	71.44	49.41	-22.03
	BARBARA	2:39	1:12	3:51	2:57	-0:53
	RGN	18.61	8.37	26.98	18.65	-8.33
	LOUISE	1:38	0:44	2:22	1:49	-0:33
	RGN	11.47	5.16	16.63	11.49	-5.14
	MARY	5:37	2:32	8:09	6:16	-1:53
	RGN	39.44	17.75	57.19	39.55	-17.64

25/ /88
DAILY

EXCELCARE (tm) Costs of Nursing Care
WEYMOUTH AND DISTRICT HOSPITAL

Page: 2

Bed	Patient	-- Required Time/Cost --			Adjusted Actual	Var
		Direct	Indirect	Total		
	HELEN	3:24	1:32	4:56	3:47	-1:08
	RGN	23.88	10.74	34.62	23.93	-10.69
	KATHLEEN	2:02	0:55	2:57	2:16	-0:41
	RGN	14.28	6.43	20.71	14.30	-6.41
	SHARON	2:24	1:05	3:29	2:41	-0:48
	RGN	16.85	7.58	24.43	16.90	-7.53
	VIOLET	0:54	0:24	1:18	1:00	-0:18
	RGN	6.32	2.84	9.16	6.34	-2.82
	JOHN	1:43	0:46	2:29	1:55	-0:34
	RGN	12.06	5.42	17.48	12.09	-5.39
	JANET	4:33	2:03	6:36	5:04	-1:32
	RGN	31.95	14.38	46.33	32.03	-14.30
	TOTAL	82:39	37:12	119:51	92:36	-27:15
		579.54	260.78	840.32	583.70	-256.61

Actual Time/Cost
By Staff Grade

RGN	27:00	221.40
EN	17:09	111.81
UTS	48:27	250.48
	0:00	.00
	0:00	.00
	0:00	.00
TOTAL	92:36	583.70

26/ /88
DAILY

EXCELCARE (tm) Nurse Manager Report
WEYMOUTH AND DISTRICT HOSPITAL

Page: 1

Bed Patient/Units of Care	Pat.No	Cons/Spec	Time Required					Total
			RGN	EN	UTS			
VERA 1502, 1602, 2101, 2304, 1187 1118, 1803		F/MED	1:48	5:09	2:45	0:00	0:00	9:42
JUDITH 2101, 1603, 1189, 1204		N/MED	0:36	0:54	0:30	0:00	0:00	2:00
KATHLEEN 1189, 1410, 1603		N/MED	0:35	0:18	0:34	0:00	0:00	1:27
MAUD 2101, 1601, 1183, 1139		H/ MED	1:21	0:45	0:38	0:00	0:00	2:44
AUDREY 1130, 1184, 1601, 1511		H/ MED	0:58	1:06	1:46	0:00	0:00	3:50
SYBIL 1313, 1807, 1602, 1511, 2101 1803, 1118		E/MED	1:49	5:33	3:23	0:00	0:00	10:45
VIOLET 1159, 1601, 2101, 1189		D/ MED	0:43	1:00	0:42	0:00	0:00	2:25
NORAH 1125, 1603		E/MED	0:33	0:03	0:42	0:00	0:00	1:18
MARY 1603, 1183		E/MED	0:38	0:12	0:18	0:00	0:00	1:08
EMMA 1520, 1701, 1204, 1183, 1601		E/MED	1:12	1:06	1:21	0:00	0:00	3:39
ELIZABETH 1100, 1125, 1148, 1603		D /MED	1:12	0:23	0:42	0:00	0:00	2:17

26/ /88
DAILY

EXCELCARE (tm) Nurse Manager Report
WEYMOUTH AND DISTRICT HOSPITAL

Page: 2

Bed	Pat.No	Cons/Spec	Time Required					Total
Patient/Units of Care			RGN	EN	UTS			
		E/MED	2:01		2:18	0:00	0:00	9:29
VIOLET				5:10		0:00	0:00	
1100, 1602, 1144, 1174, 1205								
1201								
		N/MED	3:49		1:51	0:00	0:00	7:01
PATRICIA				1:21		0:00	0:00	
1170, 1601, 1801, 2101, 2304								
1809								
		W/ MED	1:28		1:08	0:00	0:00	2:39
BARBARA				0:03		0:00	0:00	
1119, 1165, 1603								
		D/ MED	0:53		0:27	0:00	0:00	1:38
LOUISE				0:18		0:00	0:00	
1603, 1318, 1187								
		N/MED	1:19		1:15	0:00	0:00	5:37
MARY				3:03		0:00	0:00	
1159, 1701, 1189, 1174, 1601								
		H/ MED	2:23		0:26	0:00	0:00	3:24
HELEN				0:35		0:00	0:00	
2101, 1315, 1603, 1145, 1139								
		E/MED	0:28		0:40	0:00	0:00	2:02
KATHLEEN				0:54		0:00	0:00	
1130, 1807, 1601								
		E/MED	0:48		0:45	0:00	0:00	2:24
SHARDN				0:51		0:00	0:00	
1204, 1603, 1189, 2304								
		E/MED	0:18		0:18	0:00	0:00	0:54
VIOLET				0:18		0:00	0:00	
1189, 1603								
		N/MED	1:45		0:36	0:00	0:00	4:33
JANET				2:12		0:00	0:00	
1102, 1144, 1159, 1603, 1174								
TOTAL			26:37		23:05	0:00	0:00	80:56
				31:14		0:00	0:00	

Elizabeth Garrett - Anderson Hospital, London (DHSS & Bloomsbury HA Project)

In 1985 the director of nursing services from Bloomsbury HA visited the DHSS nursing computer project at Exeter and was impressed by the work being undertaken there. After Exeter HA ended its financial input to that project and it was disbanded, Bloomsbury HA suggested that it take over the work and so in 1986 a three year grant was awarded by the DHSS. (The grant runs out in April 1989 but extra funding is expected. As part of the deal signed by the DHSS, Bloomsbury HA provides salaries for a nurse and a systems analyst).

The work being conducted centres on the forty bed (2 wards and 1 day ward) EGA Hospital as well as the similar neighbouring institution, The Royal Ear, Nose and Throat Hospital. Essentially the aim of the project is to design and implement a ward based clinical nursing system. The software is being written in MUMPS linking to a home grown PAS both of which run on the Health Authority mainframe (a DEC VAX). It is planned, that each ward will have both one fixed and two portable terminals. For the latter there are sockets by each bedside.

The project has been divided into three phases: care planning, workload measurement and duty rostering. The project is still in the first phase and it is hoped that phase two will commence in August 1989. So far software is up and running for nurses to complete the biographical details of patients and to complete a discharge summary (see attached). The biographical details are linked with the PAS and so patient details only have to be input once. Details in the discharge summary do not link with other systems at this stage and so, for instance, even though information may be keyed in on the transport and

community service requirements of a patient going home the nurse still has to make the usual arrangements for an ambulance and district nurse. Specifications have been written for the actual care planning facility and the program is being written (as at March 1989). The work is behind schedule due to difficulties in finding experienced programmes and as a consequence, in having to contract out the work.

The care planning facility is going to be based on a model of nursing (a modified version of Roper, Logan and Tierney). Nurses will be able to choose an activity of living heading (e.g. breathing) if the patient has a problem in that area. A list of the more common problems in that area will be displayed from which the appropriate one can be chosen. Each problem has a list of related outcomes, again from which the nurse can choose an appropriate one. Nurses will be able to choose both long and short term goals with dates for evaluation. Related to each problem is not a list of set interventions as it was decided that a group of 'standard' interventions would not provide the required flexibility. Instead the nurse will choose the relevant interventions from a displayed list. Evaluation will consist of three options, 'achieved', 'partially achieved' and 'not achieved'. A free text facility will be available if the patient in question has an undisplayed problem or the nurse wishes to set a specific outcome. It is planned to have standard or core care plans only for pre- and post-operative care requirements.

IMPRESSION

It was obvious that the project team had undertaken a large amount of thorough preparatory work fully investigating the requirements of the nursing service. Due to the change in philosophy in nursing over the last few years the team has decided not to build on the work of Exeter but to start afresh from the beginning. The direction in which the project is going seems to be the right one but as so little software is available yet any impression can only be tentative. The theoretical basis of the care planning system seems to be sound but whether it will work in practice remains to be seen. An obvious concern is with all the choice available in the system are not nurses going to be spending the same amount of time generating computerised care plans as they do at present writing them. Having more time to give care is only one reason for a computerised system but other considerations, like the improvement in the quality of care, cannot be assessed at this stage. Although I can see great potential in the work being done, one wonders if resources will be made available in the future. As the project is quite small it has obviously taken a long time to get where it is and with the governmental pressures being brought to bear on hospitals to install information systems it is possible that this project will be overtaken by events outside its control. With only the first phase still being implemented it could be the late 1990s before the project is complete. If those who have to make the decision on the continuation of this project take a long term view then its future should be assured as it certainly seems to be a system which has a sound theoretical basis.

ZN00038

COL NORMAN LAKE
THE HOUSE

Known as:

Date of birth:

Sex:

Marital status: widowed

Religion:

Country of origin:

Occupation:

Previous occupation:

Mother tongue:

Communication problems:

Home tel:

Work tel:

Consultant: DR M BATEMAN
Staff: NO

ADMISSION

Date: 06MAR1989

Patient category: NHS

Source of admission: Home/usual res

Method of admission: Waiting list

Admitted from:

Medication on arrival:

Valuables in adm/fin:

Accompanied by:

Lodger: YES

GP:

Tel:

NEXT OF KIN:

CONTACT:

Home tel:

Work tel:

Hours worked:

Contact at night:

Notified:

Home tel:

Work tel:

Hours worked:

Contact at night:

Notified:

ZN00038

COL NORMAN LAKE

Reasons for admission:

Main diagnoses, (P)rovisional and (C)onfirmed:
(C)INFLAMMATORY DISEASE OF OVARY, FALLOPIAN TUBE, PELVIC C

Other diagnoses:

Significant life events:

Community services on admission:

HOME HELP

Notified?: YES Contact details: JANE 678-0867

Operations history:

06MAR1989 LAPAROTOMY

1964 TONSILLECTOMY

ZN00038

COL NORMAN LAKE
THE HOUSE

Known as:

Date of birth:
Marital status: widowed

Sex:

Religion:

Home phone:
Work phone:Occupation:
Previous occupation:

G.P.:

Country of origin:
Mother tongue:
Communication problems:

Phone:

ADMISSION Date: 06MAR1989
Method: Waiting list
Source: Home/usual res
From:
Accompanied by:
Hospital: Elizabeth Garrett Anderson
Hospital phone: 01 387 2501
Ward: Aldrich Blake WardDISCHARGE Date: 06MAR1989 Time: 12:00
Method: Self/relative
Destination: Home/usual res
THE HOUSE

Phone:

NEXT OF KIN:

CONTACT:

Home phone:
Work phone:
Work hours:
Told of admission:
Told of discharge: NO Reason:Home phone:
Work phone:
Work hours:
Told of admission:
Told of discharge:

ZN00038

COL NORMAN LAKE

Main diagnoses:

614 INFLAMMATORY DISEASE OF OVARY, FALLOPIAN TUBE, PELVIC C

Other diagnoses:

Operations history:

06MAR1989 LAPAROTOMY

1964 TONSILLECTOMY

Significant life events:

Community services HOME HELP
on discharge:

Notified: YES 1st. visit: 23MAR1989 Other details: JANE 678-0867

Procedure to gain entry:

Transport reqd: YES Bkd: YES Details: HOSPITAL CAR

Escort reqd: Bkd: Details:

Medication dispensed:

Type of equipment: WALKING STICK

Order date: 01FEB1989 Received: YES

Special instructions
or requirements:

Received:

Out-patient appointment:
Transport reqd: Bkd: Details:Clinic/site:
Escort reqd: Bkd: Details:Out-patient appointment:
Transport reqd: Bkd: Details:Clinic/site:
Escort reqd: Bkd: Details:

Llanelli General Hospital, Llanelli, East Dyfed (CNIS)

In 1985 the Welsh Computer Strategy Committee funded a 3 year ward based clinical nursing information system pilot study. The ward chosen for the study is a 16 bed general medical facility at Llanelli General Hospital, East Dyfed. The project has consisted of a full time nurse and three man months over two years and two man months over one year of computing time. The aim of the project has been to design and implement a problem solving care planning system. Since December 1987 all nursing records for all the patients have been computerised (this does not involve observations and fluid balance charts etc.). The system is written in BASIC and runs under the PICK operating system on GA Zebra equipment. A recent independent technical evaluation of the system resulted in a positive outcome and the study has received a further one year funding. The funding includes an extension of the project to two more medical wards and a surgical ward. The use of portable computers is also going to be evaluated.

The system can be divided into four: patient admission, initial patient assessment, development and maintenance of care plans and patient discharge. The system requires the input of a nursing knowledge base. This data can be continually updated and each nurse is able to add free text at any point of the nursing process. The system co-ordinator is able to print out the free text inputs so that required updates of the knowledge base can be undertaken.

Patient admission details consist of five screens of data covering demographic, biographical and episode specific details (e.g. possession of valuables) as

well as medical details and diagnosis (see attached - 1). The initial patient assessment is entirely undertaken in free text covering the activities of daily living model as devised by Roper, Logan and Tierney. It is envisaged that the system will be extended to incorporate the use of other models of nursing. Connected to the initial assessment details is a daily diary which can be used by nurses to record items that may normally be written in the progress notes. Again, this is a free text facility. In order to develop a care plan the nurse will enter the care planning facility and choose the activities of daily living in which the patient has problems. For each activity chosen, a list of problems will be displayed. These displayed problems together with associated outcomes and interventions are the knowledge base of the system.

It is possible to extract elements as well as add comments to the problems, outcomes and interventions. Problems can also be prioritised and for all outcomes it is necessary to input review dates and/or times. On the printed care plan (see example - attached 2) the name of the nurse devising or amending the plan will be printed. This is possible due to each nurse having his/her own password which can be altered by the individual him/herself. When nurses choose certain interventions it is possible to print out the detailed procedures required. Evaluation is a free text facility. The system will also provide core-care plans, for example, these plans have been designed for the patient requiring a blood transfusion and for the unconscious patient. The nurse is able to make any necessary amendments to the core-care plan as is required. The system will produce a care plan history which details all the patient problems and how they have been evaluated and amended during the episode of care. These

details are kept in the patient's notes when she/he is discharged. A discharge summary is also available which can be sent to the community nurse, general practitioner etc. It can list services required, drug therapies etc.

IMPRESSION

This system can truly be described as facilitating a problem solving approach to the giving of nursing care, something not seen in any of the other systems. A charge often directed at computer systems is that they require less 'thinking' from nurses than if they had to write care plans. With the flexibility inherent in this system and the facility to make free text additions and adjustments, any suggestion that it is superceding and overriding the required cognitive processes of the nurse can firmly be rejected. Such flexibility does have its drawbacks of course. As the recent evaluation report indicates, the system "does not aim for minimal high-speed use by nurses". However, studies have shown that time spent on care planning is less than on a comparative ward using a written system. Flexibility also raises other issues. For instance, it has already been realised that with nurses evaluating in free text there is no possibility of analysing which nursing actions are having the appropriate outcomes. It has been agreed that as well as having a free text facility evaluation will also have to consist of coded descriptions too (e.g. outcome achieved, partially achieved etc.) so that different types of care and their outcomes can be analysed. With the system still undergoing gestation it would be very easy to be critical concerning certain aspects of the system, however, the project nurse is aware of the problems such as the care plan history being too detailed and the potential difficulties with not having a

unique patient identification and a transfer facility but it is planned that these will be resolved in the next twelve months.

It has always been the aim of the project for the care planning facility to form a basis for workload measurement and, ultimately, for patient costing. There is some capacity to input timings, grades of nurse and commodities against interventions although this has not been implemented so far. With the flexibility inherent in the system the ability to measure the workload on such a basis does seem to be a near impossible task and it will be interesting to see if in the future, this system is used for resource management or whether it will be linked to some simplified form of patient dependency assessment and used purely for clinical purposes.

Patient ID	[ROYCE.R	]	Hospital No.	[346790	]	Page	1
Surname	[ROYCE	]	Address	[1, THE STREET	]	Sex	[Male]
Forename	[ROBERT	]		[THE TOWN	]	Date of Birth	[01 MAR 1940]
	[	]		[WEST WALES	]	Age	[49]
	[	]		[	]	Marital Status	[Married]
Title	[MR ]	]	Post code	[]		
Known as	[BOB	]	Telephone	[not on the phone]		
Occupation	[MINER	]	Religion	[METHODIST]		
Ward	[21 ]	]	GP Name	[DR. P.A. EDWARDS]		
Bed No.	[4 ]	]	GP Address	[TAL Y BONT]		
Consultant	[DR SPOCK	]		[STATION ROAD]		
House officer	[DR ABLE	]		[PONTARDULAI]		
Admission date	[14 APR 1989]]		[]		
Admission type	[E ]	]		[0792 882368]		
Community care prior to admission							
[NIL]							
Reason for admission							
[General Practitioner is concerned that patient is not responding to antibiotics for a severe chest]							
[infection.]							
Patient understanding of illness							
[MY CHEST HAS BEEN BAD, I'VE BEEN IN BED FOR 2 WEEKS AND I AM NOT GETTING ANY BETTER. I FEEL VERY]							
[WEAK.]							
Medical diagnosis							
[PNEUMONIA]							
Relevant medical history							
[NIL OF NOTE]							
Medication taken							
[HAD PENICILLIN FOR 10 DAYS BUT NOT EFFECTIVE, NOW ON AMOXIL]							
Known allergies							
[NONE KNOWN]							

***** Continued on next page *****

Patient ID [ROYCE.R] Hospital No. [346790] Page 2

Next of Kin		Other Contact	
Surname	[ROYCE]	Surname	[]
Forename	[Rachel]	Forename	[]
	[]		[]
	[]		[]
Relation	[Wife]	Relation	[]
Address	[1, THE STREET]	Address	[]
	[THE TOWN]		[]
	[WEST WALES]		[]
	[]		[]
Tel No.	[not on the phone]	Tel No.	[]
Tel Location	[]	Tel Location	[]
Emergency Tel.	[0976 5432]	Emergency Tel.	[]
Tel Location	[neighbours]	Tel Location	[]

Family understanding of illness
[Wife has been seen by doctor.]

Visit difficulties

Valuables
[Yellow metal ring]

Other information

***** End of Patient profile *****

Next of Kin		Other Contact	
Surname	[ROYCE]	Surname	[]
Forename	[Rachel]	Forename	[]
	[]		[]
	[]		[]
Relation	[Wife]	Relation	[]
Address	[1, THE STREET]	Address	[]
	[THE TOWN]		[]
	[WEST WALES]		[]
	[]		[]
Tel No.	[not on the phone]	Tel No.	[]
Tel Location	[]	Tel Location	[]
Emergency Tel.	[0976 5432]	Emergency Tel.	[]
Tel Location	[neighbours]	Tel Location	[]

Family understanding of illness
[Wife has been seen by doctor.]

Visit difficulties

Valuables
[Yellow metal ring]

Other information

***** End of Patient profile *****

2

Reg. No. ROYCE.R MR ROYCE ROBERT

Age 49

PAGE 1

Identified Problem	Desired Outcome	Prescribed Action	Evaluation
ROBERTS.R 03:26PM 14/04/89 Potential problem of dehydration.	ROBERTS.R 03:27PM 14/04/89 To prevent dehydration review on 17/04/89	ROBERTS.R 03:28PM 14/04/89 To drink 150 mls of fluid of patient's choice 1 hourly Dislikes fizzy drinks and prefers ice cold drinks. ROBERTS.R 03:28PM 14/04/89 Chart and record intake/output 12 hourly ROBERTS.R 03:28PM 14/04/89 Observe for signs of dehydration.	
ROBERTS.R 03:26PM 14/04/89 Unable to wash body except hands and face due to exhaustion	ROBERTS.R 03:29PM 14/04/89 To permit usual routine of bathing, handwashing, and hairwashing to continue review on 17/04/89	ROBERTS.R 03:33PM 14/04/89 Patient to wash hands and face, nurse to wash rest daily, time depends on how tired the patient feels. ROBERTS.R 03:31PM 14/04/89 Shave patient 1 times/day in the morning ROBERTS.R 03:32PM 14/04/89 Wash hair 2 times/week Take to bathroom in a wheel chair and use the wash basin and spray ROBERTS.R 03:32PM 14/04/89 Ambulift bath 2 times/week Tuesday and Friday ROBERTS.R 03:32PM 14/04/89 Cut and clean nails, as nessessary	
ROBERTS.R 03:34PM 14/04/89 Unable to expel sputum but he feels as though he has a lot to cough up.	ROBERTS.R 03:35PM 14/04/89 To ensure adequate rest review on 18/04/89 ROBERTS.R 03:35PM 14/04/89 To aid in the establishment of the cause review on 16/04/89	ROBERTS.R 03:35PM 14/04/89 Support patient upright with back rest out. Ensure that the pillows are in a comfortable sitting position. ROBERTS.R 03:36PM 14/04/89 Collect and send sputum specimen to the laboratory	

Pilgrim Hospital, Boston, Lincs. (South Lincolnshire HA)

In January 1984 South Lincolnshire HA commenced looking at its information requirements for more effective healthcare management. Experiments were undertaken in specialty costing at Grantham Hospital. In 1985 the health authority was chosen as a second generation management budgeting site concentrating its efforts at the Pilgrim Hospital, Boston. The health authority continued its own work when the third generation sites were chosen by the DHSS. Due to the work it has been undertaking it was invited to join the resource management initiative in April 1988. In line with the aims of the RMI, the purpose of the research ongoing at the Pilgrim Hospital with respect to nursing is "to produce a system that would allow nursing staff to manage their resources more effectively by enabling them to produce, modify and review care plans and patient dependency ratings and subsequently to assist in nurse scheduling and rostering". The project is being undertaken with the help of ICL and Arthur Young Consultants. There are now three nursing systems being used: a computerised criteria for care dependency rating system, ICLs I-care, a care planning system and the MacLaren Nurse Management system. All three systems are completely separate and do not link to each other or to the Trent PAS which the hospital runs.

Since September 1987 three wards have been running the criteria for care package available from North Lincolnshire HA. Essentially the system consists of categorising patients on a number of subfactors such as personal care, feeding etc. from which each patient is allocated to one of five overall care groups (see attached - No. 1). From work undertaken by the package's

originators patients in category 1 are allotted 92 minutes of care (patients in higher categories are given the same amount of time multiplied by a specific factor i.e. Category 2 the multiple is 1.2, Category 3 it is 2.5, Category 4 it is 4.1). Added to the total of timings for all the patients is a set factor for indirect care activities (usually around 55% of direct care time). The grand total of nursing time required is computed and the system assumes that a ratio of 70% qualified staff and 30% unqualified staff are needed. From this the system indicates whether the ward has a surplus or deficiency of qualified and/or unqualified staff.

The care planning facility, I-care, has been introduced to two wards. The care plans are core care plans based on activities of daily living. Various problems relating to activities of daily living can be put into the system with a set of appropriate nursing actions. Examples of the care plans are attached (No. 2) for a patient having a blood transfusion and a patient's post-operative care requirements.

The Maclaren Nurse Management system is aimed at supporting the management and administrative decisions of nurses. Some of the sales literature is attached (No. 3).

IMPRESSION

With this site having a long history in the development of information systems both as part of the government initiatives and through its own work I was disappointed in the progress made to date. I certainly received the impression that many difficulties had been encountered both with the software itself and

within the implementation process. Despite the work being ongoing for a number of years at the time of my visit the dependency ratings were only computerised on three wards, the care plans had only just commenced on two wards and many problems were occurring with the management system. The decision to have three systems which do not link with each other or with the hospital PAS surely has to be questioned.

The criteria for care package is now used in a number of hospitals and I was surprised to learn that totally different sites use the same timings for the different care groups as those produced by the originators in North Lincolnshire HA. It seems to me that factors such as ward layout, level of support services, roles of ancillary staff, material available etc. will make differences to the time required for the care groups at different locations. The validity of the timings and hence the nurse costs need to be questioned. With the dependency assessment not being related to care planning the system is open to easy manipulation, an issue specifically mentioned by the project co-ordinator.

The 'I-care' care plans had a number of problems. The quantity of paper being produced was not acceptable. The seven page post-operative care plan attached here is a good example of this problem. Because the care plans are core or standard plans they have the problem of not being patient specific although there is the facility to write additions and changes into the print out. There is no facility to make an evaluation on the computer nor is there space on the print out for nurses to write their evaluation. With the system being a stand alone module it seems that the print out is not identified as belonging to a specific individual (i.e. there is no patient name/number etc.).

The Maclaren Nurse Management system has been developed from the Nurse-1 rostering system. The project co-ordinator has found a number of inaccuracies in the program (e.g. it doesn't give enhancements for 'late' shifts). It has been found that the software is not particularly user friendly, having only a few 'help' facilities. I now understand negotiations are under way with other software companies for alternative software.

Dependency Date: 21/ /88															CATEGORY GUIDELINES			
															DEP.I - 3 A Scores only			
															DEP.II - A+B Scores and not more than 1 C Score			
Ward: DEMO	PATIENT DEPENDENCY CLASSIFICATION														DEP.III - 2 or 3 C Scores, C Scores equal to or more than A Scores			
Signature:															DEP.IV - 4 or more C Scores			
	Personal Care			Feeding		Mobility			Nursing Attention			Other		Total Scores			Dep.	
Patient Name	A	B	C	B	C	A	B	C	A	B	C	C	C	A	B	C	Cat.	Comments
BROUGH, MARGARET	1			1			1		1					2	2	0	2	
BURROWS, FRANCES		1		1			1			1				0	4	0	2	
CATCHPOLE, WILLIAM			1	1				1			1	1	1	0	1	5	4	
CRABB, GEORGE		1					1			1				0	3	0	2	
DANIELS, JOSEPH			1	1				1			1			0	1	3	3	
IDODES, TIMOTHY	1			1		1			1					3	1	0	2	
FAWCETT, BRYAN		1		1			1			1		1		0	4	1	2	
HARPAM, EDITH			1		1			1			1	1	1	0	0	6	4	
HARRISON, ROBERT	1					1				1				2	1	0	2	
HARTOP, JOHN	1					1			1					3	0	0	1	
HILTON, EVA	1						1			1				1	2	0	2	
HINCHCLIFFE, CHARLES	1					1			1					3	0	0	1	
JONES, FRED		1		1			1		1					1	3	0	2	
KEAL, GARY	1					1			1					3	0	0	1	
KIME, NIGEL		1				1				1				1	2	0	2	
LOVERTON, VERA	1					1			1					3	0	0	1	
ROBERTS, IAN			1				1			1				0	2	1	2	
SHARPE, LILIAN	1					1			1			1		3	0	1	2	
TABOR, FRED		1						1		1				0	2	1	2	
TONIOLD, MAVIS	1					1			1					3	0	0	1	
WATERS, BARBARA			1		1			1			1	1		0	0	5	4	
WHEELER, FRED			1		1		1				1			0	1	3	3	
WILSON, JAMES	1					1			1					3	0	0	1	
WILSON, JOAN						1			1					2	0	0	1	
WITHERS, FLORENCE	1						1			1				1	1	1	2	
WOODS, EDWARD	1					1			1					3	0	0	1	
															I	II	III	IV
															8	13	2	3

I-CARE

SOUTH LINCOLNSHIRE HEALTH AUTHORITY

14/ /88

NURSING CARE PLAN - BLOOD TRANSFUSION

Problem in Activities of Living :

1. HAS A BLOOD TRANSFUSION IN SITU

Patient's Goals :

FOR ANAEMIA TO BE CORRECTED AND TO SUFFER NO ILL
EFFECTS FROM TRANSFUSION

Review	Nursing Actions	Nurse's Signature
1. ON GOING	ENSURE PATIENT IS CROSS MATCHED AND BLOOD READY CHECK THAT PATIENT HAS A VENFLON INSITU THAT IS PATENT	
2. ONGOING	NURSE TO FETCH BLOOD, TAKING WITH HER NOTES, CROSS- MATCH SLIP[SLIP THERE WITH FIRST UNIT] OUT OF HOURS ENSURE REGISTER FILLED IN CORRECTLY	
3. ONGOING	BLOOD TO BE CHECKED BY RGN. RECORD BASE-LINE OBSERVATIONS RE-CHECK BLOOD AT PATIENTS BEDSIDE, RECORD BLOOD ON FLUID CHART	
4. ONGOING	MAINTAIN BLOOD OBSERVATIONS 1/2 HOURLY, OBSERVE FOR SIDE EFFECTS (PYREXIA, LOIN PAIN, ALLERGIC RESPONSE) ENSURE DIURETIC GIVEN AS/IF PRESCRIBED	
5. ONGOING	COMPLETE TRANSFUSION, ENSURING EACH UNIT HAS BEEN STAMPED IN NOTES. ENSURE GIVING SET CHANGED AFTER EVERY 2 UNITS	
6. ONGOING	ON COMPLETION OF TRANSFUSION MAINTAIN IV THERAPY AS PRESCRIBED BY DOCTORS LEAVE VENFLON /REMOVE AS REQUESTED	

I-CARE

SOUTH LINCOLNSHIRE HEALTH AUTHORITY

14/ /88

NURSING CARE PLAN - BLOOD TRANSFUSION 2

Problem in Activities of Living :

1. A DECREASE IN CELLULAR NUTRITION AND RESPIRATION
BECAUSE OF DECREASED CAPILLARY BLOOD FLOW.

Patient's Goals :

HAEMOGLOBIN WITHIN NORMAL RANGE, IMPROVED
CIRCULATION.

Review	Nursing Actions	Nurse's Signature
1.	MONITOR VITAL SIGNS HOURLY UNTIL STABLE THEN EVERY 2 HOURS REPORT ANY CHANGES.	
2.	MEASURE AND RECORD URINARY OUTPUT HOURLY UNTIL GREATER THAN 30 ML PER HOUR THEN 4 HOURLY.	
3.	ADMINISTER FLUID/BLOOD AS ORDERED. MONITOR FOR ANY ADVERSE REACTIONS.	
4.	INITIATE MEASURES TO HELP IMPROVE PERFUSION- KEEP PATIENT WARM, RELIEVE ANXIETY, RELIEVE PAIN AND ELEVATE LOWER LIMBS.	

NURSING CARE PLAN - POST OP

Problem in Activities of Living :

1. CONTROLLING BODY TEMPERATURE = RISK OF SHOCK DUE TO ANAESTHESIA OR BLEEDING.

Patient's Goals :

EARLY DETECTION OF FALL IN BLOOD PRESSURE, PULSE BETWEEN.....-..... NO BLEEDING.

Review	Nursing Actions	Nurse's Signature
1. 1/2 HOURLY -4 HOURLY	1. 1/2 HOURLY OBSERVATIONS FOR .....HOURS. 2. HOURLY OBSERVATIONS FOR .....HOURS. 3.	
4HRLY FROM:	1. MAINTAIN VITAL SIGNS.	
3. 1/2HRLY - 4HRLY	1. CHECK DRESSINGS FOR SIGNS OF BLEEDING. 2. NOTE COLOUR AND AMOUNT OF DRAINAGE. CHART.	

NURSING CARE PLAN - POST OP

Problem in Activities of Living :

2. BREATHING-RISK OF CHEST INFECTION WHILE ACTIVITY LIMITED DUE TO ANAESTHESIA.

Patient's Goals :

NO CONGESTION, BREATHE NORMALLY ATPER MIN.
NORMAL TEMPERATURE.

Review	Nursing Actions	Nurse's Signature
1. DAILY FOR.....DAYS	1. ENCOURAGE DEEP BREATHING EXERCISES.	

NURSING CARE PLAN - POST OP

Problem in Activities of Living :

3. COMMUNICATION = PAIN IN OPERATIVE WOUND DUE TO PRESSURE OR SPASMS.

Patient's Goals :

- VERBAL OR NON VERBAL EXPRESSION OF PAIN.
FEELS PAIN IS CONTROLLED.

Review	Nursing Actions	Nurse's Signature
1. DAILY.	1.OFFER AND GIVE PAIN MEDICATION EVERY .....TO....HOURS POST OPERATIVELY FOR.....DAYS.	
DAILY.	1.REPORT DESIRED EFFECT OF PAIN MEDICATION 10 - 15 MINS FOLLOWING ADMINISTRATION.	

NURSING CARE PLAN - POST OP

Problems in Activities of Living :

4. CONTROLLING BODY TEMPERATURE = RISK OF SHOCK DUE TO ANAESTHESIA OR BLEEDING.

Patient's Goals :

EARLY DETECTION OF FALL IN BLOOD PRESSURE, PULSE BETWEEN.....-..... NO BLEEDING.

Review	Nursing Actions	Nurse's Signature
1. DAY OF SURGERY/8HRLY	1. ICE CUBES TO SUCK, IF TOLERATED COMMENCE ON .....TO..... WATER HOURLY.	
.....HOURLY	1. ANTIEMETIC TO BE GIVEN .....TO.....HOURLY IF NAUSEOUS.	
3.	1. MAINTAIN FLUID BALANCE CHART. 2. RECORD AND REPORT ANY ABNORMALITIES. 3. INTRAVENOUS INFUSION AS PER PATIENTS TREATMENT CHART.	

NURSING CARE PLAN - POST OP

Problem in Activities of Living :

5. ELIMINATING = POTENTIAL OLIGURIA/RETENTION DUE TO REDUCED BLADDER TONE FOLLOWING ANAESTHESIA.

Patient's Goals :

PASSES URINE WITHINTO....HOURS OF OPERATION.
NO ABNORMAL PAIN OR DISCOMFORT. VOIDS....CC PER HR.

Review	Nursing Actions	Nurse's Signature
1. DAY OF SURGERY/.HRLY	1.MEASURE URINARY OUTPUT.REPORT IF OUTPUT FALLS BELOW.....CC 2.SIT OR STAND PATIENT UPRIGHT TO VOID.	
DAY OF OP/.....HRLY	1.MAINTAIN AND CHART INTAKE AND OUTPUT.REPORT ANY CHANGES. 2.REPORT ANY PAIN OR DISCOMFORT IN LOWER ABDOMEN.	

NURSING CARE PLAN - POST OP

Problem in Activities of Living :

5. CLEANSING/DRESSING=RISK OF DEVELOPING HAEMATOMA/
WOUND INFECTION(2)MAINTAINING OWN PERSONAL HYGIENE

Patient's Goals :

WOUND REMAINS CLEAN AND DRY.NO REDNESS OR OEDEMA
OF WOUND.(2)FEELS CLEAN AND COMFORTABLE.

Review	Nursing Actions	Nurse's Signature
1. DAILY.	1.CHECK WOUND,REPORT IF ANY REDNESS OR OEDEMA PRESENT. 2.ASEPTIC PROCEDURE WHEN RENEWING DRESSING. 3.REMOVE ALT SUTURES ON....DAY.REMAINING SUTURES ON.....DAY	
DAILY.	(2)1.BED BATH PATIENT DAILY/MAINTAIN ORAL HYGIENE. (2)2.PATIENT TO COMMENCE OWN PERSONAL HYGIENE WITHIN.... HRS	

I-CARE

SOUTH LINCOLNSHIRE HEALTH AUTHORITY

21/10/88

NURSING CARE PLAN - POST OP

Problem in Activities of Living :

7. ELIMINATING-POTENTIAL ILEUS/CONSIPATION DUE TO
1.ANAESTHESIA. 2.SURGICAL INTERVENTION.

Patient's Goals :

- PASSES WIND NO PROBLEMS.
SOFT ABDOMEN.

Review	Nursing Actions	Nurse's Signature
1. DAILY	1.CHECK PATIENT HAS PASSED WIND RECTALLY. 2.RECORD AND CHART BOWEL MOVEMENTS.....DAY POST OP 3.AMBULATE PATIENT WITHIN.....HRS	

THE MACLAREN NURSE MANAGEMENT SYSTEM

— A Specialised Information and Planning System for Nursing Managers

Every day, the demands made upon the nursing management staff of a busy hospital are increasing.

Staff shortages, stringent budgeting, changing requirements in reporting procedures or personnel, all conspire to stretch the management resources to their limits, with consequent stresses on all concerned.

It is to ease these problems, and provide greater administrative flexibility, that a completely integrated computer based information system has been brought to the Health Service professional by Maclaren Computer Systems Limited.

The Maclaren Nurse Management System has been designed to help Nurse Managers achieve improved operational performance. Through the use of improved information, areas of potential waste and inefficiency can be identified quickly and easily — then reduced or eliminated.

Created in close co-operation with National Health Service professionals from around the country the system meets the needs of nurse managers for:-

- Preparation of off-duty rostering
- Costing of off-duty time with the costings changed automatically if the off-duties are altered
- Over/under spending calculated for each weekly off-duty
- Ward staffing and costing reports
- Week by week absence analysis by ward, staff group and individuals
- Payroll verification listings
- Personnel and assignment records
- Workload requirements and staff level records

The improved information available enables everyone involved in nurse management to achieve higher standards of operational performance.

Integrated System

Total flexibility in its operation allows the system to form part of an overall information strategy where it will provide a wealth of information for both the general management and clinical budgeting functions.

It can be used as an entirely independent system, or linked to unit, district or regional systems to provide a wider range of Management Information.

The Maclaren Nurse Management System has been designed as an effective tool for all levels of management and staff in the nursing process.

The improved availability of accurate information throughout the unit enables timely decision making.

The results of subsequent, or planned, alterations are reflected immediately providing greater control of both manpower and costs. Further revision may then occur should the workload requirements change.

The Maclaren Nurse Management System incorporates the following facilities:

Nurse Rostering

- provides a duty roster which fulfils targets of skill mix according to local standards or workload
- holds details of bank nurses showing booked time, availability, contact point, grade and competencies
- for agency nurses the system shows details of grade, name and agency cost
- provides facility to plan ahead for annual holiday, training commitments, maternity leave and other time outs
- automatically records and stores 'lost hours' and enhancements
- produces a fully completed time sheet for each nurse
- provides a quick and simple method of entering learners onto wards when advance allocations are received

Reporting

Comprehensive reports, on both a management and staff level, including:

- Planned Roster
- Actual Roster
- Analysis of Establishment Against Actual WTE Worked
- Ward Costing/Budgeting
- Staff Costs
- Staff Time Sheets
- Staff Overtime List and Enhanced Hours
- Staff Who Worked Previous Bank Holidays
- Nursing Time Available by Grade
- Bank Nurse Time Sheets
- Agency Nurse Time Sheets
- Absence Analyses
- Comparisons Between Nursing Care Available and Nursing Care Required by Grade, Shift and Ward

Costing and Budgeting

The Nurse Management System provides complete analyses of all nursing costs on both a historical and planned basis. The costings take into account:

- Enhancements
- Annual Leave
- Training
- Maternity Leave
- Transfers Between Wards
- Other Overheads

Establishment levels are compared to in-post staffing and resultant costs, for the period and year to date. These figures are then available for comparison with the same period last year.

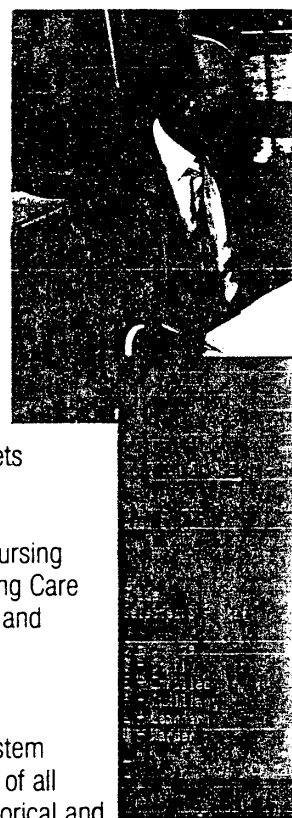
Workload Assessment

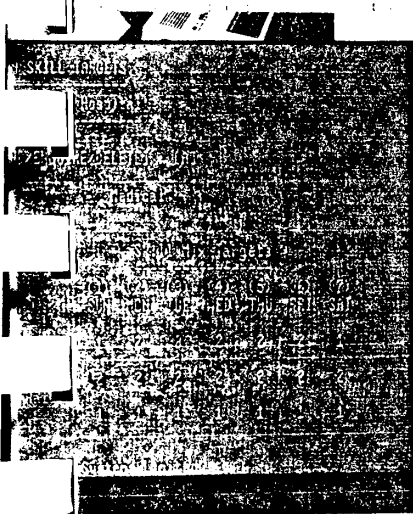
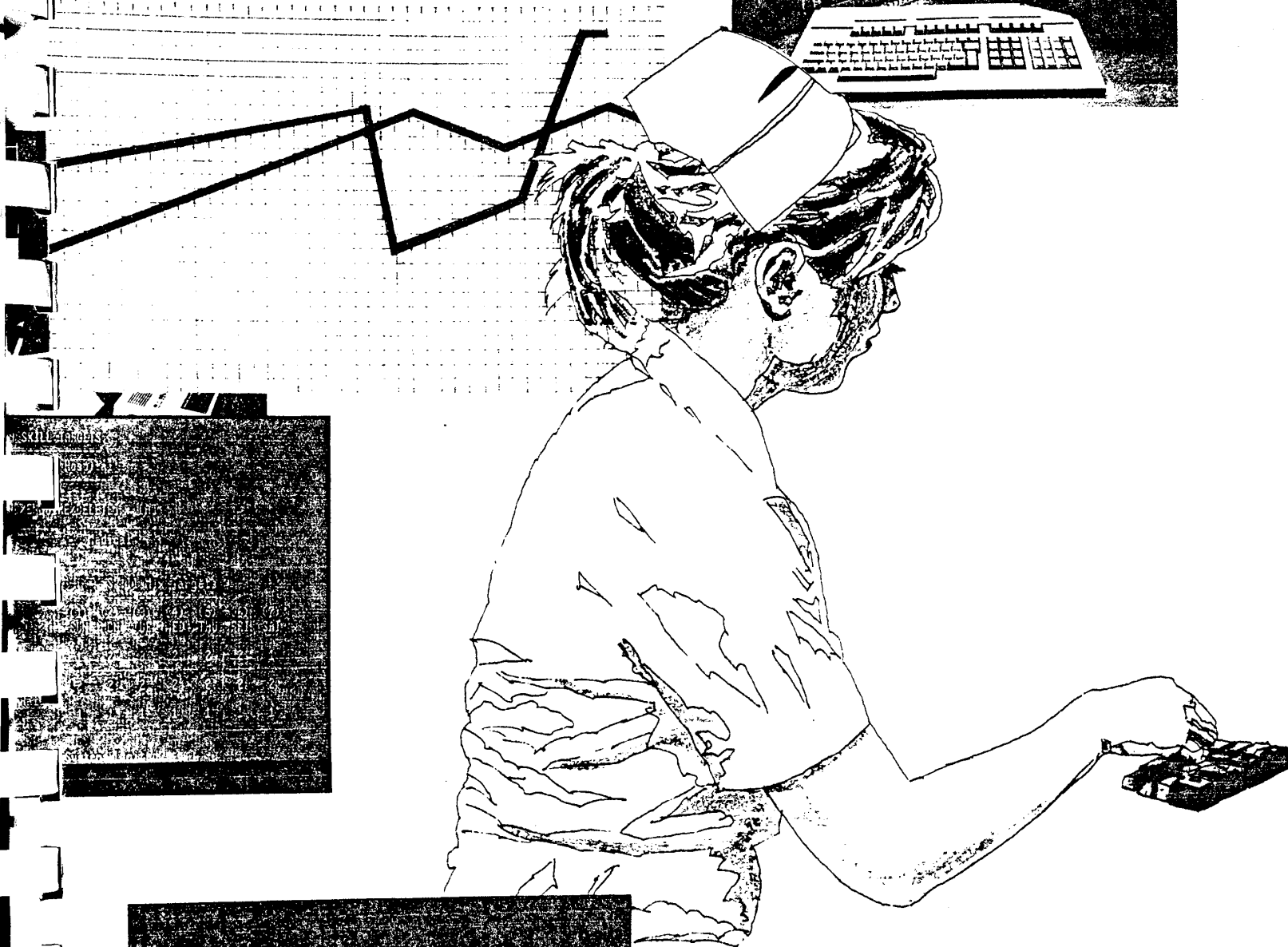
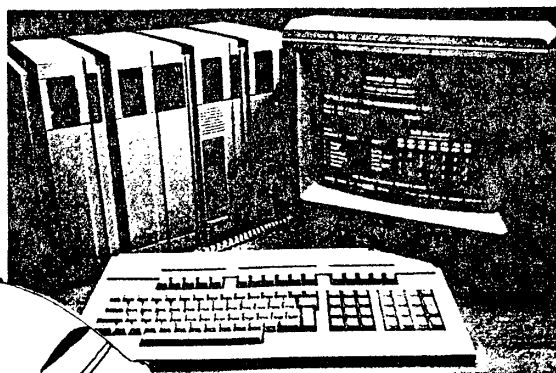
The nursing hours available are compared to the nursing hours required and the differences highlighted.

Enquiries can then reveal nursing resources available throughout the unit and the nurses transferred between the wards.

Personnel

The system maintains complete personnel files for all nursing staff, including competencies and training details.





Maclaren Computer Systems Limited

Maclaren Computer Systems Limited is an independent software house specialising in the development of information systems for health care.

Maclaren has the backing of ICL the country's largest indigenous computer supplier. This coupled with the specialist experience of Maclaren has produced a team whose health care products are fast gaining acceptance throughout the National Health Service.

Nursing staff represent the single largest resource within the National Health Service. The Maclaren Nurse Management System now brings to all nursing management staff a total information system to assist in the deployment, monitoring and support of their nursing staff and the control of their budgets.

DISCUSSION

To take the individual topics as outlined in the aim section:

Care Planning

It is understandable that as nurses are in the process of formulating the underlying concepts of nursing it is difficult for computer specialists and programmers to produce software which will gain acceptance by all nurses. There is a variety of views and understandings among nurses on what nursing is. The public or general perception of nursing is again different to the range of nurses' views. In saying that, I think that there is a broad general consensus among the profession that care must be given in a systematic way, usually thought of as consisting of patient assessment, problem identification, goal setting, care giving and evaluation. The process of nursing or problem solving approach has as one of its parts the formation of a plan of care. Interpretations of the nursing process and the design and use of care plans vary considerably within nursing. The production of care plans from a computer adds a further dimension to the arguments which already exist. In a sense, the care plans produced through computers (and I deliberately do not write 'by computers' as nurses themselves are in all the sites visited controlling the data files and undertaking computer patient assessment) from the different systems reflect different approaches and interpretations that nurses already have of care plans and nursing. The computer care plans also reflect the 'era' in which the system was written. Only five years ago, for instance, I think it would be true to say that in many areas of the country care plans were

non-existent. Although the general consensus among nurses may be that care plans are a necessary and fundamental part of their work there is still much debate about how 'individual' care plans ought to be, how detailed they should be and if 'core' care plans are adequate (see Glasper, Stonehouse and Martin (1987); Bowman and Thompson (1987) and McMahon (1988)).

Considering the systems, it can be said that plans provided by Exelcare and FIP are core care plans, with nurses having no facility to input individual expected outcomes and evaluation. CANIS can be said to be one step ahead by having choices of goals and evaluation statements but the former are very general and somewhat nurse orientated and the latter are very restricted. Llanelli's CNIS, a recent product, indeed, it still is only in use in one ward, has much flexibility and in a sense can be said to be the care planning system of the future. It comprises of an evolving knowledge base with the facility to input free text. Typing skills are certainly an advantage when using the system.

Workload Measurement and Skill Mix

It is interesting to note that the systems providing core care plans are the ones which produce detailed workload measurements. I suspect that measuring the workload from, say, the CNIS will prove very difficult. In theory, one would not expect this to be so. After all, if nurses are detailing on a care plan what they intend to do for or with a patient then it would seem that a measurement of the workload could be calculated from those recorded interventions. At present, though, only three of the systems provide a workload

measurement: criteria for care, FIP and Exelcare. The latter two have a skill mix component. The usefulness of Exelcare in workload measurement cannot be commented on here as the management reports were not being used at the time of my visit. The criteria for care system produces a workload measurement by categorising all patients into five groups using various factors and having timings for each of the five groups. Indirect care is a set percentage added to the total of the timings from the care groups. Values are arrived at by activity analysis studies prior to using the system. No skill level mix is available. FIP uses both the broad groups as well as an assessment of patients requiring certain specific interventions. Indirect care is not a set percentage of direct care but more flexibility is available depending on, say, what may occur on a certain day of the week. Skill mix is calculated by each site deciding on the grade of nurse which is able to undertake which activities. No workload system is perfect and both methods seem to have equal value in long term establishment calculation but on a day to day basis the flexibility in the FIP system does seem to have certain advantages.

Nurse Tracking

Both ANSOS and FIP have comprehensive nurse tracking systems allowing all nurses and their shifts to be recorded on the system. The automatic rostering of ANSOS does seem to have benefits in certain situations. The input of data at the ward level does have advantages over centralised manpower systems which tend not to be kept up to date.

Quality Assurance

Exelcare with its Patient Evaluation Forms allow nurses to assess whether patients are attaining certain outcomes. With each nurse having to record whether the suggested outcomes have been reached, the system lends itself to facilitating individual professional accountability. The FIP quality assurance module allows the results of an independent audit to be fed back into the computer so an audit analysis is produced. This system lends itself to facilitating both institutional and individual accountability if used as part of a comprehensive quality assurance programme.

Costing

At present the importance of individual patient costing is, perhaps, not realised but the costing of nursing resources to an individual patient is an important element of resource management. A system producing that information acts as a feeder into a case-mix system. FIP, Criteria for Care and Exelcare all have the facility as does ANSOS when used with a dependency system. As ANSOS and FIP have nurse tracking systems they have the potential to produce staffing and off-duty costs.

User Acceptability/Feeder Systems/Planned Developments/System Costs

I had hoped to produce details under all four of these headings, however, I found such expectations too ambitious. All the individuals that I met at all the sites were extremely helpful in their explanations and in our discussions. At all the sites, except one, I was impressed by the enthusiasm of the staff

involved which in many cases did not just consist of the project co-ordinator but clinical nurses also. In part this could be put down to the 'Hawthorne' effect as well as a tendency for individuals to 'feel' part of the system themselves, coming to terms with any defects if they do exist. In the short time that I was at some of the sites to assess user acceptability in any kind of objective or in depth manner is impossible.

At present all the systems I saw were stand alone except for the FIP system which was linked to a PAS. I understand that some link between Exelcare and ANSOS is envisaged.

I was unable to collect any solid information on planned developments and systems costs. In general all site co-ordinators identified developments which they wanted to their own particular system and it is quite possible, of course, that developments have occurred to some of the systems which supercede some of the comments in the report. As far as costs are concerned some of the systems outlined in the report are not yet available to other sites, some are crown copyright and, therefore, free to NHS users and the commercial software costs depend on various factors which make it impossible to give even a range of possible prices.

CONCLUSION

The study trip has indicated that developments in Britain are more advanced than in Europe. However, although the European sites have no superior nursing software at present, due to the long standing history of having nurses within the information infrastructure it is possible that we will have much to learn from their future developments. During my travels I had the opportunity to speak with experienced nurses in the field and the general consensus is that nurse systems in the USA are not as advanced as is supposed. The situation in Britain therefore, seems to be comparable with other countries. Yet, a reading of this report may result in the impression that there are no systems which are able to meet all the requirements of nurses. This I would agree with as each system has been designed for different purposes - perhaps, as a support for care planning or, say, as an indicator of required nursing resources. In a sense, information technology is being forced onto the majority of the profession who are unaware of its capabilities and limitations. Expectations of nurses and some of their user requirement documents are plainly unrealistic for the state of the art as it presently exists. A general picture emerges of a subject underfunded and neglected in the past which is suddenly being pushed to the forefront of healthcare planning.

All is not gloom, however. Sites are after all quite happily using the existing systems. Nurses have in theory the choice of either installing one of the present systems or waiting for a more comprehensive software package to be developed. In practice, though, in many instances, there are strong pressures

to install a system now. If that is the case, it certainly is important to prioritise one's requirements and choose a system which seems to fulfill the most important items on your list. It must be remembered after all that software producers are aware that they need to develop their products to keep their customers happy (although they do not all succeed in this). In choosing a system now, a site has a long education/implementation period ahead before substantial benefits are reaped. Within that implementation period, it is quite possible that software development will become available which will meet some of those original unmet requirements. In choosing a system, therefore, one must not only consider the software as it presently exists. A supplier's past record, future development plan, history of user involvement, technical and nursing expertise of support staff are all points to consider. Other important factors are how the system fits into ones overall computer strategy and most importantly the cost of the software and its ongoing support; issues that are beyond the remit of this report.

The combination of systems is also a topic which needs to be considered not only by prospective users but by developers themselves. It is quite possible that some sites are of the opinion that they would benefit from a combination of some of the systems outlined in this report. At present, this point does not seem to have occurred to developers as no links have been written between systems that complement each other. There is naturally a spirit of competition between software developers but the possibility of linkages between some of the systems ought to be at the top of some developers agendas. This is especially true for the crown copyright software developers. There certainly is a case to

be made for them to investigate if their systems might benefit from merging with each other. In this regard it does seem that some central organisation is required, not only to investigate linkages but also, to combat duplication of effort. Whether this is a feasible suggestion remains to be seen as any central control could stymie innovation and diversity.

The aim of this report was to produce in one document comparative data on all the main nursing systems available and being developed for the acute sector. In concluding, therefore, it is hoped that the previous pages will help nurses and managers make more informed decisions when choosing computer systems for their own particular requirements.

References

- Bowman, G and Thompson, D (1987) Core care plans go critical. *Nursing Times*, Vol. 83, No. 44, p 70.
- Bryant, Y (1986) The Key to the Future. *Nursing Times*, Dec. 17/24 p. 26-27.
- Catterall, J (1987) Resource Management. *British Journal of Healthcare Computing*, Vol. 4, No. 3, p 21-22.
- DHSS (1986) Health Services Management. Resource Management (Management Budgeting) in Health Authorities. Health Notice HN(86)34.
- Giovannetti, P (1985) DRGs and Nursing Workload Measures. *Computers in Nursing*, Vol. 3, No. 2, p 88-91.
- Glasper, A, Stonehouse, J and Martin, L (1987) Core care plans. *Nursing Times*, March 11th, p 55-57.
- HMSO (1979) Royal Commission on the National Health Service. London: HMSO.
- Ijebor, L (1987) IN: Coad, H, Davies, P, and Millar, B. Information - the rise of new realism. *Health Service Journal*, 22 Oct, p 1226-7.
- McMahon, R (1988) Who's afraid of nursing care plans. *Nursing Times*, Vol. 84, No. 29 p 39-41.
- NHS (1983) The NHS Management Enquiry. DHSS: 1983.
- Reed, V (1987) New Nursing Horizons in Information Technology. *Senior Nurse*, Vol. 7, No. 3, p 19-20.
- Scholes, M (1983) Introduction IN: The Impact of Computers on Nursing. (eds) Scholes, M, Bryant Y, and Barber B. North Holland: Elsevier Science Publishers B.V.
- Sweeney, A (1986) Computer Implementation Problems Stressed. *BJHC*, Vol. 3, No. 1, p 3.
- White, B (1987) IN: CP87 Order from Chaos. Windsor, P, *British Journal of Healthcare Computing*, Vol. 4, No. 3, p 16-18.
- Windsor, P (1984) Servant of Two Masters. *British Journal of Healthcare Computing*, Vol. 1, No. 4, p 3.

Further Reading

1.) Leiden.

Pluyter-Wenting, E (1986) On line nursing. Nursing Times, Sept. 17th, p 40-42.

2.) Boston, Lincs.

Flynn, B and Roberts, I (1988) A resourceful experiment. Supplement to the Health Service Journal, 10th Nov., p 4.

3.) Dundee

Henney, C (1985) Nursing time on disk. Nursing Times, Oct. 2, p 27-30.

Harrow, M (1988) A computer for clinical nursing. British Journal of Healthcare Computing, Vol. 5, No. 1, p 20-24.

4.) FIP

Fabray, C and Greenhalgh, P (1984) Nursing time is money. Nursing Times, Nov. 14, p 60-62.

Milne, C (1988) Information technology and nursing care. Nursing Standard, Sept. 24, p 34-5.

5.) Various: (Articles on Leiden, Leuven, Antwerp, Dundee, Weymouth) Nursing and Computers. Third International Symposium on nursing use of computers. Proceedings 1988 McGraw Hill.

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