ABC of Computing

J A INGRAM
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PATIENT ADMINISTRATION—II

Accident and emergency administration

For patients who are admitted or given a follow up appointment through the accident and emergency department the accident and emergency module acts as an entry point into the main inpatient-outpatient patient administration system described last week. When a patient presents in the department the receptionist can search both the accident and emergency index and the main patient master index for any previous reference to the patient.

This automatic search using the patient's details is important since many large accident and emergency departments file their casualty treatment cards in order of date of attendance. Few patients can remember the date of their last attendance, so notes are hard to locate. With the computer system any previous accident and emergency treatment or existing hospital case note number can be found within several seconds. Medical staff can be informed that the patient is currently attending outpatients or is on a waiting list for admission. A warning "special message" on the patient administration system may state whether the patient is a diabetic or a haemaphiliac. Professional "hospital hoppers" who present at accident and emergency departments around the country using different aliases and proffering bogus symptoms can be identified quickly, as the main patient administration system can keep a cross check on known aliases for such patients. The main clerical activity of maintaining a daily register of attenders and a corresponding alphabetical register disappears. Patient identification labels and a partially complete treatment card can be produced on entry to the department. The computer system can collect information about patients injured in road traffic accidents and automatically follow up those who do not pay the standard treatment fee. Automatic lists of all children treated over any given time can be created on demand, and children "at risk" can be identified quickly.

Waiting list monitoring and scheduling

The computer system can also maintain waiting lists of patients. These can be maintained on a large central system which includes details of all the patients, the consultants, the diseases, etc. Clearly it is useful that the main patient administration system is aware of what is going on within the waiting lists, but a large central system is cumbersome and difficult to use. Individual consultants would either have to rely on the central system for all inquiries and printouts or retain their existing manual lists and load duplicate copies on to the central system. Any change to details on the manual lists would have to be updated on to the central system.

A more convenient, though more expensive, method is to provide each consultant (or group of consultants) with direct access to the computer system via visual display units and printers or by local microcomputers linked to the main computer. The major advantage is that consultants can directly control additions to and selections from their lists. Collectively these lists form the hospital waiting list file, which is immediately accessible from the main patient administration system. If microcomputers are used instead of straightforward terminal links each microcomputer can perform in a "local" mode as a word processor or small research computer.

Whichever method is used, a waiting list system performs several activities. It provides details of patients within a particular type of list by date on the list. When a patient is given an admission date the details are transferred to the inpatient system and the patient is sent a letter giving the admission date. The system can calculate the waiting time for different types of list and inform the consultant of any other entries for a patient on other waiting lists in the same hospital.

Case note library control

It is common that patients are known to the hospital but their case notes cannot be found. With manual systems a large amount of time is spent tracing missing case notes. A computerised system can ease the problem by recording the last known location of a set of notes; their return to the library can be automatically logged with a light pen. A simple inquiry on the computer system will then tell the medical records clerk if the notes are in file or who last borrowed them. A list of patients expected for a particular outpatient clinic session, showing the patient's name, case note number, and location of the notes can be produced on demand. As notes are removed from the library for normal use they are booked out to a specific borrower with a light pen and if they have not been returned within a predefined time the computer can automatically generate a request for their return.

Bedstate control

BEDSTATE - GENERAL SURGERY								
Ward	E1	F23	TRAN	F2	E24	Mary	H06	J6
Ward Allocation	28	28	10	24	28	28	28	24
Spec Allocation	20	28	6	20	28	28	28	26
Occupied	18	30	8	16	24	25	23	2
Borrowed	.	.	2	.	.	.	.	2
Lent	2	.	.	1	.	.	.	.
Overbooked	.	2	.	.	.	.	.	.
Male : Exp in	1	.	.	3	.	2	1	.
Exp out	2	1	1	.	?	.	.	2
Female: Exp in	2	.	.	.	2	1	.	1
Exp out	3	2	2	1	.	1	.	.
Total : Free	.	.	.	4	4	3	3	.

1 - Another specialty
2 - Select a ward
3 - Rest of wards
[]

When the inpatient and waiting list systems are fully operational several important items of information are known to the computer system. The patient's details, the admitting consultant, the specialty, and ward of each patient admitted or on the waiting list are continually updated. Planned admissions from a waiting list; transfers of patients already admitted between consultants, specialties, and wards; discharges; deaths; and estimated dates of patient discharge are all known. It is therefore relatively easy for the system to monitor continually the current or projected bed use and availability for the entire hospital or for any given specialty or ward. Since the estimated date of discharge can be collected for those patients already in beds and the dates of planned admissions are known the number and location of free beds over any given future time can be calculated. The computer system maintains an accurate bedstate record as a byproduct of registering the patient and recording transfers between wards. The computer system also keeps track of beds borrowed between specialties and can locate patients who are "sleeping out" on wards not normally used by the admitting specialty.

Statutory statistics

-2000

HOSPITAL RETURN
Department of Health and Social Security
99-9999-9999
SILLYTOWN HOSPITAL
SILLY STREET
SILLYTOWN 13

Year ended 31st Dec 1999
FORM SHS (EDP4) SUBSTITUTE

PART A

Specialty or Department	Average daily beds available (a)	Average daily beds occupied (b)	Discharges & deaths for year (c)	Wrist on 31 Dec (d)	Average duration of stay (e)	Discharges & deaths per avail. bed (f)	% Occupancy	Turnover Interval
(GENERAL MEDICINE)	79.1	66.3	3241	678	5.2	41.1	82.6	1.1
(RENAL MEDICINE)	8.0	5.5	142	4	15.8	1.6	71.9	0.2
(RESUSCITATION)	1.4	1.3	110	0	1.3	72.5	97.8	1.1
GENERAL MEDICINE	88.5	74.1	3493	682	5.5	48.2	86.2	1.0
PAEDIATRICS	37.6	35.8	937	169	4.3	27.6	96.1	1.3
INFECTIOUS DISEASES	0.0	0.0	0	0	0.0	0.0	0.0	0.0
CHEST DISEASES	5.7	5.7	197	0	13.4	3.2	100.0	0.0
TOTALS	121.3	115.6	4627	85	6.2	36.7	89.1	0.9

PART B

AMENITY PATIENTS Average daily occupation during the year : 99
Discharges and deaths during the year : 99

The collection of statistical information is time consuming and prone to error because of misinterpretation of statistical definitions during data collection. Hospitals are a constantly changing environment; there is rarely a single point in time when a statistical snapshot can be taken. The computer system continually monitors the admission, discharge, and transfer of patients and can therefore produce most of the required information for statutory returns—for example, outpatient attendances for a single consultant, specialty, or whole hospital over any selected time; the number of clinics cancelled, the number of patients seen on a ward on any selected day; the number of beds occupied by ward, consultant, specialty, or hospital. Bed occupancy and bed availability are also easily calculated, and the standard regional and national quarterly and annual returns may be printed on demand.

Management information and hospital activity analysis

There is a subtle distinction between statutory information and management information. Local hospital managers may find it useful to have access to the statutory statistical information, but it is often difficult to derive information of more immediate local benefit. A true management information system can analyse and present coherently the data collected by the patient administration system. To a certain extent some facilities are also available via hospital activity analysis systems, where diagnostic operative patient data are forwarded to central regional systems for collation and analysis. Such data take some considerable time to collect and analyse. The patient administration system offers the facility to record diagnostic and operative data, which are then analysed on demand locally. This does not necessarily replace the central regional hospital activity analysis system. It is difficult for consultants or administrators to define in advance the types of statistical breakdowns they require, and the patient management information system is flexible enough to offer easily used "inquiry" facilities.

X ray administration

Most x ray requests handled by a large department are for patients already known to the hospital patient administration system. Some of the patients referred by general practitioners are also known, from previous contact with the hospital. In many cases therefore the patient's registration data are known and need not be re-entered (unless any changes are required). Appointments can be made using the same procedures as for the outpatient system. Previous x ray films are shown on the visual display unit with the patient's record. No registers of attendance need be kept manually since these are produced by the computer on demand. No filing of x ray request cards is required. Outpatient x ray appointments are made directly from the visual display units located in the outpatient clinic. The x ray reporting can be done via a word processing facility on the system, standard reports being made up of standard paragraphs, sentences, phrases, or free text. The location of x ray films can be monitored by a similar system to that used for case notes. Patient labels, produced on demand, can help direct the x ray film to the correct ward, outpatient clinic, or other source of request.

Link to pharmacy system

The objective of the pharmacy system is to facilitate the safe and accurate prescription of drugs for patients. In a fully integrated system all prescriptions for drugs can be done via the computer, and when the drug round is due the computer provides a list of the drugs for each patient. The computer can then check on prescribing trends and ensure that the pharmacy is always adequately stocked. Orders to drug suppliers can be automatically generated when the stocks reach preset levels.

A pharmacy module can also maintain a drug interaction file so that the doctor can check whether the prescribed drug is likely to cause problems before the prescription is implemented. The module can also be programmed to check the prescribed drug against the "drug warnings" details in the patient master index.

Link to laboratory systems

Routine laboratory tests can be ordered from a clinic, ward, or accident and emergency terminal and when the blood has been processed the results can be entered into the computer from the laboratory for inspection on the requesting terminal. The computer can also display the current and previous results in such a way as to make the trends obvious—for example, as histograms. Within limits the computer can also be used to give comments and to highlight abnormalities.

Links to other patient administration systems

As patient administration systems gather acceptance and become more widely available within the NHS links with smaller clinical systems, which make use of the basic patient hospital information, will grow proportionately. This larger network of combined systems will be the first true "hospital" computer system. The hospital networks could in turn combine to form NHS district networks. The Körner Committee has recommended the use of patient administration systems to collect information on patient treatment, even when such treatment has been carried out at more than one hospital during a single course of treatment. Similar information collected in the community, from general practice systems, can be linked in a similar fashion to form a complete and continuous picture of individual patient care.

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