North Manchester Health Authority

NORTH MANCHESTER GENERAL HOSPITAL

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Please reply to: C M H BROWN

our ref: CMHB/EA

your ref:

4th May 1989 (Dictated)

Dear Robert

OVERSEAS STUDY TOUR – SUNDAY TIMES "BEST OF HEALTH"

I am pleased to provide you with my executive report on our overseas
study tour to Japan, New Zealand, the United States and Canada,
during February 1989, which you so kindly helped sponsor.

You will be interested to know that an article on the trip will
appear in the New Society Section of the Sunday times this coming
Sunday (7th May 1989). We also hope to publish in the medical
and health service management press.

Please do not hesitate to contact me if you wish to follow up on any
of the content or if my participating colleagues and I can be of
any assistance in passing on our learning experience. We very much
appreciated your assistance and feel we have learnt a great deal
which we intend to apply here in North Manchester.

Yours sincerely

C M H BROWN
DISTRICT GENERAL MANAGER

ENCL.

Mr R Maxwell
Secretary
King Edward's Hospital Fund for London
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1. INTRODUCTION

1.1 BEST OF HEALTH COMPETITION

The North Manchester Overseas Study Tour was made possible by the success in the Sunday Times - "Best of Health" competition with a travel bursary sponsored by the British Pharmaceutical industries. This sponsorship was supplemented by grants from the King Edward's Fund, the Health Services Management Unit - University of Manchester, the NHS Training Authority and IBM.

1.2 SELECTING STUDY SUBJECT

North Manchester has a firm commitment to including doctors in the management process, and so it was considered most appropriate for the trip to focus on the interrelationship between health service management and clinical care. Consequently, it was proposed to review the development of medical audit and the utilisation of resources in Japan, New Zealand and North America.

1.3 MEDICAL AUDIT

Medical audit can be defined as the systematic critical analysis of the quality of medical care including the procedures used for diagnosis and treatment, the use of resources and the resulting outcome and quality of life for the patient.

1.4 TOUR PARTY

To ensure that different perspectives were taken the Chairman of the Medical Executive Committee, Mr D S Sharp, and Mr M Brown, District General Manager, were joined by Dr P Elton, Specialist in Community Medicine, and the Regional Medical Officer, Dr S Horsle The Regional Health Authority were pleased to sponsor the Regional Medical Officer on the trip as he has a specific brief for developing the process of medical audit and computing in the North West. The study tour took place between the 6th and 25th February 1989 and the party were pleased to see the specific focus that the subsequently published White Paper on the NHS Review : Working for Patients, has given to medical audit.

2. JAPAN

2.1 KOCHI HOSPITAL

The flight itinerary made it possible to spend 36 hours in Japan and the study team decided on an ambitious trip to visit Kochi Hospital and Medical School, some 450 miles from Tokyo International Airport, on the southern island of Shikoko.

2.2 INTEGRATED MEDICAL INFORMATION SYSTEM

This centre has a University Department of Informatics which has received considerable government support to develop to its maximum potential. One main frame computer supports the hospital on line services, whilst the other is used to develop new systems for informatics, education, and medical research. The Integrated Medical Information System comprises a full Patient Care System and integrated departmental computer systems.

New outpatients are presented with a magnetic identification card which facilitates subsequent speedy transcription of primary patient details onto the computer data base. The computer has an outpatient appointing scheduling facility and the ability to pre-plan admissions. Medical records are thus retrieved from the central library in advance.

The IMIS system has an order entry facility for prescriptions, pathology tests and x-rays, as well as patients' dietary requirements. The integration of departmental automated systems in pharmacy and pathology to the main system are particularly impressive. The pharmacy system includes prescription ordering, automatic dispensing replacement of ward stock and inventory control. Service delays in pharmacy are minimised by drugs being dispensed for outpatients before the arrival of outpatients at the pharmacy counter, and for inpatients with assistance of an automatic dispensing machine - The automatic Tablet Counting and Package System. This also reduces the work for ward nurses as it eliminates the task of separating individual patient doses. The satellite computer in pathology controls the autoanalysers, reporting, collection of data and communication between host computer and the satellite system. A conveyor belt has been devised to transport samples from the wards. The autoanalysers are synchronised with the computer system so that turnround time is at the speed of most laboratories emergency requests and results are available on the ward terminal within a maximum of 26 minutes. The fully automated laboratory is claimed to have saved 50% on laboratory staffing costs.

CT and FCR images for selected patients are stored in optical disks located in the x-ray department which are used for diagnosis at graphic terminals. This feature supplements the departmental computer system for registration details, x-ray film storage and appointment scheduling.

The ward system of IMIS provides for fast recall and review of the history of a patient's medical treatment and results. Directions for injections and medical tests or treatments are input by the medical staff and are extracted daily by the nurses. The nurses input their nursing notes onto the computer and it is claimed that this helps them make daily care plans and test preparations. All relevant items concerning patients' treatments are input by the doctors and nurses including medications, operation history and other clinical history diagnosis and discharge summary.

An integrated nursing system is used to undertake duty scheduling assigning night duty and holidays evenly and generating daily and monthly reports.

2.3   MEDICAL INFORMATION SCIENCE

Most interestingly, Professor Yasuhiro Kitazoe, Director of Medical Information Science, explained that medical informatics was an integral part of medical student education at Kochi. Not only do the students learn computer languages and analysis and data processing methodologies, but computer assisted instruction material is under development in which the hospitals accumulated patient data (since 1972) is to be increasingly used as a knowledge base for medical teaching.

When asked whether the medical staff used the clinical data base to audit their practice, Prof. Kitazoe had difficulty understanding the concept. Re-phrasing the question to "what developments do you envisage in your automated clinical information base?" our host felt far more comfortable. The Japanese aim is to further release professional health care workers from routine tasks to concentrate on patient care and to make systems more efficient in the interests of patient service and comfort. It is envisaged that achievements will include -

a) more medical teaching via IMIS data base,

b) by-passing the central computer data base through technical link-ups between departmental feeder systems,

c) development of an image data base associated with radiographic pictures and medical records sheet.

Prof. Kitazoe gave every indication to us that the programme was within their grasp.

3. NEW ZEALAND

3.1 BACKGROUND

It was decided to make the long trip to New Zealand to judge the extent to which an information system capturing detailed treatment costs by volume and type of case (case mix) contributed to the audit of medical practice. The system was claimed to facilitate for newly appointed Hospital Board general managers the opportunity to -

a) negotiate short term clinical caseload contracts with senior medical staff,

b) to contain health care expenditure,

c) improve resource utilisation,

d) illustrate how money was being spent on clinical services.

3.2 RESOURCE UTILISATION SYSTEM

New Zealand Department of Health have established a small central team to install a Resource Utilisation system, which is designed to come to terms with the financial consequences of hospital clinical practice. The initial motivation was clearly to contain health service costs. The consortium of six people comprises a general manager, John Ayling, as RUS co-ordinator, two nurses, a community doctor, an accountant and a seconded management consultant from Peat Marwick McLintock.

3.3 PILOT SITES

The team have installed the framework for RUS in two Hospital Boards - Otago, Dunedin and Waikato, Hamilton and Roturua, working closely with local management, financial services, the medical and nursing staff and departmental heads. The RUS Team had just commenced an 18 months programme in Wellington Hospital Board during the study group's stay in New Zealand.
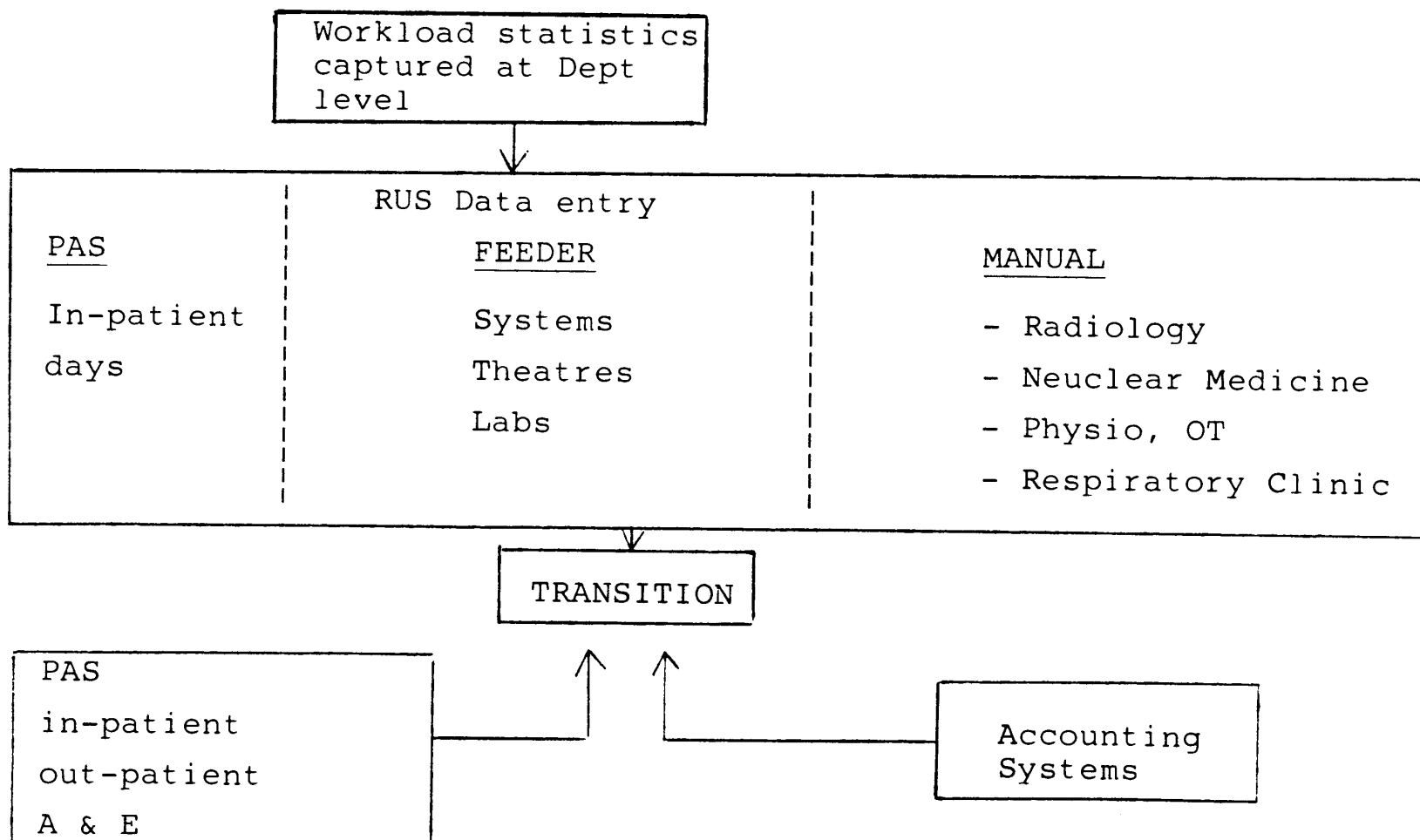
3.4 TRANSITION - COMPUTER SOFTWARE

The Resource Utilisation System is based on a software package called Transition, imported and tailored to New Zealand needs from the New England Medical Centre in Boston, U.S.A. The principle of the framework is to break down accounting to clinical treatment level individually cost these activities initially using standard costs and apportioned overheads and relate these treatment costs to numbers of patients treated. In this way, managers, doctors and nurses can monitor budget performance and utilisation of resources taking account of casemix and volume, both for direct and indirect costs. The case mix is made manageable by categorising to Diagnostic Related Groups (DRGs) whilst it is intended to add the sophistication of severity/ dependency weighting later.

3.5 DATA FLOWS

The system facilitates introducing into the health service accounting the principles of fixed and variable costs; and direct and indirect costs.

The data flows which feed the Resource Utilisation System are :

TABLE 1   DATA FLOWS - RESOURCE UTILISATION SYSTEM
                 OTAGO DUNEDIN HOSPITAL BOARD - NEW ZEALAND

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            ┌─────────────────────┐
            │ Workload statistics │
            │ captured at Dept    │
            │ level               │
            └─────────────────────┘
                       │
                       ▼
┌──────────────────────────────────────────────────────────────────┐
│                    RUS Data entry                                  │
│  PAS         │        FEEDER        │         MANUAL              │
│              │                      │                             │
│  In-patient  │        Systems       │        - Radiology          │
│  days        │        Theatres      │        - Neuclear Medicine   │
│              │        Labs          │        - Physio, OT          │
│              │                      │        - Respiratory Clinic  │
└──────────────────────────────────────────────────────────────────┘
                       ▼
                ┌──────────────┐
                │  TRANSITION  │
                └──────────────┘
                   ▲      ▲
┌──────────────┐   │      │   ┌──────────────┐
│ PAS          │   │      │   │              │
│ in-patient   │───┘      └───│  Accounting  │
│ out-patient  │              │  Systems     │
│ A & E        │              └──────────────┘
└──────────────┘
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The work of the consortium is to -

(a)   set objectives and establish a workplan, and review existing information systems and put in place any necessary manual collection arrangements,

(b) identify and cost patient treatments,

(c) collect patient specific data for all procedures,

(d) develop profiles of resource utilisation for specific patient groupings.

TABLE 2   COSTING OF PATIENTS TREATMENTS BASED ON CLINICAL PROFILE RUS - NEW ZEALAND

EXAMPLE 1

Patient Group : Carcinoma upper lobe of lung

Sub group : Lobectomy with radiotherapy

Admission for Pre: Admission tests

Service Procedure test	Units of service expected	Cost per schedule	Total Cost
Ward A	1 day	$300	$300
Chest X-ray	1 day	$ 45	$ 45
Broncoscopy	1 day	$200	$200
Mediastinoscopy	1 day	$800	$800
Respiratory function test	1 day	$ 68	$ 68
Blood Gases	1 day	$ 6	$ 6
Blood count	1 day	$ 11	$ 11
Urea	1 day	$ 3	$ 3
Sodium/Potassium	1 day	$ 3	$ 3
Liver function test	1 day	$ 5	$ 5
Histology examination	1 day	$190	$190

Sub Total $1,631

(In Feb. 1989 £1 = $2.7)

As well as being sub divided by treatment phase, profiles can show optional and mandatory orders; and the fixed and variable cost components.

EXAMPLE 2

Patient Group : Acute Myocardial Infarction
Sub Group   : Acute admission at time of infarction
Mandatory orders/treatment -

Service Description	Proced-ure Code	Expected Lgth. of stay per pt.			Expected Cost per pt.		
		Min.	Max.	Av.	Min.	Max.	Av.
		- days -			- $ -		
Medical Ward	100	1	10	5	265.5	2651.90	1325.
Optional orders/treatment -							
Coronary Care Unit	100	-	5	2	-	1847.20	738.

Over time it will be possible to compare derived standard costs (for pathology laboratories - Canadian workload units are used) programmed volume with actual expenditure and case mix and consumption of in-patient days. It is then possible to reconcile expenditure back to the accounting ledger.

3.6   PROGRESS WITH PROJECT

The study team were impressed with how much had been achieved in less than 2 years at both the pilot sites in Dunedin and Hamilton. Each site has a full time team of 3 project officers backed up by the national consortium. In Dunedin the Senior Management Services Officer envisages that the RUS project will help the Board build up meaningful clinical department budgets based on a far more detailed analysis than previously.

The opportunity then presents to negotiate changes in volume for case mix, or to seek the co-operation of providers of service to achieve better use of resources through clearer understanding of the component treatment costs.

In Hamilton the managers are looking at the costs of cross boundary flow caseloads currently budgeted to the Waikato Hospital Board at overall average case costs. As cross boundary flow is substantially for expensive regional or national specialties the Board's negotiating power with the Department of Health and neighbouring Boards is much strengthened.

3.7   MEDICAL STAFF VIEWS

The reaction of the medical profession to the RUS project in New Zealand is mixed. The study team felt that their co-operation might have been more enthusiastically given if the project had been discussed with senior doctors at the outset and they had been given the opportunity to realise the advantage of recognising the costs of optional care patterns as part of their audit of medical practice. The medical profession in New Zealand are currently smarting from the Cartwright Inquiry Report which censored the clinical practice of a gynaecologist in Auckland in relation to his screening and treatment practices for cervical cytology. The need for a systematic audit of medical practice is therefore well recognised.

In Dunedin, a teaching hospital environment, Dr Tom McKendrick, Medical Superintendent, speaking for his clinical colleagues, reported that -

(a)   the medical profession were interested and took a responsible attitude towards the rising costs of clinical care and the need for doctors to practice within financial constraints without compromising quality of service,

(b)   RUS information had already led the orthopaedic
        surgeons to standardise on implants and suture
        materials,

(c)   clinicians were reacting to the stark difference in
        cost between day patient and in-patient treatment
        highlighted in RUS by setting a target of 45%
        day surgery for elective surgery cases,

(d)   peer review had started in cardiac and general
        surgery,

(e)   one general surgeon had developed a full computer
        based audit programme,

(f)   clinicians were assisting RUS by compiling and
        agreeing clinical profiles.

The study team had the opportunity to sit in on the RUS
consortium's first presentation to the senior medical staff in
Wellington Hospital.

The project preparation work was well underway at this stage and
there was some under-current of suspicion that the project was a
government inspired cost containment exercise. Some of the
medical audience, however, perceptively recognised the natural
linkage of treatment profiles with development of medical audit
activities.

The Wellington clinicians asked whether there would be a tendency
with RUS to discourage optimal treatment procedures if they were
the most expensive. There was concern also to ensure that
outcome was measured to balance cost with benefit, but there
was a recognition of this being a difficult area to quantify for
all clinical profiles.

It remains to be seen whether a sufficient number of the medical
profession in New Zealand will embrace the Resource Utilisation
Project with the same enthusiasm as the general managers.

New Zealand demonstrates that a clear policy pursued by government
backed by adequate financial resources can make remarkable technical
progress. It was evident, though, that it was equally difficult to
ensure that the technical progress was used to enable improvements
to be made in the quality of the service within resource limitations

4.   USA

4.1   MEDICAL MANAGEMENT ANALYSIS

The study team met Dr Joyce Craddick, President of Medical
Management Analysis International Inc. in San Francisco.
Dr Craddick,previously a respected paediatric renal physician,
has spent the past 12 years developing her vision of a
comprehensive monitoring system to maintain and improve the
quality of clinical practice. Her Medical Management Analysis
System is designed to reduce adverse patient occurrences. Whilst
believing that her profession seek the highest standards of
patient treatment, Dr Craddick alleges that most doctors, however,
have no frame of reference within which to measure their treat-
ment outcomes, and that they are ill equipped to refute public
allegations of substandard care. Her system seeks to replace
a plethera of un-coordinated monitoring activities in US
hospitals such as tissue review, Mortality studies, infection
control review, review of antibiotics and medical peer review
with a systematic total medical audit approach.

MMA is an audit system for the objective analysis of medical
care in the hospital. The process is based on 'occurrence
screening' in which all outpatients and inpatients are reviewed
and adverse patient occurrences are identified, confirmed and
trended and appropriately followed up.

4.2   MEDICAL AUDIT AT SCRIPPS MEMORIAL HOSPITAL

On Dr Craddick's recommendation, the system was observed at
Scripps Memorial Hospital in San Diego, a 450 bedded acute
teaching hospital, (one of several now using the system which is
commended by the American Joint Commission on Accreditation
of Health Care Organisations). The programme is based on a
computer programmed 24 set general outcome screening criteria
which forms the basis for trained screeners (usually qualified
nurses) to scan all patients' medical records. The process
highlights potential adverse patient occurrences in treatment
episodes for further investigation.

TABLE 3.   EXAMPLES OF GENERAL OUTCOME SCREENING CRITERIA

Elements	Exceptions	Instructions for data retrieval
1. Admission for complications or adverse results at outpatient management.	Previous medical care was unrelated to this hosptial's OPD or did not involve any member of this staff.	Check recent OPD visits, admission notes, diagnose and consultation notes for complications, failur to treat test, prevent or diagnose.
2. Unplanned return to operating theatre on this admission.	None	Planned return to operating theatre must be documented prior to first surgery.
3. Length of stay greater than .... percentile or allotted days.	None	Use set criteria for leng of stay doctor reviewer to determine whether stay due to complication, diagnostic problem or treatment problem.

TABLE 3 (Contd.)

a) complication
b) diagnostic/treatment problem
c) placement problem

The experience at Scripps (a hospital with a reputation for high quality care) is that 15% - 20% of patient charts show up potential adverse patient occurrences. Many of the criteria have a prima facie relationship to patient care problems. for example, they describe events which are not natural consequences of the patient's disease, eg an unplanned injury to an organ or a pathology report that does not match the diagnosis. Some of the criteria describe or give clues to poor outcomes such as unexpected transfer from a general to a special care unit or leaving the hospital with a neurological defect not present on admission.

The screening process is very thorough involving frequent checks during the patient's stay, and after discharge. Additionally departmental screening against treatment profiles (which describe clinically pre-determined parameters of care for a medical condition) is undertaken on a sampling basis. So that in addition to the overall screening for adverse occurrences the gynaecologists may, for example, choose to look at all hysterectomies or ectopic pregnancies occurring in a month and check out to what extent their clinical firms have practised treatment to the quality of standards they have set, eg length of stay parameters, antibiotic treatment, ordering of blood tests, etc.

Secondary review is undertaken by 10, - 15 medical on-call reviewers, one to four times per month, who examine the charts in their specialties. A chart is only medically reviewed if a screener flags one or more variation from the screening criteria. The hospital has a Quality Assurance Co-ordinator responsible for trending the adverse occurrence information which is also presented to the clinicians for 'peer group review.' An illustration of the trend analysis is as follows - (The material is fictitious and not related to Scripps Memorial Hospital - for illustrative purposes only but typical of an acute US hospital)

TABLE 4   Department of Surgery, Credentials Review Worksheet

Specialist	Patients Discharged	No. of APO's	% of pts. with APOs	APOs with severity 7 or = 3	RDDs	Standard of Care (+) (+/-) (-)		
001	88	27	18%	1	5	18	2	0
002	134	30	20%	4	2	10	0	0
003	60	16	20%	0	17	5	2	0
004	144	56	35%	14	28	18	12	8
005	96	74	46%	5	20	21	6	1

Explanatory Notes to Table 4 .

<u>RDD</u> = record documentation deficiency.

<u>APO</u> = adverse patient occurrence.

<u>Standard of Care</u> = peer reviewers (in this case a surgeon) review

Variations and trends in practitioner performance -

+ = standard of care met, eg normal appendix removed but pre-op symptoms justified the surgery

+/- = there was questionable management but no clear breach of standard, eg restriction of caecum and terminal ileum for gangerous appendicitis. Very unusual and radical may have been necessary but not clear from chart.

- = a breach of standard of care occurred and may involve potential liability, eg gastric stapling - injury to spleen required splenorrhaphy, excessive blood loss, discharge summary "no complications - unacceptable documentation.

Severity code = outcome judged against -

a severity index	3 = major, temporary
0 = no diability	4 = major, permanent
1 = minor, temporary	5 = potential major or maj< continuing
2 = minor, permanent	6 = death
	7 = no injury

Medical audit in Scripps is focused at specialty level where it is fostering professional pride in standards and motivating research and medical education interests. Organisationally, however, the hospital also focuses the process on a medical quality control committee which tracks quality of clinical care by review of selected MMA trending reports. The committee identify problems and issues requiring study and follow up action, and set up study groups to examine problems and clinical issues. The committee also refer to clinical directors and the Management Board recommendations for removal of clinicians' privileges in the hospital. They may also recommend counselling or restrictions on clinical procedures they allow a clinician to practice or closely monitor a doctor's practice on a named procedure..

4.3 STUDY GROUP'S VIEW OF MMA

The study group were impressed with the thoroughness and comprehensiveness of the MMA system. This was made possible because of the need to regularly audit medical notes to satisfy the insurance companies that resources are not inappropriately used. Without this requirement the cost benefit of this check of 100% of notes would be dubious. There is cultural acceptance of the close clinical monitoring approach due to the strong influence of the US insurance companies in a competitive market demanding evidence of high quality hospital care. An

additional factor is that there is a more discernible medical hierarchy with departmental heads and medical directors, having the accepted power to recommend privileges to doctors to practice in the hospital. The medical hierarchy in the UK is not so easily dilineated. With the exception of consultants overseeing their junior doctors and professional units in teaching hospitals, senior doctors regard their independent status as important. It remains to be seen whether the lead given by the Royal Colleges will persuade clinicians that their professional standards might better be safeguarded by opting for total audit systems such as MMA rather than in-house 'peer review' with limited hospital wide control and follow up procedural review, re-training, equipment dysfunction, medical rota problems, discipline, etc.

4.4 KAISER PERMANENTE - HEALTH MAINTENANCE ORGANISATION

It was considered worthwhile to visit a Health Maintenance Organisation whilst in the United States. The Southern California Kaiser Permanente in Pasadena is one of the largest HMOs providing care for 1.8 million members through the services of 200 physicians and 26,000 employees located at 10 medical centres and 40 outpatient centres throughout the Southern California area. Kaiser Permanente have a good reputation in the States for achieving high quality standards of disease prevention and patient care. The organisation has developed an appropriate utilisation of resources programme that links monitoring of quality of patient care with utilisation control. This approach is based on a range of clinical process guidelines, and a clinical resource utilisation programme. Set clinical standards have been developed internally by the physicians themselve For each audit topic a medical staff expert drafted an initial set of outcome criteria essential for assuring a good outcome, to propose standards for each of those criteria and to identify risk factors which predispose patients to a poor outcome. The criteria were then reviewed and revised by a committee including clinical heads of departments. The committee then obtained a view of its revised criteria from a respected clinician or academic from outside the organisation. Over 56 monitoring criteria are in use with more being introduced continually. an example of two clinical areas covered are -

TABLE 5   Southern California Region, Kaiser-Permanente Medical Care programme - samples of Quality Care monitoring items and criteria

Focus of Review	Monitoring items and criteria
Emergency room	1. No preventable deaths in emergency room
	2. No preventable deaths 24 hours after hospital transfer from ER.
	3. Acknowledgment of abnormal x-rays in patient records within 48 hours.
	4. Acknowledgement of abnormal laboratory tests in patient records within 48 Mhours.
	5. No inappropriate use of skull x-rays in ER.
Blood Usage	6. No unjustified single unit transfusions.
	7. No unjustified whole blood transfusions.

Blood Usage

8. All transfusion reactions reported to pathologist.

9. Documented compatibility tests for all transfusion reactions.

10. No unused blood returned to laboratory.

The Kaiser utilisation programme involves a thorough review of pre-admission arrangements, discharge planning, retrospective review of admission, length of stay and level of care, and monitoring the utilisation of clinical resources. A medically qualified screener screens every inpatient against set criteria within 24 hours of admission for level of care and need for discharge planning. Should the screener determine that the treatment pattern does not meet the criteria after talking to the attending physician, a physician adviser is conferred with. The case can then be reviewed by the clinical head of department and ultimately in the case of disagrement (which is infrequent) by the area medical director who can direct changes. Summary reports are presented to medical centre quality assurance committee and may lead to actioning problem delineation studies. Kaiser claim to have consequently -

a) increased the percentage of outpatient surgery,

b) increased same day admissions for scheduled surgery and procedures to 90%,

c) eliminated unnecessary medical admissions and days of hospitalisation,

d) optimised use of their critical care areas.

4.5 STUDY TEAM VIEW OF KAISER

Kaiser are an impressive organisation who have carefully screened their medical staff before appointment, have a clear medical hierarchy with accepted defined responsibility, authority and accountability for quality of care. Their pre-payment system, which in many ways creates similarities with the NHS, helps to safeguard the care provided being medically necessary as the financial incentive does not exist for unnecessary tests, procedures and therapy. The high profile given by Kaiser to reviewing quality of care is driven by the competitive market. Dr Richard Rodriguez, Assistant to Associate Medical Director, and Tom Fleishman, Head of Information Services at the Southern California Regional office, claim that their respected place in the health care market justifies a multi million dollar investment in a clinical data base and automated clinical review criteria.

4.6 EL CAMINO HOSPITAL - PATIENT CARE SYSTEM

The study team were keen to observe an operational patient care computer system in the United States and chose to visit El Camino Hospital in Mountain View, California, which installed the Technicon Medical Information System in 1972 as a working tool for the 380 active physicians with admitting rights to the 450 bed district hospital. The physicians and nurses, laboratory technicians, radiographers and pharmacists all regard the system as an integral part of their everyday operating procedures.

The system is a clinical documentation and message sending facility which the hospital doctors use directly for writing orders, retrieving results, locating their patients and recording patient care. The system is user friendly through light pen activation on the VDU screens for pre-determined common medical orders and lists of diagnostic test requests. The doctors claim that the 'menu' programmes instill a basic discipline that not only speeds up the inter-communication between the professionals treating the inpatient, - ½ day reduction in receipt of x-ray results claimed - but inherently ensures a thoroughness of approach which is a form of self audit. The system is being used as an 'expert system' in that it stores advice from skilled clinicians on specific medical conditions and symptoms; these can be used as an electronic "reference book" to aid diagnosis and treatment selection, eg drug interactions, treatment profiles for renal failure and antibiotic sensitivity, etc.

A pre-admission system has been implemented that allows the physician and service departments to provide information about the patient as well as administer care to the patient, prior to admission - such as the writing of orders. This procedure it is claimed speeds up the care for the patient and can lessen length of stay by a full day. Similarly, the system is believed to be a time saver to doctors doing discharge summaries, as they can retrieve clinical information such as serial laboratory tests in chronological order at the touch of a button. The TDS system was also aiding nurse care planning by facilitating handling large volumes of data quickly into a systematised plan of care based on patient problems and expected outcomes of nursing care. Additionally, nurses entry of their nursing notes is also claimed to reduce time and overcome legibility problems. This is said to add up to savings of 8 hours per 34 bed ward per nursing shift. Producing overall savings and keeping the nurse close to the bedside.

From observation at ward level, nurses certainly are enthusiastic about the PCS and morale appears high. This system is primarily used for operational purposes and most of the patient data is remove from the computer on discharge. This partly explains why, when Neilson Buchanan, administrator of the hospital, was questioned about the extent to which the PCS had facilitated medical audit, the tangible evidence was limited. The system does, however, undertake some concurrent medical review functions such as providing a framework of trending analysis for incident reports, infection control reports and untoward patient incidents. Generic criteria are also predetermined by the clinicians to highlight malpractices such as unplanned transfers, surgical accidents, complications and deaths. Some utilisation review is practised by clinicians by retrospective analysis of patient care charts and comparisons of length of stay. Labour cost analysis is batch processed and standards have been set by establishing ratios between clinical activity and actual labour. Buchanan claims that the installation of the system has reduced running costs below that of their competitors and that the increase in labour expense is growing at a significantly lower rate than other local hospitals.

5.   CANADA

5.1   SUNNYBROOK MEDICAL CENTRE

The study team were keen to take in a visit to a large city based hospital in North America to compare and contrast the operational arrangements but also to observe how quality of patient care was being measured and reviewed. The opportunity presented through a contact with Peter Ellis, formerly a health administrator in the NHS - Yorkshire Region, but now Executive Vice-President of Sunnybrook Medical Centre, an almost 1200 bedded teaching hospital in Toronto, Canada. The busy centre with 620 acute beds and 510 continuous care beds is undergoing major organisational change.

5.2   ORGANISATIONAL CHANGE AT SUNNYBROOK

The change programme is prompted by a financial crisis in Canadian health services. Both the national government and Ontario State are cash limiting annual budgets whilst clinicians provide health care on a fee for services basis. Ellis no longer considers that a traditional departmental management structure is adequate to face the challenge of maintaining quality standards whilst striving for cost containment because departmental constributions to the health care programme can have narrow proifessional foci. Consequently the hospital is overlaying two additional structural dimensions to their organisation. One is to appoint clinical directors for clinical specialist departments, supported by a nurse and administrative manager to tackle the case mix and volume management dimension. This will involve negotiating resource changes with departmental managers. It is at this level that Brent Baldock, the Executive Vice-President, Finance, is introducing more sophisticated patient specific costing based on clinical profiles (initially for 10 Diagnostic Related Groups in the Surgical Service), enthusiastically supported by Dr Marv Tile, Director of Surgical Services. Baldock's view is that an individual treatment based accounting system is essential to control volume and case mix. Sunnybrook have chosen to use the same transitiion software the study team looked at in New Zealand with this objective in mind and to disaggregate Fixed from Variable Costs, and to facilitate variance analysis and modelling the financial outcomes of optional treatment programmes.

The third overlaying change is to introduce a programme management dimension which Ellis believes will ensure that the overall mission of the institution is not compromised. Programmes have been set up for cancer, aging, trauma, heart and circulation, rehabilition and mental health. Each programme has a programme director who is appointed by Ellis for his/her personal qualities and is usually a clinical director. The programme director sits on a co-ordinating committee chaired by the Vice-President, Corporate Affairs. The role here is to manage programmes and resource developments monitoring clinical units within the framework of development strategies. When challenged that the structure appeared complex and confusing, Ellis firmly committed to his changes, argues that a complex organisation with major challenges must have a structure compatible with the organisation's objectives Others, such as Dr Tile, are not convinced.

5.3 COMPUTER INVESTMENT AT SUNNYBROOK

The hospital is also undergoing a major investment in computer
technology not only to sub-divide the financial ledger
into treatment episode costs linked to volume information, but
to install a full Patient Care System. This will monitor nursing
resources, undertake ward ordering and provide a range of linked
departmental computer systems designed to speed up communications,
monitor clinical resources and improve operational efficiency.

5.4 CHEDOKE-McMASTER HOSPITAL IN HAMILTON

The Canadian Council on Hospital Accreditation recommended a
visit to the Chedoke-McMaster Hospital in Hamilton as a good
example of a Canadian Hospital with a respected quality assurance
programme. The study team met Mitch Baker, Director, Quality
Assurance/risk Management. The hospital is an 850 bedded acute
teaching hospital in Hamilton, Ontario, linked to McMaster
University. A Medical Quality Assurance Committee comprising
medical, nursing and management representation meets regularly.
There are 1000 consultants and associated consultants with
admitting rights who are subject to credentialing by the clinical
head of department in each specialty. This involves declaring
all doctors competencies and in some cases restricts access to
hospital facilities for a limited range of clinical procedures.

5.5 MEDICAL AUDIT AT McMASTER

The McMaster organisation place great store by their education
environment for medical students, nursing and professions allied
to medicine. It is probably this environment, together with the
legal position in North American where the Courts in large medical
negligence compensation cases are more frequently defining acceptab
practice, that has stimulated an acceptance of audit processes.
Several consultants undertake education ward rounds to emphasise
quality assurance to their junior doctors and students. Medical
records are even screened to meet set guidelines of good practice
in record entry and turnaround time for discharge summaries.
Violation of the guidelines are considered a serious matter
reportable to head of section and the Medical Quality Assurance
Committee. The Medical Quality Assurance Committee are encouraging
all specialties to undertake death reviews, which are reported upon
in summary form to a Review of Deaths Committee. Most clinical
specialties are participating in audit in some way. The Respirator
Therapy Department had recently reviewed oxygen use on wards/
departments in a four week trial which highlighted where
inappropriate continuation of oxygen orders were indicated. These
were circulated to heads of section for presentation to their peer
group. The psychiatrists had undertaken a patient questionnaire
survey and were currently analysing the results.

The hospital is also developing an unusual occurrences programme,
which Baker was at pains to point out is designed to accentuate
good practice in the hospital as well as uncovering untoward
practices and incidents. Each specialty is developing their own
clinical standards, clinical indicators/guidelines which are
discussed in a peer group before being endorsed by the Medical
Quality Assurance Committee. The general surgeons had just set
criteria for gall bladder surgery and colon surgery which
incorporated guidance on length of stay. Occurrence screening

in McMaster Hospital is using a number of prompts to highlight situations for further study such as -

a)   unplanned return to the operating theatre,

b)   any procedure taking 50% longer in theatre than planned,

c)   any re-admission within 30 days of discharge,

d)   falls - (all falls are recorded by ward; upward trends may be a symptom of concern, eg need to revise drug regimes),

e)   review of drugs patients bring into hospital, eg may highlight over-prescribing to elderly.

As clinical treatments are profiled the Quality Assurance Department, which comprises only two data abstractors in support of Baker are screening medical records on a sampling basis. Taking a particular treatment within a specialty and screening all cases over a 2 week period in all McMaster Hospitals. As there are 13 specialties provided with inpatient facilities, each department is systematically screened in this way twice per annum. This is in addition to screening notes where there has been an unusual occurrence.

5.5   RISK MANAGEMENT

Any malpractices are followed up upon by report to the Quality Assurance Committee then to the McMaster Board. Corrective action might take the form of suspending a doctor's admitting rights if the occurrence was serious or more likely organising a re-training programme designed to reinforce the competencies in particular clinical procedures. Baker recalls two incidents where action of this sort was instigated - one involved an unplanned return to the operating theatre for removal of a swab - the second an old lady of 90 who died in the operating theatre after complicated surgery - the death review concluded that undertaking the surgical procedur was a clinical misjudgement.

Part of Baker's job title is Risk Management. The insurance companies demand certain standards of practice in North American Hospitals and they monitor by questionnaires and visits to ensure monitoring is undertaken over a range of risk factors.

TABLE 7.   Insurance Company required Risk Management
            Policies and Practices in Ontario State - Canada

*   competence based credentialing for medical staff

*   licence, qualification and reference verification for all professional staff

*   patient complaint and/or patient advocate/ representative programme

*   hospital equipment acquisition and maintenance system

*   incident reporting

*   consent procedures

*   death analysis

*   information given to outpatients or inpatients on admission regarding hospital policies and practices

*   disaster and emergency plans

*   employee orientation and training programmes

*   safety

5.6   ACCREDITATION SURVEYS

The study team wanted to learn something about national accreditation systems whilst in North America. Accreditation is a process of evaluation of a hospital based on standards of care and services put together by various health professionals. The process overseen by the independent agency - Canadian Council on Hospital Accreditation - is voluntary to Canadian hospitals, but most hospitals participate to assure the public that they provide a good standard of patient care and to motivate the staff.

The standards the Accreditation Council are seeking are set out under subject headings in checklist form. This is the basis of an extensive questionnaire which is completed four months before an accreditation survey. Just taking medical services, there are 8 sections of questions one being 'quality assurance' - just one of the questions asks -

TABLE 8.   Canadian Council on Hospital Accreditation - survey questionnaire

Subject	Sub Heading	Sample Question	Answer N C I P
Medical Services	Quality Assurance	Departmental meetings to address at least the following -	
		- case presentation	
		- organised & recorded rounds	
		- reviews of morbidity and mortality	
		- business meetings	
		- reviews of medical care based on established criteria	

Key

NC = non compliance

I = initial

P = partial

F = full

The survey is done by three people - an administrator, a doctor and a nurse - over a number of consecutive days. One of the surveyors visits every department and talks to the departmental head, the staff and some patients. They look at records, minutes, manuals, etc. and ask questions of everyone.

During the visit the surveyors may tell individual departmental heads their initial impressions. On the last day a first feedback is given to senior management and representatives of the medical staff. A final report is received later when award of accreditation may be for a 1, 2, or 3 year period.

Baker described the process as useful in motivating hospitals to maintain quality standards, but he had some misgivings about the biases and selective interests of survey teams within the context of a very comprehensive framework and mountains of preparatory work. At the last accreditation visit to Chedoke-McMaster Hospital, the team had for example focused on the position of the hospital chapel, which was not considered to be in a quiet enough location.

SUMMARY

The need for financial constraint to check escalating health care costs appears to be a dominant factor driving the health services of all the countries visited with the exception of Japan, where operational efficiency is the highest priority towards improving the quality of patient care.

The drive in North America towards quality in health care originates from the insurance companies demanding on behalf of their subscribers that health care is delivered to acceptable standards.

The level of litigation for medical negligence is also so high that the courts are defining acceptable practice and the medical profession thus need a frame of reference within which to measure their treatment outcomes, and to refute allegations of substandard care.

The study team support the push for resource management and medical audit in the White Paper "working for Patients",and Working Paper No. 6 "Medical Audit" believing that as in North America an internal market environment requires a focus on analysis of the quality and results of patient care and resource utilisation. The hospitals visited in USA and Canada had impressive systematic clinical audit processes and are probably at the leading edge of their health services. It may, however, prove difficult to expect similar systems immediately in the United Kingdom.

Medical Audit will have to evolve in the UK because doctors in this country, unlike in North America, do not work in clear medical hierarchies with clinical heads of departments and medical directors.

British doctors jealously guard their independence and will resist their medical colleagues promptings or sanctions to improve clinical performance.
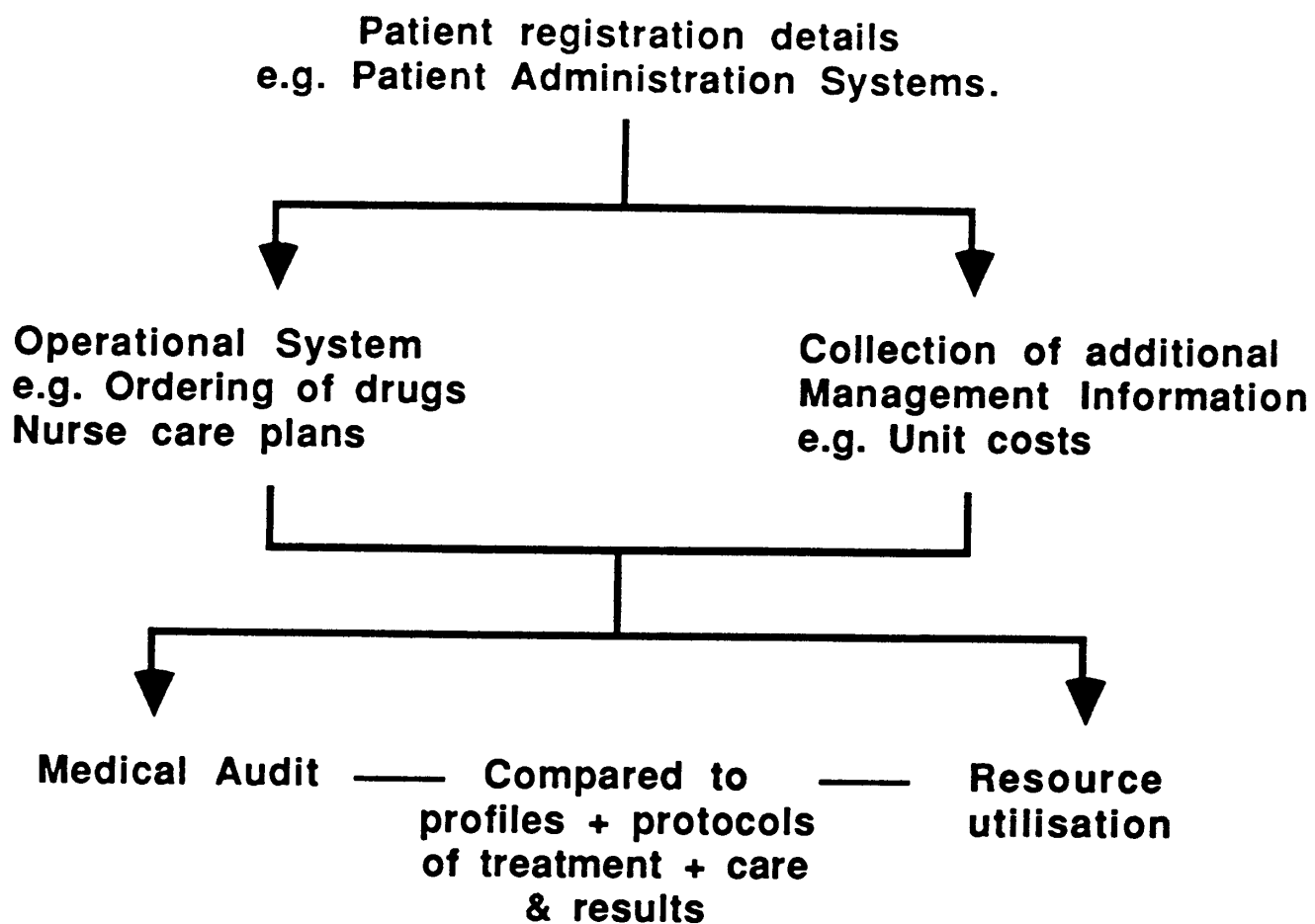
It remains to be see whether the Royal Colleges' lead will generate the systematic uptake of medical audit.

Whilst medical audit can function through the manual collection of clinical activity data a substantial investment in computerisation for hospital operational systems and for collection of clinical activity and costings will greatly facilitate collection of data, accuracy and trending.

White Paper : Working for Patients HMSO 1989

Working Paper No. 6 - Medical Audit HMSO 1989

TABLE 9.   To show the development of an information
base for medical audit.

**Patient registration details
e.g. Patient Administration Systems.**

**Operational System
e.g. Ordering of drugs
Nurse care plans**

**Collection of additional
Management Information
e.g. Unit costs**

Medical Audit —— **Compared to** —— **Resource
profiles + protocols   utilisation
of treatment + care
& results**

**N.B.   Whether computerised data will be collected by operational
system or collected additionally for management information will
vary over time. For example, nurse care plans will record
complications but until these are computerised this data needs
to be recorded systematically for clinical management purposes.**

North Manchester intend to develop a systematic overall form of
audit agreed locally between the medical profession and
management to ensure that the work of each medical team is
reviewed at regular intervals. The approach will be medically
led with a local medical audit advisory committee chaired by
a clinician.

C M H BROWN
DISTRICT GENERAL MANAGER

MAY 1989