Evaluation of a data base sheet in an A4 medical record system

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SUMMARY. The medical record system used by the author's general practice is in the A4 format and includes a structured summary sheet of their own design. In an evaluation of this data base sheet, the aims were twofold: to measure the extra time required to complete the A4 data base sheet during an interview with a patient against the time for an inspection of existing medical records alone; to quantify the usefulness of the data base sheet to the doctor seeking immediate access to relevant information about the patient's medical, family and social history.

Compilation of a structured A4 data base sheet took an average time of five and a half minutes per patient. Examination of NHS medical records took an average time of three minutes per record, and only 4 per cent of these records included any form of completed summary sheet. The data base sheet, which took only another two or three minutes to complete, was found to be a practicable document that provides immediate access to a wide range of relevant information for effective (and efficient) patient management.

Introduction

THE National Health Service system in which each patient registers with a particular family doctor, to whom all hospital reports and summaries are sent, offers great potential for the family doctor's medical record to be the central repository of clinical information about patients on the practice list. Existing medical records are automatically transferred to the next general practitioner should the patient change his family doctor for any reason.

'A doctor's practice is as good as his records,' contended Taylor 30 years ago.[1] However, Zander and colleagues, in their report on their Lambeth Road group practice record project[2] considered whether the family doctor's personal knowledge about the patient and his family made adequate recording unnecessary. They concluded that the knowledge that the doctor has about his patients is disturbingly inadequate in many important areas, particularly with regard to social background and family history. There have been many attempts to improve record keeping. Weed[3] developed the formal Problem Orientated Medical Record in 1969, 15 years ago. In the UK during the past decade, a number of different record systems have been introduced in attempts to improve upon the 64-year-old FP5/6 medical record envelope:[4] the Aldeburgh record system,[5] the Lambeth Road project,[2] and the Department of Health and Social Security's A4 record (GP111 folder and inserts).[6]

One of the central and most controversial elements in any attempt to improve medical records is the inclusion of a summary sheet for listing problems of particular long-term significance for the clinician. The medical record systems mentioned above all incorporate three or four extra summary sheets, in addition to the basic daily consultation sheet, for the structured storage and recall of key details about a patient's social and family history, medical problems and maintenance chemotherapy.

Our three-partner vocational training practice (5,550 patients on current list) has used an A4 record system since 1973. The original A4-size record comprised: double-spine folder, daily consultation sheets, and laboratory mount inserts. In 1977 we added a structured A4 summary sheet of our own design—the data base sheet—for recording key clinical details about the patient's medical, family and social history.

Data base sheet

The data base sheet (Figures 1 and 2) has since become an integral part of our A4 record system and an important clinical tool for the partners and for successive trainees with the practice. Figure 1: 'R.P.C. THERAPY' (bottom left-hand section of sheet) is for recording only long-term maintenance therapy for which a repeat prescription card (RPC) has been issued; ringed numbers match listed medical problems opposite; the 'MEDICAL PROBLEMS' heading (bottom right-hand section of sheet) was devised for inclusion of personality

type and behavioural disorders etc, as well as disease processes with long-term significance; a ringed code mark (H) beside a date entry indicates a hospital summary or other reference source. The remaining section headings in Figure 1 are self-explanatory.

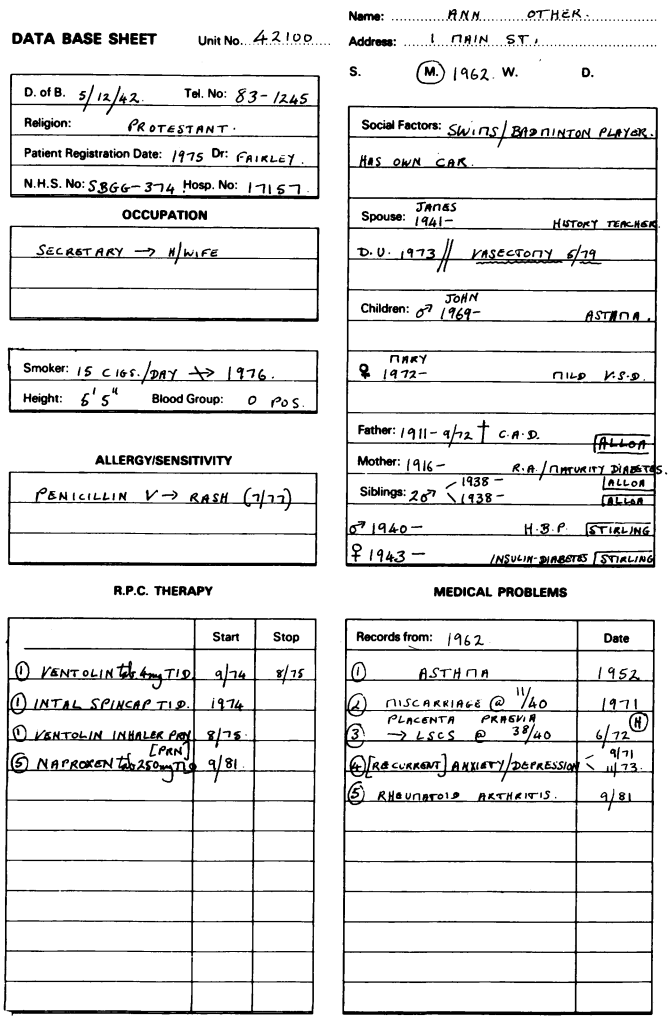
Principles for recording data. Over the years, the doctors in the practice have agreed upon the following four points for the compilation and updating of a data base sheet:

1. The use of a data base sheet is entirely at the discretion of the doctor managing that patient. But if the doctor decides to make an entry in the data base sheet, then he must check the chronological accuracy and complete the data in that section, to maintain the usefulness of the data base thereafter.

2. All entries on the data base sheet should be as brief as possible, for example a single word or a common medical abbreviation or symbol.

3. All entries must be printed in capital letters (to improve legibility).

4. Information recorded should have long-term clinical significance (that is, no minor self-limiting conditions).


DATA BASE SHEET Unit No. 42100
Name: ANN OTHER.
Address: 1 MAIN ST.
S. (M.) 1962 W. D.
D. of B. 5/12/42. Tel. No: 83-1245
Religion: PROTESTANT.
Patient Registration Date: 1975 Dr: FAIRLEY.
N.H.S. No: SBGG-374 Hosp. No: 17157
OCCUPATION
SECRETARY → H/WIFE
Social Factors: SWIMS/BADMINTON PLAYER. HAS OWN CAR.
Spouse: JAMES 1941- HISTORY TEACHER
D.U. 1973 // VASECTOMY 6/79
Children: ♂ JOHN 1969- ASTHMA.
♀ MARY 1972- MILD V.S.D.
Smoker: 15 CIGS./DAY → 1976.
Height: 5'5" Blood Group: O POS.
Father: 1911-9/72 † C.A.D. ALLOA
Mother: 1916- R.A./MATURITY DIABETES. ALLOA
Siblings: 2♂ 1938- 1938- ALLOA
♂ 1940- H.B.P. STIRLING
♀ 1943- INSULIN-DIABETES STIRLING
ALLERGY/SENSITIVITY
PENICILLIN V → RASH (7/77)
R.P.C. THERAPY
MEDICAL PROBLEMS

	Start	Stop
① VENTOLIN Tab 4mg TID	9/74	8/75
① INTAL SPINCAP TID.	1974	
① VENTOLIN INHALER PRN	8/75	
⑤ NAPROXEN Tab 250mg TID [PRN]	9/81	

Records from: 1962	Date
① ASTHMA	1952
② MISCARRIAGE @ 11/40	1971
③ → LSCS @ 38/40 PLACENTA PRAEVIA	6/72 (H)
④ [RECURRENT] ANXIETY/DEPRESSION	9/71 < 11/73
⑤ RHEUMATOID ARTHRITIS.	9/81

Figure 1. *Example of a completed data base sheet.*

Evaluation. The author had two main aims: to measure the extra time required, on average, to complete a structured A4 data base sheet during a consultation against the time taken for an inspection of the existing medical records alone; to quantify the usefulness of the data base sheet thereafter in improving the family doctor's access to a wider range of relevant information for patient management.

Method

There were two samples in the study.

Sample A comprised the first 50 UK-born patients aged 21 years and over, registered with the practice, who consulted the author without a data base sheet already started in our practice case notes (and whose previous NHS medical records had been forwarded to the practice from the local Health Board). After the patient's presenting problem(s) had been dealt with, a data base sheet was compiled (Figure 1). The interview always included an inspection of the existing medical records and this procedure was timed for each patient.

Sample B. Another 100 consecutively received NHS medical records were examined for UK-born patients, aged 21 years and over, who had newly registered with the practice. The following details were noted for each record: age and sex of patient; earliest year of an entry in the clinical contents; the format of the most recent contents (FP5/6 or A4); and whether some form of summary sheet was used. Using the existing previous medical records, the author then measured the extent to which each of 10 specific topics concerning the patient's medical, family and social history could be completed. This procedure was also timed by the author for each medical record in the sample. Medical problems, smoking habit, and continuing treatments (including family planning method) were later cross-checked from a consultation with each patient.

Results

The ratio of female to male patients was 3:2 overall for both samples. Table 1 details the number of patients in each age group from both samples.

Sample A

Almost half of the 29 regular patients in the data base sheet sample were over 55 years of age. Two thirds of the remaining 21 patients were females between 21 and 45 years of age.

A data base sheet was compiled in an average time of five and a half minutes per patient. Just over 90 per cent of these summary sheets were completed in less than seven and a half minutes per patient. The longest time taken to complete a data base sheet was 15.5 minutes.

Sample B

There were equal numbers of males and females between the ages of 25 and 65 years in the medical records sample (Table 1), and an excess of females over

males by 2.5 to 1 in the under 25 years and over 65 years age groups.

The average contents of the medical records covered only 60 per cent of the possible years, within the National Health Service era, for an adult UK-born patient, from the date of the first entry in the continuation notes or enclosed hospital correspondence (Table 2). The contents of 82 medical records in the sample were all FP5/6 size. Only four of the records (including two in the A4 format) contained any type of completed medical summary sheet.

Table 3 shows to what extent each of the 10 listed topics relating to the medical, family and social history of these 100 patients could be completed from an inspection of their existing medical records. The compilation of data, as far as possible, took an average time of three minutes per medical record. Indeed, 66 per cent of the medical records were reviewed for the above purposes in less than three minutes each. In sample B, almost 90 per cent of the records were inspected in less than five minutes per record; the longest time was 12 minutes.

The medical records in the present study seldom contained important negative information. Thus, while 10 patients were listed as smokers (there were 32 smokers and ex-smokers), no one was identified as a non-smoker. Similarly, no patient was recorded as being free from allergies.

Twenty-three patients had continuing medical problems recorded, ranging from hay fever and premenstrual tension to psychosis and hypertension. For another 10 patients there was no written (or legible) record of their continuing medical problems. A further 57 patients had had medical problems with long-term importance for the differential diagnoses of certain symptom complexes thereafter (for example, appendectomy, depression, behavioural problems, myocardial

ROUTINE U.K. IMMUNISATION SCHEDULE

DTP./Polio: 1.	2.	3.	DT./Polio:	
Measles:	Rubella:		BCG:	
Tetanus: 1. 1/11/78	2. 15/12/78	3. 15/6/79	4.	5.

VACCINATION FOR TRAVEL ABROAD ETC.

Polio: 1. Booster 15/6/79.	2.	3.	4.	5.
TAB: 1.	2.	3.	4.	5.
Cholera: 1.	2.	3.	4.	5.
	2.	3.	4.	5.
		Yellow Fever:		
Gamma Globulin:				

SPECIAL INVESTIGATIONS

	Date/Result		
1. Cx SMEAR	11/77: NAD.	9/82: NAD.	
2. THYROID FUNCTION	9/81 NORMAL.		
3. CHEST X-RAY	9/81: NAD		
4. R.A. [LATEX] TEST	9/81: +ve.		
5.			
6.			
7.			
8.			
9.			
10.			

Figure 2. *Reverse side of same data base sheet.*

Table 1. Number of patients by age groups in the two samples.

	Age groups of patients					
	yr	yr	yr	yr	yr	yr
Sample A ($n=50$ patients)	8	11	10	5	9	7
Sample B ($n=100$ patients)	21	30	24	2	12	11

Table 2. Average number of years retrospectively contained in existing NHS records for each age group of patients (also expressed as a percentage of the possible maximum NHS years by age group).

	Age groups of patients										
	21-24 yr	25-29 yr	30-34 yr	35-39 yr	40-44 yr	45-49 yr	50-54 yr	55-59 yr	60-64 yr	65-69 yr	70-80 yr
Existing records in NHS years	18.4	17.0	18.0	20.7	15.6	—	26.5	24.5	15.0	18.4	25.2
(Percentage of possible maximum NHS years)	*(80)*	*(63)*	*(56)*	*(61)*	*(46)*	—	*(78)*	*(72)*	*(44)*	*(54)*	*(74)*

Table 3. Number of patients in sample B for whom the following topics were recorded in the existing medical record. (Percentages in parentheses.)

	Males ($n=42$)		Females ($n=58$)		Both sexes ($n=100$)
1. Occupation	13	(31)	11	(19)	24
2. Smoking habit	5	(12)	5	(9)	10
3. Allergy	2	(5)	5	(9)	7
4. Continuing chemotherapy	2	(5)	2	(3)	4
5. Continuing medical problems	11	(26)	12	(20)	23
6. Marital status	7	(17)	37	(64)	44
7. Spouse (occupation or age or health problems)	0		1	(2)	1
8. Children (number or ages or health problems)	5	(12)	23	(40)	28
9. Parents (ages or residence or health problems)	1	(3)	2	(3)	3
10. Siblings (ages or sex or number or residence or health problems)	2	(5)	3	(5)	5

infarct) yet 16 per cent of such problems were not listed in the medical records.

Four patients were listed as being in receipt of maintenance chemotherapy, but for another 11 patients there was no clear written confirmation of their continuing medication. Five female patients were recorded as users of oral contraceptives, but there was no written record of oral contraceptives for a further 10 regular users.

Details of the patients' family history were infrequent, unstructured and scanty in the medical records; and the forenames of spouses and/or children were never noted in these records.

Discussion

Tait[7] defined the functions for the clinical record in general practice as: an aide-mémoire; communication between all the doctors caring for the patient; the storage and easy recall of background information. Comprehension of the contents in many of the medical records in the study was severely hampered because of illegible entries in an unstructured format.

'It is strange that the family history is so much better recorded in hospital records than in general practice,' wrote Walford.[8] Correspondence between hospitals and family doctor provided the most detailed (and most legible) information about patients' clinical and social problems. The chronological listing of significant clinical events relating to each patient in the present sample was also usually incomplete because on average the contents of the records covered, retrospectively, only 60 per cent of the possible years within the NHS era. In a random sample of 1,628 medical records from eight general practices, Dawes[9] found that for 99 per cent of male patients and 22 per cent of female patients there was no indication of marital status; nor were there any details of occupation for over 60 per cent of males and over 77 per cent of females. (The accuracy of these records was not checked). Cormack in 1970[10] studied 187 medical records and found that in no instance was the family history recorded in a formal and organized way; what family history he did find was scattered throughout the day-to-day records. According to our sample, there had not been much improvement in recording such details a decade and a half later.

Data base sheet

On average, it took only two to three minutes longer to compile a data base sheet than just to inspect the existing medical record for a patient; and the summary sheet contained thereafter a comprehensive range of relevant clinical information for patient management in an accessible, permanent and structured display. During the conversion of his practice's medical record envelopes to an A4 record system (folder and contents), Cormack[11] found that it took an average time of six minutes per folder, over a wide variation, to summarize and prune records for regular patients. (He commented: 'Summarizing and pruning take time . . . but there is little doubt that it is time well spent because it leads to much more satisfactory information retrieval and consequently much more satisfactory patient care'.) Zander and colleagues noted:[2] 'The value of a clinical record for use in the service setting depends primarily on the quantity and quality of the information it contains. But the way in which this information is displayed and the extent to which the format allows for the rapid and easy identification of relevant details are also extremely important.' Therefore, one would suggest, a structured record system which incorporates a single sheet for summarizing the patient's history—family and social as well as medical—a sheet that is permanently filed uppermost on the folder's (double) spine, facing the current daily consultation notes, is more likely to be compiled and maintained in a typically busy general practice setting than a record system which necessitates the use of a number of separate summary sheets for each aspect of the patient's history and treatment. The A4 format is self-evidently the smallest size compatible with legible recording of the range of information contained in our practice's single data base sheet.

A major difficulty with any summary problem list is the definition of terms for inclusion. The Lambeth Road Group[2] agreed on the following general definition: 'The summary problem list should include those problems which it is important for the doctor to be aware of in his continuing care of the patient.' This

basic code has proved to be adequate for the doctors in our practice, allowing for the occasional divergence in interpretation by individuals.

The reverse side of the data base sheet (Figure 2) contains separate sections for the standard UK child immunization schedule and vaccinations for travel abroad. There is also a section to record special investigations, such as barium contrast studies, cervical smears and thyroid function tests, where the tests for inclusion are also based on a common policy agreed by the doctors in the practice.

The data base sheet is made of white (150 g) index card, for durability; as yet, no summary sheet has become overfilled despite their widespread initial use for our 'fat folder' patients. In practice, most clinical events of long-term significance amount to only a few items for the average patient. Any incorrect entry in a section of the data base sheet can be quickly and neatly amended by sticking a self-adhesive strip of paper over the relevant line.

The results from this study and others suggest that the inherent potential of the general practitioner medical record to become the main repository for significant clinical information about each NHS patient is still far from being realized. This situation appears to be due partly to the habitual failure by many family doctors to record systematically the details of patients' medical, family and social history. A single, structured A4-size data base sheet, as described above, is a practicable document for improving the family doctor's immediate access to a wide range of relevant information for effective (and efficient) management of the patient.

More general practitioners may also consider using a single, multipurpose data base sheet instead of the three or four separate summary sheets which some other record systems require to perform the same functions. I am convinced, too, that the A4 format is the minimum size possible with a comprehensive, single summary sheet for legible use in general practice.

References

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Humidifier fever

Humidifier fever is an uncommon condition. The symptoms vary from a mild illness with headache and malaise to an unpleasant influenza-like illness with high fever, cough and dyspnoea. Symptoms usually begin about 4 to 6 hours after the start of a working shift and resolve over 24 hours. The periodicity is unusual in that the symptoms are most marked during the early part of the working week.

The findings on physical examination are of fever with bilateral inspiratory crackles over the lower zones of both lungs; pulmonary function tests usually show the characteristic pattern of a restrictive defect with a defect in gas transfer. Unlike extrinsic allergic alveolitis, no radiological abnormalities are found even after prolonged exposure and in the presence of severe disease.

Several outbreaks of humidifier fever have been reported since the disease was first described in 1969, particularly among employees in printing works and offices. The specific cause has not been identified although bronchial provocation studies have shown that some humidification waters contain the agent, the disease being reproduced when affected individuals inhale water from the humidifier. A variety of organisms, including free-living amoebae, *Bacillus subtilis* and a flavobacterium, have been implicated as the cause on the basis of aerobiological and serological evidence but these have not been confirmed by provocation studies.

Attempts to keep the water free of humidifier antigen at outbreak sites have proved difficult. Regular cleaning alone has usually been ineffective and it has been necessary to introduce treatment with biocides. There is an alternative approach which is effective but expensive, namely, the substitution of cold water humidification by steam injection.

Source: PHLS Communicable Disease Surveillance Centre. *Communicable Disease Report* 1984; Weekly Edition CDR 84/14.