An Integrated System for the Recording and Retrieval of Medical Data in a Primary Care Setting

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The Family Medicine Group at Highland Hospital — University of Rochester has developed a unified system that facilitates recording and retrieval of medical data in the setting of a primary care practice. Not all of the elements of this system originated with our group, but the combination of the various ingredients is unique. The system was developed and refined by the faculty, all of whom have had considerable experience in primary care and who concur that the method is practical. The adoption of this system by graduates of this program now engaged in busy ambulatory practices further confirms its usefulness.

A series of articles will be presented which describe each element of the system and which demonstrate how these elements interact to provide a unified data system that can enhance the quality of patient care in Family Practice. There are eight major parts of this unified data system:

- 1. Age-sex Register
- 2. A classification of disease suitable for primary care
- 3. Diagnostic Index-E-Book
- 4. Family folders
- 5. Filing of records by census tract
- 6. Problem-oriented medical records
- 7. Encounter forms that permit recording and retrieval of both operational and diagnostic data
- 8. Record forms which encourage obtaining a defined data base and function as flowsheets without unnecessary fragmentation of data.

It is not necessary to adopt all parts of this system, although they are complimentary. Some portions can be ex-

From the Family Medicine Program, University of Rochester-Highland Hospital, Rochester, New York: Requests for reprints should be addressed to Dr. Jack Froom, Family Medicine Program, University of Rochester-Highland Hospital, 335 Mt. Vernon Avenue, Rochester, New York, 14620. panded to fill gaps that would exist if other parts are omitted. It is possible, for example, to enter diagnostic information on age-sex cards.

Although this record system was designed primarily as a manual system, it is nevertheless completely compatible with computer programs. A computer program for the agesex register and for the diagnostic index is currently in use in our program. Our recommendation is that manual systems by instituted initially so that complete understanding of their use can first be obtained. If computer capability is present, it may be added at a later time. Analysis of computer data and the ability to detect and remove errors in programming will be enhanced by familiarity with a manual system.

This system has many advantages for the practicing physician:

- Ability to assess morbidity patterns within one's own practice and to compare these patterns with those of other practices or aggregates of practices.
- Ability to assess post-graduate educational needs by an analysis of morbidity encountered on one's own practice.
- Ability to perform self-audit or to permit audit of quality of care by peer groups.
- Ability to plan and implement rational office management.
- 5. Ability to contact groups of patients as defined by specific parameters.
- 6. Ability to do research in primary care, either in one's own practice or in group projects.

Other advantages will be outlined as each element of the system is described in detail.

This system can be adopted as a valuable addition to varied primary care settings, including teaching programs. It is suggested that the reader can best judge its applicability to his own individual practice setting after all major components have been described.

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Part 1. The Age-Sex Register

This is the first of a series of articles describing an integrated system of recording medical data. The age-sex register is described in detail. Advantages of the register include enhanced capabilities for office management, assessment of postgraduate educational needs.

General Description

The age-sex register is an essential part of the data system. It is a simple device which can be constructed and maintained in the setting of a busy primary care office. The agesex register consists of a file of 3 inch by 5 inch cards. The cards are color coded (blue for male, pink for female) and contain the following information: name, date of birth, sex, marital status, census tract, identification of doctor by code number, date of entry, and date of removal from the practice. The cards are filed by year of birth. Males are grouped separately from females and cards are arranged alphabetically within each section. Cards are maintained for active patients only. Our definition of an active patient in a family practice is one who belongs to a family from which one member visited the practice in the preceeding two years. An example of a card in the age-sex register is shown in Figure 1.

The register is easily established in a new practice by constructing an age-sex card for each new patient who enters the practice. It is somewhat more difficult for an established practice to institute an age-sex register. Registers were constructed for 12 busy family physicians in seven practices who participated in a morbidity recording project.¹ It required 62.5 hours of data clerk time for each 1,000 patients to produce the register.

A computer program for an 'age-sex register may also be established. The data from the age-sex cards is keypunched on to 5081 IBM cards and is then stored on magnetic tape. Patient confidentiality can be maintained by the use of a 10

Dr. Code			Surname of Patient					F	Forename		Date of Birth		Sex	Ms.	Census	s Tract	
1	1	3	J	0	R	DC	N		S	АМ	05	17	22	M	IM 31		1
ate	(En	ntry)_	1	I	8.	-16	5-	71	1		1	L	I				
ate	(Re	emova	al)						-								
au	se o	t Rer	nova							•							
au	se o	l Rer	nova							•							
au	se o	l Rer	nova							•					3		
au	se o	I Dea	nova									-	T		3		T
au	se o	I Dea	nova				-					-			*		++

Figure 1 An Age-Sex Card

outreach, audit and research. Subsequent articles will describe classification of disease, a diagnostic index, family folders, filing records by census tract, problemoriented records, encounter forms and various record forms.

digit code containing the first 3 letters of the last name, the first letter of the given name, and the 6 digit date of birth. This code is almost unique for the person and duplication is extremely unlikely. Sufficient fields are reserved to add diagnostic data as it accumulates.

Application to Family Medicine Program

The age-sex register has been applied to our practice in the Family Medicine Program at the University of Rochester — Highland Hospital. Table 1 shows an age-sex analysis of the practice compared with that of the population of Monroe County.

Uses of Age-Sex Register

The register is essential to allow assessment of workload and to provide population denominators to evaluate morbidity data. For example, fifty diabetic patients in a practice is a meaningless figure unless analyzed against the background of the age-sex structure of that particular population.

Some uses of the register are suggested, but by no means constitute an exhaustive list:

1. Office Management:

An analysis of data from the register can permit rational planning for additional personnel. A practice that contains a large proportion of children may be aided by such personnel as a oed attic nurse plactitioner or by nursing personnel who relate well to children. Perhaps an additional physician with an interest in pediatrics could be recruited. The need for separate waiting rooms, or for toys in the waiting room can be assessed rationally by consulting this data.

2. Post Graduate Education:

The physician whose practice is largely geriatric might wish to concentrate his post-graduate studies in the area of degenerative diseases. For example, an age-sex analysis of our practice reveals a relative excess of patients in the 25-34 age group. Doctors in our practice may benefit particularly from courses in the fields of obstetrics and marital counseling.

3. Outreach:

Public Health authorities each year suggest that the 65 year old and over population be immunized with in-

family practice

TABLE I											
Age-Sex Analysis of Family Medicine Program As Compared With That Of Monroe County											
	Monro	e County	Family Medicine								
	No.	% Total Pop.	No.	% Total Pop.							
MALES											
5	33,129	4.65	476	6.65							
5-9	36,122	5.07	304	4.25							
10-14	35,869	5.04	295	4.12							
15-19	30,973	4.35	263	3.67							
20-24	26,559	3.73	268	3.74							
25-34	45,100	6.34	741	10.35							
35-44	39,202	5.51	365	5.10							
45-54	39,289	5.52	245	3.42							
55-59	16,354	2.30	96	1.34							
60-64	12,946	1.82	71	0.99							
65-74	17,133	2.41	110	1.54							
75 & over	10,330	1.45	61	0.85							
Total	343,006	48.18	3,295	46.03							
FEMALES											
5	31,485	4.42	343	4.79							
5-9	34,574	4.86	291	4.07							
10-14	34,456	4.84	243	3.39							
15-19	31,595	4.44	315	4.40							
20-24	32,084	4.51	488	. 6.82							
25-34	46.875	6.58	810	11.32							

5.72

6.04

2.50

2.10

3.33

2.49

51.82

fluenza vaccine to reduce excess mortality. The agesex register gives one this capacity.

40.687

42.983

17,808

14,940

23,676

17,748

711,917 (Based on 1970 census)

7,158 (As of January 1973)

368,911

4. Audit:

35-44

45-54

55-59

60-64

65-74

Total

75 & over

Total Monroe County

Total Family Medicine

Random samples of charts of 6 year old children can be studied to determine if adequate immunization has been accomplished. Samples of charts of 30 year old women can be checked for cervical smear. The 40 to 60 year old male population can be studied to see if the risk factors in ischemic heart disease have been assessed. Self audit and peer group audit are both possible with this device.

Research:

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Morbidity data requires standardization for both age and sex in addition to assessment of the total population size that is studied. No meaningful research in primary care can be done without this data.

7.87

4.21

1.86

1.33

2.04

1.89

53.97

563

301

133

95

146

135

3,863

6. Additional Uses:

High risk patients' cards can be tabbed for easy recall. Some diagnostic data can be age edge punched to allow for sorting of groups of patients with specific diseases.

Reference

1. Froom J, Metcalfe D, Rozzi C. Computer analysis of morbidity recorded by primary care physicians. Journal of Clinical Computing 3:1, 1973. F