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A PROPOSED NEW OUTPATIENT DATA COLLECTION SYSTEM,(U)
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J. M. LA ROCCO

E. K. E. GUNDERSON

REPORT NO. 78-9

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A Proposed New Outpatient Data Collection System

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A Proposed New Outpatient Data Collection System

Over the past decade the Naval Health Research Center (NHRC), San Diego, has been engaged in the study of illness and accidents aboard ships and shore stations of the U.S. Navy. This research has been reported in medical and psychological literature and has led to a greater understanding of the scope and characteristics of illnesses across various occupational categories, work environments, geographical locations, and specific duty stations (1-12). In the early phases of this research, it became apparent that there were wide variations in illness reporting procedures among naval units. In addition, it was noted that for some categories the illness codes provided by the Medical Services and Outpatient Morbidity Report (NAVMED 6300/1) were far too gross to be of practical use. Because of these problems and the necessity of obtaining standardized information to carry out epidemiological studies, NHRC devised a new outpatient data collection system. The initial format resembled an IBM card. This card, referred to as the Sick Call Checklist, has been discussed in detail elsewhere (6). Essentially, it provided for the same breakdown of illness categories as that in the monthly outpatient morbidity reports. In addition, items reflecting identifying information, job specialty, pay grade, division, disposition, and days lost were included.

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Most significant for the user, however, was the check off format provided by the card which required only a few seconds of the corpsman's time to complete.

This early version of the Sick Call Checklist was used successfully aboard 20 U.S. Navy ships of the Atlantic and Pacific fleets and at three shore stations for periods ranging from 6 to 8 months. These periods corresponded to normal Western Pacific and Mediterranean operational deployments for the ships. The checklist cards were forwarded to NHRC monthly. While the Sick Call Cards were created strictly for research needs, the reactions of corpsmen to their use tended to be generally enthusiastic, and it was decided that the cards merited investigation as an operational tool. The corpsmen, of course, were responding to the potential reduction in paperwork that the sick call card represented. However, NHRC researchers needed to know if the information the card provided met the requirements of the Bureau of Medicine and Surgery. Therefore, data from the checklist were compared with data obtained from the routine Medical Services and Outpatient Morbidity Reports provided by BUMED. As indicated in Table 1, discrepancies were evident. Particularly disconcerting was the obviously severe underreporting of sick call rates by two of the ships. On most of the other ships discrepancies tended to be slight. A more detailed investigation of these discrepancies, which included reviewing actual sick call logs and interviewing medical department representatives (MDRs), led to the conclusion that the sick call card was more accurate than the medical log which in turn was more accurate than the monthly morbidity reports. This was found to be so because the

patient himself obtained a card upon his arrival at Sick Bay and filled in the appropriate personal information (i.e., name, rate, division, and social security number) prior to seeing the MDR. The MDR would then check the appropriate blocks on the card indicating the illness category, if any, disposition, and so on. Thus, even if the corpsman later neglected to make an entry into his medical log due to some oversight or because no actual diagnosis or treatment was given, NHRC received the card and registered the visit. (Note: Many corpsmen reported completing their logs only after sick call or even at the end of the day, hence, increasing the chances of error.) Discrepancies between the medical logs and morbidity reports and between the sick call checklist data and morbidity reports may have been due to the fact that corpsmen must review the log at the end of the month and translate a sometimes vague or illegible entry into the appropriate BUMED code. At the same time, personnel at BUMED must handle the hundreds of monthly reports received and recode them for computer processing. The inherent opportunities for error are obvious. The Sick Call Card, on the other hand, provided a clear, simple, and objective method of rewriting and retrieving required information so that accuracy, at the unit level, was assured. In fact, some corpsmen reported using the Sick Call Card to create their monthly reports.

Thus encouraged, members of NHRC began working with independent-duty corpsmen and medical officers of the fleet as well as staff members at BUMED to modify and expand the capabilities of this new data collection system.

This revised version of the Sick Call Card has been used most recently on seven amphibious warfare ships during their Western Pacific deployments. Based upon experience with individual sick call records over the past 5 years, NHRC researchers are now preparing a third generation form that could be a prototype for a Navy-wide outpatient data collection system. This new form (Figure 1) will be in an optical-scanning format and should possess several advantages over systems currently in use, including: (1) a further reduction in paperwork, (2) increased accuracy due to the elimination of opportunities for human error, and (3) most notably the creation of a simple but comprehensive data system for examining the etiology and epidemiology of illnesses and accidents aboard naval ships and stations. Moreover, this outpatient data system would be compatible with the current inpatient system. Therefore, for the first time Navy-wide studies could be conducted to trace the medical and psychosocial genesis of occupational and environmental health hazards affecting naval personnel.

The current format is, of course, experimental and some changes will no doubt be incorporated into a final product. If an operational version is implemented, however, it might be used in the following manner: To begin with, the corpsman would fill in the optically scanned form where required and, as necessary, make carbon or photocopies. (It should be noted that these are <u>not</u> OCR documents. All entries can be made by the MDR with a standard #2 pencil. No special equipment or training is required.) The

Sick Call Checklist could replace all forms concerning patient care, including accident reports. The opscan copies would then be forwarded to BUMED monthly for processing, thereby eliminating the need for NAVMED 6300/1. Organizations, such as the Naval Safety Center, Norfolk, would receive the information needed for their research directly from BUMED. With this system, corpsmen would not be filling out reports and tallying illnesses at the end of the month nor would BUMED personnel be required to code and process the monthly reports as they are presently required to do. The opscan forms could be fed directly into reading equipment which is capable of automatically transferring the information to magnetic tape and the information can be stored directly on tape. In this way, two sources of error and wasted man-hours can be eliminated. A similar savings would be realized by the Safety Center or other organizations such as OSHA that may require reports for their information. A carbon copy of the opscan form would be maintained by the MDR and this would eliminate the need for the medical log.

From a management or health care delivery perspective such a data system could be used to determine the type and distribution of medical supplies and the numbers of personnel any specific unit might require to carry out its tasks. In an environment of continuing personnel shortages and increasing medical costs, the potential of a computerized system to allocate resources should be particularly cost effective. In this regard, NHRC is currently using the Sick Call Card in an attempt to provide a morbidity forecast model

which may be of use in planning the need for and the distribution of medical resources. However, the existence of a Navy-wide data collection system, particularly one that is potentially far more accurate than that in current use, might allow the development of highly accurate computer models that could simulate a variety of crisis situations involving all possible levels and locations of medical department support.

By far the most significant benefit from such a system, however, would be the creation of a manageable, accurate, and usable outpatient data file that could be tied to the existing service history/medical inpatient system on the basis of social security number. This system would have capabilities far beyond those of the existing Fleet-Oriented Analysis of Morbidity (FOAM) reports. Each FOAM report is basically a gross estimate of outpatient illnesses aboard ship. It contains no individual or group data, such as occupation, pay grade, age, and so forth, which are vital to both epidemiological research and management analyses. Moreover, since the FOAM report is based upon NAVMED 6300/1, it is subject to the same inaccuracies of that form noted earlier. Being able to combine inpatient and outpatient medical files would make it possible to compare on a Navy-wide basis the characteristics of individuals who contract a specific disease with those who do not. For instance, how are the medical and service or work histories of individuals who enter naval hospitals because of cancer or heart disease different from histories of nonpatients? Perhaps patterns of occupations, geographical locations,

duty stations, and histories of recurrent complaints could be identified that were precursors of serious chronic illness.

The data system proposed here could be used to examine these questions without the necessity of extracting such information from individual health records. Moreover, rather than using small samples, an investigation of this nature could be conducted on the entire population "at-risk."

In conclusion, it is felt that the outpatient data collection system proposed here could simplify and reduce administrative procedures required of medical department personnel and, thus, free them for their primary function of caring for the health and well-being of their shipmates. Second, this data collection system would provide a tool for assessing the current state of medical readiness of units throughout the Navy. Third, this system could be used as a basis for making predictions regarding the requirements of any medical facility under a variety of conditions. Finally, a research tool with capabilities probably beyond any currently in existence in the country today will have been created that could enable investigators to explore the development, distribution, causes, and prevention of disease.

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Table 1

Comparison of Morbidity Data from Sick Call Card and from Outpatient Monthly Reports for Selected Ships[a]

Ship Type	Ship	Crew Size	Geographical Zone	Number of Reported Visits: Sick Call Cards	Monthly Reports
DD	A	237	Atlantic	444	464
	B	233	Atlantic	707	631
DDG	A	295	Pacific	1210	1193
	B	270	Atlantic	1043	1046
	C	291	Pacific	1272	1307
	D	277	Atlantic	801	687
DLG	A	337	Atlantic	1048	1071
	B	361	Atlantic	1820	1024
DE	A	213	Atlantic	377	439
	B	232	Pacific	1137	1155

[a]Initial visits only are reported from both sources. Data were for the period June-November 1973, except for Destroyer A which did not include data for September and October.

NAVAL HEALTH RESEARCH CENTER, San Diego, California 92152 - MEDICAL TREATMENT REPORT (9/77)

I. TO BE FILLED IN BY PATIENT

SOCIAL SECURITY NO. ____ / ____ / ____

LAST NAME _____

FIRST NAME _____ M.I. _____

RATE _____ DIVISION _____

SHIP _____

TODAY'S DATE _____ (month / day / year)

VISIT NUMBER FOR PRESENT CONDITION (check one):
FIRST ___ SECOND ___ THIRD ___ FOUR OR MORE ___

IF INJURED, DID IT HAPPEN:
ON DUTY ___ OFF DUTY ___ | ABOARD ___ ASHORE ___

FOR CORPSMAN ONLY
IF INJURED, BRIEFLY DESCRIBE CAUSE BELOW:

AUTHORITY FOR COLLECTION OF INFORMATION GIVEN UNDER SecNav Inst. 5211 (Series)

II. TO BE FILLED IN BY CORPSMAN ONLY

RESPIRATORY:
(1) INFLUENZA
(2) PHARYNGITIS/TONSILLITIS
(3) U.R.I./COMMON COLD
(4) PNEUMONIA
(5) HAY FEVER/ASTHMA
(6) OTHER RESPIRATORY
SPECIFY _____

EYE/EAR/NOSE:
(1) EYESIGHT PROBLEMS
(2) CONJUNCTIVITIS
(3) HEARING LOSS
(4) OTITIS EXTERNA
(5) OTITIS MEDIA
(6) NOSEBLEED
(7) OTHER EYE/EAR/NOSE
SPECIFY _____

GASTROINTESTINAL:
(1) DIARRHEA
(2) NAUSEA/VOMITING
(3) GASTRITIS/ULCER
(4) CONSTIPATION
(5) HEMORRHOIDS
(6) OTHER GASTROINTESTINAL
SPECIFY _____

SKIN:
(1) PYODERMA/BOIL/ABSCESS/CARBUNCLE
(2) CELLULITIS
(3) FUNGAL INFECTION (TINEA)
(4) ALLERGIC DERMATITIS
(5) WART REMOVAL/TREATMENT
(6) ACNE
(7) CYST
(8) INGROWN TOENAIL
(9) SCABIES
(10) OTHER SKIN
SPECIFY _____

VENEREAL/GENITOURINARY:
(1) GONORRHEA
(2) GONORRHEA (penicillin resistant)
a. Clinical diagnosis
b. Lab diagnosis
(3) HERPES SIMPLEX
(4) SYPHILLIS
(5) VENEREAL WARTS
(6) PEDICULOSIS (body lice)
(7) NON-GONOCOCCAL URETHRITIS
(8) OTHER VENEREAL/GENITOURINARY
SPECIFY _____

OTHER:
(1) DENTAL PROBLEMS
(2) BEHAVIORAL/PSYCHIATRIC PROBLEMS
(3) DRUG/ALCOHOL OVERDOSE
(4) HYPERTENSION
(5) SEA SICKNESS
(6) HEADACHE
(7) OBESITY/WEIGHT CONTROL
(8) FEVER OF UNDETERMINED ORIGIN
(9) HEAT STROKE/EXHAUSTION
10 INSOMNIA
(11) OTHER UNLISTED CONDITION
SPECIFY _____

ACCIDENT/TRAUMA:
(1) OPEN WOUND/LACERATION
(2) FOREIGN BODY
(3) FRACTURE
(4) SPRAIN/STRAIN
(5) BRUISE
(6) SUNBURN
(7) BURN (heat)
(8) BURN (chemical)
(9) ELECTRIC SHOCK, BURN
(10) OTHER INJURY
SPECIFY _____

BODY PART(S) INVOLVED:

(1) FACE	(11) FINGER
(2) EYE	(12) HAND
(3) EAR	(13) WRIST
(4) MOUTH	(14) ARM
(5) SCALP	(15) ELBOW
(6) NECK	(16) SHOULDER
(7) CHEST	(17) TOE
(8) BACK	(18) FOOT
(9) ABDOMEN	(19) ANKLE
(10) GROIN	(20) LEG
	(21) KNEE

WAS SHIPBOARD OR OTHER ACCIDENT REPORT FILED?
(1) YES
(2) NO

A. DISPOSITION:
(1) FULL DUTY
(2) LIGHT DUTY
(3) NO DUTY
(4) EVACUATED

no. of days	
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

B. TREATMENTS PROVIDED:
(1) NO TREATMENT PROVIDED
(2) EARPLUGS
(3) LAB TEST(S)
(4) PHYSICAL/EYE/HEARING EXAM
(5) SURGERY/SUTURE PROCEDURE
(6) CAST/SPLINT/ACE WRAP
(7) DRESSING
(8) EYEGLASSES
(9) PRESCRIPTION
(10) X-RAY(S)
(11) REFERRAL TO ANOTHER FACILITY

DO NOT MARK

OFFICE USE ONLY

SS	RR	DT	SC	DC	V	IN
0 0	0 0	0 0	0 0	0 0	0	0 0
1 1	1 1	1 1	1 1	1 1	1	1 1
2 2	2 2	2 2	2 2	2 2	2	2 2
3 3	3 3	3 3	3 3	3 3	3	3 3
4 4	4 4	4 4	4 4	4 4	4	4 4
5 5	5 5	5 5	5 5	5 5	5	5 5
6 6	6 6	6 6	6 6	6 6	6	6 6
7 7	7 7	7 7	7 7	7 7	7	7 7
8 8	8 8	8 8	8 8	8 8	8	8 8
9 9	9 9	9 9	9 9	9 9	9	9 9

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Figure 1

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20 ABSTRACT (Continue on reverse side if necessary and identify by block number)

A proposed outpatient data collection system is described and compared with the current system. Four major advantages of the proposed system are discussed. First, the new outpatient data collection system could simplify and reduce administrative procedures required of Medical Department personnel. Second, the new data collection system could provide a tool for assessing the current state of readiness of operational units throughout the Navy. Third, this system could be used as a basis for making predictions concerning staff-

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ing and materiel requirements of any medical facility under a variety of conditions. Finally, the proposed outpatient system could be tied to the current inpatient system to derive complete medical histories for individual patients. By merging the two data systems a research tool would be created that could provide investigators with an unprecedented opportunity to explore the development. distribution, causes, and prevention of disease.

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