

Establishing a Preventive Medicine Clinic in a Public Health Service Hospital

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ADVANCES in epidemiology and multiple screening permits the presymptomatic identification of many diseases, when early therapy can frequently prevent the development of disabling symptoms. With a more favorable prognosis, new impetus can be given to the practice of clinical preventive medicine.

To determine the need for clinical preventive medicine among Public Health Service beneficiaries and to test the merits of offering this service in the outpatient facilities of a Public Health Service hospital, a prototype preventive-medicine clinic was established at the Public Health Service Hospital in Boston in November 1962. This clinic was a joint venture of the Service's Division of Chronic Diseases and Division of Hospitals. Its delimited clientele and its character do not preclude it from the practice of other general hospitals.

Our search was for the diseases that can be treated effectively when found early: specifically, diabetes, hypertension, symptomatic arteriosclerotic heart disease, pulmonary emphysema, glaucoma, rheumatoid arthritis, and malignant tumors. The examinations of the apparently well patients were planned along statistical lines of disease probabilities, recognizing the fact that the common diseases occur commonly.

Participation in the clinic was limited to Service beneficiaries (Public Health Service and Coast Guard personnel and their dependents, retired military personnel, and active merchant seamen and fishermen) in apparent good health and at least 40 years old.

Clinic patients were recruited through direct mailing and by posting notices in the various service centers, clubs, and dispensaries serving

prospective clients in the Boston area. All members of the hospital staff were told about the clinic and asked to notify the patients and their visitors. This direct advertising proved doubly effective when many members of the hospital staff joined their patients in a visit to the clinic.

Beneficiaries of the Public Health Service Hospital in Boston include a large number of merchant seamen and crewmembers of commercial fishing vessels, a group of stoics who traditionally wait until disease is far advanced before seeking medical treatment. These men, whose occupations and attitudes mark them as a high-risk group, proved singularly unresponsive to our recruiting efforts. To motivate their enrollment in the clinic, we enlisted the aid of union agents, men whom they know and trust. We first persuaded the agents to visit the clinic; then during a lengthy examination, we sold them on preventive medicine. When they understood the mission of the clinic, they became our most effective allies. The agents asked the clinic physician to appear at union meetings, and for many seamen any evidence that a physician was concerned about their health was reason enough for them to come to the clinic.

The clinic physician was a member of the hospital medical staff. Much of his time during

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the first months after the opening of the clinic was spent in speaking at service clubs and maritime union halls in the Boston area to publicize it. In general, he devoted about 60 percent of his time to supervising the clinic, recording medical histories, and examining patients.

The expanded role of the nurse was an important feature of the clinic. An interview by the nurse before and after the examination did much to orient the patient toward preventive medicine and to complement the physician's efforts. The nurse's postexamination interview also helped in assessing the patient's response to the clinic visit and in obtaining cooperation in further tests or referrals. The part-time clerk-receptionist scheduled the patients for examination and arranged for laboratory tests.

The clinic staff saw a maximum of three patients four mornings each week. A medical history form, to be completed at home, was mailed to each patient with his clinic appointment notice, and the history of the patient was checked by the receptionist when he came for his examination. The patient was given a 1-hour appointment with the physician. The entire clinic procedure was completed in about 2 hours.

The family, personal, and systems histories of the patient were reviewed by the physician. The physical examination included screening (tonometry, proctosigmoidoscopy, chest X-ray), height and weight measurements, blood pressure and pulse rate determinations, and electrocardiograms. The physician examined the skin, extremities, head, eyes, ears, nose, mouth, lymphatic vessels, neck (thyroid), heart and lungs (percussion and auscultation), and abdomen (palpation). He examined the genitalia and prostates of males. Females were given a pelvic examination including cervical cytology tests. Laboratory procedures consisted of a urine analysis (sugar, protein, microscopic), blood chemistry studies (serum uric acid, sugar by glucose tolerance), hematocrit determination, a white blood cell count, and a VDRL test.

All patients who needed further evaluation or treatment were referred to the hospital's general outpatient clinic or to an appropriate specialty clinic. Fifty-four percent (216) of the first 400 patients seen were asked to return for a followup visit. Of the 216 patients

referred, less than 10 failed to keep their appointments and were lost to observation.

The specific disease diagnoses from the first 400 examinations are summarized below:

The systolic blood pressure of 203 patients was less than 140 mm. Hg., 120 patients, 140-159 mm. Hg., and 77 patients, 160 mm. Hg. and more.

The diastolic blood pressure of 299 patients was less than 90 mm. Hg., 62 patients, 90-99 mm. Hg., 24 patients, 100-109 mm. Hg., and 15 patients, 110 mm. Hg. and more.

Blood sugar levels (Somogyi-Nelson), 2 hours after 100 gm. oral glucose, for 312 patients were less than 120 mg./100 ml., 43 patients, 120-140 mg./100 ml., 21 patients, 140-160 mg./100 ml., and 24 patients, 160 mg./100 ml. or more.

Three microscopic adenocarcinomas were found in a group of 23 patients with rectal polyps. One patient had a basal cell carcinoma of the face, two had in situ cervical carcinomas, one had a malignant tumor of the gum (ameloblastoma).

Three patients had pulmonary emphysema, presumably requiring treatment, and were referred to the outpatient clinic for definitive diagnosis. No cases of active tuberculosis, lung cancer, or other significant diseases were revealed.

Five patients were found to have hematocrit levels of less than 35 percent. However, all the patients had significant treatable causes of their anemia. No significant low blood cell counts were found; 41 patients had white blood cell counts between 10,000 and 20,000. The medical histories and physical examinations of these patients failed to indicate any active disease contributing to such high counts.

One patient had a white blood cell count greater than 20,000. Although this patient refused further evaluation, he was alive and well 1 year after this finding.

The patients were examined for glaucoma as defined by a measurement of 26 mm. of mercury in at least one eye as recorded by the Schiotz tonometer. Eight patients were screened as glaucoma suspects, and at least half were placed under treatment after examination at the Public Health Service Eye Clinic.

Difficulties with diagnostic criteria and defi-

nition of significant arteriosclerotic heart disease prevented tabulation of this group; however, 20 patients were diagnosed as having untreated symptomatic disease and were referred to the outpatient clinic for followup.

An important positive diagnosis was patient reaction to medications: 39 were reactors to penicillin, 15 to sulfonamides, 7 to tetanus antitoxin, and 28 to an unspecified type of medication. Two patients had reactions to more than one of the three drugs specified.

These clinical findings, although based on too few patients to establish morbidity rates, indicate that the clientele of this particular clinic has a real need of clinical preventive medicine. The findings also show that epidemiologic predictions can be translated into active early casefinding that will bring to treatment many asymptomatic patients with

highly treatable forms of the major chronic diseases.

All pertinent data were coded by the Division of Chronic Diseases on a standard IBM Port-a-Punch system. Tables 1 and 2 identify the audience and total the significant findings of the first 400 examinations. Table 2 describes the results of the clinic in terms of casefinding. The diagnoses recorded were those which the examining physician considered to be major pathological abnormalities. Minor or benign structural abnormalities were not recorded for this tabulation. A diligent effort was also made to determine whether the diagnosis was truly asymptomatic or whether symptoms that might have brought the patient to the clinic were present.

Both tables were prepared in recognition of the special at-risk status of the clientele, many

Table 1. Occupation group by age of patient

Occupation group	Total	Under 39		40-49		50-59		60-69		70-79		80-89	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Eligible dependents.....	137	12	8.8	81	59.1	34	24.8	6	4.4	3	2.2	1	0.7
Fishing vessel crewmen.....	84	4	4.8	30	35.7	32	38.1	16	19.0	1	1.2	1	1.2
American seamen.....	19	2	10.5	8	42.1	6	31.6	2	10.5	1	5.3	0	-----
Coast guard, active.....	15	0	-----	14	93.3	1	6.7	0	-----	0	-----	0	-----
Coast Guard, retired ¹	83	1	1.2	19	22.9	39	47.0	20	24.1	4	4.8	0	-----
Public Health Service employees.....	40	1	2.5	17	42.5	12	30.0	10	25.0	0	-----	0	-----
Special study ²	22	0	-----	3	13.6	12	54.5	6	27.3	1	4.5	0	-----
Total.....	400	20	5.0	172	43.0	136	34.0	60	15.0	10	2.5	2	.5

¹ Including 17 other retired military persons.

² Spouses of hospital staff and families of seamen.

Table 2. Occupation group by number of diagnoses

Occupation group	Total	No disease		1		2		3		4 or more	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Eligible dependents.....	137	56	40.9	50	36.5	21	15.3	9	6.6	1	0.7
Fishing vessel crewmen.....	84	13	15.5	19	22.6	26	31.0	15	17.9	11	13.1
American seamen.....	19	5	26.3	6	31.6	5	26.3	1	5.3	2	10.5
Coast Guard, active.....	15	9	60.0	4	26.7	1	6.7	1	6.7	0	-----
Coast Guard, retired.....	83	19	22.9	29	34.9	19	22.9	11	13.3	5	6.0
Public Health Service employees.....	40	17	42.5	13	32.5	5	12.5	4	10.0	1	2.5
Special study.....	22	8	36.4	5	22.7	6	27.3	2	9.1	1	4.5
Total.....	400	127	31.8	126	31.5	83	20.8	43	10.8	21	5.3

of whom (Coast Guard personnel) had a history of periodic health examinations, and others (the seamen) who presumably were a high-risk group. Though broad epidemiologic patterns seem evident, it should be emphasized that the numbers in most subclassifications are too few to permit valid extrapolation and serve only to describe the patients.

Our prototype clinic indicated that Public Health Service beneficiaries, despite a ready access to clinical medicine, have about the same incidence of the major chronic diseases as a

general population group of similar age and are in similar need of preventive medicine.

This clinic, by consensus of participating physicians and those seeing patients on referrals, reaffirmed the fact that the search for disease in an apparently well population is a profitable casefinding procedure.

The fact that this clinic used existing staff and outpatient facilities indicates that such a clinic could be a practical addition to many general hospitals, certainly to Public Health Service and other government hospitals, most of which serve patients like those served by this clinic.

Oral Vaccine Against Adenovirus Type 4

A new live oral vaccine against adenovirus type 4, the main cause of severe respiratory disease in military recruits, has proved successful in a field trial.

The vaccine, taken in capsule form, was 100 percent effective in preventing acute respiratory illness in 135 Marine recruit volunteers at Camp Lejeune, N.C., where adenovirus 4 was epidemic. By contrast, almost 25 percent of a control group of 132 who had received a placebo were hospitalized with severe adenovirus respiratory disease during the same epidemic.

The vaccine represents a new concept in immunization against respiratory disease. A special coating on the capsule prevents release of the vaccine until it reaches the intestinal tract; thus the live vaccine bypasses the normal site of the infection, the respiratory tract. In the intestinal tract the vaccine causes a symptom-free infection that stimulates production of protective antibodies. The vaccine was

developed by the Laboratory of Infectious Diseases, Vaccine Development Program, National Institute of Allergy and Infectious Diseases, Public Health Service, and manufactured by Wyeth Laboratories, Inc., under a contract with the Institute. Others who collaborated in the project were the U.S. Navy Bureau of Medicine and Surgery and the District of Columbia Department of Corrections.

Acute respiratory disease is the leading cause of hospitalization and treatment at outpatient clinics among recruits in all branches of the Armed Forces. Ten percent of these illnesses result in pneumonia. Yearly adenovirus epidemics at military training camps through the country in fall, winter, and spring rank second only to accidents as a cause of lost manpower. Loss of training time and increased medical care during one adenovirus type 4 epidemic at a single military installation were estimated to have cost \$10 million.