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Editor - Captain L. B. Marshall, MC, USN

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Gamma Globulin--A Critical Analysis of Available Data

This article presents an analysis of the available experimental and epidemiologic data on the use of human gamma globulin in the prophylaxis of poliomyelitis, and offers some general principles to guide the physician in the application of current knowledge.

Gamma globulin, prepared from large lots of adult human serum, contains antibody against all the three known types of poliomyelitis virus. The unconcentrated serum of a convalescent from the clinically recognized disease has antibody in comparable amount against the infecting type, but may or may not have antibody against the other two. The concentration of antibody in the serum of adults without a history of clinically recognized poliomyelitis varies over a wide range from zero to the level found in the serum of convalescents. Accordingly, one may expect that different lots of gamma globulin may also vary considerably, depending on the size of the pool from which it is prepared and the efficiency of the technical procedures used. Actually there is as yet little or no information on the variability in the amount of the three types of poliomyelitis antibodies in different lots of commercially prepared gamma globulin as measured by an acceptable method of assay.

Prior to the field tests on human beings, experimental work on animals had demonstrated that only very large amounts of antibody, amounts too large for practical use in human beings, given before infection were capable of preventing paralytic poliomyelitis. When enough antibody was given before inoculation of the virus it was possible to prevent the disease even when the virus was injected directly in the brain. The issue, therefore, was not whether large amounts of antibody could prevent poliomyelitis, but whether amounts small enough to be practical would have a prophylactic effect on the naturally acquired infection.

The field tests on human beings (Utah, Texas, and Iowa) were undertaken before any information was available as to the amount of gamma globulin of known potency that had to be injected per pound body weight to obtain a barely detectable level in the serum at the time of inoculation. It is noteworthy that such information still is not available for the antibody against Type 1 poliomyelitis virus, that is, against the immunologic type responsible for almost all large epidemics.

An arbitrary dose of 0.14 cc. of gamma globulin per pound body weight was selected, because it was considered practical and not because there was any evidence that this dose would transmit enough antibody to remain undetectable for any known period of time in human beings.

The field trials were planned with great care by Dr. Hammon and his associates. The field tests included a control group of children who received gelatin instead of gamma globulin, and the physicians who diagnosed subsequent illness among the inoculated children did not know which injection they had received. This was an important and necessary precaution, and it was hoped that the injection of gelatin would not increase the incidence of paralysis in a manner comparable to that observed in certain epidemics following inoculations against pertussis and diphtheria. The field tests lacked another important control group such as might have been obtained by giving a placebo by mouth.

However, the possibility that gelatin may have increased the incidence of the disease in the control group will have to be considered, particularly because Bodian has recently obtained suggestive evidence in monkeys that gelatin may act in such a manner.

On the basis of the combined results of the three field tests, Hammon and his associates reached the following conclusions regarding the effectiveness of gamma globulin in the dosage used:

1. The disease was not prevented in those who received gamma globulin 1 week before the onset of first symptoms, but it may have been made milder.

2. Between 2 and 5 weeks after injection there was a marked preponderance of cases among those receiving gelatin as compared to those inoculated with gamma globulin, suggesting that this dose of antibody administered either before infection or very early in the incubation period could prevent paralysis.

3. After the fifth week there was no longer any significant difference in the incidence of the disease among those inoculated with gelatin or gamma globulin, suggesting that the dose of antibody was so small that its effect could not last more than about a month.

The final results in all three field tests (55,000 children) indicated that 31 clinically diagnosed cases of poliomyelitis, regardless of severity, occurred among those inoculated with gamma globulin and 73 among those inoculated with gelatin. This would be a significant result in favor of gamma

globulin if one could be certain that it was not in part due to an artificial increase in the number of cases among those receiving gelatin, and that it was repeatable with different lots of gamma globulin in different epidemics.

In response to this criticism in private discussions, Hammon and his associates collected information on the incidence of poliomyelitis reported among the children of similar age who received no inoculations in the clinics in the three areas where the field trials were conducted. Hammon has stated that he regarded those figures as unreliable, because there was a tendency, not to report all cases of poliomyelitis. If this were indeed true to a significant extent, one would expect a higher incidence of the disease in the gelatin group during the entire period after the closing of the clinics. However, an examination of Hammon's data reveals such a preponderance only during the first 2 weeks after the closing of the clinics, while in the subsequent weeks the incidence in the uninoculated children is either higher than that in the gelatin group or similar to it. This is especially significant when one recalls that the provoking effect of inoculations would be expected to occur during the first 2 weeks after closing of the clinics.

What happens when one disregards the gelatin group altogether and compares the incidence of the disease in the uninoculated children with that in the gamma globulin group? It seems best to consider the three field tests separately to obtain some idea of reproducibility of the results. The test in Utah may best be disregarded because the number of cases was too small for consideration, as is evident from the fact that in the third and fourth weeks after closure of the clinics there were no cases in either the gelatin or the gamma globulin groups. The results in Texas are not very impressive, and beginning with the third week after the closure of the clinics, the incidence was the same in all groups--uninoculated, gamma globulin, and gelatin.

The results in Iowa, however, stand out as unique and strikingly in favor of gamma globulin not only during the first 2 weeks, but also during the entire 14 weeks after the closing of the clinics. Now why this difference between Texas and Iowa? For one thing, small numbers of cases are being dealt with despite the fact that the population groups are in the thousands. The result obtained in Iowa, although statistically significant, may or may not be repeatable. Another thing to be considered is that a very small dose of gamma globulin is used which, depending on the actual concentration of antibody in the different lots, may be either on the borderline of effectiveness or totally ineffective. A number of different lots of gamma globulin were used in the field tests, and the ones used in Iowa may have been more potent than those used in Texas.

It appears to the author that the conservative conclusion to be drawn from these field trials should have been that further studies on the use of gamma globulin are indicated and that much more information is needed before it can be ascertained (a) whether or not it will be regularly effective in

the small doses that can be used practically, and (b) if it is regularly effective, how best to use a material that is of necessity in limited supply.

The conclusion that the value of gamma globulin in the prophylaxis of poliomyelitis had been proved beyond doubt, has practically halted further urgently needed experimental studies in animals, has made further controlled field studies in this country most difficult, if not, for the present at least, impossible, and has led to the expenditure of millions of dollars by the Red Cross and National Foundation for Infantile Paralysis for the production and purchase of large amounts of gamma globulin, which the public health authorities and physicians of the country are not yet ready to use in an intelligent manner.

It has been suggested that certain household associates and other intimate contacts of a clinically diagnosed case of poliomyelitis receive gamma globulin. This will probably be recommended by many state health commissioners but it should be remembered that there is no scientific evidence that gamma globulin in the dose used will have any effect on the incidence of the disease among those who have already been exposed.

Available evidence indicates that 80% of secondary cases in a household occur within 7 days after the first clinically diagnosed case, and that is the period during which gamma globulin had no effect on the incidence of the disease in the field trials. It is quite possible that the remaining 20% who develop the disease after the first 7 days were also infected prior to recognition of the first case, and there is no evidence that the small dose of gamma globulin would have any effect on these. Also, in approximately 95% or more of households there are no secondary cases of clinically recognized poliomyelitis. Even if the small doses of gamma globulin were effective in household contacts, this procedure of administering it would miss more than 90% of the people who develop poliomyelitis.

It is clear that if one accepts the suggestive evidence of the field trials, there is only one rational basis for using gamma globulin and that is to administer it to those at greatest risk in areas with a very high incidence of the paralytic disease. The author stresses here the paralytic disease because protection against the mild nonparalytic forms of the infection is neither needed nor wanted. Furthermore, it should be remembered that indiscriminate widespread use of gamma globulin, particularly in effective dosage, may interfere with the acquisition of those mild or inapparent infections which give lifelong immunity.

There is no difficulty in recognizing the very severe epidemics, but not all epidemics fall into clear-cut categories. The decisions will, therefore, have to be made by each state on how best to use the allotment which they will receive. The author, therefore, makes a plea that most of the available gamma globulin be used only in epidemic areas and that the limited amount be assigned to the age groups at greatest risk of acquiring paralysis as well as to pregnant women.

Because there will not be enough gamma globulin for everyone, particularly in epidemics in large metropolitan areas, there should be an opportunity to make further epidemiologic studies on the effectiveness of the selected dose of gamma globulin as a prophylactic agent in poliomyelitis. This would require a good deal of cooperation and concentrated work for a limited period of time on the part of the practicing physicians and health departments in an epidemic area, but it would mean that gamma globulin would be used in the only way for which there is now suggestive evidence that it might have some effectiveness. (Ohio State M. J., July 1953, A. B. Sabin)

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Acute Poliomyelitis

In any disease of uncertain course and without specific cure, evaluation of clinical results must be viewed with close objective scrutiny. Poliomyelitis has been known in medical literature for over 110 years, its epidemic character was first enunciated in 1890 by Medin in Sweden. The virus etiology was first suggested by Landsteiner and Popper over 40 years ago. A multitude of reports cover the intervening period up to the present, and it has become increasingly clear that in recent years figures on mortality and morbidity have generally been in agreement in most sections of the United States despite various regimes of therapy. It is well known that epidemics differ in severity from year to year, even month to month in the same epidemic. This article presents a clinical analysis of closely observed cases, points out certain features of bulbar poliomyelitis, and evaluates the results of therapy.

Poliomyelitis knows no limitation of age, sex, or race. The term "infantile paralysis" should be discarded in the light of present knowledge. Increased physician awareness of the disease and more frequent recourse to lumbar puncture in suspected cases have contributed to the apparent increase in incidence of the disease as well as to its shift toward older age groups.

The authors have reported on their experiences in the 1950 epidemic and have reviewed 263 cases studied at the height of the epidemic. More than 25% of their cases were nonparalytic, 22.7% were of the bulbar type, and 50.4% were spinal in type. The over-all mortality rate was 8%. Symptomatology, age, and sex ratios, and mortality figures were in general agreement with those reported in other epidemics.

Study of the spinal fluid findings offered no prognostic guide to the extent of paralytic involvement. It assumed only a diagnostic confirmatory role in most instances. About 5% of patients showed no pleocytosis or increased spinal fluid protein values on hospital admission. Similarly the length or severity of prodromal symptoms had no bearing on the ultimate outcome of the disease.

The cause of death in poliomyelitis was generally the result of bulbar involvement. The exact mechanism is controversial. The authors have emphasized the importance of pulmonary angiospasm and have offered this as an explanation for the underlying cause of death. Tracheotomy is of value only when there is tracheobronchial obstruction. This is generally not present in bulbar poliomyelitis. In addition the use of vasodilator drugs, notably Priscoline, has been cited in the treatment of vasospastic phenomena in poliomyelitis. (J. Pediat., July 1953, E. Smith, I. L. Harris, and P. Rosenblatt)

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The Diagnosis of Posterior Myocardial Infarction

Investigation of the diagnostic accuracy of the vectorcardiogram, as compared to the electrocardiogram, in myocardial infarction was undertaken in the Electrocardiographic Laboratory, Beth Israel Hospital, and the Department of Medicine, Harvard Medical School. Several striking discrepancies were disclosed, and these will be reported in detail in subsequent communications. The present study was carried out to elucidate some questions raised by these observations, and those aspects of it which are related to the electrocardiographic diagnosis of infarction of the posterior wall of the left ventricle are discussed in this article.

Eighty-six unselected cases with proved (autopsy) posterior wall infarction and satisfactory electrocardiographic observations were studied. The purpose of this investigation was to ascertain if, and how often, localized high posterior wall infarction occurred, because preliminary vectorcardiographic studies suggested such lesions in 8.6% of all patients with posterior wall infarction. It was desired also to ascertain whether or not the electrocardiogram was ever of diagnostic value in these cases.

The electrocardiograms in 6 cases consistently displayed left bundle branch block. These were set aside, leaving 80 cases for detailed analysis and study.

Isolated high posterior wall lesions were found in 6, or 7.5% of the 80 unselected cases with proved posterior wall infarction. These constitute the indirect anatomico-pathologic evidence for the high posterior infarcts diagnosed by vectorcardiography in 8.6% of 104 cases with posterior wall infarction. The 2 infarcts limited to the upper zone, and 2 of the 4 limited to the middle zone, were not recognized by electrocardiography, indicating a very limited value of the electrocardiogram in the diagnosis of high posterior lesions.

Posterior infarction was correctly diagnosed by electrocardiography in 47, or 58.8%, of the 80 cases. The electrocardiographic diagnoses were: (a) posterior infarction, 33 cases; (b) anterior and posterior infarction, 14

cases; (c) anterior infarction, 14 cases; and (d) abnormal electrocardiogram, 19 cases. Anterior infarcts were demonstrated histologically in all but 1 of the cases in which this diagnosis was made ante mortem. Not one electrocardiogram was interpreted as normal.

Posterior infarction was not diagnosed by electrocardiogram in 39 of the 86 cases with proved posterior wall lesions. The factors responsible for failure were evident in 36 cases, as follows (only single items are given, although multiple causes were operative in some cases; old posterior infarct was commonly combined with other factors): (a) left bundle branch block, 6 cases; (b) acute anterior infarction, 21 cases; (c) localized, high infarct, 7 cases; (d) old, small infarct, 1 case; (e) inadequate electrocardiographic exploration, 1 case; and (f) unknown, 3 cases.

Old anterior infarction and left ventricular hypertrophy do not diminish the diagnostic value of the electrocardiogram in posterior infarction. Methods of improving the diagnostic value of the electrocardiogram for posterior infarction are discussed. The vectorcardiogram appears to be superior to the electrocardiogram for the diagnosis of posterior myocardial infarction. (Am. Heart J., July 1953, L. Wolff, K. S. Mathur, and J. L. Richman)

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Streptomycin in Silicotuberculosis

Theodos and Gordon state that life expectancy in silicosis with complicating tuberculosis treated at home is 2 or 3 years, and that with sanatorium care life expectancy in some cases may be increased to 4 years. If the disease is clinically inactive, no particular treatment is necessary, and the patients may be encouraged to continue at work; they must in such cases work in an atmosphere which is free of dust. However, when tuberculous cavitation exists and the sputum or gastric contents are positive for tubercle bacilli, the disease usually progresses relentlessly to a fatal termination. Isolation is advisable to prevent infection of others, and rest may be of some help. Collapse therapy is usually impractical or impossible; silicosis itself reduces the vital capacity and may cause dyspnea; extensive pleural adhesions prevent adequate collapse; and tuberculous cavities in silicotic areas of the lung are difficult to close by any collapse measures. Auerback and Stemmerman reviewed 8 cases of silicotuberculosis in which artificial pneumothorax was attempted, and 4 in which thoracoplasty was performed; in none of these cases was a cavity closed. They believe that there is little hope for success with collapse therapy in silicotuberculosis. The silicotic areas form a resistant barrier to collapse of lung tissue. In ordinary tuberculosis there is destruction of the elastic elements of the lung, and when collapse therapy is attempted it may readily be successful, as the pulmonary parenchyma has already suffered a decrease in volume.

In silicosis, on the other hand, the fibrosis occurs chiefly along the septa, the silica particles stimulating the formation of new collagen fibrils to form connective tissue. The silicotic lung is more voluminous than normal and shows no tendency to collapse. Some authors even believe that in advanced cases life is actually shortened by collapse therapy. Because of widespread disease and lowered vital capacity, resection of major tuberculous foci is seldom feasible.

Because of the poor results obtained with other forms of treatment, streptomycin was given to every patient who came to the Veterans Administration Hospital, Butler, Pa., with advanced tuberculosis complicating silicosis. For purposes of this study, no case was accepted unless there was a history of prolonged exposure to silica dust, an x-ray film appearance typical of nodular or conglomerate silicosis, and cavitation and sputum positive for acid-fast bacilli. It is admitted that this is the type of disease in which the past treatment has been almost uniformly unsuccessful. Eighteen such cases were treated. The results were poor.

There are occasional reports in the literature which indicate that streptomycin is of value in silicotuberculosis. In most of these reports either the silicosis or the tuberculosis is not extensive. Boselli and Lusardi gave streptomycin to 23 cases with the combined diseases, and assert that in every case the treatment brought about benefit. Most of their patients had no pulmonary cavities. They note that on chemotherapy, in spite of clinical improvement, no cavities closed, and they say nothing about sputum conversion in cavitary cases. Most observers are agreed that in chronic fibro-cavitary silicotuberculosis streptomycin is of little value, except to reduce the manifestations of toxemia, and the results in the authors' cases certainly support this view.

If streptomycin is of value in silicotuberculosis, its benefit is limited to acute progression of tuberculosis, post-hemorrhagic spreads, miliary disease, and extra-pulmonary tuberculosis. It is probable that before cavitation develops streptomycin may be helpful. In chronic cases with cavitation and positive sputum streptomycin does not appear to cause improvement or even halt the progression of the tuberculous disease. (Dis. Chest, July 1953, A.C. Cohen and G. C. Glinsky)

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Atherosclerosis

Primary necrosis and calcification of the media with extension into the adventitia and intima are the arterial manifestations of the aging change. These aging changes are related to the intensity of elastic tissue changes, are not distinctive of blood vessels, and are similar in arteries to those aging changes which occur in all body tissues. They are probably dependent on the behavior of aging colloids and have to do with loss of water.

Atherosclerosis is a degenerative disease of the intimal coat characterized by fibrous changes and increasing accumulations of lipids in localized areas. It is a focal pathologic change, a disease process which may be superimposed on the arteriosclerosis of aging or be present even in infancy. Elderly individuals may have rigid arteries with little atheromata, while the soft elastic arteries of the child may harbor early atherosclerotic fatty flecks. X-ray evidence of calcification of the vessels of the extremities give no indication of the intimal adequacy of the coronary vessels. Clinically, the end result of atherosclerosis is rupture or occlusion of an end artery. Medial calcification does not narrow the lumen of a vessel.

There is no unanimity of opinion as to the sequence of events in the development of atheroma. Deposits of fatty material in the ground substance of the intima are presumed by some to be the initial lesion. Other investigators believe the early lesion to be a fibrous change and regard lipid infiltration as a secondary phenomenon. Fibrous change is static and not reversible. Lipid deposition is a dynamic process which may progress or resorb. It is probable that either lipid infiltration or intimal fibrosis may be the initial lesion dependent upon the combination of nonspecific etiologic factors involved. Either as initial lesions or as deposits secondary to initial fibrosis, the presence of lipids in the lesion is a determinant of the clinical manifestations of the disease. The obstructive disaster is to a large extent mediated by the degree of lipid infiltration. Interference with the blood supply to a vital organ is the first clinical sign of the disease although the atherogenic process may be well advanced. An intact myocardium may be present in this advanced stage of coronary atheroma until sudden closure occurs. The diagnosis of its presence and its corrective treatment is therefore not academic.

The first effort in detecting predisposition to atherosclerosis is an elucidation of the findings which may indicate that the investigated individual is predisposed to degenerative disease processes. A carefully evaluated family and past history will offer an indication of such a predisposition. Heredity may involve a constitutional inadequacy of metabolism, indicated by familial gout, obesity, diabetes mellitus, hypothyroidism, coronary artery disease, and a host of other disorders associated with failure of metabolic processes. Hypertension may further accentuate susceptibility, especially during continued nervous and emotional tension. Much has been said of the somatotype susceptibility to disease and it may be true that a specific morphology, especially in relation to certain biochemical abnormalities, predisposes to degeneration.

The social environment, economic status, and ambitions are important in the degree of stress to which an individual will be exposed. Economic and environmental elements should be considered during routine evaluations. These findings should be utilized for directing future activities. Industry which carefully grooms talent for executive positions after intellectual con-

sideration could with profit utilize these observations to determine a candidate's ability to withstand the stressful existence of the pre-executive stage.

Males are more prone to develop coronary artery disease, especially before age 50. This sex differential is not present in metabolic disorders such as diabetes mellitus. The presence of any metabolic disorder either in an individual or his family strengthens this predisposition to degeneration. Biochemical determinations will afford further significant evidence. The author believes that serum cholesterol and phospholipid determinations offer the cheapest, most available, reliable, and useful biochemical studies. Given sufficient funds, time, and investigative vigor, other and more involved procedures may be attempted.

The annual physical examination should include a search for atherogenicity, because those who are endowed by heredity with an inferior metabolic system require earlier and more intensive treatment. The concept of constant attention to prophylaxis and an anticipatory attitude demands treatment during the period of accumulation of degeneration when prevention and reversal is possible. It demands a point of view which takes cognizance of heredity, morphology, psychology, immunology, and biochemistry. It recognizes the nonspecific nature of atherosclerosis and applies direct prophylactic though nonspecific therapy. With all of this as a guide, therapy according to individual needs may be formulated. (Geriatrics, July 1953, J. Pomeranze)

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Penicillin Prophylaxis

Extensive programs of sulfadiazine prophylaxis instituted in military units during World War II were initially successful in controlling epidemics of streptococcal infection, but there were a few fatal reactions to the drug and the emergence of sulfonamide-resistant strains resulted in the eventual return of high disease rates. No such large-scale programs have been reported with penicillin although theoretically this drug has several advantages over the sulfonamides. Penicillin resistance has never been observed among freshly isolated strains of Group A streptococci, and the incidence of serious drug reactions may be less with penicillin than with the sulfonamides. In addition, with penicillin it is possible to eradicate Group A streptococci from the oropharynx, whereas sulfonamides merely suppress streptococcal growth.

Although suppression of streptococcal growth or interference with new acquisitions may be all that is necessary to check an epidemic in a military installation, such prophylaxis would probably not prevent spread to other installations not receiving prophylaxis. Furthermore, continuous administration of the suppressive drug for long periods would probably be neces-

sary. Such long-term programs are difficult to enforce. Short-term, intermittent administration of a bactericidal agent would be more feasible in most military situations. The pilot studies reported here demonstrate that penicillin will eradicate Group A streptococci from carriers if it is given over a sufficiently long period and in large enough doses.

These studies indicate that it is probably necessary for penicillin to be given for approximately 10 days to eliminate Group A streptococci from the throats of carriers. They confirm the report of Rantz, Spink, and Boisvert, who found that short courses of penicillin were ineffective, and the work of Goerner, Massell, and Jones, who were usually able to eradicate the carrier state after 10 days of penicillin. These findings on the chronic carrier state contrast with the observations in acute streptococcal infections, in which 1 injection of procaine penicillin in oil containing 2% aluminum monostearate will frequently eliminate the carrier state although this is not recommended as optimal therapy. In experimental infections of animals Eagle also related the age of the infection to the curative dose of penicillin.

A dose of 500,000 to 1,000,000 units orally twice daily seems adequate to eliminate the carrier state if the drug is administered for 10 days. Although 250,000 units once daily proved ineffective in these studies, Massell, Dow, and Jones obtained fairly good results with 100,000 units 3 times a day. Perhaps 250,000 units twice daily would also prove successful.

Effective intramuscular regimens include 600,000 units of procaine penicillin in oil with 2% aluminum monostearate every other day for 4 doses and a total of 1,800,000 units of benzethacil divided into 2 simultaneous injections. For large groups the administration of daily oral medication is more practical than multiple injections. A single injection or 2 simultaneous injections of benzethacil might be feasible even in large groups. This preparation warrants further investigation; 1,000,000 units in a single injection might prove to be an adequate dosage. In the present study new types of streptococci were isolated about 2 weeks after the injections of benzethacil, indicating that the concentration of penicillin in these men was very low at this interval. This contrasts with observations in children indicating that measurable amounts of penicillin persist in the body for 3 weeks after a single injection of 1,250,000 units of benzethacil.

The results of the large-scale prophylaxis studies indicate that it is possible to reduce the incidence of streptococcal disease by oral administration of penicillin. The differences between the men receiving the drug and the control group were striking during the period of administration, but a few weeks after the drug had been discontinued, the rates in the treated groups returned to levels comparable to those of the control group. The effect was of somewhat longer duration in the group receiving 10 days of drug than in the group receiving only 5 days. It is impossible to conjecture whether or not the disease rates would have returned to the original high levels after the cessation of penicillin if the epidemic had not been waning.

The results would have been more impressive, of course, if the rates in the control group had remained constant. From the data obtained it seems likely that short-term penicillin prophylaxis, when given under conditions similar to those in this study, may have to be repeated every 3 or 4 weeks until the epidemic declines. In other military units or situations it may not be necessary to repeat prophylaxis at such relatively frequent intervals. When the results of this study are interpreted, it must be emphasized that the treated units were neither static nor isolated population groups. The reduction in disease rates might have been more lasting if the turnover had been less or if the entire installation had been treated so that contacts with untreated groups would have been eliminated. In any given situation the frequency with which such a program should be reinstituted can be gauged by carrier surveys or disease rates.

In the large groups receiving penicillin by mouth, the incidence of reactions was low (approximately 1%) except for minimal or moderate diarrhea. The only serious reaction was moderate laryngeal edema, which developed in 1 man. It appears that penicillin is a relatively safe drug for large-scale prophylaxis.

Although strains of streptococci were not tested for penicillin resistance during the large-scale prophylaxis program, no evidence was obtained that a resistant strain became predominant in the population. This does not preclude the possibility that an unrecognized resistant strain did appear or that resistant strains would emerge and become predominant if penicillin were administered continuously for a long period.

These studies suggest that short-term intermittent administration of a bactericidal drug such as penicillin may be an effective method for the prophylaxis of streptococcal disease and may have certain advantages over the continuous exhibition of suppressive agents such as the sulfonamides. During times of emergency large quantities of penicillin may not be readily available, in which case sulfadiazine may be employed for prophylaxis and penicillin used for treatment of streptococcal infections. Such a regimen should be successful until sulfonamide-resistant strains become prevalent in the population. (New England J. Med., July 2, 1953, Capt. L. W. Wannamaker, MC, USAR, Maj. F. W. Denny, MC, USAR, Capt. W. D. Perry, USAF(MC), C. H. Rammelkamp, Jr., Capt. G. C. Eckhardt, MC, USAR, Maj. H. B. Houser, MC, USAR, and Maj. E. O. Hahn, MC, USAR)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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Diamidine in Blastomycosis

In addition to their clinical efficacy in the treatment of trypanosomal and leishmanial infections, the diamidines have been found to possess antibacterial and antifungal properties. The discovery of more efficient drugs led to their discard as antibacterial agents. The exploration of the diamidine group for fungicidal activity, however, has produced encouraging results.

Elson demonstrated that the growth of many of the pathogenic fungi was inhibited by low concentrations of propamidine (p, p' trimethylenedioxy) dibenzamidine. The growth of Blastomyces dermatitidis was inhibited by concentrations as low as 0.075 mg. per 20 cc. of agar. Colbert, Strauss, and Green reported complete inhibition of Blastomyces dermatitidis by 7.5 mcg. of propamidine per cc. of agar. Heilman has found that the growth of all the strains of B. dermatitidis used were inhibited by a concentration of 3.9 mcg. per ml. of stilbamidine (4, 4' stilbenedicarboxyamidine).

The treatment of cutaneous and more particularly systemic blastomycosis has been generally unsatisfactory. Colbert, Strauss, and Green treated a patient with cutaneous blastomycosis with propamidine applied locally using propamidine, 0.1 percent, in a methyl cellulose gel, 9 percent. Complete healing was not obtained but a suggestively favorable clinical response was obtained. In a preliminary report, attention was called to the successful use of stilbamidine in the treatment of systemic blastomycosis. This investigation was subsequently confirmed. Snapper, Schneid, McVay, and Lieben showed that 2-hydroxystilbamidine (2-hydroxy, 4, 4' stilbenedicarboxyamidine) was also effective in the treatment of blastomycosis.

Kirk and Henry reported that the immediate toxic reactions following the injection of freshly prepared stilbamidine intravenously may include a fall in blood pressure, generalized formication, sweating, breathlessness, dizziness, epigastric discomfort, nausea, vomiting, salivation, incontinence of urine and feces, and a puffy sensation of the face and eyelids. These reactions are all transient in nature. Concentrated solutions of stilbamidine may produce a local thrombophlebitis.

The late chronic toxicity of stilbamidine is confined to a neuropathy of the fifth cranial nerves. Two to five months after a course of stilbamidine, progressive sensory changes of paresthesia, anesthesia, and hypalgesia may be seen.

Because the symptoms of the trigeminal neuropathy from stilbamidine may be severe, Snapper, Schneid, McVay, and Lieben suggested that 2-hydroxystilbamidine be used and this has been successfully done. Only freshly prepared solutions of 2-hydroxystilbamidine should be used. The solution is given intravenously immediately by a slow drip. Treatment is given daily for 14 days. A rest period of similar length follows. A second course, and, if necessary, a third course is given with the same relationships in time.

Propamidine (p, p' (trimethylenedioxy) dibenzamidine), a compound chemically related to stilbamidine has been used in a 0.1% concentration in a 9% methyl cellulose gel or as a 0.1% solution in a 5% solution of glucose in distilled water for local application. Toxic effects have not been observed from such use but propamidine cannot be injected intramuscularly or intravenously.

A number of reports of patients with blastomycosis successfully treated with the diamidines have appeared in the literature. Sixteen patients have been treated with stilbamidine and 2 patients with 2-hydroxystilbamidine. The drug of choice is 2-hydroxystilbamidine given intravenously while propamidine may be applied locally if necessary. (J. M. Miller, Veterans Administration, Fort Howard, Md.)

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Diabetic Retinopathy

The increased life span of diabetic patients since the use of insulin some 30 years ago has increased the prevalence of retinopathy and visual loss disturbances. Visual disturbances in the diabetic are preventable for an indefinite number of years, depending upon the degree of dietary control. Loss of vision is devastating, and the physician who accepts the diabetic as a patient assumes the trust and responsibility of giving that person the advantages of all the factual, scientific, experimental, and clinical knowledge which has been amassed over the years. Most workers believe that the eye complications usually come on after the patient has been a known diabetic about 15 years. This time element is directly proportional to the care the patient has given to diet and treatment. The more carefully controlled the cases, the lower the incidence of retinal disease. The appearance of abnormal changes in the retinae do not necessarily mean impairment of vision, for with proper dietary treatment and adequate insulin the progression of retinal lesions may be retarded and useful vision retained for many years.

The earliest and most characteristic diagnostic lesions in the retina are the small punctate red spots found in the posterior poles of the eyes, usually near the macula. Until the work of Ballantyne and Lowenstein in 1943, these punctate spots were thought to be minute hemorrhages. From their work and that of Friedenwald and Ashton, it is known that these red dots are capillary aneurysms. These tiny aneurysms are located most often in the inner nuclear layer of the retina. They arise from capillaries which connect the capillary net in the nerve fiber layer with that of the outer boundary of the inner nuclear area. The size of the aneurysm may be 10 to 15 times that of the parent capillary and usually vary 30 to 90 microns in diameter. The aneurysm walls may allow blood to escape either by diapedesis or actual rupture, producing large, round, deep hemorrhages. Some aneurysms have thrombotic changes which lead to scarring and thus to the formation of a lesion, viewed ophthalmoscopically as a round white nodule.

Further development in the course of diabetic retinopathy is the appearance of the small, hard, irregularly shaped, yellowish-white exudates. These are usually in the central area of the retina, may occur singly or may coalesce into clusters. If these waxy clusters overlap the fovea, central vision is interfered with. These lesions, aneurysms, hemorrhages, and exudates, constitute the central punctate retinopathy of diabetes.

In certain diabetics, in addition to the lesion of central punctate retinopathy, cotton wool patches are sometimes observed. These exudates are probably indicative of a toxemia such as carbuncles, infective ulcers, gangrene, or a urinary tract infection. They do not signify any co-existing hypertension. After the removal of the toxic processes the exudates disappear. Another typical retinal change in diabetes is that associated with venous changes. Two main types of changes occur: changes in the veins without proliferation of new vessels and those characterized by new vessel proliferation.

In the nonproliferative type of diabetic venous disease, probably the earliest diagnostic sign is an overfilling and increased tortuosity of the retinal veins. This condition is limited to individual branches or to segments of branches. In some cases the tortuosity becomes extreme and veins become thrown into loops and coils. In other cases nodular constrictions occur, giving the appearance of beading. Yellowish-white exudate may occur along the wall of some of these veins, giving them a sheathed appearance. Other veins may appear to be completely obliterated, in which case the vein looks white and smooth in contour, peripheral to the thrombosis. Any of these venous changes may be associated with extensive hemorrhage.

Diabetic venous changes, when associated with numerous hemorrhages, are distinguished from central venous thrombosis by nonuniform or erratic distribution, while in the former all branches are distended and extensive hemorrhages always occur over the entire fundus. Because venous changes in diabetics resemble the changes in the retinal arterioles in arteriosclerosis, these changes have been referred to as phlebosclerosis. Three main types of retinal phlebosclerosis have been described. These are dependent upon whether the initiating process occurs within (a) lumen, (b) within the wall, or (c) outside the wall of the vein. (Rocky Mountain M. J., July 1953, E. S. Murphy)

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Multiple Antigen Reinoculation

Inoculation with multiple antigen preparations has been extensively studied and found to be more effective than inoculation with one antigen at a time. This report extends the knowledge of multiple antigens by studying

their usefulness in the reinoculation of free-living children with multiple antigen preparations. In the report observations are made on reinoculation of 251 children who had been inoculated 3 years previously with similar preparations. Of this group 142 had received 4-antigen preparations containing diphtheria, pertussis, tetanus, and scarlet fever antigens, and 109 had received 3-antigen preparations containing diphtheria, pertussis, and tetanus antigens.

The objectives of the study were to determine: (1) the number and type of reactions following reinjection with a multiple antigen preparation; (2) the immunity status of a group of children who previously had received multiple antigen preparations; (3) the rapidity with which children previously injected with multiple antigen preparations would respond to a single reinjection dose; and (4) the minimal effective dosage.

The group of 251 previously inoculated children were reinjected with the following 3-antigen preparation:

No. 12892 Combined antigens
Diphtheria toxoid, A. P.
Tetanus toxoid, A. P.
Pertussis vaccine, 30,000 millions per ml.

One hundred and thirty children received 0.2 ml. and 121 children received 0.5 ml. of the above preparation as a booster dose.

As measured by antitoxin levels, the immune status of children who have received a series of 3 injections of a multiple antigen preparation containing diphtheria and tetanus antigens is of a high order at the end of 3 years, following the first of 3 injections of the primary series. The immunity status of children who have received 2 injections is less adequate. These findings indicate the desirability of attempting renewal of protection by means of booster doses if reactions were at a minimum and if results following reinoculation proved beneficial.

Reactions following a booster dose of a multiple antigen preparation were greater than following the first and second injections of the primary series, but not greater than those following the third injection of the primary series. A dose of 0.2 ml. resulted in fewer reactions than did a dose of 0.5 ml. A single booster dose of the multiple antigen used in the study could safely be given to previously inoculated children.

Booster doses of a multiple antigen preparation resulted in an increase in antitoxin titer against both diphtheria and tetanus 2 weeks after injection, and the levels found at this time were maintained for at least 6 months, the last period observed.

Within the limits of titrations used, levels were found to be equally high after using 0.2 ml. or 0.5 ml. of the multiple antigen preparation, and the 0.2 ml. dose is therefore recommended because fewer reactions follow its use. (Am. J Pub. Health, July 1953, V.K. Volk, F.H. Top, and W.E. Bunney)

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Parental Evaluation of Tonsil and Adenoid Removal

This article is a preliminary report of parental opinion relative to the success or failure of adenotonsillectomy. The study was undertaken as a critical evaluation of surgical efficiency in carefully selected cases. Many surveys have been done over the years with indifferent results. Despite many variables that may be involved in this problem, observance of two basic principles should provide favorable postoperative results in any series of cases reviewed: (1) careful selection of patients and (2) good surgical technique.

Within the past decade the need for adenotonsillectomy in children has been minimized. An analysis would probably show public pressure the major cause rather than a change in competent professional opinion. Because of a variety of information and misinformation concerning this subject, it is small wonder that parents are sometimes reluctant to accept a decision demanding surgery. In an excellent review of tonsillectomy, Boies clearly outlines the cause for parental concern, which includes: (1) the indications, (2) the probable inadequacy of the operation, and (3) the associated morbidity and even mortality. He believes that with a trained laryngologist none of these aspects should provide a valid contraindication. Although control of infection is greatly facilitated by the antibiotic and chemotherapeutic aids available, this temporary therapy cannot and should not supplant surgery in many instances.

In part, the medical profession is responsible; in part, the press. Certainly the parent cannot be blamed for the existing confusion. Not many years ago it became almost a routine procedure with some members of the medical profession to recommend tonsillectomy or adenotonsillectomy at a given age regardless of adequate indications. The public accepted and actually demanded this type of medical care. These "prophylactic" operations have been repudiated by Lederer, Meyer, and others. It is still disheartening to read and see pictured in the press accounts of entire families undergoing mass removal of the tonsils and adenoids. Constructive criticism has all but eliminated this abuse, but, as a result of unjustified surgery, the integrity of the medical profession has suffered. It is also recognized that any surgical procedure will fall into disrepute if basic principles are abandoned. This situation has happened to adenotonsillectomy, and there is ample evidence daily in an otolaryngological practice. Thus the surgeon has contributed his part in molding public opinion.

Pseudoscientific medical articles are very popular in the public press. Some of the information is presented, and unfortunately accepted, as an established fact although it may simply represent an equivocal opinion. The most recent example is the controversy over the relationship of nose and throat surgery in regard to poliomyelitis. Some of the present studies indicate that the bulbar type of poliomyelitis may occur more frequently in tonsillectomized patients; but no conclusive evidence has been presented to

indicate an increased susceptibility. The well-read reputable surgeon is aware of these opinions and will avoid this type of surgery when conditions warrant. On the other hand, the parent is confused by the jumble of "authoritative" statements, and as the result of promiscuous publicity, fear and indecision are created entirely disproportionate to the known facts. Thus a combination of parental apprehension and even skepticism places the prospective surgeon in an unenviable position. A good reputation plus skill in eliciting the patients' confidence will resolve most objections. Resistance to properly advised surgery means that some children will be denied the opportunity for better health.

The elaborate program throughout the school systems of today for the detection of hearing impairment is an excellent example of preventive medicine at its best. If proper therapy is denied after hearing defects are discovered, the program will lose its value. Corrective therapy many times requires surgical removal of the adenoids, tonsils, or both. It is imperative that for this and other reasons an intelligent perspective concerning the value of this type of surgery be developed for the parent. An ideal approach should be to publish the impressions gained by parents whose children have undergone adenotonsillectomy. The parents' opinion relative to the postoperative health of the children should serve as a solid basis for evaluation.

This preliminary survey indicates intense parental interest and cooperation. Because of the need for additional data on the subject of adenotonsillectomy, a more detailed program of clinical research using this approach has been formulated. (Arch. Otolaryng., June 1953, J.S. Walker)

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Patent Ductus Arteriosus With Pulmonary Hypertension

The usual uncomplicated patent ductus arteriosus presents a fairly constant clinical picture with the following diagnostic features usually present: (1) a continuous murmur in the pulmonic area; (2) an increased pulse pressure; (3) an electrocardiogram without evidence of right ventricular hypertrophy; (4) absence of cyanosis; and (5) x-ray evidence of left ventricular dilatation with dilatation and active pulsation of the pulmonary arteries.

In older children and adults an increasing number of instances of patent ductus arteriosus with an atypical clinical picture are being encountered. Most of these cases have been instances of isolated patency of the ductus arteriosus in which some or even all of the usual diagnostic features have been missing, the most common feature usually being the absence of a continuous murmur. Studies made in some of these cases have demonstrated either marked elevation of pulmonary artery pressure or post-mortem evidence of its presence in the form of marked right ventricular hypertrophy.

The correct clinical recognition of this syndrome is important, for it is possible that it may be more common than the few reported cases suggest. It is important also to study these patients carefully in order to investigate the nature of the increased pulmonary vascular resistance, for this may have broad implications regarding vascular diseases of the pulmonary circulation in other conditions.

For these reasons this report of 8 cases of patent ductus arteriosus with pulmonary hypertension and atypical clinical manifestations has been prepared.

Four of the patient had conclusive evidence of a right to left or "reversed" shunt through the ductus, and 3 of these cases presented the clinical picture of chronic cyanotic congenital heart disease.

Four cases had no evidence of a right to left shunt but presented an atypical clinical picture with absence of the characteristic continuous murmur and evidence of enlargement of the right ventricle in the electrocardiogram and x-ray. Two of these cases were greatly improved following ligation of the ductus.

This study suggests that the basis of this syndrome is an elevation of the anatomic resistance of the pulmonary vascular bed with a resultant increase in pulmonary artery pressure. The cause of this increased resistance is not apparent, but thrombosis with recanalization and, in one instance, a diffuse arteritis has been demonstrated. Clinical evidence suggests that in some cases the disease has been present since birth. No evidence was found suggesting that it was the result of a prolonged elevation of pulmonary blood flow.

It appears that surgery is indicated in those cases in which a right to left shunt is not present but that ligation may be dangerous or fatal in instances where a right to left or "reversed" shunt is present.

The most important single diagnostic study which will detect the presence of a ductus with a reversed shunt consists of the determination of the oxygen content of simultaneously drawn blood samples from the right brachial and femoral artery at rest and during exercise.

Cardiac catheterization is necessary to detect accurately the "atypical" ductus without a right to left shunt, which may be erroneously diagnosed clinically as an atrial septal defect with pulmonary hypertension or "primary" pulmonary hypertension. (Circulation, July 1953, H. Hultgren, A. Selzer, A. Purdy, E. Holman, and F. Gerbode)

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Congenital Fibrocystic Disease of the Pancreas

The most common and most serious pancreatic lesion encountered by the pediatrician is congenital fibrocystic disease. Although the basic pathologic changes in this disease are in the pancreas, where extensive cystic

and fibrotic changes reduce the secretion of trypsin, lipase, and amylase to zero or to a trace, other organs, notably the lungs, usually develop widespread disease.

Within a few weeks or a month after birth, the patient begins to cough. This usually progresses over the next several months, and is often spasmodic in character, resembling pertussis. Clubbing and cyanosis of the nail beds usually develop. Although the appetite is normal or much increased, weight gain and growth are slow. There are as many as a half dozen stools daily, which are mushy and foul, and larger than normal. A careful inquiry may be necessary to elicit this information and a personal check on the character of the stools by the physician is often valuable. The frequency, straining, and size of the stool result in prolapse of the rectum in a large number of patients. There is gradual development of a typical picture of the celiac syndrome, with scanty subcutaneous fat, potbelly, muscle wasting, especially of the buttocks and thighs, plus clubbing of the fingers and toes, and cyanosis of the nail beds. Veins of the abdomen often are conspicuous. As the patient becomes older the signs and symptoms referable to the chronic respiratory disease increase in severity. Cases are frequent with a clinical picture of bronchopneumonia predominating, and hospitalization is often necessary to preserve life.

In a small percentage of patients the pancreatic secretion, which is characteristically thick and tenacious in this disease, results in the formation of meconium which causes obstruction of the bowel (meconium ileus). Signs and symptoms of intestinal obstruction appearing within hours after birth should always make one suspicious of this situation. Another picture seen is that of the patient in whom signs and symptoms develop within a few hours of birth and who rapidly becomes worse and dies within a month regardless of treatment. Death in these patients is due to severe widespread lung involvement. On the other hand, there are some patients who exhibit very few stigmata of the disease even after years. In these the most conspicuous feature is the minimal pulmonary pathologic changes, because the basic pancreatic changes are present with the characteristic enzyme changes. No adequate explanation has been found to explain this fortunate variation from the usual serious manifestations of the disease, and further study of all possible factors should be made.

Treatment will vary a good deal, depending on the age of the patient and the severity of the clinical picture, especially in regard to the pulmonary involvement. Meconium ileus should be considered in the newborn when symptoms of intestinal obstruction develop, and prompt surgery for the removal of tenacious viscid meconium by those experienced in pediatric surgery should keep the mortality low in this group of patients. Duodenal intubation to obtain pancreatic juice for enzymatic analysis should be done on those patients who recover to confirm the diagnosis and plan therapeutic management.

The occasional patient who has no pulmonary changes on x-ray study can be satisfactorily cared for in the office or clinic, because the symptoms

referable to the digestive tract are not difficult to control. A diet rich in protein and with about one-half the normal fat intake is usually adequate. Any respiratory infection must be vigorously treated because chronic pulmonary disease tends to develop in these patients. An x-ray study of the lungs should be made at the earliest clinical sign of involvement, and effective antibiotic therapy given.

Patients who have a well-defined clinical picture of fibrocystic disease and patients in whom crises develop should be hospitalized for study and management. It is important to establish a diagnosis so that the family can be apprised of the complexities and seriousness of the problem. Very ill patients require oxygen, parenteral fluids, antibiotics, and good nursing care. Bronchoscopic aspiration of the tenacious and viscid material from the pulmonary tree may be life-saving. A careful study of the bacterial flora of the respiratory tract should be made so that effective antibiotic therapy can be applied. When oral feedings are tolerated, it is wise to omit dietary fat and very slowly add it over a period of weeks, depending on the patient's tolerance. The diet should be rich in protein, often twice the average requirement, and simple sugars, with a total caloric intake per day of 170 to 180 per kg. The intake of all essential vitamins should be threefold the normal needs, because an excess of food elements is lost in the abnormal stools that these patients excrete.

When patients can tolerate oral medication, aureomycin or terramycin in a dosage of 7 to 30 mg. per kg. of body weight per day have proved to be the most effective agents. Pancreatin or violcase are of value in improving the digestion of some patients and should be given a clinical trial. When the patient has improved sufficiently to be followed in the office or clinic, antibiotic therapy should be continued, and a check on the pulmonary bacterial flora made every month or so, depending on the status of the lung picture. Failure to control the infection usually means that the bacteria have become resistant to the drug being administered. A warm, dry climate usually improves the prognosis and general health.

Early diagnosis, vigorous treatment of acute respiratory infection, and adequate antibiotic therapy of chronic pulmonary disease can add years to the life of a patient with this disease of unexplained etiology. (Pennsylvania M J., July 1953, J. A. Jones)

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Treatment of Renal Tuberculosis

The treatment of renal tuberculosis has been modified but not revolutionized by antibiotics. These new weapons, which are still being developed, are likely to play an increasingly effective part in the war against tuberculosis; but they have certainly not rendered obsolete the older wea-

pons--constitutional treatment and surgery. They have indeed had the opposite effect by showing up the continuing need for constitutional treatment and the advantages of surgery.

Nephrectomy is still the standard surgical treatment of renal tuberculosis when the other kidney is free from infection or only slightly infected. This measure is based on the sound principle that a resistant tuberculous focus is best removed when this is anatomically and physiologically feasible. At a conservative estimate nephrectomy more than doubles the chance of cure; and the antibiotics have not much altered this, for although they have improved the results of nonsurgical treatment they have also greatly improved the results of nephrectomy, particularly by promoting smooth healing after operation. Nevertheless the limitations and disadvantages of nephrectomy are obvious. The operation is at the same time too radical and not radical enough; it is too radical if the kidney contains healthy tissue, as is very commonly the case; and it is not radical enough because it leaves untouched the original extraurinary focus, and possibly also small foci of disease in the other kidney. On these grounds there is a clear prima-facie case for partial nephrectomy; and Semb, in an account of 87 cases treated by this method, shows that this is both feasible and successful. Semb compares renal with pulmonary tuberculosis in regard to pathological anatomy and surgical treatment. In both conditions small parenchymatous foci may heal, especially with the help of antibiotics; but cavities (the ulcerocavernous or caseocavernous lesions of renal disease) are much less likely to heal, especially in the kidney. Twenty years ago the surgical treatment of a solitary cavity in the lung which resisted lesser measures might have been total thoracoplasty; now it would probably be segmental resection. A solitary caseocavernous lesion of a kidney is still usually treated by total nephrectomy; and Semb considers this unjustifiable. The results of partial nephrectomy in his hands are, from the point of view of cure, at least as good as those of total nephrectomy. There is one reservation: none of his cases has yet been followed for more than 5 years, but even so the results are excellent. There have been no deaths, and the general condition of all the patients is satisfactory; in nearly 90% the urine remains free from evidence of tuberculous infection. In only 2 cases did the function of the partially resected kidney fail; and the series includes 13 cases in which part of the only remaining kidney was removed. These results at least justify a thorough trial of this method. (Lancet, June 27, 1953)

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Ultrasonic Therapy

At the International Congress on Ultrasonics held in Germany in 1949, 48 disease conditions were discussed as appropriate for ultrasonic therapy. This indicates the extent to which this form of treatment has been employed by certain clinicians. During the past 5 years a large number of clinical reports, from European and English clinics, claim excellent results from ultrasonic therapy in a large and diverse group of diseases. Fifty percent of the patients who received ultrasonic therapy were reported as either markedly improved or completely cured. The majority of these reports are unconvincing, because they lack evidence of any truly critical or scientific evaluation of ultrasonic therapy. For the most part the observations have been uncontrolled and the conclusions have been based largely on clinical impressions.

The medical profession of this country has been much more conservative and slower to wholeheartedly embrace ultrasonic therapy. It would seem that the experimental work carried on in American institutions and clinics, which has indicated the contraindications and possible dangers of ultrasonic therapy, has exerted a deterrent effect on the widespread clinical use of this type of energy. Nevertheless, as more and more physicians in this country have become interested in this treatment, there has developed a growing belief that ultrasonics possess definite therapeutic possibilities.

It is admittedly difficult to evaluate the results of ultrasonic therapy. This is so because the conditions which lend themselves best to such treatment, are, for the most part, of uncertain etiology, run long and variable courses subject to spontaneous exacerbations and remissions, are self limited, and often are favorably influenced by a variety of treatments. Furthermore, many patients while receiving ultrasonic therapy are concurrently under other forms of treatment. In order to establish the value of ultrasound as a therapeutic tool, more controlled clinical observations are needed. This can be accomplished by comparing the results of ultrasonic therapy in any given condition with those obtained with older and better recognized forms of physical treatment.

In this country such a controlled study has been carried on by Friedland and associates on 141 patients with conditions generally regarded as suitable for ultrasonic therapy. Control groups were given the orthodox forms of treatment and the results compared. Friedland and his group conclude that ultrasonic radiation has an analgesic effect which is no greater than that produced by other physical agents. They observed no detrimental effects in 1,477 applications. They regard ultrasonic therapy as local treatment which cannot influence the underlying cause of disease and is without specific virtue.

A variety of conditions have been subjected to ultrasonic therapy. Chief indications for its use are the arthritides and allied rheumatoid con-

ditions including myositis and fibrositis, and disorders of peripheral nerves such as neuritis, especially that involving the sciatic nerve, neuralgia, causalgia, coccygodynia, and pain in phantom limbs.

The results obtained from ultrasonic treatment are due largely to the thermal effects of this agent. Ultrasound definitely produces certain non-thermal effects. These are still poorly understood. There is no conclusive evidence that they bring about therapeutic results. The heat produced by sound waves is more penetrating and can be beamed with greater accuracy than other types of heat.

Ultrasonic energy when applied to living tissue in sufficient dosage can produce irreversible destructive changes. Because of these potential risks, there are definite contraindications to using ultrasonics.

The different technics developed for the therapeutic application of sound waves should be understood and followed. Careful consideration must be given to dosage. Ultrasonic treatment should be administered only by experienced personnel.

Ultrasonic therapy has been used in a wide range of diseases. Its greatest value is in the treatment of the arthritides and various rheumatic conditions, disorders of peripheral nerves, and possibly vasospastic peripheral vascular diseases and pyogenic infections of soft parts.

The cures and marked improvement in many other conditions reported by enthusiastic advocates of sound therapy have not been confirmed by the majority of other observers.

Available evidence indicates that ultrasonic radiation is a local therapy without specific biologic properties, capable of producing analgesic effects without influencing the underlying causes. (Postgraduate Medicine, July 1953, G. M. Piersol)

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Facsimile Abdomen

In teaching advanced emergency first aid as a part of the program in disaster training at the U. S. Naval Dental School, Bethesda, Md., it is necessary to teach procedures in clamping and tying blood vessels, suturing, and bandaging. These procedures had previously been demonstrated and practiced on a piece of felt secured to a board. It is needless to point out the inadequacy of this device as a training aid.

To provide a better, more lifelike training aid, a facsimile abdomen complete with simulated skin, adipose tissue, and blood vessels was constructed. The "skin" is made from a vinyl resin, the "adipose tissue" from foam rubber, the "arteries" and "veins" from latex tubing, and the "blood" from vegetable dye and water.

The separate items are assembled on a plywood base. A shell of formica and plywood covers the activating motor used to create a "pulse" in the "arteries."

Incisions are started at the far end of the facsimile abdomen and as the "arteries" and "veins" are clamped and tied and the "wound" sutured, the next incision is made toward the motor side of the facsimile abdomen. Once the entire area has been used, a new, previously assembled facsimile abdomen of plastic and rubber is attached in position. (Research brochure, U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md., May 1953, J. V. Niiranen and P. H. Tanner)

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Appointment of Reserve Hospital Corpsmen

Fifteen enlisted chief and first class hospital corpsmen on active duty have been appointed during the month of July, in the Administration and Supply Section of the Medical Service Corps, U. S. Naval Reserve. The successful candidates under this program were selected under the program established by BuPers Instruction 1120. 10 of 10 Nov 1952 and attended a 2-months' course of indoctrination at the Officer Candidate School, Newport, R. I.

Upon completion of this course they were appointed in the grade of Ensign and ordered to the Naval School of Hospital Administration, Bethesda, for a 2-months' course. After completion of the course at the Naval School of Hospital Administration, they will be ordered to naval hospitals for duty and further on-the-job training. This is the first group of Reserve hospital corpsmen who have been appointed in the Administration and Supply Section of the Medical Service Corps since the establishment of that staff corps in 1947. (ResDiv, BuMed)

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Training Courses for Naval Reserve Male Medical Personnel, Second Quarter Fiscal Year 1954

Training courses of 2 weeks' duration for Naval Reserve male medical personnel available during the second quarter, Fiscal Year 1954, are as follows:

Insect and Rodent Control. A class is scheduled to convene at the U. S. Naval Air Station, Jacksonville, Fla., on the first and third Wednesday of each month. The 1st, 3rd, 4th, 5th, 6th, 8th, and 9th Naval Districts have been assigned a quota for this course during the quarter.

Malariology and Insect Control. A course is scheduled to be conducted at the U. S. Naval Air Station, Alameda, Calif., for the benefit of male medical personnel residing in the 11th, 12th, and 13th Naval Districts. Convening dates may be obtained from the Commanding Officer, Naval Air Station, Alameda, Calif.

Amphibious Medicine. A course is scheduled to convene at the U. S. Naval Amphibious Base, Little Creek, Va., on 5 Oct 1953. Quotas have been assigned the 1st, 3rd, 4th, 6th, 8th, and 9th Naval Districts.

Field Medicine. A course is scheduled to be conducted at Camp Joseph H. Pendleton, Oceanside, Calif., on 12 Oct 1953 for the benefit of Naval Reserve male medical personnel residing in the 11th, 12th, and 13th Naval Districts.

These courses have been designed to provide active duty for training, information, and recommended techniques to be employed in specialized fields closely related to naval medicine which are not readily available to such personnel in their civilian pursuits, but invaluable to their respective functions in the event of mobilization. Eligible personnel who desire to attend these courses in a pay status should submit their request to the Commandant of their home naval district at the earliest practicable date. Attention is invited to the fact that attendance at these courses WILL NOT in any way increase the Reservist's vulnerability for orders to extended active duty. (ResDiv, BuMed)

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Frigid Zone Medical and Dental Practice (NavPers 10856)

The Medical Department correspondence course "Frigid Zone Medical and Dental Practice" is now available. Application for enrollment in this course should be made on form NavPers 992, and forwarded via official channels to the Correspondence Training Division, U. S. Naval Medical School, NNMC, Bethesda 14, Md.

This course is designed to provide officers and enlisted personnel of the Navy Medical Department with knowledge necessary for the care of the sick and wounded under conditions of snow and extreme cold. Knowledge of the difficulties encountered in Frigid Zone operations is essential to provide successful medical and dental service under such conditions.

The complete course consists of 6 assignments of the objective type and is evaluated at 12 points for purposes of Naval Reserve promotion and nondisability retirement. (NavMedSch, NNMC, Bethesda, Md.)

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From the Note Book

1. Doctor Howard T. Karsner, Medical Research Advisor to the Surgeon General of the Navy, has been appointed Chairman of the Advisory Medical Board of the Leonard Wood Memorial (the American Leprosy Foundation). In addition to this appointment Dr. Karsner was recently appointed as a member of the Committee on Medical Research of the American Trudeau Society, which is the medical section of the National Tuberculosis Association. Also, he was reappointed as Chairman of the Committee on Pathology of the Division of Medical Sciences, National Research Council. (TIO, BuMed)

2. A revised immunization form required for international travel is now available. The old certificate will be acceptable in international travel until the expiration date of recorded vaccinations. The new form, entitled International Certificates of Vaccination provides travelers with a record of compliance with vaccination requirements acceptable to all nations governed by the International Sanitary Regulations now in effect. It is written in both English and French, but entries may be made in any language. The form contains vaccination certificates for smallpox, yellow fever, and cholera, and space to record other immunizations. (P. H. S, Dept. H. E. W.)

3. There has been nothing developed to date in the field of medicine which closely approximates the beneficial effects of the abrasion treatment for superficial scarring of the skin by such diseases as acne and smallpox. In trained hands and in properly selected cases, this treatment can give from 20 to 70% improvement in appearance with a minimum of discomfort and inconvenience. (Ohio State M. J., July 1953, O. C. Blackledge)

4. Renal angiography has proved helpful in appraisal of function of the diseased kidney, differentiation between cortical tumors and cystic disease, renal anomalies, congenital hypoplasia, chronic pyelonephritis, upper abdominal masses, essential hematuria, ureteral obstruction, and hypertension of doubtful etiology. (J. Urol., July 1953, M. Harvard)

5. A review of 14 cases of diospyrobezoar with an analysis of 46 cases collected from the literature appears in Archives of Surgery, June 1953, C. M. O'Leary.

6. A series of 90 determinations of free gastric hydrochloric acid was made on 88 patients by simultaneous intubation and tubeless methods. The results indicated excellent agreement between the 2 methods. The tubeless method is recommended for the routine qualitative determination of free HCl. (New England J. Med., July 9, 1953, F. P. Becker, M. Maslon, See U. S. Navy Medical News Letter, Vol. 21, No. 2)

7. Bacterial pneumonia is a serious disease particularly in patients more than 50 years of age and in those having chronic illnesses. Generally penicillin is the drug of choice for the treatment of this disease. (Postgraduate Medicine, July 1953, H. F. Flippin)

8. The incidence of hemolytic streptococci in the patients of a Hospital School for rheumatic children was determined over a year's period. In the total of 1,644 throat and 1,644 nasal swabs, Group A strains were isolated from 20 throats and 2 nasal swabs. Eighty-seven strains of Lancefield's groups C and G and 54 strains of groups other than A, C, or G were isolated. (J. Hyg., June 1953, S. A. Doxiadis and S. M. Stewart, Sheffield, England)

9. A discussion of the effects of anemia on the normal and the diseased heart and its effects on respiration and the metabolism of the tissues appears in Circulation, July 1953, W. B. Porter and G. W. James III.

10. Arsenic trioxide is utilized in a wide variety of industrial processes. Agricultural insecticides account for about half of the amount used, but substantial amounts are used in weed killers, the glass industry, cattle dips, and dyestuffs. (Industrial Medicine & Surgery, July 1953, S. S. Pinto and C. M. McGill)

11. The complications resulting from the use of pneumoperitoneum in a sanatorium group of patients are discussed in Diseases of the Chest, July 1953, I. D. Bobrowitz.

12. The use of intravenous saccharated oxide of iron in obstetrics and gynecology is discussed in the American Journal of Obstetrics & Gynecology, July 1953, G. E. Evans and R. Waltman.

13. The following naval medical officers have recently been certified in their specialties by American Boards: CAPT J. L. Hatch (MC) USN, American Board of Radiology, and LTJG J. M. Edmiston (MC) USNR, American Board of Surgery. (TIO, BuMed)

14. The Nation's municipalities have invested about $31 million in water pollution control projects during the first quarter of 1953. Contracts have been awarded for 119 sewage treatment projects designed to keep harmful wastes out of rivers, lakes, and other waterways. Of these, 61 are for construction of new sewage treatment plants, 48 for enlargement or improvement of existing plants, and 10 for construction of interceptor sewers. (P. H. S., Dept. H. E. W.)

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BUMED NOTICE 5215 2 July 1953

From: Chief, Bureau of Medicine and Surgery
Chief of Naval Personnel
Commandant of the Marine Corps
To: All Ships and Stations

Subj: Joint letters; cancellation of several

The following BuMed-BuPers-MarCorps joint letters are cancelled: BuMed C/L 50-91, 51-24, and 51-153.

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BUMED INSTRUCTION 6120.6 13 July 1953

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Physical examination prior to separation from the active list

Ref: (a) Section 402(a) and 402(b), Title IV, Career Compensation Act of 1949
(b) Articles 15-48 and 15-49, ManMedDept
(c) Article 18-14, ManMedDept

Encl: (1) Sample "Statement Concerning the Finding of the Board of Medical Survey"

This instruction provides information for effecting the policy of the Secretary of the Navy as set forth below.
"The Secretary of the Navy has directed that all personnel of the Naval Service to be made aware of the possibility of being denied any benefits provided by reference (a) by reason of not rebutting, under certain circumstances, a finding that they are fit for duty."

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BUMED NOTICE 5213 16 July 1953

From: Chief, Bureau of Medicine and Surgery
To: Activities Under Management Control of BuMed

Subj: Recurring reports; review of

Encl: (1) Criteria governing approved reports

This notice directs an intensive review of all recurring reports required and prepared by addressees.

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BUMED INSTRUCTION 6710.7 17 July 1953

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical Corps Personnel Regularly Assigned

Subj: Yellow fever vaccine; procurement of

Ref: (a) BuMed Inst. 4220.2
(b) BuMed Inst. 6230.1
(c) Art. 22-25, ManMedDept

This instruction sets forth the procedures to be used in the procurement of yellow fever vaccine. BuMed C/L 52-4 is cancelled.

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BUMED INSTRUCTION 6200.5 17 July 1953

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Carbon tetrachloride and other chlorinated hydrocarbons

This instruction promulgates measures to prevent death and illness caused by the improper use of carbon tetrachloride and other chlorinated industrial products. BuMed C/L 43-1 and 44-145 are cancelled.

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BUMED INSTRUCTION 7302.1A 17 July 1953

From: Chief, Bureau of Medicine and Surgery
To: All Stations

Subj: Temporary duty travel costs of Air Force military patients in naval facilities

Ref: (a) USAF ltr AFCSF-34.3 of 6 July 1953

This instruction is for the information and guidance of naval facilities transferring Air Force military patients during fiscal year 1954. BuMed Inst. 7302.1 is cancelled.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Navy Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps, and old and new addresses.

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PREVENTIVE MEDICINE SECTION

General Sanitation

Standardization of Techniques of Milk Analysis

A continuing effort is being made in the Fifth Naval District to improve the preventive medicine laboratory services, and the first step has been the standardization of techniques associated with milk analyses. The need for such standardization became clear when a survey conducted early in 1951 revealed considerable deviation from the American Public Health Association's Standard Methods for the Examination of Dairy Products in every laboratory of the District testing milk. In some instances completely unreliable tests were being performed and the results used as a basis for sanitary control. As a result, there were some instances of unjustified action being taken toward dairies and other instances of failure to take action when it was needed.

One of the first steps taken to correct this situation was the promulgation of an outline of standard methods to be followed in milk laboratories.

These methods were taken from the Ninth Edition of "Standard Methods for the Examination of Dairy Products," and consisted of tests that were easy to perform, required as little equipment as possible, and presented an accurate picture of the product tested.

The milk-sanitation laboratory of Preventive Medicine Unit No. 2 in Norfolk was designated as the control laboratory for the District, because it was equipped to perform such nonroutine tests as detection of watered milk and the addition of preservatives, antibiotics, et cetera, which the routine control laboratory could not do. It was also to serve as "referee" laboratory.

Recently Preventive Medicine Unit No. 2 had its laboratory inspected and certified by the U. S. Public Health Service. This inspection was requested to insure that all methods and techniques were completely in accordance with Standard Methods for the Examination of Dairy Products, so that Preventive Medicine Unit No. 2 could serve as the certifying agency for personnel and laboratories of the Fifth Naval District engaged in milk analyses. The laboratory personnel also receive a short indoctrination in Standard Methods at the Unit.

When the survey was completed the certifying officer, Dr. L. A. Black of the USPHS Environmental Health Center, commended the Unit and made the following statement in his report:

"Cdr. (C. P.) Jeffers and LTJG (L. R.) Kaufman are to be commended for supporting laboratory work of a high level of accuracy, and for providing Fifth Naval District laboratories with condensed outlines of Standard Methods procedures. Similarly the personnel assigned to the milk laboratory (HMC) G. C. Gamble and (HMC) H. A. McGowan, should be commended for their proficiency in the bacteriological analysis of milk and their adherence to Standard Methods procedures."

* * * * * *

Correction of Improper Connections to Steam Tables and Kettles

Vol. 21, No. 9 of the News Letter carried information from BuShips Instruction 9340.4 on the improvement of maintenance and the reduction of health hazards of dishwashing machines. BuShips Instruction 9340.9, issued 24 June 1953, which has as its purpose the correction of improper connections to steam tables and kettles, will be of interest to preventive medicine personnel charged with the responsibility for sanitary food service and potability of water. The instruction lists improper connections which have been reported and tells how each type should be corrected by forces afloat:

"a. Fresh water

"(1) Installation--Commander Training Command, U.S. Pacific Fleet has informed the Bureau that in 90% of the vessels inspected by that Command, the fresh water inlet to the steam tables was located either in the basin bottom or half way between the bottom and the overflow level. Inasmuch as this arrangement does not provide for an air space between the supply water inlet and the steam table as required by chapter 6 of the Manual of Naval Hygiene and Sanitation, Vol. 1, NavMed P-126, 1949, the possibility of contamination of the ship's fresh water (potable) system by back siphoning through an open or leaking inlet valve exists in the event the pressure in this system is lost.

"(2) Correction--Disconnect and blank off the direct fresh water supply connections to the steam table water pans. Rearrange the fresh water connection to terminate in a swing faucet located above the top of the table as illustrated in figure 6-5, page 154 of Manual of Naval Hygiene and Sanitation. The faucet should be so located that it can be swung over one of the openings in the top of the table for filling the water pan.

"b. Waste Drain Line

"(1) Installation--Where the waste drain line from a steam table is connected directly to a drain system, the steam table and its contents may be contaminated by drainage backed up into the water basin or by odors from the directly connected system.

"(2) Correction--Rearrange the waste drains from steam table water pans which are permanently connected to a drain system to discharge through an air gap into a funnel or drain well as illustrated in figure 6-5, page 154 of Manual of Naval Hygiene and Sanitation. The funnel or drain well outlets should be permanently connected either to the drain systems to which the waste drain was originally connected or to a similar drain system more suitably located as the conditions may warrant.

"c. Vapor Exhaust Drain Line

"(1) Installation--Reports have also been received concerning the existence of an unsatisfactory condition in regard to the drain lines from the steam kettle vapor exhaust lines. In some vessels this drain line was permanently connected to the deck drain located in the same space. When attempting to blow the deck drain line clear of an obstruction, the steam pressure was relieved into the steam kettles thereby causing contamination of the kettles and their contents.

"(2) Correction--Rearrange the drain lines from steam kettle vapor exhaust lines which are permanently connected to a deck drain system to discharge through an air gap into a funnel or drain well. Connect the funnel or drain well outlets as outlined in subparagraph (b2) above."

Industrial Medicine

Correlation Between Urinary Lead Concentration and Urinary Porphyrin Determinations

With the appearance in the literature of methods and comments concerning the use of urinary prophyrin determinations as a screening test for lead absorption in exposed personnel, it was decided at one of the naval shipyards to carry out simultaneous urinary lead and porphyrin determinations in an effort to correlate the two, with the eventual objective of eliminating the urine lead determination except in cases of excessive porphyrin excretion. A total of 686 simultaneous determinations were made over a period of approximately 2 years and 8 months.

Of the 686 persons examined, 625 exhibited normal urinary lead and porphyrin concentrations. Eighteen showed normal urinary porphyrin concentrations but had urinary lead concentrations between 0.10 and 0.15 mg. per liter. This urinary lead concentration is considered to be borderline at that activity. Eleven persons with such borderline concentrations gave positive tests for urinary porphyrin excretion. Twenty-three with urinary lead within the normal range gave positive urinary porphyrin tests. Eight persons with urinary lead concentrations of 0.15 mg. per liter or more gave positive urinary porphyrin tests. One person with a urinary lead concentration of over 0.15 mg. per liter gave a normal urinary porphyrin test, but a recheck of the urine lead concentration showed 0.06 mg. per liter, indicating that the initial sample had been contaminated.

It can be seen from these figures that of the persons having urinary lead concentrations between 0.10 and 0.15 mg. per liter (borderline cases), porphyrin determinations alone would have picked up 38%. Of the persons having urinary lead concentrations of over 0.15 mg. per liter, urinary porphyrins alone would have picked up 100%. "False positives" were given by the porphyrin determinations in slightly over 3% of the total. If urinary porphyrin tests had been used alone, it would have reduced the number of urinary lead determinations to 43, resulting in a considerable economy. All persons with excessive urinary lead excretions would have been detected by porphyrins alone.

The methods used for these determinations were as follows: Urinary lead concentrations were determined by a local modification of a method described by Cholak, Hubbard, and Burkey in an article which appeared in the Journal of Industrial Hygiene and Toxicology, Vol. 30, No. 1. The urinary porphyrins were determined by a roughly quantitative test in which 5 ml. of urine were placed in a test tube, and 3 drops of 3% hydrogen peroxide and 6 drops of glacial acetic acid were added. Five milliliters of ethyl ether were added, and the tube was then stoppered and shaken for approximately 30 seconds. After separation of the two layers, the ether layer was inspected

by means of an ultraviolet lamp. Blue or green fluorescence was recorded as normal; a very faint pink tinge as trace; a definite pink tinge as 1 plus; and so on up to a definite orange red, which was recorded as 4 plus.

As a result of this study it was concluded that the roughly quantitative urinary porphyrin test is an effective, rapid, and economical method of screening large numbers of exposed individuals for lead absorption and it has therefore been adopted as such by that activity. Urinary lead determinations will continue to be run on persons showing high excretions of urinary porphyrin. It is believed that by using this quick method, coverage of exposed personnel can be increased but the time expended will be reduced.

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Automobile Safety Program

One form of preventive medicine is medical collaboration to aid in the reduction of injuries and deaths which result from automobile accidents. An outstanding example of an effective, comprehensive, and sustained safety program is the one that has been carried on recently at the Naval Air Station at Memphis, Tenn., resulting in an estimated saving in 1952 of approximately $47,000 in hospital costs, training costs, and automobile damage, to say nothing of dispensary costs, non-Navy injury costs, and indefinable values in human life and suffering.

In addition to its part in the continuing Navy-wide program to prevent accidents involving Government vehicles, the Station has recently laid special stress on privately owned vehicles. From the "Three E's" approach--education, engineering, and enforcement--of the National Safety Council and other organizations, the Air Station has chosen education for emphasis. The current program was initiated in February 1952 by Captain Joseph M. Carson, USN, then Commanding Officer, with the appointment of an "Automobile Accident Safety Board." This Board is headed by Captain George B. Ribble (MC) USN, Senior Medical Officer and Flight Surgeon of the Station, and includes in its membership officer, enlisted, and civilian personnel; a representative of the Navy hospital located nearby; a statistician; and a psychologist. The Board, which studies the psychological and statistical angles as well as the mechanical and physical, amassed "statistical justification that the human element is the predominant factor in well over 90% of all automobile accidents involving personnel stationed at the Memphis Naval Air Station." The Board "decided to approach the problems of automobile accident reduction from the standpoint of preventive medicine, treating accident-proneness in the same category as venereal disease or aviation accidents arising from poor mental adaptability or physiological instability."

A number of the safety measures taken at the Station are described in the article, and some of them are recounted here as a stimulus to ideas for adoption at other activities. Additional details are given in the article.

1. Contests were sponsored for suggestions from Station personnel, with bonds awarded as prizes.

2. A Navy safety patrol car was sent out on the highway between 1600 and 2000 every day to keep tabs on Navy drivers; those found violating traffic laws were reported, and the Air Station traffic court recommended disciplinary measures. This patrol, which was the chief suggestion of one of the contest winners, is still operating.

3. No driving or parking privileges on board the Station are granted private vehicles until they pass a rigid safety inspection by the Station Public Works Transportation Division.

4. Weekly safety talks, supplemented by films and slides, are given all new students at schools of the Naval Air Technical Training Center based at the Station. In general, these students are in the age group of 18 to 25 years, "which statistics demonstrate to be the most accident-prone single category of motorists."

5. A Navy school for safe driving was inaugurated for drivers of Government vehicles.

6. A midnight curfew was set for students Monday through Friday.

7. A radius of 100 miles was set as the limit for off-station travel for liberty of 72 hours or less.

8. Bus service on the Station was increased during heavy traffic hours.

9. Special traffic details were assigned during the evening rush hours.

10. Increased cooperation was obtained from local police and traffic authorities.

11. To encourage base personnel to remain at the Station instead of driving to town, greater emphasis was placed on intramural sports and social activities at the base.

12. A cartoon character named "Jasper Catastropher" was created and used in humorous items in the Station newspaper and on bumper strips. He became so popular that he will also be used in a cartoon strip in a city newspaper and on radio and television programs. The Station paper also carried weekly safety items, accident reports, and traffic court results.

13. Strong liaison was developed with the Memphis Junior Chamber of Commerce and with newspapers and radio and television stations, who are cooperating enthusiastically.

14. The Automobile Accident Safety Board made extensive studies of accidents occurring in 1951 and 1952 and compared results in the 2 years with each other and with the respective safety programs of these years. Though the registration of privately owned automobiles on the base increased 50.3% in 1952 over 1951, accidents involving both Government and private vehicles increased at a rate of only 27.6%. The estimate mentioned earlier of $47,000 saved was "based on a computed savings of 72 accidents which did not occur, although they were expected in proportion to the increased registration of private automobiles."

The author points out that "most of these measures were not recommended and initiated until after the Automobile Accident Safety Board had a chance to get organized and in full swing. It is felt that had these measures been instituted at the beginning of 1952, rather than in the last half of that calendar year, the accident rate would have dropped even more than it did, and total accidents would not have increased as much." (OIR Safety Review, May 1953, LT J.S. Weiss, USN)

Tuberculosis Control

Classification of Tuberculosis

The June 1953 Bulletin of the National Tuberculosis Association reports as follows on a recent statement of the Committee on Diagnostic Standards of the American Trudeau Society which clarifies questions arising in connection with the 1950 edition of Diagnostic Standards:

"The Committee points out that the 1950 Standards did not discuss the possible effect of chemotherapy and that its use may mask or throw doubt on the exact bacteriological status of secretions and excretions obtained from a patient.

"In this regard, the Committee quotes a statement issued by the ATS Committee on Therapy, appearing in the January 1952 issue of The American Review of Tuberculosis, which suggested that a period of 2 or 3 months should elapse after chemotherapy has been discontinued before a final evaluation of the activity of the disease, based on cultures, is made.

"When a patient is receiving or has recently received chemotherapy, the Committee on Diagnostic Standards suggests that a provisional classification may be made. However, it emphasizes, the word 'chemotherapy' should be added in parentheses to the classification. For example, inactive (8 months) (chemotherapy) IV; arrested (4 months) (chemotherapy) II; activity undetermined (6 months) (chemotherapy) I.

"Referring to some of the other questions raised, the Committee refers readers of Standards to the book's introductory section, written by Dr. Esmond R. Long, director of medical research, National Tuberculosis Association, particularly calling to their attention the last paragraph, which follows:

" 'Needless to say, Diagnostic Standards cannot be looked upon as a set of rules. Rather, as stated in the introduction to the last edition, it is a statement of principles and a general guide to be used with such modifications in practice as seem essential. It should serve to promote common understanding and prevent the confusion and misunderstanding in terms and concepts that would prevail if there were no such document. ' "

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A New Drug Emphasizes Old Needs

The proper relationship of isoniazid (isonicotinic acid hydrazide) to other aspects of tuberculosis control has been the subject of comment from various professional sources. Some of these observations, which appear in the journals from time to time, are compiled here because they continue to be relevant.

The use of isoniazid for tuberculosis has understandably aroused much interest in the public mind, but the professional societies have been aware that there has not been sufficient clinical trial of this drug. The American Trudeau Society has stated, "The introduction of a new drug in the therapy of tuberculosis is likely to raise more questions for a few years than it will answer. There is no knowledge at the present time that isonicotinic acid hydrazide or its isopropyl derivative will accomplish more than has been accomplished with streptomycin and PAS. It may prove to be an additional drug of great value. It may be years before its exact contribution to the therapy of tuberculosis can be assessed accurately."

Dr. Robert J. Anderson wrote in Public Health Reports: "Isoniazid brought tuberculosis dramatically to the attention of the general public, many of whom believed the disease had been vanquished years ago. I think we would be wise to make capital of the renewed interest in tuberculosis which announcement of the drug has stimulated.....

"The assertion is sometimes made that tuberculosis is a disappearing disease in this country. In large part, such views are based on the trend of mortality, which has been dramatically downward. Nevertheless, tuberculosis remains the seventh leading cause of death and the only communicable disease among the first 10 causes of death. In the age group 15 to 34, tuberculosis is the leading cause of death from disease. From the standpoint of mortality then, the 'disappearance' of tuberculosis seems to have been more advertised than achieved."

Morbidity figures cited in the article point up the magnitude of the control problem. It is estimated that 1,200,000 people in this country have tuberculosis. Of the 500,000 known by their health departments to have the disease, 250,000 are active cases, but only 105,000 of these are hospitalized. Of the 145,000 not hospitalized, 40,000 have a positive sputum, and additional beds are urgently needed for them. In about 30,000 people the disease appears to be progressing, according to their x-rays, even though their latest sputum tests were negative. The remaining 75,000 known to be active tuberculosis cases have not reported a sputum examination for a year. It is estimated that 700,000 have the disease without the knowledge of any health department.

"Whether mortality or morbidity is used as a measure, tuberculosis is still far from controlled in the United States, despite all of the efforts directed against it by the health professions. To deal with a public health problem of this magnitude, the Nation obviously needs more tuberculosis

beds, more clinics and equipment, more and better-trained health department personnel. The development of improved therapeutic methods emphasizes these pressing needs."

Dr. Leon Sternfeld, writing on isoniazid in the Massachusetts Department of Public Health publication, Commonhealth, states: "The new drug does not cure tuberculosis; the most it can be expected to do is stop the progress of the disease. The drug can only stop the bacteria from multiplying and it cannot repair destroyed tissues. It will not wipe out the need for tuberculosis hospitals or the need for finding thousands of people who don't know they have tuberculosis. Bed rest, especially away from home to prevent spreading this infection, will still be important, as will medical supervision, good diet, other drugs, surgery, nursing and rehabilitation....."

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