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Survival of Transfused Red Cells Previously Stored for Long Periods in the Frozen State

Red cells in 15% glycerol can be frozen and thawed with the production of only slight hemolysis. The glycerol can be removed from such cells by dialysis, and the recovered red cells can then be used for transfusion. Human red cells, recovered in this way after having been kept at —79° C. for 2 hours, survive normally in the recipient after transfusion. Red cells stored at —79° C. for up to 8 months appear normal, and it is shown that such red cells survive normally after transfusion.

In a study of the behavior of red cells at temperatures between 0° C. and —79° C. it was found that a considerable proportion of the red cells could be recovered after storage in 15% glycerol at —15° C. for several weeks. The percentage of red cells which can be recovered after storage at —15° C. is much lower than after storage at —79° C. Nevertheless transfusion experiments were made to determine whether —15° C. is a sufficiently low storage temperature to prevent those changes (presumably due to metabolic activity) which shorten the survival of the red cell after transfusion. The results show that red cells recovered after storage at —15° C. for 80 days have an approximately normal survival in vivo.

Ten patients were transfused, each receiving both stored (previously frozen) and fresh (control) red cells. All the patients belonged to group A (Rh positive) and were M-positive. All but one of the patients were women, and most of them had iron-deficiency anemia connected with pregnancy.

No febrile reactions were noted after the transfusions. One of the patients developed transient mild urticaria, but in the remainder no untoward effects were observed.

At present there are 2 main obstacles to be overcome before storage of red cells in the frozen state can be of practical value in the field of blood transfusion. First, a simpler and less time-consuming method for the removal of glycerol from the red cells must be devised, because the technique used in these studies is too cumbersome for general use. The process recently described by Lovelock may be the answer to this problem. Secondly, a higher recovery of red cells after storage at —79° C. must be attained before the expense of storage at this low temperature can be justified. At present, after storage at —79° C. for several months the recovery may be as low as 50%, and is even lower after storage at —15° C. However, recent work suggests that it may be possible to improve these yields considerably.

The most important conclusion from the present work is that red cells recovered after storage at low temperatures have a normal post-transfusion survival. Therefore, if the number of cells destroyed by physical processes can be reduced, it may become worth-while to store red cells in the frozen state for long periods. (Lancet, Sept. 13, 1952, P. L. Mollison, H. A. Sloviter, and H. Chaplin, Jr.)

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Vaccination by Scarification With a Combined 17D Yellow Fever and Vaccinia Vaccine

The immunizing power of 17D yellow fever vaccine administered by scarification has been established by several experiments. Hahn has claimed satisfactory results with a combined 17D yellow fever-vaccinia vaccine administered by scarification. This article reports the results of a small study made in Uganda, Africa with a combined vaccine of a type similar to that employed by Hahn.

The yellow fever vaccine used was of batch 1760 prepared in the laboratories of the International Health Division of the Rockefeller Foundation, New York. Each ampule of vaccine contained at least 3.3×10^6 mouse intracerebral LD_{50} of virus at the time of this study.

The vaccinia vaccine used was the standard calf lymph prepared by The Medical Research Laboratory, Nairobi, Kenya. It was suspended in 50% glycerol with phenol in a final concentration of 0.5%. Titrations of the lymph on the skin of rabbits gave semi-confluent to heavy confluent takes at dilutions of 1:10,000, no higher dilutions being tested.

The preparation of the gum arabic solution employed followed the method used at the Pasteur Institute, Dakar, except that powdered gum acacia B. P. Elect. was used instead of gum arabic of Senegal. Gum arabic solutions were used to suspend 17D yellow fever virus in vaccination experiments using a scarification technique in which 17D vaccine alone was used, and have been used extensively to suspend both neurotropic yellow fever vaccine virus alone and combined with smallpox vaccine. There is no evidence that gum arabic has any deleterious effect on yellow fever virus in the concentration and under the conditions of the human vaccination experiment described.

Blood samples were taken from 50 African adult female patients in the Mulago Mental Hospital, Kampala, Uganda. Their names were recorded and their previous smallpox vaccination state was recorded as the number of vaccination scars (1, 2, et cetera) and the extent of the scars (+ or + +).

The contents of 1 ampule of yellow fever vaccine were rehydrated in a mixture of 1.0 ml. of the gum arabic solution and 1.0 ml. of calf lymph, and thoroughly mixed with a mortar and pestle. 0.02 ml. of this mixture was delivered from a tuberculin syringe as 2 drops onto the deltoid region of the arm of each of the first 25 women (group 1). Two scarifications each approximately 1 cm. long were made through each drop. The patients were kept in the shade until the vaccine preparations had dried and the vaccinated area was then covered with a piece of gauze. The gauze dressing was used in order to discourage any immediate rubbing or washing off of the vaccine.

Each of the second group of 25 patients (group 2) was inoculated subcutaneously with 0.5 ml. of the contents of 1 ampule of batch 1760 vaccine

suspended in 50 ml. of distilled water, and each was then immediately vaccinated at the same site by scarification, following the method described above, with 0.02 ml. of a mixture of 1.0 ml. of calf lymph and 1.0 ml. of the gum arabic solution.

The patients were under daily medical supervision and were examined by the authors 2, 8, and 28 days after vaccination. On the first 2 examinations, the patients were called at random and the results of the vaccinia vaccination were read and recorded as primary, vaccinoid, or immune reactions. On the twenty-eighth day after vaccination, all patients with the exception of 4 who had been discharged, were again bled. No general reaction to the vaccinations was observed in any of the patients.

Fourteen developed both primary vaccinia reactions and positive yellow fever sera.

There was no significant difference in the response of the 2 groups to the vaccina vaccine. In the group inoculated with the mixed vaccine, of those whose sera contained no demonstrable yellow fever antibodies prior to vaccination, 66.6% had developed antibodies when their sera were tested 28 days later. In the other group 100% had developed antibodies by the twenty-eighth day after vaccination. (Journal of Hygiene, Sept. 1952, G. W. A. Dick and E. S. Horgan, Entebbe, Uganda)

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Therapeutic Application of Heat: Its Uses and Abuses

No therapeutic procedure is more commonly employed in either a department of physical medicine and rehabilitation in a general hospital or the home than the application of heat in some form. Numerous methods are available for the application of thermal stimuli to living human beings, heat, when it is employed therapeutically, being derived from several sources of energy — radiant, electric, or sonic.

Changes induced by heat are complex and still poorly understood. Heat in any form when applied locally to an area of the body surface causes an increased rate of blood flow that is due to vasodilatation. This results in a rise in capillary pressure associated with an increased rate of transfer of fluid from the blood to the tissues, accelerated local metabolic activity, and an increase in phagocytosis. The greatest rise of temperature occurs at the point of contact, where the energy exchange is greatest. After a sufficiently long period of contact with the heat locally, deeper structures, as the result of conduction, show a significant temperature rise. Excessive local temperature is prevented by the distribution of heat throughout the body by increased blood flow.

When a person is subjected to general heating of the body the most important effect is the production of fever. This results from a disturbance of the balance between the input of heat and its dissipation. A rise of body

temperature in sufficient degree and duration is accompanied by sweating, increased respiratory and circulatory rates, alkalosis due to dehydration and hyperventilation, and increased metabolism.

It has long been known that the local application of heat is effective for the relief of pain, particularly that of neuromuscular origin and in arthritic conditions. The relief of pain in acute poliomyelitis by the use of hot packs is another example of this effect. How heat relieves pain is still not clearly understood. Hot packs, baths, and various forms of radiant heat are widely used to bring about general relaxation and relieve muscular spasm. Therefore, heat is frequently applied before massage, manipulation, or therapeutic exercises are undertaken. In the management of inflammatory conditions of muscles and fascia the use of radiant heat and hot compresses is almost routine.

In suitable cases of chronic arthritis appropriate forms of heat are most helpful. The methods most generally used are baking and other forms of infrared energy, as well as hot compresses, but of even greater help are whirlpool baths and paraffin packs locally and general hot baths for body heating. Diathermy and the microtherm have proved of less value than the above procedures in treating the arthritic patient. Electromagnetic energy increases the discomfort of and should not be used on acutely inflamed joints. Of late, ultrasonic therapy, by means of water coupling in a bath, has been tried in chronic rheumatoid arthritis. The results obtained are unconvincing. In chronic degenerative arthritis, particularly of the hands or feet, encouraging results have been obtained with contrast baths.

The prolonged induction of high body temperature (above 104° F.), or fever therapy, is rarely employed today. The necessity for such treatment has been eliminated by the widespread use of the sulfonamides and antibiotics. Mild elevation of general body temperature (102° F. for not over 2 hours) has some value in generalized rheumatoid arthritis, in chronic infectious arthritis, when drug therapy is not effective, and in iritis, uveitis, and interstitial keratitis of undetermined origin.

As is true of all effective forms of therapy, there are cautions to be considered in the use of heat. Extreme care must be exercised to avoid burning the patient. Even superficial and slight burns may cause considerable discomfort and seriously interfere with the progress of treatment. Burns may so disturb a patient's psychology that fear of all forms of physical therapy arises. Burns resulting from electric currents are especially troublesome because they cause considerable tissue loss, heal slowly, and leave serious scarring.

The more intense forms of heating should be used with caution in very young children, in old people, in patients who are debilitated, and in those suffering from chronic disease, such as diabetes, general arteriosclerosis, myocardial degeneration, and chronic nephritis. Local heat should not be applied over areas of malignant degeneration. Nor should it be used over areas of hemorrhage or in patients who have hemorrhagic disease.

Before heat is applied to older persons or to those who have been injured, their sensory responses should be carefully worked out. If there is any sensory abnormality or impairment due to central or peripheral lesions of the nervous system, heat should be avoided or used with extreme caution.

Especial caution should be observed whenever short-wave diathermy is employed. The apparatus must be set up in such a manner as to prevent burning either from the electrodes or from the cable. There must be no clothing between the electrode and the skin — only the spacing material. Patients must remove all metallic objects from the region of the treatment. The chairs, tables, and beds upon which patients are placed must be of wood and free of metal parts, including innerspring mattresses. Any sensation of pain or burning calls for immediate cessation of treatment. Patients should not be allowed to give themselves diathermy treatment. The material used for spacing and the area under treatment must be kept dry.

Diathermy is contraindicated in all acute processes associated with fever, suppuration, or other local evidences of acute inflammation, including edema. Because diathermy increases regional blood flow, its application aggravates already present edema and congestions. Therefore, it increases the pain and disability when used during the early stages of trauma, sprains, fractures, and in acute bursitis and arthritis. Diathermy is to be avoided during hemorrhage, even during profuse menstruation, and should not be applied over the lower back during pregnancy. It is contraindicated when cancer is present.

In the use of all forms of thermotherapy it is important to remember that there is real danger of bringing about disastrous results if even moderate degrees of heat are locally applied to the extremities of patients suffering from impaired peripheral circulation. When arterial flow is obstructed or impaired the use of even mild local heating causes an increased metabolic demand, which calls for more oxygen than can be delivered through the inadequate arterial flow. This creates a relative ischemia, with its attendant pain, edema, ulceration, and even gangrene. Local heat is equally contraindicated in obstructive lesions of the peripheral venous circulation. As long as the arterial channels are open the demand for increased blood created by heating can be met. However, the inadequate venous return flow so interferes with the cooling and heat dissipation that the local tissue temperature rises to a point that causes edema, ulceration, and pain.

Disregard of some of the physiologic changes that occur when heat is used has not infrequently been responsible for disappointing results from and unfavorable criticism of thermotherapy. (New England J. Med., Sept. 4, 1952, G. M. Piersol)

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A Method for Training Civilians in Blood Grouping Tests in the Event of an Atomic Disaster

In the event of an atomic disaster the services of untrained civilian personnel will undoubtedly be required because the number of available medical laboratory personnel will be inadequate to perform the vast numbers of blood grouping tests that will be necessary. In such disaster large quantities of fresh whole blood will be required.

The method makes use of the fact that the standard procedure for blood grouping can be divided readily into 3 distinct, uncomplicated tasks; (1) procuring the blood (i. e., pricking a finger or mixing a tube of blood); (2) testing the blood in anti-A serum, and (3) testing it in anti-B serum. By assigning 1 person to each of these relatively simple tasks, an assembly-line unit is established in which members act simultaneously while testing a single specimen of blood.

Experience gained from a year's study of an assembly-line procedure for training civilians in blood-group testing appears to warrant the following conclusions: (1) The method is capable of carrying out effectively the purpose for which it was originally designed, (2) It is able to accomplish this because (a) It permits swift utilization of completely untrained people who may prove to be the only ones at the scene, (b) It permits their selection without regard to occupations, special aptitudes, or previous experience because (1) the task required of each individual is uncomplicated and (2) the system itself automatically excludes making certain errors possible in other methods, (c) It permits rapid training because the novices perform each step of their respective tasks as it is ordered and described during the reading of a 10-minute set of directives, (d) It establishes working units capable of sustained, independent action (1) because each member of a unit can exchange tasks with any member of his own or any other unit; (2) experienced members can train an untrained recruit as a replacement; (3) members exercise critical supervision of each other; and (4) dependence is placed on the method, and not on the individual, for correct performance of the test. (The person in charge need exercise only general, over-all supervision of the work). (3) Finally, the method has demonstrated in operational tests, including a pilot test, that it yields accurate results and is capable of doing so when employed on a large scale. (The original article describes the method and pilot test in detail). (Am. J. Clin. Path., Oct. 1952, W. C. Nelson)

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Retroperitoneal Pneumography by Injection of Oxygen into the Presacral Space

Good results have been reported with visualization of the kidneys by injecting air in the perirenal spaces, but most roentgenologists and urologists hesitate to use the latter method because of the danger of embolism. A technique which obviates this danger by injecting oxygen into the presacral area instead of the perirenal region was described by Ruiz Rivas in 1948 and by Juri in 1949. The procedure requires no premedication and may be completed in about 15 minutes. There is practically no discomfort to the patient and he may resume his normal activities when it is finished. Only one puncture is required for visualization of both kidneys, and other abdominal organs such as the spleen, liver, the female reproductive organs, and often the gallbladder and the intestines stand out prominently. The use of oxygen is preferable to air because it is absorbed rapidly and causes no unpleasant aftereffects.

With the patient in any position, but preferably the knee-chest, a spinal anesthesia needle is inserted at the level of the sacrococcygeal articulation, 1 cm. to the right or the left of the median line. It is directed upward, inward, and forward so that its point enters the presacral cellular tissue nearest to the anterior surface of the sacrum and in the median line. To make sure that the needle is in position (that is, in cellular tissue and not in a blood vessel) aspiration is carried out with a syringe; if no blood is obtained, a few centimeters of air are injected. If this air is injected easily, the needle is in proper position. If it does not enter easily and it is necessary to exert force, and if gas escapes through the needle, it may be concluded that the needle is in the presacral fibrous tissue. In that case, its position must be changed by advancing or withdrawing it, without a new puncture being necessary. The amount of gas to be injected can be estimated and confirmed by fluoroscopic examination. After uniform distribution is obtained by changing the position of the patient, roentgenograms are made for final study.

It is believed that this method has obvious advantages over those now in use for diagnosing adrenal neoplasm or retroperitoneal tumors. Certain renal tumors also may be visualized by this method. Oxygen has been used as a contrast medium in various anatomic locations, usually with no harm if proper precautions are taken. Faulty technique and not the procedure is considered by Kleinberg to be responsible for embolism following the introduction of oxygen into the knee for arthrography. In the discussion of Jacobsohn's report of 2 deaths following the injection of air and oxygen, respectively, into the knee joint, it is pointed out that the method is safe, provided care is taken to avoid direct entry into a blood vessel. This precaution should also be observed in retroperitoneal pneumography. Neither Ruiz Rivas nor Juri has had unfavorable results following visualization of the kidneys, and no untoward effects were observed in the 2 cases reported

here. A further advantage is that no restrictions on the patient are necessary following the use of this method. (Am. J. Roentgenol., Sept. 1952, J. Gershon-Cohen, S. Levine, and M. B. Hermel)

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Antral Gastritis

Antral gastritis is an inflammation of the antral portion of the stomach of unknown cause, which probably begins in the musosa, usually involves the submucosa, and may even extend to the serosa. The roentgen changes are sufficiently characteristic that the radiologist should be able to make a correct diagnosis in most cases. This condition must always be considered in the differential diagnosis of lesions in the antral region.

There will be some discrepancies in the diagnosis of gastritis by the gastroscopist, radiologist, and pathologist. The gastroscopist has an opportunity to observe the musosa, its movements and color, and the effect of the peristaltic waves on the rugae. Superficial ulceration is readily apparent on gastroscopy. The radiologist can study the thickness and movement of the rugae and can detect ulceration when the ulcers are deep enough to cause a crater. He also has the opportunity to make a thorough study of peristalsis. The pathologist does not have as much opportunity to determine the thickness of the rugae as the radiologist and gastroscopist. He does, however, have the advantage of being able to study the entire wall of the stomach. There may be some difference of opinion between pathologists as to the diagnosis, because microscopically the changes of early or moderate gastritis differ only slightly from the microscopic picture of the normal stomach.

Most of the author's cases of antral gastritis were in males from 40 to 70 years of age. Haworth and Rawls found an almost equal distribution between the sexes. The majority of the patients showed hyperacidity, but this was not so marked as in duodenal or gastric ulcer cases. In a few cases there was an anacidity. Benedict reported the occurrence of hemorrhage in 19.7% of a series of cases of gastritis which he analyzed. Severe hemorrhage was not present in any of the author's cases. The clinical picture of antral gastritis is not definite enough to justify a diagnosis on this basis alone. These patients usually complain of vague epigastric distress. Some state that they feel better after eating, while others do not obtain food relief. Some authorities believe that excessive use of coffee, alcohol, and tobacco may be the cause of antral gastritis in some instances. The author saw a few patients, however, who did not use tobacco or alcohol and took only an occasional cup of coffee. Some internists believe that abstinence from coffee, alcohol, and tobacco is, in general, as important as diet in the treatment of antral gastritis. The majority of these patients improve clinically under the ulcer regime.

Follow-up roentgen examinations showed regression of the process in a few patients under medical management. Usually there will be little change in the roentgen findings, even though there is considerable symptomatic improvement.

The gastroscopist can assist in the diagnosis of antral gastritis in some patients. The author's experience with gastroscopy, however, is limited. He found repeat x-ray examination after 10 days of strict medical management of aid in most cases.

Many patients in whom a diagnosis of antral gastritis is made may have a gastritis of the entire stomach which the author was unable to demonstrate roentgenologically. Occasionally, patients in whom a diagnosis of antral gastritis has been made may appear more or less normal to the gastroscopist. The reverse is also true.

In a consecutive series of 5,520 roentgen examinations of the stomach, over a 30-month period in a clinic and hospital practice, the diagnosis of antral gastritis was made 139 times.

The difficulty of diagnosis of antral gastritis is shown by the fact that 8 cases in this study were diagnosed as a possible malignant growth of the distal end of the stomach but proved pathologically to be antral gastritis; 3 of these also showed a pyloric hypertrophy.

In this Clinic, over a 30-month period, a diagnosis of antral gastritis without any other associated disease was made roentgenologically in a little over 1.0% of the patients undergoing x-ray examination of the stomach. The condition is difficult to differentiate from prepyloric ulcer, hypertrophy of the pylorus, aberrant pancreatic tissue in the antral region, and carcinoma of the stomach. An effort should be made to differentiate antral gastritis from carcinoma in order to prevent needless surgery and its attendant mortality. In all cases, however, in which one does not believe he can absolutely rule out carcinoma, a gastric resection should be performed. (Radiology, Sept. 1952, H. M. Berg)

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Cushing's Syndrome

A case report of the occurrence of Cushing's Syndrome in an adult male is presented and discussed. The syndrome caused by tumor of the adrenal cortex in the male is a rare occurrence. Rapaport, Goldberg, et al. in a recent review of the literature were able to find only 12 cases proved by surgery or autopsy.

Cushing's Syndrome is a mysterious metabolic disorder in which interest in the physiology of the adrenal cortex has been recently reawakened. Its manifestations may include abnormal functioning in every body system from the external manifestations of abnormal skin (striae, acne), to the dissipation of the protective skeletal system (osteoporosis),

to the innermost functioning of the personality and the libido. Despite tremendous advances in the understanding of this disease and in the knowledge of the physiology of the adrenal and pituitary glands, the exact cause remains unknown, and the number of "cures" remains very low.

The syndrome, now known as Cushing's syndrome, had been recognized for many years but was first clearly defined by Harvey Cushing in 1932. At that time he described 12 cases of this disease and suggested that it was attributable to basophilic adenoma of the pituitary gland. Later Crooke demonstrated hyaline changes in the basophil cells which were present in all cases and which he thought to be the basic pathologic lesion regardless of what other pathologic change was present. Other lesions have been described in association with Cushing's syndrome, e. g., arrhenoblastoma of the ovary, thymic tumors, and other pathologic changes. The concensus, however, at present, is that Cushing's syndrome represents overactivity of the adrenal cortex or a hyperadreno-corticism. This may be caused by hyperplasia of the adrenal cortices (perhaps secondary to pituitary overactivity), or caused by a carcinoma or adenoma of one adrenal cortex. (Treatment Services Bulletin, Ottawa, Canada, Sept. 1952, D. L. Wilansky, Halifax, N. S.)

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Modified Thoracoplasty Performed With Pulmonary Resection

After pulmonary resection there is a space in the thorax which has to be filled. In the case of a segmental resection the space is small; but when lobectomy has been performed, the space may be considerable. In both instances part of the lung remains to help fill it by distention; although, if an upper lobe is resected, some readjustment of the remaining lung tissue is necessary. Rise of the diaphragm and shift of the mediastinum also aid in the obliteration of the space. When pneumonectomy has been performed, the space is not only larger, but also there is no lung on that side to help fill it. Under these circumstances there is an accumulation of fluid and air in the hemithorax. Some of the fluid clots and forms a framework for the growth of fibrous tissue. The remainder of the fluid and the air eventually absorb and the space is then filled by the shifting mediastinum which, thereby, produces distention of the remaining lung. In the presence of tuberculosis or emphysema this distention may have serious consequences. To a lesser degree this also applies to segmental resection and lobectomy.

In the case of pneumonectomy the space may be filled by pneumothorax, oleothorax, or a prosthesis, or by thoracoplasty. Only the latter is available for segmental resection or lobectomy. Of course there may be no space to fill after segmental resection or lobectomy, especially if the lower lobe has been resected. There may still be the problem of overdistention of lung tissue, and, not infrequently, even this fails to obliterate the space.

Another hazard is empyema following a bronchial fistula in the stump. If this should develop in the presence of a large dead space in the pleural cavity, the consequences may be dire; and if an oleothorax is present, the complication is worse. Thoracoplasty, therefore, would seem to be the best method of meeting the situation, and thoracoplasty at the time of resection if it can be done safely, is preferable to one that is delayed for obvious reasons.

The chest is opened through the bed of the resected fifth rib. When the resection has been completed the posterior third of the fourth rib, the posterior quarter of the third rib, and a small piece of the posterior extent of the second rib are removed subperiosteally leaving a small piece of rib beyond the transverse process. If the resection is a lobectomy, no more ribs are resected. If pneumonectomy has been done, the posterior third of the sixth and a piece of the seventh are also resected. The entire procedure adds less than 10 minutes to the operation and does not cause shock. After lobectomy or segmental resection, drainage is employed to remove the fluid and air which is trapped in the chest or comes from raw pulmonary surfaces. After pneumonectomy the chest is usually closed without drainage. The trapped air is removed after 3 days by needle aspiration until there is a negative pressure. Some of the supernatant fluid may also be removed. This permits the chest wall to fall in as much as it can. If this is not done, the full effect of the thoracoplasty may be lost because the fluid and air may absorb so slowly that the chest wall stiffens before maximum collapse has occurred. Aspiration should be repeated as often as necessary.

It is emphasized that this type of thoracoplasty is effective only at the time of the intrapleural procedure over unfilled spaces and with relatively normal parietal pleura or with pleuropneumonectomy.

The advantages of this combined operation are many. (1) one operation usually suffices and the patient is spared a second major procedure which would occur at a time when he might not be in good condition for it, (2) if further collapse should be needed, it can be accomplished through an axillary incision with a minimum of discomfort to the patient. If the additional collapse is made necessary because of the development of a bronchopleural fistula, there is plenty of muscle in the axillary folds to use as a muscle graft in the fistula. (3) Paradoxic respiration can be reduced to a minimum by firm strapping because the anterior and lateral chest walls are stiffened by ribs and the decostalized portion of the thorax is largely covered by the scapula. If real dyspnea develops as a result of the operation, there is bound to be some paradoxic motion, however. Should pulmonary functional studies indicate that dyspnea may result from the removal of lung tissue, it is advisable not to do the combined operation but to control the distention by pneumothorax until such time as the thoracoplasty can be done safely. (4) If empyema should occur the empyema space is very much smaller than it would have been without the combined operation and the severity of the complication is proportionately less. (5) Scoliosis is reduced to a minimum

or avoided altogether because the attachments of the scalene muscles to the first and second ribs are not disturbed at all and the attachments of the paravertebral muscles to transverse processes and posterior portions of the ribs are disturbed but little. Furthermore, the costal attachments of the serratus anterior are intact (except to the fifth rib) thereby tending to preserve scapular function and arm motion as well as to prevent scoliosis. (6) Deformity is slight and usually unnoticeable.

There are, of course, certain disadvantages. There is a slight shift of the trachea because of the retention of the first rib and a large part of the second. This has never been enough to cause any trouble in the author's cases. Also there may be a shift of the mediastinum below this area. This is especially true in the presence of preoperative emphysema or distention in the remaining lung. This is usually not enough to cause trouble, although in rare instances it may be advisable to remove more ribs. There is apt to be more postoperative pain with the combined operation. This, however, can be reduced by crushing the intercostal nerves at operation or by injecting them.

The advantages so far outweigh the disadvantages that the author has been employing the procedure more and more over the past 4 years, at first in children and later in adults, and has now used it in 43 cases. Of these 25 were lobectomies or segmental resections and 18 were pneumonectomies or pleuropneumonectomies. Twenty-eight operations were for tuberculosis, 7 for suppurative disease, and 8 for malignancy. It might well have been used in a great many more. In 6 cases it was necessary to produce further collapse which was accomplished through an axillary incision. Of these, 4 were in pneumonectomies and 2 in lobectomies and all but 1 were because of bronchopleural fistula. (Am. J. Surg., Oct. 1952, C. W. Lester)

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Maydl Jejunostomy

In spite of the more aggressive approach in the treatment of malignant disease of the upper intestinal tract that has come about during the past few years, there still remains a large group of persons on whom even palliative extirpation of their lesions cannot be safely performed.

In spite of the many techniques available, sooner or later most gastrostomy stomas leak or develop an unpleasant odor. The frequency of feeding becomes a nuisance, not only to the patient but to his entire household. This has led the authors to re-explore the efficacy of jejunal feedings when such feedings are required.

The Maydl jejunostomy has been utilized by the authors on 34 occasions during the past 4 years. It has proved to be an unusually satisfactory feeding fistula. This jejunostomy is particularly useful in situations in which

such a feeding fistula is likely to be required for many weeks or months, either constantly or intermittently.

The Maydl jejunostomy provides the following advantages: 1. A large feeding stoma is provided through which thick formulae can be administered, with the use of a large bore rubber feeding tube. 2. No indwelling rubber tube is required. Between feedings a small gauze pad is applied over the enterostomy. 3. There is no tendency for spontaneous and premature healing of the fistula. 4. The procedure does not involve infolding of the jejunal wall, and hence no narrowing of bowel lumen occurs. 5. With minimal instruction the patient and family view the feeding procedure with less trepidation than if an indwelling tube is present. 6. The area is odorless, and the surrounding skin is not irritated. Leakage of bile and pancreatic juice and regurgitation of feeding do not occur if the technical procedure is properly carried out. Such leakage is often seen in the permanent gastrostomy or the von Eiselsberg jejunostomy. 7. Large feedings administered at infrequent intervals are well tolerated. 8. When a patient is able to take a small amount of food by mouth, supplemental feeding is much easier through the use of the Maydl jejunostomy. 9. Food intake can be regulated to such an extent that weight gain has been frequently encountered. (A. M. A. Arch. Surg., Sept. 1952, E. S. Brintnall, K. Daum, and N. A. Womack)

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Treatment of Carcinoma of the Bladder

From 1925 to 1949, 2,273 cases of tumor of the urinary bladder were admitted to the Presbyterian Hospital and the Squier Urologic Clinic. These cases included all types of bladder tumors in various stages of development. Of these, 347 cases of carcinoma were treated by segmental resection or radium implantation at some time while they were under observation at this hospital. One hundred ninety-eight were treated by radium and 149 were treated by segmental resection. The 2 methods of treatment under consideration are alternate approaches to the primary treatment of certain types of early carcinoma of the bladder.

The cases were analyzed to ascertain which of the 2 methods provided the longest time-interval free of disease, and to discover the particular indications of one or the other of the 2 methods.

In addition, it is believed that the 347 cases should be evaluated from the standpoint of their survival rate. The treatment of many of these patients was not limited to segmental resection or radium implantation. Over a period of years they received one or more forms of therapy as clinically indicated. Therefore, although this is a selected group, the survival for each year and the cumulative survival rate by years has been

calculated because it is a more meaningful expression of the effectiveness against a specific carcinoma than merely the cumulative survival rate at the end of 5 years.

The 1,926 remaining cases were treated by cystoscopic fulguration or excision, by suprapubic fulguration or excision, by external x-ray therapy or by total cystectomy. Because carcinoma of the bladder is notoriously chronic and recurrent, individual patients often require several types of treatment during the course of their disease.

In calculating the cumulative survival rate by years of a large number of urinary bladder carcinomas treated by several proved methods, it has been found that life is prolonged. When the yearly survival of these treated cases is compared with untreated cases the salutary effect of treatment is readily apparent.

As previously stated, carcinoma of the bladder is a chronic, recurrent disease. The physicians interested in the control of this cancer, the urologist, the radiologist, and the chemotherapist must pool their knowledge and efforts in the treatment of any particular case. Decision as to treatment should be arrived at by consultation of these specialists after they have examined the patient together. These therapists want the patient to remain alive for the longest possible time and with a minimum of symptoms. Clinical cure of cancer more properly should be considered clinical arrest. If in the life of a carcinoma of the bladder the patient averages 1, 5, 10, or 30 days of hospitalization and/or disability a year, but lives in comparative comfort or better the rest of the time, this is successful treatment. Many diseases other than cancer such as heart and kidney disease, arthritis, and tuberculosis, are only controlled and never really cured. Some of them require more days of hospitalization and kill the patient in a briefer span of years than some cancers.

A higher percentage of patients with carcinoma of the bladder were clinically free of disease at any given time following radium implantation than was a similar group treated by segmental resection. Therefore, radium implantation is recommended as the initial treatment in patients with grade 2 or more malignant, polypoid lesions and in patients with submucosal nodular and sessile lesions. (J. Urol., Oct. 1952, M. M. Kligerman, J. N Robinson, G. W. Fish, and I. David)

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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.

Evaluation of Tromexan and Dicumarol in the Treatment of Thromboembolic Conditions

Following the demonstration that anticoagulant therapy is of value in a variety of thromboembolic disorders, investigators have sought to find more satisfactory agents than heparin and dicumarol. Paritol, phenylindanedione, BL-5, Tromexan, and, recently, Treburon have been tested for clinical use. The Committee on Anticoagulants of the American Heart Association has evaluated the merits of Tromexan as compared with dicumarol, now in common use. An attempt has been made to answer certain questions regarding: (1) the relative speeds of onset and cessation of action; (2) the toxicity of Tromexan, exclusive of hemorrhage, if any; (3) the comparative hemorrhagic tendencies of the 2 drugs; (4) the relative ease of handling the drugs, and (5) their relative clinical effectiveness. With a view of accumulating data on these questions, the Committee initiated a study of the 2 drugs. Patients with a variety of thromboembolic disorders were treated. Details of each case history were compiled on extensive master forms and reviewed.

A total of 514 patients with actual or threatened thromboembolic conditions were treated with one or both of these anticoagulants. A total experience of 6,642 days of Tromexan therapy and 5,006 days of dicumarol therapy without supplementation with other anticoagulants was reviewed and analyzed. Responsible investigators from 7 hospitals cooperated in the project by reporting each case on a detailed master form to the Central Laboratory.

Analysis of the findings from these cases resulted in certain conclusions being drawn. Among the conclusions are the following: (1) Previous reports that a more rapid initial prolongation of prothrombin times can usually be achieved with Tromexan than with dicumarol have been confirmed. This characteristic makes it possible to protect the patient more rapidly with Tromexan than with dicumarol in the initial stages of anticoagulant therapy when the risk of thromboembolic complications is especially high, as well as after a lapse in therapy when a rapid return to therapeutic levels is indicated. (2) Previous reports that prothrombin times usually return more rapidly to normal after the cessation of Tromexan than after cessation of dicumarol have been confirmed in a variety of circumstances. This characteristic of Tromexan is of advantage when it becomes advisable to terminate therapy, as when excessively prolonged times, with or without bleeding, develop or when emergency surgery becomes necessary. (3) The power of the 2 anticoagulants to protect the patient from thromboembolic complications appeared about equal, as demonstrated by the close similarity in the thromboembolic complication rates for days of therapy under each of the 2 anticoagulants. (4) More of the thromboembolic complications under Tromexan occurred when prothrombin times were below the optimal therapeutic range than did those under dicumarol. This

suggests that control of the lower limits of the therapeutic range presents more of a problem with Tromexan than with dicumarol. (5) Mild toxic reactions (nausea, diarrhea, or rashes) were infrequent, being reported in 12 (4.2%) of the patients treated with Tromexan and in 1 (0.4%) of the patients treated with dicumarol. These reactions did not constitute a significant disadvantage in the use of either drug. (6) A review of the laboratory test findings for all patients failed to reveal any evidence that either Tromexan or dicumarol produced significant evidence of toxicity in the doses commonly used for therapy. (7) Fourteen autopsies were studied in detail. These did not reveal any difference in the toxicity of the 2 anticoagulants or in their effectiveness in preventing thromboembolic complications. (Circulation, Oct. 1952, L. A. Scarrone, D. F. Beck, and I. S. Wright)

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Degenerative Arthritis in the Aging

Degenerative arthritis in the aging is by far the most prevalent form of rheumatism. Yet only 4 or 5 syndromes are seen in this disease. Most frequently encountered is the cervical tension syndrome caused by involvement of the cervical spine. Symptoms and findings include headaches, light headedness or "dizziness," neck pains, and "cricks". Pain is often referred into shoulders, scapular areas, arms, and occasionally forearms. Upper chest pains may also occur. In patients past 40, most shoulder pain is the result of pathologic neck conditions.

The second most frequent syndrome is that of backache, sacroiliac pain, buttock, thigh, and leg pain, and coccygodynia. Occasionally a nerve root is involved, producing sciatic pain.

Next most frequently affected are the interphalangeal joints of the fingers; the terminal joints (Heberden's nodes) are involved much more frequently than the proximal ones. The metacarpophalangeal joints are never involved.

In extreme cases arthritic disease in the knee can be disabling, although degenerative arthritis does not produce essential crippling. Loose bodies and other internal derangements of the knee indicate a need for surgical procedures.

Malum coxa senilis is the term applied when the hip undergoes degenerative changes. In most instances, a previous condition such as Perthes' disease, slipped epiphysis, rheumatoid arthritis, or infection has involved the joint, rendering it susceptible to trauma. Hallux rigidus is the term used when the bunion joint is involved. It is usually preceded by direct injury. Patients with this form of arthritis characteristically have stiffness and soreness following a night's rest or a period of inactivity. They improve as the joints are mobilized. Toward evening aches and pains

intensify with fatigue, improving after retiring, but the stiffness and soreness recurs during the night. A major portion of the pain is the result of simple fatigue, or may be from delayed fatigue, as occurs in a muscle the day following unusual exercise. Part of the pain is the result of synovial inflammation, which causes muscle spasm and is aggravated by motion of the joint. Quite frequently indefinite referred pains predominate, radiating into head, coccyx, extremities, or chest, and which cannot be explained. Occasionally certain reflex phenomena of the sympathetic nervous system are superimposed, causing dystrophic reactions, usually in the upper extremities. The frozen shoulder or periarthritis, or the shoulder-hand syndrome, if the hand is involved, is an example. In the authors' experience, 3 out of 100 patients had atypical polyarticular rheumatoid arthritis following the shoulder-hand syndrome, suggesting a relationship between reflex sympathetic dystrophy and rheumatoid arthritis. There may also be an association of these 2 conditions with referred pain into the extremities in degenerative arthritis of the spine. This type of reaction is rare in patients under 40.

The treatment of degenerative arthritis consists of correcting the underlying disease and reducing trauma. Results are good. If the symptoms date from the menopause, or if there is radiologic demineralization in patients past the menopause, mixed sex steroids are indicated. Low steroid osteoporosis is one of the most common underlying factors associated with degenerative arthritis. Testosterone propionate and the best tolerated estrogen should be given in whatever dosage is required to control the symptoms. In patients past 60, the opposite sex steroid is emphasized.

In addition to the low steroid type of osteoporosis, osteoporosis resulting from malnutrition, such as hypoproteinemia, hypovitaminosis C, and the type associated with pellagra also act as contributing agents in degenerative arthritis. These are corrected by a balanced diet with supplementary food concentrates as indicated. It is extremely difficult to change the eating habits of older people, particularly when they live alone, but the correction of malnutrition is one of the most important factors in the management of the disease. Albright, Reifenstein, and coworkers attribute a form of osteoporosis to the alarm and adaptation syndrome described by Selye. This syndrome demands utmost skill on the part of the physician. Controlled rest and avoidance of stress are mandatory.

Osteomalacia of various types is seen occasionally, and can result from malnutrition, such as a lack of vitamin D or calcium in the diet, or be the result of gastrointestinal disease interfering with utilization of nutrients. It may also follow chronic kidney disease associated with acidosis when there is a demand for calcium to act as buffers in the blood, thereby depleting the bone if there is insufficient calcium intake. Occasionally secondary hyperparathyroidism is provoked by this state of renal osteomalacia, resulting in further damage to the bone structure. Conditions such as osteochondritis deformans, rheumatoid arthritis, and others should be controlled.

Control of stress in these patients is of utmost importance, and is the most difficult part of management. There is usually no pain unless a vulnerable structure has been strained. The disease is seen frequently in housewives, mothers, teachers, and those in sedentary occupations, the type who continue working regardless of pain or fatigue, and who move about quickly and under tension. Effort beyond the endurance of a vulnerable structure will eventually cause it to give way.

Rest is the physiologic antagonist of fatigue, stress, traumatic insult, and their resulting degenerative changes. Reduction of strain in the knees and hands consists largely of resting these parts and moving about more slowly. Resting the spine, however, is quite another matter, as the neck and low back can be under strain when the patient is sitting, standing, or lying down. Proper muscle balance is important. Williams has worked out suggestions to avoid back strain, which, when observed, result in surprising freedom from pain.

The essential point in reducing strain is to avoid the accentuation of existing curves, keeping from forward-thrust positions of the head and neck, lordotic or swayed-in positions of the lower back, and kyphotic positions of the dorsal spine.

Tension and exhaustion should be controlled. Loss of sleep must be avoided, utilizing daytime naps if necessary. Rest is indicated whenever the patient feels tired. Exposure to drafts, inclement weather, and cold can precipitate symptoms and should be avoided. Use of heat, massage, liniments, and analgesics is necessary to prevent pain and induce relaxation. Occasionally, supports, appliances, surgery, and orthopedic treatment are necessary to reduce some of the mechanical factors. Patients should sleep with their hips and knees flexed and avoid high pillows under the neck and head at all times. (Geriatrics, Sept-Oct, 1952, W. K. Ishmael)

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Induction of Premature Labor by Means of Pitocin in Patients With Toxemia of Pregnancy

All obstetricians are faced at some time with the necessity for interrupting a pregnancy complicated by toxemia between the twenty-eighth and thirty-fourth weeks. When the toxemia fails to respond to treatment, termination of the pregnancy is advisable for the sake of both mother and child. Once the decision has been made, with full knowledge that prematurity is a factor to be considered, the next question is what method to use. The majority of these mothers show no sign of impending labor such as engagement of the head or effacement and dilatation of the cervix. They have what is described as the "long, closed cervix". It is this type of patient, primigravida or multigravida, who is usually subjected to cesarean section.

This article describes a method of induction which permits vaginal delivery in such cases. The authors believe that the technique is preferable to surgical approach because it achieves a normal birth, and because it not only increases the infant's chances for survival, but also improves the outlook for future childbearing on the part of the mother.

It is important to stress that all patients were under constant supervision. The treatment for toxemia was maintained throughout the period of induction. The blood pressure, pulse, and fetal heart rate were recorded every 10 to 15 minutes, and the frequency, duration, and intensity of the uterine contractions were noted as they occurred.

With the reports of Lund, Hellman, and others, on the intravenous use of Pitocin, the authors began using this route of administration exclusively. Five minims of Pitocin are placed in 500 cc. of a 5% solution of glucose in water which is given by intravenous drip. The rate of administration is 9 drops per minute initially, and is increased according to the response. The average dose is from 20 to 30 drops per minute, and seldom was it necessary to administer over 60 drops per minute. The contractions of the uterus at the onset are not painful but can easily be felt by the observer and the duration, frequency, and intensity recorded. It is important that the dosage be increased slowly until the contractions are regular and lasting at least 30 seconds.

The authors prefer to administer Pitocin in the daytime for a period of from 6 to 8 hours. If labor fails to occur, the patient is returned to her room for a night's rest. The procedure is repeated on successive days, or every other day, until labor starts or the cervix becomes favorable for rupture of the membranes. Usually, the condition of the cervix can be ascertained well enough from a rectal examination.

Because all patients in this series were believed to be several weeks before term at the onset of induction the usual precautions for the management of a premature infant were carried out at delivery. All deliveries were under local or regional block anesthesia, and the infants were immediately placed in the premature nursery.

A total of 19 white patients were treated with delivery of premature infants (infants weighing less than 2,500 gm.) in 18 cases. One patient was admitted with ruptured membranes. The membranes were artificially ruptured in 10 patients, and ruptured spontaneously in 7. Pitocin was administered intramuscularly in 11 cases and intravenously in 7; initially fractional intramuscular doses had been used.

In all except 3 patients examination prior to induction revealed the cervix to be undilated and uneffaced, and the fetal head unengaged. One of these 3 showed engagement but no dilatation. In the second the cervix was dilated 1 to 3 cm. and the head was at a minus 1 station. The third patient had 3 cm. dilatation of the cervix, but attempts to rupture the membranes were unsuccessful.

The blood pressure was recorded at 15-minute intervals throughout the procedure. In no case were changes noted during the induction or when labor finally ensued. There were no maternal deaths. One patient had inert labor which lasted more than 24 hours, but in all the other cases labor was less than 10 hours in duration. There were 2 cases of maternal morbidity, both caused by endometritis. Both these patients were in the initial group and had had repeated vaginal examinations. Three of the patients have had subsequent term pregnancies. All 3 of these pregnancies were complicated by mild toxemia.

There were 3 fetal deaths, 2 stillbirths and 1 neonatal death.

Pitocin did not cause any marked elevation of the blood pressure or pulse rate in these patients. The fetal heart sounds remained good, and there were no tetanic contractions of the uterus.

Pitocin, given on successive days, can transform an "unfavorable" cervix in a toxemic patient to one with effacement and dilatation. If labor does not begin spontaneously, it is easily induced by artificial rupture of the membranes.

The authors advocate the use of Pitocin by this method only when the patient can be kept under constant supervision and observation. (Am. J. Obst. & Gynec., Sept. 1952, C. H. Mauzy and J. F. Donnelly)

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Diagnosis and Treatment of Early Ectopic Pregnancy

The occurrence of extra-uterine pregnancy has doubled during the past 15 years. There are 2 explanations for the increasing ectopic pregnancy rate: (1) Live births have increased approximately 65% in the United States during this period, and every time 150 live babies are born 1 ectopic pregnancy occurs, and (2) The widespread use of the sulfonamides and penicillin in the treatment of salpingitis. When patients with acute pelvic inflammatory disease are treated with the newer drugs, the tubes, instead of being completely occluded, remain partially open but scarred. This favors implantation of the fertilized ovum before it reaches the uterus.

The greatest single aid in the diagnosis of ectopic pregnancy is a mental alertness for the disease when a female patient in the childbearing age complains of abdominal pain.

The symptoms depend on the location of the pregnancy and whether or not the pregnancy is growing undisturbed. An unruptured extra-uterine pregnancy may produce no symptoms. A pregnancy that is threatening to rupture or abort from the end of a fallopian tube will produce different symptoms than one with frank rupture and massive intra-abdominal hemorrhage.

A history of abdominal pain, vaginal bleeding, and amenorrhea are important facts that may be elicited from the history. Abdominal tenderness,

tenderness on motion of the cervix, and shock are facts obtained from the physical examination. Softening of the cervix, slight enlargement of the uterus, a mass in either adnexal region, and bulging of the cul-de-sac may or may not be present.

The most helpful specific aid in the diagnosis of ectopic pregnancy is aspiration of the cul-de-sac. If rupture of an ectopic pregnancy has occurred, blood which does not clot on standing will be present in the cul-de-sac. If the withdrawn blood clots it means that the needle has pierced a pelvic vessel and fresh blood has been aspirated. It may mean that fresh bleeding has been precipitated by an overzealous examiner. Often the blood aspirated from the cul-de-sac is indistinguishable from that withdrawn from a peripheral vein. The clotting feature will determine if it is from a vessel or from the peritoneal cavity.

Several different types of fluid may be obtained on cul-de-sac aspiration. If nonclottable blood with flakes of fibrin is obtained, it is indicative of intraperitoneal hemorrhage. When pus is found, a pelvic abscess is indicated. Occasionally a sanguineous, watery fluid may be obtained which is indicative of acute pelvic inflammatory disease. If it is examined under the microscope, red cells will be present, but white blood cells will also be present in a far greater proportion than expected in a simple peritoneal transudate or blood from internal hemorrhage. Occasionally, straw-colored fluid may be aspirated in chronic pelvic inflammatory disease.

A diagnosis of acute appendicitis was made in 1 patient by microscopic examination of the material aspirated from the cul-de-sac. The peritoneal fluid was hazy in appearance and was filled with pus cells. Although only slight tenderness was present in the appendiceal area on abdominal palpation, operation revealed a suppurative retrocecal appendix.

Cul-de-sac needle puncture was done 106 times in which the diagnosis was proved to be ectopic pregnancy. The test was positive 101 times. In 2 cases the blood clotted. A thorough pelvic examination immediately preceding aspiration caused fresh hemorrhage in each case. If blood has already clotted in the abdomen, blood elements with flakes of fibrin will be obtained by needle puncture, but if fresh hemorrhage occurs immediately prior to aspiration, and before the blood has had time to clot, clottable blood will be obtained.

In 5 instances cul-de-sac puncture failed to obtain blood in which the diagnosis of ectopic pregnancy was subsequently confirmed. In one of these the pregnancy was unruptured. In 1 case 150 cc. of blood was found at operation; however, the patient had several examinations between needle puncture and operation which may have accounted for the blood. In 2 instances false passage of the needle was the reason blood was not obtained. In the fifth patient pelvic tenderness was so exquisite the procedure was unsatisfactory. .

There were 6 positive cul-de-sac punctures in which no ectopic pregnancy was found at operation. One case exhibited a hematoma on

the anterior rectal wall. One case was that of chronic bilateral salpingitis with an old hematoma in the cul-de-sac. Two cases were that of a ruptured follicular cyst with 500 cc. of blood in the peritoneal cavity. Blood-tinged edema fluid was obtained from 1 patient with acute salpingitis, and the sixth patient had chronic salpingitis which yielded a straw-colored serosanguineous transudate.

Cul-de-sac aspiration in these 112 cases achieved a correct preoperative diagnosis in 92%. A more careful study of the aspirated fluid would have increased the percentage.

In this series of 233 cases a correct preoperative diagnosis was recorded 200 times (85.5%). During the same period of time 25 patients were operated on with a preoperative diagnosis of ectopic pregnancy that was not confirmed by operation. The diseases most commonly mistaken for ectopic pregnancy, when an extra-uterine pregnancy was present, were fibroids, pelvic inflammatory disease, and ovarian cyst. Two cases each were diagnosed preoperatively as endometriosis, appendicitis, and intestinal obstruction. Salpingitis and physiologic cyst of the ovary were the most frequent diseases diagnosed as ectopic pregnancy preoperatively, when an extra-uterine pregnancy was not present. In 2 cases no disease was found, and in 1 case an intra-uterine pregnancy was the final diagnosis.

The treatment of ectopic pregnancy should always be surgical. The only disagreement concerns the time of operation, particularly in the severely anemic and the patient in shock. It is the authors' belief that no fixed rule is applicable to every patient with ectopic pregnancy. Each patient should be carefully studied and the operation performed when the surgeon believes the patient will live through and following the operation.

The treatment of each patient should be individualized. Severely anemic patients and those in shock should have blood replacement therapy before operation is begun. (J. M. A. Alabama, Sept. 1952, B. Word, E. H. Howe, and C. Blanton, Jr.)

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A Practical Method for Storing Organs in Cases of Fatal Poisoning

In fatal cases of known or suspected poisoning, the preservation and storage of the organs obtained at autopsy until toxicologic analysis can be accomplished present several problems. Body fluids and excreta (blood, urine, gastric content, and feces) are easily kept in sealed, labeled, chemically clean, wide-mouthed glass jars. The storage of solid viscera, e.g., brain, liver, and kidney, is not so simple.

Ideally each organ should be kept in a separate, chemically-clean, sealed container so that the presence or absence of toxic substances can be established in a particular site without the possibility of contamination

from another area. Multiple jars are thus required with resultant use of large amounts of refrigerating space.

If several cases are under investigation, the jars belonging to one case should be kept separate from those belonging to other cases. This will materially diminish the possibility of error.

When reserving post-mortem material for toxicologic analysis it is always wise to save entire organs after first removing whatever portions are required for histologic examination. The procedure will furnish sufficient tissue for the performance of duplicate analyses and will provide insurance against accidental loss of material under study. Surplus can always be discarded, but many a toxicologic problem has been left unsolved because of the paucity of tissue saved for chemical analysis. Hence containers must be large enough to accommodate 1,200 grams of brain, 1500 grams of liver, or 400 grams of kidney. Glass jars that hold these amounts are bulky, clumsy, and expensive. Storage of adequate numbers of empty jars requires shelf space that may not be readily available.

When a case has been completed and the unused portions of the organs are discarded, glass containers must be washed (a tedious procedure entailing the removal of dried blood and tissue juices) and rinsed with distilled water before they can be reused. Cleaning is laborious and time-consuming and the inevitable breakage is expensive.

In order to circumvent these drawbacks, a method of saving tissues to be submitted for toxicologic analysis has been devised using inexpensive disposable plastic containers.

The technic makes use of polyethylene plastic bags and plastic styron "crispers." The polyethylene bags are available in various sizes, those measuring 13-3/4 by 4 by 2 inches and 15 by 8 by 3 inches are of ideal size. The former size readily accommodates 2 kidneys or a spleen or a stomach, the latter is ample for 1,200 to 1,500 grams of brain or liver.

The styron crisper, with lid in place, measures 13 by 8-1/8 by 4-9/16 inches, It has a flat transparent lid that fits tight, so that several crispers can be conveniently stacked on top of one another. Small holes may be drilled in the projecting handles at each end, permitting wire or string to be passed through to which is attached an identifying tag. The crisper holds 1,200 grams of brain, 1,200 grams of liver, 400 grams of kidney, and 200 grams of spleen.

The individual organs are placed in separate polyethylene bags that are sealed with cellophane tape after first expelling the air. The several sealed bags are stowed in the crisper, an identifying label (visible through the transparent lid) placed inside the crisper on top of the packed organs, and the lid fitted into place and then sealed. A second identifying label is attached by a string or wire strung through the hole bored in the handle. Labels placed inside and outside prevent errors and confusion in the event that one label is accidentally torn off or lost. The crisper is then placed in the refrigerator or "deep freeze" until the organs are required by the toxicologist. (Am. J. Clin. Path., Sept. 1952, L. Adelson and S. R. Gerber)

Navy Medical Research Scientists Design and Build a New Type Gamma Ray Generator

The first gamma ray generator of its kind anywhere, designed to give complete uniform total body irradiation of target materials, has been designed and built by scientists of the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md. Preliminary work on the design of the irradiator was started in 1949 by members of the Atomic Medical Division of the Naval Medical Research Institute.

The generator will be used for scientific experimental research to study the effects of total body radiation of a variety of target materials by gamma rays.

A cobalt isotope, technically known as cobalt-60 is used as the source material. One hundred capsules of the cobalt-60, each capsule containing approximately 200 grams of the radioactive material and about 3 inches long, are placed in individual carriers and are then loaded into the 60 individual pneumatic tubes by remote control.

Inasmuch as the cobalt-60 has a half-life of 5.3 years, the generator can be used for several years without renewing the gamma ray source. However, as the need arises the gamma ray source can be altered or supplemented with little or no physical changes to the generator. Initially, it will be loaded with 1,200 curies of the radioactive cobalt.

Looking somewhat like a large bottle, the generator is housed in a specially constructed building. A "T" shaped barrier divides the building into 3 rooms; 2 exposure rooms and the control room. The top of the "T" is a barrier of barite concrete about 4 feet thick and runs almost the length of the building. Where the top of the "T" ends, 2 massive 1-inch steel double doors are fitted to close off the control room from the exposure rooms. The foot of the "T" is a 5-foot barrier of scrap iron, lead shot, and barite aggregate. It divides the remainder of the building into 2 exposure rooms, which contain the generator itself.

Each of the 60 generator tubes is 1-1/2 inches in diameter and is 17 feet long. They are of an aluminum alloy except where they pass through the foot of the "T" barrier. Here, for added strength and to protect against corrosion, the generator tubes are of stainless steel and are bent in an "S" shaped curve.

In exposure room No. 1 the transfer tubes extend for 3 feet into the room forming 3 concentric circles having an inside diameter of 10 inches. In exposure room No. 2 the generator tubes extend for 8 feet and form 2 concentric circles, having an inside diameter of 3 feet and an outside diameter of 6 feet.

The ends of each generator tube are closed with end stops so designed as to project within the tube. The length of the end stop projecting within the generator tube is so designed as to locate the radioactive cobalt on the surface of a theoretical sphere surrounding the target material. They are

so constructed and placed that no capsule of cobalt-60 will be shielded from the target by another. Each end stop has an electrical contact and is wired to the control panel.

Operation of the generator is accomplished by a pneumatic system. A single compressor, located in the control room, delivers a 7-pound positive or negative air pressure to each of the transfer tubes. The pneumatic system, from the compressor manifold, in banks of 5, is connected to each generator tube in exposure room No. 2. By this system, all or part of the cobalt-60 in the pneumatic tubes can be sucked into exposure room No. 2 or blown into exposure room No. 1 as required.

There are no windows in the building and only one entrance. The exposure rooms of the generator are shielded by dense barite concrete. One key controls the master switch. A warning bell sounds for 30 seconds before the radiocobalt can be transferred from 1 exposure room to the other. Electric safety switches are located in both exposure rooms which will prevent the operation of the generator mechanism. Should an investigator be in an exposure room when the warning bell sounds, he has ample time to operate the safety switch or leave the room. (TIO, BuMed)

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Rotation Policy for Medical Department Personnel Serving With Marines in Korea

The general policy for rotation of personnel serving in Korea is prescribed by the Field Commander with the concurrence of the Commanding General, Fleet Marine Force, Pacific, and the Commandant of the Marine Corps. Insofar as possible Medical Department personnel are rotated on an equitable basis with Marine Corps personnel. The Bureau of Medicine and Surgery is making every effort in the face of shortages in all categories of Medical Department personnel to provide timely replacements in order that rotation of Medical Department personnel may closely parallel that prescribed for Marine Corps personnel. Currently, Medical Department personnel are being rotated after from 9 to 12 months' service in Korea. For normal tours of duty in other overseas areas, reference should be made to BuPers Circular Letter 74-50 (p. 263 NDB Cumulative Edition Jan-Jun 1950). (Personnel Div., BuMed)

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From the Note Book

1. Regular weekly reporting by States of the number of cases of infectious hepatitis began on January 1, 1952. The provisional total for 39 weeks or three-quarters of the year is 11,868. Cases have been reported by all States except New Hampshire, New Jersey, Nevada, Vermont, and the District of Columbia. Georgia has reported the largest number. (F. S. A., P. H. S.)

2. Organization of advanced bases and of the shore establishments is the main theme of a new Officer Correspondence Course titled, Automotive Transportation at Naval Activities (NavPers 10908).

Problems in logistics, the chief concern of the automotive transportation officer, constitute a major part of the course. Strategy and tactics under battle conditions as a part of advanced base planning, also come under consideration. Regular or Reserve officers, Chief Petty Officers, and qualified enlisted personnel are eligible to enroll in the course. Reservists can earn 8 retirement or promotion points upon completion of the 4 assignments. (Naval Correspondence Course Center, Oct. 1952)

3. A method has been developed whereby it is possible to attach an open rubber bag or well to an auricular wall so that the auricle can be opened into the bottom of this attached sac. It is possible to locate accurately any septal defect and to close it. (New England J. Med., 25 Sept. 1952, R. E. Gross, A. A. Pomeranz, E. Watkins Jr., and E. I. Goldsmith)

4. A report of the hemodynamic and blood oxygen content changes in 10 patients, 5 of whom were given low and 5 high spinal anesthesia and in whom no surgical procedure was performed, appears in Circulation, Oct. 1952, S. M. Sancetta, R. B. Lynn, F. A. Simeone, and R. W. Scott.)

5. A watertight coating for caskets is sprayed on and dries quickly to form a tough web completely enclosing steel or wooden caskets and sealing tiny cracks. Made of vinyl resin, the coating resists natural chemicals in the soil. (Science News Letter, 4 Oct. 1952)

6. An example of the effectiveness of the intensive campaign that has been waged in the past year and a half in the State of Iowa to show the film "Breast Self-Examination" to the 400,000 women in that State in the over-35 age group, is revealed by the report of a public health nurse in one Iowa county. Of the 1,280 women who saw the film in this county and left their names for follow-up information to be sent in some time later, 120 requested complete physical examinations. Of these, 32 with suspicious lumps had biopsy examinations and 6 were found to have malignancy. Since the chances

of cure through surgery are excellent for breast cancer in early stages, this is a good start toward the Iowa goal of reducing its yearly rate of 400 deaths from breast cancer by 90%. (F. S. A., P. H. S.)

7. A study of the value of x-ray therapy in calcifying tendinitis of the shoulder appears in Radiology, Sept. 1952, H. P. Plenk

8. The mechanism of response to and indications for intra-arterial transfusion are discussed in the American Journal of Surgery, Oct. 1952, R. S. Wilson, F. T. Wallace, and J. A. Whiting.

9. An article describing and illustrating x-ray evidence of injuries to the intervertebral disc by means of the discogram and comparing the normal with the abnormal appears in the American Journal of Roentgenology, Radium Therapy, Nuclear Medicine, Oct. 1952, R. B. Cloward and L. L Buzaid.

10. Small polyethylene tubes are well tolerated for long periods when used for gastric or jejunal intubation. A technique for passing these tubes into the stomach and jejenum is described in A. M. A. Archives of Surgery, Sept. 1952, L. S. Fallis and J. Barron.

11. The cerebral lesions that occur as residua of carbon monoxide poisoning consist essentially of dilatation of blood vessels, edema, perivascular hemorrhages, degeneration and death of ganglion cells, focal demyelinization, and foci of necrosis. (Am. J. Clin. Path., Oct. 1952, F. R. Dutra)

12. A method permitting the use of capillary blood obtained by finger puncture and allowing delay for several days between collection and the counting of circulating eosinophils is described in Blood, Oct. 1952, R. A. Donato and M. M. Strumia.

13. A case is reported in which a diagnosis of histoplasmosis was made on the basis of culture of a lymph node obtained from the surface of the scalenus anticus muscle. (Am. Rev. Tuberc., Oct. 1952, K. I. Fetterhoff, C. X. Holmes, and G. E. Martin.

14. Marriage counseling is largely a matter of re-education of one or both partners. There are certain things which everyone has a right to expect in marriage: emotional security, companionship, sexual partnership, and children. (G. P., Oct. 1952, Paul Popenoe)

15. Naval Medical Corps Officers recently certified in their specialties are: Board of Internal Medicine, CAPT. John H. Ward, Jr., MC, USN and CDR. William A. Dinsmore, Jr., MC, USN, Board of Plastic Surgery, CDR. Joseph R. Connelly, MC, USN. (TIO, BuMed)

BUMED INSTRUCTION 4210.1 24 Sep 1952

From: Chief, Bureau of Medicine and Surgery
To: Activities under BUMED Management Control and Financial Responsibility

Subj: Local procurement of equipment; monetary limitation on

Ref: (a) BuMed C/L 52-15
(b) Par 23026 BuSandA Manual

1. This instruction modifies existing instructions concerning local procurement of items of equipment. The provisions of paragraph 5-a-(1) of reference (a) are superseded.

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BUMED INSTRUCTION 6310.1 24 Sep 1952

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations having Medical Department personnel aboard

Subj: Morbidity Report (DD Form 442); revision of reporting requirement

Ref: (a) BuMed C/L 51-62
(b) Joint Armed Forces Diagnostic Nomenclature (NavMed P-1294)
(c) Instructions Governing Individual Statistical Report of Patients (NavMed F), (NavMed P-1313) as amended by BuMed C/L 51-21

1. This instruction changes the requirements for morbidity reporting on DD Form 442, to provide uniform data from the Navy, Army, and Air Force. Paragraph 4C, BuMed C/L 51-62 is cancelled. Instructions for completion of the report are contained in basic directive.

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BUMED INSTRUCTION 6750.1 26 Sep 1952

From: Chief, Bureau of Medicine and Surgery
To: Commandants, All Naval Districts (less 10, 15, and 17) and Commandant, Potomac River Naval Command

Subj: Dental commissioning allowance list for Naval Reserve training centers

Enc: (1) Allowance List

1. This instruction authorizes procurement of initial dental outfits of material where required by dental officers performing "appropriate duty" at Naval Reserve Training Centers. BuMed C/L 50-17 is cancelled. Necessary procedures for procuring equipment are described.

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BUMED NOTICE 5215 30 Sep 1952

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations having a Medical Department Representative

Subj: BUMED instructions and notices having a limited distribution; numerical check list for

Encl: (1) Subject check list

1. Upon receipt of this notice, addressees shall verify the completeness of their limited distribution BuMed instructions and notices guided by the "distribution" column of enclosure. Requests for missing copies shall be forwarded to the Bureau, Attention Code 2124.

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BUMED INSTRUCTION 11240.1 6 Oct 1952

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

Subj: Ambulances under BUMED cognizance; policy and procedures concerning

1. This instruction promulgates the responsibilities of BuMed regarding ambulances and implements the policy and procedures regarding ambulances under the cognizance of the Bureau. The instruction does not include the reserve stock items intended for use in advanced base components, combat-type ambulances or bus-type ambulances. BuMed C/L 50-95 is cancelled.

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AVIATION MEDICINE DIVISION

Navy Air Evacuation

Our present system of evacuation by air has nearly eliminated the traditional ordeal and set-back most casualties experienced whenever they were transferred to the rear. This momentous advance and fundamental change in military medicine has been achieved by cutting down the time factor through the speed of planes, and by eliminating ground delays through a remarkable teamwork of all concerned. Since a team is efficient only to the degree that each member understands the roles of the other members, it behooves each of us who is remotely concerned with air evacuation to take a good look at the system.

Department of Defense policy is to use planes wherever practicable in the evacuation of patients. The primary role in this task has been assigned to MATS (Military Air Transport Service), a tri-service organization under Air Force control, but each of the Armed Services, including the Navy, is charged with the secondary role of air evacuation over routes not covered by MATS. The Navy has air evacuation personnel and several general purpose transport squadrons in MATS. The Fleet Logistic Air Wings provide supplementary air evacuation service, and any naval air activity may be called upon to evacuate patients.

It is a basic principle that the mission of air evacuation should ordinarily be given to the unit that routinely flies in the cargo. The Navy should therefore be prepared to provide air evacuation in the following spheres: 1. Combat zone Navy and Marine areas: a. marine land battle sectors (Marine planes), b. amphibious landings, and c. task forces at sea; 2. Remote areas of importance primarily to the Navy; and 3. Miscellaneous: a. emergencies, b. small fields adjacent to Naval Air Stations, and c. training.

If one of the other services is providing air transportation of supplies, the Navy may not be charged with the air evacuation support of a given marine battle sector or amphibious landing; surface transportation will probably be the evacuation of choice wherever we do not enjoy local air superiority or where ground fire is too heavy: some discretion and ingenuity must be used in deciding how each group of cargo planes will be used for air evacuation, or even if it will be used at all. Many types of planes have been modified specifically for part-time use in air evacuation.

Helicopters are highly adaptable for short hauls, and may often be used in forward areas, where even the morale effect is of tactical importance. Marine fighter squadrons have developed a fighter-helicopter tech-

nique for pilots (wounded or not) who have been shot down in enemy territory: the fighters locate the victim and then provide escort for the helicopter to and from the scene. Just before and during the pick-up, they strafe thoroughly on all four sides of the stranded pilot to discourage snipers, who often use him as a decoy. The pick-up is usually made by winch, to avoid presenting a stationary target. Larger helicopters are becoming available, and should be very useful where casualties are heavy.

Transport planes will be used on air fields, either for routine cargo-and-air evacuation flights or for emergencies. Seaplanes are adaptable for long hauls from coastal waters.

Air evacuation from task forces at sea presents many challenging problems. Casualties are usually light except when ships receive major damage. Only carrier-based planes, helicopters and sometimes large seaplanes are capable of landing and taking off among the ships. For security reasons, flights to and from the task force should be held to a reasonable minimum and will often be forbidden. The task force, however, is a fighting element, and its casualties should be evacuated promptly for morale as well as for medical reasons.

Helicopters can be used for transfer from ship to ship within the task force, and the patients held and treated aboard a carrier provided with extra medical facilities. When an opportunity presents itself, they may be transported over short distances to hospital ships at sea or to hospitals ashore. If evacuation lines are too long, it may be feasible to transfer to large seaplanes if sufficiently calm water is within range of the helicopters. This might be done in coastal waters or at sea through the use of a small ship equipped with a helicopter landing platform.

TRAINING, RESEARCH, AND ORGANIZATION are of primary importance in the present stage of the Navy's air evacuation mission. From its very nature, naval air evacuation will often have to be improvised to fit the occasion. This makes it only more important to be forehanded—— to be familiar with the problems, general principles, and basic techniques, and to have in mind a few simple but adaptable operating methods.

Training is of two types: that given to personnel directly engaged in air evacuation, and that given to personnel in hospitals and other installations associated with air evacuation. A few flight surgeons and a larger number of flight nurses and corpsmen require the first type of air evacuation training. The well trained Navy corpsman is able to do adequate air evacuation work with only on-the-job training. Knowledge and skills acquired on hospital wards are invaluable because an ambulance plane is essentially a flying hospital ward.

Corpsmen may have air evacuation duties in MATS or in Navy air evacuation squadrons. The latter tends to have more patients in critical condition, because the Navy will evacuate more forward areas. At present there are no schools offering training primarily for duty as an air evacuation corpsman. Naval Aviation Technicians get 10 hours of instruction in air evacuation.

Flight Nurses (who need about the same type of training as the corpsmen, except that their professional knowledge is greater) are given 234 hours of specialized training in air evacuation at the Air Force school at Gunter, Ala.

Navy Flight Surgeons receive about 10 hours of instruction relative to air evacuation at the Naval School of Aviation Medicine at Pensacola, Fla.

Training in air evacuation for those concerned indirectly is far more important than it would appear at first. It is the hospital that is primarily responsible for selecting and preparing patients for air evacuation, for classifying them according to the type of handling they will need, and for prescribing the treatment which they will receive enroute. This presupposes a thorough knowledge of the capabilities of the air evacuation unit as well as of the patient's condition. Neither MATS nor Navy air evacuation units will transport any patient by air, except in emergency, until he has been examined by a medical officer (a flight surgeon, if available), classified, and declared fit to travel by air. This is usually done at a hospital.

Classification of Patients is defined in the Manual of the Medical Department (14-9 and 23-223), BuMed C/L 47-143, and in JANAF Ltr. 50-363:

Class 1A: Disturbed psychiatric patients who are dangerous, have had to be locked up, and who require restraint.

Class 1B: Psychiatric patients who are not disturbed, but who are unreliable and have had to be locked up. These require special observation, and attendants should be prepared to apply physical restraint at any time.

Class 1C: Psychiatric patients who are reasonable and cooperative, and who were not locked up while at the hospital.

Class 2: Litter patients, other than psychiatric, who are unable to walk aboard the plane or to sit up in the plane.

Class 3: Ambulatory patients, able to care for themselves, but who might require medical attention or assistance enroute.

Class 4: Ambulatory patients, able to care for themselves, and physically able to travel alone, and who will require no medical attention enroute.

This classification is descriptive of the condition of the patient, and does not refer to the diagnosis. It is intended to aid in predicting the type of handling the patient will require. Erroneous classification is one of the most commonly reported discrepancies.

Fitness to travel by air. In general, if a patient is fit for transportation by any means, he is fit to travel by air. The following types of patients are not ordinarily acceptable, however:

1. Patients with acute or dangerous contagious disease.
2. Critically ill or moribund patients.
3. Acutely ill tuberculosis patients are especially contra-indicated for many reasons. For example, half-filled cavities tend to discharge their contents as the atmospheric pressure drops. The patient then coughs, and may seed large new areas of his lungs with tubercle bacilli.

4. Patients with respiratory embarrassment, or with pneumothorax.

5. Patients with recent attacks of coronary disease tend to develop relative hypoxia of the cardiac muscle, or even have another attack.

6. Patients with severe anemia, or any condition predisposing to tissue hypoxia.

7. Patients who have gaseous distention of the intestines, pneumoperitoneum, or who have had abdominal surgery within 6 days.

8. Patients with intermaxillary fixation other than with rubber bands.

Patients requiring careful screening or special handling:

1. Any of the above in the convalescent period.

2. Mediastinal tumors (because of frequent cardio-respiratory complications).

3. Patients with increased intracranial pressure, disturbance of the cerebrospinal circulation, brain tumor, or skull fracture, (because of frequent cardio-respiratory complications).

4. Patients with temperature over 101° F.

5. Intestinal obstruction (any degree)

6. Spinal cord injuries require special nursing procedures.

How to arrange for air evacuation:

1. Obtain proper authorization: Whenever authorization is requested give the patient's name, rank or rate, corps, branch of service, service number, and diagnosis (with number), and the name and location of the hospital to which transfer is desired.

(a) Between medical installations overseas: conform to the directives of the local command. This is usually a matter of following the chain of evacuation.

(b) From hospitals overseas to hospitals in continental U. S.:

(I) Patients transported from overseas by surface craft shall be transferred to the naval hospital nearest the port of entry, unless otherwise directed by the Commandant of the naval district in which the hospital is located or ASMRO (Armed Services Medical Regulating Office). The ship transporting the patients shall advise ASMRO by dispatch at the earliest possible date of the number of patients for transfer by classification outlined in Joint Ltr 50-363 (NDB Jan.-June 1950, p. 330)

(II) Patients received from overseas by aircraft shall be reported to ASMRO for hospital assignment by dispatch or telephone as appropriate by the Navy liaison representative if present, otherwise by the air evacuation unit. Employ codes outlined in AFR 160-27. Letter "N" shall precede numerical symbol case Navy patients, "M" case Marine Corps patients, "CN" case civilian patients under Navy cognizance, "DN" case dependent Navy personnel, and "DM" case dependent Marine Corps personnel.

(c) Patients originating in ship and station will be transferred to a hospital according to current routine procedure.

(d) Between hospitals in continental U. S.:

(I) In the same district: request authority from the Commandant of the district.

(II) Not in the same district: request authority from Chief, ASMRO (Armed Services Medical Regulating Office), Main Navy Building, 19th and Constitution Ave., Washington 25, D. C.

(e) In emergencies, take action as appropriate and notify proper authority of action taken.

(Additional authorization not related to air evacuation may be required in certain cases. If the transfer is for personal reasons and not to facilitate recovery or to make the most effective use of available bed space, a request for transfer shall be submitted by the patient to BuPers or Commandant Marine Corps via the Commanding Officer and BuMed. This does not apply, however, to combat evacuees.)

2. Request space from the proper Air Evacuation unit:

(a) Request space of Navy units in cases where the Navy Air Evacuation mission is involved. If planes of a local naval aviation unit are to be used, request should be sent to the Commanding Officer of that unit. If Fleet Logistic Air Wing facilities are to be used, request should be sent to the proper NALCOREP (Navy Air Logistic Coordinating Representative) (for transportation from east of the Mississippi or east or west from Corpus Christi, Tex., contact NALCOREP, Patuxent River, Md.; for transportation from west of the Mississippi, contact NALCOREP, Moffett Field, Calif.)

(b) Request space of MATS in all other cases. (Request should be sent to the Air Evacuation Liaison Officer of the nearest MATS air evacuation detachment or unit.)

Whenever space is requested, the following information should be supplied to the air evacuation unit: (a) Name of the patient. (b) Classification and diagnosis (with number) of the patient. (Each gives information useful in anticipating the type of space and of treatment that will be required). (c) If the patient is a female (nurse or female attendant will then be imperative). (d) Final destination of patient, and date transportation is desired, if other than first available flight. (This allows the carrier to plan details of the trip without further communication). (e) Any special factors, such as contagion, bulky cast, or need for an attendant (which may give further aid in anticipating the amount and type of space or of treatment required). (f) Evidence of authorization. (In the case of ASMRO, give the authorization number).

It is to the mutual advantage of patient, hospital, and air evacuation unit that the hospital pass on to the air evacuation crew all important information which will aid them in treating the patient enroute. This should be in the form of oral briefing and concise written records. Hospitals are responsible for transporting the patients to and from the plane: only careful liaison can prevent occasional long periods of waiting in the ambulances.

A case in point occurred during the first rush of the Korean air lift. A load of patients given preflight care had endured the 2-hour ambulance ride to the air field, where they lay for 3 hours in ambulances while maintenance personnel, aware only of the importance of early take-off, worked at exasperating motor defects and periodically sent back encouraging but ill-advised reports that the plane "would be ready in 20 minutes." The patients were eventually off-loaded at a holding ward to repeat preflight care, only to learn that the plane was now really ready. Maintenance personnel were then instructed to release no planes to air evacuation until final checks were completed. Patients are to be given high priority, since in many cases delay can cause dangerous complications, particularly if it interrupts treatment, or involves exposure to inclement weather. Great pains should be taken to have the patients arrive just in time to be loaded for take-off; if delay is necessary, the patients should be waiting at the hospital, not at the air field. This requires understanding and coordination of the highest order.

Conversely, in a local flight where the plane is scheduled to pick up patients from a number of hospitals, it is often better to leave the patients than to delay take-off.

3. Prepare the patient for air evacuation

The hospital is also responsible for the following: (a) The patient's identity-and-baggage card (NavMed 70). (Information includes special treatment required enroute, restrictions as to altitude, baggage check, et cetera). (b) Packing and labeling patient's baggage. (c) Providing any medications, food, supplies or equipment needed and not routinely carried by the air evacuation unit. (d) Giving proper pre-flight care. (This should include any of the following that are appropriate: medications, fresh dressings, transfusions and/or clyses, enemas, indwelling catheters, supports to prevent foot-drop, bivalving of new casts, replacement of maxillary fixation with rubber bands, masks for contagious cases, and restraints and/or sedation for Class 1A and 1B cases). Both the type and the timing of pre-flight care are important, and should be under the direction of a medical officer who possesses good clinical judgment and thorough briefing as to the facilities aboard the plane. (e) Brief the air evacuation crew (usually the flight nurse only) in respect to pre-flight medications, characteristics of the patients (especially psychotics), any special medicines or treatments to be given, et cetera.

References

1. Manual of the Medical Department, 14-9, 23-223, 11-362, 11-36.3
2. BuMed C/L 47-143, NDB July-Dec. 47-494 (NDB 47-981)
3. Joint Army-Navy-Air Force Ltr 50-363, NDB Jan-Jun 1950, pp. 330, 363, and 798
4. BuMed C/L 51-56

5. Manual of the Medical Department 1945, Paragraph 5117.2
6. Public Law 253, The National Security Act of 1947, Sec. 206(b) Par. 2 (NDB 47-722)
7. CNO Letter of 30 November 1949 (NDB 49-890).
8. BuMed C/L 50-92
9. ALNAV 32-51; 6-51, 141-50, 53-50
10. AFR 160-27
11. Medical Air Evacuation Instructions Flight Log. Air Wing Lant/Contl 52.
12. AvTech Manual

(CDR. Karl R. Whitney, MC, USN)

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Nominations for Change in Duty Since 15 August 1952

Captain (MC) USN

Klein, Warren E. from FMF Pac, El Toro to NATTC Jacksonville

Commander (MC) USN

Hedblom, Earland E. from MATS Pacific to USS Midway
Fusco, J. A. from NAAS, El Centro to NAS Los Alamitos
Senter, V. E. from USS Midway to NAS Memphis
Norman, Clyde W. from NH San Diego to USS Bennington

Lieutenant Commander (MC) USN

Jones, Edward A. from DUINS SAM to Carrier Air Group 10

Lieutenant (MC) USN

Harnsberger, J. P. from FASRON 106 to HU-2 Lakehurst
Fuller, Frank D. from DUINS SAM to Composite Squadron 61
Pettit, W. A. from SAM to NARTU Jacksonville
Holton, Gladys Hope (MSC) from NAS Quonset Point, retired
Muehe, C. H. from NAS Patuxent River to FASRON 795
Wiley, Homer P. from VC-61 to NAAS Corey Field, Pensacola
Durkan, G. P. from VX-3 to NAS, Akron
Bowers, J. A. from NAS Akron to VP-9
Rush, A. P. from NAAS Corey Field, Pensacola to USS Sibony

Lieutenant (jg)(MC) USN

George, John O. from DUINS SAM to Patrol Squadron (VP-812)
Bleecker, Harry H., Jr. from DUINS SAM to Patrol Squadron (VP-47)
Foy, James L. from DUINS SAM to FASRON 106
Foster, Ray D. from DUINS SAM to FASRON 107
Conroy, Richard J. from DUINS SAM to Carrier Air Group 19
Graf, George P. from DUINS SAM to Carrier Air Group 8
Bryan, Ross E. from DUINS SAM to Carrier Air Group 1
Brannigan, George V., Jr. from DUINS SAM to HS-1
Turner, Robert S., Jr. from DUINS SAM to FMF Pacific, El Toro
O'Connell, Patrick F. from DUINS SAM to FMF Pacific, El Toro
Blue, Willis B. from DUINS SAM to 2nd Marine Air Wing, MCAS Cherry Point
Burton, Truman Y. from DUINS SAM to Air Transport Squadron 5

Defects Noted On SF-88's Submitted to BuMed for the Months of August and September

Omissions	285
Excess copies	904
Lack of copies	55
Carbon copies not legible	32
Carelessness in recording results	91
Flight status not recorded	70
Flight time omitted	88
Not fully explaining dental defects of NavCad applicants	15
Not recording C. E. R. and improperly placing pulse in spaces	4
Refractions not properly recorded	12
Not leaving right side in column 73 for BuMed endorsement	43
Failure to state aviator's service group in recommendation	120
No reason given for hospitalization	3
Not clarifying or going into enough detail regarding medical defects	11
Failure to mention disqualifying defects on SF-89	17
Failure to submit SF-89 (Medical History Sheet)	22
Omissions on SF-89's	55

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