

## THE USE OF A HOSPITAL FORMULARY.\*

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Hospital formularies have not been the subject of much discussion at previous AMERICAN PHARMACEUTICAL ASSOCIATION meetings, nor have many articles relating to them been published in the pharmaceutical press of this country. Questions regarding the use of such formularies have been discussed more frequently, and debated at greater length, at meetings of the Catholic Hospital Association than at those of any other nationally organized group.

It would seem that any discussion regarding the related questions of scope of such institutional publications and of the possibility of restricting prescribing in certain hospitals to the use of drug products listed in a formulary of this type would not be profitable or proper here. I believe however, that the purposes for which this Section of the A. PH. A. was organized can be promoted by bringing to this forum our ideas regarding the value of hospital formularies and any proven ideas which have been found to increase the value of these publications to physicians and patients in the particular hospitals which we happen to represent.

The statements made in this paper are not intended as an argument in favor of the use of a private drug-formulary in all hospitals. It is recognized by the writer, and by all others who have a fair knowledge of present conditions in the hospital field, that such a formulary would be of little value in many institutions, and of practically no value in those hospitals which do not employ a pharmacist at least on a part-time basis. I shall attempt rather to outline and comment on some of the more obvious advantages to be gained through the use of a private formulary in those hospitals having large resident staffs of physicians and surgeons, those which cater to large numbers of open-ward patients and those which maintain out-patient departments in which drugs are furnished to patients by the hospital pharmacist.

In listing possible advantages we must first consider the welfare of our hospital patients. Some of the criticism which has been leveled at the use of standard private-formula drug preparations in hospitals has been based on the assumption that they were usually cheap mixtures, intended in most cases to cover a variety of human ailments, and which were frequently prescribed because of cheapness rather than for any definite therapeutic efficacy. I know that most of the hospital physicians I have contacted over a period of years could justly resent the implication inherent in this assumption. I would say definitely that in the average hospital using a private formulary at this time the patient benefits equally with the physician and the hospital. In a busy hospital the standard made-up or quickly available standard extemporaneous preparations offer many advantages which need not be detailed at length. *First* in importance to the patient and the physician is the fact that prescribed treatment may be inaugurated promptly. The hospital physician seldom prescribes merely on snap diagnosis, except possibly to allay obvious pain, or other distressing conditions of a symptomatic nature. With his patient at ease he may proceed with orderly methods of diagnosis. To uphold his professional

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reputation he must make few mistakes in diagnosis; and his remedies and methods of treatment must produce results which compare favorably with those obtained by other physicians on a hospital staff. Under such circumstances a physician is likely to demand the drug or preparation which in his judgment is best suited to the condition of his patient, regardless of cost to the patient or to the hospital. In many cases however, the remedy chosen is a simple drug or a standard-formula hospital drug product, which will be either cheap or expensive as occasion demands. In such cases, the hospital usually benefits through lowered drug costs. Costs are paid by the patient; or by the public, which, in the final analysis pays the financial deficits of non-profit hospitals. More service to more patients at less cost is, or should be the goal of the administrators and the personnel of all public hospitals. The extent to which the pharmacist is rated as an important cog in the service organization of a well-managed hospital is usually proportional to the zeal exhibited by him in aiding in the attainment of this goal. A hospital formulary which standardizes and permits the quantity manufacture of such non-official mixtures and other pharmaceutical preparations as may be popular in individual hospitals will aid materially in reducing labor and costs for materials. Unnecessary costs which can be eliminated, and which permit a reduction in the amount of the average patient's bill are a potent factor in building up goodwill for the hospital.

*Second*, we must consider the needs of the physician who spends a large part of his time in hospital practice. I have commented previously on the compelling reasons these men have for demanding the best available medication, when drug administration is indicated. It is a generally accepted fact that physicians trained in any given medical school and allied hospital, or hospitals, will usually follow more or less well-defined methods of diagnosis and treatment. Prescriptions and simple or compounded drugs ordered will, at least in the early years of practice, conform rather closely to the ideas inculcated by certain medical school instructors and hospital-staff superiors. The result of this "follow the leader" tendency is shown in the numerous drug combinations of similar content ordered for the treatment of similar clinical conditions frequently encountered. The compounded preparations found in most hospital formularies are in the main simple adaptations of these frequently repeated prescriptions set up for quantity production, and are designed to reduce to a minimum the frequently unintentional quantity variations of two or more potent ingredients contained in these mixtures. In the larger hospitals a private formulary serves a real need in simplifying the prescribing of typical mixtures favored by groups of physicians treating patients in these institutions. Such formulas are usually simplified as much as possible to avoid undue labor in their preparation in the hospital pharmacy. These formulas are frequently used both as written, or as basic medication to which further additions of synergistic or modifying drugs may be made. The use of such standard-formula preparations saves the busy physician much time in the writing of prescriptions, and has the added advantage of preventing possible errors on the part of hospital internes who may on occasions be requested to write out prescriptions. Some staff physicians will refuse to accept the principle of majority rule in regard to the formulation of such mixtures or solutions, and will continue to write prescriptions for pet variations of standardized formulas. The more cheerfully we accede to the average physician's whims in respect to his pet combinations of drugs the less onerous will be the sum

total of his demands over a period of time. Some of the physicians who frequently seek and accept the writer's technical or therapeutic suggestions to-day are remembered as individuals who in earlier years more frequently demanded and received much unnecessary service.

In previous comments, intended to convey the idea that I believe a private formulary can be of real value in the majority of hospitals having representatives in this Section, I have omitted, except by inference, one of the important reasons for an earlier suggestion that ideas should be presented here which will aid us individually to be of help in improving some of the varied types of compilations known as formularies in hospitals. Most of us are in positions where the lack of knowledge of *Materia Medica* and prescription writing exhibited by hospital internes from a majority of the medical colleges is becoming increasingly apparent. I know of no more generally applicable method of unobtrusively advancing the cause of rational and economical drug-prescribing by our younger physicians than by disseminating needed information through the medium of a hospital formulary. If the hospital interne becomes sufficiently familiar with the use of standard drug preparations and simple mixtures listed in such a formulary, and acquires confidence in the value of these products in the treatment of disease, he will usually continue to specify these same drugs and preparations when he enters private practice. In most of the larger teaching hospitals a house formulary of some kind is now regarded as a necessity. As intimated before, these formularies vary widely as to scope and as to value to the institution whose needs they are intended to serve. Uniformity in these respects is not to be hoped for. In respect to contents I do not believe uniformity would be desirable in different independently operated hospitals. For the hospital interne the formulary used in an institution should be a booklet of carefully considered information, which will supplement in some measure his meager knowledge of the proper methods to use in combining or dispensing in effective and palatable form the simple drugs which he has been taught are of therapeutic value.

We are all familiar with the incomplete and ambiguous type of prescription which so often comes to the institutional pharmacy. We become accustomed to this in our daily routine. In most cases we can prevent the lengthy periods of waiting for medication which the patient would frequently face if such prescriptions were written outside of the hospital. Few of us, however, can overcome a certain feeling of chagrin when such prescriptions are sent out of the hospital to our friends in retail pharmacies. Our sense of pride in our institutions is ruffled, and we wonder vaguely how this form of bad advertising might be at least lessened in so far as our particular hospital is concerned.

As pharmacists we are not responsible for the inadequate training received by medical students in the matter of prescription writing. We can only hope for a change in the curriculum of the medical schools. Personal help or advice to a few individual internes is the full extent of personal effort we may exert to correct this condition in most hospitals. Aside from this, our formularies appear to be the most readily available tool with which to work. In many of our hospitals the necessary costs of treatment for private patients, increasingly onerous charges for expensive proprietary drug products must be added. The majority of our visiting

physicians order much of this material because of a lack of confidence in their ability to write prescriptions for wanted drugs in equally acceptable forms. Hospital formularies would help some hospitals to cut down on unusually high drug charges to patients if the use of such publications could be inaugurated. Improvement in inadequate formularies now in use in some other institutions, with aid to the hospital interne as a guiding principle, should provide some of us with additional opportunities for service.

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### A FURTHER STUDY OF TINCTURE OF CANTHARIDES.\*

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At the 1936 meeting of this ASSOCIATION, the senior author submitted a paper entitled "A Preliminary Study of Tincture of Cantharides" (1) to the Section on Practical Pharmacy and Dispensing. The paper reviewed the changes which have been made in the official formula for this preparation in the attempt to devise a method of preparation and a menstruum which would yield a satisfactory tincture.

The investigations of Squibb (2), Scoville (3, 4, 5, 6), Nitardy (7, 8, 9) and Eberhardt (10) were briefly reviewed. As a result of these investigations, notably those of Scoville, the menstruum for the present official tincture contains 10% by volume of glacial acetic acid. Numerous criticisms of the present official preparation have been voiced, chiefly on account of its strong acetous odor. Because of these criticisms, the senior author undertook to devise a method which would yield a preparation free from these objections. The earlier paper reported the results obtained from thirteen experimental tinctures. It was found, as earlier investigators had reported, that alcohol was unsuitable as a menstruum; that mixtures of alcohol and glacial acetic acid gave better results; that a menstruum containing 10% of the acid was better than those of lower concentration. It was further found that mixtures of hydrochloric acid and alcohol were superior to mixtures of glacial acetic acid and alcohol in the extraction of cantharidin. The official process of maceration was found to be superior to the official process of percolation as a method of extraction for cantharides. To confirm the results previously obtained, and to establish the minimal concentration of hydrochloric acid in alcohol as a menstruum for tincture of cantharides, the present study was undertaken.

#### EXPERIMENTAL.

Two lots of cantharides were procured and were assayed by the U. S. P. method. Drug A, a fine powder, yielded 0.803% of cantharidin. Drug B, a fine powder, yielded 1.029% of cantharidin. Fourteen tinctures were prepared from Drug A and were assayed according to Scoville's (4) modification of the method of Self and Greenish (11). The methods of preparation, menstruum used and assay results are shown in Table I.

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