Clinical Support Functions of Computers in Psychiatry

The State of the Art

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The aim of this panel discussion was to describe the current status of computer support methods in clinical psychiatry. The four presentations reflected somewhat different evaluations of the current situation. The most notable general theme was that despite the obvious benefits, there are many hazards on the road to the collection of reliable, valid clinical data at costs that can realistically be borne in most clinical settings. Abstracts of the four papers are presented in the order followed at the meetings.

Automation of Psychiatric Case Records: Will it Help the Clinician?

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Much time, effort, and money is being spent on the development of systems for automating psychiatric clinical records, that is, recording the information in a form suitable for mechanical or electronic storage, retrieval, and processing. Many have a feeling that for good or for bad, this trend is irreversible. The reasons for this trend are multiple and include dissatisfaction with the traditional system of keeping clinical records, possible advantages inherent in automated systems, and an erroneous assumption that anything that humans can do, a computer can do better. On the other hand, there are a large number of thoughtful clinicians who claim that automated records, although perhaps useful for administrative or research purposes, will be of no value to the clinician trying to understand and treat his own patients.

The authors have for several years been working on the development of various forms for use in automated record keeping systems for psychiatric patients. Based on past experience, mistakes, and some idle speculation, the following suggestions are offered for maximizing the potential for such systems for actual clinical use:
GILBERT HONIGFELD, et al.

1. The automated record should, as far as possible, replace rather than be an addition to the traditional record. No one should be asked to enter the same information into both an automated record and a traditional clinical record, as this constitutes double work.

2. The bulk of the information in the automated system should be entered in pre-coded categories, rather than as uncoded narrative material. This is because although uncoded narrative information can be entered into an automated system and has the seeming advantage of not constraining the clinician, once in the system, there is little that can be done with it.

3. Provision should be made for the clinical record also to contain information not covered by pre-coded categories. This can be done by adding a "comments" section to pre-coded forms.

4. The amount of time spent by an individual in obtaining and entering the required information should be reasonable. Unfortunately, the man who decides what information is required, is rarely the man who supplies it. The real challenge in developing these systems is not to think of more and more categories of information that would be nice to have, but to decide what is really essential and operationally feasible in the setting where the system will be used.

5. The automated system should generate output which is useful to the clinician who supplies the information. This can be done by having the computer describe patient characteristics in a manner useful to the clinician, but not directly available to him through his contact with the patient. Examples are summarizing the data in scale sources or displaying changes in repeated evaluations over time.

6. There should be procedures for minimizing, detecting, and correcting errors.

7. Procedures for ensuring confidentiality are necessary if clinicians are to feel comfortable supplying information to the system.

Use of Computers in Monitoring a Psychiatric Treatment Program

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While some investigators have suggested that the double-blind strategy is not universally appropriate for psychopharmacology research, it was our feeling that this is perhaps the only way to try to judge the effectiveness of psychiatric treatment as it naturally occurs—using combinations of psychotherapy and psychoactive medication. In 1966 we began studying a large psychiatric inpatient service where treatment was unrestricted by using independent raters, automated data collection and statistical procedures to adjust for the lack of the usual experimental controls. The procedure was to interview and rate the patient at the time of admission using the Brief Psychiatric Rating Scale and a special history form. These forms were processed using an optical scan apparatus. Six weeks after admission the patient was
re-evaluated. At the time of discharge, treatment information was obtained from the medical record and the doctor, and these data were also added to the patient’s computer file. Analyses were to show which drugs were used, in what combinations, and assess their effectiveness in an actual clinical setting. Additionally, it was hoped that this data pool would generate information illustrating the interrelationships of symptoms, historical data, and treatment response. Using a double-blind approach, these goals would have been impossible to achieve.

Possible benefits of such a system to the clinician include: (1) Constructing a patient profile using the BPRS and historical data which could be returned to the chart within 24 hours, (2) Comparison of each patient with similar patients as to treatment selection and outcome, (3) Brief resumes would be quite useful for review purposes and record standardization, and (4) At the end of treatment the second evaluation could be returned to the clinician for follow-up purposes.

This approach has merit, and the independent assessment team may be a material asset for both research and clinical purposes. However, it is expensive to maintain such an independent staff and the necessary supporting clerical and computer personnel. These problems are formidable, but many savings and controls could be implemented that would lead to important economies while retaining much of the benefit—at least for clinical purposes. For example, nurses, residents, or the attending staff person might act in lieu of an independent rating team. This responsibility could be rotated among staff, relieving them of direct patient care during that time, or could be left in the hands of those responsible for treatment in some settings. The number of treatment categories might be reduced by getting the staff to agree to use only certain drugs and treatment combinations. Another approach is to allow the full range of treatments but then assess their efficacy by general category only, e.g. phenothiazines, antidepressants or psychotherapy.

Judicious modification can make this approach economically feasible while retaining sufficient credibility for research purposes.

The Hillside Hospital Treatment Evaluation Program

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The general purposes of the Hillside Hospital Treatment Evaluation Program were outlined. These included a) The facilitation of clinical communication between staff members, b) The redistribution of the work of collecting patient information, for better professional manpower utilization, c) The centralization of clinical record keeping and automating data retrieval, d) The provision of assistance to doctors, nurses and other clinical personnel in charting patient progress, encouraging treatment review, and assisting in differential diagnoses and treatment formulations.
GILBERT HONIGFELD, et al.

The specific procedures in use and under development include:

1. Nurse's Report
2. Case History
3. Psychiatric Examination
4. Patient Progress Record
5. Drug Order Form
6. Side Effects Report
7. EEG Report
8. Psychological Test Report
9. Drug Abuse Report
10. Sociometric Status Report
11. Activity Therapy Report
12. Follow-up Status Report
13. Discharge Summary
14. Medical History
15. Laboratory Test Report
16. Treatment Review Reminder

Specific emphasis was placed on the acquisition and reporting of psychiatric case historical material and the computer writing of the first draft of the case study. Our current procedure was developed to answer the need for a consistent set of case historical data on all patients for both clinical and research purposes. Earlier attempts to standardize case reporting were of some help, but failed to insure the minimum data set desired on all patients.

Currently, a social work case aide (bachelor's level social worker) reviews all clinical documents, and interviews patient and key family members. Following this, a 300 item checklist is completed (total time is approximately 4 hours including interviews). This information is coded, keypunched and read into the computer where through the use of the NOVEL language developed at Rockland State Hospi-

tal,* a narrative case history is produced. This case history follows the outline guide for use by Hillside Hospital doctors, and the computer write-out represents, we feel, a useful first draft of the case history.

In order to determine whether the use of computer written first drafts helps the doctor do a better job, content analytic studies were undertaken of 72 case histories. The experimental design was based upon random assignment of computer written case histories to doctors so that in the final experimental sample, each doctor contributed some case studies both with and without the help of the computer write-out. Our results indicated that those case histories prepared with the help of the computer write-out were significantly more thorough than control cases written by the same doctors. Furthermore, the benefits of the computer support seemed to be most apparent in those subsections of the case history which showed the lowest thoroughness scores for control cases.

It was concluded, therefore, that the adoption of this procedure has resulted in a more optimal utilization of mental health professional manpower in that much of the clinical data gathering can be done by a trained social work case aide, thereby freeing the doctors' time for more therapeutic activity. In addition, we have demonstrated that this technique results in measurable gains in the quality of the final case history.

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Computer Applications in Private Psychiatric Practice

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Clinical support functions of computers in psychiatry are usually discussed within the context of a state institution or a private hospital setting. By alluding to the development of our own practice we shall try to explain why the present situation exists with respect to computer applications in private psychiatric practice and what can be done about it.

A major aspect of our practice was the maintenance of clinical notes in each patient's chart; incorporated as part of the notes with some standardization, were descriptions of patients' personal characteristics, social and medical history, progress notes, medication prescription, total daily dosage, side effects and “global” responses to medication. Research commitments necessitated great time expenditures by the psychiatrists of searching through clinical notes of a particular study population, re-recording essential medical data and personal characteristics of the patients, and compiling them in the necessary format to perform statistical operations. Individual case reports had to be dictated and a final summary opinion had to be comprised. To increase the efficiency of the research system, we developed two standardized forms: the General Purpose Psychiatric Questionnaire (GPPQ) and the Medication Record. With these two forms we were able to dictate accurate individual case reports without searching lengthy charts for the data or reentering data onto an intermediary form; all pertinent data were precisely displayed ready to be summarized and analyzed. The research system and the clinical practice functioned very efficiently in this way until 1965.

From 1963 until 1965 the size of the practice increased to 700 active patients, the time the doctors had available for research purposes was diminishing rapidly, and a means of quicker access to and processing of the data was deemed necessary. The obvious solution was to use data processing equipment (computers).

Consultants were hired to assay our current research methods. The GPPQ and Medication Record were reevaluated, revised, reformulated, and restructured to allow the transposition of data from these raw documents onto punch cards. At the end of the study all the punch cards, containing both history of the patients and course of treatment, were batch processed. The net result of our introduction to data processing was the reaffirming of the forms utilized in our manual system and the generation of standardized individual case reports that did not require the doctors' additional time.

Throughout 1965 and 1966, no application programs were developed; the new and revised forms were maintained and accessed manually. We evaluated our present situation with respect to what we had expected from data processing and concluded that the money, time, and energy spent over the past few years to develop computer supported research projects was too expensive to implement. We functioned effectively until mid 1968 when, approaching a case load of 2,000, all business and research activities backlogged. We decided to approach data processing by developing a business and clinical oriented system rather than a research oriented one—a
system that would handle routine office functions, both administrative and medical, that would stress overall speed and accuracy, data accessibility, legibility, patient security, chart completeness, and information utilization without a disproportionate increase in costs. We tried to avoid repeating some of the past mistakes.

Our system supports many routine office functions including patient billing, automatic prescription generation, routinely issued "narcotics" list, a "tickler" file, a "warning" file, and provision for family physician notification, etc. There is no question that existing hardware will support the applications as outlined above, but it seems to be necessary to wait until fourth generation equipment is available for the cost to be reduced to the point of making it economically feasible.

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