they like to the stomach or the rectum, and nobody raises ethical doubts.

DR. ROLLIN: I'm thrown back on what I might call my self-righteous humbuggery. Nevertheless no one will persuade me to recommend another leucotomy, or any other type of psychosurgery. We're still too ignorant about what the brain is or does, and we have no absolute criteria for recommending the operation.

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Contemporary Themes

The Problem Oriented Medical Record

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In recent years there has been growing interest in the problem oriented medical record, a system introduced by Lawrence L. Weed, professor of medicine at the University of Vermont. Through the generosity of the King Edward's Hospital Fund and the Ciba Foundation, Professor Weed was able to visit the United Kingdom in January 1973 to lecture and to take part in a series of meetings.*† His visit was a great success. An outstanding speaker, he convinced his audiences of the value of the problem oriented record and its implications for clinical medicine and medical education. While he was in London I was privileged to spend a good deal of time with him and we discussed many aspects of the problem orientated approach. His views are having an enormous influence in the U.S.A. but interest in Britain has been confined to a few enthusiasts. As only a few people could hear him while he was here I thought it would be valuable to record my impressions of his philosophy.

Components of the Record

Weed advocates the use of the problem oriented medical record made up of a problem list, a data base, an initial plan, and problem orientated progress notes.

The *Problem List* is the key to the problem orientated medical record and forms an index or table of contents to the notes; it appears on the cover or the front page and thus allows a rapid review of the patient's clinical condition. Each problem list should include *all* of a patient's problems: precise diagnoses, pathophysiological findings—such as cardiac or respiratory failure, and symptoms, abnormal physical signs and laboratory investigations which are not explicable by a disease or syndrome already listed. Psychiatric and social problems are also noted as well as relevant past illnesses and any other factors that may influence patient care. Such a problem list (fig. 1) does not include diagnostic guesses, but states problems at a level which is consistent with the doctor's true understanding of the case even though the terms used may be elementary (that is, Epigastric pain—not ? Duodenal Ulcer ? Gallstones).

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The problem list is a permanent record but the individual entries can if necessary be changed. If an existing problem is clarified (as in fig. 1 "Epigastric pain → duodenal ulcer"), or if it is discovered that an entry has been made in error, then the list can be modified and the change dated. As new problems arise they are simply added to the problem list. The problem list is thus a dynamic statement of the patient's medical history and allows a rapid assessment of the situation existing at any given moment.

FIG. 1

A.B. MALE AGE 63
PROBLEM LIST 27.3.73
ACTIVE

1. EPIGASTRIC PAIN
→ DUODENAL ULCER (6.4.73)
2. CHRONIC BRONCHITIS
- 3.
4. LEFT INGUINAL HERNIA
5. SMOKES 30 CIGARETTES/DAY

INACTIVE

TRANSURETHRAL
RESECTION 1971

The problem list is generated initially from a body of clinical information which Weed has called the *Data Base*. It corresponds to the information which we normally assemble before making a diagnosis and its counterpart in our conventional hospital record is the history and physical examination. The data base should contain all information which the doctor thinks it necessary to collect. In the well-staffed hospital it could be large and fully comprehensive but in all clinical situations an appropriate data base should be designed to meet individual requirements.

Weed's ideal data base differs in several respects from our conventional history and physical examination. Firstly, it includes all relevant information whether it is gleaned from relatives, doctor's letters, or old notes. Secondly, certain laboratory investigations (such as haemoglobin level, chest x-ray film, and urinalysis) are requested routinely as part of the data base as these tests often provide valuable information even if the clinical picture does not suggest the need for them. Weed also emphasizes the inclusion of social and demographic information which can be invaluable for the effective practice of both clinical and preventive medicine. For example, where there are many lakes or canals drowning is a relatively common cause of death in

*A symposium on "Problem Oriented Medical Records" chaired by Sir Francis Avery Jones was recorded on video tape. Copies may be obtained from The University of London Audiovisual Centre, 11 Bedford Square, London WC1B 3RA.

†A tape recording on the use of problem oriented records in general practice is available from the Medical Recording Service Foundation, Kitts Croft, Writtle, Chelmsford CM1 3EH.

children. In such an area the data base for children might record whether they can swim; if they cannot steps could be taken to provide instruction.

The data base is used to formulate a list of problems and it is this list which is the basis for further clinical activity. For each problem a goal is decided and a plan of action prepared. These *Initial Plans* (fig. 2) are written up under individual problem headings and they are divided logically into three parts: (i) the collection of further data to aid diagnosis or to facilitate management; (ii) the choice of therapy; and (iii) patient education, which is a statement of the dialogue which has taken place with the patient about his illness and its management.

The fourth section of the problem oriented record contains the *Progress Notes*. Each time a note is written it is recorded under the number and title of the problem under discussion; this makes it easy to follow the chronological development of any particular problem and the logic pathways which govern its management. The follow-up notes are themselves structured and entries are recorded under five major subheadings (fig. 3): (i) subjective data—that is, the progress of the patient's symptoms; (ii) objective data—that is, findings on physical examination and the results of investigations; (iii) interpretation; (iv) therapy; and (v) plan for future action. It is not necessary to make notes about all problems every time the patient is seen nor is it essential to write a comment under every subheading.

FIG. 2
A.B. MALE AGE 63
INITIAL PLAN
1. EPIGASTRIC PAIN

? duodenal ulcer ? pancreatitis ? gallstones Rx mist mag. trisil., aludrox pt. education—told probably D.U. and to stop smoking	barium meal, occult bloods ? endoscopy if barium negative amylase cholecystogram if barium meal negative
2. CHRONIC BRONCHITIS—Acute exacerbation
- Sputum—microscopy and culture
- Resp. function tests
- Monitor peak flow
- Rx Ampicillin, choline theophyllinate

FIG. 3
A.B. MALE AGE 63
PROGRESS NOTES
6.4.73

1. EPIGASTRIC PAIN
- Subjective: Pain greatly improved.
- Objective: Barium meal-ulcer crater in cap. Occult blood positive
- Interpretation: Duodenal ulcer (..change title of problem 1).
- Rx: continue antacids
- Plan: Discharge to care of G.P.
2. CHRONIC BRONCHITIS
- Subjective: Still dyspnoeic on effort. Coughing less.
- Objective: Chest x-ray—no change. Sputum—pneumococcus—now less purulent. Peak flow rate improving—
- Interpretation: Doing well.
- Rx: continue ampicillin and choline theophyllinate
- Plan: G.P. to look after him.

The problem orientated record is growing in popularity. It is in common use in the U.S.A., particularly in medical schools, and there seems little doubt that it will soon be used widely in Britain. Many doctors attempt to modify Weed's system but I have found that it is simpler to stick as closely as possible to the structure which he has advocated.¹

Auditing

The problem oriented approach offers several important clinical and educational benefits—in particular the ability to audit the quality of medical care. At present we cannot assess how well doctors care for their patients as there are no rules for making such a judgement. Consequently the individual doctor does not know whether his clinical management is adequate. Probably lack of feedback is a commoner cause for poor care than deliberate medical negligence and the introduction of an appropriate feedback loop (in the form of audit) should greatly improve the quality of care.

The potential benefit of audit appears obvious, but Weed emphasizes the need for caution—"audit must be designed to educate not to punish." Thus those being audited must know precisely the form and the rules of the audit and must agree with them and with the consequences of failure. Weed suggests that instead of studying the outcomes of individual diseases or the fulfilment of criteria specific to one condition we should try to assess those qualities which characterize the doctor's handling of all clinical problems—thoroughness, reliability, analytical sense, and efficiency. Our conventional records do not allow such an assessment but with the use of the problem oriented record it is a relatively simple matter.

Thoroughness can be assessed from the completeness of the data base, problem list, and initial plans, and from the progress notes—which will indicate whether the plans have been carried out; reliability by random checks of the accuracy of both the history and physical examination and of the entries which are recorded in the progress notes; analytic sense by judging the logic on which the initial plan is based, the doctor's ability to interpret clinical information, and the intelligence with which he uses the medical literature to decide on a course of action. Efficiency can be assessed by determining the time taken to see a patient and to make a thorough, reliable, and analytically sound entry into the record; efficiency will also be reflected in the way in which the record is organized and kept up to date. Whoever audits the notes should not criticize them simply because the views expressed are not identical with his own. If the doctor's actions were conventional or common sense, or were taken after consulting an appropriate reference source then no criticism is deserved and it is particularly important that audit should be conducted on this basis.

For Weed audit is a key factor in the training of both undergraduates and hospital junior staff and he also recommends it for the continuing education of both the general practitioner and the hospital consultant. Colleagues with a mutual interest in the problem oriented approach can audit each other, but in the long term it is undesirable for audit to be done only by friends or close colleagues: occasionally one should use an external assessor to study the notes of patients whose illnesses relate to his own specialty.

Many may be alarmed at the thought of audit but they should not feel threatened by the educational type of audit proposed by Weed, as its success depends on the willingness of the subject to be audited and on his complete agreement on the rules and consequences. Having tried this method, I share Weed's enthusiasm for its educational potential.

Medical Education

Our inability to audit the quality of medical care has had serious educational consequences as we do not know, even at the time they qualify, whether our students are capable of looking after patients. We use a variety of forms of assessment but our final examinations are dominated by the assessment of the student's knowledge of factual information even though we know that clinical efficacy depends more on a doctor's behaviour than on his core of knowledge; many gifted examination candidates are incompetent at the bedside while their less illustrious colleagues may blossom when given responsibility for patients.

Weed advocates a novel and exciting approach to the training of a doctor. He suggests that we should place no emphasis at all on the memorizing of information. "We should teach our students a core of behaviour rather than a core of knowledge" and we should assess their clinical competence directly using the system of audit described above. We can judge whether a student is thorough, reliable, analytically sound, and efficient and by other techniques can assess his manipulative skills and the appropriateness of his attitudes towards patients.

This system is not incompatible with the views of those who insist (legitimately) that a core of knowledge is essential for efficient medical practice. The student must obviously make use of knowledge before he can formulate a problem list, work out an

appropriate plan for each problem or write sensible, logical progress notes, but initially that knowledge need not have been memorised. The student can write all of his clinical notes with textbooks or journals at his elbow and he should consult them if he is not familiar with the information required for the next entry. Admittedly it will take the student a long time to write up his notes, but there will be little need for any other kind of private study. He will read about common problems frequently and will remember the important things about them without effort and with a much greater understanding of their relevance to patient care.

It seems sensible that students' notes should form the basis of their medical education as it is there rather than in conventional examinations that their clinical ability will be best revealed. By auditing the notes the teacher can help the student to improve and can stimulate him to learn. The emphasis during audit must be on *learning* and the teacher should not feel that it is his main function to provide information. Instead he should direct the student's attention to faults in the record and try, with the student, to find out how the errors occurred. To make sure that difficulties are resolved he should make the student revise an inadequate record and should check the corrected version.

It is not only clinicians who can conduct audits of the kind described above. Pathologists and radiologists could analyse the record—to assess the students' use and understanding of the services which they provide—and Weed has also advocated that preclinical teachers should use audit in a similar fashion; indeed, for the preclinical teacher the feedback obtained on the results of his own teaching might be of particular value.

Ideally the teacher should audit students individually. Weed emphasizes that by teaching students on their own "we can concentrate on sharpening the cutting edge of their ability" and has found that progress is particularly rapid under these circumstances. Individual tuition might appear impracticable in terms of teacher time, but Weed points out that it does not have to be a regular or frequent occurrence. A short intensive spell may so improve a student's performance that he can work on his own for a relatively long period. Another audit will then determine if his progress is satisfactory and whether further individual tuition is required.

Paramedical Personnel and Patients—The Doctor's Helpers

One major and valid objection to Weed's insistence on the complete collection of an explicit data base appropriate to the age, sex, and to other characteristics of the patient is that it is impracticable for the busy doctor in general practice or in outpatients. Weed and his followers point out, however, that it is not necessary for a medically qualified person to collect all of the information required for a data base: lay personnel can collect much of the history and can be trained to do parts of the physical examination in a reliable fashion.

Weed also emphasizes the potential role of paraclinical personnel in another area. In Vermont nurses, physiotherapists, and social workers are encouraged to write their own comments in the progress notes of the problem oriented records. They use the same format as the medical staff, who do not then enter the same information but add comments only if they are new or if it is necessary to amend those already written. Again, the idea conflicts with our traditional customs but one can imagine the great stimulus it must be to the nursing and other staff to be allowed to contribute in such a direct and practical way to patient care. One might even speculate that the broadening of

the nurse's role in this way might have a significant effect on the present dismal rate of recruitment.

One of the most interesting comments made by Weed during his visit to Britain was that the patients themselves are the most valuable paramedical helpers. "Not only do they have the greatest motivation but there is one for each patient and they even pay to help!" The important role of the patient has been emphasized since Weed, and Bjorn and Cross and others have begun to give their patients their problem list and, if they should request it, their whole record. The possession of the record is of advantage to the patient if he subsequently attends a different doctor but it has also been found that it improves the immediate doctor-patient relationship "converting it to an adult-adult relationship rather than an adult-child one." If the patient disagrees with the doctor about the nature of his problems the doctor may obtain valuable feedback; because he has to justify his views to the patient he may either improve the patient's own understanding of his illness or equally may have to revise his own views. Weed and his colleagues have found that great benefit results from telling the patient everything about his illness—*anxiety is reduced and compliance with drug regimens is greatly improved*. Most of us, of course, would be worried about communicating in this way with a patient who is suffering from an incurable or rapidly fatal illness and individual judgement must be applied. Apparently the difficulties have been fewer than might have been expected and this approach is in accord with the views of many who have great experience in the management of terminal illness.

The Future—Role of the Computer

The problem oriented approach has already made a great impact in the United States. Many, if not most, medical schools are now teaching it and clinical and educational benefits are beginning to accrue. But only the tip of the iceberg is showing. The structured nature of the problem orientated medical record permits its rapid storage in, and retrieval from, a computer—and the computer used in this way will undoubtedly revolutionize our medical record system.

Weed himself is particularly active in the computerization of medical records, and he and his colleagues have designed a remarkable and exciting system which allows the storage and retrieval of clinical information at the bedside. In addition the computer supplies diagnostic suggestions and therapeutic information. As well as indicating the drugs which might be used in specific conditions it will display information about the dose, side effects, contraindications, and possible interactions with other drugs. Computerised information of this kind can, of course, be continually updated; today's discovery could literally be applied in practice tomorrow by doctors thousands of miles away. The cost of such a system is enormous at the moment, but already there are indications that it will fall sharply and that it will eventually be available to virtually all hospitals. The potential is clearly immense.

For many of us computerized medicine may be a long way off, but the problem oriented record is already available to all. There are many who believe, as I do, that its introduction is a major advance which will play an important part in the future development of clinical medicine and medical education. For that we can thank Professor Larry Weed.

Reference

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