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13. ABSTRACT Two of the articles in this symposium pertain to "points of view" towards the annual and periodic health examination. The "Annual Fiasco (American Style)" is a humorously written satire (reproduced with permission). It presents the examination as a farce, but the next article offers the rebuttal that if the diagnostic procedures are worthwhile and productive (not stereotyped and "routine"), there is hope for further benefit, perhaps with even less cost and effort, than could be derived from the periodic health examination. The article entitled "The Traditional versus the Problem-oriented Medical Record" defends the traditional medical record. The author draws some comparisons between the traditional record and the problem-oriented record proposed by Weed. The author leads the reader through a sequence of situations to the conclusion that the traditional record, when properly used by the physician who listens to his patient and records what he hears and his observations accurately, can guide, teach, and serve as a reflection of professional excellence as well as provide a concise method for communicating pertinent health data. The key lies in the physician himself. The final point of view states the importance of training future practitioners in clinical research methods and outlines some of the mechanics for initiating an investigation by Letterman General Hospital regulations.			

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PRESENT CONCEPTS IN INTERNAL MEDICINE

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PRESENT CONCEPTS IN INTERNAL MEDICINE
VOLUME IV June 1971 Number 6

POINTS OF VIEW
A Symposium

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Department of Medicine
LEFFERMAN GENERAL HOSPITAL

FORTHCOMING SYMPOSIA

RHEUMATOLOGY

PULMONARY DISEASES

NEPHROLOGY

ANNOUNCEMENT

Present Concepts in Internal Medicine
Postgraduate Short Course
27-30 October 1971
Letterman General Hospital

The theme for this year's course is *The Impact of Recent Research on the Practice of Internal Medicine*. The course will begin on Wednesday, October 27th with the keynote address by Brigadier General Richard Taylor, Chief of the Army Medical Research and Development Command. Following General Taylor's address a number of short clinical research papers will be presented by residents in training at the Army teaching hospitals. The afternoon session will feature topics in *NEPHROLOGY*. Doctor Marcel Coppell of Los Angeles will present the problem of renal transplant versus chronic dialysis to introduce a broad discussion of the many aspects of uremia and renal failure.

Thursday morning will be devoted to *GASTROENTEROLOGY* with such authorities as Doctor Eddy Palmer of New Jersey discussing the problem of erosions of the upper gastrointestinal tract and Doctor Michael Turner of Rochester discussing the new breakthrough in serologic detection of cancer — the carcinoembryonic antigen. A number of other timely topics will also be presented by our local consulting staff. The afternoon session will be devoted to the immunologic aspects of *MALIGNANCY* with the primary lecture by Doctor Carl Helstrom of Seattle.

Friday we will turn to *CARDIOPULMONARY DISEASE* with key discussions on cor pulmonale and chronic obstructive disease by Doctor Benjamin Burrows from the University of Arizona and newer concepts in intensive care monitoring by Doctor John Osborn from Pacific Medical Center, San Francisco. The afternoon session will cover the many new developments in the diagnosis and management of coronary artery disease.

Saturday morning will highlight newer developments in *ENDOCRINOLOGY* and *RHEUMATOLOGY*.

The program committee has organized a well-balanced course with an outstanding guest faculty to supplement our own teaching staff. There will be opportunity for informal discussions with the faculty and time to socialize with old friends and colleagues. Plan now to attend. It should be an outstanding meeting.

The Annual OTSG circular listing postgraduate short courses has been superseded by Army Medical Course Catalog FY-72. The procedures for applying for the course are outlined in AR 350-219.

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FOREWORD

The month of June is vacation or relocation time for many and so I've elected to digress from our usual scientific symposia and provide instead a bit of light reading.

Although light, the subject matter is nonetheless important to us all. Presented in a "Point of View" fashion, it should stimulate some thoughts and controversies which might lead us to broader concepts and improved practices.

The first article I found delightful reading and Doctor Morgan was kind enough to let me reproduce it here for you. The second point of view, mine ("these statements in no way reflect the opinion of the United States Army"), is designed to stimulate some thoughts about how we might save money and manpower while at the same time make the "Annual Fiasco" a more worthwhile and productive experience.

Having recently undergone review by the Joint Commission on Accreditation of Hospitals, the whole area of medical records once again became a focus of my attention. There have been a number of articles written recently based on new approaches to the written patient record. "The problem-oriented record" developed by Doctor Lawrence Weed is the most popular suggested "new look" for recording medical data and has "caught-on" with a number of educators. For Doctor Weed's complete point of view, I would refer you to his book — *Medical Records, Medical Education and Patient Care*.

Here, I have reviewed his method in part, drawn comparisons between it and the traditional medical record, have taken issue with a number of his suggestions, agreed with others, but end up by reaffirming my belief in the vitality and validity of the traditional medical record.

With the recent establishment of a Clinical Research Service as an integral part of Letterman General Hospital, it seemed timely to ask its new director, LTC Larry Logan, to review for us his "point of view" regarding

Foreword

this service in the training of an internist and the direction that he envisions for Letterman's Clinical Research Service.

COL John J. Deller, Jr.
Guest Editor

POINT OF VIEW

THE ANNUAL FIASCO (AMERICAN STYLE)*

William Keith C. Morgan, M.D.†



ONE of the more dubious advantages of being employed by a large corporation in a position of responsibility is the annual physical examination. The routine is already widespread in the United States and seems to be becoming increasingly so elsewhere. A detailed description of the rite as it takes place in America may be of interest. Once a year, the executive, if he ranks among those who matter, is sent off for a week at a diagnostic clinic. There, between rounds of golf, an inquisition is held into his social and eating habits; he has a physical examination; his body fluids are examined; a series of steel bars and contrast media are rammed into his several orifices; and the electrical impulses of his heart are recorded. This ritual is firmly established, and it has already become heresy to question it. The annual physical examination owes its popularity to the belief that by this means serious illness can be diagnosed in its incipient stages, thereby allowing appropriate and, it is hoped, curative therapy to be given early in the course of the disease. It is further postulated that early diagnosis must of necessity enhance the chance of a cure. While it is conceded that the routine physical examination may detect a few diseases while the patient is still asymptomatic and also pick up a few biochemical abnormalities, with one or two doubtful exceptions it has not been shown that the prognosis of the disease diagnosed under such circumstances has been improved one jot or tittle. Let us take a critical look at the annual physical examination, the batch of investigations that are performed along with it, and some of the possible consequences of this ritual.

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The typical executive is almost invariably a cocktail-swilling cigarette or cigar smoker. He has sedentary habits, is paunchy, prostatic and plethoric. Exercise in any shape or form is anathema to him, and he even motors round the golf course. As often as not, the physical examination will reveal a moderate elevation of his blood pressure. He who can remain normotensive knowing the details of the awesome ordeal ahead of him must indeed have a disorder of his "affect". The elevated blood pressure leads to an additional battery of tests over and above those already ordered. By the end of a further week, the results of these tests will all be found to be normal. Meanwhile, with a bit of luck and a change of surroundings, his blood pressure will have fallen to normal levels. If it has not, it is a certainty that he will be prescribed either diuretics, or reserpine, or both. This therapy usually reduces his blood pressure by 10 to 15 mm Hg, and also produces depression, nasal obstruction, lethargy, weakness and constipation. The side effects of the prescribed medications reveal themselves to the patient in a month or two, and when they do, he usually has sense enough to stop them. Meanwhile, he remains at his usual weight of 230 lb. The remainder of the physical examination is unlikely to disclose any abnormalities of note other than creaking joints.

Next, laboratory tests are likely to show that his blood count and sedimentation rate are within normal limits. His Wassermann reaction may or may not be negative; however, his serum cholesterol level has an excellent chance of being elevated. If it is, this is considered to be a finding of momentous import. As a consequence, he is usually prescribed an almost inedible diet of unsaturated fat; a mode of therapy whose efficacy is totally unproven in established atherosclerosis. He tolerates this for at least six days and then reverts to his former dietary indiscretions. Alternatively, he may be given either some

new drug or oestrogens. The therapeutic value of such preparations is only slightly less obscure than are their toxic effects; while his serum cholesterol level declines, either his brain becomes infarcted, his gonads atrophied or his breasts hypertrophied. His blood urea level will almost certainly be normal, a finding that could have been inferred from the fact that he had no proteinuria. His uric acid level may or may not be elevated, but if so, he will be taken off caviare and alcohol during the time when he is in the clinic, and probenecid will be substituted. Two weeks after he has been discharged, he will develop his first "bout of gout". The clinic physicians will then point out with pride how they diagnosed his condition in the asymptomatic stage, not realizing that it was their therapy that precipitated the attack ten years before it was due.

There may well be a borderline or mild elevation of his fasting blood sugar content. This inevitably leads to the performance of a prolonged glucose tolerance test with or without prior administration of steroids. If the results disclose that the subject is prediabetic, he will promptly be put on a diet to which he will adhere for a period varying from three days to three weeks. On the other hand, if he has a frankly diabetic curve, it is likely that, aside from the diet, some attempt will be made to control his blood sugar content with either oral hypoglycæmic agents or insulin. He will be urged to avoid anything that can be eaten with pleasure, despite the fact that rigid regulation of the blood sugar content has never been shown to be effective in preventing the complications of diabetes. Neither, if it comes to that, has the early diagnosis of the obese type of diabetes been shown to influence the eventual prognosis. Fortunately, the patient generally has the good sense to ignore the more rigid and unpleasant part of his dietetic instructions, despite the threat of all the disease's dread complications.

The Annual Fiasco - Morgan

Tests of his urine will probably give negative results, but may show a trace of sugar. This finding usually leads to little else, since his elevated blood sugar level has already been noted and the appropriate deluge of investigations initiated. His serum levels of electrolytes, calcium and phosphorus are all likely to be normal, but his physicians are gratified to realize that he does not have hyperkaliæmic coma, a finding that could have been anticipated had they observed him playing golf in between radiological examinations.

An electrocardiogram will also be recorded. This may well show no abnormality, but is just as likely to show non-specific T-wave changes, findings suggestive of hypokaliæmia or some other minor abnormality. The changes of hypokaliæmia are a consequence of the routine and excessive purgation that take place before the radiological examinations. He will be fortunate if he escapes a further batch of studies to exclude familial periodic paralysis, steatorrhæa and diabetic acidosis. Once he is told that he has an electrocardiographic abnormality, the previously asymptomatic subject starts to develop symptoms of cardiac neurosis. Yet it cannot be denied that the ECG has provided a baseline—for whatever that is worth; however, no treatment is available for the non-specific, non-significant changes. And supposing the tracing did show evidence of an old asymptomatic infarction, is there anything that can be done over and above advising him to stop smoking and lose weight, advice which he should have already been given? Should we tell the patient of his previous attack and convert a happy extravert into a cardiac neurotic? The dangers of over-reading ECGs are more to be feared than are those of under-reading. Evans (1959) related a gruesome tale of a bus driver who developed pain in the chest which was diagnosed as angina on the basis of an allegedly abnormal ECG. As a result he lost his job and, despite numerous attempts, was

unable to obtain new employment. The thought of being unable to support his wife and four children drove him to suicide. Post-mortem examination revealed that his heart and coronary arteries were entirely normal.

On now to the radiological examinations. If the routine chest X-ray film discloses appearances suggestive of tuberculosis, this is one condition which responds to treatment and which can often only be picked up by routine radiographic examination. Yet it must be admitted that the efficacy of modern therapy has rendered less essential the need for early diagnosis. Asymptomatic lung cancer may also be discovered by routine radiographic examination. But is this really of vital import? There are among us some who would have us believe that early diagnosis of this condition is of paramount importance, an incredibly gauche example of wishful thinking, as the studies of Boucot and her colleagues (1967) have so clearly shown. The prognosis in lung cancer depends almost entirely on the biological characteristics of the tumour and very little on early detection (Feinstein, 1967). In fact, in lung cancer as in colonic and breast cancer, the longer the symptoms have been present, the better the prognosis (Brooke, 1968). If the executive wishes to avoid lung cancer, he had best stop smoking. The upper gastrointestinal series and intravenous pyelograms are likely to show no abnormality. At the best, their performance usually produces only a modicum of discomfort. But when it comes to the barium-enema X-ray examination, the systemic effects are potent, protean and exceedingly uncomfortable. To prepare for the ordeal, the subject is first starved and then vehemently purged. By the time of the examination, he is grossly dehydrated and moderately hypokalaemic. Yet it must be conceded that the preparation for a barium-enema X-ray examination is the best way of bringing to light the presence of intermittent claudication. He who can survive 2 oz of castor oil and

the ensuing constant cross-country sprints surely must have adequate popliteal vessels.

Lastly, we come to the *pièce de résistance*, the sigmoidoscopic examination. After further bouts of purging accompanied by the usual electrolytic disturbances, weakness and dehydration, a hollow steel bar is thrust up the executive's fundament, to the accompaniment of grunts and wheezes from both ends, a sort of synchronous combined concerto for trumpet and oboe. While the value of sigmoidoscopic examination for subjects with bowel symptoms is not denied, what purpose does routine examination serve? Very little, according to Drexler (1968); even less according to Moertel *et alii* (1966). In the latter series of over 1,000 sigmoidoscopic examinations carried out on symptomatic subjects aged over 45 years, not one case of cancer of the large bowel was found. And even if half a dozen had been discovered in this fashion, there is no justification for assuming that the prognosis would be in any way improved (Brooke, 1968). The evidence that this investigation has any use at all for asymptomatic patients is tenuous in the extreme, and there surely are more pleasurable ways of spending an hour.

The routine physical examination is advocated by most of the medical profession, by the American Medical Association, by the voluntary health organizations, and by all sorts of lay societies. The most important personages in the land undergo this ordeal; it has come to be believed by some that it is the cure for all man's illnesses. Cervical cytology programmes, multiphasic screening, mass urine testing, routine radiographic examination of the chest, the annual sigmoidoscopic examination, self-palpation of the breasts, and the rest of the mumbo-jumbo are currently being foisted on the general public and medical profession as the answer to heart disease, strokes and cancer. But where is the evidence that they do any good? Almost without exception there is none. The

declining incidence of carcinoma of the cervix is attributed to the more widespread use of the Papanicolaou smear. On what grounds? It was not until the early and mid-1950's that cytological screening became at all widespread in the U.S.A.; however, the mortality rate for cancer of the cervix was declining, and declining rapidly, long before 1950 (Marshall, 1968). On the basis of the prevalence of positive results at the hospital at which I currently work, it is necessary to perform 5,000 cervical smears in order to detect one subject who is going to develop carcinoma of the cervix (M. Hales, personal communication, 1969). These figures refer to women who have never had a Papanicolaou smear test previously. The yield drops to one in 15,000 if the subjects have had a previous smear test in the previous 12 to 18 months. Even at the former rate, a gynaecologist would have to perform a vaginal examination and smear test every 10 minutes, eight hours a day, five days a week for six months in order to prevent one case of cervical cancer. To screen the 50,000,000 women at risk in the U.S.A. at intervals of three years would require 1,000 cytopathologists and between 1,000 and 1,500 cytological technicians working full time. Unquestionably there are certain population groups who would, were they examined, have a much higher yield of positive results to smears. Unfortunately, it is these same groups who are most reluctant to avail themselves of this examination. The realists among us believe that factors other than the cervical smear, namely birth control and other social factors, have had far greater influence in the reduction of the mortality in this form of cancer. In most countries where birth control has been practised for some time and where the average size of the family has declined, there has been a concomitant decline in the mortality from cancer of the cervix. In many of them, cervical cytological screening is available only to an insignificant minority. This is not to deny that it may have a role to play in the prevention of

cancer; nonetheless it would seem that its importance has been, and is, greatly overrated.

Similarly, at first glance, a multichannel automatic analyser seems an admirable way of detecting disease. In reality, all it does is to stop the patient's physician thinking. Why listen to the patient's history and weigh the significance of each symptom in turn when "the answer" is going to be spewed forth from a machine? It has been repeatedly shown that around 40% of abnormal results detected by routine screening are ignored by the physician in attendance, sometimes because he does not know the normal values.

It is possible to dull one's senses by too much exposure, be it by looking at the results of routine laboratory tests or be it by performing routine physical examinations. Ask an experienced cardiologist to examine 40 symptomatic patients, all of whom have cardiac disease; the chances are that he will elicit the appropriate physical findings in all 40 cases. Ask him to examine 40 asymptomatic persons, of whom 39 are normal and one has cardiac disease. He now has a 50% chance of missing the abnormality, especially if it is subtle. The yield from the annual physical examination is small, and when asymptomatic abnormalities are revealed, the prognosis is seldom affected (Schor *et alii*, 1964). Moreover, the therapy prescribed is usually ineffective and not infrequently dangerous—"*graviora quaedam sunt remedia periculis*". Why do we therefore expend money and effort on what is in reality an almost futile exercise? With the current shortage of medical manpower in the U.S.A. and elsewhere, the annual physical examination as a means of detecting disease is not practical. If a comparable effort were to be put into persuading modern man to stop smoking, to take some form of regular exercise, and to cease his gluttony, something tangible would result. As it is, we continue to lull ourselves into a sense of false security with the annual fiasco.

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Much is being written today on the subject of medical education — and much change is taking place. It pleases me to occasionally find an author who believes that the Doctor still has a role to play at the bedside — both as a healer and a teacher.

Having read Doctor Morgan's delightful article on *The Annual Fiasco*, I thought you might appreciate his view on medical education (especially since I agree with it). J.J.D.

Improvements are needed in the medical curriculum, but not those suggested by the medical educators. Increased instruction in the behavioral sciences, closed-circuit television, programmed instruction, computerized questionnaires, and the rest of the mumbo jumbo can never replace the personal contact that comes with bedside teaching and the tutorial system . . .

—William K.C. Morgan, M.D.
From "The pedagogic parvenu"
Roche Image of Medicine and Research.
June 1971

ANOTHER POINT OF VIEW

THE PERIODIC MEDICAL EXAMINATION

COL John J. Deller, Jr., MC

The purpose of the periodic medical examination is to assist in the maintenance of health" (AR 40-501, 10-13). It is the hope of advocates of such examinations that by the early detection of disease in the asymptomatic phase, serious threats to health may be averted by institution of preventive or therapeutic measures. The question to be posed, however, is how often do these examinations actually accomplish this purpose?

The Army has been involved in the "annual fiasco" /1/ perhaps longer than any other sector of organized medicine and I wonder what our record of success has been. I wonder also if more could not be accomplished by refocusing our attention on those aspects of the medical examination which really count.

Distilled to its essence, the objectives of the periodic health check-up should really be to detect insipient cardiovascular disease, correctable metabolic derangements, and early malignancy. Other remediable conditions as well as significant psychosocial problems may also be uncovered on such examinations but are probably of lesser importance in regard to later disability and life expectancy than these three basic disease categories. Whether the annual health examination by detecting these ills accomplishes anything to improve the health of an individual is unanswerable at this time, but if we are going to go through with this expensive exercise we should design it to accomplish at least these limited objectives. Two questions must be resolved at the outset: (1) who (or what) should perform the examination; and (2) who should get the examination. These questions are critical at a time when we are so concerned about conserving "medical manpower". But we must also be on guard not just to conserve it, but to use it for the right purposes! What should be the role of the physician in periodic medical examinations and what is the place of "physician's assistants", "nurse clinicians", other "paramedical personnel", — and the almighty computer? The

The Periodic Medical Examination - Deller

place of these will be discussed as we go through the examination.

As to who should get a periodic medical examination, I believe that for those under 40 (an arbitrary cutoff but with some statistical merit) /2,3/ a complete examination every five years is adequate. In military personnel, the first examination should be within the first three months of service (despite the fact that most individuals have had a "pre-induction physical"). After age 40, a comprehensive health examination should be a yearly occurrence. All women should begin an annual breast and pelvic examination ten years sooner.

What should be the mechanics of the examination? Greatest efficiency can probably be accomplished by reversing the usual order of the medical examination. That is, the data base to be accumulated by others than physicians should be accomplished first, so that at the time of interview all the basic data is available for synthesis. This then will permit the examining physician to advise the patient of the results of the entire procedure at one visit and promptly refer those patients in whom abnormalities have been detected for appropriate followup.

The Data Base

The examination may begin with the laboratory: a urinalysis and a battery of specific blood tests. A complete blood count and an automated chemistry panel which should include a glucose, blood urea nitrogen, creatinine, bilirubin, SGOT, calcium, phosphorus, uric acid, cholesterol and triglycerides should make up the laboratory base. (Here is where automation and computer readouts play their biggest role.) I see little need for the repetitive VDRL's which are so much a part of the annual physical examination — every five years should be plenty at any age. An electrocardiogram and chest x-ray are perhaps the most important screening procedures, especially after age forty, as ten to fifteen percent of myocardial infarctions are "silent" and x-rays may disclose many pulmonary lesions before they produce symptoms. /4,5/

The patient should then have a visual acuity check (with glasses if they are worn) and a three frequency audio-screen. These two examinations can be quickly and accurately performed by trained technologists or "medical assistants". Personally,

The Periodic Medical Examination - Deller

I am not convinced that the time spent, the patient discomfort, and the yield resulting from doing ocular tensions is worth the effort until age fifty. /2,6/ This procedure can also be done by a "medical assistant". A comprehensive dental examination must be done by a dentist in order to detect not only cavities but periodontal disease — the latter of greater significance after age forty.

Following these preliminary steps, the patient should be weighed, measured, have his vital signs checked and his eyes dilated by a "medical assistant". He is then ready for the examining physician — this is what we have been saving him for! All those questionnaires, pencil-paper type or computer notwithstanding, I believe the physician should take the history. /7/ Of all the acts the physician performs, none gives him more information (nor probably more satisfaction) than the medical history. There is no reason to suspect this should not be the case in the periodic medical examination as well. I should digress a moment here to emphasize that I don't feel any physician should do these examinations full time — they are not that rewarding or stimulating and a steady diet of it would soon become more unpleasant than milk and Maalox®.

The Interview

With a little practice (and this may be a good place for it), the physician can expedite a medical history and yet get the critical information. Here his "know-how" and judgment allow him to practice his art. Tears or apprehension, or silence — information communicated in a moment to the discerning physician can never be captured by a computer. The "feel for a case" cannot be appreciated by reading a questionnaire or a computer printout. It can only come from personally interviewing the patient. A query regarding the family history may provide potent information that can lead to more discerning questioning of the patient regarding his own specific complaints. A social history, which should include more than smoking and drinking, may uncover a significant family problem or open an area of considerable conflict that otherwise might go unmentioned. Although hard to imagine, a not infrequently neglected question on periodic medical examinations — on the assumption that all those taking the examination are in the best of health — is asking whether the patient has a "chief complaint"! Regardless

of whether he does, a brief rundown through the "systems" may bring out a critical area which otherwise the patient may not volunteer

The Physical Examination

Just as I believe the subtleties of the medical history are best communicated directly to the physician, I believe also that the major portion of the physical examination is most reliably done by a physician. Again, let me emphasize what we are looking for on this examination: the earmarks of cardiovascular, metabolic, and malignant disease.

The largest organ of the body, and the most visible — the skin — is often the one most overlooked — it may hold the clue to a serious underlying disease or may reveal an obvious cutaneous neoplasm. The cutaneous organ should be examined carefully and thoroughly. A computer can't do this!

Our assistant dilated the patient's eyes. The fundi should be visualized carefully and with purpose. Here a variety of diseases may be reflected. The rest of the "ENT exam" can be performed quickly — a perforated or diseased eardrum, a deviated nasal septum, or a buccal mucosal lesion. A carefully palpated neck — thyroid, cervical lymphnodes, and the carotid arteries — may provide tips to significant disease.

Despite the ready availability of the chest x-ray, physical examination of chest is still important. Limited expansion of the rib cage may be evidence of emphysema or restrictive lung disease while the presence of fine rales may suggest pulmonary fibrosis — findings which may not be visualized on the roentgenogram.

The cardiac examination should be done with the patient in at least two positions — rhythm, sound intensity, extra sounds and murmurs are all important pieces of data to record. Careful auscultation of the heart may provide the greatest diagnostic information of the examination. /8,9/

The abdominal examination should be directed at detecting hepatosplenomegaly, normalcy of the aortic and femoral pulses and any unexpected masses. The genital and rectal examination

should include in the male palpation of the testes, a check for herniae and a digital rectal examination. In the female, the breast examination should be thorough (and the patient after the age of thirty should have been well indoctrinated into monthly self-examinations). The pelvic examination should include a Pap smear /10/ and following the menopause should also include a cornification index. The breast and cervical examinations, as previously mentioned, should be done yearly from age thirty and can be performed by a "nurse clinician". After age forty, however, I believe a complete pelvic examination should be done by an examining physician.

Unless clues of neurological disease are uncovered in the history, or the examination up to this point, only noting symmetry of deep tendon reflexes and gross observation of strength, gait and coordination is necessary. Likewise, the musculoskeletal system need not be specifically tested if it was not symptomatic and general inspection reveals it to be normal. The patient's mental status can be "unconsciously" evaluated during the entire examination.

Additional Procedures

What about additional procedures? Is the examination as I have outlined it really sophisticated enough to seek out those problems that we are looking for — arteriosclerotic, hypertensive or valvular heart disease; obesity, diabetes, gout, endocrine, liver and renal disease; cancer — skin, breast, cervix, lung, and gut? I believe our examination is adequate to screen for these disorders if we take up any clues that are uncovered and explore them further.

There is little evidence that the additional procedures of spirometry, sigmoidoscopy, /11/ mammography, /12/ pyelography, upper and lower bowel series /6/ are worthwhile as routine additions. This is where judgment enters in. The physicians must decide from the data provided from this examination which patient may need further study. He must piece the data together and tell the patient who is physically fit just that, and provide counsel to the patient who has a potential problem — putting it all together and giving it meaning is what the physician's "precious time" should be used for — only by "being involved" in the examination can he be in a secure position to

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do this — and can it have real meaning for the patient.

One final question — how should all of this data be recorded? Certainly a form should be devised whereby entries can simply be made for all steps of the examination, and preferably in a way that can be programmed for computer storage and later retrieval. Even if computers are not available at the present time such a format of recording would be worthwhile for future programming. Thus, there should be at least an original and one copy of the examination so that one original may be placed in the patient's record to provide ready comparison at the time of the next examination, or to be readily available for any subsequent physician when the patient presents with an illness. The other copy should be filed in a storage bank for future survey and research. Such record keeping might allow us to look back on these examinations and decide just what we really are accomplishing by the periodic medical examination.

CONCLUSION

By the systematic approach to the periodic medical examination that I have outlined I believe we can detect significant disease in the asymptomatic phase if we simply focus emphasis on the right things. True, there are many shortcomings of the periodic health examination, but there is also ample evidence that by such an exercise disease can be detected in many individuals at a time when an opportunity still exists for prophylaxis or early remedial treatment. /8/ By continually evaluating our diagnostic procedures to be sure that they don't become stereotyped and "routine" and that the procedures done are worthwhile and productive, there is hope for further benefit, perhaps with even less cost and effort, to be derived from the periodic health examination.

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Man thinks by "zeroing in" in contrast to computers which
"think by counting out".

H. Smith

Human vs artificial intelligence

Read at the Nobel Conference, St. Peter, Minn.

January 11-12, 1967

POINT OF VIEW

THE TRADITIONAL VERSUS THE PROBLEM-ORIENTED MEDICAL RECORD

COL John J. Deller, Jr., MC

The traditional medical record which we have all so faithfully learned, nurtured and practiced since medical school has recently been challenged. Weed's book, Medical Records, Medical Education and Patient Care /1/, proposes a new format for the medical record which he believes will transform it into a dynamic instrument for structuring medical care. More important than the form, however, is the philosophy of his PROBLEM-ORIENTED MEDICAL RECORD. His thesis is that patients present with problems, not with diagnoses, and the problems should be the central theme of the medical record. His challenge of the TRADITIONAL MEDICAL RECORD is stimulating and invites us to reflect on some of the shortcomings that we have allowed to creep into our data recording. I wonder, however, if the real problem doesn't lie with the RECORDERS rather than the RECORDS! The traditional medical record is only as sound as those who use it and those who have failed with the traditional record are likely to fail just as miserably with the problem-oriented record. I would like in this paper to draw some comparisons between the "battered champ" and the "bright new challenger", and despite the worthy opposition come to the defense of the traditional record.

Before delving into the controversy over whether or not the traditional medical record should be replaced by the problem-oriented record — or some other form which may come along — I would like to review some basic principles regarding medical records. The 1970 Accreditation Manual for Hospitals clearly defines the purposes of the medical record. /2/ These are summarized in TABLE I. The primary goal of the medical record, as stated by Gertzog /3/, is that it should be "a device for communicating selected data of health and medical interest in such a way as to affect continuity of care." Thus, if a record satisfactorily and accurately communicates pertinent medical events it can be considered a good record. The structure of the record should be designed to facilitate this communication.

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TABLE I
PURPOSES OF THE MEDICAL RECORD

-
- ⇒ To serve as a basis for planning and for continuity of patient care.
 - ⇒ To provide a means of communication among those contributing to the patient's care.
 - ⇒ To furnish documentary evidence of the course of the patient's illness and treatment.
 - ⇒ To serve as a basis for review, study and evaluation of the care rendered to the patient.
 - ⇒ To assist in protecting the legal interests of the patient, hospital and responsible practitioner.
 - ⇒ To provide data for use in research and education.
-

The Joint Commission also believes that the medical record is a major indicator of the quality of care provided in a hospital. The hospital's records are judged by their content; the actual form and method of recording are secondary considerations. I might add that a physician is also judged to a great extent by his records!

In general, there are three types of medical records /2/: (1) the inpatient record, usually the most detailed; (2) the outpatient record, which should incorporate a complete data base; and (3) the emergency record, usually the briefest and containing information essential only to the immediate situation. In this paper I will dwell on the inpatient record but the parallelism between an inpatient and an outpatient record should be obvious. If a patient is being evaluated for abdominal pain and weight loss, his outpatient records should be no less complete if his evaluation is being carried out in a clinic rather than in the hospital.

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The first issue that I must reemphasize, as I have already done in the Periodic Health Examination /4/, is that I believe the most significant information in a medical evaluation comes from the history and that the relationship which develops with the patient during an interview situation with the physician cannot be replaced — his reviewing data obtained from questionnaires or computers is not the same. Much can be revealed (both diagnostically and therapeutically) by allowing the patient to talk to the one person who must assimilate not only what is being told but how it is being told into a diagnostic consideration. Weed /5/ and others /6/ would have us relegate this critical facet of patient care and evaluation to trained interviewers or computerized approaches. By such measures every patient can be guaranteed a minimal recorded data base, they say, and that is exactly what they would get — the minimum! It saves precious physician time, they say. Of course, the physician would have to read this information, enlarge upon it where indicated and integrate it. This all takes time too, and time that the patient doesn't get to spend with his doctor!

What of the contents of the history, except for a change in terminology and different emphasis, the historical data base is quite similar in the two formats. Both begin with A CHIEF COMPLAINT (although Doctor Weed would prefer to call it a "problem"). The traditional format usually then has a FAMILY HISTORY, an important bit of information for many diseases (some of which may not even be considered without a positive family history). For some reason, in all of Weed's meticulous format I cannot find this section included! He instead expands the traditional SOCIAL HISTORY (which I must admit we have allowed to become decadent in our terse "two packs per day, 1 pint per week" commentaries) into a much more comprehensive "patient profile", (perhaps a bit overdone for the usual case, but nonetheless a definite improvement over the stereotyped traditional social history). But his overemphasis of this section leaves me chagrined at the total absence of a clearly defined family history. The PAST MEDICAL HISTORY is similar in both systems. For convenience, I prefer to break-down the specific categories of medicine, surgery, trauma, psychiatry, and obstetrics. My only disagreement here with Doctor Weed is that he would have us bring forward the past, even totally resolved problems, and emphasize them later on an "inactive problem list". I see little purpose in this.

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The development of the PRESENT ILLNESS to me most logically falls at this point in the history. If one allows the patient to enumerate his "chief complaints" initially, one can then explore important background information without having the patient get upset over not getting right to his "problem". Once the family, social and past history are completed, one has a better foundation upon which to pursue the development of the chief complaint into a present illness. The present illness, of course, is best given directly by the patient when he is able. Otherwise, anyone who has witnessed the patient through the development of his illness should be interviewed. Family members, old records and reports of earlier studies should amplify the patient-given history. I believe the flow of the history should be freely related with little interruption except for guidance and clarification if needed. Any additional data should be recorded following the patient-given story. Doctor Weed would have us incorporate any ancillary information into the history of the present illness which would certainly be a time-consuming maneuver and perhaps, for most of us would require a rewriting of the history in order to make it all tie together.

Although it is true that many patients have multiple problems I find that there are rarely more than a few (primary complaints) which bring a patient to the physician. Developing these as a present illness (or illnesses) will focus the attention where it belongs. On occasion, as in the periodic health examination, there are either no outstanding problems recognized by the patient or multiple, unclearly defined "little problems". In these instances, rather than trying to build a present illness the physician simply turns to the SYSTEMIC REVIEW. Even where an extensive present illness is developed, a structured review of those systems not covered should be done. It is convenient to asterisk those systems which reveal significant symptoms (secondary complaints) so that they may be easily referred to later when the physician develops his initial impressions. I agree with Doctor Weed that the initial collection of data should be as complete as possible. This is not to say that it must necessarily be recorded on the first encounter with the patient, i.e., when the patient is in significant discomfort or where the nature of the problem is a minor emergency; but at a convenient time the record should be completed.

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With the exceptions listed above, the PHYSICAL EXAMINATION should likewise be thorough (but reasonable), with major emphasis on the areas in which active symptoms are present. A comment regarding the examination of each system, however, should be made (it's nice when at some later date a patient is seen for a mass in her breast to see it clearly written in the record that there were no masses on the previous examination). Again an asterisk at the positive findings will permit ease of later reference for incorporation into the diagnoses.

Laboratory Data

It does not seem practical to me to attempt to include in the initial data base laboratory studies. The patient who enters the physician's office or is admitted to the hospital does not have the opportunity to have any laboratory data accumulated, nor, except for a few basic determinations, is there any guidance as to what direction the laboratory studies should take until after the interview and the physical examination. I do not believe that every patient — man, woman, child — who enters a hospital for a thousand different reasons can have a meaningful "standard set of laboratory orders". Perhaps a complete blood count, complete urinalysis and a chest x-ray are the closest reasonable "routine orders". More than this would be a waste in many cases, while any artificial extension would be inadequate in others. If we are dealing with adults over 30 years of age, those additional laboratory procedures outlined on the Periodic Health Examination /4/ would seem appropriate.

I believe all laboratory studies, however, should await the physician's specific order as it is certainly inefficient (and inconsiderate) to send the patient off for a chest film and then find that as soon as he has been examined he needs to return to the Radiology Department for an abdominal film; and likewise, even a vena puncture which is likely to need repeating for additional studies is not reasonable. Here I must philosophize, and perhaps digress for a moment. The accumulation of laboratory data for the medical record, in my estimation, is the place for developing computerized systems to their maximum. Wouldn't it be nice if all the laboratory data on a case went through a central memory bank which could bring up to date each new set of tests on a laboratory

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flow sheet that could be transmitted directly to the patient's ward, or even better, to his own chart? Such a system is not outside the realm of possibility and, in fact, systems approaching this degree of sophistication are already being tested. Such total computerization in this area could solve uncountable problems inherent in most current systems of laboratory data retrieval.

The Differential Diagnosis

Thus far, we have accumulated the TRADITIONAL history and physical examination as our initial data base and have pointed out a few differences in the traditional and problem-oriented record. This is where I depart from the Weed record system. Instead of formulating a differential diagnosis, Doctor Weed has us list all of the patient's problems as a "table of contents and index combined, past as well as present, social and psychiatric as well as medical". /1/ He, at this point (after assimilating the data in at least two categories: (1) the chief complaint - present illness, the primary considerations; and (2) symptoms from the systemic review or signs unrelated to the present illness from the physical examination, secondary considerations) would now fragment the entire structure of this examination into a cumbersome list of "individual problems". All this is done in the name of "completeness" and to "encourage sound logic". To me, it leads to fragmentation and fails to place any priority on the problems as to their relative importance and also fails to combine logically those problems which fit into precise diagnoses. He artificially splits such "problems" as arteriosclerotic heart disease (ASHD) with heart failure, and supraventricular tachycardia which are examples right out of his book. Much confusion is generated in what to list and what not to list — and the list can become very long — and subsequent reference is always made by referring numerically to the original problem list. It takes a mathematician to keep the numbers straight in some of the examples he relates! I find such problem lists to serve perhaps two useful purposes: (1) to facilitate teaching of medical students; and (2) to facilitate programming for a computer. I am not sure that either of these purposes are germane to the medical record or to providing good medical care, and they are not among those purposes listed by the Joint Commission on Accreditation of Hospitals.

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In my estimation, a "problem list" should not replace the evolution of the "differential diagnosis" as the key point of the medical record. When thoroughly and thoughtfully performed, contemplating a differential diagnosis provides a sound teaching experience for physicians and guarantees a thorough search for the underlying disease process. After all, putting the pieces together into diagnoses is what it's all about. The whole of our learning as physicians is put into practice by this process. What better way to understand the pathophysiology of disease than to formulate a differential diagnosis and then go about singling out the final diagnosis.

I have no objection to preceding the diagnostic considerations by first enumerating the set of complaints to which the differential diagnosis pertains, and in fact, I believe this is appropriate in many instances, but these should not stand alone because then nothing has been accomplished. It should be mentioned too, that the final diagnosis is often obvious from the outset, for instance, the patient who presents with a classical myocardial infarction. In such cases, the primary consideration needs no "differential diagnosis"; just a plan of monitoring the course and therapy, and in such an instance all other problems are indeed secondary and should be treated as such.

Specific diagnoses should be sought not only for the primary consideration but for those secondary considerations which have come out of the basic evaluation. They must, however, be kept in proper perspective. To me the "problem list" does not facilitate this. On occasion, a secondary consideration may actually be more significant than the primary one, and in such a case it should be given appropriate priority.

The Initial Plan

After formulation of the differential diagnosis the development of a plan for the evaluation is the next logical step. Here I couldn't agree more with Doctor Weed. A sound plan should be outlined as part of the record (something which only the medical student seems to do with any degree of thoroughness). The plan should be precise and have a specific purpose. Each study or procedure should be done in direct pursuit

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of a diagnostic consideration. Before ordering a study, one should ask himself why that specific test is being ordered -- if this does not serve as an educational question it certainly serves as an economic consideration! A convenient format for writing the initial plan is to outline the differential diagnosis in the left-hand column and the plan in the right-hand column as illustrated in TABLE II. Such a format is an excellent teaching instrument when done by a house officer and reviewed by the attending staff; and when done by the "private physician", it serves as a daily "self-assessment" examination.

TABLE II
SAMPLE DIFFERENTIAL DIAGNOSIS AND EVALUATION PLANS

DIFFERENTIAL DIAGNOSIS	EVALUATION PLANS
<i>I. Primary Consideration:</i> (chest pain, cough, breathlessness) 1. Pulmonary embolism Site? pelvic, leg veins Consider other pulmonary diseases -Pneumonia -Pleurisy -Pleurodynia 2. Consider cardiac disease -Myocardial infarction -Acute pericarditis	<i>Immediate -</i> CBC, ERS, urinalysis, SMA-12 chem. panel 1. Blood gases (CO₂, O₂) 2. Chest x-ray - P.A., left lateral 3. Lung Scan 4. Sputum for gram stain and culture 5. Coagulation screen (pro time, P.T.T., platelets) 1. ECG 2. SGOT, CPK, LDH } monitor periodically 3. Acute phase sera - freeze
<i>II. Secondary Considerations:</i> 1. Goiter - nontoxic, nodular -consider chronic thyroiditis, possible hypothyroidism 2. Obesity -Exogenous/genetic	Procedures, deferred 1. T₄ 2. RAI uptake and scan

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Having completed the HISTORY, PHYSICAL EXAMINATION, DIFFERENTIAL DIAGNOSIS and PLAN OF EVALUATION, the INITIAL DATA BASE is established. If our major diagnostic considerations are proven correct by our studies and observations, proper treatment will follow with little effort. Of course, the nature of any individual case will determine the speed with which this sequence is carried out and definitive treatment instituted. Therapy may be started in a matter of minutes in some cases whereas in the more difficult and less urgent situations it may be several days or even weeks before a diagnosis is established firmly enough to permit specific therapeutic action. In the case of an immediate diagnosis, for example, an acute myocardial infarction, a treatment plan may appear following the diagnosis as part of the initial data base. In the instance of deferred diagnoses, the treatment plan will be entered in a later progress note following establishment of a diagnosis.

Progress Notes and Flow Sheets

I have always considered the progress note as a crucial part of the medical record, perhaps not the most crucial as Doctor Weed states, but certainly critical to completing the evaluation of a case. Progress notes should convey in a few selected phrases the course of the case, catalog critical datum as it comes in, and should convey to a reader the "thinking" of the physician regarding the hour-by-hour or day-by-day progress of the case. In this sense, the progress notes should be like chapters in a book. They should be well-written, informative, and individualized. When well done, progress notes can be an art in prose. I must admit that I found the numbered and stereotyped format for writing progress notes distasteful. The format — number, subjective data, objective data, interpretation, treatment, and immediate plan — as the requirement for each progress note may make for easy computer programming but it makes lousy prose. How would you like to read a book whose every chapter was indentically structured? I believe that progress notes can be just as meaningful, informative, and precise without a written structure. I also believe that a physician who is thinking logically about his case should be able to convey his thoughts and commentaries in a logical fashion without outlined and numbered subheadings (which many times are inappropriate and just clutter the record). Certainly, the

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progress notes should clearly identify the specific problem to which they pertain when there are a number of problems under consideration, but I would prefer a word identity rather than playing the numbers game and making one refer back to the original "problem list" for reference to the corresponding number to which the progress note is directed (as in the Weed system). I also feel the progress note should be authored by the physicians who are offering primary care to the patient. I don't believe they should include nurses notes, social service notes or any others as Doctor Weed advocates. When appropriate, such notes and consultations (clearly written on special forms within the record) should be referred to by the attending physician in proper context in his progress note. I should emphasize here, that the in-patient progress note is analogous to the outpatient follow-up note. The former, however, is usually briefer and written more often, while the latter is longer and written less often; but they both should serve as chapters in the book of total patient care.

I would like to sound a strong agreement with Doctor Weed's use of the "flow sheet" for certain problems where progress notes are just not adequate. Unfortunately, although it would be convenient to have a "standard flow sheet", they rarely can be standardized for more than one condition. Flow sheets are most helpful in situations where hour-by-hour monitoring of many parameters are indicated such as for the patient in coma, in acute renal, or ventilatory failure. Keeping a flow sheet, however, does not preclude the periodic analysis of the case by way of a comprehensive progress note. In fact, in all complex or lengthy records, it is wise to periodically write a "review note" which brings everything up-to-date.

The Resume'

We have adopted the recommendations of the Joint Commission of Accreditation of Hospitals for the clinical summary. The format is rather abbreviated and (after identifying the patient and the dates of hospitalization) includes only six essential parts: (1) the reason for admission, (2) pertinent physical findings and laboratory data, (3) course in the hospital, (4) condition on discharge, (5) diagnosis and procedures (with appropriate nomenclature and classification code numbers) and (6) plans for followup and listing of discharge

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medications. A sample of a clinical resumé with this structure is illustrated in Figure 1.

It is true that the length and structure of the discharge summary may vary from the basic format depending on the situation, especially upon the complexity of the case. The resumé should never be a complete "blow-by-blow" recapitulation of what has happened during the entire hospital course. The two most important elements in the resumé are probably accurate diagnoses so that future reference to records can be facilitated and charts can be retrieved by their diagnostic coding, and the plan for followup with the listing of medications so that the patient and the following physician know exactly what the plans and medications are. This will facilitate continuity of care when another physician may see the patient on a subsequent visit. If one wishes to study a case in depth or a series of cases at a later date, one should not rely simply on the clinical resúmes but should be able to derive from them the primary clinical record. Thus the resumé need not be lengthy and all inclusive — just properly identified and accurate. The format outlined when rigidly maintained will permit conversion to programs for statistical reporting of key data.

Weiss and Yanez /8/ in their paper echoing the merits of the problem-oriented record, (no doubt students of Doctor Weed!) point out they have had difficulty introducing the use of the new problem-oriented record "because of the reluctance of interns, residents and attending staff to change their attitudes". They say they have heard repeatedly that the approach of the problem-oriented record is "what we have been doing in effect, anyway." There is probably a great deal of truth in that. We do analyze the patient's "problems", but our analysis of them results in a "differential diagnosis". It may also be that there is reluctance to accept this new approach because it really doesn't offer any definite advantages over the properly utilized traditional medical record! The traditional record has stood the test of time and although it has become a bit tarnished, perhaps we should polish it up and stop abusing it before considering turning it in on a new model — which may not stand up as well.

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CLINICAL RECORD		NARRATIVE SUMMARY	
DATE OF ADMISSION	DATE OF DISCHARGE	NUMBER OF DAYS HOSPITALIZED	
1 June 71	4 June 71		
(Sign and date at end of narrative)			
REASON FOR ENTERING HOSPITAL: This 32 year old female diabetic, known to this hospital was admitted for control of her diabetes. Over the past two weeks she had been having persistently 4+ urine reductions and when seen in the clinic this date, her blood sugar was 550 mg%. She had noticed polydipsia and polyuria for the past week.			
PERTINENT PHYSICAL, LABORATORY AND X-RAY STUDIES: The patient's temperature was 98.6. Blood pressure 120/80. Pulse rate 80 and regular. Weight 145 pounds. Her hemogram was normal. Her initial urinalysis revealed a 4+ glycosuria without protein. Her urine culture grew out a hundred thousand colonies of E. coli. Her blood sugar was reconfirmed to be 525 mg%. Her serum acetone and CO₂ were within normal limits. Within 72 hours her urinalysis revealed 0 to 2+ reductions and her blood sugars on a t.i.d. basis on the third hospital day were all under 180 mg%.			
HOSPITAL COURSE, TREATMENT AND CONDITION ON DISCHARGE: The patient responded dramatically to reinstitution of a 2,000 calorie ADA diet, insulin, after an initial 50 units subcutaneously on admission, 35 units of NPH in the morning and 10 units of regular. Her urinary tract infection was treated with Ampicillin, 250 mg four times daily and Mandelamine, 1 gram four times daily. Her disease was well controlled at the time of discharge.			
*FINAL DIAGNOSIS AND SPECIAL PROCEDURES: 1. Diabetes mellitus, requiring insulin and diet MOS. Treated, improved. (250) 2. Infection of kidney due to E. coli. Treated, improved. (590)			
DISPOSITION ON DISCHARGE: 1. Diet, 2,000 calorie ADA. 2. Insulin, 35 units NPH and 10 units of regular at 7 AM daily. 3. Ampicillin 250 mg four times daily to be continued for a total of 14 days. 4. Mandelamine, 500 mg four times daily to be continued for 30 days.			
PLAN FOR FOLLOW-UP: Appointment in one week, Medical Clinic, with a fasting blood sugar and a repeat urine culture at that time.			
*Note: Standard nomenclature of diseases and ICDA code numbers (no special procedures done and so not listed). (Use additional sheets of this form (Standard Form 502) if more space is required)			
SIGNATURE OF PHYSICIAN		DATE	HOSPITALIZATION I.D. NUMBER
JOHN J. DELLER, JR. COLONEL, MC		4 Jun 71	LETTERMAN GENERAL HOSP
DOE, MARY JANE			
C.D. USA			
176-24-3740		00725700	108

Fig. 1. Clinical Summary. A sample summary to illustrate the six essential parts, an abbreviated form recommended by the Joint Commission of Accreditation of Hospitals.

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Three very wise men are here quoted — seeing their words together makes them seem to have been spoken by one tongue — perhaps that's the secret of wisdom!

Knowledge and wisdom, far from being one, have oft-times no connection. Knowledge dwells in heads replete with thoughts of other men; wisdom in minds attentive to their own. Knowledge is proud, that he has learnt so much; wisdom is humble, that he knows no more.

—William Cowper
(*The Task*)

To know what you know and know what you don't know is the characteristic of one who knows.

—Confucius

Regrettably we only see what we know -- but wouldn't it be magnificent if we knew what we saw?

—Edwin L. Overholt

POINT OF VIEW

CLINICAL RESEARCH

Importance in Training of Future Practitioners

LTC Laurence J. Logan, MC

This personality [of the student of medicine] has two complexions; sometimes the one predominates, sometimes the other, but most often there is a happy mixture. The first is the humanitarian. Some youths want to enter medicine because it is the route to doing good, the open door to human relationships with an endless series of appreciative people. This is the social, gregarious, extrovert side of the candidate. The second is the intellectual. Here the appeal is to the mind, the powerful urge to see further into the unknown of science and life. This is the quiet, penetrating, introvert side of the candidate. The first enables the future physician to be a friend to his patient; the second enables him to learn the scientific facts with which he may save his friend's life.

-- Windsor Cutting, M.D.

This quotation from a monograph (1955) /1/ describes no less accurately in 1971 the two moieties of the personality which characterize the superior physician. The truly effective, mature clinician invariably displays both complexions although the proportions of each vary with the individual. These two general complexions, variably blended, are at the root of basic motivations which impel certain individuals to undertake the study of medicine. The extent to which the student emerges a concerned, competent practitioner of the art and science of Healing will be governed to a large extent by how effectively these two components are developed and permanently integrated into his professional personality.

Doctor Cutting states that of the two complexions the second is the more important. Few medical educators and mature clinicians would challenge that view. To acknowledge the primacy of the physician's intellectual facility in no way subtracts from the recognition that his human qualities are of vital importance. A concerned and understanding affect (especially when 'backed up' by a sound intellectual approach) may make the difference between 'success' or 'failure'

Clinical Research. Importance in training - Logan

in the management of many disorders attended by the internist. The warm and reassuring physician will be able, solely by projection of his human qualities, to sustain the effective functioning of many patients who might otherwise be defeated by their psychosomatic problems or by emotional reactions to their afflictions. But it must be admitted -- and indeed, stressed -- that the kindly, well-intentioned physician whose "bedside manner" may be very comforting can be extremely dangerous when he attempts to minister to truly ill patients if the scientific component of his professional make-up is wanting.

Staggering increases in biomedical knowledge and advances in technology in recent years have immensely challenged the student of medicine's ability to acquire that critical scientific base which will prepare him to make proper use of the massive volume of information which has become available. Academicians have been forced to re-evaluate the approach to medical education and to dismiss concepts of education which belong to bygone years when medical knowledge was less extensive and less complex. A major goal must be to develop training programs which will instill in the trainee the capacity for a continuing evaluation of new information, thereby allowing for orderly revision in his concepts based upon inquiry and measurement. Such training will help to prepare the physician to be the perpetual student of medicine which the inevitability of change and the ever-increasing mass of new information impels. It is in this context that the importance of clinical research as a training device has recently become appreciated. Because the student of medicine will never be able to learn all the information it becomes essential that he learn to educate himself as the need arises by employing the following steps: take a problem; find the sources; do the study; correlate the material; integrate and interpret the data; and report it. /2/ The student must discover early that it will be his life-long responsibility to be able to orient himself properly in order to continue his professional growth by perpetual self-education.

Involvement in the discipline of clinical research during the training years (and thereafter) can be an invaluable experience. The academic world has gradually recognized that, in reality, medical research is inseparable from medical education. This fact is reflected in the operational plan of most medical school departments in that an instructor usually devotes about one-third of his time to formal teaching and the remaining two-thirds to working with graduate students and

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technicians on some research project related to his field of interest. However, this emphasis is of relatively recent origin and often the organizations charged with teaching physicians have not offered realistic financial support for the critical element of research. As pointed out in an editorial in the Journal of the Canadian Medical Association: "The attitude that medical research is a hobby or luxury persists even among people who use computers in business and are alive because of penicillin." /3/ This lingering myopia undoubtedly has much to do with the paltry financial support of clinical research in many teaching settings despite the fact that its merits may be given hearty verbal endorsement. The time has come to recognize that "the separation of clinical research from teaching does harm to both -- to clinical research, because a teaching opportunity attracts people interested in clinical problems; to teaching, because vocational training serves only the passing hour, and is not a preparation for medical life, which is quite certain to be transformed several times over by the fruits of research in any one lifetime of practice." /4/

What is Clinical Research?

Perhaps the definitive feature of "clinical research" is that it is research carried out on or very near the actual ward. Clinical research encompasses many activities (not to exclude the collection of the history and the physical examination) which are directed toward increasing knowledge about disease, adaptation to disease or reaction to disease. It presupposes, rather than leads to, accurate diagnosis. /4/ Clinical research as here defined thus differs from "investigation", the latter term tending to imply study and use of procedures with the primary aim of making a diagnosis in an individual patient. Clinical research usually denotes more general inquiries but the terms do overlap. Clinical research involves or stems from patients and thereby differs from fundamental research which relates to animals and to the sciences basic to medicine. There are many links between clinical and fundamental research but they are basically different entities. The dichotomy is not an arbitrary one but simply reflects the integral role of the intact patient to clinical research.

The two essentials of research are the problem and the man with an idea. /5/ In clinical research the approach to the problem often involves study in two spheres: one in the

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laboratory; the other, (a specifically clinical one) at the bedside. Technologic advances including the use of sophisticated machinery, isolated tissues, and intact animals have permitted clarification of many aspects of etiology and pathogenesis of disease. These advances, however, have provided little aid in evaluations of prognosis and therapy. /5/ Studies of prognosis and therapy must employ the clinical skills in which the clinician, functioning as scientifically as possible, concentrates on intact sick people and makes his observations and recordings with meticulous and objective care. This information cannot be adequately gleaned from animal studies or studies done in the laboratory alone. In the areas of clinical research involving prognosis and therapy the two essential components for which there can be no substitute are: the patient and the clinician. Thus, "to advance art and science in clinical examination, the equipment a clinician most needs to improve is himself." /5/

Clinical Research and Internal Medicine Training

The relationship between clinical research and internal medicine should be a symbiotic one. The two disciplines by their very nature will nourish each other. Without slighting our surgical colleagues whose contributions in clinical research speak for themselves, it does appear true that a background of training in internal medicine offers an advantage to individuals who enter clinical research. /6/ The internist is especially well-suited to the ideal role of the "physician-scientist" who can be equally at home in the world of research and science as he is in the world of clinical medicine. While few can fully attain this lofty goal, training programs must offer the opportunity for such development. Failure to do so will surely result in a dangerous division between "clinical" skills and biomedical science as the latter continues to grow. A certain small number of internists who experience the invigorating excitement of discovering something new will desire to devote a major portion of their time to research. Thus, research, clinical and fundamental, will acquire a certain number of internists who will employ their clinical knowledge and skills toward being more effective researchers.

The exposure of residents in internal medicine to clinical research is not, however, primarily intended to recruit full-time researchers. The vast majority of medical residents

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will still go into practice and this is as it should be. The exposure to clinical research, it is hoped, will permit these physicians to carry with them the principles of controlled observation, a highly critical approach to new ideas, a healthy suspicion toward over-enthusiastic reports and 'panaceas', and certain operational concepts of statistics. (I hasten to add that the last comment does not necessarily imply 'statistics' in its formal sense. I am well aware of the general, pervading unpopularity of the subject of statistics among embryonic internists and physicians in general. But an appreciation of the critical importance of grasping the import of and consequently an appreciation of the need to employ operational concepts of statistics -- even if someone else does the calculations! -- should be a by-product of the research exposure.) An experience in a clinical research project -- even a relatively simple one -- is almost certain to inculcate the resident with certain important precepts: he will become wary of his own subjective impressions; he will doubt expansive claims concerning the efficacy of a therapeutic agent or a treatment regimen based upon evaluations by an "investigator" who has relied solely upon "his experience" to formulate his conclusions; he will learn that while experience is important, his mind can play tricks on him -- and that by fairly simple means he can guard against being so 'tricked' by himself.

Finally, the resident will learn that clinical medicine is really not quite an "art" in the purest sense just as it necessarily cannot be completely "scientific" in the purest sense of the adjective as it is applied to basic sciences. At the same time he will learn that he can be far more scientific than he probably previously recognized was possible within a clinical framework. As Alvin Feinstein pointed out so well: "If clinical medicine has failed to demonstrate these scientific aspects of its function, the failure arises because contemporary clinicians have depreciated or ignored the scientific potential contained in clinical skills. Obsessed by the precision and discipline of laboratory methodology, clinicians have abandoned or failed to improve precision and discipline in their own clinical observations and clinical judgments. Clinicians have often rejected their own human sensory and cerebral capacities as inherent defects, irremediable flaws, elements of scientific imprecision that must be avoided and removed by inanimate technology. The fallacy of this belief is its exclusion of the human brain as an adjunct in the explanation of human complexity." /5/ I doubt that this affirmation of the clinician's potential role in scientific

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observation could be better stated. An appropriate exposure to properly supervised clinical research should enable the resident to gain a realistic perspective regarding the clinician's capabilities in making scientific observations. He should emerge from his experience in research with an understanding which renders him appropriately cautious in his conclusions and critically wary of those of others, but not unduly self-effacing or inappropriately condemning of clinical research which was done with suitable care. His research experience should enable him to be intelligently and scientifically skeptical of his own opinions as well as of cavalier conclusions by others. Such an experience and discipline can only result in helping the resident in medicine develop into a better internist!

Clinical Research at Letterman General Hospital

Enlightened elements within the Army Medical Service are fully aware of the vital importance of clinical research in the training of the complete internist of today. The success of incorporating exposure to research into residency training in internal medicine will necessarily be dependent upon the facilities, the staff, and the prevailing mood of the Command at the individual training hospitals. And, of course, the ultimate success or failure of such a program will be contingent upon the degree to which clinical research is given the financial support essential to its success as a training adjunct.

The facilities available at Letterman General Hospital and at the Letterman Army Institute of Research are superb and offer the resident a fairly sophisticated support capability encompassing microbiology, biochemistry, radiobiology, immunology, animal resources, physiology, coagulation research, etc. The present members of the Internal Medicine staff are entirely sympathetic with the merits of clinical research and the medical resident can expect staff support and guidance for any well-conceived clinical research protocol. The Command elements of the hospital can likewise be counted upon for support in this important training adjunct. In candor, it must be admitted, however, that suitable funds for a truly avant-garde program in clinical research remain meager and inadequate -- due to factors beyond the immediate control of individuals in the Department of Research and

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Development of the Office of The Surgeon General of the United States Army. This must be mentioned since it has already proven regrettably necessary to reject certain research protocols which, although fully acceptable to the Research Committee of LGH/LAIR based on scientific merit, could not be supported with presently available funds. There is every reason to expect that this situation will be corrected in the near future. In the meantime there are many areas in which meaningful research efforts can be supported. The extremely important matter of evaluation of new drugs, drug combinations, or comparative efficacy of drug regimens is an excellent example. Attainment of the training goals of clinical research by involvement in large scale, prospective, controlled drug studies has been well-documented. /7/ And the military setting provides a superb setting for the conduct of such studies.

Mechanics of Initiating a Clinical Research Project

Residents in medicine at Letterman General Hospital are advised to discuss their ideas concerning a project in clinical research with their immediate Service Chief and with the Chief and/or Assistant Chief, Department of Medicine. If encouragement is offered, and following an exhaustive review of the literature on the topic in question, they should then contact the Chief, Clinical Research Service, for guidance on how to prepare a research study protocol. In most instances the resident will have the direct support of a staff member who will offer on-going guidance and will often be a "junior" author if a publication results from the study. The protocol will be reviewed by the Chief, Clinical Research, and members of the LGH/LAIR Research Committee following which the resident will be invited to present his proposal to the Committee. Ideally the staff member, when possible, will also attend that meeting. Questions and critical comments generated by review of the protocol by members of the Committee will have reached the Investigator (resident) before the meeting. The protocol will then be 1. approved 2. approved pending certain changes recommended by the Committee 3. approved on scientific merit but disapproved due to lack of funds 4. disapproved. Coordination of the studies proposed with necessary support facilities at LAIR will be effected by the Chief, Clinical Research. The resident will be expected to keep careful records and to submit interval

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reports on his progress or lack of progress to the Clinical Research Service office. It is emphasized that "paper work" and administrative "chores" in connection with the research will be made to render support of this type to the resident and to relieve him of undue "red tape." Indeed, this is a major function of the Clinical Research Service at Letterman.

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