AMBULATORY CARE QUALITY ASSURANCE PROJECT

Volume 3: Bibliography and Selected Abstracts

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.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
ublic Health Service
ealth Services Administration
ureau of Quality Assurance

December, 1976

AMBULATORY CARE QUALITY ASSURANCE PROJECT

Volume III: Bibliography and Selected Abstracts

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This investigation was supported by Contract No. 240-75-0101, Bureau of Quality Assurance, Health Service Administration with partial support from Grant No. 1350, The Robert Wood Johnson Foundation. The opinions, findings, and recommendations in the text of this volume are those of the authors and do not necessarily represent the views of the Department of Health, Education and Welfare, The Robert Wood Johnson Foundation, or project consultants and advisory board members.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price $2

Stock No. 017-026-00056-9

FOREWORD

As the Bureau of Quality Assurance began implementation of the PSRO program in hospitals, it soon became evident that the future would require PSROs to be actively involved in ambulatory medical care quality assurance. Since the state of the art of ambulatory care review is far less advanced than that of hospital review, we realized that it would be necessary to develop a sound basis for the careful, gradual movement of PSROs into ambulatory care quality assurance.

This three-volume report is the result of the work completed by Health Care Management Systems, Inc., in one of the first major Bureau contracts to acquire and document knowledge of presently operational ambulatory care quality assurance projects. The purpose of this project was to systematically assess and document existing activities in a variety of health delivery settings across the country. During the course of the project, a generic quality assurance model was developed for use in the design, implementation, and assessment of ambulatory care review systems. This model is now under refinement and is being applied in the Bureau's cooperative ambulatory care quality assurance demonstration project. It represents a significant advance in our ability to design and assess such systems.

This three-part report, which includes a description of the generic model and study findings, description of each of the 27 ambulatory quality assurance systems included in the survey, and a bibliographic index that has been enriched by selected abstracts, should provide the reader with a concise overview of the state of the art. The results of this project are an important part of the foundation upon which to build well-balanced and meaningful PSRO participation in ambulatory care quality assurance. The report also reflects the investigators' concern with ambulatory quality assurance outside the scope of PSRO.

The authors of the report developed their material in a relatively short time to meet the need for fundamental knowledge of existing quality assurance programs to support the implementation of voluntary systems and governmental regulatory programs. It is hoped that any limitations in the material presented herein will be corrected through additional research and careful experimentation and demonstration of new ambulatory quality assurance methods and organization.

We believe that this report will be valuable to those within and outside the Federal Government who are interested in establishing effective quality assurance systems in ambulatory medical care. We are pleased to have provided partial funding to the project and the preparation of this monograph and hope that it will be useful to all who are now engaged in activities leading to improved quality in ambulatory medical care.

Michael J. Goran, M.D.
Director
Bureau of Quality Assurance

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ABSTRACT

That quality care assurance is in a state of flux is attested to by current literature in the field and is substantiated by the Ambulatory Care Quality Assurance Project (ACQAP) report. This nationwide survey was undertaken to reveal the state of the art in the United States today. During a study of more than two dozen sites over a wide range of geographic locations, the ACQAP produced a set of basic program procedures, a scoring method, and what appears to be a sound basis for planning, operating and assessing quality care assurance programs. The literature relative to quality assurance in ambulatory care was investigated and a collection of the better references accumulated.

Volume I of the three-volume report contains a detailed description of the ACQAP Model, its scoring system, and its findings. The data collection instrument, a 226-item open-ended questionaire used in the study, is contained in an appendix.

Volume II contains detailed descriptions of the 27 programs reviewed in the course of the ACQAP accompanied by a compact tabulation of their key characteristics for quick reference, so that the reader may compare the study sites with his own.

Volume III is a bibliography containing a general list of the articles and other references found to be most useful to the study. The list is duplicated under several topic headings for the convenience of the reader interested in a particular aspect of quality assurance in ambulatory medical care. A number of the references have been abstracted and the volume also contains a narrative review of the literature.

INTRODUCTION

This volume is the result of a review of quality assurance literature completed as part of a research grant and project work funded by The Robert Wood Johnson Foundation and the Bureau of Quality Assurance, Department of Health, Education and Welfare. The review was conducted at various times during a two-year period, culminating in selection of particular articles for abstracting. There are more than 200 general citations and nearly four dozen abstracts. The review concentrated on material written between 1970 and April, 1976, unless material from an earlier period was considered unique or essential to historical perspective and orientation.

In company with the first two volumes of the report, this review of the literature provides a concise overview of the state of the art in ambulatory medical care quality assurance today. Compiled primarily for specific project uses, it began to reveal patterns of various areas of interest; hence the citations and abstracts are included not only for general orientation in the field but for use in research and in operational quality assurance programs. The indices are unique in that works are classified not just according to topic area, but also by setting. "Topics" are subdivided into fifteen categories, for example, and eleven different "settings" (e.g., solo practice, emergency room) to increase the utility of this review of literature.

There are five sections in this volume: Main Index, Topic Index, Setting Index, Abstracts and Review of the Literature; each of them is discussed below.

MAIN INDEX

The Main Index section lists all articles alphabetically by author. All articles are coded by type, topic and setting. Letter codes appear at the end of each article in the Main Index section and in all the other sections. The example below illustrates a citation in the Main Index.

EXAMPLE

*Brook, Robert H. and Stevenson, Robert L., Jr.: Effectiveness of patient care in an emergency room, New Engl J Med 283:904-907, 22 Oct 1970 (P-D), ES-0, ES-P, S-2

Abstract Type Topic Setting

Abstract: An asterisk preceding the author's name indicates the article has been abstracted.
Type : Type refers to the general content of the article as either Theoretical (T) or Program Description (P-D) as defined on page 3.

Topic : Fifteen topics are defined on pages 3 to 5. They were selected by project staff to identify key concepts and concerns in researching, designing, or describing quality assurance methods and programs.

Setting : Nine different settings defined on page 5 were identified by project staff. They refer to the specific type of medical care delivery or review systems.

TOPIC INDEX

The Topic Index section lists articles alphabetically by author according to topic. Hence, all the articles having the topic code CA will appear under the topic heading Computer Applications (CA) as on pages 23 and 24; those having the topic code CS will appear under Consumer Satisfaction (CS) as on pages 25 and 26, etc.

SETTING INDEX

The Setting Index section lists articles alphabetically according to practice setting. For instance, articles having a Setting code S-7, i.e., articles describing research, policy or programs relating to prepaid group practices, will appear under S-7 on pages 71 and 72.

ABSTRACTS

Abstracts were made of 44 articles on the basis of the following questions:

1. Is the article clear, concise and easily understood?
2. Do the research design and method seem to be well-constructed and internally consistent? Was the method pretested?
3. What are the limitations of the research or the system described?
4. Were the data collected actually measurable? Was the sample representative and of an adequate size? Was the analysis accurate and thorough, given the data?
5. Is the article current and relevant to current issues in the field?
6. Are the authors reputable in the field?
7. Does the article add to the cross-section of literature reviewed in Volume III of this report?

Abstracts are listed alphabetically by author in this section.

In all indexes, abstracted articles are identified by an asterisk preceding the author's name.

REVIEW OF THE LITERATURE

Representative articles are summarized under major content areas at the end of this volume.

DEFINITIONS AND CODES OF TYPES, TOPICS, AND SETTINGS

The definitions are not precise and exclusive. Many of the articles reviewed do attempt to construct precise definitions. Therefore, types, topics and settings are defined loosely to encompass the latitude of the literature and to limit their number to a manageable size.

DEFINITION	CODE
TYPE	
Theoretical, Policy Issues - material discussing current aspects of quality assurance philosophy, general approach, and construction of models at local, state, and federal levels.	(T)
Program Description - material discussing the testing or application of quality assurance methods within a particular setting.	(P-D)
TOPIC	
Computer Applications - the use of computer software and hardware in the processing of medical care data.	CA
Consumer Satisfaction - patients' attitudes toward health care providers, the health care system and the care received.	CS
Corrective Action - the various efforts made to correct deficiencies uncovered by medical care evaluation. This category also includes feedback and continuing education.	CX
Criteria and Standards Development - the process of establishing standards by which medical care is evaluated.	CSD
Data Collection, Processing, Analysis - the various ways data are collected, processed and analyzed. Articles dealing with the concerns of confidentiality and privacy are included here.	DC

DEFINITION	CODE
TOPIC	
Evaluation and Impact Studies - analysis of medical care, comparing the care to what is possible, and attempting to determine the origins of deviations while stressing improvement. This is a general category; articles listed herein may or may not address process, outcome or structural evaluation.	ES
Outcome Evaluation - analysis of medical care which examines end result of care in terms of patient mortality, physical or psychological morbidity, care, rehabilitation, level of function, etc.	ES-O
Process Evaluation - analysis of what is done to the patient (history taking, lab tests, diagnosis, therapy, etc.) as compared to a standard.	ES-P
Structural Evaluation - analysis of the effect that characteristics of facilities and providers (e.g., hospital beds, physicians per population, board certification, etc.) have on medical care. This category also includes accreditation and the use of paraprofessionals.	ES-S
Medical Audit - the process which measures actual medical care received compared to a set of standards.	MA
Medical Record - the primary form of patient data collection. Protocols are also included in this category.	MR
Peer Review - the evaluation of a physician by physicians, usually of the same area and specialty.	PR
Provider-Patient Relationship - the quality of communication between providers and consumers of medical care. Consumer involvement in decision-making is also included in this category.	PPR
Quality (Assessment, Assurance) - articles in this category attempt to make explicit what is meant by the quality of medical care.	QA

DEFINITION	CODE
TOPIC	
Utilization Review - the process which measures the use of available facilities and services to determine medical necessity, cost effectiveness, and conformity to criteria for optimal use.	UR
SETTING	
Group Practice, Fee for Service	S-1
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Hospital, Inpatient	S-3
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PSRO legislation is seen to have led to a focus on process types evaluation and thus to cost-control approaches to improvement. The author considers quality as embracing: 1) patient's health status and health attitudes on entry to care, 2) suitability of the care delivery machinery (structure), 3) application of care (process), and 4) outcomes of current application of care.

Seven evaluatory approaches are discussed, though the author emphasizes the "Past-Focused Analysis." 1) The traditional answer of "more and better of everything" that relates to health (i.e., do more research, require higher levels of training) is seen as an anti-evaluation approach. 2) The evaluation of the community level of well-being as a base from which to seek improvement is limited because the ultimate outcome of how well people are is only very modestly the result of their health care. 3) In the Prospective Outcome Analysis as a means of identifying needed improvements, an expert committee establishes the standards of specified outcomes for selected conditions. Statistically significant numbers of cases are checked and when outcomes are significantly lower than expectations the committee investigates for the underlying factors contributing to the failure. The committee then designs and tries to institute changes required to build further failures out. However all failures cannot be attributed to the health care process because the many environmental factors impinging upon the patient can have much to do with poor outcome. 4) The Past-Focused Analysis is predominantly an effort of looking back into what the patient brings with him, including prior health care, to find the causes that bring a patient to care in the condition in which he is found. Forces identified as preventable immediately can lead to spelling out measures that would eliminate those forces as the causes of the particular condition. 5) Using Process Evaluation to find failures in the health care machinery does not necessarily give a real idea of what is going wrong or why, nor does an apparently ideal process guarantee good care. The patient's environmental situation may justifiably require departures from the ideal. However, Process Evaluation should involve physicians and other health care workers in continuing education and practice improvement. 6) In Structural Evaluation the expert committee works backward from their ideal process to the ideal structure to implement those processes. However, since structure is not specifically checked against outcomes, it can promote costly changes which may not be improvements at all. 7) A "tracer" is a condition that has a significant functional impact, can be diagnosed, occurs frequently, requires much care, has effective therapy, whose epidemiology is comprehended, is common in a specific age-sex-race grouping and uses many major kinds of health services. The Tracer method offers the possibility of examining each major aspect of quality control.

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The author concludes in this general summary and review of each type of quality evaluation that not all investment should go into one or two types of evaluation alone. The process evaluation ignores the patient's contributions to the outcome of the processes, but the past-focused and the prospective outcome analyses point out the process and structural failures. The use of well-studied tracer conditions may become a particularly efficient and effective way of relating all types of quality evaluation of health care.

Bouchard, R.E., Eddy, W.M., Tufo, H.M., Twitchell, J.C., Van Buren, H.C., and Bedard, L.: The patient and his POMR, Quality Assurance of Medical Care, DHEW (HSM) 73-7021, Feb 1973, pp. 233-239 (P-D), CSD, CX, ES-P, MA, MR, PPR, UR

A model ambulatory care center (the Given Health Care Center) was organized at the University of Vermont according to the Weed Problem-Oriented System which is based on the four phases of medical action: 1) collecting the data base; 2) formulating problems; 3) making explicit plans; and 4) conducting a follow-up based on specific goals. After freshman medical students, who are actually laymen, proved to be excellent auditors, it was decided to send a copy of the record to all patients. The goals were to educate the patient and define his responsibility to carry out the health care plan. Provider-patient communication is not good after a complete examination and some long-range plans are not clearly established while the patient is still in the office. The patients could also participate in the audit process. Improved understanding and motivation are potential advantages, but possible disadvantages include increased anxiety level and an information overload.

After 6 months experience, a questionnaire was mailed to 100 patients receiving complete examinations and there was a 93% response rate. For each of a variety of health factors, the patients were clearly in favor of getting more detailed information. Respondents also indicated an increased understanding of their condition and role in improving it. Eighty percent were now more careful in taking medication and 78% indicated that they had subsequently changed their living, eating or drinking patterns. Ninety-seven percent felt that after reviewing their own record they were less worried about their health.

A process audit method has been chosen and is a positive experience because it leads to continuing self-education, motivation, uniformity of performance, and updating standards. The patient participates in three sections of the audit: 1) the role and interaction description of the patient; 2) subjective data; and 3) clarity of the plans.

Brook, Robert H.: Quality assurance: the state of the art, Hosp Med Staff 15-26, Mar 1974 (T), CSD, ES-0, ES-P

Although the United States is unique in its commitment to health care quality assurance at the level of the individual practitioner, Brook does not see this as necessarily resulting, even if implemented with the most unselfish of motives, in improvement in the health of the population or in stabilization or reduction in the costs of health services. It is just as likely that it would result in little or no improvement in the general health at a much greater cost. He feels, however, that the causal relationship between a quality assurance program and changes in the health of the population and in the costs of the health services can and should be tested.

Because the maintenance or improvement of patient outcome is the goal of the medical care system, outcome or clinical and structural factors shown to be related to it should be the basis of quality assessment. This is made difficult, however, because 1) medical care services are not the only factors affecting outcome, 2) measuring outcome is difficult and expensive, and 3) the outcome of care varies as a function of the stage of the disease. For these reasons the trend is to examine and develop process and structure criteria as yardsticks for assessing the quality of health care. However, the causal relationships between both process and structure criteria and outcome are not based on hard scientific evidence and this leads to guidelines that if followed would not result in improvement in the health of the American people but would result in a vast increase in the cost of medical care. Studies indicate that process criteria selected by practicing physicians tend to be unrelated to outcome and that these physicians tend to ignore their own criteria.

Improvements in the health of the population will not come as a result of following process criteria, nor having physicians retake board examinations and attend continuing education courses. The best research techniques must be used to find what works and what does not. Change will be necessary in both institution and provider behavior.

Brook, Robert H. and Appel, Francis A.: Quality-of-care assessment: choosing a method for peer review, *New Engl J Med* 288:1323-1329, 21 June 1973 (P-D), ES-P, ES-O, CSD.

A successful peer review system depends upon whether process or outcome, or both, data are used and upon by whom and how value judgements are made to determine the quality of care. To answer these questions, comparisons were made of 5 different methods of quality assessment: 1) implicit (relying on the subjective opinion of an individual judge) judgement of process; 2) implicit judgement of outcome; 3) implicit judgement of process and outcome combined (quality-of-care judgement); 4) explicit (relying on predetermined criteria set by group agreement) judgement of process; and 5) explicit judgement of outcome.

Three conditions (urinary tract infection, hypertension, and ulcerated lesion in the stomach or duodenum) were selected for this study conducted at the Baltimore City Hospitals. For the three implicit methods physician judges read an abstract prepared from the medical record and patient interview. The abstract was more legible, more complete, and more in chronologic order than the medical record. Each of three physicians performed implicit-process judgement from data provided on the first page of the abstract, containing background information and medical-process data. Then the second page of the abstract (outcome data) was read and the physicians decided whether the outcome could have been improved if the medical-care process had been better (implicit-outcome judgement). The physicians then rated the quality of care received by the patient as acceptable or unacceptable (implicit quality-of-care judgement). Criteria for each of the three conditions necessary to provide good care and likely to affect outcome in an important way, were those selected by five of seven physicians, and when applied to each case, resulted in an explicit-process judgement. For groups of patients with similar characteristics likely to affect prognosis physicians estimated outcome with no therapy, with current therapy, and with adequate therapy (explicit-outcome judgement).

At the end of the 5-month study, 44% of the hypertensive patients still alive had uncontrolled blood pressure, probably due to insufficient follow-up, noncompliance with medication, and inadequate adjustment of drug dosage. Sixty-one percent of patients with urinary tract infection had bacteria resistant to the antibiotic originally chosen. Sixty-one percent of patients with an ulcerated lesion remained symptomatic.

With at least two of three judges considering care adeqate, 23.3% patients had an adequate medical-care process. Outcome was judged unimprovable in 63.2% of the cases and for 27.1% of the cases the quality-of-care was judged acceptable. Only 2% of the cases met all the explicit-process criteria and the mean percentages of criteria met were 52% (urinary tract infection), 58% (hypertension), and

35% (ulcerated lesion). Explicit-outcome evaluation resulted in 40% of urinary tract infection patients and 44% of hypertensive patients receiving acceptable care. For those with ulcerated lesions outcome was found to be worse than the estimated outcomes with no therapy.

Implicit-process judgement correlated weakly with outcome. The three implicit methods varied significantly with the conditions and reliability was not sufficient to judge individual patient care. In terms of physician willingness to estimate and the validity of the estimates, explicit-outcome evaluation seemed the least satisfactory. Explicit-process evaluation, currently the most widely used, produced the severest judgements.

Brook, Robert H. and Stevenson, Robert L., Jr.: Effectiveness of patient care in an emergency room, New Engl J Med 283:904-907, 22 Oct 1970 (P-D), ES-O, ES-P

To determine if the emergency room is a suitable source of primary care for inner-city residents, an evaluation of diagnostic and therapeutic processes and outcomes was conducted for a sample of 141 emergency room patients scheduled for upper gastrointestinal series, barium enemas, or oral cholecystography. The study was administered during the months of April-June, 1969, at Baltimore City Hospital. The Williamson model was used.

Patients for study were obtained from x-ray department lists by date and source of appointment. A retrospective review of each chart and all x-ray reports obtained from the x-ray department was done in addition to a patient interview. Results are presented in four parts: the success of a follow-up study, patient characteristics, diagnostic processes and outcomes, and therapeutic processes and outcomes. Patient data were analyzed according to employment, sex, race and source of payment. Some of the results were as follows: Out of 141 patients, 94 (67%) completed diagnostic x-ray studies; 77 (55%) received an adequate work-up according to established criteria; of 38 patients with abnormal x-rays, 37% had no adequate therapy.

Conclusions: Effective medical care was rendered for only 35 (27%) of the patients, ineffective care for 84 (60%) of the patients, and 19 patients experienced no net positive or negative effect. By every criterion included in the study, the medical care in the emergency room appeared to be both inefficient and inadequate. Approximately one-third of the patients were forced to seek additional help, had prolonged symptoms and missed work. Effective medical care was delivered to only one-fourth of the patients.

Brown, Clement R. and Uhl, Henry S.N.: Mandatory continuing education sense or nonsense? JAMA 213:1660-1667, 7 Sept 1970 (P-D), CX

Although research in medical education continues, implementation of experimental programs has not been successful. The history of continuing medical education has led us to the standard teacher or planner-oriented approach. This method conceptually does not relate educational programs directly to identified physician and patient need. This can be accomplished by 1) identification of deficiencies and combining them with corrective programs and 2) establishment of a communication network to provide regular consultation.

The "bi-cycle" concept directly relates patient care to education. Both the patient care and educational cycles begin with the physician-patient interaction. Education takes place where such interaction occurs. Data from these interactions is abstracted and processed. Management criteria (screening, prevention, diagnosis, and therapy) are established for disease categories causing the most amount of preventable disability. Actual physician performance is compared to the criteria and gaps are identified, representing improvement potential. Closing these gaps is the educational objective. Here the bi-cycle concept enters into the inner educational cycle, where causes (cognitive, skill, or attitudinal) of the gaps are determined. Effectiveness of the proposed educational programs is determined by reentry into the outer, patient-care and audit cycle.

The bi-cycle concept was employed to study the use of antibiotics at the Chestnut Hill Hospital. The medical staff estimated a minimal expectation of 75% appropriate antibiotic use and a 35% audit result. An audit by chart review found 30% appropriate use and deemed it unacceptable. Six of the first eight patients receiving appropriate antibiotic therapy was the educational objective. An examination using some of the originally audited cases revealed an average of 68% appropriate choices. After four conferences on antibiotic use using the examination as the focus, physician performance was reaudited (back to the outer patient-care cycle) and found to have improved to 48% and subsequently to 60%. A required progress rate explaining the necessity of prescribed antibiotics was another instituted change.

Two-way closed circuit television for consultative purposes is feasible and provides a regular highly-motivated problem-solving learning process. A WATS system has proved feasible and worthwhile in the Alabama Regional Medical Program and such has been the experience of the Dartmouth Medical Center with its television program. It is hoped that basing accreditation on standard types of continuing education will not rule out experimental programs which are more effective.

Buck, Charles R., and White, Kerr L.: Peer review: impact of a system based on billing claims, New Engl J Med 291:877-883, 24 Oct 1974 (P-D), PR

To determine if adjustment of billing claims made by a peer review mechanism affects subsequent practice patterns, the records of Medi-Cal patients of the San Joaquin Foundation for Medical Care were examined for the period from 1 February 1968 to 31 May 1971. The Foundation has performed billing claims peer review since 1955 to control unnecessary physician services and assure adequate funds to pay for required services. All claims are reviewed according to the Foundation's standards by nonphysician examiners but may be then referred to a physician or the Medical Review Committee for adjustment.

Fifteen procedures in three categories (injections, physician visits, and laboratory procedures), performed by 259 individually identified physicians, were studied. The uneven distribution of adjusted claims that was revealed tends to corroborate the impression that such review mechanisms focus more on some providers than on others. The study placed major emphasis on attempting to associate individual effects with peer review stimuli. To measure the impact of peer review, changes in the trend (the rate and direction of change in the number of procedures provided per month during both a "before" and an "after" period) were illustrated by calculating and comparing the slopes of the regression lines for each physician for each specific procedure during both periods. A statistical analysis was done to test for an association between the percentage of claims adjusted for a specific procedure and the magnitude of any "before" to "after" change in regression line slopes.

A positive association was seen between the percentage of procedures adjusted and the subsequent decreases in regression line slopes although the tests for an overall decrease in regression line slopes were statistically significant for only four of the 15 procedures studied. Physicians with review adjustments to more than 20 per cent of their claimed injections decreased their regression line slopes more than the remaining physicians did.

Due to the long history of claims peer review at the Foundation, much of the reduction in variation among practice patterns occurred before periods concerned in this study. There was inconsistency in the results suggesting that for some physicians or procedures the stimuli may have a decreasing effect and that in some cases the same level of change might be achieved with lower percentage levels of adjustments.

Curran, William J., Stearns, Barbara and Kaplan, Honora: Privacy, confidentiality and other legal considerations in the establishment of a centralized health-data system, New Engl J Med 281:241-248, 31 July 1969 (T), DC

The protection of privacy and confidentiality are the most important legal questions in the development and acceptance of a centralized health-data system. The right of privacy is the right to keep information about one's self inaccessible to others. Confidentiality implies disclosure of certain information to others for particular purposes and with certain restrictions. Testimonial privilege means information received confidentially cannot be divulged in a legal proceeding without consent.

In Massachusetts the law states that all records in the custody of state, county or local governmental agencies are public records with certain exceptions, including personal and medical information. Hospital patient records, owned by the hospitals, are available to the individual patients except those under the control of the Department of Mental Health. Unlike most states, Massachusetts does not provide for physician-patient testimonial privilege. Professional group ethical codes forbidding disclosure of patient confidences are legally binding. The release of aggregate data where individuals cannot be identified does not seem to pose a problem.

The Public Information Act of 1966 made federal records more accessible to the public, except for personnel and medical data. Census data, unidentifiable as to individuals or establishments, is publicly available. The Social Security Administration protects identifiable data and names of contributors from disclosure.

Only a general outline of the legal protection of the "right to privacy" has been developed. Safeguards must be developed to protect data aggregately released but identifiably stored. A centralized health-data system should develop rules and regulations specifying conditions for information release and should periodically re-evaluate them through a privacy and confidentiality committee. There should be criminal penalties for violations and civil damages should be awarded for injuries resulting from such violations. Violation of the system's rules and regulations by employees, associates and users should result in dismissal and termination of association. It is recommended that the major contributors and users of the data make up a large part of the system's policy-making body.

Dutton, Cynthia B., Hoffman, Susie, Ryan, Linda K., et al.: Ambulatory health care, NY State J Med 1545-1550, Aug 1974 (P-D), ES-P, MA

This article describes a system of ongoing evaluation, using the problem-oriented audit, to successfully incorporate continual feedback of relevant information to the clinical staff for their education and for the improvement of medical care delivery. The study took place at the Whitney M. Young, Jr., Community Health Center which provides family-oriented health care to a low-income inner city population. The project was in part federally funded and began in July, 1971. Four health problems (pediatric otitis media, adult hypertension, adult urinary tract infection, and pediatric anemia) were selected as tracers to assess the quality of health care. The health center physicians designed protocols, including criteria for resolution or control, for diagnostic evaluation and treatment of these four health problems. Audit forms were designed as well as a system of computerized storage of selected clinical and statistical data. Specific items were selected to assess provider compliance with the protocols, and data were collected concerning patient compliance with therapeutic regimens and scheduled appointments.

The study found that failure to record data, misunderstanding or disagreement concerning what data are necessary, and frequent failure of patients to keep return appointments were all of major importance and operative to some extent in the majority of clinical episodes. The audits brought out the diversity of the clinical staff's opinions and understanding regarding criteria for diagnosis, and for either resolution or adequate control of the various clinical entities. After completion of the audit the disparities between the protocol and actual practice were defined and presented to the clinical staff for an attempt toward closer adherence to or a modification of the protocols. A limitation of the audit methods is that it is dependent upon the completeness of the recording of clinical data. The study also concluded that the selection of criteria for health care evaluation should actively involve all clinical providers.

Fessel, W.J., Van Brunt, E.E.: Assessing quality of care from the medical record, New Engl J Med 286:134-138, 20 Jan 1972 (P-D), ES-O, ES-P, MR

The processes of care for appendicitis and myocardial infarction were analyzed to assess the relationship between the recorded process of medical care and the outcome of that care. A medical-record librarian abstracted information from patients' records with only 2.4% error. A list of recorded symptoms, signs and laboratory data relevant to appendicitis and derived from 50 charts from one study hospital was used to audit all 150 charts from three hospitals. Another list, containing 44 elements of history, physical examination, and various tests, and documented on at least 75% of 50 charts from one hospital, was created for myocardial infarction. The corresponding outpatient charts were reviewed for the following outcomes: time before returning to work; angina pectoris; congestive heart failure or arrhythmias not recorded on medical record; new myocardial infarction; and death. These charts were also examined for items found to be related to myocardial infarction outcomes: white-cell count, blood pressure, congestive heart failure, diabetes, and histories of myocardial infarction and hypertension. Three cardiologists also drew up an audit list for myocardial infarction.

Differences among the three hospitals in their recording of useful information concerning appendicitis were statistically significant. Yet they correctly diagnosed the condition a similar percentage of times (outcome of the clinical diagnosis was the same). Similarly, for myocardial infarction there was no correlation between recorded data and the outcomes after discharge. Thus, chart review of the process of care, the usual method of audit, may be misleading.

Flashner, Bruce A., Reed, Shirley, Coburn, Robert W., et al.: Professional Standards Review Organizations, JAMA 223:1473-1484, 26 Mar 1973 (P-D), PR, UR

A preliminary review of the Illinois Hospital Admission and Surveillance Program (HASP), a peer review program, was conducted in 1972. Significant cost reductions and improvement in both utilization and quality of medical care for recipients of medical assistance programs are goals that HASP has in common with established PSRO principles. HASP hopes to accomplish these goals by the monitoring and precertification of hospital admissions, elimination of hospital days medically unnecessary, and ongoing surveillance of diagnoses, services, and patterns of care. A specially trained coordinator provides the administrative services for precertification of length of stay, extensions, summary abstracts and data collection. To avoid delays in implementation, median length of stays were taken from the pooled statistics of the Professional Activities Study, representative of Illinois Hospital. The involvement of a government contract officer, enpowered to change the original contract to solve problems, will also facilitate implementation.

Historical utilization and cost data is necessary as well as a management reporting system, based on the individual patient abstract, to monitor expenditures, problem areas, trends, etc. HASP designed both year-to-date summary reports and program exception reports. Physician advisors were reimbursed for their time and responsibility. Forms should be designed for minimum paperwork for the physician and the hospitals' financial office should control certification of hospital bills with a special stamp, not additional forms. The state HASP committee, or its PSRO equivalent, must remain prepared to interpret contract policy and the local HASP committee should act as a court of first appeal.

The following are operational problems that may arise and ways in which HASP has addressed these problems. Without review by the physician advisor, the coordinator may grant extension in cases of obvious medical necessity. Because extensions should be granted only when medically necessary, extensions due to hospital delays in providing services should be examined carefully. Extensions due to delays in long-term care transfer are granted only when they are the result of governmental agency inaction or justifiable social service problem. HASP requires a minimum of four hours of hospitalization prior to certification, allows only one certified day for multiple admissions for false labor, and usually precertifies one day for preoperative care. Diagnostic changes may also require extensions. Only attending physicians, and in teaching hospitals only senior residents, may request admission certification. The physician advisor must review admissions by those doctors who are continually in noncompliance. Only after eligibility is determined by the appropriate state agency may certification occur. Determination of eligibility may occur after discharge, in which case retroactive certification may be granted.

PSRO's must not be too small and certification should be implemented initially in institutions with the greatest medical assistance admission rates to insure a high volume cash flow. About 80 patients per coordinator would be considered a full work load. Modification of certification standards should happen only after 100,000 admissions. A price tag for the one-time start up costs should be agreed upon right at the beginning and further reimbursement should be on a risk-incentive basis.

The average length of stay dropped from 7.2 days in the year prior to HASP implementation to 6.2 days in the corresponding period of HASP operation. A $9.6 million reduction in hospital expenses was anticipated for this period. Although the number of eligible recipients was 21% higher during HASP operation, state payment for hospital services increased only 1.5%. HASP expenses accounted for 2% of total hospital expenditures. PSRO's will eventually expand to the private sector and ambulatory and long-term care settings.

Gilson, Betty S., Gilson, John S., Bergner, Marilyn, Bobbitt, R.A., et al.: The sickness impact profile, development of an outcome measure of health care, AJPH 65:1304-1310, Dec 1973 (P-D), ES-0

Process and structure evaluation is legitimate only when closely associated with outcome measurements. To overcome the inappropriateness and insensitivity of previous outcome measures, the Sickness Impact Profile (SIP), a behaviorally based measure of sickness-related dysfunction, an indicator of health status, has been developed. The provider's definition of the illness, the care process, and the individual's own sickness perception influence the impact of the sickness. The behavioral aspect of sickness is an appropriate outcome measure because: 1) the overall impact of illness is reflected in behavior; 2) both health providers and consumers perceive the social, mental, and physical effects of sickness; and 3) many health care systems are responsible for the health of heterogeneous groups over long periods of time.

Patients, health care professionals, individuals caring for patients, and the apparently healthy contributed statements describing behavioral dysfunction. Grouping techniques cut the original 1250 statements to 312, which were then sorted into 14 categories of items (e.g. social interaction, locomotion, etc.). The SIP items were rated by 25 judges on an 11-point scale from "minimally dysfunctional" to "severely dysfunctional." Then they rated the least and most dysfunctional items to provide scaled endpoints from which to rate the remaining items. There was high agreement between the judges in both steps.

In a pilot study of the SIP 246 group practice enrollees (inpatients, home care patients, walk-in clinic patients, outpatients, and non-patients) were interviewed and their set of positive responses (dysfunctions) provided a profile of sickness impacts, a protocol. Four groups of 25 judges performed a protocol scaling similar to the item scaling. Agreement among judges was again high and differences in medical sophistication did not produce significantly different scores. The profile scoring method (items checked in four scale-point groupings) and the per cent scoring method (percentage of total possible dysfunction) were used. Preliminary tests showed evidence of reliability and validity. SIP contains no considerations relating to prognosis but was found to be a complete list of dysfunctions.

Gonnella, Joseph S., Louis, Daniel Z., McCord, John J.: The staging concept - an approach to the assessment of outcome of ambulatory care, Med Care 14:13-21, Jan 1976 (P-D), CA, CSD, ES-0

To overcome the shortcomings of structural and process assessment, a "staging" concept has been developed whose basic premise is that "the seriousness of a patient's condition at some point in the treatment process is a good indication of the outcome of the previous parts of the process." A medical problem or disease is divided into three stages: 1) without complications or with complications of minimal severity, 2) with local or moderately severe complications, and 3) with systemic or serious complications. Sublevels can also be defined for more precision. In this way groups of patients requiring common treatment procedures and services and having similar expected outcomes can be identified. These "staging" classifications can be translated into ICDA and H-ICDA codes for use by nonphysician personnel and, in some cases, directly by computer.

It is assumed that an inadequately treated population can be expected on the average to be further advanced in illness (at a higher-numbered stage) than an adequately cared-for population. The staging technique cannot pinpoint where in the process of care, or if indeed it is in the medical care system, the reasons for the problem lie. However, it can comment on the overall health of a population and the general quality of care available to them. It is a measure of true outcome that can be applied quickly and objectively and can be used in a wide range of comparative studies.

A preliminary analysis, involving 5000 patients admitted to a sample of hospitals in two California cities, was performed to test the feasibility of the staging method. Data on patients in 18 disease categories were computer processed at a low cost. In six categories differences were found between beneficiaries of commercial insurance and Medi-Cal and beneficiaries of "other government programs" (primarily county welfare patients), the latter group entering the hospital in consistently worse condition.

Future improvements in the staging technique include: 1) developing staging criteria for other disease conditions, 2) testing and refining staging criteria, 3) establishing baseline standards (including time-phased monitoring for significant changes), 4) developing protocols for tracking back along the process of care, and 5) developing comparison techniques.

Hanson, A. Stuart, Kraus, E.D.: An outpatient medical audit, Minnesota Medicine Supplement 56:49-52, Oct 1973 (P-D), CSD, MA

A system of auditing outpatient medical records was developed in 1972 at the St. Louis Park Medical Center, a multispecialty clinic in Minneapolis, Minnesota. The goal of this ongoing project was to evaluate the effectiveness of care provided through the use of the outpatient medical audit. Among other things they hoped to involve many clinic physicians (70% actually) in choosing diagnoses for the study, in developing "Master Criteria" patterns, and in setting "Expected Performance" standards of care; to use nonphysician paramedical personnel as auditors for chart abstraction; and to integrate the audit into an ongoing professional standards and education program at the Medical Center.

Twenty study diagnoses were chosen and participating physicians developed "Master Criteria" patterns for each of these diagnoses. A "Case Abstract Form" was constructed to allow its use with data processing equipment and an "Audit Manual" was prepared to help the nonphysician personnel in their patient record abstraction. Quarterly reports consisted of individual reports to each physician having patients in the study, summary reports to each clinic involved, and summary reports for the Medical Center as a whole.

To determine the validity and reliability, 93 records were reabstracted by the original nonphysician abstractor and one physician coordinator. Comparison data were formulated for physician vs original, physician vs reaudit, original vs reaudit. There was substantial investigation and discussion of error origination. It was found that the most consistent defect in all of the disease summaries was the lack of record concerning outcome. The article does not address the problem of patients with multiple diagnoses, the time frame of the study, or the feedback from the physicians regarding the reports given them.

Conclusions: Paramedical personnel can be used to abstract medical information from the records, which saves physician time and thus is cost-effective. Plans are to continue using the audit system for an ongoing evaluation of professional activities.

Hare, Robert L. and Barnoon, Schlomo: Medical care appraisal and quality assurance in the office practice of internal medicine, American Society of Internal Medicine, San Francisco, CA, 157 pages, HSM 110-70-420, July 1973 (P-D), CA, CSD, CX, DC, ES-P, MA, MR, QA

The American Society of Internal Medicine undertook a study to develop a method for assessing quality in the office practice of internists and to see if this method is effective in promoting and directing continuing medical education for the improvement of the quality of care. Participants were all general internists from four states (New York, Colorado, Washington and Georgia) representing four regions of the country. In New York the physicians were divided into three groups, practicing in metropolitan, urban or rural areas. One hundred fifty physicians were selected at random from volunteers. Six categories of care were selected: 1) newly discovered adult diabetes mellitus, 2) follow-up of established diabetes mellitus, 3) newly discovered diastolic hypertension, 4) follow-up of established hypertension, 5) female acute urinary tract infection, and 6) periodic health evaluation.

An "exhaustive" list, prepared by the members of the Quality Evaluation Committee, was sent to the participants for additions, deletions and scoring on a five-point scale from highly relevant to contraindicated. When an average grade for an item was smaller than the grand average for that category and region, it was considered a poor indicator of quality. A validation study of these criteria was also conducted. To facilitate and assure recording and processing of the patient care data, a data collection form was prepared. The physicians's performance was scored by assigning points to the various items in the established process of care, the physician receiving no points when procedures were not done or recorded. Cases with deviations from established norms might be referred to peer review committees for further study.

It was demonstrated that physicians of similar backgrounds and with minimum interaction agreed very well in the establishment of criteria for quality care for common diseases. They also agreed well with expert academicians and practitioners. However, physicians seldom agreed on the relative weighting of each of the criteria. A preferable weighting system would be one based on the demonstrated relationship between the process and outcome of care. The data collection form, which should be a permanent part of the patient's chart, should be completed by a physician's aide. A problem-oriented approach that demonstrates the logic of the medical care process would be most beneficial. The study also showed that there is little correlation between the physician's theoretical approach (criteria) to ideal care and his actual performance. This statistical quality control mechanism, although not applicable to the evaluation of individual cases, can apply to the review of physician profiles and regional performance and can identify physicians who are over or under-utilizers of process of care.

Holloway, Don C., Wiczai L. James, Carlson, Edgar J.: Evaluating an information system for medical care evaluation studies, Med Care 13:329-340, Apr 1975 (P-D), CA, DC, ES-P

A study was conducted which compared a computerized information system, the Professional Activity Study - Medical Audit Program (PAS-MAP), with a manual system. Although PAS-MAP can also compile death rates, index and cross-index hospital discharges, select patients for studies, perform administrative and financial functions, etc., only its use in medical care evaluation studies was examined. The PAS-MAP and manual systems were compared using four criteria: 1) completeness (degree to which requested data could be provided, limited to that which could be abstracted from the medical record), 2) timeliness (degree to which the data reach the study process in time to influence action - 2 months in this study), 3) operability (ability to offset potential human error), and 4) cost.

In the manual system the data in the medical records of patients with the diagnosis under study were abstracted onto a worksheet and findings were summarized. In the computerized system the medical record data were abstracted using PAS-MAP abstract forms which were then mailed to the Commission on Professional and Hospital Activities. The CPHA provided the hospital with monthly reports of the findings. Although the study method guaranteed a 100% score in completeness for the manual system, the PAS-MAP scored considerably lower, especially in General Practice (18 and 20%). Both systems proved timely but a manual system would have to augment PAS-MAP where it was incomplete. Partially because PAS-MAP processed considerably more data (87% were care elements unrequested in this study), the manual system protected more against human error than PAS-MAP did. PAS-MAP was less costly if more than 41% of the hospitalized patients were included in the studies. After the criteria were weighted for importance, the manual system was recommended over PAS-MAP.

Hulka, Barbara S., Kupper, Lawrence L., Cassel, John C.: Practice characteristics and quality of primary medical care: the doctor-patient relationship, Med Care 13:808-820, Oct 1975 (P-D), CS, PPR, QA

The doctor-patient relationship is an integral and large part of medical care, yet has remained unmeasurable. Three elements of this relationship have been identified: 1) communication (the provider's ability to increase patient knowledge and to get compliance to a therapeutic regimen); 2) satisfaction (patient's attitude toward medical care received, the provider, and the care system); and 3) physician awareness of patient concerns. Three hundred sixty-three pregnant women and 523 mothers with infants were studied for the care of the pregnant woman and the care of the normal infant. The 49 physicians (family doctors, obstetricians and pediatricians) were selected randomly. Both patient and physician-practice characteristics were recorded to determine their effect on the primary relationships.

Specific items of communication between doctor and patient were selected for both pregnancy and normal infant care. The physician indicated which items were communicated to the patient, and the patient was given a corresponding set of questions to determine what information was comprehended. The doctor was given another list for conditions of issues that might cause anxiety in the patient and was instructed to indicate his perceptions of the patient's attitudes. The patient was given the same list but was asked to express her own attitudes. The satisfaction scale (professional competence, physician's personal qualities, and cost and convenience) was a modified version of the Thurstone Equal Appearing Interval Technique.

It was found that more than half of the information intended to be communicated to the patient was communicated. Patients seemed well satisfied with their medical care in all three categories. The doctors seemed aware of the patient's concerns 60 to 85% of the maximum possible. A stepwise regression analysis was used to review the relationship between physician-practice characteristics and doctor-patient interaction dimensions. Of interest among these findings was that doctors trained in approved residency programs seemed more skillful in communication; the fewer the members of a practice, the more effective the communication; and for pregnant women younger physicians communicated more effectively than older physicians. Since this analysis did not explain differences in physican awareness of patient concerns, it was thought to be related to the individual physician's personality and style of practice.

Hulka, Barbara S., Zyzanski, Steven J., Cassel, John C., and Thompson, Shirley J.: Scale for the measurement of attitudes toward physicians and primary medical care, Med Care 8:429-436, Sept-Oct 1970 (T), CS, PPR

To overcome the difficulties of direct questioning, the Thurstone "Method of Equal Appearing Intervals," a psychological scaling technique, was adapted to the problem of measuring patient satisfaction with medical care. Methods used to develop the scale and to validate the theoretical basis of the technique are presented. Strengths and limitations are discussed and a copy of the final scale presented. Studies were administered to determine if judges with differing attitudes were competent and able to score statements (attitudes toward physicians) in an objective way. Edwards' "Techniques of Attitude Scale Construction" was reviewed to develop these statements, which were then checked for content and format by the Educational Testing Service. Professional competence, personal qualities, and cost/convenience were the three content areas most frequently discussed. The statements were edited prior to the test and placed in random order using a table of random members. Three groups of judges were chosen: physicians, social workers, and members of a women's club. They were instructed to score each statement from 1 to 9 (1 being the most favorable). Certain returns were excluded for incompleteness and obvious reversal on the favorable-unfavorable continuum. "A scale value S, the median value from the distribution of scores, was calculated separately for each statement for each group of judges. Likewise a Q value, which equaled the inter-quartile range, was calculated to measure variation around the median score." To show the degree of concordance for S values among the three sets of judges, correlation coefficients were found using the Pearson Product-Moment Method--.98 for women's club and social workers; .99 for women's club and physicians; and .98 for social workers and physicians. This seems to verify the assumption that persons with different characteristics and attitudes can perform as reliable judges.

A pretest was conducted with low income black and white mothers in a clinic setting. Parallel form reliability was tested in the three content areas with the following coefficient correlations: .75 for personal qualities; .63 for professional competence, and .43 for cost/convenience. The significance of defining three unique content areas is yet to be determined. The statements in the personal qualities and professional competence areas support the above assumption. However, the cost/convenience items need further modification.

Hurst, J. Willis: How to implement the Weed system, Arch Intern Med 128:456-462, Sept 1971 (T), MR

Based on experience implementing the Weed system for improving medical records in three hospitals in Atlanta, three obstacles to its implementation have been identified. Because not all personnel involved are highly interested in the system, there are obstacles related to the acceptance of a new system. Even those who agree to the values of the new system may be hampered by their old habits. Obstacles related to the mechanics of the system can be dealt with in appropriate meetings, however many that may take. Although people must be attentive to the details, they should not see this as the end of the system. It is only after they have mastered the mechanics that the true value emerges.

Perhaps the most difficult obstacles to overcome, however, are those related to the creation of an excellent problem list. An incorrect or inadequate data base will result in an incorrect problem list. Using nonphysician assistants and computer techniques, the physician must develop reliable methods to assure a complete data base. However, given an accurate and complete data base the physician still must manipulate and interpret the data, using disciplined thought, to arrive at a good problem list. A major objective of his or her educational system was to develop such a self-disciplined and logical thought process. Yet this thought practice must continue to be practiced, for the initial plan, orders, progress notes and discharge notes are all based on the problem list. Although the problem list is useful to the physician who created it and should not be judged by another as "right" or "wrong," a physician more skillful in collecting and interpreting the data base can use the exploration of the differences between the two problem lists as an educational tool.

The physician's task is to order the data into a meaningful diagnosis. The distinction between a problem that can be ordered into a diagnosis and that which is a more problem should be maintained. A system diagnosis should include four subdiagnoses: etiologic, anatomic, physiologic and functional diagnoses. In essence, the Weed system is a problem-solving system.

Kaufman, Theodor, Vorzimer, Jefferson J. and Metz, David: The POMR in an ED, Hospitals JAHA 48:59-62, 1 Nov 1974 (P-D), MR

In April 1973 the Emergency Department of Beth Israel Hospital, New York City, devised and began using a slightly altered form of Weed's Problem-Oriented Medical Record. First is recorded the usually required registration and demographic data. The same clerk records the patient's reason for coming to the emergency department under "Problem." Using this problem as a starting point, the physician then takes a history, performs an examination and arrives at an initial assessment. If no further evaluation is necessary, the physician forms a plan for treatment. If further evaluation is necessary, the physician checks the appropriate boxes and upon receiving results of these tests, records his final diagnosis. Then a plan for treatment is formulated as well as a plan for patient education, including all instructions and information discussed with the patient. The condition of the patient upon discharge is also noted.

The primary physician and nurse are solely responsible for this first page; all others must use a progress or consultation sheet. Copies are sent to the follow-up agency, the billing department and the patient. The consultation sheet, if a consultation is requested, is set up so that reviewing the record and a signature are all that is required of the consultant unless he disagrees with the entire formulation of the problem, which he explains on the sheet. This avoids duplication of effort. All other personnel enter their progress notes on a problem-oriented progress sheet for each problem. The staff also uses an emergency department flow sheet in three sections--vital signs, medication administration records and diabetes record.

Advantages of this system include: 1) promoting a unified record-keeping system (records are available to both the comprehensive health service and the emergency department); 2) promoting legible and complete notes, including reasoned diagnoses and treatment; 3) preventing careless omissions and unnecessary duplication; 4) promoting the ease and speed of auditing; 5) providing a structured audit for the utilization review committee. The only real difficulty in using the POMR is changing the habits of the staff.

Kessner, David M., Kalk, Carolyn E., Singer, James: Assessing health quality - the case for tracers, New Engl J Med 288:189-193, 1973
(T), CSD, ES-P

The basic premise of the tracer method is that the general quality of care and the efficacy of the care system will be reflected in how a physician or group of physicians routinely administer care for common disease conditions. A tracer is a health problem that demonstrates how particular parts of the health care system work in relation to one another. This method measures both process and outcome of care. Criteria for selecting health problems as tracers include: 1) a tracer should have a definite functional impact, 2) a tracer should be relatively well defined and easy to diagnose, 3) prevalence rates should be high enough to permit the collection of adequate data from a limited population sample, 4) the natural history of the condition should vary with utilization and effectiveness of medical care, 5) the techniques of medical management of the condition should be well defined for at least one of the following processes: prevention, diagnosis, treatment or rehabilitation, and 6) the effects of nonmedical factors on the tracer should be understood.

The activities of a health care system are divided into five major groups: prevention, screening, evaluation, management and follow-up. Therefore quality of care can be sampled from various perspectives. To avoid rigidity in medical practice, the criteria against which services performed can be compared should outline minimal care, should be pragmatic, and should be periodically revised and updated. They should be considered broadly applicable to populations of patients. The results of an evaluation should get back to those who set standards for acceptable levels of care. A tracer evaluation in a hypothetical situation is described for illustrative purposes.

Komaroff, Anthony L., Reiffen, B., and Sherman, Herbert: Protocol for paramedics: a quality assurance tool, Quality Assurance of Medical Care DHEW (HSM) 73-7021, Feb 1973, pp. 161-178 (P-D), ES-S, MR

A system of problem-oriented protocols which directs the management of common illnesses by paramedics is being developed by the Ambulatory Care Project, a joint effort between Beth Israel Hospital (Harvard Medical School) and M.I.T. Lincoln Laboratory. This system defines an explicit standard of care. In this study paramedics perform patient evaluation during return visits of chronically ill patients. The protocols guide the paramedics in data collection and in recommending action including the necessity of a visit with the doctor. The physicians choose the patients for participation in this program which can be used to eliminate, in many cases, the need for a visit with the doctor or can be used as a pre-physician workup. The protocols are problem-specific, can be constructed for the presence of more than one chronic disease and direct collection of different data on each patient, data which the paramedic can collect as accurately as the physician. The paramedics, "health assistants" in this study, do not have an educational degree above the high school level.

A preliminary evaluation has found only 11% false positives and 2% false negatives, none of which were considered "serious." A 10% error rate in following the printed logic format was found as well as 10% "unnecessary" referrals. Protocol use does not degrade disease control and may improve it. There was a physician visit saving rate of 37% which may be artificially low. Physician acceptance has been shown in three ways: 1) decisions to send patients home without a physician visit having been approved in most cases; 2) physicians are routing many more patients through the system; and 3) physicians are not scheduling an earlier return visit after a "nonvisit." Patient acceptance has also been demonstrated: 1) only 7% have declined participation; 2) there is no increase in "no-shows;" 3) only one patient has objected to being sent home without a physician visit; and 4) many close relationships have formed between patients and health assistants. Many important questions remain to be answered, however.

Lieberman, Harry M.: Evaluating the quality of ambulatory pediatric care at a neighborhood health center, Clin Ped 13:52-55, Jan 1974 (P-D), ES-P, MA

The charts of a random sample of registered pediatric patients at the Watts Health Center in Los Angeles were audited in December 1970 to uncover the weaknesses of current pediatric care and to plan for improvement. The Watts Health Center is a family-oriented neighborhood health center in a predominantly black low income community of about 35,000 people in a 3-square-mile area. At first registration, a permanent file is started for the patient and all his family members. A 2.5 per cent random sample (244 families) of the registered population was selected and the chart of every patient under 17 years of age was recorded on a survey form and made available for hand sorting. This sample was found to be representative of the entire registered pediatric population.

"High quality" pediatric care was presumed to be present when all of the following were recorded in the patient file: 1) at least one comprehensive work-up, 2) immunizations appropriate for age, 3) attention paid to all abnormal laboratory reports, and 4) appropriate follow-up visits for all significant clinical conditions detected.

Observations confirmed that the use of a baseline medical chart review helps to point out program areas that are in need of improvement. Specific problems highlighted by this chart review include 1) one-quarter of registered children are never brought to the center, 2) the majority of pediatric patients receive only episodic care, 3) two-thirds of the pediatric charts have no record of immunizations, and half of the remainder indicate incomplete immunization, 4) a quarter of the patients have inadequate follow-up of an abnormal finding, 5) registered patients who live in the more distant parts of the target area are less likely to get care at the center, and 6) a significant backlog of inadequate follow-up exists in the 17,000 active patient charts.

The author speculates on the possible causes of these deficiencies and some directions for improvement and concludes that life styles and other nonmedical factors should be considered in the planning of preventive and curative health services.

Lyons, Thomas F. and Payne, Beverly C.: The relationship of physicians' medical recording performance to their medical care performance, Med Care 12:463-469, May 1974 (P-D), DC, MR

Because there are objections to measuring a physician's performance using the medical record, a study was undertaken to find the relationship between a physician's medical recording and medical care performances by computing the correlations between those measures of quality that depend upon the physician's recording and those that are independent of the physician. This study combined nonreactive retrospective measurement with Rosenfeld's method of secondary analysis of record entries that are independent of the physician.

Data, sampled from all 22 general hospitals in Hawaii in 1968, were collected on 1239 cases in eight diagnostic categories (acute and chronic cholecystitis, breast cancer, congestive heart disease, transient ischemic attacks, recent stroke, and acute and chronic urinary tract infection). Panels of Hawaii practitioners developed criteria for optimal hospital services for each diagnosis and weighted each criteria item for importance. The criteria included items in history, physical examination, laboratory, roentgenology, and special procedures of therapy. For each case two indices were used: "physician entries" and "independent entries" (items recorded by other personnel if the physician requested the recommended action).

In those diagnoses where both the physician entry and independent entry indices had high reliabilities, overall they tended to be related. This study concluded that 1) good recording is related to good practice, and that 2) the relationship is not perfect but it is statistically significant.

Nelson, Alan R.: Relation between quality assessment and utilization review in a functioning PSRO, New Engl J Med 292:671-675, 27 Mar 1975 (P-D), CSD, CX, DC, ES-P, MA, UR

In 1971 the Utah Professional Review Organization (UPRO) was established by the Utah State Medical Association (USMA). By July, 1974, UPRO-USMA became designated as sponsors of the Utah PSRO. Physician support includes 1100 members out of 1500 eligible physicians. In the On-Site Concurrent Hospital Utilization Review (OSCHUR) program, a nurse coordinator, hired and trained by UPRO, reviews admissions covered by subscribing third parties, including Title XVIII and Title XIX. The nurse coordinator screens and collects data on all admissions and the involvement of a physician consultant is required in only 10% of the cases. Discussion between reviewing and attending physicians resolved the utilization issue in all but 47 of 34,000 cases, when UPRO certification was withdrawn. Reviewing physicians are compensated for their time which amounts to about 1.3 minutes per UPRO patient. The average workload for a nurse coordinator is 70 patients and each coordinator processes about 10 admissions per day. This person also completes the data collection from the medical record on the last hospital day and from this process assessments are conducted on selected diagnoses, a retrospective analysis of aggregate data. Although there are advantages to this type of quality assessment, it depends on effective education programs and the inherent lag-time in bahavior modification. Goals of the medical processes applied to a particular problem, "management objective," are used by UPRO to simplify outcome assessment.

Special projects investigate particular aspects of the care process, such as utilization of an ancillary service. When warranted by complexity or volume, electronic data processing is employed. In Utah, a Medical Education Foundation, separate from but linked to the peer-review organization, is used to coordinate continuing education. UPRO will validate a service as a process audit criteria if it leads logically to the next step in diagnosis, directly influences the selection of therapy, or gives direct information concerning prognosis. Evaluation is dependent on accurate discharge diagnosis data. The utilization activity of hospitals, reviewing physicians, and nurse coordinators is described in a monthly report. The weak link in this system seems to be the inability to change physician behavior through education.

Novick, Lloyd F., Dickinson, Karen, Asnes, Russell et al.: Assessment of ambulatory care: application of the tracer methodology, Med Care 14:1-12, Jan 1976 (P-D), CSD, ES-P

The feasibility of utilizing the tracer method was investigated at the Pediatric Ambulatory Clinic of the Babies Hospital of the Columbia Presbyterian Medical Center. The tracer approach, basically a measurement of the process of care, uses the health care episode of specific conditions to provide a data base for assessing the quality of health services. Basing acceptability on high prevalence, significant functional impact, defined diagnosis, standard management procedures, and influence of treatment on the course of the illness, iron-deficiency anemia was selected as the tracer condition for this study.

Criteria, regarded as essential elements of good care that could favorably influence outcome, were chosen when agreed upon by at least 80% of the physician respondents. Two nonphysician abstractors reviewed selected medical charts using the accepted explicit criteria. This review focused on four levels of care: evaluation (history, physical examination, and laboratory procedures), diagnosis, treatment and follow-up. A panel of three physicians weighted each level of care. Each chart was also reviewed by two of four attending pediatricians to implicitly judge as "acceptable" or "unacceptable" each level of care as well as the overall quality of care.

Of the 100 study patients for whom hemoglobin determination was requested and found low, 58 were tested for conditions other than anemia. In 48 cases the hemoglobin level was recognized and noted as low. Of them, 34 met minimal criteria in the evaluation phase, 30 were diagnosed with iron deficiency, 27 received treatment, 26 had follow-up arranged, and 25 kept their follow-up appoinements. Termination of care was usually due to patient failure to keep subsequent appointments. The mean overall score for the 48 recognized cases was 50.7 out of 100. Implicit evaluation resulted in acceptable ratings by both physicians in about 60% of the cases for physical examination, diagnosis and treatment, 50% of the cases for laboratory examination, and 37.5% of the cases for overall quality of care. For each of the four levels of care and for the overall score, explicit review was closely related (correlations from .37 to .46) to implicit review. Physician reviewers spent an average 3.9 minutes per chart. This study, depending on the record to reflect the care process, demonstrated serious lapses in recognition as well as deficiencies in treatment and thus encourages future use of this method.

230-046 O - 77 - 8

Patrick, Donald L., Bush, James W., Chen, Milton M.: Toward an operational definition of health, J Health Social Behavior 6-23, 14 Mar 1973 (P-D), ES-0

A prerequisite to the construction of a health status index is an operational definition of function, one component of a definition of health. This should reflect the relative importance of diseases and disabilities. Measuring the value judgements that distinguish illness from health is the main difficulty. Prognosis, the patient's expected transition to other levels of function in time and the other component of the social construct of health, is not measured in this study.

Optimum function is defined as "conformity to society's standards of physical and mental well-being, including the performance of activities usual for a person's age and social role." The chief purpose of this study was to classify the deviations from well-being and determine the relative value-weights assigned. The objective disturbances in role performance due to diseases and disabilities were classified in three scales: 1) Physical Activity (primarily the ability to walk); 2) Mobility (freedom to travel); and 3) Social Activity (major, other, and self-care). Eliminating rare and impossible combinations, 29 functional levels were selected. To help rate the relative desirability of these functional levels, the variables of age and symptom-problem complexes were added. The latter variable includes the subjective factors of pain and discomfort. Mental dysfunction and social deviance were excluded. Combining 29 functional levels, 5 age groups and 42 symptom-problem complexes required eliminating those combinations that are rare or impossible.

The Thurstone method of equal-appearing intervals was used by 31 nurses and 31 nonmedical students to assign values to the randomly parallel descriptions, each containing an age group, three areas of functional ability, and a symptom-problem complex. A 16-point scale was used with 0 representing least desirable or death and 16 representing most desirable.

Overall, the nurses and students agreed quite well on the relative desirability of case descriptions, although the nurses gave slightly higher ratings. Because the judges may have been reluctant to use the extreme ends of the scale, truncation resulted. Social and subjective factors not included in symptom-problem complexes also affected the assigned values. Due to insignificant differences between some levels, the list of 29 functional levels could be further reduced and then used for monitoring populations and planning health programs.

Riedel, D., Brenner, M.H., Brauer, L.: Psychiatric utilization review as patient care evaluation, AJPH 62:1222-1227, Sept 1972 (P-D), CSD, ES-P, UR

Members of the Connecticut Mental Health Center and of various departments of Yale University collaborated in the Psychiatric Utilization Review and Evaluation (PURE) Project. Five areas of the care appraisal process were of major importance: 1) development of screening mechanisms to select cases for review, 2) development of guidelines or explicit criteria for the evaluation of care, 3) development of more adequate instruments for collecting data, 4) assessment of factors involved in the actual process of evaluation of care by the reviewing physicians, and 5) epidemiological surveys and follow-up studies. Utilization review in psychiatry was considered to be much more complex than review in the general medical setting because the relationships between diagnosis and treatment and the efficacy of different methods of treatment for specific illness conditions are not clearly established. For this reason the Yale-developed Basic Utilization Review Program (BURP) was modified for psychiatric utilization review. The three major phases of the project were: 1) the development of criteria for evaluation and mechanisms for case selection, 2) the testing of criteria and mechanisms, and 3) the implementation of a system of patient care evaluation.

The Data Group performed a retrospective analysis of the data available in patient records at the Connecticut Mental Health Center (CMHC) in order to provide preliminary material on actual patterns of patient care. To determine the best ways to approach the problem of utilization review in mental health, panels were formed on schizophrenia (by traditional diagnosis), depression (by symptom), and adolescence (by developmental epoch), and intake (by institutional process). Follow-up studies on schizophrenia and outpatients would ideally help to validate the hypotheses that might be developed in those related panels.

The project developed several criteria to determine adequacy of care, especially in the initial evaluation prior to assignment to treatment. It was concluded that guidelines for evaluating an individual case are best developed along diagnostic or symptom lines. However, guidelines for overall program concerns are best developed by focusing upon institutional processes and broader social issues. The components of this psychiatric utilization review system include: 1) a computerized data system, 2) mechanisms for chart selection, 3) guidelines for care evaluation, and 4) indications for supplementary epidemiological surveys and follow-up studies. Implementation initially should aim at reviewing broad patterns of care with illustrative individual cases. Future plans include implementation, modification, and evaluation of this project in four community mental health centers.

Rubin, L.: Measuring the quality of care, Group Practice 22:7-14, July 1973 (P-D), CS, MA, MR, PR

The Hayward (Calif.) Permanente Medical Group has devised a quality review system that solves some of the shortcomings and difficulties of current review procedures. All physicians serve on the review committee on a rotating schedule and are assisted in learning this activity. Outpatient records are selected by time and day from appointment schedules and inpatient records are selected by time of discharge. The records are not selected on any medically significant basis (e.g., deviation from committee-established norms) because this procedure must cut across all lines. Many current record selection procedures routinely do not detect significant areas of suboptimal care (e.g., selection by specific therapeutic agent will not uncover those cases in which that agent was erroneously omitted).

To preserve confidentiality the record is first coded, then checked by a medical record technician for mechanical problems, then reviewed by a physician on the committee who notes anything in, or missing from, the record which reveals or will lead to poor care and which no one is likely to defend. Then charts with significant deficiencies (one out of eight ambulatory charts reviewed and 95% of inpatient records reviewed) are presented to the committee, where classification of the alleged deficiency as a deviation must be unanimous. Mild disagreement will result in the chart being accepted as satisfactory, but strong disagreement will lead to a formal educational program for the entire department. Periodically the findings of the committee are submitted to the entire department, an action that often is the only educational activity necessary for correction.

The purpose of this peer-oriented system is to pinpoint suboptimal care, yet it also does reveal the behavior of poor practitioners. However, it is everyone's responsibility to correct suboptimal care. Although often this review process is all that is necessary for corrective action, sometimes a memorandum or a change of systems is in order. Changes that have been made include: 1) a mechanism for transferring hospital-discovered drug allergies to the patient's ambulatory charts, 2) a form for drug histories that is now standard procedure, and 3) a list of approved abbreviations. The review procedure has been extended to other members of the health team.

Rutstein, David D., Berenberg, William, Chalmers, Thomas C. et al.: Measuring the quality of medical care, a clinical method, New Engl J Med 294:582-588, 11 Mar 1976 (T), ES-0

Most current measurements of health care are concerned with the process of that care, the improvement of which may or may not result in better health of the individual and the population. This system overcomes the difficulties of establishing objective criteria for measuring increasing gradients of positive health by establishing quantitative negative indexes of health: unnecessary disease, unnecessary disability, and unnecessary untimely deaths. Their occurrence is a "sentinel health event," a warning signal that the quality of care may need to be improved and that a scientific search for the remediable underlying causes is justified. Such a search should lead to information about the scientific, medical, social, and personal factors that could lead to better health.

Certain conditions were selected as sentinel health events with the assumption that the condition would have been prevented or managed if everything had gone well. Although the physician is surely not always responsible for the errors that lead to a sentinel health event, his position in the health care system gives him the initial and also some continuing responsibility.

Three lists of conditions are presented, prepared by the authors in collaboration with representatives of the National Center for Health Statistics, the Center for Disease Control, the Veterans Administration, and specialists in many fields. The lists are designed for international use and are selected whenever possible from the Eighth Revision, International Classification of Diseases Adapted for Use in the United States to facilitate comparison with existing health tabulations. For each condition in the three categories of unnecessary disease, unnecessary disability, and unnecessary untimely death, an attempt is made to indicate whether it is preventable or tractable. The three lists of conditions include: 1) clear-cut and immediate use of index (occurrence of a single case would warrant an investigation into its cause), 2) limited use (an increase in the number of cases of a particular condition would justify an investigation), and 3) categories demanding better definition and special study (prevention or diagnosis and treatment are not well enough defined).

Sanazaro, Paul J., Goldstein, Richard L., Roberts, James S., et al.: Research and development in quality assurance - the Experimental Medical Care Review Organization Program, New Engl J Med 287:1125-1131, 30 Nov 1972 (P-D), CSD, CX, DC, ES-P, MA

In 1970 the National Center for Health Services Research and Development began an experimental program, the Experimental Medical Care Review Organization (EMCRO), to develop and evaluate various objective and reliable methods for the areawide or statewide review of physicians' services. Priority was given to evaluating physician performance, including developing better criteria, data-collection, and analysis techniques. Each of the 10 EMCRO's founded in 1971 and included in this study had a potential total of at least 250 participating physicians and were affiliated with state or county medical societies. The relationships between the EMCRO's and third-party insurers varied with local conditions.

Most EMCRO's had specialty panels, reviewed by general practitioners, develop criteria emphasizing the process of care. Only a few outcome criteria were established. The goal was to raise the average physician's performance to a locally defined optimal level. In six diagnostic categories, the EMCRO's were to have conducted a collaborative validation study. The EMCRO's obtained their data from either insurance claims forms or chart abstracts and have adopted standard definitions of data items. Using these diagnostic specific criteria, most EMCRO's will review care provided for entire episodes of illness. The criteria development process and the data review itself have been educationally beneficial. The EMCRO's are evaluating problems in organization, data collection, criteria development, cost and impact. Analysis of individual patient care must be limited yet done as a sampling. The operational definition for quality is "the extent to which scientifically established procedures in the diagnosis and management of serious, common and treatable disorders are properly applied to patients who can benefit from their application." Although quality assessment is the primary purpose of EMCRO, cost containment is the immediate chief goal. EMCRO should also determine the involvement of nonhealth-professional representatives of the public in this review process.

Schroeder, Steven A., Donaldson, Molla S.: The feasibility of an outcome approach to quality assurance; a report from one HMO, Med Care 14:49-56, Jan 1976 (P-D), ES-O

The Health Maintenance Act of 1973 stipulates that a participating health maintenance organization have a quality assurance program that "stresses health outcome." An 18-month study was performed in 1972-73 by the George Washington University Health Plan. The Quality Assurance Executive Board established ideal standards and estimated findings for diagnostic accuracy and therapeutic outcomes. Diagnostic accuracy included two categories of undesirable outcomes: false positive (misdiagnosed) and false negative (missed diagnoses). Therapeutic outcome was measured on a functional activities scale from 0 (no impairment) to 5 (death). The three health problems studied include Contraception (measured by comparing desire for pregnancy with risk), Depression (measured by the depression scale of the Minnesota Multiphasic Personality Inventory), and Hypertension (measured by using age-specific blood pressure standards set by the Board).

Results revealed a highly unacceptable rate (41-64%) of false negatives in each condition. Therapeutic outcomes in contraception revealed a 5% abortion rate and a 5% unwanted but complete pregnancy rate. Unacceptably high levels of functional impairment (25% in class 4, 25% in class 3) were found among the depressives. A 39% inadequately controlled rate was found among the hypertensive patients.

Data collection was hampered by low response rates (38-63%) and constant changes in the HMO subscriber pool due to changes in residency and eligibility. The health accountant was often required to make difficult assessments of functional level when other psychological or physical conditions were present. The Board's high level of accuracy in predicting diagnostic accuracy seemed to support the premise that physicians can point out from their own experience those areas where diagnostic accuracy can be improved. The project was too short to determine its effectiveness. Doubts were raised concerning this project's ability to fulfill the intent of the federal legislation.

Slee, Vergil N.: How to know if you have quality control, Hosp Prog 38-43, Jan 1972 (T), CSD, CX, DC, ES-P, MA, QA

A hospital must start with a proper organization and qualified physicians, but it is patient care that counts. Hard, objective data must be used to determine quality and the essentials of its control are standards development, surveillance, and corrective action. Standards that measure the outcome of care are used in only a few instances. Most standards employed deal with the processes of care, e.g., all patients should meet minimum standards of laboratory investigation, a hospital-wide standard for all patients. More specific standards can be set by clinic, diagnosis, therapy, etc. Standards should be considered as descriptive of patterns of care and one should not be misled by an occasional unusual individual case. Although research produces the most reliable and valid standards, most standards are derived from the judgements of experts. Statistics will increase in importance for determining standards of care. For a hospital or a group of hospitals an expert committee is responsible for formulating the standards.

As a means of data collection, individual chart review is time-consuming and does not lend itself to the recognition and analysis of patterns of care. A computer-assisted data collection system, such as the PAS system, is essential. With a proper approach, including the training of doctors and other hospital employees and the provision of a health record analyst, there will be no manpower problem.

The evaluation must be followed with corrective action. The medical audit process itself serves as an important educational tool. Recommendations should be made and attitude, cooperation and coordination should improve. When deemed necessary, however, strong intervention should occur. It must be clear that the evaluative process does change practice and in a reasonable time. The medical audit will be the heart of the quality control process.

Starfield, Barbara, Scheff, David: Effectiveness of pediatric care: the relationship between processes and outcome, Ped 49:547-552, Apr 1972 (P-D), ES-O, ES-P, MA

Diagnostic and therapeutic processes and outcome were compared in order to assess the effectiveness of care. The hematology laboratory files for July - September 1967 of 53 children 6 months and older with newly discovered low hemoglobin levels were reviewed to determine the reason for the initial hemoglobin order and evidence for recognition, diagnosis, therapy and follow-up of the condition. Home interviews were also conducted which ascertained the mother's knowledge of the condition and recall of therapy.

Of the 53 patients with low hemoglobin levels only 14 (26%) were recorded as having their condition recognized, diagnosed, treated, and followed-up. In 24 cases (45%) the lab result was not recognized as indicating low hemoglobin. When ordered as part of a routine check-up, hemoglobin results were recognized only 35% of the time. Only 23 (44%) of the children were tentatively or finally diagnosed. Almost a third of the patients (7 of 22) who had therapy initiated denied receiving any and 4 (18%) had no follow-up plan recorded. The most important factor in patient loss was a lack of doctor awareness of abnormal laboratory findings. Therapy was found to be the care maneuver most closely associated with good outcome. With therapy taking place follow-up may also be closely related to outcome. The biggest difficulty in carrying out the study was finding and auditing the medical records.

Stratmann, William C., Block, James A., Brown, Stephen P., et al.: A study of consumer attitudes about health care: the control, cost and financing of health services, Med Care 13:659-668, Aug 1975 (P-D), CX

A survey of 521 households in the Rochester, New York, area was conducted in May 1973 to examine the public's opinion of the control, cost and financing of health care and to determine the standards with which people judge various ambulatory care facilities. A set of open-ended questions was used to elicit opinions of different care facilities. The respondent was also asked to assign values to the criteria he or she used to arrive at those opinions.

The resultant criteria categories and weightings were: economic (3.6%), temporal (11.3%), convenience (20.6%), sociopsychological (19.7%), and care quality (44.7%). Because this sample area has high levels of professional quality to select from, the care quality weighting may be lower than that found in other areas. Generally, the respondents expressed confidence in the medical profession. Forty-five percent preferred planning and control by the health professions, 48% preferred equal involvement of professionals and consumers, and 7% felt that the consumer should plan and control health services. Although economic criteria were least important (3.6%) in consumer decisions in seeking care, 64% of the people felt that a cost-related problem (insurance, costs of services, hospital costs, etc.) was where the government should get involved. In this sample area 28% favored government financing of health services, 41% favored equal financing, and 31% favored private financing. This compares to 37%, 29% and 34% respectively in national samples in 1970 and 1972. The difference may be due to the Republican partisanship in the Rochester area. Income, education, and health status are inversely proportional to support for national health insurance.

Thompson, Hugh C., Osborne, Charles E.: Development of criteria for quality assurance of ambulatory child health care, Med Care 12:807-827, Oct 1974 (P-D), CSD

In May 1970, the Joint Committee on Quality Assurance (JCQA), with members from eight national professional organizations dealing to some degree with primary care for children, began a study, the first phase of which was to select, develop and validate criteria for the evaluation of ambulatory child health care. Because it lends itself well to quantification, the chart audit approach was used to collect data. To counteract weaknesses of process and outcome evaluations, the JCQA attempted to identify process procedures likely to be causally related to patient outcomes according to available studies or the consensus of qualified experts.

The first step was to select seven health problems: health supervision in various age brackets, tonsillopharyngitis, female urinary tract infection, and bronchial asthma. The JCQA developed an extensive list of process criteria for each area. To validate the relevance of the criteria to outcome and thus acceptability for peer review or self-assessment, the list was rated by 388 "expert" academicians and practitioners. The JCQA then established a final list of 138 criteria that were rated relevant by at least 85% of the "expert" panel. There was a surprising agreement between the opinions of the "expert" academicians and practitioners. Although the experts generally agreed with the initial JCQA classification, there was enough difference between the initial and final versions to suggest that the formulation of criteria be done by those accustomed to such procedures. In the other phases of this study the attitudes of physicians toward the criteria and the presence of the criteria in 130 sites were examined.

Thompson, Hugh C., and Osborne, Charles E.: Office records in the evaluation of quality of care, Med Care 14:294-314, Apr 1976 (P-D), MA, MR

A previous portion of this study validated criteria for child health supervision (in four age groups) and three diseases (tonsillopharyngitis, bronchial asthma, and female urinary tract infection) for relevance to outcome and suitability for peer review. The Joint Committee on Quality Assurance (JCQA) then selected 166 physicians whose office charts were to be reviewed to determine if in fact these physicians recorded performance of these 144 criteria and subsequently to be able to judge the quality of care. Family physicians and pediatricians, divided into solo, small groups (2-5) and large groups (6 or more), were selected. Each physician's last ten charts in each category prior to the date of the review were to have been pulled by the office personnel. Fourth-year medical records administration students performed the reviews.

Only two-thirds of the office personnel followed the prescribed method for selecting charts. In general, the established criteria were recorded infrequently, overall about 50 per cent. Growth and development measurements were the only criteria in the health supervision category recorded more than 75 per cent of the time. Counseling and guidance were the least frequently recorded criteria. Physicians agreed with the reviewers' findings most of the time (96-100%). Pediatricians and family physicians recorded criteria with about the same frequency, except for 38 of the 74 health supervision criteria which the pediatricians recorded more often. Physicians in large groups recorded criteria more frequently than those in solo or small group practices. Only 48 per cent of the physicians felt the audit gave an accurate picture of their performance. Most of the rest said they recorded only positive findings. Usually the audit was completed in an eight-hour working day.

Bias may have been introduced by selecting physicians most willing to cooperate and thus, possibly, those with better recording systems. Notwithstanding, the demonstrated lack of recording prevents an accurate and meaningful chart audit of ambulatory child care. The challenge is still to develop and implement new concepts of medical recording keeping, better documenting the logic of medical care.

Wagner, Edward H., Greenberg, Robert A., Imrey, Peter B., et al.: Influence of training and experience on selecting criteria to evaluate medical care, New Engl J Med 294:871-876, 15 Apr 1976 (P-D), CSD

To determine the influence of varying training and experience on the selection of process criteria for medical care evaluation, three groups of physicians were sampled: general pediatricians, family physicians, and pediatricians subspecializing in infectious diseases (academicians). The indicator condition, associated with 10 possible diagnoses, was "a 6-month to 2-year-old infant with recent onset of rhinorrhea and/or cough." One hundred twenty-five test situations (symptom-sign combination followed by a diagnostic or therapeutic action) were selected.

The questionnaire asked the physician to rate the necessity of the action in each test situation on a 7-point scale from absolutely necessary to completely unnecessary. Their responses were grouped as favoring, opposing or neither favoring nor opposing. A physician was considered to have favored an action if 65% or more individuals favored and 20% or less opposed it. If all three groups shared the same opinion (favor, oppose, or uncertain) they were considered to have agreed. Agreements to favor or oppose an action established it as a consensus criterion. Distribution of uncategorized responses were also compared. There was an overall 54% (524) return rate.

There was agreement in 74% (93) of the test situations: 52% favoring an action, 22% uncertain, and in one test situation, opposing it. Thus, 53% (66) could be classified as consensus criteria. When a criterion was applied in a more benign situation, it was also applied in more serious situations. Disagreements (26%) were most prevalent concerning antibiotic use. In most disagreements the family physicians were most likely to favor the action. In infectious-diseases pediatricians were least inclined to prescribe antibiotics. The general pediatricians were the least demanding concerning history taking, physician examination, and diagnostic tests. In general, an emphasis was made on the quality and completeness of medical records. However, most of the 66 consensus criteria have yet to be supported by outcome data.

Waldman, Martin L.: The medical audit sutdy - a tool for quality control, Hosp Prog 82-88, Feb 1973 (T), CSD, MA, MR

A medical audit, a hospital quality control system, is composed of a series of medical audit studies, the performance of which is educational for the physician and points out needed structural and process changes. A medical audit study requires: 1) criteria development; 2) care evaluation; 3) pinpointing deficiencies; 4) corrective action; and 5) evaluating the effectiveness of the corrective action. The ten steps of a Medical Audit Study Worksheet (MASW) are described.

Step 1 - Study Specifications: A group of patients with a common characteristic should be defined. This can be done at various levels of detail from "all patients" to those with a "specific clinical" characteristic. A time period for data collection should be chosen and the age and sex distribution should be recorded. Step 2 - Study Schedule: Dates should be set for adopting criteria, data collection, study completion. Step 3 - Pattern Standards: The elements of the care process, including investigation, management, therapy and hospital outcomes, which can assess the quality of care and refer to available data, should be enumerated. For each of these elements a pattern standard, a percentage which predicts how often an element should be found or done for the quality of care to be excellent, is established. Step 4 - Pattern of Care: A health record analyst must abstract and display the pertinent data from the medical records. The practice display and statistical tabulations from PAS and MAP can be of help. Step 5 - Problem?: Deviations that indicate superior care should be publicized and may result in revising the standards. Substandard deviations should be noted. Step 6 - Analysis of Deficiencies: The level and class (knowledge) or performance) of the deficiency should be determined. Medical knowledge deficiencies call for educational efforts for one or more or the whole staff. Performance deficiencies can occur because the physicians are not receiving feedback, are being interfered with structurally, or are reluctant to perform in an acceptable manner. Step 7 - Objectives and a Timetable: Objectives of the corrective action, whether in education or performance, should be enumerated and assigned deadlines. Step 8 - Monitor Parameters: To maintain continuity between studies in a clinical group, selected critical elements should be monitored from routinely collected data. Step 9 - Date for Repeat Study: To ascertain the effectiveness of the corrective action, a follow-up study should be scheduled. Step 10 - Report of Study: Reports for each medical audit study should be disseminated to responsible committees and offices as well as to the whole medical staff.

Weed, Lawrence L.: Quality control and the medical record, Arch Int Med 127:101-105, Jan 1971 (T), CA, ES-P, MA, MR

At one level quality control should point out the gross errors in medical care. At the other level it should reflect the excellence with which medical care is carried out. The definition of level of care implies careful data collection, problem recognition, explicit plans, and follow-up and evaluation, not a rigid list of "cookbook" instructions. Quality evaluation is possible only when there is prior agreement as to what care should be given and how it should be recorded. Only that which can be realistically expected to be achieved should be audited. Effective audits are rigorous and well defined.

The problems of auditing are reflected in the four phases of medical action. 1) The data base (history, physician examination, and base-line laboratory data) means asking specific branching logic questions, performing specific actions in the physical examination and obtaining certain base-line laboratory data, regardless of complaint, every time. 2) A complete list of problems as an index to the medical record is necessary if the auditor is not to continue guessing which data go with what problem. The physician should know what record the auditor expects. Failures in performance should be pursued until the physicians develop discipline and techniques for solving problems. 3) Similarly, plans for each problem should be developed so that the auditor does not have to guess what treatment goes with what problem with detrimental results to the audit. 4) A correct follow-up requires progress notes titled with respect to each problem on the problem list. Here the physician can explain exactly why he did what he did and why he may have deviated from the usual criteria. He should not be criticized for not rigidly sticking to the criteria; he must be audited in terms of the logic of his pursuit of the problem. Using structured information and adequate communication techniques is the only practical way for the millions of patients to receive the highest standards of care.

The article concludes with the four premises of a problem-oriented audit. 1) All the data after the initial data base in the medical record must be associated with a specific problem. 2) All the data on any given problem must be easily retrieved in sequence and with complete currency. 3) Conclusions will be much more difficult when there are concomitant problems in the same patient. In these particular cases fixed standards of care do not apply, and quality must be determined individually. 4) The dimensions of the quality control problem alluded to in premises 2 and 3 can never be assessed until computerization of the data is accomplished.

Williamson, John W.: Evaluating quality of patient care, a strategy relating outcome and process assessment, JAMA 218:564-569, 25 Oct 1971 (P-D), CSD, CX, ES-O, ES-P

Education objectives specifying who needs to learn and the goals of the learning process can be identified only through systematic investigation. These same methods can be used to evaluate the impact of the educational effort. This study describes a strategy to identify preventable impairment not being prevented by presently provided care. Diagnostic outcomes are the data the physician needs to determine need of care, therapy and prognosis. Therapeutic outcomes are the patient health status following treatment. The need for process study will be determined when outcome criteria are compared to outcome measurements. Peer judgement is a practical way of establishing outcome criteria.

Diagnostic outcomes can be measured by determining the proportion of diagnostic false-negatives and false-positives. Therapeutic outcomes can be measured by investigating after a certain period of time the patient's level of maximum impairment: (0) no impairment, (1) measurable impairment, (2) symptomatic, (3) not a major life activity, (4) bedridden, or (5) dead. Process study would be warranted if outcome measurements were not within 95% confidence intervals as compared to outcome criteria. As a result of the process study plans for action should be formulated, and where warranted, outcome criteria can be modified.

In one of eight illustrative studies, the maximum acceptable percentage of false-negatives for the diagnosis of urinary tract infections (UTI) was set at 15% and that of false positives at 20%. Outcome measurements revealed a 70% false-negative rate and a 29% false-positive rate. In the clearly indicated process study physicians completed a series of simulated patient problems and were found to treat all patients complaining of classical UTI symptoms with antibiotics and not utilizing urine test results in the diagnosis. When meeting with university faculty resulted in no improvement in performance, it was decided to institute routine bacteriologic screening of urine from all admissions.

Tests established the validity of the group prognostic estimates. This strategy requires a focus on prognosis, on overall patient impairment, including its multiple determinants, and on continuing education.

Williamson, John W.: Outcome assessment for implementing quality assurance systems, Quality Assurance of Medical Care DHEW (HSM) 73-7021, Feb 1973, pp. 313-328 (P-D), ES-O

The article expresses the feasibility and practicality of outcome evaluation. Clinical outcomes (diagnostic and therapeutic) and economic outcomes (final direct and indirect costs) are stressed. Diagnostic outcomes are expressed as % false negative and % false positive. The level of overall functional impairment following medical care is the therapeutic outcome (expressed on a 6-level scale from no impairment to death). Depending on the illness involved, the time interval between care and therapeutic outcome measure is of great importance. The final outcome is a product of one or more determinants, each of which themselves can be intermediate outcomes of other processes. Outcome evaluation is based on an analysis of the causal and correlational relationships between these outcomes and determinants.

The three steps of outcome assessment are: 1) identify the standards of maximum acceptable functional impairment following care for patients within a certain disease category; 2) measure outcome directly with follow-up interviews; and 3) compare outcome results with standards. If correctable deficiencies are found, corrective action (an educational program) is warranted; but if the deficiencies are found not to be correctable, then adjustment of the standards is indicated. Two hypothetical cases are described followed by a short history of outcome assessment.

The Health Accounting Project, a practical application of the outcome assessment method, has two major goals: "1) to optimize patient health without jeopardizing resource utilization, and 2) to optimize resource utilization without jeopardizing patient health." A staff physician, devoting 10% of his time, directs the Quality Assurance program and reports directly to the QA Board of Directors. A full-time Health Accountant, with one or two years college education, carries out the studies based on priorities (health and economic benefits) set by a priority team of staff physicians and according to criteria set by other staff physicians augmented by an outside specialist. The latter team also identifies the source of discrepancies and may carry out the improvement effort. Outcome assessment points out when further process or structural evaluation is needed and will become increasingly more stressed in the quality assurance effort nationwide.

Wirtschafter, David D. and Mesel, Emmanuel: A strategy for redesigning the medical record for quality assurance, Med Care 14:68-76, Jan 1976 (T), CA, DC, MR

The medical record should be considered a means to achieve explicit health care goals. The relationships between health processes and improved patient outcomes must be further researched because providing health services is goal-related. To accomplish this, objective and relevant outcome parameters must be chosen. The record system must demonstrate as well as contribute to the achievement of the health care goals. Present systems fail in this respect, for they do not lend themselves to computer programs that can display objective historical or physical examination data demonstrating realization of objectives.

Four steps are necessary to accomplish this. Selecting problem or disease entities will be determined by the particular management goals. Goal analysis should result in feasible and rational disease-specific objectives, with medical practices described in terms of their diagnostic and therapeutic objectives. To specify the indicators of goal achievement, one must recognize the parameters by which attainment can be demonstrated, the conditions for attainment, and the standards of performance. Completion of these three steps leads to a "minimum care assurance data set," monitoring outcome through patient-specific and problem-specific objectives. "Minimum care assurance data sets" are limited by being based upon patient follow-up visits and of course will change with advances in medical knowledge.

Zuckerman, Alan E., Starfield, Barbara, Hochreites, Clare, et al.: Validating the content of pediatric outpatient medical records by means of tape-recording doctor-patient encounters, Ped 56:407-411, Sept 1975 (P-D), MR

During a two-week period in August 1973, 51 physician-patient encounters were tape-recorded to compare information that was verbally communicated to that which was written in the medical record. A prior examination of medical records showed that the act of tape-recording had substantially no effect on the frequency with which information was written in the medical record. Items examined included diagnoses or problems, medications (name, dosage, purpose, side effects), other therapy, allergies, follow-up appointments, diagnostic studies, chief complaints, reason for seeking care, probable underlying cause of disease, and purpose of follow-up. Immediately after the encounters, the adult accompanying the child-patient was interviewed concerning knowledge of diagnosis, medication, other therapy, follow-up appointments, and diagnostic studies. The presence and absence of the above items on the tapes and medical records was reviewed.

Chief complaint, diagnosis, scheduled appointments, other therapy, and diagnostic studies were all well recorded. Medication names were recorded more often than told to patients but the opposite was the case with dosage. Patient compliance, disability, cause of illness, reason for follow-up and allergies were discussed more often than recorded. Both reasons for seeking care and medication side effects were rarely recorded or discussed. When the diagnoses and medication name, function, and dosage were both recorded and discussed, patient knowledge improved.

Medical records may be expected to be more complete at the study site (university medical center) than in a general sample of practices or clinics. Improved patient understanding was correlated with the concordance of verbal and written information.

QUALITY ASSURANCE IN AMBULATORY CARE: REVIEW OF LITERATURE

This section is a review of the articles listed in the bibliographic index. Like the index, it is not exhaustive but is expected to be representative of the current methods and approaches to the assurance of quality in medical care. As such, many important references are not included. The rapidly burgeoning literature also contains much important work since April, 1976, which is not included in this review. Indeed, more detailed and complete descriptions as well as more comprehensive state-of-the-art reviews are cited herein and are listed and catalogued in the accompanying bibliography. While this review concentrates on quality assurance in ambulatory medical care, hospital quality assurance literature is included where it adds to an understanding of current methods and concepts. Although many of the articles address broad quality assurance topics, the references are organized first to familiarize the reader with the definition and general concepts of quality assurance and then to deal more specifically with quality assurance methods and techniques.

QUALITY ASSURANCE DEFINITIONS AND CONCEPTS

Many authors first attempt to define and put into focus the most basic concept under examination, quality. What is meant by "quality" of medical care? Lee and Jones (1933) enumerated the variables that constitute quality. In modern parlance this multidemensional conceptualization of the quality of care includes "acceptability, occurribility, availability, compliance, comprehensiveness, coordination, effectiveness, and efficiency" (Barr and Gaus, 1973). Brook et al. (Winter 1975) have distilled the various definitions of quality and arrived at two basic concepts: technical care and the art-of-care. It is the technical aspect of the quality of medical care that has usually been measured; but they feel that more emphasis should be placed on the development of the art-of-care, which is concerned with the "milieu, manner, and behavior of the provider in delivering care to and communicating with the patient." In the Experimental Medical Care Review Organization Program the operational definition of quality is "the extent to which scientifically established procedures in the diagnosis and management of serious, common, and treatable disorders are properly applied to patients who can benefit from this application" (Sanazaro 1972).

Of fundamental concern to investigators of the assessment of the quality of medical care is the selection of the best object of assessment. By grouping the various methods for evaluating the delivery of health care, Donabedian (1969) and Brook et al. (1975) describe the three basic conceptual approaches to quality assessment: process evaluation, outcome evaluation, and structure evaluation. To date, process evaluation, often in the form of the medical audit, has been the most widely applied method of quality control.

Donabedian (1968) feels that process evaluation is the most direct method, especially when measuring professional functions such as diagnosis and treatment. However, he considers outcome evaluation the ultimate validation of process evaluation standards. Other investigators argue that process evaluation has problems both conceptually and practically. Process data are used by many to assess the quality of care on the assumption that the factors measured are causally related to outcome of medical care, an assumption "based on customary medical practice and not on hard scientific evidence." (Brook 1974).

According to Brook and Williams (1975) "structural measurements are concerned with the descriptive characteristics of facilities or providers (e.g., clinics, hospital beds, physicians per population, nurses per physician). Donabedian (1968) felt that the qualifications of the staff, organization and physical structure are not synonymous with quality. This relationship is presumed but is not always the case.

REVIEW METHODS

To help administrators and planners select a method of quality evaluation, various studies have been conducted which compare process and outcome evaluation. Brook and Appel (1973) compared five different methods of peer review: 1) implicit judgment of process; 2) implicit judgment of outcome; 3) implicit judgment of process and outcome; 4) explicit judgment of process; and 5) explicit judgment of outcome. They found that the explicit process judgment, probably the method most widely used, produced the severest judgment: only 1/4% of the cases were deemed acceptable. The implicit outcome method, on the other hand, produced a judgment showing adequate care in 63.2% of the cases. Starfield and Scheff (1972) compared diagnostic and therapeutic processes and outcome in children with low hemoglobin values. They found that therapy was more closely related to good outcome than was diagnosis and was unrelated to the original reason for the hemoglobin test. Finding and auditing the medical record seemed to be the biggest problem in the study. This method relates specific provider and patient activities to outcome.

Criteria Development

The selection of valid and reliable criteria and standards is essential for both process and outcome evaluation. Rosenburg (1975) proposes the use of disease specific criteria, which requires complex data retrieval and is also time-consuming. These disadvantages may hinder the widespread use of disease-specific criteria.

Williamson (1971) felt that peer judgment is a practical way of establishing outcome criteria. Thompson and Osborne (1974) found that academicians and practitioners agreed well in judging criteria for use in peer review. They concluded, however, that only groups accustomed to the development of criteria and with access to supporting data attempt it. Wagner et al. (1967) compared the criteria selection of three groups of physicians: family physicians, general pediatricians, and pediatricians specializing in infectious diseases. The area of greatest disagreement appeared in the criteria for the use of antibiotics (family physicians tended to use antibiotics more than the other groups). However, most of the criteria were agreed upon by a large, diverse group of physicians. Criteria for patient outcome varied according to type of clinical practice.

Process Evaluation

Brook (1973) points out that "in order for the assessment of quality of care based on process data to be valid, it must meet certain standards: (a) the procedures for collecting the information must produce valid and reliable results; (b) the criteria which are established must also be valid and reliable; and (c) there must be a previously established positive relationship between a high score on the process assessment and health." Process evaluation measures "what a provider does to and for a patient and how well a person is moved through the health care system, either in a "macro" sense (e.g., from first symptom, to seeking care, to obtaining care) or in a "micro" sense (e.g., from arrival to departure at any emergency room or outpatient clinic) (Brook and Williams, 1975).

Morehead (1967) described medical audits concentrating on the professional performance of the physician as judged by a clinician surveyor in the review of a medical record. It was concluded that when conducting medical audits, weighting and scoring components of medical care has advantages when large numbers of cases are involved; however, the arbitrary nature of such weights is difficult to defend.

Process evaluation has taken many different forms. Lieberman (1974) performed a review of a random sample of pediatric charts and from this was able to uncover deficiencies in care and plan corrective action. He concluded that patient lifestyles and nonmedical concerns must be considered in planning health services. Rubin (1973) selected outpatient records by appointment time and selected inpatient records by discharge time. Physicians noted in the records deviations that might lead to poor care. Corrective action then could be planned, although the review itself may be all the action that is necessary for improvement. Rubin found this evaluation method to be very well accepted at the Hayward (Calif.) Permanente Medical Group. Gonnella et al. (1970) discovered discrepancies in health care by documenting the medical status of patients before they were accepted in the general medical clinic.

Waldman (1973) described the medical audit, a hospital quality control system, as composed of a series of discrete medical audit studies, the performance of which is educational for physicians and points out the needed changes in the process and structure of medical care. The medical audit study requires: 1) criteria development; 2) evaluation of health care; 3) pinpointing of deficiencies; 4) corrective action; and 5) evaluation of the effectiveness of that corrective action. Using a medical audit, Lyons and Payne (February, 1974) found that elderly and younger patients were treated similarly by physicians. The medical audit can readily be adapted to evaluation of the medical care of ambulatory patients. Hanson and Kraus (1973) found that in performing a medical audit nonphysicians agreed with themselves 90% of the time and with a physician master audit 85% of the time. In evaluating health care in the emergency room, Brook and Stevenson (1970) discovered that only one quarter of the patients received effective care. They felt that follow-up outcome evaluation studies were needed.

Levine et al. (1976) describe the use of new "health practitioners" in the Columbia Medical Plan. These para-professionals are providing more management of acute conditions. They found that the new health practitioners "are providing care, within their areas of responsibility, of comparable quality to that delivered by physicians." Sackett (1974) focuses on outcome and suggests that not only is design and execution of randomized clinical trials of innovations in the delivery of broad categories of clinical services possible, but that the outcomes provide a solid base for further study of the introduction of nurse practitioners as providers of primary clinical care. Spector et al. (1975) discovered that when patients were referred to nurses by physicians, the nurses provided adequate care for most of the patients and there was a decrease in physician visits. However, this was not cost-effective because a cost per patient increase developed due to more visits with the nurses.

Protocols were used to collect data on return visits of chronically ill patients in Boston. Komaroff (1973) studied the use of these protocols by "health assistants" who had no educational degree above the high school level and found positive preliminary results: 1) a low error rate; 2) signs that show protocols may improve care; 3) physician-visit savings of 37%; 4) physician acceptance; and 5) patient acceptance.

Quality assessment has also entered the field of psychiatry. Riedel et al. (1972) feel that the "state-of-the-art" of psychiatry has developed to the point where information systems, even computers, can be used to find in the medical record deviations from the norms of usual care. Huber et al. (1974) state that with effort and creativity, a computerized screening model can be developed for any diagnostic group, even for psychiatric utilization review.

Outcome Evaluation

According to Gonnella and Zeleznik (1974) outcome evaluation should include the contributions of the physician, the hospital or facility, the patient, and the social and physical environment.

Blum (1974) states that a health care institution should use more than one or two types of quality of care evaluation because many factors inside and outside the institution affect the outcome of a health care encounter and each type of evaluation has its own biases and deficiencies. He believes the most effective quality-promoting tools are past-focused analysis of major conditions present at entry to care and prospective outcome analysis of those conditions after treatment by the system. He also supports the use of tracers in relating all types of evaluation of quality of health care. Sanazaro and Williamson (1970) define and classify end results of patient care in relation to and along with "critical" physician actions, which are those defined as having one or two specific beneficial or detrimental effects on a patient. These classifications contribute to the development of objective criteria for effective physician performance. Rutstein et al. (1976) conceptualized the implementation of an outcome evaluation method that "counts cases of unnecessary disease and disability and unnecessary untimely deaths." For some diseases the occurrence of one case or for others an occurrence rate increase signals the need for an investigation of the causes.

Gordis and Markowitz (1971) found that for completeness of immunization, utilization of services, morbidity, and mortality of infants, there was no difference between Comprehensive Care and Traditional Care. The same results were found for compliance with a daily oral penicillin regimen for rheumatic fever. Barr and Gaus (1973) suggested a population-based approach to quality assessment. They measured three major dimensions of quality assessment: accessibility (whether patients use a service or not), effectiveness (problem status as perceived by the patients), and efficiency (average unit costs). In a Health Maintenance Organization Schroeder and Donaldson (1976) compared diagnostic accuracy and therapeutic outcomes with ideal standards. They found considerable underdiagnosis (false negatives) and unacceptable therapeutic outcomes for depression and hypertension.

Kessner et al. (1973) applied the tracer concept to health care evaluation. By following the process of care and the outcome of specific conditions (tracers) one can evaluate the quality of a health care system. They established the criteria for selecting these tracers: 1) A tracer should have a definite functional impact; 2) A tracer should be relatively well defined and easy to diagnose; 3) Prevalence rates should be high enough to permit the collection of adequate data from a limited population sample; 4) The natural history of the condition should vary with utilization and effectiveness of medical care; 5) The techniques of medical management of the condition should be well defined for at least one of the following processes: prevention, diagnosis, treatment or rehabilitation; and 6) the effects of nonmedical factors on the tracer should be understood.

Using iron deficiency anemia as a tracer condition, Novick et al. (1976) found weighted explicit scores of nonphysician abstractors to be close to results of implicit review by a panel of physicians. Serious lapses in the recognition of this condition were uncovered as well as deficiencies in treatment. These results seemed to encourage the use of the tracer method in health care evaluation.

Williamson (1969, 1971) has devised the ABCD strategy which attempts to determine "who needs to learn what to effect the greatest improvement in the health status of a defined population." In this strategy evaluation of diagnostic and therapeutic outcomes can lead to changes and improvements in the diagnostic and therapeutic processes. In Williamson's words this method is an "analysis of management outcome to determine the direction and extent of subsequent study or alteration of the management process to produce the most health improvement." Diagnostic outcomes are determined by measuring the proportion of diagnostic false-negatives and false-positives (Williamson 1971). Final outcome is the product of one or more determinants, each of which themselves can be intermediate outcomes of other processes. The relationship, both causal and correlational, between these outcomes and determinants defines outcome evaluation. Williamson (1973) developed the Health Accounting Project to demonstrate the feasibility and practicality of outcome evaluation.

Gonnella et al. (1975, 1976) popularized the staging concept of outcome evaluation whose basic premise is that "the seriousness of a patient's condition at some point in the treatment process is a good indicator of the outcome of the previous parts of the process." The purpose of the staging concept is to identify "groups or clusters of patients that require common treatment procedures and services and have similar expected outcomes." The stages themselves are the different levels of disease severity.

Health Status

Gilson et al. (1975) developed the Sickness Impact Profile (SIP) which is a "behaviorally based measure of sickness related dysfunction." Preliminary tests showed evidence of reliability and validity. They found the SIP to be more appropriate and sensitive than other outcome evaluation methods. Pollard et al. (1976)found "evidence for the feasibility of collecting reliable data using the SIP." Bergner et al. (1976) demonstrated the validity of SIP. They found the correlation between validating criteria and SIP scores to be high. Patrick et al. (1973) developed a list of 29 functional status levels which classify the relative value-weights of deviations from well-being. At the Kenny Rehabilitation Institute Ellwood (1966) developed a self-care scale which rated six daily living activity categories (bed activities, transfers, locomotion, personal hygiene, dressing, and feeding) to measure patient improvement. Katz et al. (1970) have since 1963 continued to develop the Index of Interdependence in Activities of Daily Living (Index of ADL) which is of major importance in connection with the dynamics of disability in the aging process. With regard to the chronically ill, it is equally valuable in objective evaluation. Shapiro (1966) felt that despite the hazards of observational research, more outcome evaluation studies are needed.

Medical Records

Lyons and Payne (May, 1974) concluded that good recording is related to good practice and that the relationship, although far from perfect, is statistically significant. However, Fessel and Von Brunt (1972) revealed conflicting information. They found that despite differences in recording useful information, different hospitals correctly diagnosed appendicitis a similar percentage of times. Also, for myocardial infarction there was no correlation between recorded data and the outcome after discharge. They felt that a chart review of the process of care may be misleading.

Wirtshafter and Mesel (1976) felt that the medical record should be modified according to the information system design theory to express the relationship between process and outcome and to facilitate corrective action. They developed a "minimum care assurance data set" that monitors the achievement of patient-specific and problem-specific objectives. Using prevalidated criteria, Thompson and Osborne (1976) found that a demonstrated lack of recording prevents an accurate and meaningful chart audit of ambulatory child care, and they called for improved documentation of medical care. Zuckerman et al. (1975) tape-recorded physician-patient encounters and compared that information with the data in the medical record. They found that when the diagnosis and the name, function, and dosage of medication were both recorded and discussed, patient knowledge improved. Patient understanding was correlated with the concordance of verbal and written information.

A variation of the standard medical record is Weed's problem oriented medical record (POMR). Weed (1974) feels that quality evaluation is possible only when there is prior agreement as to what care should be given and how it should be recorded. The physician should be audited in terms of the logic of his pursuit of the problem. Margolis et al. (1973) found that Weed's problem oriented record can measure the level of data collection, data recording, and problem solving skills. Skills can be taught by grading the POMR.

Using a slightly altered form of Weed's POMR, Kaufman et al. (1974) found several advantages to this system: 1) promoting a unified record-keeping system; 2) promoting legible and complete notes, including reasoned diagnosis and therapy; 3) preventing careless omission and unnessary duplication; 4) promoting the ease and speed of auditing; and 5) providing a structured audit for utilization review. Hurst (1971) viewed the Weed system as a problem solving system but discovered three obstacles to implementing it to improve the medical record: 1) acceptance of a new system; 2) the mechanics of the system and dealing with details; and 3) creation of an excellent problem list to insure a complete data base. To Weed's problem-oriented system, Hertz et al. (1976) added a "Health Care Plan" which discusses present problems and possible problems and enumerates possible solutions. This addition will increase patient-provider communication and patient involvement in solving the problems.

Among the computerized medical records systems is the Professional Activity Study-Medical Audit Program (PAS-MAP) which Holloway et al. (1975) compared with a manual system for quality evaluation. The PAS-MAP system was found 1) to be loss costly if over 41% of patients are included; 2) to be as timely as the manual system; 3) to provide less data requested by physicians; and 4) to be more susceptible to human error. In this case the manual system was retained.

Of concern in all medical record systems is the issue of confidentiality. Curran et al. (1969) found only a general outline of the legal protection of the "right to privacy." They felt that every centralized health data system should develop rules and regulations specifying conditions of information release as well as criminal penalties for violations. Major contributors and users should make up a large part of the system's policy-making body.

PATIENT SATISFACTION

The relationship between the providers and the consumers of medical care is another important aspect of quality assurance. Hulka et al. (1971, October 1975) felt that patient attitudes and the physician's awareness of those attitudes are important in the evaluation of health care. They describe the three elements of the provider-patient relationship: 1) communication (the provider's ability to increase patient knowledge and get compliance with therapy); 2) satisfaction (the patient's attitudes toward the care received, the provider, and the care system); and 3) physician awareness of patient concerns. They devised a method of measuring a physician's awareness of the patient's concerns and felt that the differences found between various physicians were related to individual personality and style.

Ware and Snyder (1975) developed index scores to measure consumer satisfaction. They arrived at four major dimensions of patient attitude: physician conduct, availability of services, continuity-convenience, and accessibility (cost, payment systems). Hulka et al. (1970) used the Thurstone "Method of Equal Appearing Intervals" to establish a scale to measure patient satisfaction or dissatisfaction. Stratman (July 1975) examined patient perceptions that influence the selection of ambulatory care sites and found that when other sources of care are not available, patients will use the emergency room (Stratman, December 1975). Hulka et al. (August 1975) found that consumers were satisfied with the competence of health care professionals but had less high regard for accessibility, cost and convenience of health services. Black women without a regular source of care were the most negative. Stratman et al. (August 1975) sampled households in Rochester, N. Y., and found general confidence in the medical profession. About half of the sample felt that there should be equal involvement of professionals and consumers in the planning and control of health services.

At the University of Vermont Bouchard (1973) had positive experiences sending their own medical records to the patients for audit, such as: 1) better patient understanding; 2) improved motivation for complying with the therapy regimen and required life-style changes; 3) less patient anxiety.

CORRECTIVE ACTION

Although a major object of health care evaluation is the measurement of care and the discovery of deficiencies, action taken to correct the problems found is of equal importance. Slee (1972) says that corrective action should improve attitudes, cooperation, and coordination, but that strong intervention should be used when deemed necessary. An evaluation study should change practice habits in a reasonable amount of time. Pozen and Bonnet (1976) found that increased educational and administrative intervention improved attitudes and resulted in better clinic functioning. However, there was no change in the process or outcome of care. Guptill and Graham (1976) discovered that despite the assumption that group practice leads to more continuing education, involvement in various types of continuing medical education was similar for solo practitioners and those in group practice.

Gonnella et al. (1970) found that objective examinations showed that physicians knew more than they practiced. It was concluded that standard continuing educational methods will not translate knowledge into action. Brook et al. (October 1975) also advised resisting standard continuing education. Dutton et al. (1974) showed that a problem-oriented audit with protocols may evaluate the total process of care of specific components and that the continuing feedback is educational for both clinicians and administrators. Morehead (1967) felt that medical audit in the Health Insurance Plan of Greater New York and the Teamsters' studies had significant impact on record systems, organization of clinical departments, policies relating to patient care, hospital organizations, and physician qualifications.

Brown and Uhl (1970) developed the "bi-cycle" concept of continuing medical education. The traditional teacher or planner-oriented approach is not satisfactory. The bi-cycle concept directly relates patient care (outer cycle) to education (inner cycle). Care deficiencies are found through a comparison with criteria for ideal management of patients, and the closing of these gaps is the objective of education. The effectiveness of the corrective action is determined by a re-audit. Using this method, Brown and Uhl found that the appropriate use of antibiotics at the Chestnut Hill Hospital went from 35% to 60%. Two innovative programs are described and it is concluded that basing accreditation on standard continuing educational methods should not rule out experimental programs.

Buck and White (1974) discovered that in a prepaid plan (the San Joaquin Foundation for Medical Care) adjustment of billing claims in a utilization control system led to decreases in the number of some services claimed, and that the cost of peer review was less than the dollar amount of the retrospective adjustment.

The authors cited above describe the present approaches to the attempt to ensure accurate and reliable evaluation of the quality of medical care given to ambulatory patients. The concepts, methods, and implementation of quality assurance are currently in a rapidly evolving state, and literature documenting quality assurance research and progress is becoming more abundant.

U.S. GOVERNMENT PRINTING OFFICE : 1977 O—230-046

DHEW Pub. No. (HSA) 77-3008