A Multidisciplinary Audit of Diabetes Mellitus

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A multidisciplinary audit evaluating the quality of care of patients with a primary diagnosis of diabetes mellitus was performed at St. Mary's Hospital in Grand Rapids, Michigan. The audit served to evaluate the treatment and care of diabetic patients, in both the inpatient and ambulatory care settings, and also to identify interaction problems involving patient care among physicians, nurses, dieticians, and social workers.

Analysis of the data indicated that each discipline rendered adequate patient care. As other published audits have also indicated,[1-3] this multidisciplinary audit revealed that documentation of services is frequently lacking and that communication between the involved disciplines was less than desirable. The audit disclosed a need to educate the hospital staff (medical and nursing) as to the role and function of the Social Services Department.

As a result of this audit, definite measures have been instituted in each participating department in an attempt to further upgrade the quality of medical care and improve interdepartmental communication and cooperation.

The focus of a multidisciplinary audit is to evaluate the quality of "total" patient care. Each discipline analyzes its own performance and its interrelation with other disciplines.

Utilizing the audit system,[4] quality of care is objectively reviewed by formulating valid criteria which reflect the acceptable standards of patient care. The actual care rendered, as documented in the patients' medical records, is compared with the critera. Variations from criteria indicate potential problems that prevent achievement of the expected or predicted patient outcome. Corrective actions are recommended, implemented, and evaluated to determine effectiveness of that action in relation to overall patient care.

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0094-3509/79/050947-05$01.25
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Since approximately 1970, medical audits and multidisciplinary audits have been a tool used in acute care hospitals to survey patterns of care and patient outcome. A survey of literature published also indicated increasing interest in the use of medical audits in ambulatory care as well as inpatient settings.[1,2,5] As the interest in audit has increased, it has become obvious that the problems encountered in ambulatory care audit are frequently greater than those in an inpatient audit. According to Christofell and Loewenthal, these problems include less well-defined diagnoses, various stages of disease severity, and nonuniformity and weakness of individual record keeping.[6]

This audit on diabetes mellitus employed the multidisciplinary approach to assess the quality of multiple component care. The audit included care given in both inpatient and outpatient settings and involved social services, dietary, nursing, and family medicine departments in both settings, as well as the internal medicine department as part of the inpatient aspect of the audit. A literature

search revealed no previous combined inpatient and outpatient multidisciplinary audit.

St. Mary's Hospital in Grand Rapids, Michigan, is a Catholic hospital owned and operated by the Sisters of Mercy Corporation and serves a population of approximately 550,000. From July 1976 to June 1977 (the time frame from which the sample of cases was drawn for this audit), the hospital's bed capacity was 375. The medical staff consisted of 398 physicians, 33 of whom were family physicians, and 32 internal medicine specialists. In addition, there were 9 dieticians, 266 nurses, and 5 social workers.

The Family Health Center is part of St. Mary's Hospital (with approximately 24,220 patients, 6,960 families at the time of the audit) and serves as the model ambulatory teaching area for the Family Practice Residency in Grand Rapids. The Family Health Center is organized and operated on the basis of the "team concept" developed at Beth Israel Hospital in Boston. Within the center are 18 family practice residents (who during 1976 and 1977 were assuming total patient care with full preceptor assistance), a full-time dietician, 4 registered nurses, 3 health assistants, and a part-time psychosocial worker (from July 1976 to June 1977 a full-time psychosocial worker was present).

The topic of diabetes mellitus was chosen for this multidisciplinary audit because of the chronicity of the disease process and its noted prevalence. Additionally, a diabetic patient requires multidisciplinary involvement in the inpatient and outpatient care and management of his/her disease.

In using the multidisciplinary approach to this audit, various departments were provided the opportunity to participate jointly in evaluating their services to this patient group in the context of the overall care. The objective of the audit was twofold: first, to evaluate the treatment and care of diabetic patients on the basis of established criteria and, secondly, to identify interaction problems involving patient care among the physicians and the nursing, dietary, and social services departments.

Methods

Patients were chosen from the time frame of July 1976 to June 1977. A total of 181 inpatients with diabetes mellitus (primary diagnosis) were reported for that period. A representative sample of 80 patients was randomly selected for the audit. These patients were selected by medical record number, using the H-ICDA code numbers of 250.0, 250.1, and 250.2. Only patients with the primary diagnosis of diabetes mellitus were included in the audit.

The selected sample represented a proportionate number of physicians from the family practice and internal medicine departments. From this sample, 20 Family Health Center patients were identified and chosen for the outpatient record review, some from each of the practicing residents and physicians at the Family Health Center. Diabetes mellitus was diagnosed in 368 patients at the Family Health Center from its inception in 1973 to July 1977.

The following steps were followed to accomplish the audit study:

1. A total of 18 criteria were drawn up by departments involved in the audit: 8 medical criteria, 4 dietary criteria, 2 social service criteria, and 4 nursing criteria. These criteria were organized to reflect prehospitalization, inhospital, and posthosptalization patient care.

2. A joint meeting was held with representatives from the medical staff, and the nursing, social services, and dietary departments of both the hospital and the Family Health Center. At this meeting all the criteria were reviewed and established. Table 1 illustrates a sample of the format used in defining the elements and instructions of and exceptions to the criteria. Exceptions clarified incidences in which the criteria would not realistically apply. Detailed instructions for each criterion were provided as a guide to assure standard data retrieval and accurate analysis of the compiled data.

3. Medical record review was performed by a registered record administrator (RRA) who was knowledgeable in the audit process as well as the deciphering of medical record content. Separate worksheets listing criteria for each discipline involved in the audit were prepared. Based on the predetermined instructions for each criterion provided by the discipline, the worksheet was used to indicate which criteria the medical record did or did not meet. Compliance with criteria was based on strict adherence of actual documentation within the record to the specified criteria instructions.

4. Records found to be in variation of the criteria were reviewed independently by each de-

partment.

5. Variations revealing discrepancies were further analyzed by each department to determine causes of problems and potential corrective actions.

6. A joint meeting was held with the above-specified representatives to review all audit findings and to analyze areas of interaction concerning jointly held concerns.

7. Actions of the audit were implemented with plans for follow-up evaluations.

8. Audit findings were reported to the medical staff, involved departments, Administration, Executive Committee, and Governing Board.

Results

Table 2 displays the percentages of records that did not comply with each of the 18 established criteria. These percentages are based on the total sample number of records with the exception of social services criteria, in which percentages are based on the number of cases in which intervention by social services was indicated, and not the total number of cases in the audit. Indications

Table 1. Examples of Audit Criteria

	Criteria (Standard, 100%)	Instructions and Definitions for Data Retrieval	Exceptions
Prehospitalization (Family Health Center)			
Medical	1. Method of screening timely and appropriate	Tests done by next scheduled visit to include: fasting blood glucose, 2-hr postprandial blood glucose, random blood glucose, or 3 or 5-hr glucose tolerance test	1. If patient (Pt) is a known diabetic, past records reviewed and review documented in chart.
Nursing	2. Patient education documented: A. Observe films B. Review materials C. Attend diabetic classes	Patient progress notes reflect documentation by nurse or resident at the time the diagnosis is documented in the record	2. A. Pt hospitalized within 48 hours B. Pt refused C. Family member or significant other person educated
Inhospital (At time of discharge)			
Medical	1. Blood glucose less than 180 mg/100 ml and urine free of ketones	Fasting, 11 AM, 4 PM, or 4 hr postprandial blood glucose within 24 hours of discharge	1. A. Pt expired B. Hemo/peritoneal dialysis (Pt on dextrose)
Social Services	2. Documentation of social services intervention for patients requiring posthospitalization continued care	Needs or plans documented by social worker via discharge notes or progress notes. Continuing care defined as postacute medical, nursing, rehabilitative, supervisory	2. A. Pt refused B. MD defers or cancels Social Services referral C. Social Services not indicated D. Lack of appropriate resources for care in the community
Posthospitalization (Family Health Center)			
Dietary	1. Dietician's documentation of appropriate information for patients upon follow-up visits after hospitalization	Progress notes. Dietician documents: 1. Patient's recollection of diet (how it compares to hospital discharge diet) 2. Any special problems with diet 3. Assessment of patient's understanding 4. Plan for patient's continued nutritional care	1. A. Pt refused B. Scheduled appointment not kept C. Physician did not refer patient for continued nutritional care

Table 2. Percentage of Discrepancies Based On Medical Record Documentation

Criteria	Discrepancies %
Prehospitalization	
1. Screening for diabetes mellitus (DM) to be done for elements listed (these elements included 15 conditions, in combination or alone, which indicated need for screening)	5
2. Method of screening appropriate and timely	5
3. Interpretation of results appropriate	0
4. Treatment of American Diabetic Association (ADA) diet and insulin or oral agents	15
5. Dietician instruction of patient and follow-up for ADA diet and appropriate documents in patient record	40
6. Documentation of patient education by means of films, written materials, and diabetic classes upon diagnosis of DM, by nursing	35
Hospitalization	
Admission	
1. Uncontrolled DM or complicating or precipitating illness or complications of therapy or disease (to justify admission)	0
2. Appropriate referral of DM patients to social services for physical, social, and psychological problems	76
3. Confirmation of diet orders by dietician within 24 hours of time diet order was written	99
Discharge	
4. Blood glucose less than 180 mg/100 ml and urine free of ketones	1
5. Length of stay (maximum of 7 days)	1
6. Alive	0
7. Documentation of social service intervention for patients requiring continued care	81
8. Dietician documents description of diet instruction and assessment of patient comprehension	49
9. Nursing service documents self-care instruction and patient understanding of disease treatment	28
Posthospitalization	
1. Documentation by dietician of appropriate information for patients upon follow-up visit following hospitalization	15
2. Recording by nursing service of every Family Health Center visit, weight, blood glucose, blood pressure, and urinalysis	0
3. Review and recording by nursing service of patient's knowledge of diabetes	85

were based on criteria established by the department.

The audit did serve to evaluate the treatment and care of diabetic patients in both inpatient and outpatient settings from a multidisciplinary treatment approach. Physicians, for example, analyzed their performance by reviewing the findings of the audit. The data substantiated that all patients who were hospitalized with diabetes mellitus required hospitalization. Evaluation of patient outcome revealed that 58 of the 80 patient records met the screening criteria, showing a blood glucose level of less than 180 mg/100 ml with urine free of ketones at the time of discharge. Upon physician review of the remaining 22 patients' medical records, all but one were considered justified variations. Examples of justified variations were as follows: a patient transferred to extended care facility with complication of the disease which made "ideal" control impossible at the time of transfer, and an elderly brittle diabetic with blood glucose values stable, but not considered acceptable at time of discharge.

The outcome of the eight medical criteria revealed a mean adherence of 97 percent. The most significant finding, relating to the lower compliance for prehospitalization treatment criteria, was that the current protocol used at the Family Health Center by residents required revision and updating.

Nursing service's mean adherence to their four criteria was 63 percent, with major discrepancies identified in pre, post and inhospital care. Specifically, all of these variances to the criteria were related to patient education and documentation of the education given diabetic patients.

Dietary's mean adherence to its four criteria was 50 percent. Dietary variances were attributable to the lack of documentation of patient education. It is significant that criterion #3 (Table 2, Hospitalization) in retrospect proved to have been inappropriate, since during the time frame of the audit, a dietician's signature confirming diet orders had not been a departmental requirement.

The mean adherence to the social service criteria was 22 percent. The reasons contributing to this low compliance were multiple, including lack of physician awareness of social services' role and function and lack of referrals from nursing service. In some instances, social services involvement was not appropriately documented.

Discussion

As a result of the audit, definite steps have been instituted in each department to upgrade the quality of medical care and interdepartmental communication. Specific examples include revision of the Diabetes Mellitus Protocol used by Family Health Center physicians; initiation of a diabetic teaching program for hospital nursing staff; formulation of a comprehensive protocol for Family Health Center nurses; construction of a summary form by the hospital dietician to include patient's comprehension of diet and instructions during hospitalization, which would be sent to the Family Health Center dietician to facilitate a more comprehensive follow-up; and educational sessions by the Social Services Department for all hospital departments involved in direct patient care.

Various departments are planning to re-audit areas of significant variance after corrective plans have been implemented for a 12-month period. Re-audits will give a measurement of the effectiveness of the actions that were initiated as a result of this audit.

This was the first time that several departments have participated jointly in assessing patient care. The opportunity of being involved in this multidisciplinary audit provided each of them with a method to objectively evaluate their department's performance. As a result of their participation, the individuals involved all expressed a new appreciation for the need of continual communication and cooperation in the providing of health care to patients with complex, chronic diseases. Also, each department gained further understanding of the roles and functions of the other departments.

References

1. Harris AE Jr, McDowell J, Schoen RG: A longitudinal chart audit of hypertension in a family practice center. J Fam Pract 5:939, 1977
2. Dutton CB, Hoffman S, Ryan LK, et al: Ambulatory health care. NY State J Med 74:1545, 1974
3. Allen JE, Greenwald HD: An outcome-oriented audit of ambulatory care of patients with hypertension. Quality Rev Bull 3:17, 1977
4. Standard for medical audit of the accreditation council for ambulatory care. Quality Rev Bull 3:16, 1977
5. Hanson AS, Kraus ED: An outpatient medical audit. Minn Med 56 (suppl 2): 49, 1973
6. Christoffel T, Loewenthal M: Evaluating the quality of ambulatory health care: A review of emerging methods. Med Care 15:877, 1977