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EFFECT OF MANAGED CARE ON SELECTED OUTCOMES OF HOSPITALIZED SURGICAL PATIENTS

BY

DEBORAH ELAINE WILSON

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF NURSING

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Effect of Managed Care on Selected Outcomes of Hospitalized Surgical Patients submitted by Deborah Elaine Wilson in partial fulfillment of requirements for the degree of Master of Nursing.

Judith Hibberd.

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Date: January 31, 1995

ABSTRACT

Managed care is a method of health care delivery by which a multidisciplinary team may achieve effective patient outcomes while utilizing resources efficiently. Hospital-based care managed care refers to an approach to the delivery of patient care which incorporates multidisciplinary guidelines or caremaps.

In this thesis, a model of managed care for patients undergoing herniorrhaphy was compared with traditional treatment patterns to determine if there was a difference in hospital length of stay, laboratory utilization, readmission rate, reutilization of health care services, post-operative complications or patient satisfaction.

Following the introductory chapter, chapter 2 has been prepared as a paper for publication. Chapter 3 contains a summary of the study, a discussion of the findings, implications and conclusions. The consent, post-discharge telephone survey, clinical practice guidelines for preoperative bloodwork for elective surgical patients, caremap for herniorrhaphy patients, and a review of relevant literature is provided in the Appendices.

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CHAPTER 1

Introduction

As a result of rising health care costs and efforts by provincial governments to control operating deficits, there is a growing interest in reforming the Canadian health care system. One of the major themes in contemporary literature is the need to improve the utilization of resources while maintaining or enhancing patient outcomes. Several differing methods aimed at achieving this have been introduced in recent years but evaluative research on their effect is sparse.

Hospital care constitutes a major and expensive component of our current health care system and has been a particular target for funding cutbacks. Traditionally, the provision of inpatient hospital care tends to be a fragmented process with various health care providers working autonomously, under the general guidance of a physician's day-by-day orders. This and many other factors have created variations in care for similar diagnostic patient groups.

One method of approaching cost containment is the development and dissemination of practice guidelines. This is based on the assumption that the implementation of these will result in improved quality of care by reducing variation in patterns of practice, while at the same time eliminating unnecessary costs. As with other models however,

outcome-based research supporting this is lacking.

In this thesis, a model of managed care for patients undergoing herniorrhaphy was compared with traditional treatment patterns to determine if there was a difference in hospital length of stay, laboratory utilization, readmission rate, reutilization of health care services, post-operative complications or patient satisfaction.

In this introductory chapter, managed care is defined and its purpose explained. The rationale for testing a managed care program at the study site is discussed and terminology is provided. The chapter concludes with an overview of the thesis.

Managed care

Managed care is a method of health care delivery by which a multidisciplinary team may achieve effective patient outcomes while utilizing resources efficiently. Hospital-based managed care refers to an approach to the delivery of patient care which incorporates multidisciplinary guidelines or caremaps. These guidelines are used to identify the set of care components and timeframe parameters considered optimal in managing targeted patient groups. This approach to patient care is based on the belief that:

1. Contributions of all health care providers toward achievement of specified patient outcomes promote collaborative interdisciplinary practice, and allow for coordination and continuity of efficient and effective care.

2. Clinical practice and system variations (i.e., patient, clinician, hospital, community) affect patient outcomes.

3. A focus on outcomes of patient care is needed to assist health care providers in determining the most appropriate treatment for a given condition (Zander, 1988a).

Purpose of this Study

Current interest in managed care is increasing and attempts are being made to implement it in Canada. There appears to be no consensus on the definition of managed care, however, and as yet, the quality and appropriateness of such care have not been adequately evaluated. Few clinical guidelines are available in Canada and no standard outcome criteria have been established to date. It is thus necessary to undertake a systematic approach to the evaluation of managed care. A pretest-posttest design was used, with the pretest group receiving traditional care and the posttest group receiving managed care.

The primary null hypothesis was that there was no difference in length of stay between patients receiving managed care and those receiving traditional services. Secondary hypotheses were that there was also no difference in laboratory utilization, medication profiles, readmission or reutilization of health care services, post-operative complications, or patient satisfaction.

Location of Study

The study was conducted at the Royal Alexandra Hospital (RAH), where escalating health care costs and fiscal constraints led to a decision to test and evaluate managed care. The RAH is a 932-bed urban teaching hospital serving all socioeconomic groups. Surgery is one of the major services of the institution and was selected as the service area for implementation of this study protocol. The mode of nursing care delivery on the selected patient care unit was a modified system of primary nursing. No clinical guidelines existed for surgical patients in advance of this study. The managed care model used in this research study was based on that from the Case Management Center at the New England Medical Center which encompasses six components: caremaps, variance/variance tracking, case consultation, shift report, health care team meetings and quality improvement (Zander, 1988a). These components will be briefly reviewed.

Caremaps

The caremap, developed by a multidisciplinary team, is a written treatment plan directing daily interventions for various disciplines involved in the patient's care and identifies expected outcomes. The categories defined within the treatment plan are consults, tests, medications, treatments, diet, activity and discharge planning.

Case Consultation

Caregivers involved in the patient's care meet as the

variance occurs to discuss a plan for resolving the variance.

Health Care Team Meeting

When a patient's length of stay exceeds that indicated by the caremap or is at a variance greater than 48 hours, a health care team meeting is conducted. All disciplines involved in the caremap meet to determine how best to resolve the variance and progress the patient along the map.

Quality Improvement

Aggregate analysis of variance are reviewed by caregivers who developed the caremap to determine patterns or trends. This trending information assists to identify clinical and system opportunities for quality improvement.

Shift Report

Inter-shift report addresses the length of stay allotted for a patient's hospitalization, the number of days remaining, activities to be completed during the next shift, and discussion of any variances that have occurred with the action steps developed to address the variance. The caremap helps improve communication between caregivers.

Variance/variance tracking

Variance is an unanticipated event. Variance tracking is the process of comparing expected patient outcomes, and projected interventions to actual outcomes and interventions.

Of these six components only five were used in this

model to develop the managed care approach to patient care. The inter-shift report was considered too complex for this pilot project and would have required additional resources.

As a preliminary investigation for the study presented in this thesis, a review of all surgical patients admitted over the previous year showed that herniorrhaphy was a high volume surgical procedure. The case mix demonstrated low severity of illness yet included a high proportion of long-stay outliers, with a higher than average length of stay. In selecting a particular group of cases for study, low severity and high volume were chosen as criteria because they were presumed to be important factors in developing and evaluating caremaps. A case type in which there was a high proportion of long-stay outliers and higher than average length of stay was chosen because these characteristics suggested undesirable variances in care which might be explainable, and which might be eliminated by more standardized approaches to management.

Definition of Terms

Caremaps

Caremaps are the basic tools of a managed care approach to patient care delivery. They may be described as multidisciplinary plans consisting of defined patient problems, expected clinical outcomes, a critical pathway, and a pre-defined length of stay. Patient problems and expected clinical outcome statements provide pre-defined

criteria for measuring patient behaviours, attitudes, skills, physiological states or conditions that reflect resolution of the identified problems. Critical pathways identify key events that must occur in order to achieve the appropriate length of stay and specified clinical outcomes (Zander, 1988b).

Case Type

This refers to a group of patients with similar diagnoses that use approximately the same type and amount of resources during the course of an episode of care, and which may be aggregated together for the purpose of monitoring, managing, and/or reimbursing (Fetter, Brand, & Gamache, 1991).

Multidisciplinary Teams

Multidisciplinary teams are comprised of health care workers from different disciplines who collaborate to reach consensus on strategic plans that will move patients toward achievement of predictable outcomes. Multidisciplinary team meetings focus on the specific case type, review of new treatment plans and evaluation of variances on the caremap, and exploration of strategies for improving patient outcomes (Zander, 1990a).

Clinical Outcomes

Clinical outcomes refer to measurable patient behaviours, attitudes, skills, physiological states or conditions that reflect successful resolution of patient

problems. Patient outcomes are specified on the caremap (Zander, 1990b).

Outcome Criteria

Outcome criteria are predetermined results of treatment agreed upon by the multidisciplinary team and incorporated into the caremap. The extent to which care provided to the patient had the desired result can be determined by the use of outcome criteria (Zander, 1992).

Outlier

Outliers are cases in which resources consumed as measured by length of stay are exceedingly large relative to a typical case (Hall & Jacobs, 1991).

Practice Patterns

Practice patterns are defined as the usual actions of an individual or group, as dictated by tradition, professional training, role definition, ethics, spontaneous assessments, and perception of resources available to bring about results in patient care (American Hospital Association, 1992).

Variance

Variance is defined as a deviation in the outcomes of care outlined on a caremap. Variance may alter the anticipated discharge date and/or the quality of outcomes. The sources of variance may be: (a) patient/family; (b) clinician; (c) hospital systems; or (d) community (Etheredge, 1989).

An Overview of this Thesis

Chapter 2 has been prepared as a paper for publication. The research method is described, the findings presented and discussed, and conclusions drawn. Chapter 3 contains an overall summary of the study, a discussion of the findings, implications and conclusions. The consent, post-discharge telephone survey, clinical practice guidelines for preoperative bloodwork for elective surgical patients, caremap for herniorrhaphy, and a review of relevant literature is provided in the Appendices.

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CHAPTER 2

MANAGED CARE IN LOW SEVERITY SURGERY

A COMPARATIVE TRIAL

This chapter will be submitted for publication

in the

Journal of the American College of Surgeons

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ABSTRACT

MANAGED CARE IN LOW SEVERITY SURGERY: A COMPARATIVE TRIAL

Background

In Canada, Managed Care (MC) refers to the use of multidisciplinary clinical guidelines developed through literature review and expert opinion in managing defined patient groups. MC is one method by which health care teams can use caremaps (or critical pathways) to achieve effective patient outcomes, while efficiently utilizing resources.

Research design

The objective of this study was to compare MC and traditional (T) treatment of a low severity/high volume case group, namely patients undergoing herniorrhaphy using a pretest-posttest design. Pretest (N=141) and posttest (N=110) groups were compared for hospital length of stay; resource consumption was measured by laboratory testing, medication profiles, and reutilization of health services; and outcome was measured by readmission rate, complications, and patient satisfaction assessment. There were four months between the end of data collection for the pretest group and the beginning of data collection for the posttest group, to allow a "run-in" period for the introduction of managed care and for users to become familiar with the use of the caremap.

Results

A comparison between MC and T shows a significant difference ($p<.01$) in mean length of stay (MC = 0.6 days and T = 1.6). Laboratory tests decreased by 60% in the MC group compared to the T group ($p<.01$). Standardization of medication profiles was achieved in the MC group. No significant differences were noted in readmission rate, reutilization of health care services or complications; however, patients in the MC group indicated a preference for additional time in hospital.

Conclusions

MC offers potential for a health care team to achieve effective patient care while utilizing resources efficiently. This would enable the throughput of low severity high volume patients in an acute care environment to be maintained with a smaller bed complement while maintaining quality care.

Recommendations

Further evidence is required to demonstrate that MC can fulfill the promise of improving health status outcomes and to determine which patients are most likely to benefit from a managed care approach to patient care.

Key words

Case management, caremaps, critical paths, clinical practice guidelines, managed care.

INTRODUCTION

Although health care reform has been recommended by a succession of Canadian national and provincial commissions in the last 20 years, only now is there genuine interest in structural changes to the system. As a result of rising health care costs, health care agencies require innovative approaches to the management of hospital resources. Accordingly, pursuit of appropriateness and efficiency of patient care offer continuing challenge.

Managed care (MC) offers a means by which multidisciplinary health care teams may achieve cost-effective patient outcomes. Hospital-based MC refers to an approach to delivery which incorporates multidisciplinary guidelines or caremaps. These are used to identify the set of care components and timeframe parameters considered to be optimal in managing targeted patient groups.

In this study output and outcome measures associated with hospital-based managed care directed at a sample of patients undergoing inguinal herniorrhaphy were evaluated. The model used for MC was compared with traditional treatment (T) to determine if there was a difference in hospital length of stay, laboratory utilization, readmission rate, reutilization of health care services, post-operative complications or patient satisfaction.

METHODS

This comparative study was conducted in a 932-bed urban teaching hospital in Alberta, Canada. A review of all surgical patients admitted over the previous year showed that those undergoing inguinal herniorrhaphy constituted a high volume case grouping with low severity of illness but with a high proportion of long stay outliers and a higher than expected average length of stay (LOS). Low severity and high volume were presumed to be important factors in developing and evaluating caremaps for such cases. A high proportion of outliers and above average LOS suggested variances in care which might be explainable and amenable to more standardized management. No clinical guidelines existed for this group of patients prior to the study.

The primary (Null) hypothesis was that there was no difference in LOS of patients receiving MC and those receiving traditional services.

Inclusion criteria included patients classified under the procedural ICD-9-CM code 5300-5317, unilateral inguinal hernia repair up to and including bilateral inguinal hernia repair. These procedure codes fall into Adjacent Diagnostic Related Groups (ADRG's) 161, 162, and 163. ADRG's are patient classification schemes within which inpatients are grouped to mutually exclusive, clinically coherent groups (Fetter, Brand & Gamache, 1991). In Alberta, a further refinement of the DRG system categorizes all cases into a

severity system called refined diagnosis related groups (RDRG) and includes indicators of severity (Hall & Jacob, 1992). The surgical RDRG's have four levels of severity with 0 severity indicating no complications up to severity 3 indicating factors such as complications or further diagnosis resulting a greater resource use and increased length of stay. Patients were excluded if they were under 18 years, had more than one procedure undertaken, were admitted as an emergency, or if they could not speak English.

A pretest-posttest design was used, with the pretest group receiving traditional care and the posttest group receiving managed care. Patients gave written consent to participate in the study (Appendix A). Data were collected on length of stay, demographic characteristics, laboratory utilization, and medication profiles.

A telephone survey (Appendix B), was used to collect information on post-discharge outcomes and patient satisfaction which are important aspects of program evaluation (Abramowitz, Cote, & Berry, 1987; Rossi & Freeman, 1989; Sovie, 1989; Veney & Kaluzny, 1991). A pilot test of the telephone survey was conducted at random to 40 medical and surgical patients who had agreed upon discharge to participate in the evaluation of this tool. Patients were contacted two weeks following discharge. Following the pilot test the questionnaire was modified to incorporate recommendations from patients.

The structured telephone interview with patients two weeks following discharge provided data on readmission, reutilization of health care services, complications related to surgery, and patient opinion. Readmission was defined as admission within a 2-week period for any complication related to the procedure. Reutilization of services included frequency of patient visits to doctors or clinics (other than a regularly scheduled appointment), utilization of emergency services, and patient contacts with a nurse or pharmacist.

Complications related to surgery were inclusive of wound sepsis, pulmonary atelectasis, urinary obstruction, and medication reaction. Patients were questioned with respect to assistance from relatives or friends and asked whether they required access to community services. Pain control was assessed by questioning the adequacy of the analgesic prescribed.

Patients were asked to rate the level of satisfaction with care received, whether they had enough information to look after themselves at home, if the information provided was understood, if they were aware of anticipated length of hospitalization, and whether hospital length of stay was appropriate. The survey instrument included an open-ended question offering patients an opportunity to indicate concerns or comments associated with care in hospital or experience at home.

Data were collected on 141 patients receiving traditional care, over a 5 month period. During this same time period, a steering committee of clinical leaders from medicine, nursing, professional support services, education, and quality management participated in developing a managed care approach adapting the model from the Case Management Center at the New England Medical Center (Zander, 1988).

The managed care program was implemented over 4 months beginning with educational sessions for multidisciplinary health care providers. Clinical practice guidelines were developed for the management of inguinal herniorrhaphy, taking into account recommended LOS, medications, IV fluids, and discharge planning. Guidelines were developed collaboratively with a multidisciplinary group which included surgeons and nurses who consulted more widely with their peers. As well, an adhoc committee consisting of representatives from general surgery, orthopaedics, anaesthesiology, laboratory medicine and internal medicine developed guidelines for preoperative bloodwork for these and other elective surgical patients (Appendix C). Continuing education was provided for all staff. Upon completion of implementation of the caremap the same data were collected on 117 patients cared for using the caremap (Appendix D). This data collection was collected over a 4 month period.

Ethics approval was granted by the Investigational

Review Committee at the Royal Alexandra Hospitals and the University of Alberta. Data was edited and a sample of randomly selected cases was conducted to verify the data. Comparisons between groups for length of stay was done using a t-test as well as an analysis of covariance when a covariate was found that significantly distinguished the two groups. Additional comparisons for continuous variables were analyzed by t-tests and for discrete variables by chi-square tests. Level of significance used was .01.

RESULTS

Prior to the implementation of MC, 154 patients undergoing inguinal herniorrhaphy were available for the study. Six were excluded because they were emergency admissions, and 7 were excluded because of additional unrelated procedures, leaving 141 for comparison with the MC group.

Four months were used to undertake the caremap formulation, education, and implementation process. Upon completion, 117 patients were available for study. Four were excluded because of emergency admission, and 3 were excluded because of additional unrelated surgery, leaving 110 MC patients.

Characteristics of both groups (Table 1) are compared with respect to age, gender and type of procedure. The procedure time was significantly lower in the MC group.

Length of stay

There was a significant difference in mean LOS from 1.63 days for the T group (SD=4.2) to 0.57 days in the MC group (SD=1). Variation in LOS by surgeon in the T group did not occur in the MC group (Figure 1). In the T group, patients were equally likely to be discharged on Day 0, 1 or 2. In the MC group there was a marked shift towards earlier discharge (Figure 2).

Laboratory Utilization

There was a statistically significant difference ($p<.01$) in laboratory testing. There was a significant reduction in the MC group, in particular, the number of CBCs performed. Frequency of other testing was low (Table 2).

Patient Survey

Two weeks post discharge 75% (n=105) of T patients were contacted and 80% (n = 88) of those receiving MC. Reasons for non response were: no consent (T=12, MC=10), unwillingness to participate (T=3, MC=1), unable to be contacted after 3 attempts (T=7, MC=5), unable to communicate due to language barriers (T=9, MC=2) and incorrect contact information (T=4, MC=3). Non respondents were not significantly different from respondents when compared on demographic and clinical characteristics.

In the T group (Table 3), one readmitted patient returned to the operating room for a revision of the herniorrhaphy and stayed in hospital 5 days following

surgery. Another patient was seen in Emergency on 3 different occasions for urinary retention, admitted after the third emergency visit and underwent a transurethral prostatectomy. Two other patients were admitted overnight for observation with abdominal pain and discharged the following day. In the MC group one patient was readmitted for 5 days with a diagnosis of post-op ileus. A second admission was a handicapped patient who was transferred to a rural hospital where he stayed for 10 days because the family felt he required additional care that was not available in their community. Patients stated they revisited a physician's office for reassurance in relation to operative site swelling, bruising or pain. Patients attending the emergency department for urinary retention were catheterized and sent home.

Patient satisfaction

There was a significant difference between the T (84%) and the MC (41%) in the perception that length of hospital stay was adequate (Table 4). In the MC group, 59% of patients said they would have preferred to stay in hospital an additional day. The most common reason was concern that something adverse might happen. There was no relationship between the number of days a patient stayed in hospital and satisfaction with LOS. Patients in hospital for more than one day did not necessarily feel the LOS was satisfactory.

There was also a significant difference in favor of

traditional care in patients managing without assistance once at home. The most common reason cited for requiring assistance was limited mobility. There was no significant correlation between age and assistance required. Patients stated that being discharged put the burden of responsibility on family members and as a result, caregivers had to take additional time off work. Patients stated that if it had not been for the assistance from relatives or friends they would not have been able to manage at home and would have had to return to hospital. Patients in both groups were satisfied with the nursing care they received while in hospital and felt they were given sufficient information for self care at home. Patients were aware of when they would be discharged and stated that the prescribed analgesic was effective.

DISCUSSION

The literature on hospital-based managed care is mainly anecdotal. Research articles focus on financial outcomes or demonstration projects and do not attempt to evaluate patient outcomes beyond acute care (Capuano, 1995; Cohen, 1991; Collard, Bergman, & Henderson, 1990; DeWoody & Price, 1994; Flynn & Kilgallen, 1993; Fox, Ehreth, & Issel, 1994; Latini & Foote, 1992; McIntosh, 1987; Mckenzie, Torkelson, & Holt, 1989; Ogilvie-Harris, Botsford, & Hawker, 1993; Rudisill, Phillips, & Payne, 1994, Shikiar & Warner, 1994; Turley, Tyndall, Roge, Cooper, Turley, Applebaum, & Tarnoff,

1994; Vautier & Carey, 1994; Warrick, Christianson, Williams, & Netting, 1990). Other research articles report on populations at highest risk for adverse outcomes showing little impact on quality or cost (Davidson, Penrod, Kanc, Moscoivice, & Rich, 1991; Franklin, Solovitz, Mason, Clemons, & Miller, 1987; Hofmann, 1993; Hornstra, Bruce-Wolfe, Sagduya, & Riffle, 1993; Jerrell & Hu, 1989; Trella, 1993).

Despite the history of hospital-based care in the USA, the limited number of research studies that has been documented suggests a need to assess this approach to patient care to ensure appropriateness and cost effectiveness within and beyond acute care. It has been suggested that evaluation on a small scale before broad implementation is critical because of the significant changes MC creates in organizational relations (Sheps, Anderson, & Cardiff, 1991).

There is mounting evidence that some diagnostic and therapeutic activities are being performed with little or no proof of their efficacy (Axt-Adam, Van der Wouden, & Van der Does, 1993; Eisenberg, 1986; Feldman, 1993). Eliminating inappropriate care is fundamental to cutting costs and reducing unnecessary use of health care resources.

Based on a retrospective chart audit completed at the study hospital, a low severity patient sample was identified in which there was significant variation in length of stay,

medication profiles, and laboratory utilization. Wide variation in patterns of practice may, in part, be due to underservice or variation in illness rate (Wennburg, 1987). A greater part of the variation occurs because physicians may lack standard clinical approaches to treatment of certain diseases and injuries, and so development and implementation of clinical practice guidelines is based on the assumption that dissemination of guidelines will result in improved quality of care by reducing variation (AMA, 1992). Such guidelines have potential to assist clinicians toward standardized, clinically optimal, cost-effective strategies and could provide a foundation to determine appropriate care (AMA, 1992). However, an evaluation of the effect of practice guidelines developed by a national medical specialty association found no measurable change in the actual practice patterns of practitioners and researchers concluded that practice guidelines should only be developed in conjunction with participating physicians (Lomas, Anderson, Domnick-Pierre, Vayda, Enkin, & Hannah, 1989). Other authors (Chassin, Kosecoff, Park, Winslow, & Kahn, 1987; Eisenberg, 1986; Luft, Garnick, Mark, & McPhee, 1990) have noted that such approaches tend to have a temporary effect in reducing utilization. Some clinical practice guidelines are, moreover, limited in that the focus is solely on individual physician performance. To be most effective, guidelines and the process for adopting them,

must be integrated with all other components of ongoing clinical processes (Brook, 1989; Hegyvary, 1991; Kibbe, Kaluzny, & McLaughlin, 1994; Payne, 1987). As quality monitoring and variance tracking are an integral part of a comprehensive managed care program with the focus on multidisciplinary review, the managed care program in this study was an effective method to monitor patient progress. The caremap employed linked relevant clinical practice guidelines to all other components of ongoing clinical processes and served as a tool for integrating practice guidelines with efforts to reduce variation in delivery and outputs of care in herniorrhaphy patients.

Initial resistance was voiced by physicians who felt this would interfere with professional autonomy in patient care. Physicians who became involved in planning and implementing MC worked with their colleagues to gain acceptance, which was critical to the success of the program.

One contemporary trend in hospitalization is shortening of the average LOS making it likely patients are being discharged at a stage of recovery that requires more home care than in the past. Because patients may be discharged from hospital before their needs for intervention have been met, ongoing patient care problems following discharge should be monitored. Although there was a significant decrease in LOS in the MC group this did not necessarily

demonstrate that quality of care had been provided. This aspect could only be assessed through the measurement of patient outcomes following discharge.

The cost of clinical laboratory tests in Canada is estimated to be about 9% of all health care expenditures (Church, 1994). There was a significant decrease in laboratory utilization in this study of managed care. Moreover, there was no significant difference in readmission, reutilization, or complications. Regardless of the model utilized for the delivery of patient care, patients are utilizing health care services post discharge. The failure to show significant differences between traditional care and MC in readmission, reutilization of health care services, or complications may have been a function of the sample chosen in that patients were elective and low severity. Most research on post discharge focuses on chronically ill and/or elderly patients whose overall health status is likely to be lower than those in this study, thus their potential for complications would reflect poorer health status. Additionally, the treatment regimen for the chronically ill and elderly would typically be more rigorous and difficult to follow, influencing utilization of services. Should this research be replicated with such a population results might be quite different. Another explanation may be that the customary discharge planning program at the hospital was adequate in meeting patient

needs and post discharge intervention was unnecessary to effect a change in utilization. This explanation seems plausible in that patients perceived themselves having sufficient information to care for themselves at home and understood the discharge instructions. The managed care program that was introduced in this study built upon existing discharge planning procedures at the study hospital. These procedures were altered with the managed care program by addressing preadmission activities with teaching beginning in physicians' offices, thus strengthening the entire discharge planning process. In the managed care program, hospital nurses called patients the next day at home as part of an ongoing quality improvement initiative and provided additional teaching and counselling. Perhaps patient teaching was not of sufficient intensity or duration to generate differences between groups.

Patient satisfaction is an important measure of program effectiveness and is compatible with continuous quality improvement. Patient satisfaction has been identified as an outcome and represents evaluation of perceptions about the care received (Jennings, 1991; Lang & Marek, 1991; Lohr, 1988). The managed care group required more assistance at home and patients stated they would have liked to stay in hospital longer, as some patients had difficulty mobilizing themselves at home. Despite the shift towards earlier discharge, managed care patients were satisfied with the

care received and felt they were given sufficient information to look after themselves at home. It is to be emphazied, however, that a majority (59%) would have preferred to stay in hospital longer. There was no relationship between length of stay and satisfaction with care.

CONCLUSION

Survival of innovative patient care delivery models rests on clear and convincing demonstration of quality and cost effectiveness. Numerous hospitals have implemented models of managed care, but with limited evaluation of their impact on patient outcomes (Lamb, Deber, Naylor & Hastings, 1990).

Attention to LOS of hospitalized patients has become imperative as it is a major indicator of a hospital's financial performance. As hospitals attempt to determine the benchmark for LOS within specific diagnostic groups, it is critical to evaluate performance indicators such as readmission and reutilization of health care services, complications post discharge, and patient satisfaction, in order to claim that quality has been maintained or improved.

The managed care program provided a framework to enable the throughput of a low severity, high volume sample of patients, in an acute care environment, while maintaining quality.

Dissemination of guidelines and education alone are not

sufficient for changing behaviour and affecting quality of care. The managed care program provides for integration of clinical practice guidelines into the ongoing activities of clinical practice. The caremap serves as a tool for integrating practice guidelines, with efforts to reduce variations in the outputs of the care process. Caremaps and caremap analysis offer promise of providing a framework to assist in ongoing evaluation of patient care. Further research is necessary to determine which patient populations are most likely to benefit from managed care interventions, and fulfil the promise of improving health status.

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Table 1

Characteristics of Patients by Group

	T (n=141)	MC(n=110)	Prob
Sex (M/F)	128/13	100/10	NS
Age(years-X±SD)	56.5 ± 16.7	53.5 ± 15.0	NS
Duration of Procedure (X±SD)	67.7 ± 36	57.5 ± 32	<.01
Pre-op days (SD)	.14 ± .35	.02 ± .16	<.01
Procedure - inguinal hernia - bilateral hernia	 129 12	 102 8	NS
Surgeons	16	16	

Legend: T = Traditional treatment MC = Managed Care

Figure 1. Length of Stay by Group

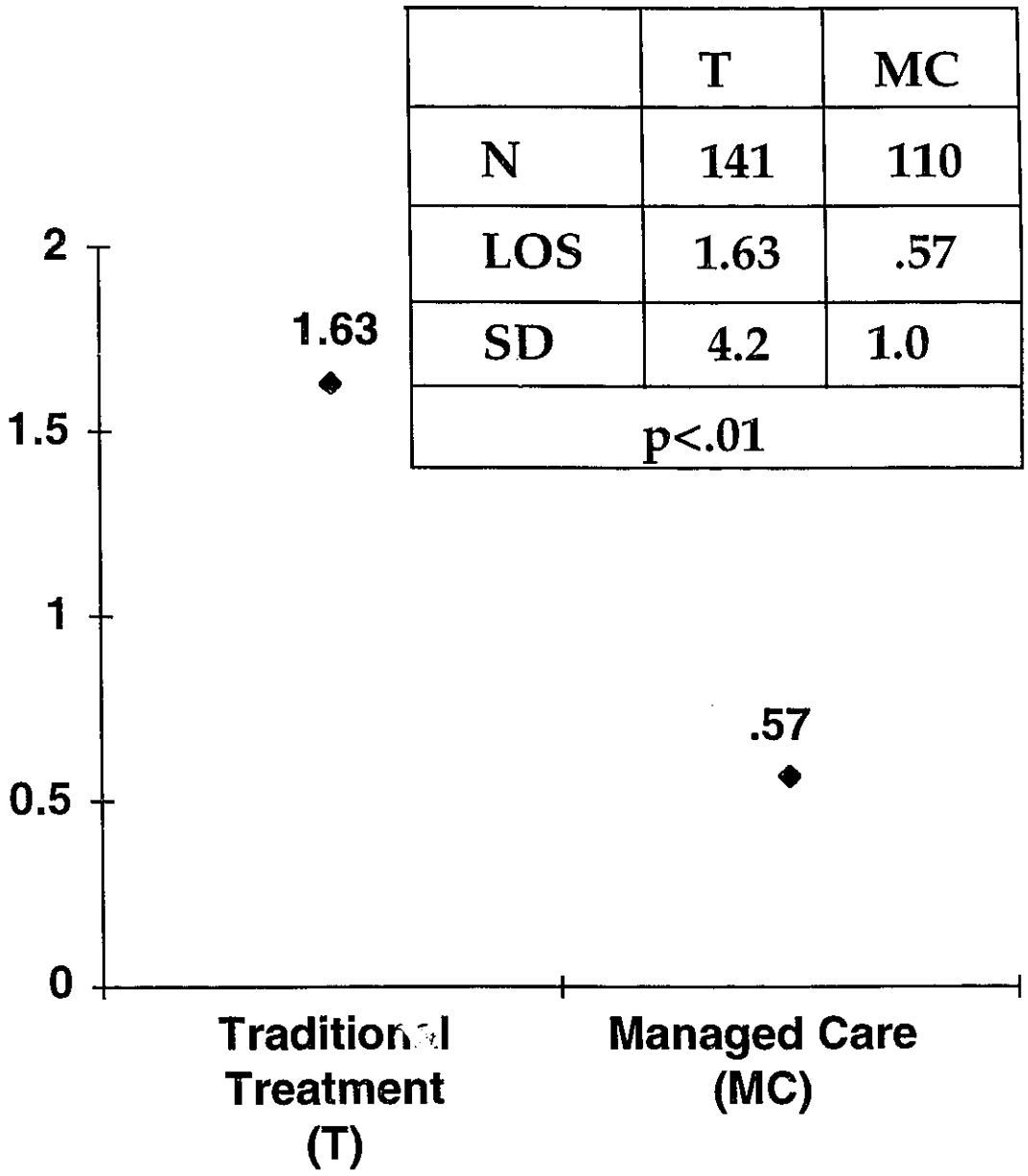

Figure 2. Patients discharged by day by group (%)

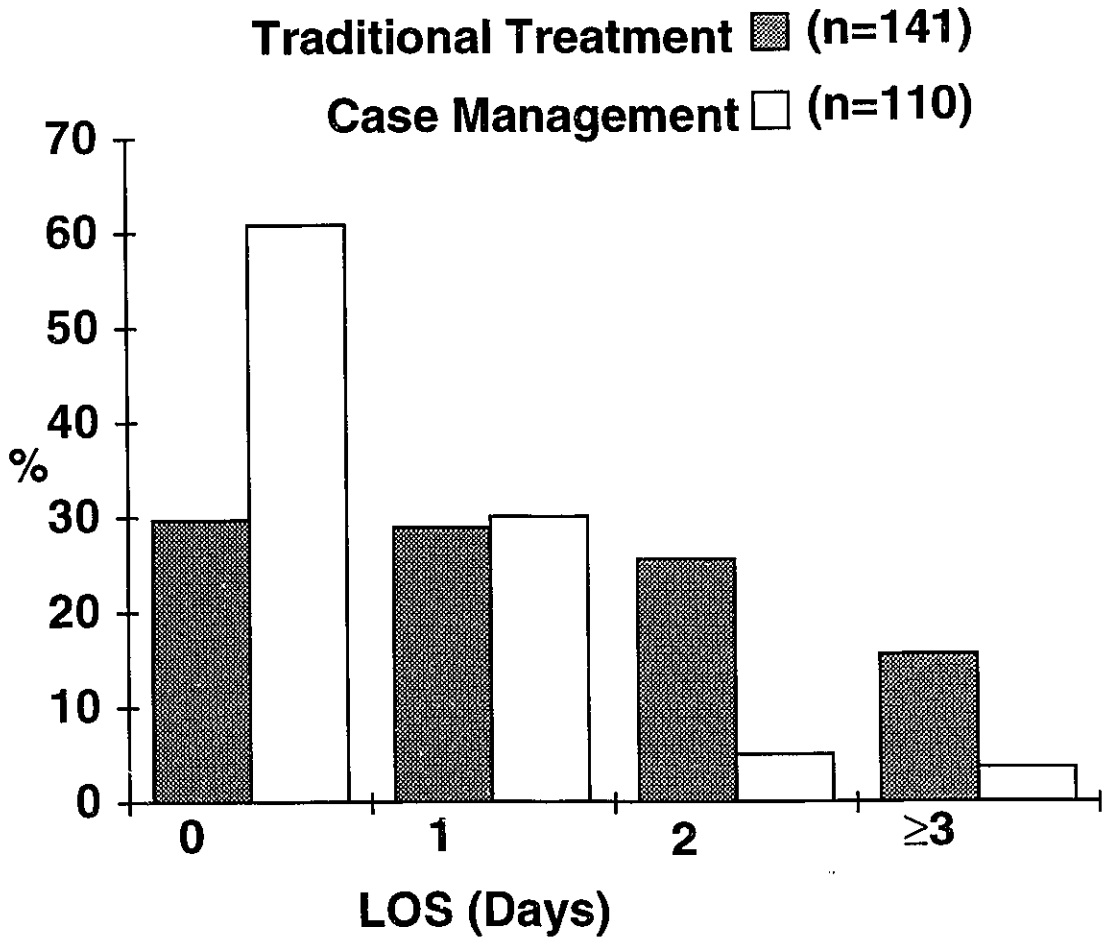

Table 2

Laboratory tests by Group

	T % n =141	MC % n = 110	Prob
CBC	86.0%	28.2%	<.01
Urinalysis	7.1%	3.6%	NS
Electrolytes	29.1%	8.2%	NS
Other	37.6%	24.5%	NS

Legend: T = Traditional treatment MC = Managed Care

Table 3

Reutilization of Health Care Services

Readmission	T	MC
* post-op ileus	1	1
* post op pain	1	0
* post-op bleed	1	0
* urinary retention	1	0
Visited physician other than regular check-up		
* swelling and or bruising at the incision	10	8
* temperature	1	1
* wound infection	3	2
* staple reaction	1	1
Emergency visits		
* urinary retention	1	3
* post-op pain	1	1
* heartburn	1	0

Legend: T = Traditional treatment MC = Managed Care

Table 4

Patient Opinion Survey

Patient opinion survey	T %	MC %	Prob
Length of time in hospital was long enough	84	41	<.01
Required assistance at home	13	48	<.01
Satisfied with nursing care	96	98	NS
Know how to care for self at home	94	95	NS
Required more information on how to care for self	11	7	NS
Knew when they would be discharged	88	100	NS
Understood information and discharge instructions	98	96	NS
Pain adequately controlled at home	94	93	NS

Legend: T = Traditional treatment MC = Managed Care

Chapter 3

Summary

The primary purpose of this study was to determine the effects of a managed care program on selected outcomes of surgical patients. The study focused on comparison of traditional versus managed care of patients for which preliminary studies showed a high proportion of long-stay outliers and marked intra-group variation.

The relevance of this study for the health care delivery system is apparent from two perspectives. First, as efforts to reform health care accelerate, there has been an impetus to seek more cost-effective means to deliver services, while maintaining or even increasing quality of care. This focus on quality emphasizes the need to develop strategies to assess outcomes of care.

Second, a major impact of alternate funding mechanisms in general, and the acute care funding payment scheme in Alberta in particular, has been a compression in length of stay for hospitalized patients. This makes it quite likely that patients will be discharged at a stage requiring more care than in the past. In published success stories of implementation of managed care programs in the United States, insufficient attention is paid to the effects of these programs on patients health and well-being after discharge. A proper assessment of the need for, and the effectiveness of, post discharge follow-up remains

imperative.

This study served to determine post discharge effects on patients of a managed care approach to patient care in which length of hospital stay was significantly reduced. This is important in providing evidence upon which to base future practice decisions. The limited number of studies on follow-up care suggest a need to evaluate whether these findings can be replicated on other low severity case types and with more heterogeneous and complex patient groups. Additionally, research is needed to evaluate the impact on caregivers in the hospital and home.

Assumptions and Limitations

A limitation of evaluative research is that investigators work in a continually changing environment (Rossi & Freeman, 1989). Priorities and responsibilities of the organization may change and unanticipated problems with delivering the service may require modification of the program and consequently the outcome measures being evaluated. Such an external environmental effect occurred during this study as a function of a hospital merger. The resultant effect was that numerous staff changes occurred on the patient care unit where the study was undertaken. This necessitated ongoing education for staff. As well, with the consolidation of surgical services to one site, a reduction of 95 beds was realized (E. Hall, personal communication, January, 1995).

In the MC group 60% of patients were discharged on the day of surgery making it difficult to administer the patient satisfaction survey, however, patient satisfaction was captured in a telephone interview with patients two weeks following discharge.

The ideal study would randomize patients to either traditional care or managed care groups. This was not possible given the geographic location and common administration of the hospital-based program. Constructing such a control group from another site would have introduced different variables in corporate philosophies, physician practice patterns, and nursing practice patterns. Limiting the timeframe in which definitive information can be gained rapidly strengthens the design because it decreases the possibility of other influences (Veney & Kaluzny, 1991). External generalizability of these results should be made with caution. Interpretation is limited to populations similar to the sample within similar hospitals.

Recognition by the surgeons that they were participating in a study may, by itself have had an effect on LOS. Such recognition or sensitivity, is referred to as the Hawthorne effect (Veney & Kaluzny, 1991). It is recommended that measurements be repeated in one year to evaluate sustainability of these results. It is also possible that surgeons who had patients that were outliers with respect to LOS regressed to the mean when provided with

this information. Without a control group in a pretest-posttest design, there is no way to assess this source of error (Veney & Kaluzny, 1991). Another possible explanation for the reduced LOS could be the reduction of surgical beds on the service following the hospital merger. In reviewing other patient profiles of low severity case types during this timeframe, there were some reductions in length of stay, however not as significant as in the herniorrhaphy patient group. A further analysis of herniorrhaphy completed from September 1 to December 30, 1994, 4 months after the completion of this study indicated length of stay continued to decline with the average being .32 days. A plausible explanation for this could be the feedback provided to clinical leaders with respect to the results of the study. In addition region wide clinical practice guidelines have now been introduced incorporating further reductions in requirements for laboratory testing. These guidelines will be incorporated into caremaps.

Nursing Implications

As health care funds diminish, demands for accountability of all health care professionals will continue. The nursing profession must continue to demonstrate how nursing care makes a difference and how health care resources are effectively and efficiently utilized by nurses to improve the health status of their patients (Swanson, Albright, Stern, Schaffner, & Costner,

1992).

The profession must also ensure that its knowledge, expertise and research are incorporated appropriately into patient care. Using a managed care approach to patient care promotes the utilization of research-based practice, in which nursing knowledge, generated by research, can be applied in a practical fashion (Zander & McGill, 1994). In the development of a caremap for a specific group of patients, current literature is reviewed for changes in the standard of practice or new patient management methods. Much has been written on barriers to research-based practice in clinical settings. Some of the barriers that have been identified are: dependency on tradition which is difficult to change; interpretations of findings in an unusable form; no provision for necessary resources to conduct research such as time; financial support; and, a tendency to adhere to policy and procedures (Funk, Champagne, Wiese, & Tounquist, 1991). Moreover, as caremaps are developed primarily by direct caregivers, a team may actually consist of experienced health care providers who have had no formal exposure to research utilization. Thus, there needs to be support for health care providers to have access to the best possible knowledge for caremap development.

Clinical nurse specialists could play a vital role in organizations that are implementing a managed care approach to patient care by taking the lead responsibility for

guiding and facilitating caremap development. With their advanced preparation the clinical nurse specialist can promote critical-thinking skills, research-based practice and provide stimulus and motivation to conduct research when sound evidence is lacking (Brubakken, Janssen, & Ruppel, 1994).

Once a caremap has been developed for a similar group of patients, all staff involved in delivering direct care use the caremap. In daily practice the caremap has many advantages for nursing. It emphasizes timeliness of care, multidisciplinary involvement and expected outcomes. By standardizing care and removing unnecessary variation within the traditional system, the caremap provides for efficiencies in nursing workload by diminishing the need to accomodate to individual preferences of attending physicians. Moreover, as nurses begin to use the caremap in daily practice, their practice becomes less task orientated and more outcomes focused. Documentation is based on exceptions from the predefined standards of care and outcomes thereby decreasing the amount of charting required in comparison to traditional narrative charting.

With the changes occurring rapidly in health care, there is concern that consistency and quality of care may be compromised. The caremap serves not only to define and safeguard these but also as an educational and orientation aid, by delineating caregiver responsibility along each

point in the care delivery spectrum. Caremaps also help guide patient and family education in terms of what can be expected from the prehospital, hospital, and posthospital experience. Developing the caremap across the entire episode of care provides links to physicians' offices, preadmission clinics, the hospital, and home care in a collaborative process which clearly delineates each careprovider's role in continuity of care.

The caremap, of course, is not intended to replace nursing judgement, clinical decision making or critical thinking. Patient assessment and modifying the caremap to meet individual patients needs is critical. As primary care givers, nurses have a pivotal role in this process.

Follow up at the RAH

The sample of patients undergoing herniorrhaphy was one of four patient samples being investigated under research protocols. Aggregate results confirm the value of introducing caremaps into a hospital practice for low-severity diagnostic groups. However, this should be done with continuous evaluation of performance indicators such as readmission, reutilization of health care services, complications post discharge and patient satisfaction. At the RAH, 55 caremaps have been selected for development of which 7 are regional and include other hospitals and community health care agencies. A group of multidisciplinary health care providers is currently working on defining

details of when and how to implement caremaps recognizing that managed care is more than designing a caremap. There is a long term commitment to improving clinical processes and to shifting fundamentally in the way patient care is delivered.

Regionalization

There are 212 caremaps targeted for development within the newly formed Capital Health Authority (Region 10) which includes the RAH. This is of concern in view of some of the complex and heterogeneous case types selected for caremap development. As Sheps et al (1991) suggest, evaluations on a small scale are critical before broad implementation because of the significant changes managed care creates in the way patient care is managed. Reliable and valid measurement instruments are needed to assess the impact of treatment interventions on expected outcomes.

Future Direction

Caremaps have changed significantly since their early conception at the New England Medical Center in the 1980s. Despite the lack of sound research justifications, they continue to be promoted as collaborative tools to be used by all members of the health care team throughout the entire episode of care.

The caremap provides an infrastructure for health care providers to learn more about relationships between processes of care and outcomes. Although clinical judgement

remains vital, less variation will be accepted, once specific management parameters are validated by outcome studies and shown to be optimal.

In the future, the format and function of caremaps will continue to evolve as information technology advances. With computerization comes an algorithmic description of patient care, in which key decision points and/or variance from the expected course are the focus (Richards, Kocan, Monaghan, Wintermeyer-Pingel, & Goldman, 1994; Spath, 1994). As patients become more involved in decisions regarding their care, caremaps will be expanded to incorporate more patient choice alternatives. Computerization will also have an impact on the providers' ability to collect and analyze path variances and patient outcome data (Aronow & Coltin, 1993; Dijerome, 1992). It is even likely that future "intelligent" systems will have the capacity to learn from these variances and to modify the caremap appropriately.

To be effective, outcome management requires collection of data across the entire continuum of an episode of care (from preadmission to community care). Not only are outcome measures of mortality and morbidity important, but health care providers have to learn to evaluate behaviourial, physiological and psychological outcomes (Owens & Nease, 1993; Sowell & Meadows, 1994; Williams, Cohen, Basinski, & Llewellyn-Thomas, 1992).

Conclusion

The caremap of today may disappear or change, however, advances made by organizations that successfully implement caremaps will not be lost. The health care team which has learned how to work collaboratively to improve clinical processes of care and has discovered how to use data to measure and improve performance will find itself ahead of those who chose not to initiate caremaps.

In the coming years, the caremap will likely remain a dynamic tool that is in a state of continual flux, as a result of new therapies, advanced technologies, acceptance of new clinical practices guidelines and appropriate outcome studies. Successful caremap implementation will depend on the availability of an adequate information system, that reliably correlate caremap variances with patient outcomes over the continuum of care.

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APPENDIX A

Informed Consent Form

Title of Project: The Effect of Managed Care on Selected Outcomes of Hospitalized Elective Surgical Patients.

Researcher: Debbie Wilson
Graduate Student
Faculty of Nursing
Phone: 477-4429

Supervisor: Dr. Judith Hibberd
Associate Professor
Faculty of Nursing
Phone: 492-6399

Purpose: The purpose of this study is to evaluate the care you received while you were a patient. The long term goal is to develop better patient care programs which may help patients after surgery.

Procedure: If you agree to participate you will be interviewed by telephone 2 weeks after discharge by a nurse for about 15 minutes.

Participation: There will be no harm to you if you participate in this study. You will not benefit directly from this study. Results from this study may help health care providers develop better patient care programs.
Your name will not appear in the study. Only a code number will be used on the question sheets. All information you give will be kept in a locked cabinet and destroyed after seven years.
Information in this study may be reported on, but your name or any material that may identify you will not be used.If you have any questions about this study at any time, you can call the Debbie Wilson 477-4429.

Consent: The above research procedures have been told to me and all my questions have been answered. I understand that I may contact the researcher named above, if I have any questions to ask at any time. I understand I do not have to agree to be in the study. I understand the possible benefits of being a part of the study. I understand there are no risks or discomforts. I have been assured that all question sheets will be kept confidential. I understand that I am free to withdraw from the study at any time by letting the researcher know. I understand that if I do not participate in the study, my nursing care will not be affected. I have been given a copy of this form to keep.

Date _____ Signature of Participant _____

Date _____ Signature of Witness _____

APPENDIX B

Effect of Follow-up Care on Patient Outcome

Telephone Interview

I. READMISSION/REUTILIZATION

1. Have you been re-hospitalized since you have been discharged?

____ No (skip to question 4)

____ Yes: How many times? _____

For what reasons? _____

2. Which hospital(s) did you go to? (Check one.)

____ Royal Alexandra Hospital

____ Other(s) (Please Name)_____

3. If you have been back in the hospital, did you have an operation?

____ No

____ Yes: What procedures? _____

4. Not counting hospitalization, how many times since discharge did you:

a. visit a doctor, clinic or nurse____ times

b. telephone a doctor's office or clinic____ times

c. call the hospital to speak to a nurse____ times

d. visit an emergency room____ times

e. consult a druggist about your pills____ times

5. Is anyone else living in your household?

_____

6. Have you needed help with your care from people who live in your household?

____ No ____ Yes

7. Have you needed help with your care from people outside your household?

____ No _____ Yes

8. If yes to question 7 or 8, who helped you with your care? (Check all that apply.)

____ Relative ____ Health Care Professional

____ Friend ____ Could not find help

9. Have there been health care or other community services that you needed that were not provided?

____ No (skip next question) ____ Yes

10. If yes to question 9, what kind of services would have been helpful?

II. COMPLICATIONS

1. Did you experience any complications or problems following surgery? Please check all that apply.

_____ Wound infection
_____ Pneumonia
_____ Bleeding from wound
_____ Other infection, related to hospitalization
_____ Urinary difficulties
_____ Blood clots
_____ Reaction to medications
_____ Constipation/Diarrhea
_____ Other

Reflecting back on your hospital stay, circle the answer that best represents your experience.

1. Overall, I was satisfied with the nursing care.

1	2	3	4
strongly agree	moderately agree	moderately disagree	strongly disagree

2. I was told what to do to care for myself at home.

1 2 3 4

3. I would have liked more information about what I should have done when I got home.

1 2 3 4

4. The nurses explained things in language I could understand.

   1 2 3 4

5. I was told on admission when I would probably be going home.

   1 2 3 4

6. The length of time I was in the hospital was appropriate.

   1 2 3 4

IV. Do you have any other comments you would like to make?

APPENDIX C

Clinical Practice Guidelines
for Preoperative Bloodwork for Elective Surgical Patients

Section concerning laboratory testing from RAH Policy on Admission of Patients to Surgical Suite.

5. Physicians should continue to use discretion in ordering preoperative laboratory and diagnostic tests. The following are minimum requirements:

A. Hemoglobin is required on:
- all females with a history of menorrhagia or over the age of 50.
- all neonates (<1 year of age).
- men over 50 years of age.
- all patients where blood loss is anticipated to be greater than 10% of blood volume.
- all patients with a history of renal disease, bleeding disorder, anticoagulant use, cancer or chronic disease states (such as inflammatory bowel disease, rheumatoid arthritis).

B. Serum Sodium, Potassium, BUN & Creatinine
- any patient taking diuretics, lanoxin or steroids
- all patients with a history of renal disease or diabetes.
- any cancer patient

C. Type & Screen is required:
- if blood loss is anticipated to be greater than 10% of blood volume.

D. Crossmatch is required:
- as determined by the surgeon's orders.

E. PT PTT is required on:
- all patients taking anticoagulants.
- patients with liver disease.
- patients with bleeding disorders.

APPENDIX D

Herniorrhaphy Care Map

	Pre-hospital / Physician's Office	PAC / Unit (same day admission)	OR
Assessment / Monitoring	• Determine appropriateness for Pre-Admission Clinic • Physicians History and Physical • Assess for Home Care • Assess the need for medication prior to surgery	• Anaesthesia History and Physical in PAC, if required • VS ***VS WITHIN NORMAL LIMITS***	Receiving Area / OR • Confirmation of documentation required ***CHART IS COMPLETE*** ***PATIENT VERBALIZES UNDERSTANDING OF SURGERY***
Consults	• Identify consults required. Refer to guidelines for elective surgical pts. ***COMORBIDITIES ADDRESSED***	• PRN	• PRN
Tests / Diagnostics	• Refer to clinical practice guidelines ***ALL DIAGNOSTICS COMPLETED PRIOR TO ADMISSION***		• PRN
Interventions	• Physician to complete Pre-operative Orders	• Start IV with maxidrip tubing 0.9 N/S at 100cc / hr unless other ordered ***PRE-OP PREP COMPLETE***	Receiving Area • Maintain O_2 / I.V.s • Inform & support family members OR Theatre • Transfer to OR Theatre • Appropriate monitors per pt need • Anaesthesia (1) General; (2) Regional (3) Local • Routine positioning for procedure • Each Care Map to be specific for procedure • Foley cath (if necessary) • Surg. prep (if necessary) • Drsg. over incision and drain sites • Transfer to PACU ***SURGERY COMPLETED***
Medications	• Reinforce taking medication at home prior to admission if applicable	• Medications	
Nutrition	• Reinforce NPO as per established guidelines	• NPO after midnight	
Activity		• AAT • Self Care • To O.R.	
Teaching / Discharge	Physician's Office • Review Care Map • Review patient teaching material • Review discharge time ***PATIENT ASSESSED, INFORMED, EVALUATED, AND TAUGHT, REGARDING SURGERY***	• Teaching Reinforced ***PT/FAMILY VERBALIZE UNDERSTANDING OF PLAN-OF-CARE***	
Pt / Family Responsibility	***PT/FAMILY VERBALIZES UNDERSTANDING OF PLAN-OF-CARE.*** ***COMPLETE HEALTH-HISTORY FORM***	• Arrangements for transportation home	

	PACU	Post-op (> 24 hours)	Home
Assessment / Monitoring	A - Airway, B - Breathing, C - Circulation • Vital Signs: on arrival; 10 min; and pm • Oximetry • Dressing, drainage • Pain level • Level of consciousness • Intake and output • Spinal level PRN	• Routine post-op vs standards • Oximetry PRN • Intake / output • Operative site check ***VS WITHIN NORMAL LIMITS*** ***OXYGEN SATURATION > 90%***	Pt contacted within 24 hours post-discharge, if okay
Consults	• PRN	• Appropriate discipline to assess	
Tests / Diagnostics	• PRN		
Interventions	• Maintain O_2 at 4-6 L / min / nasalcannula • Extubation PRN • Temp control • I.V. as ordered • Operative site dressing and drain care PRN • Initiate PCA if ordered • Discharge by Nurse per criteria	• Post-op sponge as needed • Operative site care as needed • O_2 PRN ***DRESSING DRY AND INTACT***	
Medications	Analgesic, other meds as ordered	• IV as ordered: D/C when tolerating fluids • Analgesia and antiemetic as ordered • Other Meds as ordered ***PATIENT VERBALIZES THAT:*** ***• PAIN IS CONTROLLED*** ***• NAUSEA IS CONTROLLED***	
Nutrition	• NPO	• Clear fluids to DAT ***PATIENT WILL MAINTAIN HYDRATION AND NUTRITION***	
Activity	• Bed rest • Deep breathing and coughing	• Deep breathing with coughing q 1 hr • AAT ***UP WITH MINIMAL ASSISTANCE***	
Teaching / Discharge	• Orient to surroundings • PCA teaching • Deep breathing and coughing ***PATIENT DISCHARGED TO UNIT IN AWAKE, STABLE CONDITION***	• Reinforce post-op teaching Instructions: Prescription Discharge instructions Follow-up appointment Valuables returned	Follow-up arrangements with health care providers reinforced * *Standard physician orders for hemiorraphy patients accompany the Care map. The Care map does not replace physician orders.*
Pt / Family Responsibility		• Patient /family will make appointment for follow-up visit with surgeon or GP ***DISCHARGE CRITERIA*** ***ALL POST-OP OUTCOMES MET***	

APPENDIX E

Literature Review

Introduction

The purpose of the literature review is to examine the development of managed care and related strategies for integrating and improving health and patient care delivery services/programs while controlling costs. This appendix, therefore, contains a review of the literature, both descriptive (anecdotal) and research related to managed care, case management, utilization management, and clinical practice guidelines. The chapter concludes with a review of issues related to outcome measures.

The literature search was limited to a 9 year period from 1985 to September, 1994, spanning the duration of "the New England Model" of managed care. Health planning and Administration Med-Line searches were utilized under the key words case management, caremaps, critical paths, and managed care. The search produced 771 relevant abstracts. Based on a review of these abstracts, it becomes evident the term managed care is used in various ways.

Managed care is a recent and rapidly evolving field with many acute care institutions implementing this approach to patient care, however, the majority of literature remains anecdotal, a limitation of this literature. The manner in which managed care is operationally defined, presents both conceptual and methodological issues to the reader. The

further development of a body of knowledge around managed care is essential to be able to evaluate this approach to patient care.

Managed Care Programs

The terminology of managed care has generated much confusion among health care professionals in Canada and has been described as an evolving philosophy that has emerged over time (Lamb, Deber, Naylor, & Hastings, 1991). In its broader context, managed care is defined as organizing and integrating the delivery of patient care including many programs designed to control health care costs. Generally, these efforts fall into the rubric of "managed care" programs.

Managed care originated in the United States and the concept can be traced back to Bodenheuer's work in the 1960s. Originally, managed care referred to the standard of care provided by Health Maintenance Organizations (HMO), however, recently it has expanded to include Preferred Provider Organizations (PPO), competitive medical plans and other alternate delivery system models (American Hospital Association, 1992; Lamb, et al, 1991). Typically, in a managed care system, members are assigned a primary care physician who meets most of their medical needs, while arranging referrals to specialists and requiring preauthorization for hospital care and other services. Through this system, the care of patients is carefully

planned and monitored. An HMO is an organization which offers patients a health plan with a defined set of benefits for monthly or annual fees often with copayments or deductibles that vary from HMO to HMO. PPOs, on the other hand, are described as individual organizational structures that develop and coordinate contracts among providers (Physicians and Institutions) and between providers and patients. Thus, in the United States managed care has been described as an alternate delivery and financing system that integrates a financing mechanism, utilization management and high quality service delivery (Schroer & Penn, 1987). Kongstvedt (1989) described managed care as an organized system responsible for the financing and delivery of a broad range of comprehensive health services to an enrolled population for a prepaid, fixed fee. Schneller (1991) refers to managed care as a strategy that establishes a relationship between patients and health care providers and evaluates, plans and authorizes utilization prior to, concurrent with, and following the provision of health care. Leisure (1988) describes managed care as a concept of utilization review, case management, second surgical opinion and precertification.

In Ontario, Health Service Organizations (HSO) exist but they provide medical services to a voluntary registered group of patients (O'Neill, Johnston, Barch, Awad, Menzies, & Moors, 1993). The services are financed on a capitation

basis by the Ministry of Health under a contractual agreement. This system differs from those in the United States in that patients may go to other health care facilities for treatment without financial penalty (Abelson & Birch, 1993; Lamb, et al, 1991; Meeks, 1993).

Comprehensive Health Organization (CHO) is another alternate delivery system being implemented in Ontario. It is a nonprofit corporation that provides or purchases a more comprehensive range of health services for its members than an HSO. The CHO closely resembles the HMOs in the United States (Lamb, et al, 1991; Meeks,1993).

The common attributes in these models reflect strategies aimed at procedures, organizations, and individuals (other than physicians) involved with planning and monitoring health costs through case management, utilization review, and gatekeeping. Case management will be described in more detail.

Case Management Model

Case management has evolved as one method to accomplish managed care strategies (Goode & Blegen, 1993; Hampton, 1993; Leisure, 1988; Lumsdon & Hagland, 1993; Petryshen & Petryshen, 1992; Trella, 1993; Weilitz & Potter, 1993; Weisman, 1987; Zander, 1988a). The essence of case management has been described as a strategy that establishes a relationship between patients and health care providers so that specific patient outcomes can be achieved thereby

ensuring cost effective, resource efficient quality care (Bell, Edelman & Zeelley, 1990; Collard, Bergman & Henderson, 1990; Dezell, Comeau & Zander, 1987; Etheredge, 1989; Hagin, 1989; Zander,1988a). Within the case management model there are two distinct approaches: managed care and case management.

Managed Care

In 1985, managed care was pioneered at the New England Medical Center through the use of a case management model (Zander,1988a). Zander (1988a) and Etheredge (1989) claim managed care is the organization of unit-based care so that specific patient outcomes can be achieved within appropriate timeframes and with appropriate use of resources. The term unit refers to the geographic area in which the patient receives care and can include inpatient, ambulatory or emergency departments. In the managed care approach, clinicians establish expected outcomes, timeframes and resources by case type before patients are admitted into the health care system. This information is then shared with patients and families before hospitalization or upon admission.

The first step in implementing and evaluating managed care is to identify case types which are characterized as high volume, high cost and/or high risk as these are most suited to a managed care approach (Dunn, 1990; Etheredge, 1989; Zander, 1988a, 1988b, 1988c). Baseline information

includes length of stay; the number of patients that exceed the average length of stay; patient, family and practitioner satisfaction; and case costing to provide a foundation for pre- and post-implementation (Zander, 1992).

The second step is to identify the health care workers who are most familiar with the target case types. Once the multi-disciplinary team members have been identified, they outline the timeframes within which care will proceed focusing on expected outcomes of care. Multidisciplinary processes or activities necessary to move the patient toward the outcomes and intermediate goals are identified.

The resulting information is formatted into tools known as case management plans (CMP) and critical paths. CMPs were first developed at the New England Medical Center Hospitals to "define the business of nursing as the essential link between tasks and clinical outcomes" (Dezell et al, 1987, p. 4). They provided both descriptive and prescriptive standards of practice and replaced traditional care plans. Since its conception, the "New England Model" has evolved from a professional nursing model to a multidisciplinary one (Zander 1992). Critical pathways, variance analysis, and collaborative practice groups are becoming the foundation of comprehensive, patient-centred, outcome driven clinical systems in acute care hospitals (Zander, 1992).

Collaborative practice has been defined as "a joint intellectual effort which involves shared planning, decision

making, problem solving, goal setting, and assumption of responsibility; working together cooperatively; coordination of patient care services; and open communication" (Baggs & Schmitt, 1988, p. 145). Collaboration between medical, nursing and other health care professionals is essential if a true collaborative practice is to exist (Zander, 1992). Ideally, all members of the collaborative case management team regard each other as equal partners. Agreement about the expected clinical outcomes of intervention are essential in a collaborative practice model (Lang, & Marek, 1991; Zander, 1992). According to these authors, it is critical to develop open communication, cooperation, respect and trust for each other to promote collaborative practice. Etheredge (1989) notes that nurses are the prime users of caremaps despite their development by multidisciplinary teams. Zander (1992) states that for true collaborative practice to exist, determination must be made as to which discipline has the authority to validate the outcomes on the caremap. Zander (1992) suggests that documentation of caremap tools has the potential for replacing progress notes for all disciplines. When variance occurs, the discipline considered best qualified to evaluate the outcome is expected to write the progress note.

As patients are admitted, the caremap developed for that particular diagnosis or procedure is selected by the nurse. This is then modified collaboratively through a

review by the multidisciplinary team. As the patient's care proceeds, actual care is compared with the expected plan of care several times a day. This results in the identification of variance between expected care and actual care. Variance occurs when the patient's care or progress does not meet the standard or expected care. As a result of this attention to planned and actual care, there is often sufficient time to reverse negative variance effectively (Zander, 1992).

Four sources of variance have been identified: system, clinician, patient and community (Etheredge, 1989; Zander, 1988a). System variance occurs when, for example, the x-ray department does not perform a requisioned x-ray resulting in a delayed discharge. Clinician variance occurs when, for example, bloodwork is ordered and requisitions are not generated. Patient variance is exemplified by the patient who experiences post-operative complications that prolong the length of stay (Zander 1992). An example of a community variance is when home care or other support services are not available when needed.

Particular elements of a managed care approach have been introduced into hospital settings at the Toronto Hospital (Toronto, 1991) and recently in certain Alberta hospitals. The focus is to move patients through preadmission screening, hospitalization, and discharge planning in a cost effective manner. Recently this has expanded to include home care in the development of caremaps

for targeted patient populations. In summary, the managed care approach is effected by a multidisciplinary team and is also referred to as case management (Capuano, 1995; Hampton, 1993; Heacock & Brobst, 1994; Olivas, Tongo-Armanasco, Erickson, & Harter, 1989; Quick, 1994; Turley, Tyndall, Roge, Cooper, Turley, Applebaum, & Tarnoff, 1994; Jones & Mullikin, 1994; Zander & McGill, 1994).

Nursing Case Management

Managed care and nursing case management tend to be used interchangeably in the literature and although they share common goals and characteristics, the approach to care is different. The difference between nursing case management and managed care is that nursing case management includes all the concepts of managed care, however, accountability is decentralized to a specific nurse called a case manager. The case manager role evolved from the primary nursing model of patient care assignment.

The implementation of nursing case management on target populations such as the chronically mentally ill, long-term elderly, AIDS patients, and community health is addressed in the literature (Davidson, Penrod, Kane, Moscovic, & Rich, 1991; Jerrell & Hu, 1989; Piette, Fleishman, Mor & Thompson, 1992). However, there is growing interest in its application in acute care hospitals particularly in the USA (Daleiden, 1994; Del Togno-Armanasco, Olivas, & Harter, 1989; Flynn & Kilgallen, 1993; Fitzgerald, Smith, Martin, Freeman, & Katz,

1994; Hofmann, 1993; Hornstra, Bruce-Wolfe, Sagduyu & Riffle, 1993; McGinty, Andreoni, & Quigley, 1993; McKenzie, Torkelson & Holt, 1989; Rotz, Yates, & Schare, 1994; Salmond, 1990; Smith, 1994; Warrick, Christianson, Williams &, Neeting, 1990; Veenema, 1994; Zander, 1990a, 1990b; McIntosh, 1987).

The role of the case manager. The scope and nature of the case manager's role varies in form and function. In nursing case management, a nurse is generally assigned as case manager and is accountable for working with other health care members to develop the expected patterns of care by case type, and for reviewing those patterns on a regular basis to ensure they reflect the case management plans and critical paths. For example, case managers identify causes of prolonged length of stay for all patients within a particular case type.

Case managers are generally nurses and their roles vary considerably. Four distinctive types of roles have been described.

1. The case manager is a nurse who coordinates the care of a group of patients and works exclusively with selected physicians (Cronin & Maklebust, 1989; McKenzie, et al, 1989).

2. The case manager is a nurse who works with specified diagnostic groups of patients. Patients can be located throughout the hospital or in the community (Loveridge,

Cummings, & O'Malley, 1988; Smith, 1994; Wimpsett, 1994).

3. The case manager is an nurse who remains on the unit and provides nursing care in specific diagnostic groups (Ethredge,1989; Rotz, Yates, & Schare, 1994).

4. The case manager is a health care professional who provides specific services to patients in specific diagnostic groups (Cooper & Leja, 1990; Goodwin, 1994).

There is little evidence of the effectiveness or cost containment of nursing case management when compared to traditionally administered services. (Bair, Griswold, & Head, 1989; Crawley, 1994; Cronin & Maklebust, 1989; Etheredge, 1989; Fitzgerald et al, 1994; Lamb, 1992; Lamb & Huggins, 1990; Lyon, 1994).

Research Literature

Despite the widespread use of case management, information about the evaluation hospital-based case management is largely anecdotal. Available research focuses on financial results or demonstration projects targeting populations at highest risk for adverse outcomes showing little impact on quality or cost (Marschke & Nolan, 1993). Of the studies that included length of stay, no attempt was made to follow patients after discharge to determine if readmission, complication, or patient satisfaction were different in patients in case management programs.

Cohen (1991) evaluated the effect of a caremap used for 128 patients in a non-randomized study who had a caesarian

birth. A significant reduction in mean length of stay for the managed care group occurred thereby decreasing hospital charges. Similar results were found by other authors who examined caremaps for other case types (Goode & Belgan 1993; Hofmann, 1993; Ogilvie-Harris, Botsford, & Hawker, 1993; Richards, Sonda, Gaucher, Kocan, & Ross, 1993; Rudisill, Phillips, & Payne, 1994; Vautier & Carley, 1994). These authors claim implementation of caremaps emphasized timelines, multidisciplinary involvement, and expected outcomes which resulted in a decrease of length of stay and subsequently a reduction of hospital costs. There is no evaluation of patient outcomes post discharge in the above studies. In contrast, other authors have noted no significant differences between traditional patient care and case management programs in length of stay (Falconer, Elliot, Sutin, Strasser, & Chang, 1993; Franklin, et al, 1987; Hornstra et al, 1993; Jerrell & Hu, 1989; Rossler Loffler, Fatkenheuer, & Riecher-Rossler, 1992). This could be the result of more complex and heterogenous patient groups selected for implementation of caremaps in these studies. However, in a recent publication, Turley et al, report that defining a critical pathway for patients undergoing a congenital heart operation produced a significant reduction in length of stay and intensive care unit stay as well as increased quality of patient care.

In an evaluation post implementation of a critical path

for patients undergoing open heart surgery, a decrease in length of stay was reported (Hampton, 1993). The evaluation of this study suggested variance tracking of predetermined standards of care and patient care outcomes assisted in monitoring patient progress which promoted patient care improvements.

In two specific studies where caremaps were not developed, a decrease of length of stay occurred. Etheredge & Lamb (1989) claim nurse managers appear to exert a financial impact through decreased length of stay. Comparison data for case managed and non-case managed patients were analyzed utilizing institution wide statistics for specific populations. In analyzing retrospective data authors concluded it is difficult to state nurse managers are solely responsible for a decrease of length of stay. At the Ottawa Civic Hospital, Moher, Wennburg, Halon, & Runnals (1992) designed a study to assess the effects of a Medical Team Coordinator on patient length of stay, the frequency of readmissions and satisfaction with hospital care. There was a decrease in length of stay for some patient groups. The authors recommended further research to examine which components of the coordinator's interventions influenced length of stay. These two studies serve to illustrate other factors which may influence length of stay. In evaluating a managed care program, all dimensions of the program must be examined to be able to make a claim that a decrease in

length of stay is a result of the program.

No research reports were identified in which randomized experimental designs were used to study a managed care approach to patient care. Further research is necessary to evaluate health care providers' role in a managed care framework, the process used to implement managed care, and how specific interventions on the caremap affect patient care outcomes. The research literature pertaining to nursing case management has not been addressed. However, nursing case management uses all the components of the managed care approach, but because of the limited research in this area, it seems advisable for acute care organizations to plan, implement and evaluate the managed care approach to patient care prior to implementation of a nursing case management model.

Utilization Management

One of the key elements in a managed care strategy is utilization management which is defined as "a dynamic ongoing process to maintain and improve the quality of care or service through review of appropriateness of care or service and the efficient utilization of resources to provide that care/service" (Canadian Council on Health Facilities Accreditation, 1990, p. 1). The utilization management process consists of two steps, utilization review and utilization control (Payne, 1987; Strumwasser, Paranjpe, Ronis, Nastas, Livingston & Share, 1989; Wickizer, 1990;

Zusman, 1990). Utilization review is a process that involves the development of standards and criteria to measure actual performance against standards. Utilization control focuses on developing initiatives to ensure utilization of resources is effectively monitored. Utilization management has a dual objective of achieving cost containment and quality of care and thus, has the same objectives as managed care.

Utilization management varies widely in scope and remains fragmented (Linton & Peachey, 1989; Brinkworth, & Fyke, 1989; McDonough, & Vaz, 1987; Sheps, Anderson, & Cardiff, 1991). These authors claim virtually limited empirical data exists to demonstrate the effectiveness of utilization management in Canada, however four initiatives are worthy of mention.

One is a Value Improvement Program (VIP). This is a retrospective review program that was developed by the Baxter Corporation in 1984 (Sheps et al, 1991). The process involves creating a profile of the costs associated with treating a particular type of patient and comparing cost profiles of similar patients collected by Baxter from other hospitals. The process has been documented as improving quality of care, reducing length of stay and saving money (Coombs, 1988; Eliasoph, & Hassen, 1986). The above studies have used a "before and after" design with no control hospitals, raising the question of whether observed changes in utilization were the result of factors other than the VIP

process. A second strategy found in Canada is the Resource Enhancement Program which is similar to the Value Improvement Program (Sheps et al, 1991) and, according to the authors there has been no formal evaluation of this program. Signs, Winds, Intramuscular Injections, Tubes, Consultant and Hospice Index (SWITCH) was developed by the Peace Arch District Hospital in 1984 (Medicus, 1989). SWITCH is a concurrent review program where patients are monitored daily for variables that contribute to delays in discharge. An evaluation on length of stay indicated a small but not significant reduction. Lastly the Victoria Integrated Care Alternative Review and Evaluation Program introduced in 1988 by the Greater Victoria Hospital Society introduced objective criteria to review admissions. Both concurrent and retrospective review are integral parts of their program (Harrison & Roger, 1990).

Clinical Practice Guidelines

As noted above, the goal of utilization management is to establish the mechanisms which will enable the organization to examine resource utilization with the ultimate goal of correcting misuse of resources (Canadian Council on Health Facilities Accreditation, 1990). Evidence is mounting that a large number of diagnostic and therapeutic activities are performed by physicians despite little or no proof of their efficacy (Church, 1994; Eisenberg, 1986; Feldman, 1993; Wennberg,1987). Eliminating

inappropriate care is fundamental to cutting costs and reducing unnecessary use of health care resources.

It has been suggested that such wide variations in patterns of practice may, in part, be due to underservice or variation in illness rate (Phelps, 1993; Wennburg, 1987). A greater part of the variation occurs because the physicians may lack standard clinical approaches to treatment of certain diseases and injuries. Development and implementation of clinical practice guidelines is based on the assumption that dissemination of guidelines will result in improved quality of care by reducing variation (AHA, 1992). Such guidelines have potential to assist clinicians toward standardized, clinically optimal, cost-effective strategies and could provide a foundation to determine appropriate care (AHA, 1992). However, evaluation of the effect of practice guidelines developed by a national medical specialty association found no measurable change in the actual practice patterns of practitioners. It was concluded that practice guidelines should only be developed in conjunction with participating physicians (Lomas, Anderson, Domnick-Pierre, Vayda, Enkin, & Hannah, 1989). Other authors have noted that such approaches tend to be temporary in reducing utilization (Axt-Adam, Van Der Wouden, & Van Der Does, 1993; Chassin, Kosecoff, Park, Winslow, & Kahn, 1987; Eisenberg, 1986; Kibbe, Kaluzny & McLaughlin, 1994; Luft, Garnick, Mark, & McPhee, 1990). Some clinical

practice guidelines are, moreover, limited in that the focus is solely on individual physician performance. To be most effective, clinical practice guidelines and the process of adopting them must be integrated with all other components of ongoing clinical processes (Brook, 1989; Jennings, 1991; Kibbe et al, 1994; Lang & Marek, 1991; Lohr, 1988; Payne, 1987). As quality monitoring and variance tracking are an integral part of a comprehensive managed care program with the focus on multidisciplinary review, this model may be an effective method to monitor patient progress.

Clinical Outcomes

In spite of the lack of sound research based evidence, clinical practice guidelines continue to be advocated in the literature as promoting the development of clinical and outcomes information to strengthen decision making. Lohr (1988) defines patient care outcomes as the end results of medical care or treatments. The concept of patient outcomes focuses on the individual rather than the group or society as a whole. The focus of patient outcomes research is to evaluate effectiveness of care with treatment (Bauman, 1991; Jennings, 1991).

Evaluation of care as a step to decision making or to isolate patterns of care across similar patients are elements of outcome measurement (Lohr, 1988). An evaluation tool that addresses the effect of multiple caregivers on patient outcomes is necessary (Bond & Thomas, 1991;

Hegyvary, 1991). It is generally agreed that there is a need to conceptualize outcome measurements and through empirical research document the reliability of outcome measures (Bauman, 1991; Bond & Thomas, 1991; Hegyvary, 1991). The most important outcome measure is to demonstrate the relationship between the process of care and outcomes (Lohr, 1988; Woodyard & Sheetz, 1993).

Outcome Measures

Measuring outcomes through clinical indicators is very complex. The literature reveals numerous attempts to measure outcomes in terms of length of stay, patient satisfaction, morbidity, mortality, and disability. The compression of length of stay for hospital patients, has raised concern that patients may be discharged from hospital before their needs have been adequately addressed. Little research is noted in the area of utilizing outcome measures to assist health care providers in determining what treatments are most effective. When outcomes are poorly linked to clinical practice, they offer the health care provider little guidance for improving quality of care. As noted by Sovie (1989), "All clinical practices must be critically examined in terms of their contributions to quality patient outcomes" (p.79). Valid and sensitive outcome measures are needed to establish the effectiveness of existing practice patterns that have not been subjected to rigorous scrutiny.

The medical literature suggests there is a relationship

between physician case load and outcome. Data from medical records, patient case abstracts, and insurance claims have been used to examine general analytical questions, not specific patient outcomes (Luft, Garnick, Mark, & McPhee, 1990). There is a need to investigate the effect of physician case load and patient outcomes.

Showstak, Rosenfeld, Garnick, Luft, Schaffarzick, Fowles (1987) analyzed discharge abstracts for coronary artery bypass graft. High volume hospitals had lower in-hospital mortality, shorter average post-operative length of stay, and fewer patients with extremely long stays when compared with hospitals with lower case volumes.

Roos, Cageorge, Roos, & Danzinger (1986) analyzed patient, surgeon and hospital characteristics associated with serious post-discharge complications following hysterectomy, cholecystectomy, and prostatectomy. A significant inverse association between physician volume and risk of complications after cholecystectomy was found. The authors controlled for age, gender, type of surgery, duration of anaesthetic. Patients of surgeons performing fewer than 20 cholecystectomies per year had an increased incidence of readmission for complications. No significant associations were found for physician or hospital volumes in the case of prostatectomies and hysterectomies.

Luft & Hunt (1986) found an inverse relationship between hospital volume and patient mortality for cardiac

catheterization. An examination of patterns of outcomes indicated that low-volume hospitals were more likely to have results that were worse than expected. These authors suggest that a shift in focus to the evaluation of individual hospitals and physicians performance is required.

Researchers in nursing have focused on specific interventions for incontinence, skin breakdown, pain, immobility and positive health behaviours (Lang & Marek, 1991). Determining the level of attainment of patient care outcomes and the adequacy of care must be measured in relation to established criteria. Hegyvary (1991) states the term nursing outcome should not be used. Rather, the focus of outcomes is not on the provider but on the recipient of care. Attempts to link patient care outcomes with a specified discipline do not take into account the multiple factors that contribute to patient care outcomes. Further conceptual development and empirical research is needed from a collaborative perspective in the development of guidelines to evaluate the processes of care and outcomes (Gesta, 1993). A collaborative managed care approach has the potential to begin to address processes of care and outcomes. The caremap links relevant clinical practice guidelines to all other components of ongoing clinical processes and serves as a tool for integrating practice guidelines with efforts to reduce variations in the delivery of care.

Conclusion

Despite the history of managed care programs in the USA there has been little solid evidence of their effectiveness. The Toronto Hospital was the first Canadian acute care hospital to introduce a managed care model (Lamb et al. (1991) and many other hospitals have since begun implementation plans. However, the lack of established outcome criteria has resulted in doubt as to the utility of this patient care model. The limited number of evaluations that have been documented suggest a need to assess managed care programs to ensure cost effectiveness and appropriateness within a Canadian context. Indeed,it should be noted that the program at the Toronto General Hospital has been temporarily halted in order to collect baseline data to evaluate program effectiveness (M. Keatings, personal communication, November 10, 1994). Sheps et al. (1991) suggest that evaluations on a small scale before broad implementation are critical because of significant changes managed care creates in organizational relations. The Toronto General Hospital experience also supports this for they found it difficult to implement a large number of caremaps simultaneously. No documented research was found specifically on managed care or case management models in acute care hospitals in Alberta. Thus, it seems that managed care or case management initiatives provide a worthwhile area for future research.

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