

Clinical Pathways – The New Paradigm in Healthcare?

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Summary

A clinical pathway defines the optimal care process, sequencing and timing of interventions by doctors, nurses and other healthcare professionals for a particular diagnosis or procedure. It is a relatively new clinical process improvement tool that has been gaining popularity across hospitals in the USA, Australia and United Kingdom. Clinical pathways are developed through collaborative efforts of clinicians, nurses, pharmacists, physiotherapists and other allied healthcare professionals with the aim towards improving the quality of patient care. Clinical pathways have been shown to reduce unnecessary variation in patient care, reduce delays in discharge through more efficient discharge planning, and improve the cost-effectiveness of clinical services. The approach and objectives of clinical pathways are consistent with those of total quality management (TQM) and continuous quality improvement (CQI) and is essentially the application of these principles to the patient's bedside. This article examines the proliferation in the use of clinical pathways, its benefits to the healthcare organisation, its application as a tool for CQI activities in direct relation to patient care and the medico-legal implications involved.

Key Words: Clinical Pathways, Variance, Total Quality Management, Continuous Quality Improvement, Case Manager

Introduction

More than ever, it can be said that we live in an era of change. Change is not a new concern in healthcare. It is the subject of discourse and dissonance for a long time. The fact that it is happening at such a rapid rate and involving such a broad range of activities is what creates opportunity and challenge. In this turbulent and uncertain time in healthcare, hospitals are being asked to achieve outcomes that were considered impossible five years ago. This is so despite a shrinking financial and human resource pool. Turnaround time and patient throughput are all much faster now than ever. Hospitals, healthcare institutions and clinics are now grappling with the issue of cost-containment and providing the most cost-effective quality health care to patients. Despite advances in medical technology, there are inherent problems that

need to be dealt with. The absence of a formal care planning system often leads to:

- a] Errors of omission so that crucial steps in the care process are forgotten or not followed through;
- b] A team approach may not be used, resulting in poor discharge planning and a lack of patient education.

Increased technology has its own set of accompanying problems. Procedures may cost more, inefficiencies may increase length of stay and in turn increase waiting lists and there is always the possibility of over utilisation of laboratory and radiological tests due to unreasonable patient expectations and the practice of defensive medicine. There is also a growing disenchantment among patients and their families who

are unaware of the plan of medical care. Hospital staff have also expressed unhappiness over unplanned discharges.

The challenge in healthcare today is to engineer the efficient use of shrinking resources while maintaining or even increasing quality outcomes in patient care. Hospitals should foster increased collaboration between disciplines to ensure continuity of care both during the period of hospitalisation and into the community. **Clinical Pathways** or critical pathways or care paths is one such tool that has been developed to address these problems. This new innovation in clinical process management and documentation may be the new paradigm for healthcare provision in the 21st Century.

Description of a Clinical Pathway

A clinical pathway is an optimal sequencing and timing of interventions by clinicians, nurses and other healthcare professionals for a particular diagnosis or procedure, designed to minimise delays and resource utilisation and to maximise the quality of care. Critical path methodologies originated in the construction and engineering industries where they have been in use for many years in manufacturing and production lines. They have been proven to be of great value in managing large complex projects such as aircraft manufacturing.

In healthcare, concepts related to critical paths were first discussed and researched in the early 1970s, but the environment for implementation was not receptive. The reason was that in the USA, at that time, hospitals were reimbursed on a dollar for dollar basis for their full costs by most payers. Hence, there was no financial incentive to optimise resource utilisation. In addition, most doctors resisted formal efforts to restrict their freedom to practice as they wished¹. Beginning in the early 1980s, however, hospital reimbursement systems began to feature prospective payment and competitive bidding. These changes stimulated renewed interest in critical paths and related subjects such as clinical practice guidelines and algorithms. Other factors that stimulated renewed interest included increasing evidence of unacceptable variation in clinical care and outcomes, a trend towards increasing input from multiple professionals in the

decision making process for patient care and increasing malpractice costs^{2,3}. Since the mid 1980s, healthcare in the USA has seen an escalation in the use of clinical pathways. There seems to be no stopping this increase, and hospitals and managed healthcare companies are finding more and more ways of using clinical pathways for their patients and clients. Hospital administrators see pathways as a means to standardise the length of stay for defined patient populations, thereby allowing them to predict the financial outcome of the hospitalisation. Clinicians and nurses see pathways as a means to provide quality of care of a minimum standard. They also use pathways as an educational tool. Insurance companies and health maintenance organisations (HMOs) see pathways as an ideal tool for the estimation of hospitalisation costs and reimbursement. Clinical pathways have therefore served the needs of a multitude of users, both within the healthcare system and external third party payers.

A clinical pathway is essentially a plan of care that reflects best clinical practice and the expressed needs of the patient on the pathway. It describes the pattern of care for the usual patient. It represents the minimum standard of care and ensures that the essentials are not forgotten and are performed on time. Conventionally, pathways are written in the form of a grid (or matrix) which displays aspects of care on one axis and time intervals on another. The time intervals are typically in the form of a day by day clinical order and documentation sheet. However, this may vary, depending on the nature and progression of the illness or procedure being performed. Pathways designed for chronic conditions could have timelines in the form of weeks or months.

Clinical pathways integrate medical treatment protocols, nursing care plans and the activities of allied healthcare professionals into a single care plan, which clearly defines the expected progress and outcomes of a patient through the hospital system. Typically, pathways are developed for high-volume, high-risk and high-cost diagnoses and procedures. For ease of use, staff actions and interventions in the clinical pathway are organised into categories. Usually, the following processes are tracked: consults and assessments, tests, treatment and medication, nutrition, activity or safety, patient education and discharge planning⁴. Additional

categories of intervention can be included depending on the nature of the diagnosis or procedure. In addition to the types of interventions, a new second generation of clinical pathways called CareMaps™ developed by the Center for Case Management in Boston, USA and widely used by many hospitals, incorporate expected problems, responses and outcomes⁵. This is in line with the current trend for hospitals and clinicians to track, measure and manage clinical outcomes as a means towards improving the quality of care. The advantage to this approach is that the doctor, patient and family know the typical progress of a patient along the care provided. For example, pain, activity tolerance, knowledge deficit, anxiety, etc can be tracked.

The method of documentation on the clinical pathway is a matter for consideration. When clinical pathways were first implemented, the documents were used only as guidelines and therefore were not kept as part of the medical record. As such, the clinical pathways were often discarded after discharge from hospital. In some cases, the pathways were retained for quality assurance purposes or clinical audits. This severely limited the use and acceptance of the clinical pathway among the care givers, especially the ward nurses and doctors. Since the early 1990s, it has become common practice to include the clinical pathways as part of the permanent medical record. Documenting directly on the pathway would reduce the time required for charting, especially for nurses. The pathway would include columns for the ward nurses to document the completion of relevant interventions every shift. Doctors can now document directly on the clinical pathway - it replaces the conventional clinician orders sheet. Such an integrated clinical documentation sheet has significant advantages. For instance, all members of the care team now have easy access to all the important information related to the care plan, which is outlined on the clinical pathway. In this manner, the team works together to achieve the same objectives and clinical outcomes.

Clinical pathways most often are applied to the in-patient hospital setting. However, it can also be equally effectively and usefully applied to the outpatient setting, especially for patients who require multiple outpatient visits with a defined plan of clinical

management. In this setting, a clinical pathway could be written to reflect the necessary interventions to be completed for each outpatient clinic visit and the desired outcomes after each visit. Currently, most clinical pathways are developed by healthcare professionals, with little or no direct input from patients. The increasing focus on patients as part of continuous quality improvement may result in a movement towards more patient input in developing pathways, particularly for long term chronic care. In essence therefore, each clinical pathway defines the problems that patients in a specified case type typically encounter and thus directs the development of a comprehensive approach to their care. When caregivers collaborate, a picture evolves describing what interventions are to be delivered and what results or outcomes can be anticipated over the course of a predicted length of stay. Well developed clinical pathways identify patient problems and associated clinical interventions needed to avoid adverse effects of care (for example, wound infection), improve physiologic outcomes, reduce pathologic signs and symptoms and improve the patient's functional state and well being.

Currently, most clinical pathways are developed for acute or chronic in-patient care. These clinical pathways are initiated either at the time of admission or the commencement of a procedure and end at the time of discharge. Clinical pathways have also been developed for a complete episode of care - ie from the time the patient presents at the clinician's office to the end of follow up post-hospitalisation. In the area of chronic long term care, clinical pathways are being developed that span the care continuum from the acute setting to the community hospital and even to the home environment. For such pathways, the timelines would probably be written as per visit or per week or even per month, depending on the nature of the progression of the disease.

Variance

Flexibility is the key in using clinical pathways. They are guidelines and maps, not inflexible dictates for care. Because clinical pathways reflect the care needed by most, but not all patients within a defined population, situations arise in which there are differences from the

anticipated plan of care. A well designed clinical pathway will capture between 60 to 80 percent of patients within a defined population. This is because a clinical pathway can only be designed for the usual patient. Some patients will fall off the pathway during the course of their hospitalisation. Some patients will encounter problems in the course of their hospitalisation, causing variation in the interventions and outcomes. Variances are the unexpected events that occur during patient care - events that are different from what is predicted on the clinical pathway. Despite the intent to define the essential components of care, there still is variation in how care will be delivered and how patients will respond. Variance can be positive or negative. Positive variance occurs when the patient progresses towards projected outcomes earlier than expected, when preselected interventions such as pain medication administration are unnecessary, or when interventions such as patient education can successfully begin at an earlier stage. Negative variance occurs when either the patient fails to meet projected outcomes, there is a delay in meeting the outcomes, or there is a need for additional interventions previously unplanned.

An essential part of the use of clinical pathways is the collection and analysis of information obtained when patients deviate from the pathway. Analysis of variation provides useful and accurate information on the frequency and causes of variations in patient care. The analysis encourages members of the multidisciplinary healthcare team to adhere to the guidelines and standards set in the pathway, or justify the reasons for variations. In this way, clinical pathways compel doctors and healthcare providers to critically evaluate and understand about the basis of clinical decisions. Several authors have shown that using clinical pathways and clinical practice guidelines can improve clinical outcomes and the quality of patient care by reducing avoidable variation in the clinical process^{6,7,8}. Analysis of variance is also a powerful clinical audit tool as all aspects of patient care are constantly reviewed and revised. Improvements in the quality of care are achieved through continuously redefining the pathways to reflect current best practice. This is the essence of continuous quality improvement incorporated into clinical practice. Variance data are used most effectively as a means of educating clinicians

and enabling them to make considered changes to their practice based on emerging trends and the results of that care. The clinicians and the clinical pathways development team are intimately involved as they determine whether the variance data indicate that changes are needed in the clinical pathway itself or whether other system changes are required.

Case Managers

Case managers are trained clinical nurse specialists or medical social workers who coordinate the care for specified patients through the entire episode of illness. Case managers are a new breed of healthcare professionals who are responsible for the ongoing coordination, monitoring, and evaluation of the patient's progress along the clinical pathway or throughout the episode of illness. In most hospitals and institutions, case managers are the crucial staff who drive the clinical pathway programme. They are the soldiers who execute the necessary actions required to develop and implement the clinical pathways. Typically, variances at the ward level would be collected and documented by the staff nurse. The case managers would abstract the important variance data and analyse them. Monthly or quarterly reports on variances and the outcome of patients on the various clinical pathways are presented to the hospital specialists and management for further follow up actions.

Case management is a concept that is rapidly gaining acceptance and popularity in healthcare organisations across the USA. As a concept, case management is not new. It has been practised by public health nurses since the turn of the Century while psychiatric case management has been practised since the 1940s. Recently, case management has emerged as a strategy to focus on the problems and needs of patients, while maintaining the balance between outcome, cost and process. The overall purpose of case management is to advocate for the patient through coordination of care, which reduces fragmentation of clinical services and the care process, and ultimately, cost. Most of the models of case management are based on a nursing foundation. In nursing case management, the fundamental focus is to integrate, coordinate and advocate for patients requiring extensive clinical services and complex care. Quite commonly, the case manager would work towards

and be accountable for ensuring that a patient meets the desired outcomes within an appropriate length of stay (as prescribed on the clinical pathway) though effective use of available resources. The case manager would often work very closely with the clinicians and collaborates with the other healthcare professionals to ensure that the desired outcomes are met.

Case management and clinical pathways complement one another. Ideally, the case manager would use the pathway as a guide and tool to achieve the desired outcomes for the patient. However, case management can be implemented without the presence of pathways. In this instance, the case manager would discuss the desired outcomes of the patient with the clinician, patient, family and other healthcare professionals. A care plan would then be formulated with the desired clinical outcomes to be achieved. All members of the care team will then work together consistently to ensure that these goals are achieved within the appropriate time frame. Case management has been used and applied by many insurance companies across the USA to contain the cost of healthcare provision through negotiation of contracts and hospitalisation. This has caused some negative publicity, especially from doctors. However, the concept of case management as a means of coordination of care, which reduces coordinating care across the entire episode of illness is consistent with the practice of collaborative care. This should be encouraged in all healthcare organisations. The aim should be to create a model of case management that spans the continuum from hospital to the community. Patients who require complex, long term chronic care would benefit from case management. In the USA, it is now commonplace for the clinician to work closely with the case manager to ensure that the patient receives all the necessary care and services during and after hospitalisation.

Role of the Clinician in Clinical Pathways and its effects on Clinician Practice

It has been shown conclusively that the best clinical pathway programmes are those that are driven by practising clinicians. Clinicians directly participate and may initiate the development of clinical pathways. Hospitals across the USA have faced the same problems when clinical pathways are developed with

minimal clinician input - the pathways are either discarded or used purely as nursing documentation tools. This severely limits the usefulness of the clinical pathway as an integrated clinical documentation and clinical process improvement tool. The current trend now is to develop clinician directed clinical pathways, ie the development and implementation of clinical pathways should be led by a clinician. The rest of the multi-disciplinary care team works with the clinician to develop the holistic plan of care based on the directions provided by the doctor.

It has been shown that patients on the clinical pathways express higher levels of satisfaction⁵. The mere presence of the pathway means that the ward staff are in a better position to provide explanation of the plan of care to the patient and relatives, thus facilitating better communication. Clinical pathways also increase the likelihood that patients will receive the care desired no matter where they are in the hospital. Clinical pathways keep all other healthcare professionals "in-sync" with the clinician's plan of care. The clinician retains control over the overall plan of care.

Clinical pathways facilitate the resolution of system problems that are often irritating to the clinicians. Through the analysis of variances, issues that affect a significant proportion of patients are dealt with. Organisational involvement becomes important when resources must be allocated to extend the availability of departments or services to meet clinical and financial goals. For example, data from variances can be presented to show that delays in discharges are due to unavailability of certain tests that are only done on certain days of the week. The hospital would need to then weigh the benefits and drawbacks of extending the service in order to facilitate earlier discharge.

Clinical pathways also decrease the number of telephone calls to the clinician's office because the multidisciplinary care team has a clearer picture of the plan of care. Communication between the clinician, the nursing staff and other members of the healthcare team is enhanced. Collegiality is strengthened. Pathways also allow research and audit findings to be readily incorporated into practice. This facilitates the application and practice of Evidence-Based Medicine⁹.

Organisational Effects of Clinical Pathways on Hospital/Institutions

Clinical pathways have demonstrated their effectiveness in strengthening the cost-quality link both quantitatively and qualitatively^{10,11,12,13,14}. Implementation of clinical pathways in a variety of settings has been consistently associated with reduced length of stay and cost per case. This is in part due to enhanced coordination and communication among the care givers and the hospital management staff.

At the institutional level, clinical pathways provide a vehicle for efficiently identifying systems issues that interfere with, rather than support, effective patient care. Teamwork becomes the organisational norm, and staff better understand clinical resource management, ie the allocation of staff, work processes, policies and organisational resources needed to produce clinical services.

By including desired clinical outcomes into the clinical pathway, the quality component is included in the process. This assures clinicians that patients are not being "rushed through the system" and discharged before they have reached the appropriate clinical status. Clinicians are more satisfied because care progresses more smoothly and patient outcomes improve. Nurses feel that their capabilities are better utilised and they feel ownership of the care process. Patients also enter the hospital with realistic expectations of their treatment and outcome.

Establishing and Using Clinical Pathways

The first step in the development of a clinical pathway programme is to identify the target patient population. This involves collecting data and information on the disease epidemiology of the population or community, utilisation of hospital services and availability of key resources in the hospital. Once the decision has been made to develop a specific clinical pathway, additional data should be collected and analysed. This data should be focused on the target patient population and provide useful information to the care team such as average length of stay, common problems encountered during hospitalisation, reasons for delay in discharges, etc. An analysis of the prevailing practice patterns compared against any available published and peer reviewed clinical practice guidelines should be carried out

whenever possible. This critical evaluation of current clinical practice is crucial in developing clinical pathways that are based on sound clinical decision making. Thereafter, the process of drafting the clinical pathway is a matter of getting the multidisciplinary care team together to deliberate on the details of the care plan as directed by the clinician leader.

All key hospital staff must be properly trained in the use of the clinical pathway. For nurses, this entails a re-orientation to nursing documentation - ie charting by exception and focus charting. For doctors, much of the clinician orders would have been incorporated into the clinical pathway, thereby reducing the time required for clinical documentation. The other care givers would also be spared from reading illegible handwriting by doctors.

All new clinical pathways should undergo a trial implementation of 3 to 6 months. Thereafter, the pilot pathway should be reviewed to take into account staff feedback and variance analysis. Based on the results of the feedback and variances, the pathway is then revised and fully implemented. As part of continuous quality improvement, every clinical pathway should be reviewed every six months to one year to ensure that the most current and up-to-date modalities of clinical treatment is incorporated into the clinical pathway. Clinical pathways should always incorporate current knowledge of accepted clinical management. The application and practice of Evidence Based Medicine is thus ideal in the setting of clinical pathways.

Some key considerations in the development of clinical pathways include the following:

- a] Clinician involvement is critical to the success of any clinical pathway programme. The clinicians should ideally lead the development of all clinical pathways. In this way, there is ownership of the clinical process, resulting in more widespread acceptance by doctors.
- b] Clinician practice variation should always be taken into consideration when drafting pathways. Treatment alternatives should be incorporated to allow flexibility for doctors.
- c] Practice guidelines should never be written to

reflect current practice unless it is the best practice based on available evidence.

- d] Clinical pathways should reflect the current available resources in the hospital or institution. Pathways must be reasonable and the prescribed plan of care should be feasible for the ward staff to carry out.

Clinical Pathways and Continuous Quality Improvement

Quality improvement programmes are often driven by a long term goal towards process improvement, a better understanding of systems, and better overall control of those systems^{15,16}. Coordinating the development of a clinical pathway programme and continuous quality improvement (CQI) can facilitate and drive the organisation forward towards achieving its objectives. Quality improvement is built on the principle of understanding and controlling process variation through systems thinking¹⁷. Because CQI originated in the manufacturing industry, many doctors and hospitals did not see any relevance to healthcare. Recently, CQI principles have been explored in relation to healthcare and it has become increasingly clear that viewing patient care as a series of steps or processes does not diminish the doctor-patient interactions in providing care.

In order for a hospital to become accountable for delivering high quality care, it must be able to deliver three sets of information: evidence of continuous quality improvement (CQI), outcomes management and clinical practice standards and guidelines. When integrated into a total quality management (TQM) process, a clinical pathway provides a model for outcomes management and delivery of a higher quality of care to patients. At a more practical level, clinical pathways contribute to clinical quality improvement through various means:

- a] The process of developing clinical pathways ensures that current processes and practices of care delivery are critically reviewed. This includes the review of clinical quality indicators such as post-operative morbidity, wound healing rates, infection rates, etc to determine if the standard of care is within an acceptable range. The current mode of management is then compared to published results or peer reviewed clinical guidelines to assess clinical effectiveness. Once this has been completed, the finalised clinical pathway, based on evidence, is implemented. The entire process ensures that patients on the clinical pathway have a care plan that reflects best possible practice within the available resources.
- b] Clinical pathways are written and developed by healthcare professionals. All relevant clinical disciplines should be involved, making up a complete multidisciplinary team. Simply by getting different people together to discuss and review care processes and practices may facilitate the melt down of interdisciplinary barriers. Staff can better understand the roles of other disciplines and what skills they each have to offer. Through our experience, we never cease to be amazed at how many specialists do not know what the occupational therapists can do or what are the benefits of diabetes counselling by the nurse educator. Interdisciplinary understanding builds up the team so that they can work together cohesively and complementarily. Effective patient care requires the entire care team to work together "in sync" to achieve quality patient outcomes.
- c] There is improved consistency of patient care through the use of clinical pathways. Consistency in care is where patients can expect similar, consistent practices and treatments for similar, consistent conditions, whichever doctor is delivering that care. It has been advocated that reducing the variation in the process of providing a service is the most effective way of improving quality¹⁹. Pathways enable care teams to get together and agree upon practice that is research or evidence based. Consensus must be reached so as to ensure that the interventions outlined in the pathway are achievable within the means of all involved staff. The main argument against standardisation of care processes is that all patients are individuals with their own needs and care should be "tailored" to their needs. However, when a patient group is selected whether by diagnosis or procedure or need, there are common

threads in terms of what the health care professionals will do for each individual within that group. Such common threads can be mapped out on the pathway, which is then used as a guideline. The clinician would then have to use their own clinical judgement to decide on whether the patient can be put on the pathway or deviate from the anticipated care plan. Such deviations (or variances) should be recorded as part of the pathway document, thus providing a facility by which care may be individualised as appropriate.

- d] The recording, collection and analysis of variances provides continuous audit data on the care being delivered. Such audit information is specific to each case-type on the pathway being analysed. This regular analysis of the care processes, practices and outcomes through the analysis of variances and the feedback of the team is a vital component of the entire clinical pathway programme. Analysis can highlight deficiencies in the care process due to problems arising from the hospital system, such as reasons for delayed discharges, inavailability of sufficient operating theatre time, etc. Clinical pathways are also an ideal tool for outcome audit analysis because the documents can be retrieved and studied to ascertain whether or not the interventions resulted in the desired clinical outcomes as stated on the pathway.
- e] Resource management is an important component of quality healthcare delivery today. The costs of providing good quality care is rising. High technology treatments and diagnostic tests are now available and are expensive. Economic pressures have compelled providers to ensure that resources are well managed, well used and not wasted. Clinical resources such as blood tests, X-rays and drugs must be managed efficiently. Pathways can help ensure that laboratory and radiological tests are done only when it is clinically appropriate. Equally important, pathways will guide doctors to order tests during the appropriate stages of hospitalisation or illness. By guiding the use of clinical resources, even to the extent of suggesting drug prescriptions as agreed by the team for certain case-types, clinical pathways have a major role in resource management.

- f] Through the process of development and regular review of clinical pathways and guidelines, the entire care process is periodically and continually reviewed and revised to reflect the best possible standard of care. This is the essence of CQI as applied to patient care. Standards are therefore monitored and reviewed. There is therefore a system of implementing CQI in patient care. Studies have shown that explicit guidelines do improve clinical practice when introduced in the context of rigorous evaluations²⁰.

Medicolegal Implications

Concern has been raised by some in the medical community about the effect that the use of such written guidelines may have upon the incidence of malpractice suits and the outcome of such suits. Most commentators conclude that the use of practice standards and clinical pathways do not create significant new risks and may instead reduce the risk and cost of litigation^{21,22}. The use of pathways will alter the practicalities of malpractice litigation in ways that will promote the use of practice standards in court. Recent legal commentary concludes that this will strongly favour the defence. In a judge's eyes, a pathway provides an orderly method of analysis for medical care. The standards inherent in the pathway also has a powerful influence on the judge for the definition of care - an influence that is independent from the give-and-take of the expert witness opinions presented by both plaintiff and defendant on trial. More importantly, when maximally utilised, the pathway will have a profound effect on the prevention of malpractice litigation - the value of the pathway in coordinating care, in ensuring good medical recordkeeping and clinical documentation, in promoting good communication among care givers, and in facilitating communication with patients and their relatives concerning their care.

The use of clinical pathways and practice guidelines may also be beneficial to malpractice plaintiffs. On its own, the mere fact that a doctor has deviated from a pathway's guidelines need not lead to liability if an adverse outcome is attained. This is especially so if the guidelines are clearly written as a series of recommendations and the variance is clearly

documented. Nevertheless, deviation by mistake or without record of adequate justification can be potentially damaging against the care giver. In this respect, pathways will probably protect diligent doctors while creating additional risk for careless ones, thus tending to place the incidence and outcome of liability suits on a more rational basis.

According to the Medical Defence Union²³, properly constructed and used clinical guidelines have the potential to reduce complaints and litigation levels in healthcare by improving channels of communication with and between healthcare professionals and patients. It has also been argued that the very fact that a hospital has developed and used practice guidelines and pathways shows that they have thought reflectively about the care environment and process, and that they have addressed issues, which could go to their credit in a malpractice suit.

On the flip side of things, doctors should be aware that they could be found negligent if a guideline is applied automatically without first assessing the patient. Clinical guidelines and pathways are not substitutes for independent professional judgement. There are too many variables in patient care for clinical pathways and guidelines to be applied automatically.

The American Medical Association puts matters into perspective when it commented on the use of practice guidelines: Some physicians are concerned about that practice parameters will increase their exposure to malpractice liability. In particular, physicians are concerned that they may be automatically liable if they choose, for legitimate medical reasons, not to follow a practice parameter applicable to a patient's condition and an undesired outcome results. Such concerns are unfounded. Practice parameters do not create any new liabilities for physicians and may in fact, serve to help physicians better control their existing liability risks²⁴.

Conclusion

Clinical pathways have much to offer the healthcare organisation and the individual practising clinician. It provides a proactive, locally owned facility by which the multidisciplinary team can critically review and improve their processes and practices of care delivery

towards the achievement of agreed clinical outcomes through the provision of best possible practice within the available resources. Pathways are also a means towards efficient resource management, provision of more information to patients and a clinical audit tool. Through the use of clinical pathways, hospitals have consistently shown a reduced length of stay for the pathway specific case types without a detrimental effect on clinical outcomes, reduced hospital bill size, improved care giver to patient communication resulting in higher patient satisfaction, and improved patient education. Reducing unnecessary variation in care and improving the level of collaboration among doctors, nurses and other allied healthcare professionals are all highly consistent with total quality management (TQM). Clinical pathways are therefore an important means towards achieving clinical quality at the bedside, which matters most to the patient.

It is clear from the current trends that the use and applications of clinical pathways will continue to expand around the world as demands for higher quality healthcare increases in the face of shrinking resources and cost-containment. Hospitals and healthcare organisations will see a transition of the care process from a fragmented system to a collaborative multidisciplinary team approach. The role of the case manager within a healthcare system will also continue to expand as the concept of case management encompasses coordinated holistic care and provides a model of care provision that spans the entire continuum from hospital-based acute care to community-based primary healthcare. Case management and clinical pathways are therefore seen as the means by which a "seamless" system of healthcare delivery can be achieved within a care network or environment.

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References

1. Shoemaker WC. Critical path medicine. *Critical Care Medicine* 1974;2(5) : 279.
2. Wennberg JE. Changes in tonsillectomy rates associated with feedback and review. *Paediatrics* 1977; 59(6) : 821-6.
3. Eisenberg JM. Doctors' decisions and cost of medical care. Ann Arbor, Michigan: Health Administration Press Perspectives, 1986.
4. Zander K. Care Maps: the core of cost/quality care. *The New Definition* 1991;6(3) : 1-3.
5. Zander K (Ed). *Managing outcomes through collaborative care: the application of caremapping and case management*. Chicago, American Hospital Publishing Inc 1995.
6. Hart R and Musfeldt C. MD-directed critical pathways - its time. *Hospitals* 1992;66 : 56.
7. James BC. Implementing practice guidelines through clinical quality improvement. *Hospital Management Review* 1993 : 3,7.
8. Weilitz PB and Potter PA. A managed care system: financial and clinical evaluation. *Journal of Nursing Administration* 1993;23 : 51-7.
9. Rosenberg W and Donald A. Evidence based medicine: an approach to clinical problem solving. *British Medical Journal* 1995;310 : 1122-6.
10. Zander K. Nursing case management: strategic management of cost and quality outcomes. *Journal of Nursing Administration* 1988;18(5) : 23-30.
11. Boyle T and Ellis D. Estimating and tracking the financial impact of critical paths. *Definition* 1990;5(4) :1-3.
12. Mosher C. Upgrading practice with critical pathways. *American Journal of Nursing* 1992;Jan : 41-4.
13. McKenna M. Patient discharge outcome audits: improving quality and reducing cost. *Definition* 1991;6(1) : 1-3.
14. Bronow R. The physicians who care plan. *Journal of the American Medical Association* 1991; 6(1): 1-3.
15. Berwick DM. Continuous quality improvement as an ideal in health care. *New England Journal of Medicine* 1989;320 : 53-6.
16. Berwick DM. The clinical process and the quality process. *Quality Management in Health Care* 1992;1 : 1-8.
17. Senge PM. *The fifth discipline: the art and practice of the learning organisation*. New York City: Doubleday/Currency, 1990.
18. Joint Commission on Accreditation of Healthcare Organisations. *Striving towards improvement: six hospitals in search of quality*. Oakbrook Terrace, Illinois: JCAHO, 1992.
19. Hart, R.I. and Musfeldt, C. Physician-directed diagnostic and therapeutic plans; a quality cure for America's health care crisis. *Journal for the Society for Health Systems* 1993;4(1) : 80-7.
20. Grimshaw JM. and Russell IT. Effect of clinical guidelines: a systematic review of rigorous evaluations. *The Lancet* 1993; 342 : 1317-22.
21. Nolin CE. Malpractice claim, patient communication and critical paths: a lawyer's perspective. *Quality Management in Health Care* 1995;3 : 65-70.
22. Garnick, D.W., Hendricks, A.M. and Brennan, T.A. Can practice guidelines reduce the number and costs of malpractice claims? *Journal of the American Medical Association* 1991; 266: 2856-60.
23. The Medical Defence Union. *Talking to patients*. London, MDU 1993.
24. American Medical Association. *Practice parameters: a physician's guide to their legal implications*. Chicago, AMA 1993.