Clinical Pathway as a Strategy in Improving Healthcare Quality and Cost Containment

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ABSTRACT

The increasing health care cost and public awareness on the delivery of high quality services has forced healthcare service providers to look into the healthcare delivery system. Clinical Pathway (CP) has been introduced in many hospitals and has been widely accepted as a tool that can help healthcare organizations around the world. In addition, CP can provide high-quality continuous services and can coordinate health services with low resource utilization. It has been proven to be an effective tool in other countries, and CP is currently being introduced into the healthcare system in Malaysia. The purpose of this article is to highlight the benefits of CP in improving healthcare quality and controlling medical costs. Related articles have been reviewed. The conclusion of this study is that the majority of the reviewed articles concluded that CP implementation has a positive impact. CP has been found to reduce the length of hospital stay and medical costs significantly. The introduction of evidence-based medicine, clinical outcomes, clinical audit, interdepartmental communication, collaboration, and planning in care is also enhanced by CP. The challenge to providers and health managers is to fully engage and commit in the development and implementation of CP to improve quality and control costs.

Kata kunci: sistem pemberian jagaan kesihatan, carta-alir klinikal, kualiti, kos perubatan, pembekal dan pengurus jagaan kesihatan

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accepted as a beneficial tool in assisting healthcare organizations worldwide. Further, the CP also provides consistently high quality and coordinates services with minimum resources. It is proven to be a beneficial tool in other countries. CP is recently being introduced into the Malaysian healthcare system. The aim of this article was to highlight the benefits of CP in improving healthcare quality and controlling the medical cost. The relevant articles have been reviewed. The majority of literature reviewed concluded that there were positive effects in implementing CP. The CP was found to be significant in reducing length of stay and medical cost. The introduction of evidence based medicine, clinical outcomes, clinical audit, multidisciplinary communication, teamwork and care planning were also improved by CP. The challenges for healthcare providers and healthcare managers are to participate and be fully committed in pathway development and implementation in order to improve healthcare quality and cost control.

**Key words:** healthcare system, clinical pathway, quality, medical cost, healthcare providers and managers

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**INTRODUCTION**

The demand for the healthcare system to deliver high quality services whilst containing expenditure, has forced health service providers to examine and restructure the clinical management systems. There is a need for healthcare organizations to persistently examine patient care processes, deliver superior quality care, achieve positive clinical and better financial outcomes (Coffey et al. 1992, Pearson et al. 1995, Jones et al. 1999).

The focus of health services has shifted towards controlled clinical management strategies to make healthcare organizations more efficient without compromising the quality of care delivered. There are increasing demands for more appropriate use of technologies, more coordinated care and more enhanced care given to the patient. Qualities of care and cost containment are debatable and are the foremost and principal agenda on the policy in many countries today (Cheah 2000).

The Ministry of Health, Malaysia has implemented several quality assurance programs in government hospitals such as peri-operative morbidity review (POMR), clinical audit, risk management and incident reporting (Ministry of Health Malaysia 1998). All these programs are very important to maintain the quality of healthcare in government hospitals.

Clinical pathway has been introduced in many hospitals and has been accepted as a beneficial tool. The CP assists the healthcare organization in providing better quality and coordinating services within scarce resources (Dowsey et al. 1999, Hoffart & Kuckelman 2000, Kohn et al. 2000, Every et al. 2000). Clinical pathway differs from clinical guidelines, protocol and algorithms. Clinical guidelines are consensus statements that are systematically developed to assist practitioners in making patient management decisions related to specific clinical circumstances (Field & Lohr 1990, Dwyer 1998, Gaddis et al. 2007). Protocols are treatments that were recommended based on guidelines.

What is clinical pathway? Clinical pathway is a methodology for mutual decision making, and is an organization of care for a well-defined group of patients during a
well-defined period. (European Pathway Association, Slovenia Board Meeting, Dec 2005). The pathway can also be defined as a multidisciplinary plan of care based on best clinical practice for specific groups of patients with a particular diagnosis designed to minimize delays, optimise resource utilization and to maximize the quality of care (Pearson et al. 1995, Campbell et al. 1998, Panella et al. 2003). The aim of a care pathway is to enhance the quality of care and cost control by improving patient outcomes, promoting patient safety, increasing patient satisfaction, and optimising the use of resources (European Pathway Association, Slovenia Board Meeting, Dec 2005).

Clinical pathway is also known as critical pathway, care map or integrated care pathway. It forms all or part of the clinical record, document the care given and facilitates the evaluation of outcomes for continuous quality improvement. The CP was developed by multi-professional teams, consist of physicians (family practitioners to specialist), nurses, physiotherapist, pharmacist, social workers and managers (Pearson et al. 1995, Gregor et al. 1996, Mabrey et al. 1997, Campbell et al. 1998, Healy et al. 1998, Hill 1998, Pritts et al. 1999, Cheah 2000, Huerta et al. 2001, Pearson et al. 2001, Uchiyama et al. 2002, Panella et al. 2003, Lee & Anderson 2006). The pathway was able to facilitate the use of clinical practice guidelines by the multidisciplinary team, as pathway was locally agreed and available in the patients’ record (Kitcher & Bundred 1998).

The CP was first developed in the 1950s to coordinate multiple contractors or persons in a project by identifying the key sequence of events or critical point which would drive the timeline of the overall project (Pearson et al. 1995). In healthcare system the CP was first developed and applied in the 1980s at the New England Medical center by Karen Zander and Kathlen Bower (Pearson et al. 1995). The development of CP was in response to the initial Diagnostic Related Group (DRG) based reimbursement system (Pearson et al. 1995, Luttman 2000). The CPs were introduced in the early 1990s in the United Kingdom and the United State of America (Kitcher & Bundred 1998, Lutman 2000)

The implementation of CP is highlighted in the current health care sector because of its similarity to the descriptions of case-mix system which addresses the same clinical characteristics and resources involved (Cheah 2000). The development and implementation of CP can be applied in homogenous population, high volume cases, high risk cases and common cases. The CP can also be applied in clinical protocols and guidelines, by committed and accountable healthcare providers, health managers and government. The aim of this article was to highlight the benefits of CP in improving healthcare quality and cost control.

**MATERIALS AND METHODS**

For selection of relevant articles, the search was focused on the terms ‘clinical pathway’, ‘care path’ and integrated care pathway. Most studies were conducted in the United States, Canada, Australia and United Kingdom. Only few studies were conducted in Asia.

**RESULTS**

*What can be measured from clinical pathway?*

Continuous evaluation and follow up are essential to establish a good CP. The effect of clinical pathway can be measured in five domains; clinical outcome, service, team, process and finance (Herck et al. 2004). The indicators for clinical outcome domain are number of readmissions, complications, mortality, number of re-


The indicators for team domain are team communication, team satisfaction, knowledge and competence, recognition and appreciation of roles, autonomy of physician, self confidence and influence on understanding (Johnson et al. 2000, Hoffart & Kuckelman 2002, Kinsman 2004).


Herck et al. (2004) evaluated the effect of the implementation of the clinical pathways and found that the majority of the articles reviewed between years 2000 to 2002 had positive effects on three domains namely process, team and financial domain (Table 1).

### Benefits of clinical pathway


<table>
<thead>
<tr>
<th>Domain</th>
<th>Positive effect (%)</th>
<th>No effect (%)</th>
<th>Negative effect (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical outcome</td>
<td>65.6</td>
<td>32</td>
<td>2.4</td>
</tr>
<tr>
<td>Service</td>
<td>62.2</td>
<td>29.7</td>
<td>8.1</td>
</tr>
<tr>
<td>Process</td>
<td>86.0</td>
<td>7.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Team</td>
<td>83.3</td>
<td>6.3</td>
<td>10.4</td>
</tr>
<tr>
<td>Financial</td>
<td>82.5</td>
<td>13.5</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Table 1: Global effect of the implementation of clinical pathways, described in literature between 2000-2002 (Herck et al. 2004)
Clinical Pathway to Improve Healthcare Quality


According to Zander et al. (1988), the major reasons for developing CP are to improve patient care by improving the quality of patient care through consistent management, identifying and measuring improvements in patient care, and measuring outcome. The CP has also improved communication and collaboration among all disciplines, enhanced the discharge coordination process and established protocols to all members of the health care team. CP also can be used to support clinical audit and risk management (Zander et al. 1988, Dowsey et al. 1999, Cheah 2000, Benson et al. 2001, Darer et al. 2002, Panella et al. 2003, Xu et al. 2008).

In the articles reviewed, only a few studies were conducted in an Asia health care setting. In Singapore, a study conducted by Cheah (2000) at a General Hospital discovered the average length of stay for uncomplicated acute myocardial infarction using CP was significantly reduced. There was no significant increase in hospital mortality, complication rate and no readmission rate at six months after discharge. He concluded that CP was able to improve care processes through better collaboration among healthcare professionals and improved work systems (Cheah 2000). Santos et al. (2002) had developed a mastectomy clinical pathway for breast cancer patients at the National University Hospital of Singapore and the results showed that the implementation of the CP had improved patients' treatment and outcome. The medical cost and length of hospital stay also was reduced. Similar finding by Xu et al. (2008) shown that the use of knee pathway had led to a significant decrease in the length of stay, complication rates and early mobilization among 1663 patients who underwent total knee replacement (tkr) in a tertiary institution in Singapore.

In Taiwan, a study carried out by Liao et al. (1998) at Tsu Chi General Hospital found that CP was able to decrease resource consumption, control medical expenditure and decrease the number of procedures performed. They also demonstrated no changes in clinical outcomes and complication rates in patients who underwent transurethral resection of the prostate. In another study conducted by Chang & Lin (2003) they also found the implementation of the CP for patients who underwent vaginal hysterectomy had improved health care outcomes, decreased length of hospital stay and admission fees. The authors concluded that CP is a good policy for cost management and in enhancing the quality of care.

Paiboon (2006) in his study conducted at Taksin Hospital in Thailand also found the implementation of clinical pathway among type 2 diabetic patients had reduced the length of hospital stay and decreased readmission rate of recurrent hypoglycaemia.

Many studies on CP have been carried out in United States (US) and United Kingdom (UK) (Wigfield & Boon 1996, Chang et al. 2006). The implementation of CP was reported to be high in US and
UK with the apparent outcomes such as reduction in the incidence of complications, medical cost and improved patient satisfaction (Chang et al. 2006 and Wigfield & Boon 1996).

Ranjan et al. (2003) had carried out a study among congestive heart failure (CHF) patients at hospitals in United States and the result showed that the patients assigned to the CHF CP had a shorter length of stay and reduced hospital charges compared with those who were on the usual care. The quality of care delivered (as measured by administration of ACE inhibitors) was not compromised by the reduction in length of hospital stay in patients on the clinical pathway. Further there was a significant saving of US$2,500 per patient and US$750,000 per year in CHF treatment (Ranjan et al. 2003).

A study conducted by Pearson et al. (2001) also found with the implementation of the CP, the length of stay decreased 21% for total knee replacement, 9% for CABG surgery, 7% for thoracic surgery, 5% for hysterectomy and 3% for colectomy. In 1999, Pritts et al. conducted a study at University of Cincinnati Medical Center, Ohio and showed a significant decrease in length of stay and medical cost in the pathway groups who underwent bowel resection.

Several studies also found improvement of interdisciplinary cooperation, staff satisfaction (Mabrey et al. 1997, Maxey 1997, Hanna et al. 1999, Jacavone et al. 1999) and also patient satisfaction (Jacavone et al. 1999, Walter 2005).


Even though CP has been approved as beneficial tools in improving quality and controlling healthcare cost, there are a few aspects and factors which require attention as revealed by nearly one third of the articles reviewed (Gregor et al. 1996, Pritts et al. 1997, Macario et al. 1998, Dowsey et al. 1999, Choong et al. 2000, Cheah 2000, Pearson et al. 2001, Hogkin 2001, Uchiyama 2002, Panella et al. 2003, Ranjan et al. 2003, Brunenberg et al. 2005, Walter 2005, Lee & Anderson 2006). The aspects that require attention are the understanding, implementation, accountability, the system and the administrative support of the CP.

CONCLUSION

As a conclusion, the majority of literature reviewed concluded that there were positive effects in implementing CP. The CP was not only found to be significant in reducing length of stay and medical cost but is also found to support the introduction of evidence based medicine, clinical audit, multi disciplinary communication, teamwork and care planning. In addition, the CP is able to support the continuity and coordination of care across different clinical disciplines, reduce variances in patient care (by promoting standardization), help improve patient documentation.
and optimize the management of resources. Even though CP had been shown to improve quality and control of healthcare costs, its successful implementation would require full commitment and participation from all health care providers and healthcare managers.

REFERENCES


European pathway Association, Slovenia Board Meeting, 2005.


