SURE Rapid Response

What are the effects of clinical pathways in cancer management?

April 2012

This rapid response was prepared by the Uganda country node of the Regional East African Community Health (REACH) Policy Initiative.

Key messages

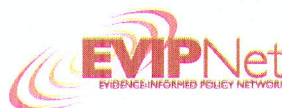
- Clinical pathways have generally been found to improve patient outcomes, reduce hospital length of stay and reduce care costs.

  The evidence however points to no significant change in terms of readmission rates and in-hospital complications.

  Other outcomes to be noted include client care and satisfaction, professional identities and relationships, and written documentation

- Not many studies have looked at the efficacy and effectiveness of clinical pathways as a mode of management, and the evidence base is not conclusive enough to provide a replicable framework for all pathway strategies

- **Any health system using clinical pathways is able to identify all interventions that can be used to treat the given cancer identifying four critical things on each: the cost, the efficacy, and how and where it can be delivered best**



Who requested this rapid response?

This document was prepared in response to a specific question from a policy maker in Uganda.

! This rapid response includes:

- **Key findings** from research
- **Considerations about the relevance** of this research for health system decisions in Uganda

✗ Not included:

- Recommendations
- Detailed descriptions

What is SURE Rapid Response?

SURE Rapid Responses address the needs of policymakers and managers for research evidence that has been appraised and contextualised in a matter of hours or days, if it is going to be of value to them. The Responses address questions about arrangements for organising, financing and governing health systems, and strategies for implementing changes.

What is SURE?

SURE – Supporting the Use of Research Evidence (2) for policy in African health systems - is a collaborative project that builds on and supports the Evidence-Informed Policy Network **(EVIPNet) in** Africa and the Regional East African Community Health **(REACH)** Policy Initiative (see back page). SURE is funded by the European Commission's 7th Framework Programme.
www.evipnet.org/sure

Glossary

of terms used in this report:
www.evipnet.org/sure/rr/glossary

Background

Disease or diagnosis (Cancer) management pathways or sometimes referred to as case management may be divided into two: patient pathways and clinical pathways. Other names include critical pathways, care plans, care paths, care maps, and care protocols (3).

The basic aim of a **clinical pathway** is to improve the quality of care, reduce risks, increase patient satisfaction, and increase efficiency in the use of resources (4). Therefore it explicitly states that the goals and key elements of care are based on clinical guidelines, and best available evidence. They are a documented sequence (including timing) of clinical interventions assisting a patient with a specific condition or diagnosis progress through a clinical experience to a desired outcome (3, 5, 6). Usually the pathway is a multidisciplinary plan of care based on the best practice for that particular group of patients with the particular diagnosis. They are tools developed specifically for the facility or institution using them, and originally, they run from admission and ended with discharge from the hospital, but today they usually merge the medical and nursing plans with others, such as physical therapy, nutrition, or mental health. Clinical pathways have four main components: a timeline, the categories of care or activities and their interventions, intermediate and long term outcome criteria, and the variance record (to allow deviations to be documented and analyzed) (6). They differ from practice guidelines, protocols and algorithms as they are utilized by a multidisciplinary team and have a focus on the quality and co-ordination of care.
In essence, a clinical path is not a mandatory treatment plan, a standard of care, a substitute for clinical judgment, or a substitute for physician order, it only serves as an integrated documentation tool to stabilize the intraoperative process of patient care and effectively manage clinical and financial outcomes.
Patient Pathways aim to assist people with cancer to understand and navigate the journey ahead, providing information such as the tests and treatments most likely to be needed for a particular cancer (4). They are also useful for primary care health professionals and consumers to follow the likely referral and treatment pathways for particular cancers. Their orientation is towards the patient.

While acknowledging the importance of patient pathways, the findings and research summarized in this paper will concentrate on the role of clinical pathways in cancer management and in improving health systems.

Summary of findings

A review of the literature reveals that most of the studies done in this area have been in high income countries and almost none can be found done in low income or developing settings. This partly signifies the fact that the practice of using clinical pathways is not very common in these low income settings and therefore their utility has not formally been evaluated in low- or middle-income countries (7). However this is changing fast and health systems together with practitioners in developing countries have to be aware and ready of the practice; attempts have already been piloted in several parts of Asia including rural China (7, 8). This is because it presents options that have the potential to improve the organization of services and increase the efficiency with which resources are used, which are furthermore based on evidence. However care has to be taken as developing countries look at models from their western counterparts

because there are multiple aims for the different models. For example, in the United States where this phenomenon began, the initial and primary use of clinical pathways was to control healthcare costs in what was called 'managed care', in which they helped create standardized treatment packages with same length of stay in hospitals and therefore more predictable costs (9). In other countries, the main aim has been to use these to improve the quality of care although the fact that it can also help reduce costs is not ignored.

Despite the different models and their aims, the one common characteristic that is applauded about clinical pathways is their ability to implement evidence-based practice (9, 10). They do this by ensuring the merging of external evidence with national clinical guidelines and local practice. Rather than being based on evidence they instead graft the evidence onto the available guidelines and care process. This may therefore ease their adoption into the already existent health systems.

Clinical pathways can take any of two forms: either reflecting the care and management of a particular diagnosis or reflecting the process of care from one agency or care boundary to another (9). In the latter there is attention paid to timing and sequencing of events in the care process thereby improving coordination and communication between practitioners. This is not only beneficial to the patients it is a potential for reducing delays, decreased length of stay and removal of task duplication which saves costs. Caution has to always be taken that the quality of the services is not compromised in the process though.

Clinical pathways are also advantageous in that they expand the individualized a-contextual process that defines healthcare practice problems tied to individual limitations as seen with protocols; clinical pathways frequently involve considering institutional shortcomings too, contextualized organization of care and interaction between practitioners, which is a broader and better way of handling care matters (9).

Several studies have been done to examine the effect of clinical pathways on different outcomes. Outcomes may be on the patients, they may be on the practitioners, on other aspects of healthcare practice or on the health system. Results of these are summarized below.

Outcomes on patients and professional providers

A systematic review of high quality evidence whose objective was to assess the effect of clinical pathways on professional practice, patient outcomes, length of stay and hospital costs concluded that clinical pathways are generally associated with reduced in-hospital complications and improved documentation without negatively impacting on length of stay and hospital costs (11). Although not specifically done on cancers, the conditions studied were of a chronic nature and the findings are

How this Response was prepared

After clarifying the question being asked, we searched for systematic reviews, local or national evidence from Uganda, and other relevant research. The methods used by the SURE Rapid Response Service to find, select and assess research evidence are described here:

www.evipnet.org/sure/rr/methods

What the quality of evidence (1) means

The quality of the evidence is a judgement about the extent to which we can be confident that the findings of the research are correct. These judgements are made using the GRADE framework, and are provided for each outcome. The judgements are based on the type of study design (randomised trials versus observational studies), the risk of bias, the consistency of the results across studies, and the precision of the overall findings across studies. For each outcome, the quality of the evidence is rated as high, moderate, low or very low using the definitions below.

⊕⊕⊕⊕
High: We are confident that the true effect lies close to what was found in the research.

⊕⊕⊕O
Moderate: The true effect is likely to be close to what was found, but there is a possibility that it is substantially different.

⊕⊕OO
Low: The true effect may be substantially different from what was found.

⊕OOO
Very low: We are very uncertain about the effect.

For more information about GRADE:

www.evipnet.org/sure

generally applicable to cancer pathways too. Findings from this study are summarized in table 1 below.

Table 1

Clinical pathways on professional practice, patient outcomes, length of stay and hospital costs

Patients or population: Health professionals, hospitalized patients, Hospitals
Settings: USA, Australia, Japan, Canada, UK, Norway, Taiwan, Thailand,
Intervention: Clinical pathways
Comparison: Usual care

Outcomes	Impact	Number of studies	Quality of the evidence (1)
Patient outcomes	All studies reported that there was an improvement in patient outcomes associated with using clinical pathways	5	⊕⊕⊕O moderate
Professional practice	There was an improvement reported of more than ten times in the clinical pathways group as compared to the usual care group	3	⊕⊕⊕O moderate
Length of hospital stay	Majority of studies showed a positive impact, 11 out of 14 studies showed significant reduction in length of stay	14	⊕⊕⊕O moderate
Hospital costs	There were considerable benefits noted in using clinical pathways as compared to usual care		⊕⊕OO low

GRADE: GRADE Working Group grades of evidence (see bar on the right, page 3)

Another systematic review was done to assess the effect of using clinical pathways on hospital length of stay, hospital costs and patient outcomes and eventually provide a framework for local healthcare organisations considering the effectiveness of clinical pathways as a patient management strategy (3). Its results are summarised in table 2 below. It however in addition showed and concluded that according to the available evidence, knowledge about the mechanisms through which pathways work was insufficient, and therefore that future research should focus on trying to better understand the key elements of clinical pathways that have impact on economic and patient outcomes.
The researchers in this study also found the evidence base not conclusive enough for them to use to provide a replicable framework for all pathway strategies. However they were able to conclude that considering the clinical areas for implementation, clinical pathways seem to be effective especially for invasive care. They also noted taht when implementing clinical pathways, the decision makers need to consider the benefits and costs under different circumstances (e.g. market forces).

Table 2

A systematic review and meta-analysis of the effects of clinical pathways on length of stay, hospital costs and patient outcomes

Patients or population: Adults and children of every age and diagnosis whose treatment involved pathways
Settings: USA, Australia, Japan, Taiwan
Intervention: Clinical pathways
Comparison: Usual care

Outcomes	Impact	Number of studies	Quality of the evidence (1)
Effect on hospital length of stay	Clinical pathways appeared effective in reducing hospital length of stay Pathways for invasive procedures showed a stronger length of stay reduction	16	⊕⊕⊕O moderate
Effect on patient outcomes (patient readmission and in-hospital complications)	There was no evidence of differences in readmission to hospitals or in-hospital complications.	9	⊕⊕OO low
Effect on hospital costs	Out of the six studies that examined costs, four showed significantly lower costs for the pathway Group	6	⊕⊕⊕O moderate

GRADE: GRADE Working Group grades of evidence (see bar on the right, page 3)

A cohort study done to evaluate the durability over time of the changes similar to those described in the above studies after implementing a clinical care pathway for head and neck cancer surgery, such as reduction of resource utilization, found that these findings are actually sustained (12). It found that the median total length of stay and the length of stay exclusive care unit decreased in the first year and remained stable even at three years. The intensive care unit length of stay decreased to across three years as well as the median total charges across three years. Incidence of post-operative pneumonia and readmission rates decreased significantly.

Effectiveness and Efficacy of clinical pathways in general

Not many studies have looked at the efficacy and effectiveness of this mode of management, let alone in developing countries. In fact a literature review on clinical pathways by Hunter and Segrott notes that research into the effectiveness of clinical pathways is limited despite its widespread implementation (9). There is a paucity of rigorous evaluation, with most of the current literature largely restricted to before and after short term studies and descriptions of implementation. Although pathways use evidence within them, that is, evidence to back the protocols and guidelines and activities, their very existence is not based on much evidence (9). This evidence is necessary because their implementation is complex and they may have

unanticipated consequences, both positive and negative. Therefore simple cause-effect studies may not be enough to evaluate these interventions but in-depth evaluations are necessary.

Despite the above a few studies may be found. For example a study whose purpose was to evaluate the impact of a clinical pathway and standardize the treatment for mucosal gastric cancers treated with IT-ESD found that the intervention proved effective in these patients. In addition it helped in minimizing the length of hospitalization without compromising patient care.

End-of-life care pathways for improving outcomes in caring for the terminally ill patient

A systematic review was done to assess the effects of end-of-life care pathways, compared with the usual care modes of care that do not involve pathways or with care guided by another end-of-life care pathway across all healthcare settings (e.g. hospitals, residential aged care facilities, community) (13). The authors concluded that without further available evidence, recommendations for the use of end-of-life pathways in caring for the dying cannot be made. They further recommended that randomized controlled trials or other well designed controlled studies were needed for evaluating the use of end-of-life care pathways in caring for dying people.

Impacts on healthcare practice

Although the ultimate focus of pathways is the achievement of clinical aims, the evidence suggests that there may be other unexpected outcomes. There is some impact usually in three areas of practice: client care and satisfaction, professional identities and relationships, and written documentation (9).

Client care and satisfaction: Several benefits like reduced length of stay and others are always fronted as advantages, and they are, for healthcare administrators but they might not be necessarily for the clients or their carers. Some studies have claimed that pathways empower patients by encouraging them to read or contribute to pathway documentation, a closer look into this shows that in fact their role is that of recipients of expert information than active co-producer of care plans. Other studies have also criticized pathways as failing to meet the social processes and context that are important in patient care. They argue that by rigidly following and going through the pathway, practitioners are not able to exercise their usual flexibility when responding to different and diverse client needs and so the quality of individualized care is lost.

Professional identities and relationships: there is substantial evidence that pathways impact on professional relationships both positively and negatively. There has been noted improvement in multidisciplinary communication and collaboration especially at the pathway development stage. The process of discussing client care from differing perspectives and the related consensus building activity and goal setting seems to be of greater benefit than the resulting tool. However pathways have also the potential of increasing inter-professional tensions. The process of pathway development may act as a reflection for workplace hierarchies and authoritative knowledge. Furthermore pathways may lead to a mapping of professional boundaries in terms of roles and responsibilities which again may be a source of tension. It may involve extending a given cadre's traditional roles thereby transforming occupational territories, in terms of re-skilling

or task shifting. Much as this may be welcome in terms of getting the work done, breaking down inter-professional boundaries risks undermining the values which hold professional groups and communities together. This destabilization may well trickle down to the quality of care provided to the clients.

Written documentation: Multi-professional documentation which is a common feature of pathways has the potential to enhance communication between all those involved in the care of a given patient. And therefore failure to complete documentation at any point in the pathway also has the potential to disrupt communication and fragment or interrupt care.

Impact on the Health System

Through such an intervention or organization like a clinical pathway, the health system is able to identify all interventions that can be used to treat the given cancer and so is able to identify four critical things on each intervention: the cost, the efficacy, how and where it can be delivered best (14). It will also identify what services and structures should or must be in place to ensure optimal delivery. The data on cost and efficacy allow the identification of interventions with the highest value, that is, the one with greatest benefit for each unit cost. The data on how and where to deliver best help the system determine how to deliver the prioritized interventions efficiently to appropriate patients.
However this is an area that is so far not rigorously evaluated in all settings.

Conclusion

Clinical pathways as a mode of management generally provide the breadth and depth of information needed to make a good decision at patient, institution or health system level. This paper has however shown the gap in research evidence in low income settings and in terms of rigorous evaluation of the efficacy and effectiveness of clinical pathways.

References

1. Guyatt GH, Oxman AD, Kunz R, Vist GE, Falck-Ytter Y, Schunemann HJ, et al. What is 'quality of evidence' and why is it important to clinicians? BMJ. 2008;336:995-8.
2. Ke Xu, Guy Carrin, Ana Mylena Aguilar Rivera, Nguyen Thi Kim Phuong, Nguyen Hoang Long, Dorjsuren Bayarsaikhan. Health service utilization and the financial burden on households in Vietnam: the impact of social health insurance. 2nd International Conference on Health Financing in Developing Countries; Clermont-Ferrand2006.
3. Thomas Rotter, Joachim Kugler, Rainer Koch, Holger Gothe, Sabine Twork, Jeroen M van Oostrum, et al. A systematic review and meta-analysis of the effects of clinical pathways on length of stay, hospital costs and patient outcomes. BMC Health Services Research. 2008;8:265.
4. Department of Health. Cancer Pathways. 2012 [cited 2012]; Available from: http://www.health.nt.gov.au/Cancer_Services/CanNET_NT/Cancer_Pathways/index.aspx.
5. Leigh Kinsman, Thomas Rotter, Erica James, Pamela Snow, Jon Willis. What is a clinical pathway? Development of a definition to inform the debate. BMC Medicine. 2010;8:31.

6. Satya Audimoolam, Maya Nair, Rekha Gaikwad, Chungyang Qing. The Role of Clinical Pathways in Improving Patient Outcomes2005. Available from: http://web.cs.dal.ca/~asharma/OWL/Role%2520of%2520Clinical%2520Pathways.pdf.

7. Rong Ye, Turnbull Fiona, Patel Anushka, Du Xin, Wu Yangfeng, Gao Runlin, et al. Clinical Pathways for Acute Coronary Syndromes in China: Protocol for a Hospital Quality Improvement Initiative. A Journal of Evidence-Based Medicine. 2010;9(3):134-9.

8. Jason Cheah. Development and implementation of a clinical pathway programme in an acute care general hospital in Singapore. International Journal for Quality in Health Care. 2000;12(5):403-12.

9. Billie Hunter, Jeremy Segrott. Re-mapping client journeys and professional identities: A review of the literature on clinical pathways International Journal of Nursing Studies. 2008;45(4):608-25.

10. Cheah J. Clinical Pathways: changing the face of client care delivery in the next millenium. Clinician in Management. 1998;7(78):78-84.

11. Rotter T, Kinsman L, James EL, Machotta A, Gothe H, Willis J, et al. Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs. Cochrane Database of Systematic Reviews 2010, Issue 3. Art.No.:CD006632. DOI: 10.1002/14651858.CD006632.pub2.

12. Gendron KM, Lai SY, Weinstein GS, Chalian AA, Husbands JM, Wolf PF, et al. Clinical care pathway for head and neck cancer: a valuable tool for decreasing resource utilization. Arch Otolaryngol Head Neck Surg. 2002;128(3):258-62.

13. Chan R, Webster J. End-of-life care pathways for improving outcomes in caring for the dying. CochraneDatabase of Systematic Reviews 2010, Issue 1. Art. No.: CD008006. DOI: 10.1002/14651858.CD008006.pub2.

14. Olivia Cavlan, Penny Dash, Jean Drouin, Tim Fountaine, Farhad Riahi. Using Care Pathways to improve health systems. Health International. 2011;11.

This summary was prepared by

Dr. Rhona Mijumbi, Supporting Use of Research Evidence for Policy (SURE Project), Office of the Principal, College of Health Sciences, Makerere University, New Mulago Hospital Complex, Administration Building, 2nd Floor, P.O Box 7072, Kampala, Uganda

Conflicts of interest

None known.

Acknowledgements

The following people provided comments on a draft of this Response: **Ekwaro A. Obuku**, Makerere University, College of Health Sciences.

This Rapid Response should be cited as

Rhona Mijumbi, MD, MPH(I), MSc. **What are the effects of clinical pathways in cancer management?** A SURE Rapid Response. April 2012

For more information contact

Rhona Mijumbi, mijumbi@yahoo.com

SURE collaborators:

REACH

Regional East African Community Health Policy Initiative

The **Regional East African Community Health-Policy Initiative (REACH)** links health researchers with policy-makers and other vital research-users. It supports, stimulates and harmonizes evidence-informed policymaking processes in East Africa. There are designated Country Nodes within each of the five EAC Partner States. www.eac.int/health

EVIPNet

The **Evidence-Informed Policy Network (EVIPNet)** promotes the use of health research in policymaking. Focusing on low and middle-income countries, EVIPNet promotes partnerships at the country level between policymakers, researchers and civil society in order to facilitate policy development and implementation through the use of the best scientific evidence available. www.evipnet.org