HealthPathways implementation on type 2 diabetes

A programmatic evaluation (HIT2 evaluation)

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Abstract

Purpose – The purpose of this paper is to appraise the development, implementation and acceptance of HealthPathways (HP), specifically in Type 2 Diabetes Mellitus (T2DM), at different levels of the health system in a large metropolitan Local Health District in Australia.

Design/methodology/approach – This study used a programmatic approach and mixed methods including literature reviews, site visits, semi-structured interviews of stakeholders and General Practitioners (GPs), and surveys (GPs and patients) to better understand the development, implementation and acceptance of T2DM pathways.

Findings – Results from this study indicate that 63 percent \((n = 37)\) of all survey respondents use HP and nearly half (47 percent) use HP in caring for a patient with diabetes. More than 80 percent of the health professionals found HP a useful tool, which has improved the quality of care, keeps them informed and supports diagnostics process. The use of website has led to an improvement in referral quality (69 percent), has assisted in the provision of more healthcare in the community (87 percent) and made their job easier. Thematic analysis from stakeholder interviews \((n = 12)\) emphasizes the importance of established collaborations and the need for standardized tools with common priorities and transparency in processes.

Practical implications – This study has provided insight into the details of delivery of integrated healthcare using HP. It provides a preliminary analysis of the lessons learnt for the implementation of HP.

Originality/value – The results of this study will be ideally placed to inform future policy amendments in the area of integrated healthcare as well as serving as a guide on implementing HP in the future.

Keywords Community care, Integrated pathways, Chronic care, Integrated care

Paper type Research paper

Introduction

HealthPathways (HP) is a web-based resource for delivering information to General Practitioners (GPs), though other health practitioners within the primary care team (e.g. practice nurses) may use and have access to them (Gray et al., 2017). It supports integration by bringing together general practice and hospital-based clinicians to develop agreed local pathways that best fit the local context. HP includes information on areas of referral for secondary care, and is not proposed as an automated or structured decision support tool or to describe the management of a condition within the hospital (McGeoch, Sycamore, Shand, Simcock, 2015; McGeoch et al., 2015; McGeoch, McGeoch and Shand, 2015). The pathways are intended for use as a guide only and are not intended to replace clinical decision making (Gray et al., 2017; South West Sydney Local Health District, 2008/2018).

Implementation of the Australian HP program is supported by the New Zealand-based technical communications company, Streamliners Ltd. HP evolved in 2008 as part of changes toward an integrated healthcare system in the Canterbury region of New Zealand (HealthConsult Pty Ltd, 2016a, b), where it has shown to have contributed to the delivery of more care in the community by developing primary and community services that...
supported people to take greater responsibility for their health and ensured patients were treated by the correct person, thereby reducing demand on secondary and specialist resources. It has been associated with an improvement in referral quality, more equitable referral triage and more transparent management of demand for secondary care (McGeoch, Sycamore, Shand, Simcock, 2015; McGeoch et al., 2015; McGeoch, McGeoch and Shand, 2015). In Canterbury (McGeoch, Sycamore, Shand, Simcock, 2015), the use of HP for clinical guidance on skin cancers has increased steadily, reducing waiting times – from 11–12 months to 3–4 months – and patients getting treated generally within one week, reporting an increased access to care on a more equitable basis and reduced waiting times and number of visits to hospital. Within Australia, some impacts include: referral quality improvement, process redesign leading to improved access to specialist care and reduction in the patient wait time (Gray et al., 2017; McDonald, 2013).

The HP development process has demonstrated positive impact on relationships between key stakeholders as result from effective collaboration (McDonald, 2016; Mansfield et al., 2016; Holland et al., 2017), improving awareness of each other’s processes; trust and respect; communication; and stronger relationships between organizations such as Medicare Locals (now Primary Health Networks (PHNs)) and Local Health Districts (LHDs) (McDonald, 2013). The LHDs have been delegated with the administration and governance of the State’s public healthcare services managing all aspects of hospital and health service delivery for their local region, whereas the PHNs are established by the Commonwealth Government to increase the efficiency and effectiveness of medical services for patients by working directly with GPs, other primary healthcare providers, secondary care providers and hospitals to facilitate improved outcomes for patients (Director-General, NSW Department of Health, 2011).

In 2014, New South Wales (NSW) Health implemented an integrated care program, followed by the NSW Integrated Care Evaluation Framework (NSW Ministry of Health, 2015) to demonstrate and support transforming how care is delivered in NSW to improve health outcomes for patients and reduce costs deriving from inappropriate and fragmented care, across hospital and primary care services by:

- focusing on organizing care to meet the needs of targeted patients and their carers, rather than organizing services around provider structures;
- designing better connected models of healthcare to leverage available service providers to meet the needs of our smaller rural communities;
- improving the flow of information between hospitals, specialists, community and primary care healthcare providers;
- developing new ways of working across State government agencies and with Commonwealth funded programs to deliver better outcomes for identified communities; and
- providing greater access to out-of-hospital community-based care, to ensure patients receive care in the right place for them.

HP is now being implemented at 22 sites across Australia, 9 regions in New Zealand and 1 in the UK (HealthPathways Community, Canterbury District Health Board and Streamliners NZ, 2016). It has been identified that a national “rollout” of the program would not be appropriate and that HP must be initiated and implemented at the regional level in order for the process to be effective (Australian Medicare Local Alliance, 2014). Therefore, this study will appraise the development, implementation and acceptance of HP, specifically in Type 2 Diabetes Mellitus (T2DM) at different levels of the health system in a large metropolitan LHD in NSW, Australia.
Methods
This study used a mixed-method approach for the programmatic evaluation of T2DM pathways implementation. Both qualitative and quantitative data were collected for the better understanding of their implications and applications. Although this study aims for the overall evaluation of the HP implementation, the in-depth analysis and scope of the qualitative data will be released as a separate evaluation paper. Data from semi-structured interviews of GPs; semi-structured interviews of stakeholders (i.e. staff across organizations who have been involved in the management and governance of the pathways); GPs online survey; anonymous paper survey of patients attending diabetes clinics; working groups and program meeting documents; and web server utilization data were collected and analyzed to create the overall results.

Participants
This study was conducted in a number of general practices and diabetes clinics across a large metropolitan LHD in NSW, Australia. Participants were sampled purposively, and included stakeholders, clinicians and patients from the study LHD area; and GPs on the PHN’s database for initial general survey and semi-structured interviews. Patients were invited to complete anonymous questionnaires at each diabetes clinic across the LHD.

Recruitment and data collection
For GP participants, an initial online survey was distributed to registered GPs and general practices across the target LHD (estimate of 930 GPs/400 practices on PHN’s database in February 2017). This survey included questions on perceptions, expectations and feedback on general usage of HP as well as some demographics and practice characteristics. The survey questions were based on the previous New Zealand evaluation to provide consistency and point of comparison across sites; however, other questions were adapted to the specific purpose of T2DM evaluation and as a method for voluntary recruitment for the follow-up semi-structured interview. This survey was composed of 27 single and compound questions (including multiple choice and Likert scales) to assess: awareness of HP; basic demographics about the GP and the practice (i.e. age range, current position, years in practice and number of sessions per week, other GPs or services within practice, influx of DM patients, computer skills and internet accessibility); use of other web-based clinical decision-making resources (before and after the release of HP); use of HP in treating their diabetes patients; overall feedback on practicality, usage, acceptability and quality of information of the HP; and recommendations for improvement or troubleshooting. As well as if there were any specific reasons why the low/lack of use of HP.

GPs who indicated in the initial survey that they were willing to be contacted by a research team member, and who fulfilled certain criteria (influx of patients with Diabetes Mellitus, familiarity with HP and use of diabetes pathways for patient management), were invited to participate in an individual semi-structured interview to discuss their insights, suggestions and acceptability of the pathways. Those GPs, who were interviewed, were offered financial reimbursement equivalent to their clinical time and capped to 1 h per interviewee.

For patient participants, an anonymous paper survey (ten items) was available at reception areas of the diabetes clinics for them to complete whilst waiting at the clinics. Participation was strictly voluntary.

For the other stakeholders, an invitation for a semi-structured interview was sent out to all of those participants who were identified across partnering organizations, given their involvement in the governance and day-to-day management of the HP program. Participants were sampled purposively, and included stakeholders, clinicians and patients from the study LHD area; and GPs on the PHN’s database for initial general survey and semi-structured interviews.
Other data gathered included HP working group and meeting documents related to the implementation of the Diabetes HP (comprising implementation plan, operational meeting notes and e-mail correspondences). Google analytics data for the total number of sessions on HP for the period July 2015 to February 2018 were extracted to examine the pattern of utilization of HP, frequency, specific pathway take-up and other distributional features of the usage patterns.

**Analysis**

Quantitative data from the questionnaires, and from the Google analytics data of the HP website, were analyzed descriptively using Microsoft Excel and IBM Statistical Package for the Social Sciences, Version 20.

Semi-structured interviews were digitally recorded and transcribed. Interviews were progressively analyzed using a thematic analysis approach within QSR NVivo software. For qualitative analysis, the comments were grouped into broad themes with initial codes generated directly from the participant’s words (*in vivo*). These codes were abstracted further to identify concepts and categories to generate final themes. In addition, a framework analysis of data from the HP working group and the meeting documents were undertaken against the NSW Integrated Care Evaluation Framework (NSW Ministry of Health, 2015).

**Ethical considerations**

Ethical approval for this study was granted by the South Western Sydney Local Health District Human Research Ethics Committee (HREC Reference No. LNR/15/LPOOL/587).

**Results**

**Demographics**

In total, 54 percent (*n* = 31) of all GPs survey respondents (*n* = 57, response rate of 7 percent) were male, predominantly from the 55 to 64 years age group (Figure 1), with a mean of 22.6 years (SD: 14.7) of experience in general practice. Most of the respondents were senior GPs who considered themselves as confident users of computer technology with better than basic skills and had full access to internet.

Mean age of the anonymous patient survey (*n* = 41) attending diabetes clinics was 55 years (SD: 18.84), with T2DM being the main diagnose (80 percent). Most of the patients have been attending the diabetes clinic for years (mean: 5.62, SD: 7.57) and half of them are on insulin.

![Figure 1. GP survey age demographics](image)
Online GPs survey data \((n = 57)\)

Results show that 86 percent \((n = 49)\) of respondents were aware of HP. However, 63 percent \((n = 36)\) of them used HP, with a pattern of use of 37 percent \((n = 21)\) on a daily or weekly basis and 28 percent use it only a couple times a year. Nearly half \((47\% \text{, } n = 16)\) of those who use it used HP in caring for a patient with diabetes.

To evaluate HP’s development, implementation and acceptance at different levels of health systems, the survey questions and responses were categorized on the basis of its effectiveness: navigation, ease of use, service design, personal experience and patient management with respect to referrals and triage, along with reasons for not using HP.

GPs’ response to effectiveness of HP in caring for patients with diabetes \((n = 16)\):

1. HP as a site to navigate and obtain information
   
   In all, 94 percent \((n = 15)\) of the respondents agreed that information on HP is of high quality and guidance provided is of practical use. In total, 81 percent \((n = 13)\) of them found HP an effective search function and helpful in knowing the criteria for availability of publicly funded patient care.

2. Ease of use
   
   In all, 75 percent \((n = 12)\) of health professionals found HP clear and easy to understand and use in daily practice.

3. Improvement in the service design as a result of the pathways implementation
   
   GPs agreed that HP has assisted in the provision of more healthcare in the community \((87\% \text{, } n = 14)\) and made their job easier \((81\%)\). It has improved the quality of care \((87\%)\) and supports diagnostics process \((87\%)\). It has also increased the number of patient information leaflets or website links they can provide their patients \((75\%)\).

4. Personal experience
   
   Nearly half \((44\% \text{, } n = 7)\) of GPs felt that their relationship with patients had improved since using HP. Similarly, respondents \((37\%)\) considered their working relationship with hospital clinicians had improved since the introduction of HP.

5. Patient management
   
   In total, 69 percent \((n = 11)\) of GPs reported that HP enables them to manage patients they would have previously referred and half of them found it encouraged them to offer private referral options.

Overall, more than 60 percent \((n = 34)\) of the health professionals are using HP in the management of their patient. They found HP useful tool which keeps them informed \((42\%)\). They reported that it helps streamline processes, especially for local area relevant information and advice about public clinic referrals, i.e. criteria and investigations prior to referral \((17%)\). They mentioned that they would refer HP to other colleagues, as professionals will always welcome addition support.

When GPs were asked for feedback or reasons why they did not use HP, the results highlighted that HP as a tool was not frequently within GPs’ minds. As demonstrated in Figure 2, 52 percent \((n = 11)\) GPs reported that they forget using HP website, 9 percent \((n = 2)\) mentioned that they do not know how to use it and 5 percent \((n = 1)\) said they cannot access the website (error message or restricted access). In all, 33 percent \((n = 7)\) had very limited time to access an online system during consultations, 24 percent \((n = 5)\) felt that many and better health information is available on other more reliable websites. In total, 5 percent \((n = 1)\) were unsure about the content and how it will add to the consultation/management of their patients.
Diabetes patient care experience ($n = 41$)

The mean wait time to get an appointment at diabetes clinic from the time they were referred by doctors was 54.32 days. Most of them visited the diabetes clinic once (19 percent) or twice (37 percent) in the past 6 months, 19 percent ($n = 8$) attended emergency department and 17 percent ($n = 7$) were hospitalized in the past 12 months.

Data were also compared on diabetes patient care experience across three sites which included appointment wait times, emergency attendance or hospitalization in past 12 months, duration patient had been attending diabetes clinic and frequency of visits to diabetes clinic in past 6 months. It was observed that out of three sites, Site 2 had the highest frequency of visits to the diabetes clinic in past 6 months, attended most for emergency department and were hospitalized the most (Figure 3).

Maximum waiting time of 108.46 days was observed in Site 3. Mean frequency of visits to diabetes clinics within 12 months was of 3.9 and duration of attending diabetes clinic of 7.1 years in Site 2, which was highest as compared to other two sites. In all, 80 percent of the respondents from Site 1 did not attend emergency department or were hospitalized for issues directly related to diabetes in past 12 months.

Google analytics data

Google analytics data showed a total number of 160,695 page views of which 7 percent were to access Diabetes HP (Figure 4). Of all Diabetes HP views, gestational diabetes (GD) (9 percent) was the most commonly viewed page followed by newly diagnosed T2DM (9 percent), non-urgent diabetes specialist referrals (6 percent), diabetes continuing care (5 percent) and screening/detection of diabetes and pre-diabetes (5 percent).

Semi-structured interviews

A total of 16 interviews were conducted with GPs ($n = 4$) and stakeholders ($n = 12$) (i.e. general managers, chief executive officers, service managers and project managers). The qualitative evaluation identified four core themes that promote the integration of care in SWS through utilizing HP: engagement, transparency, sustainability and accountability. First, engagement refers to how different members at organizational and individual levels of the healthcare system actively create and maintain collaborative partnerships to implement and maintain HP. Transparency describes how communication and information affect the provision of health services; sustainability refers to factors...
promoting the ongoing and efficient delivery of health services; and accountability describes how relationships created between people and organizations affect the provision of health services. The full scope and in-depth analysis of the qualitative data for this study will be released as a separate evaluation paper.

Diabetes was established as the model for HP development because of the many different services providing care for diabetes patients, and the recognition of the prior work done by working parties to establish guidelines and referral paths for these patients. Some of the stakeholders interviewed were allied health professionals, who care for diabetes patients; these stakeholders were included in the initial working parties and subsequent design of

Figure 3. Diabetes patient care experience across three sites

Figure 4. Utilization pattern of whole HealthPathways website vs diabetes pathways
Diabetes HP. One of the stakeholders determined the examination of how care is delivered for diabetes as follows:

[A] great opportunity […] given the many changes around medication, a lot of changes around clinical practice and guidelines.

Another stakeholder working as a diabetes nurse educator, who when asked if printing HP material would assist in a consultation, remarks:

No. We don’t. We’ve got our own; we go through the Australian Diabetes Council resources. We also have […] depends on the age group. We’ve got different resources to suit them. Not just the age group, the ethnicity, if someone’s bilingual, we would go look for a printout in their own language because people like to read in their own language. So, yeah, so we would find the more suitable [one] for that patient.

Communication issues were perceived to be central to how HP might promote the engagement of patients and their carers in the management of chronic disease, and therefore contribute to the deployment of HP.

Discussion
Survey/analytics
This study appraises the development, implementation and acceptance of HP (specifically in T2DM) at different levels in a large metropolitan LHD in Australia. By using a mixed-methods approach, it allowed the collective analysis of different data and improves the consistency of the observations.

While the specific aim of this study is to investigate HP related to T2DM, many of the participants appeared to reflect on HP more broadly rather than focusing solely on T2DM.

Based on the Google analytics data (Figure 3), this suggests the pattern of Diabetes HP usage as compared to the whole website and clearly identifies an increase in the utilization of website over the years. More so, it also identifies the linear progression of the views for the DM pathways, of which, GD was the most commonly viewed (9 percent), followed by newly diagnosed T2DM (9 percent), and non-urgent diabetes specialist referrals (6 percent). Insulin pump breakdown and troubleshooting were the least viewed (0.5 percent), followed by Diabetes Case Conference (0.5 percent) and HbA1c Conversion Chart (0.7 percent).

Interviews
Interviews revealed how communication and information affect the provision of health services as a consequence of implementing the HP program, which is associated with the identified theme of transparency.

Engagement, trust and understanding within partnerships have also been reviewed as key elements for the implementation of the HP. Organizational aims and values become transparent and aligned with the implementation of HP, which is perceived as “proof” of the viability of relationships between different healthcare sectors.

Shared governance of HP by the PHN and the LHD has facilitated this process, but it has also led to an identified problem about the unclear reporting accountabilities across organizations of people contracted to an individual organization. This resulted in miscommunication and misallocation of resources, which subsequently affected the prioritization of the project. HP development entailed identifying which and how services are provided within the LHD and across sectors. For HP to be effective this must be delineated as one part of the referral process inside the program; not doing so may hinder the effective utilization of HP. The indicators required to assess the success of HP beyond being a “work in progress” are unclear, when considering the many different responses
focused on this question. Nevertheless, if one examines the effectiveness of HP in facilitating a transparent means of communication and accessible information for its users, it currently appears to have succeeded on these counts.

**Limitations**

Limitations of this study included that the study only covered one LHD but not a wider distribution of population. Therefore, it does not provide evidence for national and international generalizability. The study design was dependent on volunteer participation for two arms of the study: GPs surveys and interviews, requiring vast dynamic engagement (need for incentives); and access to diabetes clinics for “passive” recruitment of participants. Despite of a number of strategies for engaging the GPs, the uptake of the GP interview has been a challenge for the research team. The challenge of adequate sample size and purposive sample characteristic has significant impact on the results for this study. Moreover, the study focus was on T2DM, which resulted on low numbers for GPs online survey uptake and translated into even lower numbers of possible participants for the semi-structured interviews. This study only provides a process evaluation.

One of the background aims of this study was to identify and develop research questions based on the study experience. This study provides a process evaluation for an integrated care initiative within our region. This evaluation includes information on development and project implementation. Further longitudinal large studies on utilization rate impact on integration in the diabetes field would be useful to investigate and explore the health outcomes and impact of HP with the community. Broader scope for evaluation of multiple HP is important to identify the best ways of ensuring sustainability and uptake of the program, identify outcomes related to the effect on patient care and provide lessons for other regional health service interventions.

The results of this study will be ideally placed to inform future policy amendments in the area of integrated healthcare, as well as serving as a guide on implementing HP in the future, its sustainability and how it aligns with the NSW Integrated Care Strategy.

**Conclusions**

A mixed-methods evaluation of the development, implementation and acceptance of the HP project supports that HP appears to have been successful on the counts of facilitating the integration of patient care across different healthcare sectors.

This study has provided insight into the details of delivery of integrated healthcare using HP. It provides a preliminary analysis of the lessons learnt for the implementation of HP in a metropolitan region in Australia. While suggestive of being useful to communicate between acute and primary healthcare, further analysis and research is required to demonstrate that this is a useful tool in improving management of chronic conditions. This study has also served to increase understanding of the practical issues for implementation of Diabetes HP working with patients, GPs and other healthcare providers. Future projects should be targeted to appropriate patient cohorts and include other chronic health conditions.

**References**


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