Primary Care Network (PCN) As A Model Of Care For GP Chronic Disease Management

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ABSTRACT

Objectives: The Primary Care Network (PCN), comprising small private General Practitioner (GP) clinics supported by a mobile team of dedicated nursing and allied health professionals, as well as a chronic disease register (CDR), can be an alternative model for good chronic disease management. GPs in the network manage the mobile team, set common goals for each clinic and self-evaluate. In this paper we share the data and experience of the first year of the pilot PCN in Singapore.

Methodology: Process indicators for diabetic patients seen from April 2011 to March 2012 (pre-PCN) and April 2012 to March 2013 were compared. McNemar test was performed.

Results: There was statistically significant improvement in process indicators of yearly DRP, DFS and Urine ACR screening for diabetes in the first year post-PCN compared to baseline data. Rates of regular HbA1c and LDL-C testing, as well as smoking blood pressure and weight assessment also showed statistically significant improvement.

Conclusion: The PCN has shown promise in improving quality of care for diabetes among small private GP clinics. Key challenges to the success of PCN include good clinician leadership, suitable IT support, and creating a viable business model for GPs.

Key Words: PCN; GP; Team-based Care; Mobile Team; Chronic Disease

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INTRODUCTION

An urgent challenge for healthcare in Singapore today is our rapidly ageing population. The number of citizens aged 65 and above will triple to 900,000 by 2030.[1] Along with an ageing population comes an increased prevalence of chronic diseases which could pose a huge burden on our healthcare system in the near future, especially if not managed well.

"Primary health care is well positioned to have an important impact on outcomes of care for patients with chronic conditions," says Grant M Russell.[2] In Singapore, primary health care is provided through an island network of outpatient polyclinics and private General Practitioner's clinics. There are currently 18 polyclinics and about 2,400 private General Practitioner's clinics.[3] The 2010 Primary Care Survey showed that Polyclinics, despite seeing only 19% of overall primary care attendances, are managing 45% of chronic condition load. On the other hand, General Practitioners (GPs), who are seeing 81% of overall primary care attendances, are only managing 55% of the chronic patient load.[4]

The Primary Care Master Plan, announced in 2011, aims to engage the GPs to help transform the primary care landscape and enhance chronic disease management in the community. Community Health Centres (CHCs) and Family Medicine Centres (FMCs) are the care models of this master plan.[5]

The Primary Care Network (PCN), comprising small private GP clinics supported by a mobile team of dedicated nursing and allied health professionals, can be an alternative model. By providing team-based care, it can expand the amount of time available for patient care and allow physicians to focus on the more complex medical care issues.[6]

The concept of PCN is not new. It is a well-established model of care in New Zealand and Canada,[7,8] and comprises a network of GP clinics coming together to share resources in providing nursing and allied health care as well as administrative support such as care coordination. The aim is to provide more holistic care through a team-based care approach. GPs in the network lead the team, manage the shared resources, set common goals and self-evaluate.

In this paper, we share the experience of the PCN pilot project, as well as some of the preliminary findings of improvement in process indicators. This pilot project started in April 2012 and is a collaborative effort between Frontier Healthcare Group and Agency for Integrated Care (AIC).

The PCN pilot project

This pilot project started with nine clinics of Frontier Healthcare Group. The clinics are located in different parts of the island.

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The two key elements of the PCN are the provision of a mobile team comprising of nursing and allied health practitioners, and the tracking of chronic patients' clinical indicators through the chronic disease register (CDR). Services provided by the mobile team include nurse educator counselling, Diabetic Retinal Photography (DRP) and Diabetic Foot Screening (DFS).

A CDR was set up identifying the number of chronic patients being managed at each clinic and within the network as a whole. Individual clinic assistants maintained the CDR in collaboration with a centralised staff team. Patients with at least one of the following five chronic conditions were included in the register: diabetes mellitus, hypertension, lipid disorder, asthma, and chronic obstructive pulmonary disease. Only patients whose chronic conditions were being managed by the GP clinic were included in the register. Patients with the stated chronic medical condition who visited the GP for acute care only were not included in the register. We verified this by checking through the chronic medications dispensing records.

Data fields in the CDR included both process indicators and care outcomes in accordance with our national Chronic Disease Management Programme (CDMP)[9] guidelines. Indicators for diabetic patients included HbA1c, blood pressure (BP), LDL-Cholesterol (LDL-C), weight, smoking assessment, DRP, DFS, urine albumin/creatinine ratio (UACR). Smoking assessment was considered to have been performed only if there was documentation in the case-notes of the patient having been a smoker or non-smoker.

Methods

Data from April 2011 to March 2012 (pre-PCN) and April 2012 to March 2013 (PCN first year) were compared. Summary statistics were given as mean and standard deviation for continuous variables and percent frequencies for categorical variables. For pre- and post-PCN comparisons of process indicators, the McNemar test was performed using a 2 x 2 table to test for statistically significant differences. All the patients on the CDR for DM were included in the analysis. Patients who were followed up for less than one year were excluded as they were not due for some of the annual requirements. Significant changes in care outcomes such as improvement in HbA1c levels and successful weight loss require a longer time horizon to manifest, and thus will not be presented in this paper.

Results

A total of 377 diabetic patients were on the CDR with at least one year follow up and thus used for analysis. Mean (SD, range) age of the patients was 57.2 (11.64, 25 to 93) years. Forty-five percent of the patients were female, 73% were Chinese, 18% were Malay, 7% were Indians, and 2% were of other ethnicities.

There was a statistically significant improvement in process indicators of yearly DRP, DFS and UACR screening for diabetes in the first year post-PCN compared to baseline data. Rates of regular HbA1c and LDL-C testing, as well as smoking blood pressure and weight assessment also showed statistically significant improvement. Please refer to Table I for the detailed analyses.

Table I: Proportion of diabetic patients (%) having done their process indicators.

Indicators (Results expressed as % achieved)	pre-PCN	PCN 1st year	P value
Diabetic retinal photography (DRP)	26.3	39.0	<0.001
Diabetic foot screening (DFS)	17.5	37.1	<0.001
Urine Albumin Creatinine Ratio (UACR)	45.1	63.9	<0.001
Body weight assessment	36.1	70.8	<0.001
Smoking assessment	30.2	50.7	<0.001
1 Blood pressure measurement	89.4	93.6	0.0356
1 HbA1c Test	68.7	80.4	<0.001
1 LDL-C Test	69.5	79.8	<0.001

Discussion

In this pilot study to evaluate the implementation of PCN in Singapore, the preliminary results were encouraging. An improvement in the process indicators among the patients with diabetes within the first year of PCN was evident.

There are several reasons for the effectiveness of a PCN.

Firstly, through the setting up of a chronic disease register, we are now able to provide, for the first time, data to reflect GP standards of chronic care (including both process indicators and care outcomes). This facilitates self-evaluation and peer review. It also allows for comparison with benchmarks that are available from the public institutions such as the Polyclinics.

The CDR also provides a systematic process for tracking of patients' disease control and care outcomes. Patients due for their regular chronic disease screenings are given telephone reminders. Patients whose chronic diseases are poorly controlled from the care indicators (i.e., HbA1c levels) are highlighted to the multidisciplinary team for discussion. Targeted interventions such as counselling by nurse educators can then be implemented. The goal of this is to translate to better control of chronic diseases, reduced complications of chronic diseases, and reduced downstream costs.

Secondly, the availability of a mobile team to provide nursing and allied health services in and within the vicinity of the clinic confers much convenience to the patients and may help to improve compliance. Having these services under "the same roof" as the GP also reinforces the concept of team-based care. The fees for such services can be deducted through national schemes such as Medisave and CHAS, to help reduce out-of-pocket payments and improve compliance to follow-up.

Thirdly, the PCN ensures relevant support for GPs to provide team-based care which is crucial in managing chronic conditions well. GPs who are managing chronic patients in isolation often do not have enough time to deliver all the preventive and chronic disease services recommended in national clinical care guidelines. The support of a dedicated nurse educator within the mobile team, as well as systemic-level support in maintaining the CDR database and initiating inter-clinic quality improvement initiatives are likely to give confidence to GPs to improve in chronic disease management.

Limitations

The GPs currently in the pilot PCN are GPs who are keen to measure and improve their care in chronic disease management. There is thus a selection bias. Whether such encouraging results can be replicated as PCN grows in size, will be dependent on the motivation of GPs that subsequently come on board.

Secondly, we acknowledge that with the general increase in affluence and health awareness in Singapore, patients are getting more aware of the need for regular monitoring of their conditions and screening for complications, improving compliance. This may be a confounder in our results.

Thirdly, while the results show significant improvement, there is still much room for improvement in process indicators. Also, due to the lack of local data on chronic disease management from the private sector we are unable to benchmark our results. We hope that more chronic disease databases can be set up in the near future to provide avenues for benchmarking and continuous quality improvement.

Challenges ahead for the PCN

From this experience, we also recognised several challenges in sustaining and expanding the PCN.

Firstly, clinician leadership is crucial. The GP leaders would need to galvanise GPs to come together to form a network, provide leadership and be held accountable for its clinical and corporate governance. This reflects a "bottom-up" approach for engaging GPs which is likely to achieve better results than the traditional "top-down" approach adopted by policy-makers.

Secondly, the current take-up of chronic disease load by the GPs is low as the business model for managing chronic cases is not attractive to the GP practice. Besides relying on GPs' goodwill to take on more chronic cases, there should be more intervention by the state in the form of funding.

Thirdly the current data collection is manual and labour intensive. A good IT system would help facilitate more efficient data collection. With a network of GP practices, sufficient economies of scale may be achieved to make this a worthwhile investment.

We acknowledge that PCN is in its early days. While improvement in process indicators may have been demonstrated, any improvement in care outcome can only be assessed later.

CONCLUSION

The PCN can be an alternative model in the Primary Care Master Plan, to enhance chronic care by the GPs. The pilot PCN has shown initial promising results. Key challenges to the success of PCN include incentivising good GP clinical leadership, providing good IT support for data collection as well as creating a viable business model for implementation of PCN by GPs.

Declaration of conflict of Interest

The authors declare that they have no conflict of interest in relation to this article.

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