



General Practice Services Committee

GPSC Literature Review

What are the characteristics of an effective primary health care system for the future?

Question 6:

Should we customize primary care for specific sub - populations?

Prepared for the GPSC Workplan & Budget Working Group

Prepared by Shirley Bryant, Indigo Inc.

February 2, 2015

Table of Contents

Executive Summary.....	1
Should we customize primary care for specific sub-populations?	2
Methodology.....	2
Introduction	2
Should practices organize themselves differently to serve diverse or vulnerable populations?	3
Regional Health Collaborative.....	4
Chronic Care Model	5
Medical Home Model.....	5
Shared Care	7
IT/E-Health	7
Home Based Primary Care	8
Utilization of non-medical roles: Health Trainers, Patient Liaison Officer, Patient Navigators.....	8
Student Run Clinics	9
Peer Health Coaching.....	10
Should we customize services to deliver effective primary care?	10
Diabetes Care	11
Hypertension.....	12
HIV Care	13
Asthma	14
Mental Health	14
Targeting care for specific populations: how and whether we should customize delivery of primary care?	15
Migrants.....	16
HIV Infected	16
Homeless.....	16
Developmental Disabilities	19
Appendix A: Acronyms Used in this Report.....	20
Appendix B: Questions Guiding the Preparation of this Report	21
References	22

Executive Summary

The overarching theme of this review is how an effective primary health care system will look in the future. This review is focused particularly on whether primary care should be customized for specific sub-populations. A number of models that serve diverse or vulnerable populations were reviewed. These models included a Regional Health Collaborative, a Chronic Care Model, Medical Home Models and a Shared Care Model. These models focused on incorporating cultural competency, improving coordination of care across the continuum and maximizing effectiveness and efficiency of primary care systems. Other approaches included a number of IT or e-health initiatives, the delivery of home based care, Student Run Centres and the utilization of non-medical roles such as Health Trainers, Patient Liaison Officers and Patient Navigators.

In terms of customizing services to deliver effective primary care, the most frequent analyses focused on diabetes care, hypertension, HIV, asthma and mental health. There were several recurring themes throughout the literature focused on adherence to clinical recommendations, investments in quality improvement initiatives, pay-for-performance and other financial models, integration of support groups into health services and moving specialized assistance into a primary care group in order to serve this hard-to-reach population.

In addition to customizing services to deliver effective primary care, the delivery of care targeted to specific populations such as migrants, HIV infected, homeless and individuals with developmental disabilities. Approaches to targeting these vulnerable groups included the provision of language interpretation and comprehensive interdisciplinary care and use of evidence-based guidelines. Case management, support groups and outreach were effective with the HIV infected population while housing services alongside primary care were effective with the homeless population. Ethical and high-quality research on primary care of adults with developmental disabilities remains an urgent priority.

Should we customize primary care for specific sub-populations?

Methodology

This section on primary care for specific sub-populations garnered many results in the peer-reviewed literature sourced through PubMed and other sources. A total of 145 article abstracts from the peer-reviewed literature and 4 from the grey-literature were provided. Of the 145 abstracts provided a total of 70 full articles were requested for further inspection. Of these 70 articles a total of 40 were used in this review.



Introduction

Bloch et al (2011) noted that poverty is widely recognized as a major determinant of poor health, and this link has been extensively studied and verified. Despite this strong evidentiary link, little work has been done to determine what primary care health providers can do to address their patients' income as a risk to their health. Their qualitative study explored the barriers to primary care responsiveness to poverty as a health issue. The consistency of these findings suggests it may be time to shift the research and clinical conversation away from identification of barriers and toward an examination of primary care-based interventions into poverty as a risk to patients' health.

Bostick et al (2006) noted that available clinical evidence consistently indicates that patients from minority populations are less likely than whites to receive needed services, including clinically necessary procedures. In fact, the Agency for Health Research and Quality's National Healthcare Disparities Report estimated that African-American patients receive poorer quality care than whites on two-thirds of the quality measures under examination. Physicians can provide the same quality of care to all patients by examining their clinical practice for potential sources of bias, providing patient centred care to all clients and helping to promote diversity within the physician workforce. The authors provide a number of recommendations for reducing racial and ethnic disparities in healthcare including:

- Providing quality of care to all patients irrespective of race or ethnicity
- Ensuring inappropriate considerations do not affect clinical judgement
- Eliminating biased behaviour from other healthcare professionals towards patients
- Encouraging participatory decision making with all patients
- Taking into account linguistic factors
- Increasing diversity in the physician workforce
- Addressing healthcare disparities in medical school curricula

There are many benefits of having a regular doctor including increased patient satisfaction, receiving better preventive care, more timely access to care, better compliance with medications, lower medical costs during hospitalization, less discomfort and dissatisfaction during chronic diseases and less disability. Using a secondary analysis of the National Population Health Survey, Talbot et al (2001) attempted to determine the characteristics of Canadians without regular doctors. According to their study, regional differences are the most powerful predictors of being without a regular doctor, yet we strive for a universal health system in Canada.

Should practices organize themselves differently to serve diverse or vulnerable populations?

Robert Ferrer (2007) reported in his population-based assessment, the extent to which Americans access both primary and specialty ambulatory care, and examined how equitable contact with different types of clinicians is across demographic and policy-relevant subgroups, such as those disadvantaged by low income, minority status, or uninsurance, as well as persons with chronic illness. One of the major findings was that primary care clinicians, especially family physicians, are a vital source of care for disadvantaged groups in the United States as primary care clinicians, especially family physicians, deliver a disproportionate share of ambulatory care to these populations. A diminished primary care workforce would leave considerable gaps in US health care equity. Health care workforce policy should reflect this important population-level function of primary care.

There was a significant amount of literature available related to healthcare for diverse and vulnerable populations. The following section provides descriptions and evaluations, where available, of a number of different practice organizations or methods of delivering care to these populations. Some models are well known with robust evaluations available through the literature and others are new initiatives that have yet to be evaluated or have evaluations underway. The models reviewed include:

- *Regional Health Collaborative: incorporating cultural competency, using information systems, and coordinating care across the continuum*
- *Chronic Care Model: maximising effectiveness and efficiency of primary care systems to enhance interaction between health care providers and patients*
- *Medical Home Model: participating in the medical home model did not necessarily equalize the playing field in terms of health care access, further research required particularly around communication issues and cultural competence from both the patient and provider perspective*
- *Shared Care: collaborative care improved access, satisfaction and outcomes for marginalized individuals in urban settings*
- *IT/E-Health Initiatives: modest improvements among socio-economically disadvantaged patient populations*
- *Home Based Care: primary care medical home visits that provide coordinated, multidisciplinary, timely, and patient-centered care can improve patient outcomes and decrease overall costs*
- *Health Trainers/Patient Liaison Officers/Patient Navigators: some benefits noted, although largely still under evaluation*
- *Student Run Centres: can play an important role in the provision of primary care for the homeless, offer considerable tangible benefits to patients, and provide a valuable contribution to medical education.*

- *Peer Health Coaching: clinically important and statistically significant improvements in patients who received peer coaching*

The wide variety of approaches to delivering primary care to diverse and vulnerable populations indicates the recognition of the importance of delivering equitable care to these hard-to-reach populations.

Regional Health Collaborative

Carrillo et al (2011) discuss a regional health collaborative developed by the New York-Presbyterian Hospital, in association with the Columbia University Medical Center. The initiative is a population-based, collaborative model of regional health planning and care coordination designed to improve health and reduce disparities. The collaborative aligns services to meet the documented health needs of the local community by incorporating cultural competency, using information systems such as electronic health records and disease registries, and coordinating care across the continuum. Within the study area, most of the residents are poor, Spanish-speaking immigrants who face socioeconomic and health disparities compared to residents of other parts of Manhattan and New York City. Taking the residents' culture, language, and health literacy into account plays an important role in efforts to meet health needs and reduce health disparities in this community. The initiative used a four-phased approach as follows:

1. Developed recommendations based on health needs, access barriers, and structural challenges and identified key areas of improvement that the collaborative would focus on. The targeted areas were cultural competency, information technology, access to care, and the patient-centered medical home.
2. Developed program recommendations, defined resource and cost challenges, and identified initial strategies for implementation.
3. Process and outcome measures and emergency department and inpatient hospital utilization metrics were established to monitor and track progress.
4. Provided complete care co-ordination across the continuum of services and supported the conversion of community physician practices into patient-centered medical homes.

The four main strategies included: establishing patient-centered medical homes; exchanging health information; implementing a targeted care intervention; and creating a "medical village" or interlinked medical homes connected to other health care providers, such as hospitals, as well as additional community resources, such as home care providers.

Preliminary utilization results from the first six months for ambulatory care-sensitive conditions (diabetes mellitus, congestive heart failure, and asthma) demonstrated a significant 9.2% decline in emergency department visits for ambulatory care-sensitive conditions and a 5.8% decrease in hospitalizations although this was not statistically significant. These results suggest that this population-based model can improve quality for all patients and reduce disparities by improving overall access and quality.

Chronic Care Model

Si et al (2008) conducted a cross-sectional study in 12 Indigenous communities in Australia's Northern Territory. Using the Chronic Care Model as a framework, they conducted a mail-out survey to collect information on material, financial and human resources relating to chronic illness care in participating health centres. The survey questionnaire contained six sections consistent with the six system components in the Chronic Care Model, notably:

1. Organisational influence
2. Community linkages
3. Self-management support
4. Clinical decision support
5. Delivery system design
6. Clinical information systems

Analysis of the results identified a number of strengths and weaknesses. The identified strengths of current systems suggest that remote Indigenous health centres are generally keeping abreast with the international practice in developing chronic care oriented systems. Identified weaknesses point to the need for refinement of current primary health care systems, not only by increasing financial, staffing and other resources, but also by seeking to implement improved and innovative management practices. These should aim to maximise the effectiveness and efficiency of primary care systems, and to enhance interaction between health care providers and patients.

Medical Home Model

BeLue et al (2011) report that children of immigrant families experience poor access to medical care and low satisfaction with the healthcare system compared to children from non-immigrant families. The patient-centered medical home model has the potential to reduce healthcare disparities experienced by children of immigrant families as it has been shown to be effective in decreasing costs and improving the quality of care for children with chronic disease and special health care needs and also increases the likelihood of receiving preventive care.

In their study, BeLue et al (2011) examined the relationship between medical home participation and immigrant status among children age 0–17. Specifically, they examined the relationship between medical home criteria and receipt of preventive health care services among children of immigrant and non-immigrant families to explore whether having a medical home equalizes the playing field for health care access, or do children living in immigrant families still have limitations in care access despite meeting the medical home criteria? The authors evaluated the following components of the Medical Home Measure: Does the child have a personal doctor or nurse; a usual source of sick or well care; family-centered care; problems getting needed referral; coordinated care?

Medical homes have the potential to reduce disparities in the receipt of necessary health care services. However results of BeLue's study show that immigrant children who have medical homes appear not as likely to receive necessary preventive services compared to non-immigrant children. In addition, immigrant children are in general less likely to have a medical home, and are reported to have greater chronic conditions than non-immigrant children. It is possible that while the family-centered medical care component is met among immigrant children who have a medical home, it is only met to minimal

levels. Future research and data collection efforts should include the exploration of variables that may explain issues specific to family-centered care, particularly communication issues and cultural competence from both the patient and provider perspective.

Aysola et al (2011) reported on a similar study using data from the National Survey of Children's Health. Their analysis revealed that children were less likely to have access to a medical home if they were from less socially cohesive neighborhoods, less safe neighborhoods, or neighborhoods with fewer amenities. These associations persisted for each measure even after adjustment for demographic and socioeconomic factors. Adjusting for these predictors reduced the income-related disparity in access to a medical home by half and reduced the racial or ethnic disparity in medical home access to a lesser degree.

The findings suggest that these neighborhood characteristics are independently associated with access to patient-centered medical homes and contribute greatly to the socioeconomic disparity in medical home access. More than 93 percent of children surveyed had access to both a personal provider and a usual source of care, so availability of primary care services did not appear to be the issue. However, a secondary analysis suggested that children from disadvantaged neighborhoods were less likely than others to experience family- or patient-centered care. Thus, where a child resides may play a crucial role in ensuring access to care that reflects a collaborative family or patient relationship with the provider. The authors highlight that understanding the role that social and environmental factors play in the uptake of new models of health care delivery is central to informing policy and ensuring that patient-centered medical homes are accessible in all communities.

Cooley et al (2009) studied whether having more aspects of a medical home would be associated with lower utilization of hospital and specialty services. Forty-three primary care practices were identified through 7 health plans in 5 states. Using the Medical Home Index, each practice's implementation of medical home concepts "medical homeness" was measured. Health plans provided the previous year's utilization data for children with 6 chronic conditions. Results showed that higher Medical Home Index scores and higher subdomain scores for organizational capacity, care coordination, and chronic-condition management were associated with significantly fewer hospitalizations. Higher chronic-condition management scores were associated with lower emergency department use.

Driscoll et al (2013) reported that Alaska Native and American Indian people experience poorer health outcomes than the overall US population. Access to quality health care represents one component of a comprehensive program to reduce health disparities in these populations. The patient-centered medical home model has been shown to improve primary care quality, access, and health outcomes and is postulated to be an effective approach for reducing health disparities in preventive and chronic disease care. The authors describe key elements of the transition to a patient-centered medical home model at Southcentral Foundation, a tribally owned and managed primary care system, and evaluated changes in emergency care use for any reason, for asthma, and for unintentional injuries, during and after the transition. The authors conducted a time series analyses of emergency care use from medical record data. All reported measures of emergency care use show a decreasing trend after the patient-centered medical home model implementation. Before the implementation, overall use and use for unintentional injuries had been increasing. The combined quantitative and qualitative results are consistent with decreased emergency care use resulting from a decreased need for emergency care services due to increased availability of primary care services and same-day appointments.

Shared Care

Kisley and Chisholm (2009) describe the experience and evaluation of a shared care project targeted at marginalized individuals living in the North End of Halifax, Nova Scotia. This population has high rates of psychiatric disorders, often comorbid with chronic medical conditions, and people have difficulty in obtaining the help they need. This primary care liaison service with community outreach covers all ages and includes outreach to emergency shelters, transitional housing and drop-in centres. The program is operated out of a Community Health Centre in the area. All team members are salaried to allow for compensation when undertaking non-billable services such as care co-ordination and education sessions. Evaluation of the project indicated that collaborative care improved access, satisfaction and outcomes for marginalized individuals in urban settings. Primary care providers with access to the service reported greater comfort in dealing with mental health problems, and satisfaction with collaborative care, as well as mental health services in general. The median wait time for access to services was 6 days compared with almost 40 days in practices without shared care. While the model works in this context the authors delineate the limitations of generalizability to other settings such as fee-for-service clinics.

IT/E-Health

Bennett et al (2012) discuss their study which examined obesity care for socially disadvantaged patients in a primary care setting. Participants were randomized into either usual care or a behavioral intervention that promoted weight loss and hypertension self-management using eHealth components. The intervention included tailored behavior change goals, self-monitoring, and skills training, available via a website or interactive voice response; 18 telephone counseling calls; primary care provider endorsement; 12 optional group support sessions; and links with community resources.

At the end of the two-year study period, intervention participants had larger mean weight losses compared with that in the usual care group, (-1.07 kg; 95% CI, -1.94 to -0.22). Mean systolic blood pressure was not significantly lower in the intervention arm compared with the usual care arm. The intervention produced modest weight losses, improved blood pressure control, and slowed systolic blood pressure increases in this high-risk, socio-economically disadvantaged patient population.

Highfield et al (2014) presented a case study in the redesign, development, and implementation of a web-based healthcare clinic search tool for virtual patient navigation in underserved populations. The primary focus of the study was to demonstrate the use of health information technology for the purpose of bridging the gap between underserved populations and access to healthcare. To improve underserved communities' potential access to healthcare, St. Luke's Episcopal Health Charities created two web-based health information portals, Project Safety Net and the Breast Health Portal, to connect individuals to subcounty level healthcare resources. The original Project Safety Net and the Breast Health Portal provided an online clinic search that gave users information on clinics based on their address or zip code, along with information on clinic hours, languages spoken, hours of operation, eligibility requirements, payment plans accepted, and a detailed list of services provided. The site needed an upgrade in 2010 and the objective of the article was to describe the redevelopment and enhanced functionality of the portals. A combination of interviews and focus groups was used to guide the development process. Interviewees were asked a series of questions about usage, usability, and desired features of the new system. The redesigned portals have improved the usability for patient navigators and the efficiency of maintenance for staff. The portals serve as a centralized location for

navigators to link uninsured and underinsured populations to healthcare. They allow for the identification of local resources that would otherwise have to be identified from multiple, non-integrated data sources. The authors note that Project Safety Net and the Breast Health Portal remain the only comprehensive web-based tools for virtual patient navigation in underserved populations in the Greater Houston healthcare delivery system.

Home Based Primary Care

DiCherrie et al (2012) discuss the resurgence of physicians making house calls and a growing body of literature supporting the effectiveness of the medical house-call model. In 1930, 40% of physician encounters were house calls, however by 1980 this dropped to less than 1%. Fortunately, the past two decades have seen a resurgence in the practice of house calls in the United States. In 1998, Medicare established new billing codes that better reflected the work of home visits and increased reimbursements for physician house calls by nearly 50%. There are several models of house calls, which serve multiple purposes ranging from Home-Based Primary Care, Concierge Medicine as well as Short Term and Transitional House Calls. The evidence over the past three decades strongly suggests that primary care medical home visits that provide coordinated, multidisciplinary, timely, and patient-centered care over time can improve patient outcomes and decrease overall costs. Research has shown that home-based primary care is an effective mode of healthcare delivery for medically complex patients, reducing acute and long-term care utilization and improving patient and caregiver level outcomes. In recent years, healthcare providers and payors have realized the potential financial benefits of providing timely and coordinated care to these patients, and the number and variety of house-call programs have increased greatly.

Utilization of non-medical roles: Health Trainers, Patient Liaison Officer, Patient Navigators

Health Trainers: Wilkinson et al (2011) reported on an innovative NHS behavioural intervention targeted at socially disadvantaged groups, the use of Health Trainers. Health Trainers aim to increase uptake of preventative services and facilitate healthy behaviour using evidenced-based behaviour change techniques. Specifically, Health Trainers aim to teach clients who are engaging in risky health behaviours how to set clear and attainable behavioural goals, action planning, self-monitoring, to reward successes and how to maintain behaviour change through coping strategies. Clients came to the service through their GP rather than through community or self-referral routes. Data show that the service reached disadvantaged groups and that those groups were engaging in risky health behaviours. Self-efficacy about changing behaviour was not strong and clients were unlikely to have made explicit behaviour-change plans prior to attending the service. Nevertheless, the current findings have implications for Health Trainers and other interventions aiming to reach, and change the health behaviours of disadvantaged groups. Such interventions could benefit from broadening their scope beyond GP referrals to community based and self-referrals to ensure that they reach those least likely to seek help through traditional routes. The data also suggest pivotal beliefs to target which appeared to be weak and/or in need of support specifically, increasing people's confidence in their ability to change their behaviour (self-efficacy) and support with forming simple but effective action and coping plans to strive for their chosen behavioural goal and maintain the changes in behaviour when they have achieved it.

Ball and Nasr (2011) also reported on the use of Health Trainers in their study, which examined the perceived value of the health trainer scheme. They conducted in-depth consultations with key primary care stakeholders, health trainers and their clients in two primary care trusts in northern and central

England. Results of the study revealed that the health trainer approach was regarded as effective in contributing to the support of a broad spectrum of health and welfare issues across widely diverse communities in the two primary care trusts evaluated. The health trainer service also appeared to provide added benefits of time, the 'person next door' and a 'one-to-one' approach, which facilitated an innovative and highly productive connection between the health trainer and client.

Patient Liaison Officer: Another new role in the UK general practice is that of the Patient Liaison Officer. Tavabie and Tavabie (2013) report that this role supports delivery of integrated community care for patients with complex health needs and long-term conditions. It seeks to improve communication and administrative functions between different care providers, and incorporate patient and carer voices in care planning and delivery. As this is currently a new role, future evaluation will include patient surveys and measures of impact on avoidable hospitalisation for vulnerable patients, and GP feedback on whether time has been released for new clinical work through reduction in administration carried out by PLOs.

Patient Navigator: Percac-Lima (2014) discussed the role of the Patient Navigator in increasing screening rates for colorectal cancer among vulnerable patient groups. Patient Navigators use culturally and linguistically matched outreach workers to explore patients' barriers to cancer care and to help them navigate the complexities of the health care system to obtain necessary care. In their study, eligible patients from the Community Health Centre with a Patient Navigator were compared with the rates from other practices without Patient Navigators. The authors found that the Patient Navigator program increased colorectal cancer screening rates in the Community Health Centre and improved equity in vulnerable patients. They conclude that long-term funding of Patient Navigator programs has the potential to reduce cancer-screening disparities.

Student Run Clinics

Campbell et al (2013) report on the role of a student-run clinic in the provision of primary care for Calgary's homeless populations. In January 2010, medical students from the University of Calgary opened a SRC at the Calgary Drop-In and Rehabilitation Centre, Canada's largest homeless shelter. During weekly evening clinic hours, a team of two students see patients. They take a history and perform an initial physical examination. General primary care is provided to whomever requests clinic services. There is no discrimination on the basis of payment. Patients are seen free of charge, even if they do not have proof of government health insurance. Students also assist patients with logistical arrangements for specialist or supportive care, and provide assistance obtaining relevant insurance or emergency medication payment.

Through a qualitative semi-structured interview format, the study reported on benefits, barriers and future directions of the student run centre.

- **Benefits:** All participants agreed that the student run centre had value for serving homeless populations and for medical education purposes. Student providers were thought to have more time to listen and educate patients than physicians, which may permit development of more empathetic relationships than possible in a typical brief patient-physician encounter.
- **Barriers:** Perceived barriers were related to infrastructure and personnel. While the location of the student run centre had its benefits, being in the Calgary Drop-In and Rehab Centre also posed certain challenges. Functioning in this location allowed the student run centre to only

serve a subset of the homeless population, those familiar or comfortable with the Calgary Drop-In and Rehab Centre. Families and seniors would be unlikely to access the clinic.

- Future directions: Communicating effectively with other organizations that serve homeless populations.

The authors felt that this study confirmed that in the context of a large Canadian city, student run clinics can play an important role in the provision of primary care for the homeless, offer considerable tangible benefits to patients, and provide a valuable contribution to medical education.

Peer Health Coaching

Primary care faces serious challenges due to the growing demand for diabetes care. Several models have been developed to address this need. One such model involves the use of peer educators and coaches. These individuals have the same disease as the people they assist, are usually volunteers and generally focus on providing ongoing support for self-management to a small group of clients. Because they experience similar challenges of living with the same chronic condition as the patients they assist, peer supporters are uniquely poised to engage and motivate other patients in self-management. Thom et al (2013) conducted a randomized control trial of patients from 6 public health clinics in San Francisco. The authors found that clinic-based peer coaching for low-income, underserved patients with poorly controlled type 2 diabetes had a clinically important and statistically significant greater reduction in HbA1C levels in patients who received peer coaching compared with those in usual care.

Should we customize services to deliver effective primary care?

There were many articles devoted to the topic of specialized services to be delivered in a primary care setting. The most frequent analyses focused on:

- *Diabetes Care*
- *Hypertension*
- *HIV*
- *Asthma*
- *Mental Health*

The recurring themes in terms of delivering these services in a primary care setting included:

- *Adherence to clinical recommendations*
- *Investments in quality improvement initiatives*
- *Pay-for-performance and other financial initiatives for physicians*
- *Appropriate identification of candidates for intervention*
- *Accessible and responsive to needs in the community*
- *Integration of support groups into health services*
- *Moving specialized assistance into a primary care group*
- *Co-location of services*

Diabetes Care

United States - Residents in rural communities in the United States, especially ethnic minority group members, have limited access to primary and specialty health care that is critical for diabetes management. In their study of African American, Native American and white 65+ patients with diabetes living in rural areas, Bell et al (2005) surveyed patients about their utilization of primary care and specialists over the past year. The results indicated a low use of specialty diabetes care providers across ethnic groups and reflected the importance of primary care providers for diabetes care. The authors concluded that efforts should be made to ensure that primary care providers in rural areas are adhering to clinical recommendations to enhance diabetes management.

United Kingdom - Gray et al (2007) report that diabetes is a growing public health concern worldwide. The prevalence of diabetes is increasing rapidly, and diabetes contributes significantly to overall health disparities in many countries. South Asians comprise more than one-fifth of the global population and have a particularly high prevalence of diabetes-related morbidity and mortality. Minority ethnic groups living in developed countries such as the UK and United States generally have a higher prevalence of diabetes and higher mortality rates than the general population. In their population-based study, Gray et al (2007) found considerable ethnic disparities in intermediate clinical outcomes, with blacks and south Asians significantly less likely to meet all three treatment targets for diabetes than whites. These disparities were present—after controlling for age, gender, and neighbourhood socioeconomic status—in a health care system that provides universal health coverage and has been subject to an ambitious program of quality improvement over the past decade. Overall, substantial investment in quality improvement initiatives in the UK may have led to more systematic and equitable processes of care for diabetes. However, disparities in intermediate clinical outcomes have persisted, suggesting that access to high quality health care, although important, remains only one facet of an effective strategy to tackle health disparities. Additional strategies targeting ethnic minority groups are required to reduce disparities in chronic disease outcomes.

This finding was echoed by Verma et al (2010). The authors report that in the UK considerable investment has been provided to enhance standards of clinical care for patients with diabetes. Investments have included the introduction of a National Service Framework for Diabetes in 2001 and the introduction of the new contract for general practitioners in 2004 in which 25% of general practice income is generated from achieving key quality targets in a pay-for-performance scheme. Despite these initiatives, ethnic minorities continue to bear a disproportionate burden of the diabetes epidemic in the UK. While studies have shown major improvement in diabetes care over a 10-year period among an ethnically diverse population in North-West London, improvements in care varied markedly across ethnic groups. At the end of their 10-year population based repeated cross sectional study in primary care, the authors found black patients remained less likely to achieve blood pressure control compared with the white group. In contrast, South Asian patients were found to have better lipid control, more likely to be prescribed lipid-lowering treatment and oral hypoglycaemic agents but less likely to be prescribed insulin than the white group.

Australia - Thomas et al (2007) note that Indigenous Australians have high rates of diabetes and its complications. The estimated prevalence of diabetes among Indigenous adults is between 10% and 30%, two to four times higher than for non-Indigenous Australians (Si et al, 2008). Thomas et al (2007) examined ethnic differences in the management of patients with type 2 diabetes in Australian primary care. The authors examined the management of patients identified by their GP as having an Indigenous

ethnic background, and contrasted it with the care of non-Indigenous patients consecutively presenting to the same practice. Although seeing the same physicians and receiving the same medications as non-Indigenous populations, glycaemic and smoking cessation targets remained unfulfilled in Indigenous patients. Their cross-sectional study confirms Aboriginal ethnicity as a powerful risk factor for microvascular and macrovascular disease, which practitioners should use to identify candidates for intensive multifactorial intervention.

A study by Cuesta-Briand et al (2014) suggested that Indigenous and socioeconomically disadvantaged people tailor their health care-seeking behaviour to the limitations imposed by their income and disadvantaged circumstances. To reduce inequities in care experiences, diabetes services in primary care need to be accessible and responsive to the needs of such groups in the community.

Marley et al (2012) reviewed quality indicators of diabetes care in a remote-area Aboriginal primary health care over a period of 10 years. The study took place in Derby, a small remote Western Australian town with a harsh seasonal climate, 230 km from the nearest regional centre and 2350 km from Perth tertiary referral centres. The 2006 census rated the Derby–West Kimberley area as the fifth most disadvantaged in Western Australia. Between 1999 and 2009 several major activities and factors were implemented that were likely to have directly affected quality of care provided to patients with diabetes. These included:

- Aboriginal community-controlled health service
- A purpose-built facility
- Electronic health information systems
- Consistency of senior staff
- Specialist outreach services
- Formal and informal teaching and upskilling incorporated into routine practice
- CQI approaches based on a culture of organisational appraisal and improvement
- Formalised CQI processes
- Regional support and standardisation of systems

Sustainability of chronic disease programs has previously been reported to be a major challenge in this area, however over the 10 years, the proportion of clinical care activities undertaken according to regional protocols increased significantly, with very high levels recorded in the last 3 years (at least 70% of patients had each activity recorded). There were significant improvements in both systolic and diastolic blood pressure and cholesterol levels over the 10 years. In the final year, 69% of patients had at least half their blood pressure measurements in the normal range and 83% had median annual cholesterol levels in the normal range. There were small improvements in HbA1c levels that approached statistical significance. In the final year, 34% of patients had median annual HbA1c levels of 7.0%. The authors concluded that diabetes monitoring and outcomes can be improved and maintained over a 10-year period in a well-supported remote Aboriginal community-controlled health service setting.

Hypertension

Interventions to increase patient–physician communication are important strategies to improve hypertension care and outcomes in underserved populations. Cooper et al (2011) report on their Patient–Physician Partnership Study which compared the effectiveness of patient and physician interventions, separately, and in combination with one another, with the effectiveness of minimal interventions, by evaluating intervention impact on:

1. Patient–physician communication behaviours
2. Patient ratings of the interpersonal process of care
3. Patient adherence to medications
4. Blood pressure levels and control over 12 months

The study occurred in 14 urban community-based primary care sites chosen because they serve primarily low income and/or ethnic minority patient populations. Approximately 60 to 100% of the patients in participating sites were African-American, and 35% to 55% earned below 200% of the federally defined poverty guidelines. Visits of trained versus control group physicians demonstrated more positive communication change scores from baseline. At 12 months, the patient and physician intensive group compared to the minimal intervention group showed significantly greater improvements in patient report of physicians' participatory-decision making and patient involvement in care dimensions related to doctor facilitation and information exchange. Improvements in patient adherence and blood pressure control did not differ across groups for the overall patient sample. However, among patients with uncontrolled hypertension at baseline, non-significant reductions in systolic blood pressure were observed among patients in all interventions. The authors conclude that interventions that enhance physicians' communication skills and activate patients to participate in their care positively affect patient-centered communication, patient perceptions of engagement in care, and may improve systolic blood pressure among urban African-American and low socioeconomic status patients with uncontrolled hypertension.

Chuang et al (2014) report on the use of Panel Management with patients with hypertension. Panel Management is system of care that allows the targeting of groups of patients with similar needs, and has been shown to be an effective way to improve chronic disease management. Panel Management involves:

- Systematic identification of groups of patients at-risk or with gaps in care
- Outreach to improve follow-up care
- Implementation of guideline-based interventions
- Tracking and monitoring indicators of care delivery and outcomes

For their study, a patient registry was developed to track hypertensive patients over time and to recall patients with uncontrolled hypertension for planned care visits during which evidence-based interventions for hypertension were delivered. The percent of patients gaining control of blood pressure and change in blood pressure were measured between 6 and 9 months after enrollment. The authors found that Panel Management for hypertension can be effective and can be implemented in a low-income, urban, primary care clinic setting given appropriate staffing allocation.

HIV Care

To address poor health care access and utilization in marginalized individuals in New York City, Cunningham et al (2008) developed a collaborative health care program that delivers comprehensive HIV medical care and support services to a predominantly minority, substance-using, unstably housed population. The objective of their analysis was to evaluate whether use of support services (case management, outreach, support groups, mental health care) is associated with subsequent use of HIV health services within the health care program. Using a retrospective cohort study they extracted program data three months prior to Program enrolment through six months after Program enrolment.

The data included medical visits, support services visits, and socio-demographic data. The study found that case management and support groups were positively associated with subsequent quarterly medical visits and outreach was positively associated with subsequent medical visits in a traditional health care setting. The authors suggest ongoing research to explore how the integration of support services into health care programs for disadvantaged and underserved populations can improve HIV health care delivery and patient outcomes is crucial for both health policy and program development.

Asthma

Malbran et al (2008) report that asthma is a common chronic illness; an estimated 5.8% of people currently have asthma. Despite advances in diagnosis and treatment, asthma-associated morbidity and mortality have increased dramatically in the last 15 years, especially in poor and minority populations. While the study took place in a suburban neighbourhood of Buenos Aires, Argentina, the results of their interventional study suggest that moving specialized assistance (eg. an asthma specialist) to a primary health center and training patients and family in disease management would by-pass access to care barriers and reduce asthma morbidity. The findings obtained in the cross-sectional analysis at follow-up found significant improvement in all areas of asthma control, from symptoms scores to quality-of-life measurements.

Mental Health

According to Uebelacker et al (2009), depression is one of the most common conditions in primary care settings. Primary care physicians are the sole providers of care for many depressed patients. Recent estimates suggest that 40% of U.S. residents receiving mental health treatment are treated in the general medical health sector alone. Additionally, research suggests that not all depressed primary care patients are receiving adequate depression treatment. Recent trends in primary care research and practice have suggested that co-located or integrated mental health may improve the care and treatment outcomes of patients with mental health problems. With this background, the authors examined mental health treatment-as-usual amongst depressed patients in a large primary care practice in the U.S. with co-located mental health specialists. The authors also considered income and minority status. In this setting with co-located mental health care, most patients with elevated depressive symptoms were receiving some type of mental health care, indicating they had been identified as depressed. However, only half were receiving “minimally adequate care” while minority patients were less likely to receive any care. Patients who were more depressed, demonstrated poorer problem-solving ability, and had poorer physical health were more likely to receive any treatment and to receive minimally adequate treatment for depression. The authors conclude that even in the context of co-located mental health care, there is still room for improving treatment of depressed patients. For some depressed patients, an important first step will be to ensure they are receiving minimally adequate care. However, others may need more intensive care, including combined treatments.

Ayalon et al (2007) evaluated whether the integration of mental health into primary care overcomes ethnic disparities in access to and participation in mental health and substance abuse treatment. The authors conducted site-specific analysis of a multisite clinical trial to compare participation of black and white elderly in an integrated model of care (all mental health/substance abuse services are provided at primary care clinics) versus an enhanced referral model of care (all mental health/substance abuse services are provided at specialized mental health clinics). Overall, they found that an integrated model

of care is particularly effective in improving access to and participation in mental health/substance abuse treatment among black primary care patients.

Steele et al (2013) looked at the inclusion of persons with mental illness in patient-centred medical homes in Ontario. In Ontario, Canada, the patient-centred medical home is a model of primary care delivery that includes 3 model types of interest for this study: enhanced fee-for-service, blended capitation, and team-based blended capitation. All 3 models involve rostering of patients and have similar practice requirements but differ in method of physician reimbursement, with the blended capitation models incorporating adjustments for age and sex, but not case mix, of rostered patients. The authors evaluated the extent to which persons with mental illness were included in physicians' total practices (as rostered and non-rostered patients) and were included on physicians' rosters across types of medical homes in Ontario. In their study, they found that persons with mental illness were under-represented in the rosters of Ontario's capitation-based medical homes. These findings suggest a need to direct attention to the incentive structure for including patients with mental illness.

In New Zealand, beginning in 2005 the Ministry of Health began funding mental health initiatives across 42 Primary Care Organizations in order to support the development of mental health within primary care. O'Brien et al (2009) reviewed the initiative with the results of structured interviews identifying enablers and barriers to adoption. Key enablers included:

- Appropriate mental health training for staff and clinicians
- Guidelines which provide a sense of direction, cohesive planning and collaboration
- Funding available prior to the development of the initiative
- Cultural and community development especially from the indigenous population

Barriers to adoption included:

- The stigma of mental illness
- Lack of training as staff felt they lacked the necessary skills
- Competing priorities as providers commonly felt overloaded as they were expected to respond to multiple primary health priorities identified by the Ministry
- Current fee-for-service model of GP funding was seen to be a barrier because of the limitations placed on contact time, and the longer time necessary to complete a mental health
- Providers perceived that the secondary services were funded to care for people with long-term mental illness.

The authors concluded that further research is needed to identify what is happening at a practice and practitioner level, to understand how mental health services provided in primary care are perceived by consumers, and to establish the clinical effectiveness of interventions.

Targeting care for specific populations: how and whether we should customize delivery of primary care?

There appeared to be less information available as to how to target care for specific populations along

genetic and cultural predispositions, although diabetes care among indigenous and Southeast Asian populations is addressed in this and in the previous section. Some information was available about how to structure care for the following vulnerable populations:

- *Migrants: targeted approach to identify and register, provision of language interpretation, comprehensive interdisciplinary care and use of evidence-based guidelines*
- *HIV Infected: case management, support groups and outreach*
- *Homeless: increased efforts to address the barriers to appropriate health care, multi-agency approach, and targeted, co-ordinated networks of Primary Health Care and housing services with nurses working alongside community workers.*
- *Individuals with Developmental Disabilities: guidelines provided however ethical and high-quality research on primary care of adults with Developmental Disabilities remains an urgent priority*

Migrants

Using a retrospective cohort study Stagg et al (2012) found that levels of registration with GPs within a selected group of new entrants, as measured through record linkage, were low. Their study indicated that less than one-third (32.5%) of new entrants who are eligible for tuberculosis screening at ports register with a GP. The author felt that registration rates need to be improved by targeting resources to particular subgroups (eg, students and asylum seekers) and increasing awareness of eligibility for primary care among both migrants and GPs. Migrant groups with the lowest proportion registered are likely to be those with the highest health needs. The UK would benefit from a targeted approach to identify the migrants least likely to register for healthcare and to promote access among both users and service providers.

In Canada, Pottie et al (2014) reported on strategies to address the health concerns of vulnerable migrant populations. Using a modified Delphi process they utilized 41 primary care practitioners to identify and prioritize innovative strategies that could potentially improve the delivery of primary health care for vulnerable migrants. The 3 most highly ranked practice strategies to address delivery challenges for migrants were language interpretation, comprehensive interdisciplinary care, and evidence-based guidelines. Training and mentorship for practitioners, inter-sectoral collaboration, and immigrant community engagement ranked fourth, fifth, and sixth, respectively, as strategies to address delivery challenges. The selected strategies provide guidance for practices and health systems interested in improving health care delivery for migrant populations.

HIV Infected

As noted in the previous section, Cunningham et al's 2008 study strengthens the notion that the use of case management services, support groups and outreach are important elements in the care of HIV-infected individuals.

Homeless

Homelessness is a serious social issue that affects a large number of people in urban centres around the world. Homeless people have poorer health than the general population and often experience a disproportionate burden of acute and chronic health issues, including concurrent mental health and substance use disorders. They also have significantly higher mortality rates than the general population.

Khandor et al (2009) investigated the association between having a family doctor as the usual source of health care (an indicator of access to primary care) and health status, proof of health insurance, and substance use after adjustment for demographic characteristics. After adjustment for potential confounders and covariates, the authors found that the odds of having a family doctor significantly decreased with every additional year spent homeless in the participant's lifetime. Less than half of the homeless people in Toronto who participated in the study reported having a family doctor. Not having a family doctor was associated with key indicators of health care access and health status, including increasing duration of homelessness, lack of proof of health insurance coverage and having a chronic medical condition. The authors noted that increased efforts are needed to address the barriers to appropriate health care and good health that persist in this population despite the provision of health insurance.

Hewett et al (2011) discuss the morbidity trends in the population of a specialized homeless primary care service. In the UK, several specialist homeless primary care services have been developed in areas to try and meet the particular healthcare needs of the homeless population, but there are few data available on the outcomes of these developments. One such service, a full-time specialist primary healthcare service for homeless people in Leicester, the 20th most deprived local authority in the country, was set up in March 2000. The service includes a full team of nurses and GPs, with dedicated drug and alcohol workers, a sessional counsellor, aromatherapist, optician, and a mental health team including community psychiatric nurses, a psychologist, and consultant sessions. The service also includes a drop-in centre run by the YMCA, which also serves as the practice waiting area, and a 42-bed shelter run by the local authority. A weekly multi-agency meeting coordinates care between front-line agencies for the hardest to reach of the homeless population. The report studies the diagnoses of attenders between 2003 and 2009. The morbidity data provides a baseline for comparison with other services and suggests some trends, which should influence service planning. Alcohol has overtaken heroin as the most problematic drug of addiction for the homeless population. The authors suggest that consistent provision of drug treatment in this setting contributes to an increasing proportion of patients receiving treatment and an overall reduction in heroin dependency. A similar approach should be considered for alcohol dependency. While severe and enduring mental illness diagnoses are stable, anxiety and depression are increasing. Despite this observation, the proportion of patients who have ever self-harmed or attempted suicide has reduced, suggesting potential benefits from a multi-agency approach to mental health problems.

Dawson and Jackson (2013) completed a narrative synthesis of peer-reviewed research designed to determine:

1. Primary Health Care services that homeless youth access
2. Experiences of services, reported outcomes and barriers to use
3. Primary Health Care service needs of homeless youth

Their review found that homeless youth accessed a variety of services and delivery approaches. Increased PHC use is associated with youth who recognise they need help. Street-based clinic linked services and therapy and case management alongside improved housing can positively impact upon mental health and substance use outcomes. Barriers to service use include knowledge; provider attitudes, financial constraints and inappropriate environments. Findings support targeted, co-ordinated networks of Primary Health Care and housing services with nurses working alongside community workers.

In their research paper, “Delivering Primary Care to Homeless Persons: A Policy Analysis Approach to Evaluating the Options”, Short et al (2008) discuss “What is the most effective way to deliver point-of-first-contact or primary healthcare to homeless persons?”. The authors note that a search of the literature revealed insufficient empirical sources to answer the question using standard systematic review methodology. Instead, they used a policy analysis approach.

The literature suggests four broad options for delivering primary care to homeless persons differentiated primarily by the location of care delivery, but also by associated organizational features:

1. Status quo based on independent family doctors’ offices
2. Standard facility/clinic site
3. Fixed outreach site and
4. Mobile outreach service

The models were evaluated against the 7 evaluation criteria identified by the Working Group on Homeless Health Outcomes for the United States Department of Health and Human Services as seen below:

Evaluation criteria	Status quo model	Standard facility/ clinic site	Fixed outreach site	Mobile outreach service
Entitlement documents not required for healthcare or for ancillary services	poor	excellent	excellent	excellent
Service available at venues likely to suit homeless persons	poor	well	excellent	excellent
Collaboration with public health authorities on harm reduction strategies	poor	well	adequate	adequate
Multidisciplinary team care	poor	excellent	excellent	excellent
Established referral routes for specialty services	excellent	excellent	excellent	adequate
Social work assistance available for benefit entitlement, housing	poor	excellent	excellent	well
Service available at times likely to suit homeless persons	poor	well	adequate	excellent
Evidence of reduced emergency room use	poor	adequate	unknown	unknown
Special expertise in areas germane to the clinical conditions of homeless persons, e.g., substance abuse, sexually transmitted diseases	poor	excellent	excellent	well
User involvement in service planning and operation	poor	poor	poor	adequate
Appropriate access to electronic medical records by multiple providers	poor	well	adequate	well
Mechanisms to contact patients	poor	well	fair	fair
Hospital liaison for planning discharge	poor	unknown	poor	poor

While the literature on homelessness and health includes many descriptions of local interventions, no single paper provides a sufficiently generic experience upon which broad generalizations can be based.

It is easy to assume that a health system such as Canada's, which provides universal first-dollar coverage, meets the health needs of homeless persons. But the concept of "horizontal equity" that underlies the system – equal needs receive equal resources – fails to appreciate the different and far greater needs present in vulnerable groups. These populations require a system that incorporates "vertical equity," that is, the capacity to meet unequal needs with unequal resources. The disproportionate burden of illness borne by the homeless population constitutes a dramatic inequality of health need, yet in comparison to specialized services designed to meet these needs, the current model of primary care in Canada is inadequate and Canada's primary care system must urgently address the health needs of the homeless population.

Developmental Disabilities

Sullivan et al (2011) report that Adults with developmental disabilities (DD) have complex health issues, many of them differing from those of the general population. Good primary care identifies the particular health issues faced by adults with DD to improve their quality of life, to improve their access to health care, and to prevent suffering, morbidity, and premature death. In their paper, the authors present guidelines for working with this population in Canada. The approach used a consensus development method to update previously developed 2006 guidelines. The guidelines are extensive and can be found in full here: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093586/pdf/0570541.pdf>. These guidelines synthesize general, physical, behavioural, and mental health issues of adults with DD that primary care providers should be aware of, and they present recommendations for screening and management based on current knowledge that practitioners can apply. Because of interacting biologic, psychoaffective, and social factors that contribute to the health and well-being of adults with DD, these guidelines emphasize involving caregivers, adapting procedures when appropriate, and seeking input from a range of health professionals when available. The authors conclude that implementation of the proposed guidelines proposed would improve the health of adults with DD and would minimize disparities in health and health care between adults with DD and those in the general population. Nevertheless ethical and high-quality research on primary care of adults with DD remains an urgent priority.

Appendix A: Acronyms Used in this Report

FFS – Fee for Service

GP - General Practitioner

GPSC - General Practice Services Committee

IHI – Institute for Healthcare Improvement

NHS – National Health Service

NP – Nurse Practitioner

RN – Registered Nurse

DRAFT

Appendix B: Questions Guiding the Preparation of this Report

RESEARCH QUESTIONS

1. Should we customize primary care for specific sub-populations?
 - Should practices organize themselves differently to serve diverse or vulnerable populations?
 - Should we customize services to deliver effective primary care?
 - What would it look like? (e.g., South Asian population/clinic in Surrey)
 - Targeting care for specific populations: how and whether we should customize delivery of primary care? (E.g., genetic and cultural predispositions)

DRAFT

References

1. Ayalon L, Arean PA, Linkins K, Lynch M, Estes CL. Integration of mental health services into primary care overcomes ethnic disparities in access to mental health services between black and white elderly. *The American journal of geriatric psychiatry : official journal of the American Association for Geriatric Psychiatry*. 2007;15(10):906-12.
2. Aysola J, Orav EJ, Ayanian JZ. Neighborhood characteristics associated with access to patient-centered medical homes for children. *Health affairs (Project Hope)*. 2011;30(11):2080-9. Available from: <http://content.healthaffairs.org/content/30/11/2080.full.pdf>.
3. Ball L, Nasr N. A qualitative exploration of a health trainer programme in two UK primary care trusts. *Perspectives in public health*. 2011;131(1):24-31.
4. Bell RA, Quandt SA, Arcury TA, Snively BM, Stafford JM, Smith SL, et al. Primary and specialty medical care among ethnically diverse, older rural adults with type 2 diabetes: the ELDER Diabetes Study. *Journal of rural health : official journal of the American Rural Health Association and the National Rural Health Care Association*. 2005;21(3):198-205
5. Belue R, Degboe AN, Miranda PY, Francis LA. Do medical homes reduce disparities in receipt of preventive services between children living in immigrant and non-immigrant families? *Journal of immigrant and minority health / Center for Minority Public Health*. 2012;14(4):617-25. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4174363/pdf/nihms513211.pdf>.
6. Bennett GG, Warner ET, Glasgow RE, Askew S, Goldman J, Ritzwoller DP, et al. Obesity treatment for socioeconomically disadvantaged patients in primary care practice. *Archives of internal medicine*. 2012;172(7):565-74. Available from: http://archinte.jamanetwork.com/data/Journals/INTEMED/23009/loi120001_565_574.pdf.
7. Bloch G, Rozmovits L, Giambone B. Barriers to primary care responsiveness to poverty as a risk factor for health. *BMC family practice*. 2011;12:62. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3135547/pdf/1471-2296-12-62.pdf>.
8. Bostick N, Morin K, Benjamin R, Higginson D. Physicians' ethical responsibilities in addressing racial and ethnic healthcare disparities. *Journal of the National Medical Association*. 2006;98(8):1329-34. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2569559/pdf/jnma00195-0091.pdf>.
9. Campbell DJ, Sargious P, Lewanczuk R, McBrien K, Tonelli M, Hemmelgarn B, et al. Use of chronic disease management programs for diabetes: in Alberta's primary care networks. *Canadian family physician Medecin de famille canadien*. 2013;59(2):e86-92. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3576962/pdf/0590e86.pdf>.
10. Carrillo JE, Shekhani NS, Deland EL, Fleck EM, Mucaria J, Guimento R, et al. A regional health collaborative formed By NewYork-Presbyterian aims to improve the health of a largely Hispanic community. *Health affairs (Project Hope)*. 2011;30(10):1955-64. Available from: <http://content.healthaffairs.org/content/30/10/1955.full.pdf>.
11. Chuang E, Ganti V, Alvi A, Yandrapu H, Dalal M. Implementing panel management for hypertension in a low-income, urban, primary care setting. *Journal of primary care & community health*. 2014;5(1):61-6.
12. Cooley WC, McAllister JW, Sherrieb K, Kuhlthau K. Improved outcomes associated with medical home implementation in pediatric primary care. *Pediatrics*. 2009;124(1):358-64.
13. Cooper LA, Roter DL, Carson KA, Bone LR, Larson SM, Miller ER, 3rd, et al. A randomized trial to improve patient-centered care and hypertension control in underserved primary care patients. *Journal of general internal medicine*. 2011;26(11):1297-304. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3208476/pdf/11606_2011_Article_1794.pdf.
14. Cunningham CO, Sanchez JP, Li X, Heller D, Sohler NL. Medical and support service utilization in a medical program targeting marginalized HIV-infected individuals. *Journal of health care for the poor and*

underserved. 2008;19(3):981-90. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2705623/pdf/nihms113511.pdf>.

15. DeCherrie LV, Soriano T, Hayashi J. Home-based primary care: a needed primary-care model for vulnerable populations. *The Mount Sinai journal of medicine, New York*. 2012;79(4):425-32.
16. Cuesta-Briand B, Saggars S, McManus A. 'It still leaves me sixty dollars out of pocket': experiences of diabetes medical care among low-income earners in Perth. *Australian journal of primary health*. 2014;20(2):143-50.
17. Dawson A, Jackson D. The primary health care service experiences and needs of homeless youth: a narrative synthesis of current evidence. *Contemporary nurse*. 2013;44(1):62-75.
18. Driscoll DL, Hiratsuka V, Johnston JM, Norman S, Reilly KM, Shaw J, et al. Process and outcomes of patient-centered medical care with Alaska Native people at Southcentral Foundation. *Annals of family medicine*. 2013;11 Suppl 1:S41-9. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3707246/pdf/0110s41.pdf>.
19. Robert L. Ferrer . Pursuing equity: contact with primary care and specialist clinicians by demographics, insurance, and health status. *Annals of family medicine*. 2007;5(6):492-502
20. Gray J, Millett C, Saxena S, Netuveli G, Khunti K, Majeed A. Ethnicity and quality of diabetes care in a health system with universal coverage: population-based cross-sectional survey in primary care. *Journal of general internal medicine*. 2007;22(9):1317-20. Available from:
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2219761/pdf/11606_2007_Article_267.pdf.
55. Hewett N, Hiley A, Gray J. Morbidity trends in the population of a specialised homeless primary care service. *The British journal of general practice : the journal of the Royal College of General Practitioners*. 2011;61(584):200-2. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3047314/pdf/bjgp61-200.pdf>.
56. Highfield L, Ottenweller C, Pfanz A, Hanks J. Interactive web-based portals to improve patient navigation and connect patients with primary care and specialty services in underserved communities. *Perspectives in health information management / AHIMA, American Health Information Management Association*. 2014;11:1e. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3995492/pdf/phim0011-0001e.pdf>.
57. Khandor E, Mason K, Chambers C, Rossiter K, Cowan L, Hwang SW. Access to primary health care among homeless adults in Toronto, Canada: results from the Street Health survey. *Open medicine : a peer-reviewed, independent, open-access journal*. 2011;5(2):e94-e103. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3148004/pdf/OpenMed-05-e94.pdf>.
58. Kisely S, Chisholm P. Shared mental health care for a marginalized community in inner-city Canada. *Australasian psychiatry : bulletin of Royal Australian and New Zealand College of Psychiatrists*. 2009;17(2):130-3.
59. Malbran E, Rey GL, Malbran A. Asthma in a primary health care center serving a poor population: a descriptive and interventional study. *The World Allergy Organization journal*. 2008;1(12):200-4. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3650987/pdf/1939-4551-1-12-200.pdf>.
60. Marley JV, Nelson C, O'Donnell V, Atkinson D. Quality indicators of diabetes care: an example of remote-area Aboriginal primary health care over 10 years. *The Medical journal of Australia*. 2012;197(7):404-8. Available from: https://www.mja.com.au/system/files/issues/197_07_011012/mar10275_fm.pdf.
61. O'Brien A, Moir F, Thom K. The provision of mental health care by primary health organisations in the northern region: barriers and enablers. *Journal of primary health care*. 2009;1(2):120-5.
62. Percac-Lima S, Lopez L, Ashburner JM, Green AR, Atlas SJ. The longitudinal impact of patient navigation on equity in colorectal cancer screening in a large primary care network. *Cancer*. 2014;120(13):2025-31.
63. Pottie K, Batista R, Mayhew M, Mota L, Grant K. Improving delivery of primary care for vulnerable migrants: Delphi consensus to prioritize innovative practice strategies. *Canadian family physician*

Medecin de famille canadien. 2014;60(1):e32-40. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3994840/pdf/0600e32.pdf>.

64. Shortt SE, Hwang S, Stuart H, Bedore M, Zurba N, Darling M. Delivering primary care to homeless persons: a policy analysis approach to evaluating the options. *Healthcare policy = Politiques de sante*. 2008;4(1):108-22. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2645199/pdf/policy-04-108.pdf>.
65. Si D, Bailie R, Cunningham J, Robinson G, Dowden M, Stewart A, et al. Describing and analysing primary health care system support for chronic illness care in Indigenous communities in Australia's Northern Territory - use of the Chronic Care Model. *BMC health services research*. 2008;8:112.
66. Stagg HR, Jones J, Bickler G, Abubakar I. Poor uptake of primary healthcare registration among recent entrants to the UK: a retrospective cohort study. *BMJ open*. 2012;2(4). Available from: <http://bmjopen.bmj.com/content/2/4/e001453.full.pdf>.
67. Steele LS, Durbin A, Sibley LM, Glazier R. Inclusion of persons with mental illness in patient-centred medical homes: cross-sectional findings from Ontario, Canada. *Open medicine : a peer-reviewed, independent, open-access journal*. 2013;7(1):e9-20. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3654503/pdf/OpenMed-07-e9.pdf>.
68. Sullivan WF, Berg JM, Bradley E, Cheetham T, Denton R, Heng J, et al. Primary care of adults with developmental disabilities: Canadian consensus guidelines. *Canadian family physician Medecin de famille canadien*. 2011;57(5):541-53, e154-68. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093586/pdf/0570541.pdf>.
69. Talbot Y, Fuller-Thomson E, Tudiver F, Habib Y, Mclsaac WJ. Canadians without regular medical doctors. Who are they? *Canadian family physician Medecin de famille canadien*. 2001;47:58-64. Available from: <http://www.cfp.ca/content/47/1/58.full.pdf>.
70. Tavabie JA, Tavabie M. The patient liaison officer: a new role in UK general practice. *Quality in primary care*. 2013;21(5):303-13.
71. Thom DH, Ghorob A, Hessler D, De Vore D, Chen E, Bodenheimer TA. Impact of peer health coaching on glycemic control in low-income patients with diabetes: a randomized controlled trial. *Annals of family medicine*. 2013;11(2):137-44. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3601392/pdf/0110137.pdf>.
72. Thomas M, Weekes AJ, Thomas MC. The management of diabetes in indigenous Australians from primary care. *BMC public health*. 2007;7:303. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2174478/pdf/1471-2458-7-303.pdf>.
73. Uebelacker LA, Smith M, Lewis AW, Sasaki R, Miller IW. Treatment of depression in a low-income primary care setting with colocated mental health care. *Families, systems & health : the journal of collaborative family healthcare*. 2009;27(2):161-71. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2847802/pdf/nihms185793.pdf>.
74. Verma A, Birger R, Bhatt H, Murray J, Millett C, Saxena S, et al. Ethnic disparities in diabetes management: a 10-year population-based repeated cross-sectional study in UK primary care. *Journal of public health (Oxford, England)*. 2010;32(2):250-8. Available from: <http://jpubhealth.oxfordjournals.org/content/32/2/250.full.pdf>.
75. Wilkinson DL, Sniehotta FF, Michie S. Targeting those in need: baseline data from the first English National Health Service (NHS) health trainer service. *Psychology, health & medicine*. 2011;16(6):736-48. Available from: <http://www.tandfonline.com/doi/pdf/10.1080/13548506.2011.564191>.