



<http://www.diva-portal.org>

This is the published version of a paper published in *Health Policy and Planning*.

Citation for the original published paper (version of record):

Ameh, S., Klipstein-Grobusch, K., D'ambruoso, L., Kahn, K., Tollman, S M. et al. (2017)
Quality of integrated chronic disease care in rural South Africa: user and provider perspectives.
Health Policy and Planning, 32(2): 257-266
<https://doi.org/10.1093/heapol/czw118>

Access to the published version may require subscription.

N.B. When citing this work, cite the original published paper.

Permanent link to this version:

<http://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-133704>

Quality of integrated chronic disease care in rural South Africa: user and provider perspectives

Soter Ameh,^{1,2,*} Kerstin Klipstein-Grobusch,^{3,4} Lucia D'ambruoso,⁵ Kathleen Kahn,^{1,6,7} Stephen M Tollman^{1,6,7} and Francesc Xavier Gómez-Olivé^{1,6}

¹Medical Research Council/Wits University Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa, ²Department of Community Medicine, College of Medical Sciences, University of Calabar, Calabar, Cross River State, Nigeria, ³Division of Epidemiology and Biostatistics, School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa, ⁴Julius Global Health, Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, The Netherlands, ⁵Institute of Applied Health Sciences and Centre for Sustainable International Development University of Aberdeen, UK, ⁶The International Network for the Demographic Evaluation of Populations and Their Health in Developing Countries (INDEPTH) Accra, Ghana and ⁷Umeå Centre for Global Health Research, Epidemiology and Global Health, Umeå University, Umeå, Sweden

*Corresponding author. Dr. Soter Ameh, School of Public Health Building University of the Witwatersrand (Education Campus), 27 St Andrews Road, Parktown 2193, Johannesburg, South Africa and Department of Community Medicine, College of Medical Sciences, University of Calabar, Calabar, Cross River State, Nigeria. Tele: +27781010732 (South Africa), +2348050409859 (Nigeria). E-mail: sote_ameh@yahoo.com

Accepted on 10 August 2016

Abstract

The integrated chronic disease management (ICDM) model was introduced as a response to the dual burden of HIV/AIDS and non-communicable diseases (NCDs) in South Africa, one of the first of such efforts by an African Ministry of Health. The aim of the ICDM model is to leverage HIV programme innovations to improve the quality of chronic disease care. There is a dearth of literature on the perspectives of healthcare providers and users on the quality of care in the novel ICDM model. This paper describes the viewpoints of operational managers and patients regarding quality of care in the ICDM model.

In 2013, we conducted a case study of the seven PHC facilities in the rural Agincourt sub-district in northeast South Africa. Focus group discussions ($n=8$) were used to obtain data from 56 purposively selected patients ≥ 18 years. In-depth interviews were conducted with operational managers of each facility and the sub-district health manager. Donabedian's *structure, process* and *outcome* theory for service quality evaluation underpinned the conceptual framework in this study. Qualitative data were analysed, with MAXQDA 2 software, to identify 17 a priori dimensions of care and unanticipated themes that emerged during the analysis.

The manager and patient narratives showed the inadequacies in *structure* (malfunctioning blood pressure machines and staff shortage); *process* (irregular prepacking of drugs); and *outcome* (long waiting times). There was discordance between managers and patients regarding reasons for long patient waiting time which managers attributed to staff shortage and missed appointments, while patients ascribed it to late arrival of managers to the clinics. Patients reported anti-hypertension drug stock-outs (*structure*); sub-optimal defaulter-tracing (*process*); rigid clinic appointment system (*process*). Emerging themes showed that patients reported HIV stigmatisation in the community due to defaulter-tracing activities of home-based carers, while managers reported treatment of

chronic diseases by traditional healers and reduced facility-related HIV stigma because HIV and NCD patients attended the same clinic.

Leveraging elements of HIV programmes for NCDs, specifically hypertension management, is yet to be achieved in the study setting in part because of malfunctioning blood pressure machines and anti-hypertension drug stock-outs. This has implications for the nationwide scale up of the ICDM model in South Africa and planning of an integrated chronic disease care in other low- and middle-income countries.

Keywords: Agincourt study site, HIV, non-communicable diseases (NCDs), health outcomes, integrated chronic disease management, quality of care, primary health care, South Africa

Key Messages

- An integrated chronic disease management (ICDM) model was initiated as a national pilot in 2011 in selected primary health care (PHC) facilities in South Africa to leverage an established HIV treatment programme for improving quality of care for non-communicable diseases (NCDs). This study was a novel evaluation of a major initiative of the national department of health, one of the first of such efforts by an African ministry of health.
- An in-depth perspective of the quality of care in the ICDM model was assessed from the viewpoints of healthcare providers and users using Avedis Donabedian's structure, process, and outcome theoretical framework for evaluating the quality of healthcare. The manager and the patient narratives showed the inadequacies in *structure* (malfunctioning blood pressure machines and staff shortage); *process* (irregular prepacking of drugs); and *outcome* (long waiting times). Patients reported anti-hypertension drug stock-outs; sub-optimal defaulter-tracing; and rigid clinic appointments. Managers thought there was reduced HIV stigma because HIV and NCD patients attended the same clinic.
- These findings suggest that the purpose for which the ICDM model was initiated - to use the HIV programme as leverage for scaling up services for NCDs - is yet to be achieved. This has implications for the nationwide scale up of the ICDM model in PHC facilities in South Africa and planning of an integrated chronic care of communicable and non-communicable conditions in other low- and middle-income countries.

Background

Many low- and middle-income countries (LMICs) are witnessing an increasing burden of chronic non-communicable diseases (NCDs) (WHO 2010). Chronic conditions include all health problems that require ongoing management for at least six months encompassing NCDs (e.g. hypertension), but also expanding to include HIV (WHO 2002). This is due to the growing recognition of the transformation of HIV to a chronic condition as a result of rapidly expanding Antiretroviral Treatment (ART) resulting in increasing life expectancy (UNAIDS 2011).

Chronic non-communicable diseases are responsible for two-thirds of all mortalities worldwide with 80% of these deaths occurring in LMICs (WHO 2014a). It is estimated that the annual number of deaths from NCDs will increase to 55 million by 2030 (WHO 2013b) and Africa will have the greatest increase by 27% (WHO 2008b). Since the beginning of the HIV/AIDS epidemic, over 78 million people have been infected with the virus and 39 million people have died of HIV-related causes (WHO 2015). In 2011, nearly 70% of the 34 million people living with HIV (PLWHIV) worldwide resided in sub-Saharan Africa (SSA) (WHO, 2015). Thirty six million deaths due to chronic diseases could have been averted globally by 2015 if health systems were strengthened and small set of interventions were directed towards whole populations and high-risk individuals (Beaglehole *et al.* 2007).

In 2008, NCDs accounted for 29% of all deaths in South Africa (WHO 2011) and in 2012, mortalities due to NCDs had increased to 43% (WHO 2014b). The increase in NCD-related mortalities in

South Africa may be attributed to the rising prevalence of NCDs which is an outcome of improved life expectancy (Mayosi *et al.* 2009) in part due to the increased roll-out of Antiretroviral Treatment (ART). The increasing burden of NCDs in South Africa (Tollman *et al.* 2008) is occurring against the background of the gradually declining but persisting HIV infection with a prevalence rate estimated at 10% in the general population in 2014 (Statistics South Africa 2014), one of the highest in Africa. These numbers present the urgent necessity to address the dual burden of HIV and NCDs in South Africa.

Chronic disease services are fragmented with the HIV programme vertically controlled and administered in a 'silo' within the health system (Kawonga *et al.* 2013). Although the achievements of vertical programmes have been widely acknowledged (the smallpox eradication programme is a case in point) (Unger *et al.* 2003), these programmes address only a fraction of the need for healthcare; create duplication; lead to inefficient facility utilisation by recipients; and may lead to gaps in care (Brown 2001). In confronting the challenges posed by vertical programmes, Margaret Chan, the Director General of the World Health Organization (WHO) stated emphatically: 'We need a comprehensive, integrated approach to service delivery. We need to fight fragmentation' (Chan 2007).

The WHO defines integrated healthcare as 'the organisation and management of health services so that people get the care they need, when they need it, in ways that are user-friendly, achieve the desired results and provide value for money' (WHO 2008a). Following evidence that integrated chronic disease care improves patient health

outcomes (Janssens *et al.* 2007), the Joint United Nations Programme on HIV/AIDS (UNAIDS) recommended an integrated approach for chronic disease management. This approach leverages the innovations of the HIV programme to support or scale up services for NCDs (UNAIDS 2011) using the building blocks described in the Innovative Care for Chronic Conditions (ICCC) framework (WHO 2002).

In line with this recommendation, the National Department of Health (NDoH) in South Africa initiated the Integrated Chronic Disease Management (ICDM) model which uses a diagonal approach to health systems strengthening (Mahomed *et al.* 2014). The diagonal approach integrates the vertical HIV programme with the horizontal general health system (Knaul *et al.* 2015). The national pilot of the ICDM model commenced in June 2011 in selected PHC facilities in three of South Africa's nine provinces, i.e. Gauteng, North West and Mpumalanga (NDoH 2014). This is one of the first of such efforts by an African ministry of health.

The ICDM model has health facility, community and population components. Services in health facilities have been reorganised to improve operational efficiency and quality of care. In the communities, ward-based PHC outreach teams provide 'assisted' self-management to promote individual responsibility. The population component involves health promotion and screening (NDoH 2014). The priority areas of facility reorganization include coherence of care; reduced waiting time; defaulter-tracing activities; appointment systems; supply of critical medicines; prepacking of medication; and appropriate referral. In community-oriented integrated chronic disease care, an outreach team consisting of one professional nurse, three staff nurses and six community health workers operates within the community clinic serves. The outreach team is responsible for 6000 individuals in 1500 households (250 households per 1 community health worker), and is expected to manage at least 80% of defined health problems of the catchment population (NDoH 2014).

Quality of care and quality assessment

Several frameworks have been recommended for evaluating quality of care (Donabedian 1988a; WHO 2006; Hulton *et al.* 2000; Parasuraman *et al.* 1985). However, Avedis Donabedian's model has been used extensively in evaluating quality of healthcare and is regarded as a classic conceptual framework. Avedis Donabedian described seven elements of quality of medical care: efficacy, effectiveness, efficiency, equity, optimality, acceptability and legitimacy (Donabedian 2003). He argued that the choice and relative prioritization of these elements should be contextual and guided by the circumstances in which quality of care is assessed (Donabedian 2003). Donabedian described the quality assessment as a triad of structure, process, and outcome (SPO) constructs. He defined *structure* as the factors that affect the context in which care is provided (e.g. availability and functionality of equipment); *process* as the actions that make up healthcare (e.g. examination of patients); and *outcome* as the effects of healthcare on patients (e.g. waiting time). He postulated the relationships between SPO constructs based on the premise that good structure should promote good process, and good process should in turn promote good outcome. The SPO framework often represented by a chain of three boxes depicting the relationships between SPO constructs (Donabedian 2003) can be used to draw inferences about the quality of healthcare (Donabedian 1988a).

Integrated healthcare programmes have been well researched quantitatively (Huntington and Aplogan 1994; Briggs and Garner 2006) from the perspective of healthcare providers and relatively less so from a user perspective (Briggs and Garner 2006).

Furthermore, differing views of healthcare providers and users have been reported in few quantitative surveys that assessed provider-user perspectives and interactions on quality of integrated healthcare programmes (Briggs and Garner 2006). However, little is known about the use of a qualitative method to assess the quality of care in the ICDM model from the perspectives of and interactions between healthcare providers and users. The aim of this study was to assess the perspectives of healthcare providers and users and their interactions regarding the quality of care in the ICDM model in PHC facilities in a rural South African setting, using qualitative research to operationalise Donabedian's theoretical framework.

Methodology

Study setting

This research was conducted in PHC facilities in the rural Agincourt sub-district of Mpumalanga province, northeast South Africa. At the time of the study, the ICDM model was being implemented in 17 of the 38 PHC facilities in the sub-district. Seven of the 17 facilities implementing the ICDM model are situated in an area covered by the Agincourt Health and Demographic Surveillance System (HDSS), which has been monitoring the population in the area for two decades. The population under surveillance in July 2011 was 90 000 people in 16 000 households in 27 villages in which Tsonga is the most widely spoken language (Kahn *et al.* 2012). Government's development initiatives have led to improved housing and access to potable water, electricity and social security grants. However, infrastructure in the area is still limited and unemployment rates remain high (Kahn *et al.* 2007). All PHC health facilities in the Agincourt HDSS were selected for the study. Three referral public hospitals that serve these PHC health facilities are situated 25 km to 45 km from the study area (Kahn *et al.* 2007). These primary and secondary public health facilities serve socio-economically vulnerable populations in the study area.

Study design and study population

This qualitative study was a component of a broader mixed methods research project which evaluated the quality of care in the ICDM model and assessed the effectiveness of the model in improving patients' health outcomes in the study setting (Ameh *et al.* under review). This research was a case study of the seven PHC facilities implementing the ICDM model in the study area. The study population consisted of patients 18 years and above receiving treatment for chronic diseases at the health facilities; seven operational managers (nurses-in-charge) of the selected PHC facilities; and the sub-district health manager. Focus Group Discussions (FGDs) were conducted to obtain in-depth data from multiple patients to capitalise on group interactions and communication regarding lived experiences based on provider-user interface. In-depth interviews were held for the seven operational managers of the health facilities and the sub-district health manager to get the depth and breadth of providers' perspective on the quality of integrated chronic care and policy environment for implementing the ICDM model, respectively.

Inclusion and exclusion criteria for research participants

The ICDM model addresses the following disease categories: HIV/AIDS, tuberculosis, hypertension, diabetes, chronic obstructive pulmonary disease, asthma, epilepsy and mental health illnesses that are to be managed at PHC level (NDoH 2014). Considering the burden of chronic diseases in the study area, patients with markers of chronic diseases for HIV, hypertension, and diabetes in the health facilities

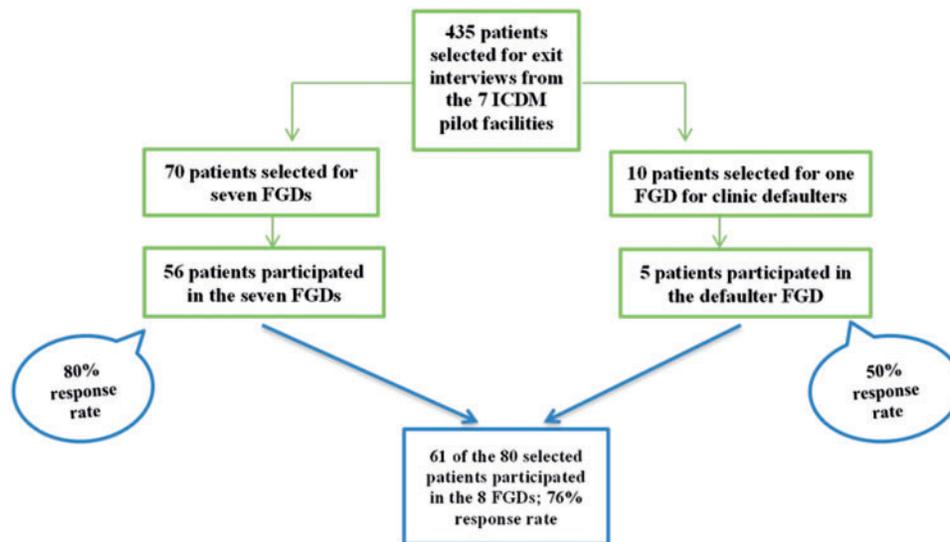


Figure 1. Sampling of patients for focus group discussions

were eligible to participate in the study. The criteria for recruiting patients for FGDs were i) having commenced treatment for the markers of chronic conditions in the study area six months before the implementation of the ICDM model; ii) having participated in the exit quantitative interviews organised by the research team before the FGDs and iii) willingness to participate. Participation in the exit quantitative interview was a criterion for recruiting patients for FGDs because the broader mixed methods research was designed for the quantitative and qualitative components to be conducted in series with the exit interviews preceding the FGDs. The purpose was to use the exit interviews as a means of identifying patients who overwhelmingly reported satisfaction or dissatisfaction with the quality of care in the priority areas of the ICDM model and purposively selecting these patients for FGDs to further explore their in-depth perspectives on the quality of care in the ICDM model. Patients receiving treatment six months before the ICDM model was implemented were selected to assess their levels of (dis)satisfaction with the quality of chronic disease care before and after the implementation of the ICDM model in efforts to gauge possible changes in the quality of chronic disease care that can be attributed to the ICDM model.

Out of the 435 randomly selected patients who responded to the exit interviews, 70 were purposively selected for seven FGDs (i.e. 10 patients per clinic). Ten (10) clinic defaulters were identified and purposively selected for FGD with at least one patient from each of the seven health facilities. Clinic defaulters were defined as those who missed three consecutive clinic appointments as was observed through the review of clinical records. Of the 70 selected patients, 56 participated in the FGDs and five of the 10 defaulters participated in the FGD for clinic defaulters. Sixty one of the 80 patients selected for discussions participated in the FGDs giving a response rate of 76%: 80% for the seven FGDs and 50% for the defaulter FGD (Figure 1). The Exit interviews were conducted from August to October 2013 and preceded the FGDs to make it easy to recruit patients for the FGDs and to provide a large sampling frame from which prospective FGD participants were to be purposively selected. Prospective FGD participants were selected from all clinics during official working hours (8.00 am - 4.30 pm local time) from Monday to Friday when the exit interviews were held. The FGDs were conducted in November and December 2013 and were held on a Saturday at a time that was convenient for most of the patients.

The operational managers, who were also professional nurses, were selected for the in-depth interviews because of their roles and responsibilities as managers of the health facilities. These roles were perceived to be critical to better understanding the quality of care in the ICDM model than other nurses who often rotated their clinical duties at predetermined intervals in other service provision areas such as acute care, antenatal clinic, postnatal clinic and child welfare clinics. The sub-district health manager was interviewed in order to understand the policy environment for the operational implementation of the ICDM model.

Conceptual framework for assessing quality of care in the ICDM model

This study utilized Donabedian's SPO framework, used in Sweden (Kunkel *et al.* 2007), as it is a classic framework for evaluating the quality of medical care (Mitchell *et al.* 1998), and because the NDoH in South Africa adopted this framework for the ICDM implementation (NDoH 2014).

Figure 2 shows the conceptual framework for this study. In this article, the relationships between structure, process and outcome constructs are non-predictive. The postulated relationships are thematically assessed using qualitative analytical techniques to generate recommendations for policy and practice. The conceptual framework indicates that, for instance, the provision of good structure (e.g. equipment and critical medicines) leads to a good process, (e.g. examination of patients) which in turn leads to good outcome (e.g. reduced waiting time).

Data collection

The FGDs were preceded by the health facility patient exit interviews, which were conducted as a component of the broader study. After the exit interviews, the patients were briefed about the purpose and scheduled dates of the upcoming FGDs. Those who volunteered to participate in the FGDs were invited to do so based on the inclusion criteria previously described. Seven FGDs were held for 5–9 participants of similar age recruited from within the seven PHC facilities, with each session lasting 60–90 min. The purpose of interviewing participants of similar age was to gain collective rather than individual accounts and to provide a conducive environment for the

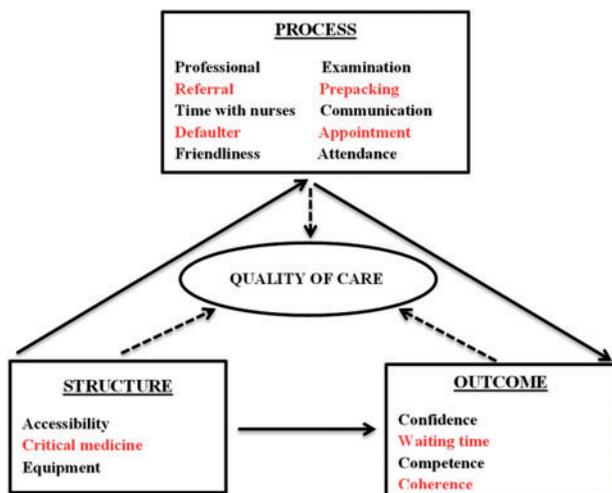


Figure 2. Conceptual framework of quality of care in the ICDM model*

*The 17 dimensions of care and their intended constructs used to operationalise Avedis

Donabedian’s theory in the ICDM model in Bushbuckridge sub-district in 2013 (The dimensions in red colour are the priority areas of the ICDM model)

participants to freely discuss their experiences with the health system without fear of being intimidated. One FGD was also held for five clinic defaulters from within the seven health facilities; hence, a total of eight FGDs were conducted. The FGDs were held in a centrally located neutral venue within the catchment area of the health facility to enable the patients to freely express and communicate their lived experiences with healthcare services. Finally, eight in-depth interviews lasting 30–40 min were conducted with the seven operational managers and the sub-district health manager in designated health facilities.

A priori identification of the 17 dimensions of care (Figure 2) for which the SPO constructs were intended was undertaken by experts on quality of care in the study team to reflect Donabedian’s definitions of SPO domains and the theory of the relationships between SPO constructs; henceforth, referred to as themes. This approach was used to develop the respective topic guides.

Of the 17 dimensions of care assessed and categorised under SPO themes, ten were adapted from the Patient Satisfaction Questionnaire (PSQ-18) (Ware *et al.* 1976) used as a study tool in the exit interviews. The remaining seven dimensions were identified by the study team as priority areas for improving quality in ICDM: supply of critical medicines, hospital referral, defaulter tracing, pre-packing of medicines, clinic appointments, reducing patient waiting time, and coherence of integrated chronic disease (NDoH 2014). These priority areas (Figure 2) are the key components of the tools and systems used in the successful HIV programme that is being leveraged to support or scale-up services for improving the quality of care for NCDs (NDoH 2014). The FGD and interview guides for operational managers contained statements on the 17 dimensions that were intended to elicit healthcare providers’ and users’ perspectives of quality of care in ICDM. The study participants were asked to raise their concerns about unanticipated dimensions of care not originally included in the topic guides.

The first author (S.A.) ran a two-day training session with two experienced qualitative field workers, with at least 10 years of field experience in the HDSS. During the training, the field workers were

briefed about the purpose of the study and on how to administer the structured topic guide to the patients. One field worker audiotaped and moderated the discussions while the other took notes during the FGDs which were held in Tsonga. The first author conducted and audiotaped the in depth interviews with the operational managers and sub-district health manager according to the respective topic guides written in English language.

Quality assurance

The FGD audio recordings were translated and transcribed into English by two qualitative field workers. A third qualitative field worker in the Agincourt HDSS validated the transcriptions by listening to two of the eight audiotapes and also translated them into English. A comparison of the early and latter transcriptions showed no major differences in the participants’ experiences and opinions regarding the dimensions of quality of care in the ICDM model. Similar procedures were used to assure data quality for the in-depth interviews.

Data analysis

The transcribed FGDs and interviews were thematically analysed using MAXQDA 2 software. A combined deductive and inductive approach was used for data analysis. The deductive analysis was based on the pre-identified themes focusing on the in-depth inquiry of the dimensions of care in the ICDM model. Inductive analysis was undertaken for an emerging theme that was not anticipated at the outset and not included among the 17 dimensions of care covered in the topic guide. The data were coded by S.A. and verified by the co-authors through the reading and re-reading of the quotes. A code book was developed based on recurring pre-identified themes and emerging themes. Reliability of the coded data was verified through discussions of inconsistent codes among co-authors until agreement was reached.

Ethical considerations

Written informed consent was obtained from the study participants after reading out the content of the information sheet and explaining the purpose of the FGD. Because confidentiality during the FGDs could not be guaranteed, participants chose whether to disclose the chronic disease(s) for which they were receiving treatment in the health facilities and were urged to respect the privacy of fellow discussants who voluntarily disclosed this information. Anonymity was guaranteed by removing all identifiable information from the narratives reproduced in study reports.

Results

Healthcare provider and user perspectives on the quality of care in the ICDM model are discussed below using Donabedian’s structure, process and outcome framework for health service evaluation. Verbatim quotes are used to illustrate the analysis.

Socio-demographic characteristics

There were 61 black adult South African participants (43 females and 18 males) in the eight FGDs. The race of the FGD participants reflects the dominance of black people in the study setting. The gender imbalance of the 61 participants in the FGDs (43 (70%) females and 18 (30%) males) corroborates the gender constitution of the participants of a population-based research in the study setting (female vs. male: 70% vs. 30%) to determine the predictors of health care

utilisation (Ameh *et al.* 2014) and the gender composition of the 345 patients who participated in the exit interviews from which the FGD participants were recruited (female vs. male: 81% vs. 19%) (Ameh *et al.* under review).

All seven operational managers who participated in the in-depth interviews were female professional nurses with an age range of 40–55 years and 15–20 years of nursing experience. A 55-year-old male senior sub-district health staff was interviewed on behalf of the sub-district health manager because the latter could not be reached due to busy administrative schedules.

Structure-related dimensions of care

Critical medicines

Hypertension patients reported receiving monthly prescribed medication. However, there were occasional drug stock-outs in some health facilities and participants expressed frustration with irregular supplies of anti-hypertension medicines.

When my treatment is not available at the clinic they do tell me that this month my treatment is not available; then they gave me the one that is available that day. When the treatment is not out of stock, they do give me all the treatment that I am getting every month [Respondent 2 (man), Clinic 1].

Equipment

Hypertension patients expressed concerns about the lack of functioning blood pressure (BP) machines in the facilities. Patients reported expectations of BP checks by nurses while taking anti-hypertensive drugs. They also described their experiences of travelling to other health facilities to assess their BP.

We have stayed for two to three months without BP machine. They were just giving us treatment without knowing whether our BP was high or not. ... It gives us problem when we have to travel to another clinic to check our BP [Respondent 1 (woman), Clinic 7].

An operational manager acknowledged that her facility did not have functioning BP cuffs (a component of BP equipment) and other medical equipment. This nurse expressed frustration in her ability to provide quality care to patients due to lack of equipment. She further indicated that a project manager working in a non-governmental research institution donated BP cuffs to her health facility to enable nurses to monitor patients' BP more effectively.

[Laughs] what can I say? I think three weeks back Mr. X [a project site manager at institution Y] was here to give us different kinds of BP cuffs because we didn't have them. I really can't say that the clinic has all the different medical equipment to take care of all those patients or bring quality nursing care to the patients [Operational Manager, clinic 3].

Process-related dimensions of care

Prepacking of drugs

The ICDM manual stipulates that nurses prepack patients' medicines before their arrival at the facilities to reduce patient waiting times during consultations. Nurses' inability to regularly prepack medicines was reported as a factor militating against their ability to effectively deliver services. An operational manager reported that prepacking of drugs before appointments was sometimes done, but that staff shortage and unavailability of prepacking bags were

obstacles to regular prepacking of drugs. Hence, prepacking was sometimes done during or after consultations or was not done in instances when there were no prepacking bags.

Sometimes we do prepacking the day before clinic appointment. Sometimes when we are short-staffed, we are unable to do it. Another challenge is that we don't have prepacking bags [Operational Manager, Clinic 4].

Appointment system

Patients reported a rigid appointment system in which they were unable to access services for sudden-onset illnesses occurring outside scheduled appointment dates.

When your date is still far you can't go to the clinic even when you have other illnesses [Respondent 2 (woman), Clinic 3].

In the ICDM model, patients with chronic diseases are given appointment dates for their next clinic visits. These predetermined scheduled appointments are usually on a monthly basis for unstable/uncontrolled cases [e.g. BP > 140/90 mmHg for hypertension patients and CD4 count < 350 cells/mm³ for HIV patients] or two monthly for stable/controlled cases [e.g. BP < 140/90 mmHg for hypertension patients and CD4 count > 350 cells/mm³ for HIV patients].

Patients also reported that missing clinic appointments led to punishment through being made to wait in queues during subsequent visits until the nurses had attended to patients who were on the appointment list for that day. This resulted in long patient waiting times.

When they [nurses] shout at us it is because ... they tell you to come today at nine, you find that you miss your appointment date and come at another day. When I missed my appointment and went there the other day, they [nurses] delayed me even when I arrived at the clinic early. All the patients that came after my arrival collected their treatment and went home and left me at the clinic. And I don't think they [nurses] are wrong because you [patient] are the one who missed your appointment [Respondent 2 (woman), Clinic 1].

Unprofessional behaviour of clinical staff

Patients recognised the role of home-based carers [HBCs] in patient management such as assisting patients with domestic chores and delivering drugs from the facilities. However, some patients reported that HBCs breached confidentiality by disclosing their clinical information to persons other than those entrusted with patient care and management.

I told them [HBCs] not to come to my house any more. When I tell them something, I expect them to report it to their seniors and not to tell the whole community. So when I'm sick, I will go to the clinic [Respondent 5 (woman), Clinic 2].

Patients reported how the behaviours of healthcare providers influenced their perception of quality of care in the health facilities. In the quote below, a patient expressed dissatisfaction with the professional conduct of a nurse.

Eish! [A popular exclamation in South Africa often used to describe a frustrating or appalling experience] there is a new nurse that arrived at the clinic. She is fat and tall [Man 1 and 2 nod in agreement]. When you are in the consulting room with her [referring to the new nurse], she will send you to go and take the tablets in the locker [referring to where drugs are kept]. Do I know the

tablets I have to use? Sometimes she will send a cleaner to go and take the tablets; does the cleaner know the treatment? I have seen it several times and am saying that these nurses are going to kill us [Respondent 2 (woman), Clinic 4].

Outcome-related dimensions of care

Reduced stigma in the health facilities

An operational manager reported that the ICDM model conferred an advantage on PLWHIV because of the reduced stigma due to non-segregation of patients managed for chronic disease in the same clinic. Non-separation of patients or consultation rooms in the clinics implied that it may not have been easy for patients to identify who was being managed for HIV/AIDS; hence, the reduced HIV-related stigma.

Previously we were grouping them according to their diseases, but now they are put together. Patients living with HIV/AIDS are satisfied because they are mixed with those who are having hypertension and diabetes (Operational Manager, Clinic 6).

Waiting time

Patients and operational managers attributed long patient waiting time in facilities to several factors. Patients noted the late arrival of filing clerks and nurses; long morning prayer sessions before commencement of clinical duties; staff meetings; prolonged tea or lunch breaks; nurses giving preferential treatment to friends or relatives who skip the queues; and nurses engaging in trading activities (e.g. buying and selling of household products) in the consultation room during consultation hours.

We arrive at six in the morning and stay outside the gate and they will open the gate at eight o'clock. Sometimes they will start to check you at one o'clock. You will get your treatment very late despite early arrival at the clinic [Respondent 2 (man), Clinic 7].

Operational managers by contrast reported long waiting times due to staff shortage and patients missing appointments.

We are booking a certain number of patients and if that number becomes extra because of those who didn't come on their appointment dates, you find that we have a lot of patients and they [who missed previous appointments] have to wait (Operational Manager, Clinic 1).

The overall findings show that the aim of leveraging the HIV programme for NCD care, such as hypertension, may be yet to be achieved due to anti-hypertension drug stock-outs; malfunctioning blood pressure machines; sub-optimal defaulter tracing activities; rigid clinic appointments; and a dysfunctional prepacking system. Long patient waiting time was also reported as problematic by the service providers and users.

Emerging themes

Staff shortage

Both users and providers identified staff shortage as a key challenge impacting the delivery of quality care in facilities. A manager described making mistakes due to work overload arising from staff shortage, and a patient described how staff shortage led to work-related exhaustion and 'complicated' behaviour of nurses, negatively impacting the provision of quality services.

I'm alone and I have to do all the programmes with the staff nurse. I'm to manage the deliveries, antenatal clinics, integrated chronic disease clinic, minor illness, immunization and all those programmes. I can't! ... Sometimes if I am forced to do the work alone I end up making some stupid mistakes (Operational Manager, clinic 3).

Today, they [referring to nurses] are two and they get tired and become complicated [Respondent 1 (woman), Clinic 6].

Unaffordable transportation costs

Patients reported unaffordable transportation costs as a barrier to accessing clinics or when referred by nurses from clinics to doctors in the hospitals. In a rural South African setting with high unemployment levels, people's reliance on paid jobs as a means of livelihood affects health-seeking behaviour.

If I am working for someone and that person doesn't pay me, I have to wait until the person pays me before I have to go to the clinic or hospital [Respondent 4 (woman), Clinic 1].

HIV stigmatisation due to home visits by home-based carers

An operational manager described a situation in which community members stigmatised ill people who were visited by HBCs. Community members were said to have perceived persons visited by HBCs to have HIV/AIDS, and that patients responded by not allowing HBCs visit their homes. This reported stigma constitutes a barrier to accessing home-based health services.

Home-based carers are not accepted. They [patients] are thinking that other people [community members] will think that they are HIV positive and that is why the HBCs are coming to visit them [Operational manager, Clinic 1].

Use of traditional healers

An operational manager noted that patient behaviours presented challenges for HBCs to trace clinic defaulters who use traditional medicine in places far away from where they [patients] received biomedical care. Furthermore, the use traditional medicine for the treatment of chronic diseases could potentially interfere with the use of modern pharmaceuticals.

We [nurses] have tried our level best even to trace patients who missed their appointment using HBCs and by telephone calls. Some of our patients move around seeking care in many places because they believe in both western civilization treatment and traditional healers. You find that a patient is receiving treatment in village X and the next thing you will hear from the relative that he (the patient) is at village Y (about 50 Km away from village X) because there is a traditional healer there who is busy treating him. That gives us a problem in tracing them [Operational manager, Clinic 3].

Discussion

This study shows that the innovative ICDM model provides non-segregated services for chronic disease patients and appears to have benefited PLWHIV due to reduced HIV-related stigma. This was also reported in a pilot study in Cambodia (Janssens *et al.* 2007; UNAIDS 2011). However, the ICDM model did not show benefits for patients receiving treatment for hypertension as a result of occasional stock-outs of anti-hypertension drugs and malfunctioning BP

machines. This was corroborated in the quantitative component of the broader study which showed suboptimal blood pressure (BP) control (Ameh *et al.* under review). The widely reported suboptimal BP control could impact the WHO's target for the 25% reduction in premature mortality (i.e. deaths among persons 30–69 years of age) due to NCDs by 2025 (WHO 2013a).

The inability to deliver effective hypertension services in the ICDM model can be attributed to policy and health system factors. Notable among these is the failure of the Innovative Care for Chronic Conditions (ICCC) framework to significantly incorporate the complexities associated with multiple morbidities; (Oni *et al.* 2014) South Africa's public health sector vertical HIV programme not being administratively integrated with the horizontal general health system; (Kawonga *et al.* 2013) and the lack or breakdown of equipment to measure blood pressure (Thorogood *et al.* 2004). Most chronic diseases are presently managed in separate disease-specific public health facilities in South Africa (Oni *et al.* 2014) and suboptimal care has been reported for hypertension patients receiving treatment in these facilities (Steyn *et al.* 2008). This justifies the prioritization of optimal management of non-communicable diseases in the ongoing PHC re-engineering and ICDM model implementation (NDoH 2013) within the ICCC framework forming the cornerstone of these reforms (NDoH 2013).

Defaulter-tracing activities in the study setting were not done by the ward-based PHC outreach teams, but by volunteer HBCs who receive little or no remuneration. This was because the pilot of the PHC outreach team was being implemented in other communities in the Bushbuckridge Municipality at the time this study was conducted. Although the HBCs visited homes to do domestic chores and trace clinic defaulters, they were not generally accepted because the patients feared lack of confidentiality often arising from the disclosure of their disease status to community members by HBCs.

Unprofessional conduct of some nurses was identified as a barrier to the effective implementation of the ICDM model. Some patients reported nurses were involved in buying and selling of household products during official working hours. These illicit trading activities which are not related to professional work could potentially contribute to long patient waiting time in the clinics. Furthermore, preferential treatment to health workers' friends and relatives could also lead to patient dissatisfaction with services and prolonged waiting time. Therefore, educational programmes need to be targeted at healthcare workers to change their attitudes and behaviours regarding provision of quality services to patients.

Emerging theme were staff shortage and patients' inability to afford the cost of transportation to the PHC health facilities and hospitals on referral as previously reported in our study setting (Goudge *et al.* 2009). Therefore, financial constraint remains a barrier to accessing free services and treatment in public PHC facilities in South Africa. Other emerging themes were HIV stigmatization due to home visits by HBCs and use of traditional healers. Ill persons did not welcome HBCs into their homes because of the stigma attached to such visits which is often associated with chronic illness specifically HIV/AIDS. These practices have been reported in the literature in an integrated HIV/TB programme elsewhere in South Africa (Uwimana *et al.* 2012). The reported HIV-related stigma in the communities is a barrier to accessing home-based health services and has the potential to negatively impact the effectiveness of the model in improving patients' health outcomes. Defaulter tracing was reportedly challenging because of combined use of PHC facilities and traditional healers in communities far away from where they received biomedical care. This pattern of health-related migration in the study setting has been attributed to the use of plural healing such as use of biomedicine,

traditional healers, prophets and churches as viable alternatives for the treatment of stroke-like symptoms and other diseases (Thorogood *et al.* 2007). The use of traditional healers may interfere with pharmaceutical treatment which could result in poor health outcomes of patients.

The healthcare provider-user interface reported in this study corroborates the multi- and bi-directional relationship between structure, process, and outcome constructs postulated by Donabedian (Mitchell *et al.* 1998). Staff shortage and the lack of prepacking bags (structure factors) made it challenging for nurses to prepack patients' drugs (process factor) which in turn led to long patient waiting time (outcome factor). Patients who missed clinic appointments (process factor) felt nurses were unfriendly (process factor) to them during their subsequent clinic visit, and punished them by delaying their consultation process (outcome factor). These dynamics contributed to avoidable long waiting periods (outcome factor), aside from other health facility-related factors, such as the late arrival of staff; long morning prayer sessions before commencement of clinical duties; morning staff meetings; and prolonged tea/lunch breaks. Healthcare providers and users consistently reported long waiting periods in the health facilities as has been described in other resource-constrained LMICs (Babirye *et al.* 2014). This could be a reflection of operational challenges such as performance of multiple tasks, staff shortage, and work overload (Briggs and Garner 2006).

A substantive finding in terms of how quality of care is conceptualised relates to the diverging views of providers and patients. Constraints experienced by each group (e.g. providers working under pressure due to chronic staff shortage and patients struggling to access services or their lack of trust in service providers) result in pronounced provider-patient disconnect. Hulton's framework of quality of care, which incorporates the user's experience of care with care provided (Hulton *et al.* 2000, Hulton *et al.* 2007) is an interactional notion of quality of care and underscores the need to address these challenges through people-centred health systems research.

The purpose of leveraging HIV programme for NCDs, especially hypertension, is yet to be achieved in PHC health facilities in the study setting due to malfunctioning blood pressure machines and anti-hypertension drug stock-outs. This has implications for the nationwide scale up of the ICDM model in South Africa and planning of integrated chronic care of communicable and non-communicable conditions in Swaziland and Ethiopia (Rabkin *et al.* 2012) and Uganda (Schwartz *et al.* 2015).

Strengths and limitations

The limitations of our study have been categorised as general and specific. Although qualitative methods do not necessarily require probability sampling techniques, the patients were not randomly selected and may not be representative of the chronic disease sub-population in the selected health facilities. Furthermore, the qualitative methods used to preclude the establishment of cause and effect relationship as would be established in quantitative research. Instead, explanations of phenomena are developed through eliciting lived experiences and systematising these into valid forms of knowledge on the relationships between problems and their causes. Specifically, this study was conducted in a rural sub-district of South Africa and our findings may not be generalized to PHC facilities in semi-urban and urban areas in the provinces where the pilot of the ICDM model is ongoing. Future research is needed to understand how the ICDM model works in urban PHC facilities.

Although the qualitative methods used do not establish cause and effect relationships, they help to identify contextual factors that

could contribute to understanding the quality of care in the ICDM model for the purpose of generating recommendations for policy and practice. Despite these limitations, our methodology was well suited for the study because of the dearth of contextual qualitative data on provider and patient perspectives on the quality of care in the ICDM model. To our knowledge, this is the first application of Donabedian's theory, using qualitative methods, to assess the quality of care in the ICDM model in Africa. The use of a combined deductive and inductive approach in data collection was a major strength.

Conclusion

A key finding was that patients reported anti-hypertension drug stock-outs (structure); sub-optimal defaulter-tracing activities (process); and a rigid clinic appointment system (process). Nurse and patient narratives showed the inadequacies in structure (malfunctioning blood pressure machines and staff shortage); process (irregular prepacking of drugs); and outcome (long waiting times). There was discordance between managers and patients regarding reasons for long patient waiting time which managers attributed to staff shortage and missed appointments, while patients ascribed it to late arrival of managers to the clinics. Emerging themes showed that patients reported HIV stigmatization in the community due to defaulter-tracing activities of home-based carers, while managers reported treatment of chronic diseases by traditional healers in the community and reduced facility-related HIV stigma because HIV and NCD patients attended the same clinic.

Acknowledgement

This work was supported by (i) Medical Research Council/Wits Rural Public Health and Health Transitions Research Unit (Agincourt) South Africa, through the Wellcome Trust, UK (Grant Numbers 058893/Z/99/A, 069683/Z/02/Z); (ii) Fogarty International Centre of the National Institutes of Health fellowship (Grant number 1D43TW008330-01A); and (iii) African Doctoral Dissertation Research Fellowship. The content is solely the responsibility of the authors and does not necessarily represent the official view of the National Institutes of Health and other funders. This paper was facilitated by attending the Wits School of Public Health Thanda Ukubhala writing retreat funded by the Faculty of Health Sciences Research Office. The authors acknowledge the contributions of Chimaraoke Izugbara, Rachel Caesar, Lenore Manderson, Faith Mambululu and Latonya Wilson for writing support.

Funding

Funding to pay the Open Access publication charges for this article was provided by the Fogarty International Centre of the National Institutes of Health fellowship (Grant number 1D43TW008330-01A).

Conflict of interest statement. None declared.

References

Ameh S, Gomez-Olive FX, Kahn K, Tollman SM, Klipstein-Grobusch K. 2014. Predictors of health care use by adults 50 years and over in a rural South African setting. *Glob Health Action* 7: 24771.

Babirye JN, Engebretsen IM, Rutebemberwa E, Kiguli J, Nuwaha F. 2014. Urban settings do not ensure access to services: findings from the immunisation programme in Kampala Uganda. *BMC Health Serv Res* 14: 111.

Beaglehole R, Ebrahim S, Reddy S, Voute J, Leeder S. 2007. Prevention of chronic diseases: a call to action. *Lancet* 370: 2152–2157.

Briggs CJ, Garner P. 2006. Strategies for integrating primary health services in middle- and low-income countries at the point of delivery. *The Cochrane Database of Systematic Reviews* Cd003318.

Brown A. 2001. Integrating Vertical Health Programmes into Sector Wide Approaches: Experiences and Lessons. Available from: http://www.swisstph.ch/fileadmin/user_upload/Pdfs/swap/swap044.pdf, accessed 23 November 2011.

Chan M. 2007. Speech at the launch of the UK Department for International Development's new health strategy. Available from: http://www.who.int/dg/speeches/2007/050607_DFD/en/, accessed 18 September 2014.

Donabedian A. 1988. The quality of care. How can it be assessed? *JAMA* 260: 1743–1748.

Donabedian A. 2003. *An introduction to quality assurance in health care*. New York: Oxford University Press, (1st edition, Volume 1).

Goudge J, Gilson L, Russell S, Gumede T, Mills A. 2009. Affordability, availability and acceptability barriers to health care for the chronically ill: Longitudinal case studies from South Africa. *BMC Health Serv Res* 9: 75.

Hulton L, Matthews Z, Stones WA. 2000. *A framework for the evaluation of quality of care in maternal services*. Highfield, Southampton: University of Southampton.

Hulton LA, Matthews Z, Stones RW. 2007. Applying a framework for assessing the quality of maternal health services in urban India. *Social Science & Medicine* 64: 2083–2095.

Huntington D, Aplogan A. 1994. The integration of family planning and childhood immunization services in Togo. *Studies in Family Planning* 25: 176–183.

Janssens B, Van Damme W, Raleigh B *et al.* 2007. Offering integrated care for HIV/AIDS, diabetes and hypertension within chronic disease clinics in Cambodia. *Bull World Health Organ* 85: 880–885.

Kahn K, Collinson MA, Gomez-Olive FX *et al.* 2012. Profile: Agincourt health and socio-demographic surveillance system. *Int J Epidemiol* 41: 988–1001.

Kahn K, Tollman SM, Collinson MA *et al.* 2007. Research into health, population and social transitions in rural South Africa: data and methods of the Agincourt Health and Demographic Surveillance System. *Scand J Public Health* 69: 8–20.

Kawonga M, Fonn S, Blaauw D. 2013. Administrative integration of vertical HIV monitoring and evaluation into health systems: a case study from South Africa. *Glob Health Action* 6: 19252.

Knaul FM, Bhadelia A, Atun R, Frenk J. 2015. Achieving Effective Universal Health Coverage And Diagonal Approaches To Care For Chronic Illnesses. *Health Affairs (Project Hope)* 34: 1514–1522.

Kunkel S, Rosenqvist U, Westerling R. 2007. The structure of quality systems is important to the process and outcome, an empirical study of 386 hospital departments in Sweden. *BMC Health Serv Res* 7: 104.

Mahomed OH, Asmall S, Freeman M. 2014. An integrated chronic disease management model: a diagonal approach to health system strengthening in South Africa. *Journal of Health Care for the Poor and Underserved* 25: 1723–1729.

Mayosi BM, Flisher AJ, Lalloo UG *et al.* 2009. The burden of non-communicable diseases in South Africa. *Lancet* 374: 934–947.

Mitchell PH, Ferketich S, Jennings BM. 1998. Quality health outcomes model. American Academy of Nursing Expert Panel on Quality Health Care. *The Journal of Nursing Scholarship* 30: 43–46.

National Department of Health, Republic of South Africa (NDoH). 2013. Strategic Plan for the Prevention and Control of Non-communicable Diseases 2013–17.

Department of Health, Republic of South Africa. 2014. Integrated Chronic Disease Management Manual.

Oni T, McGrath N, BeLue R *et al.* 2014. Chronic diseases and multimorbidity - a conceptual modification to the WHO ICCM model for countries in health transition. *BMC Public Health* 14: 575.

Parasuraman A, Zeithaml VA, Berry LLA. 1985. Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing* 49: 41–50.

Rabkin M, Melaku Z, Bruce K *et al.* 2012. Strengthening health systems for chronic care: leveraging HIV programs to support diabetes services in Ethiopia and Swaziland. *Journal of Tropical Medicine* 137460.

Schwartz JI, Dunkle A, Akiteng AR *et al.* 2015. Towards reframing health service delivery in Uganda: the Uganda initiative for integrated management of non-communicable diseases. *Glob Health Action* 8: 26537.

- Statistics South Africa. 2014. Mid year population estimates. Available from <http://beta2.statssa.gov.za/publications/P0302/P03022014.pdf>, accessed 02 February 2015.
- Steyn K, Levitt NS, Patel M *et al.* 2008. Hypertension and diabetes: poor care for patients at community health centres. *S Afr Med J* 98: 618–622.
- Thorogood M, Connor MD, Hundt GL, Tollman SM. 2007. Understanding and managing hypertension in an African sub-district: a multidisciplinary approach. *Scand J Public Health* 69: 52–59.
- Thorogood M, Connor MD, Lewando-Hundt G, Tollman S, Ngoma B. 2004. Secondary prevention of stroke—results from the Southern Africa Stroke Prevention Initiative (SASPI) study. *Bull World Health Organ* 82: 503–8.
- Tollman SM, Kahn K, Sartorius B, *et al.* 2008. Implications of mortality transition for primary health care in rural South Africa: a population-based surveillance study. *Lancet* 372: 893–901.
- The Joint United Nations Programme on HIV/AIDS. 2011. Chronic care of HIV and non-communicable diseases: How to leverage the HIV experience. UNAIDS report 2011. Available from: http://www.unaids.org/en/media/unaids/contentassets/documents/unaidspublication/2011/20110526_JC2145_Chronic_care_of_HIV-1.pdf, accessed 08 July 2014.
- Unger JP, De Paepe P, Green A. 2003. A code of best practice for disease control programmes to avoid damaging health care services in developing countries. *Int J Health Plann Manage* 18: S27–39.
- Uwimana J, Zarowsky C, Hausler H, Jackson D. 2012. Engagement of non-government organisations and community care workers in collaborative TB/HIV activities including prevention of mother to child transmission in South Africa: opportunities and challenges. *BMC Health Serv Res* 12: 233.
- Ware JE, Snyder MK, Wright WR. 1976. *Development and validation of scales to measure patient satisfaction with health care services: Volume I of a final report part A: review of literature, overview of methods and results regarding construction of scales.* (NTIS No. PB 288-329). Springfield, VA: National Technical Information Service.
- World Health Organization. 2002. *Innovative Care for Chronic conditions: Building Blocks for Action.* <http://www.who.int/chp/knowledge/publications/icccglobalreport.pdf?ua=1>, accessed 20 July 2014.
- World Health Organization. 2006. *Quality of Care. A Process for Making Strategic Choices in Health Systems.* http://www.who.int/management/quality/assurance/QualityCare_B.Def.pdf, accessed 28 July 2014.
- World Health Organization. 2008a. *Integrated Health Services - What and Why? Making Health Systems Work. Technical Brief No. 1, May 2008 (Page 1).* http://www.who.int/healthsystems/technical_brief_final.pdf, accessed 08 July 2014.
- World Health Organization. 2010. *Global Status Report on Noncommunicable Diseases.* http://www.who.int/nmh/publications/ncd_report_full_en.pdf, accessed 08 July 2014.
- World Health Organization. 2011. *Noncommunicable Diseases Country Profiles.* http://whqlibdoc.who.int/publications/2011/9789241502283_eng.pdf, accessed 08 July 2014.
- World Health Organization. 2013a. *Draft Comprehensive Global Monitoring Framework and Targets for the Prevention And Control of Noncommunicable Diseases. Document A66/8,* http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_8-en.pdf, accessed 24 November 2015.
- World Health Organization. 2013b. *Global Action Plan for the Prevention and Control of Noncommunicable Diseases (2013–2020).* http://www.who.int/nmh/events/2013/revised_draft_ncd_action_plan.pdf, accessed 06 July 2015.
- World Health Organization. 2014a. *Global Status Report on Noncommunicable Diseases.* http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854_eng.pdf, accessed 08 July 2015.
- World Health Organization, 2014b. *Noncommunicable Diseases Country Profiles 2014.* http://www.who.int/nmh/countries/zaf_en.pdf?ua=1, accessed 08 February 2015.
- World Health Organization. 2015. *Global Health Observatory (GHO): HIV/AIDS.* <http://www.who.int/gho/hiv/en/>, accessed 21 September 2015.
- World Health Organization. 2008b. *2008–2013 Action Plan for the Global Strategy for the Prevention and Control of Non-communicable Diseases.* http://www.who.int/nmh/publications/ncd_action_plan_en.pdf, accessed 12 June 2015.