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Joanna Binch

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THESIS ABSTRACT

The purposes of the study were to investigate homeless men's experiences of taking medications while living in a homeless shelter and the factors that affect medication adherence; and to describe medication adherence, as it pertains to homeless men residing in a shelter, from the perspective of the shelter staff.

This is a manuscript-based thesis. The first manuscript provides a description of a proposed ecological model, based on clinical experience of the author and from the literature. The second paper is a summary of the findings of the qualitative research on medication adherence and homeless men's shelters. The third manuscript, directed at pharmacists, offers recommendations and strategies based on results of the qualitative study, to improve medication adherence.

This thesis suggests that when health professionals view adherence to medications as an individual, cognitive choice, it does not take into account the challenges imposed by a homeless individual's environmental context.

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Chapter I

General Introduction

This chapter provides a general introduction to the thesis. It outlines the purpose and research questions of the thesis. It introduces the complexity of homelessness and the health of the homeless as background to why this study population was chosen. Health outcomes are affected by medication adherence, and a partial review of the adherence literature is presented. This chapter also describes the study methods and the setting in which the research was conducted.

Purpose and Research Questions

The purposes of the study were to investigate homeless men's experience of taking medications while living in a homeless shelter and the factors that affect medication adherence; and to describe medication adherence, as it pertains to homeless men residing in a shelter, from the perspective of the shelter staff.

This study set out to answer the following research questions:

- (a) *What is homeless men's experience of taking medications while living in a men's shelter in Ottawa?*
- (b) *From the perspective of homeless men, what are contributing and limiting factors that affect medication adherence?*
- (c) *What is the shelter context in which homeless men in Ottawa manage their medications?*
- (d) *How do shelter staff (both front-desk and management) describe the experience of shelter clients taking medications within the shelter system?*
- (e) *From the perspective of shelter staff, what are contributing and limiting factors that affect medication adherence for men living in a homeless shelter?*

Background

The desire to conduct research on medication adherence in shelters derived from the clinical experience of the researcher working as an outreach nurse practitioner with the homeless population in Ottawa. Clients, as well as members of the health care and shelter systems, expressed an interest in this topic. The methods by which medications were dispensed, stored, and administered while living in a shelter have often been

inconsistent. During informal consultations, outreach nurses indicated that adherence to medications was a significant issue facing the homeless population living in shelters that has frequently impeded their progress toward improved health and quality of life.

Homelessness

Homelessness¹ is a growing problem globally, nationally, and locally. The United Nations has intensified lobbying on behalf of the estimated one billion people who are homeless (United Nations Human Settlements Programme, 2003). In Canada, homelessness has been declared a national crisis with tens of thousands considered homeless (Hwang, 2001). At a Canadian National Roundtable on best practices to address homelessness (Canada Mortgage and Housing Corporation, 1999), representatives from across Canada expressed concern about the growing number of homeless persons; as well as the expansion of the homeless problem across ages, cultures and diverse geographic areas. Members of the roundtable also discussed the likelihood that a rise in cost of shelter could force more people into homelessness. The number of Canadians who allocate more than 50 per cent of their income to shelter has risen by 59 per cent in the last 20 years (Canadian Mortgage and Housing Corporation, 2002). Now one in five households pays more than half of their combined income on shelter (Housing Help Aid Lodgement, 2004).

In Canada, the homeless have a mortality rate approximately four times that of the general population (Barrow, Herman, Cordova, & Struening, 1999; Hwang, 2000). They also have higher rates of physical illness, mental illness, substance abuse, and early mortality (Kushel, Vittinghoff &, Haas, 2001). In addition, homeless persons as a

¹ The definition of homelessness, and who should be included in this term has been debated (Springer, 2000). Homeless persons who are living in a shelter are the focus of study, but a wider definition of homelessness is recognized to represent persons who are unstably housed.

population are at higher risk for a number of infectious diseases, such as tuberculosis (Barnes et al., 1996; Moss et al., 2000) and hepatitis C (Nyamathi et al., 2002).

Ottawa, Canada's fourth largest urban centre, is considered to be a prosperous and affluent city. However, job growth creates competition for scarce accommodation, driving rents beyond the financial means of many (Layton, 2000). Fuelled by poverty and a severe shortage of affordable housing, the homelessness situation in Ottawa is worsening (City of Ottawa, 2002). Like many cities with a colder climate, Ottawa sustains the greatest percentage of the homeless population in shelters as opposed to the outdoors. Within the three Ottawa men's shelters, the total overnight visits increased by 85% between 1996 and 2002, reaching nearly 162, 000 overnight visits per year (Eddy, 2002).

In comparison to the general population, persons who are homeless in Ottawa have higher rates of chronic conditions such as mental illness, asthma, arthritis, back problems, migraine headaches, emphysema, and physical pain (Farrell, Aubry, Klodawsky & Petty, 2000). The prevalence of HIV in the homeless population in Ottawa has been estimated to be as high as 20% (Remis, Major, Wallace, Scheidel, & Whittingham, 2001).

Given the greater incidence of chronic illness and disease in the homeless population, medication adherence is an important issue for homeless individuals and a concern for shelter staff responsible for its administration, as well as for the health care providers who work with this population. The sheltered homeless living in Ottawa are the population of interest for this study.

Literature Review

The following section provides a review of the literature search strategy. The relevance of the study, and how it builds on the existing literature, is then described. In Chapter 2 of the thesis, more detailed findings from the literature review are presented in the form of a manuscript.

Literature Review Strategy

A comprehensive review of the literature was completed using the web-based search systems, Polaris and PubMed. From Polaris, the searched databases included Medline (from 1966 to 2004), CINAHL (from 1982 to 2004), SocioFile (from 1974 to 2004), EMBASE (from 1980 to 2004) and PsychINFO (from 1872 to 2004). Research articles were sought that pertained to homelessness, homeless shelters, and medication adherence. The maximum timeframe available for each of the databases was selected to identify when medication adherence, formerly known as compliance, came to the forefront in health research.

Initially key words or word groups alone were exploded and searched: *homeless or homelessness, shelters, medication adherence or compliance*. Subsequently, to focus the number of articles, the terms *homeless or homelessness* were combined using the term *low socioeconomic status* “or” *indigent* and limited to *research*, and *English language*, with and without the term *male*. The results were then combined individually with the terms *shelter, nursing* [exploded], *context* and *gender, medication adherence or compliance* to identify any significant new articles. All duplicate articles were then removed.

In addition to searching key words, other articles and books were located using names of authors. Key authors were defined as: those who had conducted research on shelters or homelessness, those whose names appeared with any frequency during the database search, and those who had written about medications in shelters. The names of these authors were entered into the same Polaris databases, in an attempt to locate all pertinent articles. ORBIS, the University of Ottawa's cataloguing system was used to find published material on *homeless or homelessness* as well as *medication adherence or compliance*.

Much of the literature on the homeless was not research, and once the search criterion was limited, there was a significant decrease in the number of references. Following the search criteria described above, over one hundred and fifty studies were found, spanning the past forty years. However, well over half of these studies related to treatment adherence, with a few studies describing medication adherence for a specific disease (Carthew & Styres, 1993; Fogarty et al., 2002; Hwang & Bugeja, 2000). HIV testing, diabetic monitoring and mental health (with a particular emphasis on assertive community treatment (ACT) approaches) were the principal foci of treatment adherence studies. Of the medication studies, HIV, tuberculosis, schizophrenic and diabetic medications were predominant. These studies were not necessarily specific to the sheltered homeless population, but may have included homeless persons in their sample. It is noteworthy that, using the search criteria described, approximately twenty percent of the studies found pertained exclusively to women and children, addressing issues such as cervical screening, prenatal care and immunization rates.

Only four studies were found specific to *medication adherence in shelters among the homeless* (Bangsberg et al., 2000; Carthew & Styres, 1993; Hwang & Bugeja, 2000; Nyamathi & Shuler, 1989). These four articles are discussed in detail in Chapter 2 of this thesis.

Few adherence studies have been conducted with the homeless, and even fewer have studied the sheltered homeless specifically. The concentration of research has been on disease-specific medications, studied in the general population. It is evident that there is a dearth of research about medication adherence from the perspectives of sheltered homeless individuals and shelter staff.

Relevance of the Study

This study of sheltered homeless men and medication adherence is vital for a number of reasons. A Canadian perspective is needed to define and describe factors that affect medication adherence. Canada's system of universal health insurance has been cited as a key factor explaining the higher mortality of US homeless populations compared to Canadian (Hwang, 2000). Differences between these two countries in health insurance coverage and access to health services may also impact medication adherence. The majority of published research relating to medication adherence that was obtained through the search strategy originated from the United States (US) with some key articles from the United Kingdom (UK).

The homeless suffer from a diverse range and number of health conditions, yet there is a lack of information about medication adherence in the shelter environment. Thus, it is important to examine adherence to all classes of medications as a starting point, rather than focusing on any one type of medication.

The descriptive quality and nature of research published about the homeless population reflects the difficulty of conducting research with this population. Research with homeless populations is logistically difficult due to recruitment and retention issues. Consequently, very few studies have systematically attempted to identify the guidelines and methods necessary to improve medication adherence with this population (Pilote et al., 1996). Despite the challenges of research with the homeless, there is a pressing need for applied clinical research to guide public policy and to direct patient care (Turnbull & Podymow, 2002).

The literature about medication adherence or medication compliance has generally been narrowly focused by medication type, and research has been conducted with specific demographic groups. Generally the issue has been studied within high socio-economic status populations, and has focused on intrapersonal factors influencing adherence and individually-focused interventions such as dosettes and educational programs (Cooke, 2000; Haynes, McKibbin, & Kanani, 1996; Horne & Weinman, 1999). Thus far, few studies have looked at the significant role of homelessness coupled with the context within which medications are taken.

A number of surveys of perceived health status of the homeless included brief references to patterns of medication use by those with chronic health conditions (Ambrosio, Baker, Crowe, & Hardill, 1992; Struening, 1990; Vredevoe, Brecht, Shuler, & Woo, 1992). These studies made recommendations for greater access to prescriptions, and increased use of medications or a therapeutic regimen to address health problems. However, the authors did not address the context in which medications were taken as a potential barrier to adherence. A qualitative study is needed that explores and describes

the meaning behind medication adherence and non-adherence given the shelter experience of the homeless.

Focus of Study: The Choice of Men

For this research in homeless shelters, men were selected as the population under study for several reasons. In Ottawa, there are greater numbers of men compared to women affected by homelessness (Eddy, 2004; Farrell, Aubry, Klodawsky, & Petty, 2000). This disparity is not unique to Ottawa. In fact, one researcher in New York City began with the expectation of researching women, but changed course after noticing the larger percentage of homeless males (Passaro, 1996). The author noted that men were depicted as deserving of their situation whereas women were seen as victims of circumstance. She argued that these assumptions were the basis for the dramatic gender inequalities in rates of obtaining permanent housing as well as differences in shelter conditions. The United Nations has recognized that homeless men are different from women, and men are more likely to use homeless shelters (United Nations Centre for Human Settlements (Habitat), 2000).

Gender differences in health concerns suggest that men are unique from women, and there has been an appeal for more research with men to explore these discrepancies in men's health (White & Johnson, 1998). Overall in Canada, men will live, on average, six years less than women (Statistics Canada, 1996). Men have been reported to ask for assistance with medical problems less often than woman, regardless of objective indicators of need (Herman, Struening, & Barrow, 1994; Mechanic, 1993). This information supports the idea that gender plays an important role in how individuals view their health. Gender differences may also play an important role in medication

adherence. Therefore the population of men was chosen for the current study. Shelters are typically divided by gender or for families. This provides reason to suspect differences in organizational characteristics between men's and women's shelters. Men's shelters were selected for this study.

Research Sites

The study took place at the three men's shelters in Ottawa, all located within a small radius in the downtown core of the city. Men's shelters in Ottawa have a lower staff-to-user ratio than women's shelters. This is in keeping with reports of men's shelters in other cities in which the buildings are described as larger-scale and more institutional and the physical surroundings are described as stark (Ward, 1989).

Tolerance

The level of tolerance refers to the degree of flexibility the staff will allow for client anti-social behaviours, including intoxication. One shelter follows an abstinence-based philosophy and has a low tolerance while the second shelter follows a harm-reduction philosophy and provides many addiction services on-site, such as 24-hour availability of needle exchange. The third shelter is ranked as medium tolerance, since this shelter is more lenient toward "troubled clients" and they hesitate before barring clients from the shelter for a first offence.

Programs

All three shelters offer emergency shelter and meal programs as well as services unique to each organization. Due to the Christian-based philosophies of all of the shelters, all offer some chapel service and pastoral counselling. One shelter is known for its Special Care Unit for men in transition from hospital, or who suffer from a short-term

illness. A second shelter is known for its many addiction programs offered on site for both men and women. A third shelter houses the Home Hospice program, offering palliative care for terminally ill homeless men and women who wish to die “at home.”

Clients

The three shelters are very similar in capacity, each capable of housing close to two hundred men in beds, not including over-flow². Overflow is seasonally dependent, but can be up to fifty clients per shelter. Clients often prefer one of the three shelters, which has led to each shelter having a reputation in the community for a general type of client. For instance, one shelter has clients who are more frequently intoxicated, whereas a second shelter houses a large number of men who are in the workforce.

Schedules

All three shelters have similar policies regarding the periods of time when men are allowed to stay in the shelter. Shelter clients are required to leave their beds each morning between 0700 and 0900 and they are not admitted again until the evening except with special permission. This allows for cleaning of the shelter, as well as providing a means to maintain order. Clients have the option of remaining in the lobby of the shelter during the day at two of the three shelters. A client is able to keep his bed for additional nights as long as he returns by curfew (2300 hours). Clients are limited to a maximum stay of three months, but this clause is often waived due to the current severe low-income housing shortage in Ottawa.

² Overflow refers to shelter clients who are given a mat to sleep on the floor of the shelter when there are not enough beds.

Medications

Clients are asked to surrender all of their medications to staff upon arrival in the shelter. The medications are then catalogued in a medication administration record (MAR) and stored in a locked cabinet. Clients must go to the shelter front desk or medication area each time they would like to access their medications, often waiting in line. Shelter staff technically are not permitted to dispense medication, they only offer the dosette or pill bottle by client request. The shelter is only required to provide “safe storage” of medications, as the municipal service agreements state:

The operator shall ensure the following with respect to all prescription drugs: they are kept in one or more locked cabinets and properly identified as to the drug name and user; they are made available only to those subsidized residents for whom they have been prescribed; records are kept concerning the release of medication to the subsidized resident, as set out in subsection (b); they are given to the resident to whom they belong when that resident is discharged and, if practical, a receipt is signed by the resident; and proper medical and legal procedures are followed for their disposal, if they are unclaimed. (Freire, 2003)

Methods

Ethnographic methods were used in this qualitative study. Through ethnography the researcher gains a greater depth of understanding and tacit knowledge by living and working within the community. Ethnography allows for exploration of the meanings and interpretations that people assign to events in their lives, things that are not easily quantifiable (Glasser & Bridgman, 1999). In this sense, the researcher becomes a student of the culture or community. Since it was inappropriate for the researcher to live within the male homeless community for this study (as the researcher is female), the researcher instead made multiple visits to the shelter. Considering this lack of immersion, the study drew upon ethnographic methods. It was not a true ethnography by strict definition. The

flexibility of the research strategy to focus on observations along with interviews in the context of the shelter provided a deeper degree of understanding of the sheltered homeless culture and medication adherence among those living in shelters.

Sampling Method

Both clients and staff were selected using a *reputational case selection* method (Schensul, Schensul, & LeCompte, 1999). This type of convenience sampling involves asking experts, in this case front desk shelter staff who are familiar with the population of interest, to recommend individuals for participation in the study. Using this sampling method, staff assisted with the selection of client participants based on their *reputation* as the type of person the researcher was interested in studying. To increase variance, clients were selected for their reputation as having either excellent or poor adherence to medications. Shelter staff were also interviewed. Some staff participants self-referred, others suggested a more ideal candidate based on the focus of research. These sampling methods were designed to provide examples of variation in attitudes and behaviours regarding medication adherence among shelter clients and staff.

Front desk shelter staff were asked to approach clients. Preference was given to selected clients who were available at the time that the researcher was in the shelter. The onus was then on the client to approach the researcher, unless permission was already given by the client to be approached. Prior to the start of the study, an information sheet for shelter staff was posted, indicating the intent to conduct research, as well as the important role of staff in recruitment (Appendix A).

Sample

Clients and staff were recruited from each of the three men's shelters in Ottawa. By including all three sites, there was a greater probability for a rich mixture of the processes, people, interactions and structures of interest (Marshall & Rossman, 1995b).

Eligibility

Shelter clients were eligible for inclusion if they were at least 18 years old, able to speak and comprehend English, male, lived in the shelter for a minimum of one week prior to the interview, and prescribed more than one non-PRN³ medication (with at least one non-narcotic medication). Shelter clients were excluded for obvious intoxication at the time of the interview, acute mental health crisis or cognitive impairment at the time of the interview, or a prescription for only directly observed therapy (DOT) for tuberculosis.

Shelter staff were eligible to participate in the study if they were over 18 years old, able to speak and comprehend English; employed in one of the three men's shelters in Ottawa as either a front desk staff or as staff manager responsible for overseeing shelter medication distribution; and had at least two week's experience working with shelter clients and medication. Shelter staff were excluded from the study if they were employed for less than two weeks at the shelter, experiencing an acute mental health crisis, or had no at-work involvement with medications.

Data Collection

Data were collected using five different means. Interviews with participants were conducted using a semi-structured interview guide, in conjunction with a background questionnaire. Interviews and background questionnaire responses were audio taped and

³ PRN refers to medications taken as needed, and not prescribed with a regimented schedule, such as once daily, by clients who decide upon the schedule based on symptoms.

later transcribed. Information about current medications was obtained from the shelter medication administration record (MAR), and corroborated with the client's self-report. Data collection progress was regularly discussed with the thesis supervisor to elicit guidance and review any necessary modifications in order to focus interview and background questions. Throughout the data collection period, field notes were made as participants were observed. The basic tools of ethnography are the researcher's "eyes and ears" as the primary modes for data collection (LeCompte & Schensul, 1999). Observations were made during prime medication dispensing times (morning and evening) on several occasions, and at two shelter staff meetings. Observations and data collection were conducted from October 2003 to March 2004.

Data Analysis

Data analysis abstracts the rich data from transcripts into categories and later themes, as an attempt to make sense of the diversity of data (Richards, 1999). Qualitative data analysis relies on inductive reasoning processes to interpret and structure the meanings of the collected data (Thorne, 2000).

Transcription and analysis of interviews and field notes began in the first weeks of data collection. Transcripts were read, and reread, to get a general flavour of the overall data (Creswell, 1998a). Document summaries of individual interviews and corresponding field notes were created to facilitate content analysis (Miles & Huberman, 1994). Ideas from the text were assigned to specific categories, and were revisited throughout data analysis. This strategy, *constant comparative analysis*, involved the simultaneous comparison of observations with preliminary categories, searching for commonalities and inconsistencies (Guba & Lincoln, 1992). Emerging categories were

tracked using original paper transcripts and a data processor and grouped by either shelter staff or shelter clients. Several working meetings with a committee member experienced in ethnographic methods ensured a systematic capturing of early categories and identification of potential themes. One committee member independently coded two of the transcripts to ensure accuracy of the emerging categories.

The themes emerged from the convergence of both the staff and client data sets and bridge the two perspectives. Themes are an extension of the inductive reasoning process, and represent a higher level of abstraction than that provided at the level of categorical analysis. The socio-ecological perspective, and more specifically the proposed ecological model (Chapter 2), gave direction to the identification of emerging themes. Themes were elicited from the data and represent areas of dynamic interplay between shelter clients and staff, and the interactions with the greater community, health and social systems. Although participants were asked to discuss medication adherence, the themes move beyond medication to provide a deeper understanding of the culture of the sheltered homeless. The thesis committee provided input into the elucidation and labelling of final themes.

Thesis Outline

This is a manuscript-based thesis. Three individual papers have been written with the expectation of publication. This first chapter has provided a general introduction of the thesis, as well as an introductory review of the literature of medication adherence and the homeless. It has also provided a detailed review of the methods and study setting.

The first manuscript, chapter 2, provides a description of a proposed ecological model that guided the study questions and design. The model was influenced by the

clinical experience of the author and based upon the literature and socio-ecological models, and tailored to the homeless population. This chapter contains a more detailed review of the literature.

The second manuscript, chapter 3, is a summary of the findings of the qualitative research on medication adherence and homeless men's shelters. In this manuscript, three themes that emerged from the data are discussed, then incorporated into a revised socio-ecological model.

The third manuscript, directed towards pharmacists, offers recommendations and strategies to address medication adherence that arise from the results of the qualitative study. The final chapter concludes with implications for future research, and clinical implications for both the clinical nurse specialist and the multidisciplinary health care team.

Abstract

The homeless are at greater risk for medication non-adherence than the general population because of their living environment and complex medical needs (Bamberger et al., 2000; Hwang & Gottlieb, 1999). This manuscript provides a critical analysis of the problem based on a literature review. An ecological model is then described that illustrates how personal, medication, social, institutional and system-wide factors influence medication adherence. The intention of this model is two-fold, to direct nursing practice and to guide future research. A case study is also presented to further illustrate the many issues of medication adherence, and provide an example of how the ecological model may be used by nurses in clinical practice.

Key Words: *medication adherence, medication compliance, homeless, shelter.*

Introduction

Treatment protocols for many acute and chronic diseases often involve medications, each prescribed with its own set of instructions to achieve the most favourable treatment effect. However, sub-optimal adherence³ to medication regimens is a serious issue and can undermine treatment plans. Adherence is a complex, multi-faceted problem. To better understand how nurses can address medication non-adherence, research needs to examine the unique characteristics of population subgroups and their immediate social and institutional environments.

The homeless are disproportionately affected by chronic disease and they are especially challenged by medication adherence (Sabaté, 2003). Homeless men living in a shelter share a unique environment in which they take medications, and the experience of medication adherence for this population merits further investigation. The purpose of this paper is to describe an ecological model that illustrates how personal, medication, social, institutional and system-wide factors influence medication adherence. This model has been derived from the literature and informed by the clinical experience of the first author who works as an outreach nurse practitioner with sheltered homeless men in Ottawa, Canada. A case study is also presented to further illustrate the many issues of medication adherence, and provide an example of how the ecological model may be used by nurses in clinical practice.

³ The term adherence can be defined as the degree to which a patient's behaviour coincides with medical recommendations (Svensson, Kjellgren, Ahlner, & Saljo, 2000). The term adherence is used in keeping with current thought that adherence is an evolution from the more traditional label of compliance, but reflects a shift in attitude implying that a patient is empowered to choose, rather than cater to the wishes of medical staff (Sorensen et al., 1998).

Importance of the Issue

Adherence is becoming an ever-growing concern for Canadians; we are prescribed over \$10.3 billion in medications annually (CPC, 2002). Non-adherence to prescription medications can be costly. The economic burden of medication non-adherence in Canada, based on hospitalization costs alone, is estimated to be over one billion dollars annually (Iskedijian, Addis, & Einarson, 2002). Poor medication adherence increases the burden on individuals and families as morbidity and mortality rise (Iskedijian et al.). Sub-optimal prescription adherence to antibiotics can also have an impact on the health of populations, as illustrated by the development of drug resistant strains of bacteria and viruses (Canadian Psychological Association, 2001; Clark, 2000). By improving medication adherence, nurses can diminish the burden of acute and chronic disease, and thus improve individual quality of life and population health.

The Homeless Population

The homeless are at greater risk for medication non-adherence than the general population because of the combination of their living environment and complex medical needs (Bamberger et al., 2000; Hwang & Gottlieb, 1999). Compared to the general population, the homeless have higher rates of physical illness, mental illness, substance abuse and early mortality (Kushel, Vittinghoff & Haas, 2001). Therefore, it is reasonable to expect a greater demand and need for prescription medications among the homeless, with subsequent difficulties supporting their adherence with prescribed protocols.

Adherence Literature Review

In 2003, the World Health Organization (WHO) published a document calling researchers and health care providers to action, citing long-term therapy adherence as “a worldwide problem of striking magnitude” (Sabaté, p.7). In the report, the WHO acknowledged that the true extent of the problem had not yet been fully explored, and suggested that adherence research data from “...important subgroups, such as adolescents, children and marginal populations are urgently required” (p.7).

The first research publications on medication adherence did not appear until the 1960s. Initial landmark researchers included many disease categories in their studies of medication adherence and underscored the problem when they estimated an overall adherence rate of only 30% (Haynes, 1976; Sackett & Snow, 1979). Since then, numerous studies have examined adherence, each focusing on a single disease category, describing prevalence and predictors of adherence. Several measures of medication adherence have also been developed (Dunbar-Jacob & Mortimer-Stephens, 2001). Despite recent technological advances in pharmaceuticals and treatment regimens, long-term adherence to chronic illness treatment regimens in developed countries remains low, estimated at 50% (Sabaté, 2003).

Findings from this comprehensive review of the adherence literature include individual studies as well as review articles. Relevance and generalizability of the current literature to the homeless population and the Canadian health care system are discussed. Four key articles that report on research with sheltered homeless men are examined, and finally the contributions of existing models that have aided in the development of the proposed ecological model are reviewed.

Comprehensive Reviews and Meta-Analyses of Adherence

The adherence literature is very diverse, and includes prevalence and predictor studies as well as intervention studies of adherence⁴. The literature is further divided by disease type, and/or medication typology. In an effort to identify promising interventions and factors of medication adherence, various authors have published systematic reviews and meta-analyses of interventions to improve adherence. These reviews cover the adherence literature published between 1967 and 2001 (Appendix B).

Relevance of Previous studies to Homeless and to Canadian Health Care System.

There is a dearth of published medication adherence literature involving sheltered homeless individuals. The Canadian perspective, which is unique because of universal health coverage and medication payment system for those receiving social services, is clearly lacking in the adherence literature.

Homeless and other marginalized populations are largely excluded from the literature on medication adherence. Furthermore, many promising interventions are not relevant for homeless persons living in shelters where they have no access to a personal phone, they may not have links with family, and they may have had to relocate from their regular health care professional. This suggests that the homeless may require different interventions than those that are “successful” for the general population.

Very few published studies have been conducted in Canada. Most studies have been conducted in the United States, where Medicaid, responsible for medication coverage of low-income individuals, has been criticized because of limited access for the

⁴ There is much debate in the literature how to measure adherence, and for the purposes of this manuscript, this will not be discussed.

homeless (Nwakeze, Magura, Rosenblum, & Joseph, 2003) and insufficient coverage for those with high prescription costs (Tseng, Brook, Keeler, & Mangione, 2003). In comparison, Canada has universal health coverage, and subsidized or free medications for the homeless.

Limitations.

Several limitations are striking.

- a) Generally there is a lack of consensus about how adherence should be measured, whether with behavioural, biochemical, or clinical measures, and thus descriptions of non-adherence vary by study (Krueger, Felkey, & Berger, 2003). This makes comparisons across adherence studies difficult, and brings into question whether calculations to determine the significance of interventions have either been over or underestimated. It could be argued that considering researchers are still debating how to measure adherence, more qualitative research needs to be conducted to find out how best to assess adherence and which factors that impact on adherence should be considered when developing potential interventions.
- b) Theoretical models of adherence and/or health behaviour change have rarely been described in intervention studies to increase adherence. Models and conceptual frameworks are important to assist in organizing, guiding and communicating research. The few key models that have been developed and used will be discussed later, in relation to the development of the proposed ecological model.
- c) Structural and environmental variables have rarely been acknowledged in intervention studies, or predictor studies of adherence. The foci of studies have been on personal attributes and relationships with health care providers, reflecting an implicit

cognitive-behavioural approach in published adherence literature (Johnson, 2002).

For the homeless, this ignores the institutional context, and influence of community resources on medication adherence.

- d) Few studies give recommendations to improve medication adherence, and only multi-strategy interventions appear to have made any significant difference (Haynes, McKibbin, & Kanani, 1996). There is little evidence of effectiveness of patient education alone, when medications are prescribed or dispensed. Instead, promising interventions use a combination of more convenient care, information, telephone reminders, family therapy and additional supervision (Haynes, McDonald, Garg, & Montague, 2003). These interventions, when used in combination require coordination of care with health professionals and require additional resources, such as a family member or a care-worker to provide support and supervision. None of the comprehensive reviews referenced the homeless population specifically as being included in any of the quantitative studies. It is acknowledged that accessing the homeless population can be challenging, making it difficult to obtain an adequate sample for quantitative studies (Faugier & Sargeant, 1997).
- e) Few of the systematic reviews made reference to qualitative research. This could be because few qualitative authors researched adherence specifically, but instead made reference to adherence as part of a category or theme. For instance, as one of the experiences of a newly diagnosed diabetic, adherence with the treatment regimen might be difficult. One author who included qualitative studies in a systematic review of adherence felt that there was too high a reliance on descriptive studies, and more randomized controlled trials were needed to give credibility to the issue of

adherence (Wood & Gray, 2000). However, another research team felt qualitative studies better captured the under-reported patient perspective (Vermeire, Hearnshaw, Van Royen, & Denekens, 2001).

Considering that the methodological quality of the quantitative adherence intervention literature has been critiqued as poor (Nichol, Venturini, & Sung, 1999), it could be argued that high calibre research, both quantitative, and qualitative, is needed to address the issue of adherence.

Adherence Studies involving Sheltered Homeless

From a thorough review of the literature, only four studies were found that focused specifically on medication adherence among the sheltered homeless population. Two of these studies had significant limitations. One study was published in 1989 (Nyamathi & Shuler), and a second was described only in a “letter to the editor” (Carthew & Styres, 1993). However, these four studies remain key articles because of the authors’ interest in homeless persons living in shelters, their discussion of adherence, and the applicability of the findings to the proposed ecological model. The four studies therefore merit further description.

A retrospective descriptive study identified perceived factors that homeless men thought enhanced or diminished their compliance with prescribed medications (Nyamathi & Shuler, 1989). The convenience sample (n=61) was recruited at a nursing clinic within a Los Angeles homeless drop-in centre. The homeless persons interviewed considered structural factors to be the greatest reason for non-compliance. These included lack of privacy, lack of storage space and difficulty obtaining medications. The authors suggested that frameworks guiding research should include these structural variables.

In a survey of homeless shelter users in Toronto, Ontario, 50 participants with diabetes described barriers to optimal management (Hwang & Bugeja, 2000). The most common barriers were limited availability of appropriate food choices, problems with logistics to obtain diabetic supplies, difficulties scheduling to coordinate medications with meals, and lack of drug benefit cards. Although the authors did not address medication adherence specifically, medications are one form of diabetic management. This study suggests that certain structural factors need to be addressed to more effectively manage chronic disease among the homeless.

In a cross-sectional study of the relationship between HIV medication adherence to antiretroviral resistance, 34 homeless clients with HIV were recruited from shelters, meal lines and hotels in the United States (Bangsberg et al., 2000). The authors found a median adherence rate of 67%-89% with anti-retrovirals after ten weeks, depending on the way in which adherence was measured. This high rate of adherence was exceptional, explained in part by a sampling strategy that yielded participants who were less likely to report ever using illegal drugs, and who were less likely to consider themselves 'homeless'. The study suggested that addictions, personal characteristics and self-perception of homelessness influence adherence.

The third study, conducted with 50 homeless men and women who had used a mobile health clinic in a large US city, used a structured interview and questionnaire to ascertain ability to comply with a medical regime, including medications (Carthew et al., 1993). Again, the findings suggested structural concerns as barriers to following a plan of treatment. These barriers included lack of transportation, lack of water to swallow medications, inability to rest, and inability to maintain diet as reasons for non-adherence.

The authors suggested that medical practitioners need to address homeless-specific potential barriers to adherence, and practitioners may not be able to prescribe the same therapy for homeless as they do for housed individuals.

To summarize, relatively little is known about the homeless population in terms of medication adherence. Much of the literature on adherence has been conducted with populations that, compared to the homeless, have stable housing and secure financial and social supports. To better examine the problem of adherence among the homeless, an ecological model was developed that addressed barriers and facilitators to medication adherence from the perspective of a sheltered homeless male.

Existing Models

A framework derived from established social ecological models was chosen to reflect the important extra-personal factors influencing adherence among the homeless. The adherence literature and models used in existing adherence studies, such as the health belief and socio-behavioural compliance models, have further informed the proposed framework.

Social Ecology

Social ecological models challenge researchers and program developers to assess the problems of the homeless at multiple levels, thus moving beyond an individual's personal attributes and including the environment (Best et al., 2003; Toro, Trickett, Wall, & Salem, 1991). With respect to medication adherence, the environment encompasses the physical environment (e.g. proximity of shelters and pharmacies), the social environment (e.g. social resources), and the organizational and policy environments (e.g. policies of shelters and pharmacies). Social ecologists also emphasize the dynamic

interplay between situational and personal factors (Clitheroe, Stokols, & Zmuidzinas, 1998; Stokols, 1996). This interplay suggests that living in a shelter environment affects a person's health differently depending on his or her personal attributes (e.g. resilience, health and financial status) and resources (e.g. social supports, life experience). Social ecology models have mainly been used in the area of health promotion, with limited application to adherence problems. One example of a social ecology model used in health promotion and adherence is Corbett's (2001) framework of levels of influence on smoking adherence.

Cognitive-Behavioural Models

In the published models of medication adherence, the focus is on the individual and the aim is to predict adherence, rather than to understand and to explore all the relevant factors affecting adherence, or lack thereof (Gustafson et al., 2001; Johnson, 2002). These models make little reference to the unique context for the homeless population, such as the institutional policies and practices of shelters as well as the instability of housing and supports. The Health Belief Model, The Socio-behavioural Compliance Model, and the more recently published Medication Adherence Model will be reviewed. The following models are not exhaustive of available frameworks and models described in the adherence literature, but they are repeatedly referred to or cited.

The Health Belief Model (HBM).

The Health Belief Model (HBM) was first developed to explain the likelihood of an individual to partake in a preventative health action, such as immunization, or screening (Becker et al., 1979). The HBM focuses on the patient's perception of susceptibility, severity, benefits, preservation of health, barriers, and self-efficacy

(Becker, 1974). This model suggests that an individual's adherence behaviour is dependent upon an individual's desire to avoid illness and a belief that a specific action will result in illness avoidance (Janz & Becker, 1984). This model describes intrapersonal factors relevant to medication adherence.

Sociobehavioural Compliance Model.

The Socio-behavioural Compliance Model provides a perspective from social psychology. Becker and Maiman (1979) drew on the Health Belief Model (HBM) in creating the compliance model. Like the Health Belief Model, the socio-behavioural compliance model is limited in its inclusion of environmental and contextual factors that may affect adherence. For homeless men living in a shelter, institutional and policy factors, such as hours of access to lockers, meals and medications, need to be included in a model of adherence specific to this population group.

Medication Adherence Model.

This model was developed to describe the process of achieving adherence to hypertension medication, and is based on the idea that non-adherence is related to either the intentional decision to miss medications, or unintentional interruptions causing medications not to be taken (Johnson, 2002). Health care providers can use this model to assess and predict adherence, once three core concepts have been explored. *Purposeful action* refers to an individual's perceived need, and the perceived effectiveness and safety of the medication. *Patterned Behaviour* refers to the degree to which an individual has established a habit or pattern of taking medications through access, routine and remembering. The final concept, *feedback*, refers to an individual's appraisal of information or events which may then reinforce or modify medication adherence

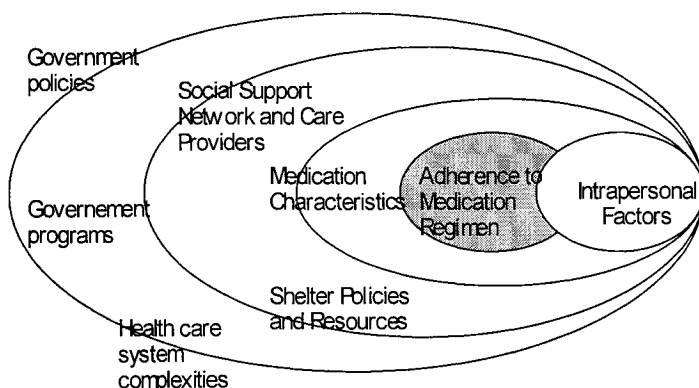
behaviour. This model builds on earlier cognitive-behavioural models, but remains grounded in a cognitive approach, not giving consideration to the environmental context.

To summarize, cognitive-behavioural models provide an excellent description of adherence at the intrapersonal level, with some attention to extrapersonal interactions and social supports. However, homeless clients living in a shelter have a unique institutional environment in which to take medications. For this reason, an ecological model that conceptualizes the extrapersonal factors to include not only a social environment, but also a physical environment, an organizational, and a policy environment would be helpful as a basis to better understand the adherence problem among the homeless.

Proposed Ecological Model

The proposed model is presented in figure 1. The model was originally developed to guide a qualitative study of medication adherence among the male homeless population living in a shelter. Here the model is described with a focus on its application for nurses to assess medication adherence among homeless clients.

Figure 1
Proposed Ecological Model of Medication Adherence in Men's Homeless Shelters



Elements of the Model

The following description of the elements of the model are intended to assist the nurse in assessing specific factors related to medication adherence among homeless living in shelters.

Intrapersonal Factors for the nurse to assess include a homeless individual's knowledge of medications and specific instructions, beliefs about the effectiveness of medications and adherence, motivation to adhere, previous experiences in the shelter and with medication as well as the perceived threat of illness. These factors directly influence *Adherence to the Medication Regimen*. This is where the majority of research has focused, reflecting a predominantly cognitive-behavioural approach to adherence. Different classes of medications may also influence adherence differently. For example, HIV medication regimens can have a high degree of complexity since they are taken a minimum of twice daily, and some medications within this group have special dietary and temperature requirements. Individuals who adhere to antibiotic therapy will experience a rapid and perceptible medication effect, compared with those taking medication for chronic illnesses such as high blood pressure.

Medication characteristics may influence adherence. Nurses need to assess the characteristics of a homeless individual's medications, including the frequency of doses, the timing of administration, the route of administration, the duration of treatment, whether self-administered or administered under supervision of others, and side effects of medications. For instance, some antipsychotic medications are available as depot injections, increasing adherence over daily oral dosing (Coldham, Addington, & Addington, 2002). Presumably the influence of medication characteristics is similar for

the homeless population in comparison to the general population. However, homeless individuals living in a shelter may not have the same ease of routine to follow a schedule of medications, hence the timing and number of doses required per day, as well as the duration of treatment may have more weight for this population and affect a homeless client's ability to adhere to prescribed treatment. Therefore, *Medication Characteristics* are identified at the next level in the proposed ecological model as influencing medication adherence.

For homeless individuals, health care providers are an integral part of the social support system. When assessing a homeless individual's supports, it is appropriate for nurses to include not only family and friends, but also health care providers and shelter staff. This is depicted in the model as the category *social support network and care providers*. Indeed existing literature has studied the benefits of social support for adherence to medical regimes (Boutin-Foster & Charlson, 2002; Nyamathi, Leake, Keenan, & Gelberg, 2000). Often it is the shelter staff who coordinate care and distribute medications to clients. However, both nurses and shelter staff are important individuals in the social support network of the homeless.

The way in which clients and shelter staff interpret the rules for medication storage and distribution is addressed in the category *Shelter Policies and Resources*. Shelter staff do not dispense medication, as they are not trained health professionals. Instead shelters provide safe storage of medications, and following shelter policy, staff offer clients their medication. Shelter resources and policies also dictate mealtimes and the types of food provided, which may influence a client's ability to tolerate the side effects of a medication, and indirectly influence adherence. Some shelters may be able to

assist clients to pay for medications if they have no other means, depending on a shelter's resources. Shelter policies direct the way in which staff are reprimanded if they are responsible for a medication error, such as giving medications to the wrong client. This can either positively influence clients' adherence to medications by increasing shelter staff diligence, or negatively affect client's adherence to medications by discouraging shelter staff from dealing with medications. It would be helpful for the nurse to assess the policies, practices and resources related to adherence to medication protocols in the shelter where their clients reside.

And at an over-arching layer, *Government Policies and Programs* as well as *Health Care System Complexities* have an impact on clients and staff through the financial implications of rules and regulations. In Ontario, an Ontario Works income support program client must have a valid health card to qualify for the drug card, which pays for medications. If a client has lost all of his identification, including his health card, a copy of a birth certificate must be obtained, a process that can take several months. During this process, a client with little or no financial subsidy may not take medications. A client over the age of 65, depending on his income status, must pay an annual base fee to the pharmacy in order to continue to receive prescription coverage throughout the remainder of the year. Some clients may not have saved enough to pay this fee the month it is due, and they may have subsequent difficulty obtaining their prescriptions. Therefore *Government Policies and Programs* as well as the *Health Care System Complexities* have been included in the model. The nurse should assess whether homeless clients have identification and the financial means to obtain prescriptions.

Interplay Among the Model Elements

An ecological model highlights the dynamic interplay between situational and personal factors. An in-depth understanding of the way in which the model elements relate to each other provides insight into the issue of adherence. The following are illustrations of this interplay.

A health care provider may interact with a client's social support network, thus influencing the client's intrapersonal perceptions of illness, and beliefs about the importance of medication adherence. Optimal adherence to a medical regimen may provide an opportunity for a client to remain in the shelter, for instance when a client taking anti-psychotic medication is able to better understand and follow shelter rules and policies. Provincial government programs that require a monthly drug card to be delivered to the pharmacy in order to cover medications for those with financial need reflects the interplay between the health care system and government economic programs.

Application of the Model

Case Study.

The following case study provides a glimpse into the experience of a homeless male who is living in a shelter with prescribed medications. It highlights some of the issues associated with medication adherence that are unique to the homeless population.

Jack⁵, a 33-year-old gentleman was just discharged from the hospital after a three-day admission for diabetic coma. While he was in hospital, medical staff diagnosed Jack with Type II insulin dependent diabetes and schizophrenia. Jack was given a written prescription for his diabetic and psychiatric medications. Because Jack

⁵ This is a fictitious character that has been created from experiences with many clients in the homeless community.

had no fixed address, transportation was arranged from the hospital back to one of the local Ottawa men's shelters. No referral information was sent to the shelter.

Three days later staff were called when one of the other shelter clients could not wake Jack up from his chair in the lobby. After another lengthy hospital visit, it was determined that Jack had not filled his diabetic and psychiatric medication prescriptions, and therefore his admission diagnosis was again hyperglycaemia. With some

The shelter environment offers a particular challenge to medication adherence:

- You are forced out of your bed by 8 am and are not allowed to return to your room until after 4pm
- You cannot take your medications with you, forcing you to stay close to the shelter if you have medications that need to be taken at noon
- Meals are scheduled and generic, seldom allowing for special requirements, such as low salt, low sugar, or low fat
- Low staff: client ratios can create lengthy waiting times, and intimidating crowds around the front desk area at medication administration times

investigation, the discharge-planning nurse determined that Jack had not yet received Social Assistance because he had been too mentally ill to complete the application process, and therefore did not have the drug card that paid for medications. Jack was so mentally ill that he could not ask for help, let alone work independently to afford his medications.

This time when Jack was discharged back to the shelter he was connected by front-desk shelter staff to the local community health centre and shelter outreach nurse. Over the next several weeks Jack had to contend with staff unease about his access to and use of insulin syringes, since staff were familiar with these syringes as those used by most injection drug users. The outreach nurse provided diabetic education, to both Jack and the staff. She liaised with the family doctor at the Community Health Centre since it was still difficult for Jack to attend any scheduled appointments. Jack lost weight as he tried to negotiate a diabetic meal from the food being offered through the shelter. Ironically it was partially through this weight loss that Jack's diabetes could now be controlled by oral medications and diet alone. Jack has just recently been accepted into supportive housing in the community and expects to move out of the shelter at the end of the month.

This case study illustrates how, for homeless individuals living in a shelter, medication adherence is not necessarily as straightforward as making medications a

priority, or taking medications as directed and scheduled. There are many internal and external variables that need to be considered when looking at medication adherence from the perspective of the homeless sheltered male. Several *intrapersonal factors* led to Jack's situation, since he had a biological predisposition to diabetes, and his mental illness prevented him from asking for help with his medications. Jack's *medication characteristics* needed to be considered, and their interplay with the *shelter policy*. Insulin must be injected, and the reluctance to have syringes in a shelter may have had an effect on adherence. A *social support network* was established only after Jack was diagnosed and relapsed, to prevent further hospital admissions and decline of his health. His social support network included the front desk staff who coordinated Jack's care and the visiting nurse who provided diabetic education and general support. Both of these providers, the front-desk staff, and the nurses, were critical to improving Jack's medication adherence, and communication between them was necessary to optimize Jack's health and continuity of care. The *shelter policies and resources* dictated the diet available to Jack and the number of front-desk staff available to help Jack access his medications. As illustrated in the case study, clients must apply and qualify for a drug card to have medications covered, and this is not always feasible, thus contributing to non-adherence. The process of accessing medication coverage is reflected in *government policies and programs*. *Health care system complexities* were seen when Jack was unsuccessfully discharged from hospital after his initial diagnosis. Once care coordination was established, the health care system provided a community health centre where Jack was able to have flexibility with appointments, and where special needs of certain client groups were recognized.

Implications of the Model for Practice

The intention of this model is two-fold: 1) to direct nursing practice and 2) to guide future research. The implications for each are highlighted below.

Implications of the Model for Nursing Practice.

Nurses are key health care providers who can improve continuity of care for the homeless. In addition to providing direct patient care, nurses often have the closest and most frequent contact with clients; they are critical in ensuring their clients' adherence to long-term therapies (Burkhart & Sabaté, 2003). The model is relevant for nurses working in both community and hospital settings.

Nurses working in the community are linked to a wide array of services in the health, social services, and housing sectors that are accessed by clients; and are therefore in a position to monitor, intervene and advocate for clients, and their medical regimen. After using the model to assess areas of concern in a client's treatment regimen, the nurse can intervene at the appropriate level. This may involve the nurse providing education to shelter staff, lobbying shelter directors for policy changes impacting upon medications, or lobbying local government for more community resources to support clients living in shelters who are taking medications.

Implications of the Model for Research.

It is hoped that future researchers of adherence will consider using socio-ecological frameworks. Thus far, research has focused on predictors of adherence and on interventions with cognitive-behavioural orientations. However, researchers need to begin to reshape thinking about the issue of adherence, to include the context in which medications are being taken, such as homeless shelters. Researchers need to ask questions

about how extrapersonal variables may affect adherence, and explore the relationships among these variables for unique subpopulations, such as the homeless or those who are institutionalized. As an example, this model has been utilized to direct a qualitative study on this issue of medication adherence in men's homeless shelters (Binch, Edwards, Legault & Cragg).

Unlike the cognitive-behavioural models, the proposed ecological model argues that a client's perception, and desire to avoid illness are only a small part of what should be considered when assessing adherence to medications. Nurses are in a unique position to consider the context of a client's environment, and with this insight, nurses can advocate for their clients, in order to best improve medication adherence.

Conclusion

An ecological model of medication adherence for homeless sheltered men has been presented. This model was developed from an analysis of the current literature of medication adherence. The model illustrates how personal, medication, social, institutional and system-wide factors influence medication adherence. The model has utility for nurses who assess and advocate for changes with their homeless clients. The model also provides a new orientation for researchers investigating predictors and interventions for medication adherence among vulnerable populations.

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Abstract

Background: In Canada, homelessness has been declared a national crisis; with rates estimated at 5 in 10 000 (Hwang, S., 2001). In comparison to the general population, persons who are homeless in Ottawa have higher rates of chronic conditions such as mental illness, asthma, arthritis, and physical pain (Farrell, S, Aubry, T., Klodawsky, F., & Petty, D, 2000). Within the men's shelters in Ottawa, the total number of overnight visits has increased by 85% since 1996, now totalling nearly 162, 000 overnight annual visits (Eddy, L., 2002). Thus, medication adherence is an important issue for homeless individuals and a concern for the shelter staff responsible for administering medications. Improved medication adherence among the homeless can reduce symptoms of chronic disease, improve quality of life, and by stabilizing chronic conditions, improve access to secure housing.

Purpose: The purposes of the study were to investigate homeless men's experiences of taking medications while living in a homeless shelter and the factors that affect medication adherence; and to describe medication adherence, as it pertains to homeless men residing in a shelter, from the perspective of the shelter staff.

Methods: A qualitative study using ethnographic methods was conducted in three shelters in Ottawa, Canada. Clients, shelter staff, and managers were interviewed using a semi-structured interview guide. Field observations of the physical and social environment were also during the six-month data collection period in 2003-2004.

Results: Six shelter clients and six shelter staff participated in the study. Three themes emerged from the data: *Transitions, Neither institutional nor Autonomous, Multi-System Discontinuity in Communication*. These themes are incorporated into a revised socio-ecological model that describes how personal, medication, social, institutional and system-wide factors influence medication adherence.

Implications: Findings illustrate the limitations of viewing adherence to medications as an individual, cognitive choice. The necessity of taking into account the complexity and challenges imposed by a homeless individual's environmental context when they are living in a shelter are demonstrated.

Introduction

In Canada, homelessness has been declared a national crisis; with rates estimated at five in 10 000 (Hwang, 2001). Within the men's shelters in Ottawa, the number of overnight visits has increased by more than 85% since 1996, now totalling nearly 162 000 overnight annual visits (Eddy, 2002). In comparison to the general population, persons who are homeless in Ottawa have higher rates of chronic conditions such as mental illness, asthma, arthritis, and physical pain (Farrell, Aubry, Klodawsky, & Petty, 2000). Thus, medication adherence is an important issue for homeless individuals and a concern for the shelter staff responsible for administering medications. Improved medication adherence among the homeless can reduce symptoms of chronic disease, improve quality of life, and by stabilizing chronic conditions, improve access to secure housing.

Objectives

The objectives of this study were:

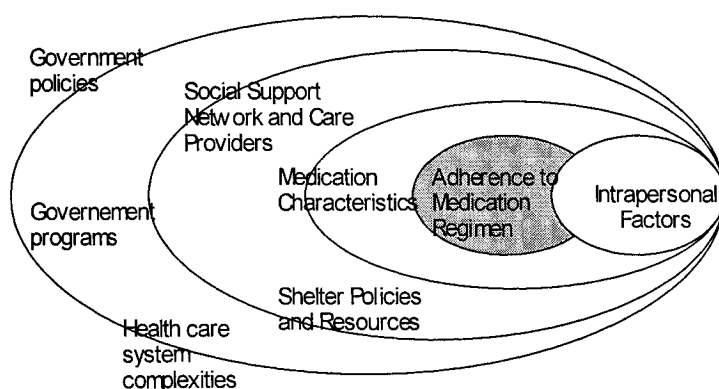
- 1. To describe homeless men's experience of taking medications while living in a homeless shelter and the factors that affect medication adherence.*
- 2. To describe medication adherence as it pertains to homeless men from the perspective of the shelter staff.*

Review of the Literature

The World Health Organization (WHO) recently presented a document that cited adherence to long-term therapy as "a worldwide problem of striking magnitude" (Sabaté, 2003). Despite recent technological advances in pharmaceuticals and treatment regimens, long-term adherence to chronic illness treatment regimens in developed

countries remains low, estimated at 50% (Sabaté). Various authors have published systematic reviews and meta-analyses of medication adherence, but to date, very few strategies have yielded any clinically significant improvements in medication adherence (McDonald, Garg, & Haynes, 2002). This suggests that a new approach to research on medication adherence is needed. A socio-ecological model, shown in figure 1, guided the current qualitative study (Binch & Edwards).

Figure 1
Socio-ecological Model of Medication Adherence in Men's Homeless Shelters



The model illustrates how personal, medication, social, institutional and system-wide factors combine to influence medication adherence. This study has a primary focus on the social- and institutional-level factors.

Methods

Design

This qualitative study followed an ethnographic approach. Ethnographic methods focus on culture through the participants' perspective and through encounters where

participant's meaning is elicited (Marshall & Rossman, 1995). Ethics approval was gained from the University of Ottawa prior to conducting this study.

Data Collection

Interviews with participants were conducted using a semi-structured interview guide, and a demographic questionnaire. The semi-structured interview guide was developed primarily from the literature and further guided by the socio-ecological model (Figure 1). Responses were audio taped and later transcribed. Information about medications was obtained from the shelter medication administration record (MAR), and corroborated by the client's self-report. Throughout data collection, field notes were made. On several occasions, observations were made in each shelter during prime medication dispensing time (morning and evening), and during two staff meetings at two different shelters. Data were collected from October 2003 to March 2004. During this time, the first author was employed as an outreach nurse practitioner in the shelters.

Data Collection Setting

The study took place at the three men's shelters in Ottawa, all found within a small area downtown. Each shelter is known in the community for a general type of client, and for different strengths in services or programming. Table 1 provides a brief overview of the numbers of clients housed, the level of tolerance⁵ of the organization, the types of programs offered, and the governing body.

⁵ Level of tolerance refers to the general atmosphere of the shelter towards client behaviours including intoxication, hygiene and anti-social behaviours.

Table 1

Comparison of Ottawa's Three Men's Shelters

Shelters	Bed Capacity	Level of Tolerance (Client Behaviour)	Programs Offered	Governing Body
Shelter A	194	High tolerance (harm-reduction philosophy)	▪ Emergency shelter ▪ Alcohol harm-reduction program ▪ Supportive housing ▪ Meal programs ▪ Chapel service	▪ Faith-based organization ▪ Elected board of directors
Shelter B	191 + 42 private beds	Medium	▪ Emergency shelter ▪ Hospice (palliative care) ▪ Life skills ▪ Chapel services ▪ Meal programs	▪ Faith-based organization ▪ Elected Board of directors
Shelter C	170	Low tolerance (abstinence-based organization)	▪ Emergency shelter ▪ Special care unit ▪ Thrift store ▪ Outreach van ▪ Chapel services ▪ Job-help ▪ Meal programs	▪ International faith-based organization ▪ Managed by religious denomination

Data Analysis

Transcription and analysis of interviews and field notes began in the first weeks of data collection. Transcripts were read, and reread, to get a general flavour of the overall data (Creswell, 1998a). Document summaries of individual interviews and corresponding field notes were created to facilitate content analysis (Miles & Huberman, 1994). Ideas from the text were assigned to specific categories, and were revisited throughout data analysis. This strategy, *constant comparative analysis*, involved the simultaneous comparison of observations with preliminary categories, searching for commonalities and inconsistencies (Guba & Lincoln, 1992). Emerging categories were tracked using original paper transcripts and a data processor and grouped by either shelter staff or shelter clients. Several working meetings with a committee member experienced

in ethnographic methods ensured a systematic capturing of early categories and identification of potential themes. One committee member independently coded two of the transcripts to ensure accuracy of the emerging categories.

The themes emerged from the convergence of both the staff and client data sets and bridge the two perspectives. Themes are an extension of the inductive reasoning process, and represent a higher level of abstraction than that provided at the level of categorical analysis. The socio-ecological perspective, and more specifically the proposed ecological model (Figure 1), gave direction to the identification of emerging themes. Themes were elicited from the data and represent areas of dynamic interplay between shelter clients and staff, and the interactions with the greater community, health and social systems. Although participants were asked to discuss medication adherence, the themes move beyond medication to provide a deeper understanding of the culture of the sheltered homeless. The thesis committee provided input into the elucidation and labelling of final themes.

Results

Description of Participants

Six clients and six staff (two staff and two clients from each of the three shelters) were interviewed. In each shelter one recruited staff member was in a management position and the other was front-desk staff.

Staff.

Table 2 presents the socio-demographic characteristics of the shelter staff interviewed. All the staff had worked at their respective shelters for over three years. Those in management included a team leader, a caseworker and a hospice-services co-

ordinator. At some point in their career, each had worked as front-desk staff, and at the time of the study, all regularly interacted with front-desk staff and clients. Compared to those in management, the front-desk staff had job descriptions that entailed greater direct client care, and few administrative meetings. Front-desk staff had less responsibility administratively, but had regular, on-going contact with shelter clients as they entered the shelter facility. Among those interviewed, front-desk staff were generally older and more experienced at working in the shelter than the managers.

Table 2

Sociodemographic Characteristics of Staff Respondents

	Position	Full/Part-time	Months worked in the Shelter	Age	Education
1	Front-desk Staff	full-time	72	>35	Community College
2	Shelter Worker (Team Leader)	full-time	146	>35	Some secondary or high school
3	Hospice Services Coordinator	full-time	48	<35	University Degree Completed
4	Case Worker	full-time	66	<35	Some university -not completed
5	Front-desk Staff	full-time	144	>35	Community College
6	Front-desk Staff	full-time	264	>35	Some university -not completed

Clients.

The socio-demographic profile of the six clients interviewed is presented in Table 3. The length of time the clients had spent continuously at the shelter during the current stay ranged from three weeks for a client recently released from jail, to three years for a client at Shelter B. Three clients reported Ontario Disability Support Payments (ODSP) as their main source of income and one client received a pension from the Canada

Pension Plan (CPP). Two clients received a shelter allowance, entitled the Personal Needs Allowance (PNA), which at the time of the interview meant their monthly income was \$112.00 (Cdn). The median age of the clients interviewed was 57, with a range from 49 to 65 years of age. All except one respondent had completed secondary school, and four had some post-secondary education.

Table 3

Sociodemographic Characteristics of Client Respondents

Client Number	Length of Time This Visit in Shelter	Income	Age	Education
1	Almost a year (this visit)	PNA	63	Some primary school (Completed grade 6)
2	2 months	ODSP	57	Some University- Not completed
3	3 weeks (this visit)	ODSP	49	Some community College or technical college
4	3 years (on & off)	PNA, Private Insurance	54	Some community College or technical college
5	17 months	ODSP	53	Some University- Not completed
6	2 months (this visit)	CPP	65	Completed secondary or high school

A brief health profile of the client respondents is presented in Table 4. Many respondents had at some point lost their identification, including their health card, or had had it stolen. However, at the time of the interview, all but one had a valid health card. All the respondents considered themselves smokers and at least two of the respondents reported consuming alcohol to the point of intoxication at least once a week or more

frequently. When asked if illicit drug use was a part of the client's life, four out of six respondents answered 'yes.' All but one respondent had used the hospital emergency department on at least one occasion in the last 12 months, and three out of six respondents had gone more than once. Two respondents had spent at least one night in detox, and two had spent some time in jail within the last year.

Table 4

Health History and Resource Utilization of Client Respondents in Past Year

Client Number	Health card	Smoking	Alcohol Use	Illicit Drug Use	Emergency Room Use in the last 12 months	Detox Use in the last 12 months	Jail Stay in the last 12 months
1	Yes	Daily	Less than 1x month	No	Yes x1	No	No
2	Yes	Daily	1-2x month	No	Yes x2	No	No
3	No	Daily	Less than 1x month	Yes	Yes x2	No	Yes 3 months
4	Yes	Daily	Once a week	Yes	No	No	No
5	Yes	Daily	Everyday	Yes	Yes x2	Yes x2	No
6	Yes	Daily	Once or twice a month	Yes	Yes x3	Yes x6	Yes, 1 night

Medications from a variety of classes were used regularly, for both acute and chronic diseases, but predominantly for chronic diseases. Selected information from the medication categories is presented in Table 5. Cardiac medications, including antihypertensives were used by three of the six respondents. A psychiatric medication, either an anti-psychotic or anti-depressant, or a combination had been prescribed for four of the six respondents. Three of the six client respondents had been prescribed a narcotic pain medication at the time of the study, although only one identified this when asked

directly during the interview. Checking the shelter MAR validated client self-reports of medications, and provided additional information about prescribed pain medications.

Table 5

Medication Class Use of Client Respondents

Interview Number	Non-narcotic Pain relief	Heart Meds	Narcotic	Tranquilizers	Antibiotics	Anti-depressant	Anti-psychotic	Inhalers	Total Number Prescription Medications
1	Yes	No	Yes	No	Yes	No	No	No	2
2	Yes	Yes	Yes	Yes	No	Yes	No	No	6
3	No	Yes	Yes	Yes	No	Yes	Yes	Yes	16
4	No	No	No	No	No	No	Yes	No	1
5	No	No	No	No	Yes	Yes	Yes	No	4
6	Yes	Yes	No	No	No	No	No	No	3

Description of Cultural Context

The following are excerpts of field notes taken by the researcher at each of the three shelters. These provide a glimpse into the overall atmosphere of the three shelters, as well as a description of how medications were stored.

Sample Field Notes from a Shelter:

In order to get into this shelter I used the back door through a program that I'm used to visiting. In this way I missed out on the chaos and intimidation of the front desk. At the end of the interview when I finally did see the medications at the front desk, I regretted not starting there to get the full sensation of what a client would have gone through. I was dwarfed by the size of the front desk staff- there were 4 young men standing around in this small room that had a door to the kitchen and the rest of the shelter on one side, and a cut-off door where clients could lean on the other side- very intimidating. The windows of the front desk looked out into the lounge area straight ahead. Medications at the shelter were stored in 2 large drawers and appeared very organized. There was a medication reference book beside the medication administration record (MAR) binder.

Sample Field Notes from a Shelter:

This shelter is prominently situated in the City of Ottawa. Approaching the shelter, I first noticed that the front-side of the building is lined with clients sitting on bent bars that

protect the basement windows. The front door is easily recognizable, and there is a sign at the door that says “no more bagged lunches for today.” In the lobby there is a chapel on the far right, and a long corridor to offices straight ahead- the front desk is slightly to the right – very much an open concept compared to the other two shelters. There are several residents occupying the chairs in the lobby- mostly elderly-appearing people- a few at tables, but mostly lined up side-by-side facing the front desk. Here medications are kept in a wardrobe-appearing cupboard behind the front-desk. The medications are each in little baskets, but there are also some medications sitting on the bottom two shelves, appearing forgotten. Some medications are grouped inside plastic bags, and others are in dosettes, but mostly the baskets are filled with individual pill bottles.

Sample Field Notes from a Shelter:

The door to this shelter is particularly hard to locate, as there are no real door handles, but small metal grab bars. There is a drop-in centre beside the shelter with clients milling outside in large numbers. In order to get into the shelter you walk upstairs, talk to staff through a thick plastic window, and are “buzzed” in. In order to get to the dental office where we were doing the interview, we had to go through another two series of locked doors. There were no clients around inside the building during the early afternoon. The medication room is on the other side of the shelter from the front-desk, and the medication room also houses the hygiene products and under-clothes donations that are in milk crates along one wall. During an initial visit, the medications were visible in the over desk cupboard overflowing out of the little baskets that had letters marked on the front. Some letters such as “R” and “S” clearly did not have enough space and dosettes and plastic bags of medications were just packed into the area wherever it seemed they could fit. Glucometers, dosettes, bottles of various sizes and cardboard punch cards were all housed inside or beside various baskets. At a later visit the medication cupboard had been renovated or cleaned out and the medications were all able to fit into a basket, giving a more organized appearance.

Perspectives of Staff

Several messages were consistent across the shelter staff: insufficient knowledge needed for the job, fear of involvement with medications, feelings of great responsibility and concerns with continuity of care.

Insufficient Knowledge Needed for the Job

Shelter staff are responsible for a number of roles and tasks. In addition to their role in offering medications they are asked to be security officers, resource coordinators, communications officers, and counsellors. During the interviews some staff seemed puzzled that medications would merit the attention of research since they dismissed giving medications as just another task.

Types of Medications.

Generally staff were poorly informed about the different classes of medications. Interviews and observations showed organization into three different groups: mental health medications, narcotics, and others. Depending on the category of medications, staff concern for adherence differed. Staff expressed the most concern over mental health medications. This group of medications most affected ease of client interaction, and lack of adherence often caused problems with behaviour. Therefore, the class of medication can facilitate adherence, such as when staff give greater attention to clients with mental health medications.

Bob⁶ [front-desk]: ... if [clients] don't take their medications their moods alter and it's important that they take their medications. And if they don't come to us and ask us for their medications, more often than not we're so busy... And when clients are here, especially the ones that are on [mental health] medications, they're here for an extended period.

However, adherence to mental health medications overshadowed staff concerns for adherence of the other two groups: narcotics and all other medications. Narcotics generally made staff apprehensive, and they were most guarded about offering these medications.

⁶ Pseudonyms have been used to protect participant's anonymity.

Jim [management]: ...narcotics are always an issue, if they are kept in a dosette or they're kept in a pill bottle... [clients] take what they need and then the front desk tries to watch what they're taking but some of the guys can be pretty slick...

In one instance when a staff member discussed the decision making process of when to assist a client fill a prescription, the type of medication affected the staff's decision to help obtain the prescription and thus influenced the client's ability to adhere to the therapeutic regimen. If the prescription was deemed important enough, the shelter would cover the cost of the prescription for a few days.

Jill [management]: In fact, depending on the medication, depending how urgent it is – if it's just something as simple as antibiotics or something not terribly, terribly urgent, then the couple of days is no harm to them.

The types of medication clients were taking influenced how staff treated the clients and their treatment regimens, and consequently affected adherence.

Complex Clients and Complex Regimens.

Staff had insufficient knowledge to deal with the complex conditions of clients, and medication regimens they encountered daily. In order to increase adherence, staff at one shelter prioritized the remaining doses if a client had missed some. This might mean that staff would rearrange the dosette, or make a decision about which group of medications (i.e. morning or bedtime) was the most important to take.

Eli [front-desk]: ...for example, say a person's supper meds would only be due around 10 o'clock at night by virtue of when they received their other meds during the day, but if there is no duplication involved, we will often times give them both dosages at the same time... if there is [duplication], we might pull out that one prescribed medication, leave that one aside, but make sure they got the rest of them.

The ultimate goal was to improve adherence as much as possible under the circumstances, but staff were making decisions outside their range of knowledge.

Insufficient Training.

Staff were not required to have had any medical or health-related training before employment. Staff discussed their limited training with medications. The training they did have was often concentrated on how to perform the task of offering and documenting medications, rather than on either the pharmacological action of medications or situations that might arise with clients regarding the dose and safety of administering medications (such as a client requesting more medication than prescribed, or requesting medications while intoxicated).

Bob [management]: It's a five-day training process when someone is hired- and medication is not part of it. Not to my knowledge. It's not part of it.

Staff needed to be trained for all of their shelter roles, and the time and priority given to medications was minimal.

Fear of Medications

Many of the staff expressed fear of causing harm to a client, and concern about liability for mistakes.

Causing Harm to a Client.

Several staff discussed not wanting to harm clients, and feared making a medication error that could result in harm. Staff were concerned about interactions with other substances clients might be taking, such as illicit drugs, or prescription medications not given to staff for storage.

Ray [front-desk]: We run into problems [when] people bring in a bottle with a mixture of medications. ...We can't just say, " here take the bottle" while you're in the shelter but we can't take any responsibility for something that may happen to that person as a result of taking medication incorrectly.... In this case we will keep the medication and he will tell us what he's taking away, just so we can record that he took it, that's all we can do.

Shelter staff feared that medications, when not administered properly, might cause greater harm to their shelter clients.

Liability from Mistakes.

Staff discussed concern for mistakes they might make because of shortcomings of other staff, or because of recognized policies and practices of the shelter itself. Staff discussed a lack of trust among staff members regarding medication documentation.

Bob [manager]: ...because if another staff member doesn't document something, how are you gonna know? And if you ask the clients you're either going to get a right answer or a truthful answer, or an untruthful answer. So that's a big concern to me...So when I'm actually documenting someone's medication, I really don't know what I'm documenting ...I guess it's the fear of the unknown a lot of people really don't like dealing with medications. And [Shelter A] puts such a premium on it, because if you do make a mistake you could be liable, you know, people have lost their jobs over double-dosing...

Staff from two of the shelters highlighted a concern about the poor organization of medication storage that may impede adherence. Storage cupboards at two of the three shelters revealed some medications did not fit into the available storage areas, medications stored out of order, and medications toppling from shelter clients' bins.

Although shelter staff discussed a fear of medications, they also discussed the great responsibility for medication distribution they felt in their role as shelter staff.

Staff Roles and Responsibilities

At times, staff were conflicted between undertaking their role obligations not to dispense, and ensuring clients maintained their independence. They also felt a responsibility to connect clients to resources to optimize medication adherence and health.

Independence or Intervention.

Overwhelmingly, staff felt a great responsibility for medications, and their safe administration. Staff recognized that their role was not to dispense medications, but to provide safe storage, and then offer clients their medications. One staff member suggested that offering more control to clients when they approached the front-desk for their medications would produce more clients responsible for medications.

Ray [front-desk]: See, shelters are becoming more and more cheap hospitals and I think that we can't go that far. We have to give the patient, the client more control. And we have to just prevent them from submitting to the patient role rather than being somewhat responsible for their own life...

Most staff felt that they had a responsibility to remind clients about their medications, in order to improve adherence. One staff member described the process he used:

Eli [front-desk]: I'll make a list, by going through every MAR sheet. I'll make a list of the individuals that are to be dispensed medication while I'm on my shift. I'll put down the times that they are due, and I'll just scratch them off as I dispense them.

Staff disagreed about whether clients should be given full responsibility for their own medication, or reminded about medications when due.

Connecting and Advocating for Clients.

Staff cited connecting clients to community resources as a critical strategy to improve adherence. Some staff advocated for clients with police by making efforts to give arresting officers the client's medications. Most commonly, staff talked about referring clients to outreach nurses, outreach workers or other health practitioners.

Bob [front-desk]: If they have a worker that we're aware of, we'll definitely contact the worker. A lot of them have CMHA [Canadian Mental Health Association] workers, so maybe the CMHA worker can exert a bit of pressure.

By connecting clients with community resources, shelter staff attempted to improve adherence.

Concerns with Continuity of Care

Staff members described gaps in continuity of care, including inconsistent communication, exclusion of shelter staff from the health care team, lack of support for clients outside of the shelter, and lack of drug cards impeding adherence.

Inconsistent Communication Between Shelters.

Although the three shelters are geographically within close proximity, none used the same documentation system for medications, and did not share a common client database.

Drew [front-desk]: ...we do have that on-going problem with communicating with certain shelters in the past, and we will continue to do so, I think. But I would hope in a situation, especially with medications, that it might be a little easier than the communicating [problems] that we usually have.

This quote illustrates the lack of a communication protocol among shelters, which resulted in inconsistent communication among shelters. The difficulty communicating among shelters was especially evident in the cases of clients who had been referred out for placement to another shelter. There was no linked database among the three shelters that would have advised shelter staff about the admission of their client at a different shelter. Instead, any communication about a client, and his medication regimens occurred on the basis of individual staff discretion.

Exclusion of Shelter Staff from the Health Care Team.

From the interviews and observations, poor communication among medical practitioners, pharmacies, and shelters was evident. Medical confidentiality is intended to protect the patient and not to harm him. After observing two instances when staff had

significant challenges to ascertain medical information about a client from his health care provider and verify the existence of a prescription, it became apparent that confidentiality could also be a barrier to medication adherence.

One scenario that was observed involved a client who was distressingly impaired by an unknown substance, suspected to be a prescription medication. From previous experience, staff had asked to have his medication delivered directly to the shelter but this time, the client had gone to a different pharmacy than the one where his file was flagged and his drug card was filed. As a result, an ambulance was called, as the staff were concerned about the client overdosing. In a second case, staff noticed a hospital bracelet on one of the clients, yet he had no medications on file despite the fact that staff had referred him to the hospital because they suspected medications were needed. A week later, shelter staff referred this client to the outreach nurse for follow-up. In both these instances, staff expressed concern that they had no way to obtain client medication information from other service providers.

One shelter staff gave an example of the discontinuity of communication between shelter staff and family physicians.

Bob [management]: We had one guy who would get a medical book, and he would study it and then go out the next day to doctors' offices with all these symptoms and come back with all his medications. And you know what he's doing, but what can you do? And then you try to monitor it as best you can, but, and that happens a lot. I just think that whole system is not as safe as it could be. Because they're just going doctor to doctor.

The frustration of being excluded from the health care team was evident from staff responses.

Insufficient Supports for Transition into the Community.

Staff believed that continuity of care was lacking due to limited resources in the community to support clients once they had departed the shelter. Staff reported observing a cycle that included clients becoming stabilized on medications while at the shelter; and then leaving the shelter, becoming overwhelmed, then discontinuing medications; and eventually returning to the shelter. One staff member described the shelter as a ‘comfort zone’ for clients and recognized the transition process as difficult, and the stability of the shelter as a welcome reprieve.

Jill [management]: Yes, what happens is that many of the clients that go, and finally get housed, end up coming back to the shelter because that's where their comfort zone is. So, they come back to the shelter for the comfort, for the support from the other staff, for the support of the other clients that need to always be around people... The downfall is that their medication gets transferred here, there, and everywhere...

In comparison to the perceived stability provided by the shelter environment, staff expressed concern with the lack of resources to support clients once they moved out into the community.

Drug Cards Impeding Adherence.

Most staff discussed difficulties obtaining drug cards, and the challenge of providing seamless care with the social services structure in place. Drug cards are provided to qualified clients whose source of income is a government assistance program. However, in order to obtain a drug card, clients require appropriate identification if they are not registered in the welfare system. This often poses a barrier to care as many clients had lost their cards or had their identification stolen.

Also, drug cards are issued monthly in the envelope that contains a client's monthly cheque and receipt rather than directly to a chosen pharmacy. Each month the

drug card must be delivered to the pharmacy in order to have prescriptions filled. One staff member shared her experience with the challenges for some of the clients to meet the criteria for a drug card:

Jill [management]: Out of province people, people who have quit their job, people who get fired from their jobs, mental health issues, especially severe mental health issues, the clients aren't able to get the drug card immediately, or at all, since, because of underlying issues they don't fit the needs test of Welfare.

Staff members described a gap in the continuity of care, primarily stemming from a combination of miscommunication and insufficient resources.

Perspective of Clients

Although the six clients had different medications, they reported some shared experiences with medications while residing in the shelter. Negative interactions with staff affected adherence. Through both the interviews and observations, it became evident that, for most of the clients, medications had to compete for priority with concerns for future housing, other appointments, mealtime, and addictions or mental health issues. Overwhelmingly, clients expressed a fierce independence in managing their own health.

Interplay with Staff

All of the clients interviewed were familiar with the shelter system and shelter staff. All had previous experiences residing in a shelter. The minimum time of the current stay of all of the clients was three weeks.

Some clients felt that they could be either negatively labelled because of their reputation at the shelter, or that their relationship with staff was dynamic, and could change without mutual respect.

Labelling.

Some clients described tension in their relationship with staff resulting from being negatively labelled. One client described the difficulty he had in changing the schedule of his medications, a difficulty that he attributed to the staff's perception of him.

Clay: ...you are labelled there right away, if you hang around with somebody here, automatically you are labelled, whether you are using a drug or not, abusing alcohol or not, so that has effects. So right away, the staff, they look down upon you.

A client's adherence to a medication regimen may be influenced by negative staff perceptions and the client's experience of being labelled.

Outward Appearances.

Several of the clients chose not to overtly challenge the staff as a mechanism to maintain their bed at the shelter and access their medications. Clients detailed their knowledge of the shelter rules- both explicit and implicit. For instance, one client described his relationship with shelter staff and the importance of being polite, even if he had to wait for his medications.

J.P.: ... You're barking at people day in and day out in a negative way and that there, well, you're not going to get anyone anywhere's in life. I like where I stay, I make my own decisions. If I don't like something I will go see what's happening, I don't use no attitude. ... not because I'm Mr. Goody or that there, but I value where I stay and the people around me.

Some clients, such as J.P., demonstrated an unflappable attitude, even when they would have preferred to express their feelings differently, as a method of maintaining a rapport with shelter staff, who were, in turn, responsible for distributing the clients' medications.

Competing Priorities

Most of the clients suggested that medications were not their highest priority. For some clients, this had more to do with being overwhelmed by living in a shelter, and for others, it was a conscious choice. Still, others made medications a priority, waiting patiently for their medications and changing their social and appointment schedules.

Overwhelmed.

During some observations of the activity at the front-desk in the different shelters, the scene could only be described as chaotic. Many clients asked staff to address a wide range of concerns, ranging from getting medications, to getting bus tickets, to requesting emergency access to lockers. On several occasions, clients quietly moved away from the desk, despite not having voiced the issue for which they were waiting to approach staff. On more than one occasion, a client left after vocalizing loudly that he had been waiting for medications and would have to come back later.

One client interviewed had moved to the shelter relatively recently, and he still appeared overwhelmed and slightly disorganized. Half way through the interview, he remembered that he should be taking a lipid-lowering agent and a baby aspirin along with his blood pressure pill to prevent a second myocardial infarction. He then proceeded to change the topic back to his concern for his previous roommate. It was a struggle to bring him back to the topic of medications.

Troy: Actually I should, I take Zocor and a form of aspirin but I haven't been taking it since I've been here...I could go and get it renewed, eh? But when I left [my home] I left everything there, even the Metoprolol. But I got some Metoprolol since I left there...I got it when I was in the detox over there and I hadn't had any in about four days so they phoned the White Cross and they sent some over there... Well I've been going to get it, going to get it and I haven't been over there to get it –maybe I'll go over there today.

A client may be so overwhelmed by the living environment and the life circumstances surrounding the move to the shelter that medications are not a priority.

Not Top Concern.

Other clients who were interviewed were more direct in discussing their feelings about medications and adherence. For these clients, in comparison to their addictions, housing issues, finances or other concerns, medications were not considered a top priority. Lack of adherence seemed to have less to do with being overwhelmed by the chaos, and more with a conscious decision to either adhere or not adhere.

Bill: ...See to me it's kind of a dry sterile subject... When I go out [of the shelter], it's not my top concern, cause I know that it's not that critical. I might miss a night; I might miss two or three...

Adhering to a therapeutic regimen was not seen as critical and therefore medication adherence was allocated a lower.

Waiting Patiently.

During the interviews, the clients mostly dismissed waiting for medications as a problem. However, in the undertones of the interviews, the frequent references to waiting, and field observations suggested that waiting was in fact an issue.

JP: ... so if you have to wait 20 minutes it's no big deal. Some people, they don't like waiting, so they won't... you just sit down because standing there kind of doesn't help much with the kidney stone. I go away if they are busy, it's no problem like I say; I'll go to [the bookstore].

Other clients made medications a priority, but were frustrated that they had to make such an effort to reorganize their lives to fit the medication regimen.

Tom: ...I schedule myself to be back at that time cause I know what time I have to take it, so I arrange myself that way...

Shelter staff were limited by the shelter policy requirement to follow the directions on the medication bottle or dosette, and they were reluctant to send dosages with clients during the day. Thus clients were often forced to return to the shelter for each dose of medication.

Fierce Independence

Generally clients felt that they were both responsible for taking medications as prescribed and for self-monitoring adherence. Two clients asserted their independence in taking medications, but acknowledged that they benefited from staff assistance with reminders to take medications.

Autonomy.

From the posture that clients assumed, to their voiced authority (correct or incorrect) about their medications, the clients interviewed were emphatic about their independence. Clients expressed that taking medications was their responsibility alone.

Bob: It's up to me if I want to take my pills. It's my decision. Ok? No one can make me take pills if I don't want to. Right? Right.

When asked about other social supports, all of the clients felt that they were primarily responsible for medication adherence, and for the decision to take the medications.

Somebody to Help.

While all of the clients asserted their autonomy, two of the clients reported benefiting from the support of staff.

Tom: You just won't regiment yourself [at home] and I find it better here when you have somebody to help you with that. As opposed to trying to look after it yourself.

For these two clients, staff concern and monitoring of medications helped to improve medication adherence.

Temporary vs. Long-term Housing

Although the shelters are classified as emergency housing, most of the clients had lived at one or more of the shelters for lengthy periods.

For those new to the shelter, it was sometimes difficult to relinquish resources from their old neighbourhood, because they were uncertain whether or not they would be returning, or moving again. This “limbo” had the potential to decrease medication adherence as it left clients’ physicians, social supports, or pharmacists in various locations throughout the city. For example, one client residing at the shelter for two months described how he was forced away from the community resources with which he was familiar. His bank and pharmacy were across from each other, and he used to always visit them on the same day.

Troy: A friend of mine there said ‘You walk all the way down there to get your medication?’ He said there is a drug store right there... but I [have] been dealing there so you know, and as I said it’s usually the time when I go to the bank.

This client was not ready to obtain new resources closer to the shelter, despite having been without half of his prescription medications since arriving, as he was convinced that he would be leaving the shelter shortly.

Themes

From the preceding categories, the following three themes emerged: Transitions, Neither Institutional nor Autonomous, and Multi-System Discontinuity in Communication.

Transitions

This theme reflected the perpetual activity of shelter clients when they settled into their shelter ‘home’ and also when preparations were made to move out of it. Transitions

from the shelter into the community included moves to and from community housing, jail, detox or hospital. This theme brings together the lived experience of shelter clients with the context of the shelter environment. It involves an adjustment to a new culture—including learning the rules, the role of the relationship between staff and client, and learning how to best access and utilize available community resources. The theme also includes competing priorities which impact upon medication adherence, especially when a client is transitioning into or out of a homeless shelter.

Learning New Roles.

The implicit and explicit rules of the shelter set the routine and expectations for clients when they moved into a homeless shelter. Clients were expected to relinquish their medications to the shelter staff who decided when medications would be available, and in some circumstances, such as intoxication, when it was safe to allow clients to have access to their medications. Learning this new role in the homeless culture also determined the relationship that formed with shelter staff.

The Role of the Relationship Between Shelter Staff and Client.

Shelter staff could be gatekeepers for clients as they transitioned into and out of the shelter. Shelter staff discussed their important role in advocating for clients and their medications with health care professionals and community agencies. However, clients discussed concern as to how shelter staff perceived them and how this might influence the assistance shelter staff provided with medications. As clients transitioned into and out of the shelter, a relationship developed between shelter staff and clients.

Access and Utilization of Available Community Resources.

Some clients had strong ties with community resources, and resisted making any changes, as they saw their shelter stay as short-term. For other clients, it was the resources in the shelter with which they were most familiar and their routine stabilized under the extra supervision and guidance provided in the shelter. Regardless, when clients transitioned into the shelter, they had to assess how to best access and utilize available community resources.

For some clients, moving into a shelter was familiar, and there was a positive association with the available resources in the shelter, including shelter staff, visiting nurses and outreach workers. During the study, both staff and clients reported the additional supports available in the shelter, such as medication reminders from staff, and provision of meals as necessary for some clients. Some clients had unsuccessfully attempted independent living in the past, and failed when they moved away from the resources available in the shelter, and the downtown community. These clients cycled back into the shelter system where they could once again access health care and assistance with medication adherence.

Other clients discussed the difficulties with adjusting to the resources in the shelter as opposed to the resources they had become more familiar with when they were housed. For instance, some clients lost access to their physician or pharmacist in the community when they moved to their new shelter, simply because the distances were prohibitive, or because their usual routine was thrown into turmoil. For some clients, this negatively impacted adherence to their medication regimen.

Competing and Shifting Priorities.

Throughout the transition process, there were a number of issues that a client had to cope with simultaneously, and sometimes medications were not a client's highest priority. When clients were asked to speak about their medications, the discussion often veered into discussing their future plans for housing. Although most clients discussed the importance of medications, they also discussed how they were focusing their resources, such as outreach workers or family physicians to help secure housing.

To summarize, the theme *Transition* represents the role learning for clients when they cycle into and out of the shelter system, and the interaction between shelter clients and their community supports when they come to reside in a shelter. As well, medications had to compete for priority with other areas of client interest when they moved into a shelter.

Neither Institutional nor Autonomous

This theme reflected the deeper tension between staff and clients over autonomy versus paternalism while residing in a shelter, and the conflict manifested itself in discussions and actions about medications. Both clients and staff were at times conflicted when discussing shelter rules or policies, and describing how these were put into practice for an adult, supposedly self-sufficient population. There was a conflict between shelter practice and policies, and clients attempting to adhere to their medication regimens while living within the shelter institution.

Staff reported understanding the need to follow official policies about medications, such as their responsibility to confiscate all medications to be kept safe, and to offer but not dispense medications. This is a conflict in itself. The medications

needed to be kept safely away from clients because it is an institution, but then it was recognized that clients are adults and should have total autonomy with those same medications when it came to actually dispensing them. The ambiguity came into play when staff had concerns that clients were either taking too many, or not taking enough medications. Staff were not sure if their role was then to either allow or intervene in client's autonomous medication "dispensing." Staff were concerned that they had some responsibility in their caregiver role to ascertain the safety of giving medications to clients whom they felt to be intoxicated or abusing medications, and potentially causing harm.

From the perspective of clients, medications and health represented areas where they wanted to assert their authority. Clients felt that if they did not have control over their own body and belongings, then what did they control? At the same time, clients recognized that they were residing in an institution that had policies in order to keep them and other clients safe. As well, some clients recognized that they needed an institutional environment and the supports that were offered in terms of managing activities of daily living, such as help with meal preparation and reminders of when to take medications.

Multi-System Discontinuity in Communication

In asking about factors that affect adherence to medications, *multi-system discontinuity in communication* emerged as a theme. This theme reflects the difficulty with which information is communicated among agencies and providers who are part of the core network for the homeless. This includes difficulty with which information is communicated at the level of community shelter agencies, pharmacies, at the level of regional health care providers, and at the level of provincial government programs.

Communication Between Community Shelter Agencies.

Staff reported cases where they referred out clients to other shelters, or booked in clients who had been transferred from another shelter. Although communication among shelter staff would help to ensure medications were transferred along with the client, staff recognized that no formal communication links existed. Some staff were diligent in telephoning another shelter to advise them of a client's health status and imminent arrival, but many of the same staff recognized that this was not always possible, considering the staffing resources and their lack of knowledge of client movement.

Communication Among Pharmacies.

Communication among pharmacies was also an area of potential risk for clients. Pharmacies, apart from individual retail chains, did not share common communication systems. If a client attended a new pharmacy to obtain a prescription, the pharmacist had no way of knowing the date of a client's most recent medication refill, potentially resulting in a duplication of prescriptions. Pharmacists were also without the benefit of knowing either a client's history of medication adherence, or the most effective delivery method of medications, such as a weekly dosette as opposed to pill bottles.

Communication Between Shelters and Regional Health Care Providers.

Staff were frequently in a position to co-ordinate services for clients with regional health care providers. However, when shelter staff made referrals for clients to health care providers, they were usually not privy to the follow-up information, because shelter staff were not considered part of the formal health care team. When a client moved into the shelter, staff assumed an implicit responsibility in ensuring the client regularly ate, bathed and took his medications. Thus, shelter staff became the primary caregivers for

many shelter clients. When clients were given prescriptions by physicians or had instructions upon discharge from the emergency department, neither the client nor the prescribing facility regularly relayed this information to the shelter staff. Subsequently medication adherence was affected and therefore overall health potentially deteriorated.

Communication with Provincial Government Programs.

Several clients reported receiving assistance through social services, a government program. Government programs influence medication adherence by providing clients with economic resources, and a monthly drug card attached to the social assistance cheque. However, if shelter staff were not privy to information about when a client's social services application was due for renewal, and if the client did not ask for help, the client might lose his drug card. This could result in a client without the means to obtain his medications until staff were able to help him navigate the lengthy process of getting reinstated.

There were some areas of serious concern where discontinuity of communication impeded adherence to medical regimens. Communication was affected at many levels as shelter staff and clients interacted with the community, and, health and social service systems.

Conceptual Framework

In light of the findings of the study, the proposed ecological model (Figure 1) has been modified. The following is a description of the revised conceptual framework. It focuses the ecological layers of the previous model and adds the themes from the study, providing greater detail. 'Medication adherence' is no longer in the diagram, as adherence permeates all elements of the conceptual framework.

For clients taking medications in shelters, both *intrapersonal* factors, or those factors within the individual, and *interpersonal* factors, or those that describe the client's network of relationships involved with medication adherence, were included. In addition, community resources and government influence are represented as examples of extrapersonal factors.

Medication adherence can be *intrapersonal*, for example, for clients who had experienced positive medication outcomes, such as reducing “voices” they heard, or who had maintained some degree of organization in their lives. A client may have had a personal experience, such as fearing a second heart attack, which inspired him to adhere to medications. In these examples, the client’s perspective of the importance of medication was a factor that affected adherence. Clients discussed how their perceived autonomy over their medications, and familiarity with the shelter staff and shelter policies influenced medication adherence.

Medication adherence can also be influenced by interpersonal factors, such as when clients who do not take prescribed mental health medications draw negative attention from staff. Medications provide an opportunity for regular contact with shelter staff and health care providers. The degree to which clients can obtain medications through established channels has been described as system access to medications.

In the revised model, *Shelter staff* are shown immediately next to the client because of the regularity of interactions, and the important role shelter staff play as *gatekeepers* by connecting clients to resources. Clients and staff are influenced by existing *shelter rules and policies*, as the shelter policies guide practice. The implicit and explicit

shelter rules influence medication access, storage, and distribution and subsequently client adherence.

The concept of *transition* into the shelter is visually represented as an arrow, bridging shelter clients with the *community* outside of the shelter. The circle of clients overlaps with the community to further emphasize the adjustment that is needed for clients to learn the culture of the shelter, as well as community resources, as they transition into and out of the shelter. The community where clients might transition to and from includes other shelters, jail, hospital, and community housing. Competing priorities while living in the shelter may thwart adherence, and are especially relevant when clients are transitioning into the shelter. These competing priorities include addictions, relationships with others, housing, and anything else that may influence the client's perception of the need for medication. There is a resulting impact on the stability of relationships with outreach workers, nurses, physicians, prescribing agencies, and shelter staff.

Tension of autonomy, one of the study's themes, is represented in the model as a thick dotted line. The tension exists between clients and shelter staff as clients attempt to express *autonomy* within the rules and structure of the shelter institution.

Outreach workers and social supports are grouped together, and have a direct connection with the shelter and clients. Shelter staff relied upon the expertise and availability of mental health outreach workers who regularly visited the shelter. Some clients identified nurses as significantly influencing their overall health by providing support and facilitating management of health concerns, including medications.

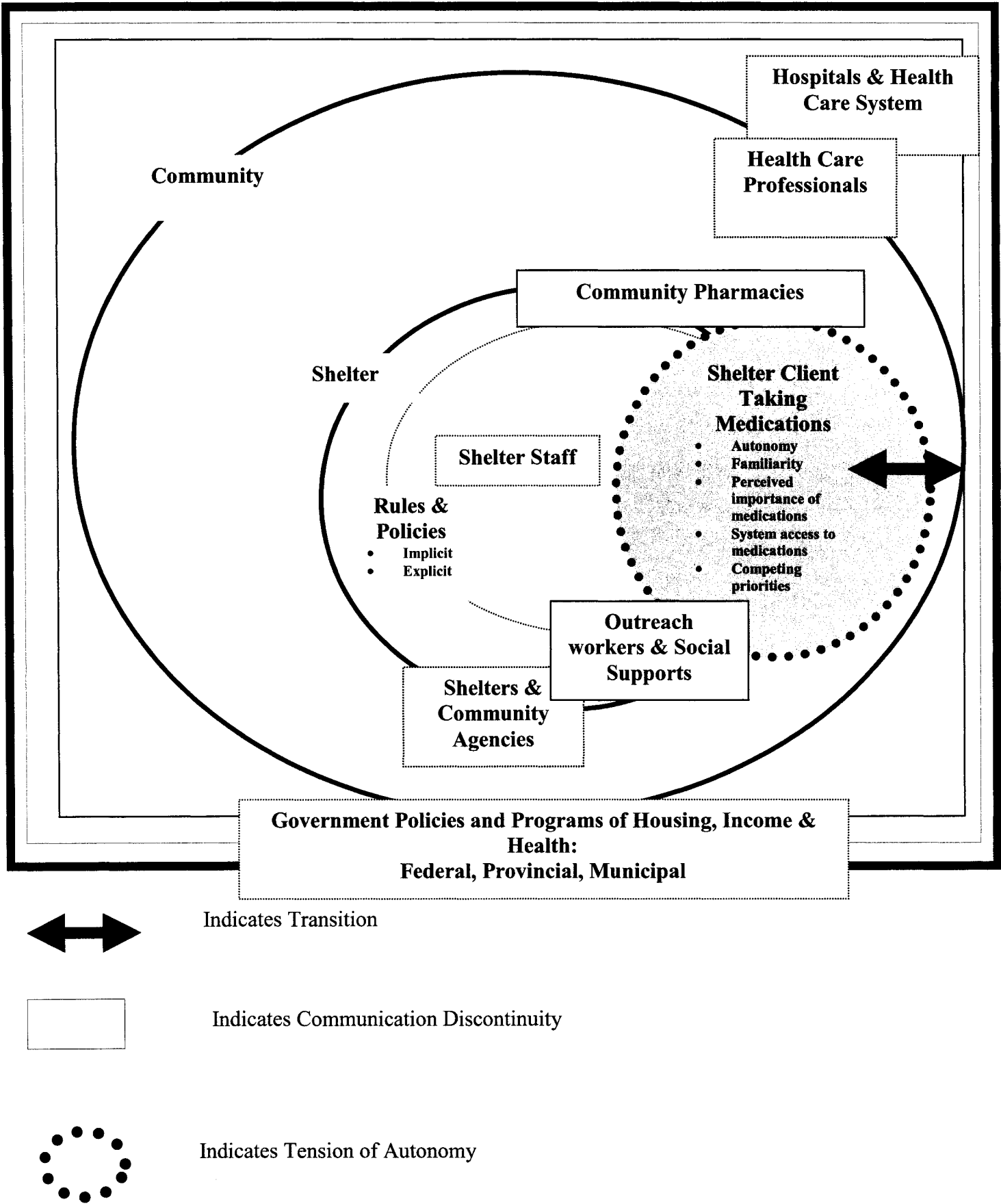
Community Pharmacies have a direct relationship with clients, staff and health care professionals, reported by both client and staff study participants. Pharmacists and/or pharmacies are often the coordinators of care for the transient homeless population, and are therefore shown linking shelters, clients, and the community resources external to the shelter to ensure medication adherence.

Multi-System discontinuity of communication is illustrated throughout the model as a fine dotted line and represents difficulties transferring information between certain systems. Communication between *other shelters and other community agencies* is fragmented. Shelter staff expressed concern about the lack of information that accompanied a client who was referred from another shelter, including information about medications. There is a break in the relationship between *health care professionals* and shelter staff. The relationship can be unidirectional, as shelter staff refer clients, but are not privy to the follow-up information that shelter staff could use to optimize care provision. This is also true of the greater *health care system and hospitals*, which present shelter staff with the challenge of caring for many clients in the community, but subsequently provide relatively little support for shelter staff in their roles as informal care providers. The health care system provides the structure within which health care professionals operate and prescribe medication, and the regulation of medication dispensing. The complexity of access to *provincial government* programs, such as housing and income support suggests that there is also a discontinuity of communication at this level.

At a greater level than the community are *government policies and programs of housing, income and health*. Municipal, provincial, and federal governments are

involved as they each provide some level of regulation. These levels of government influence health and housing policies and programs that impact upon the homeless population, and thus medication adherence. Government policies directly or indirectly influence all of the community services, shelter staff and clients in the proposed model. Government programs provide financing and decisions around resource allocation for shelters, and the programs within each shelter.

Figure 2: Revised Homeless Medication Adherence Model



Methodological Rigour and Limitations

The role of rigor in qualitative research is to ensure that results accurately reflect study participants' perspectives of the topic under study. Study rigor can be influenced by a researcher's views and experience. Ethnographers feel that the experience of the researcher enriches the conduct and interpretation of the study, unlike positivists who assert that researchers should be neutral and value-free (LeCompte & Schensul, 1999). The researcher attempted to minimize the external influence in the interviews by reflecting participants' comments back to be verified or refuted, and by providing neutral prompts.

Bias

Bias may have resulted from working as an outreach nurse in the three shelters: preconceived notions of client and staff, and notions of efficiency of particular shelters. However, the researcher works for an external agency that staffs independent programs housed within each of the shelters, with few occasions to pass through the general shelter. In this way, the staff and clients were only remotely familiar to the researcher.

Another potential source of bias was the researcher's opinions about the issue of medication adherence. To address this, an audit trail was maintained as a record during the progress of the study, and transcripts of the initial interviews were reviewed with the second author to assess for leading questions and prompts, or premature conclusion of a topic.

Trustworthiness

Combining evidence from several sources, such as field notes of observations in the shelters, background questionnaire data as well as semi-structured interviews with

both staff and clients, is a type of triangulation that enriches evidence and guards against potential errors (Creswell, 1998b). Collecting data from not only the perspective of shelter staff, but also from the perspective of clients increased dependability of the data. Transferability of the data between different settings or groups was more difficult to achieve. The use of three different shelters, and the provision of a detailed description of the study environment have increased transferability.

Limitations

Study limitations included the representativeness of the client and shelter staff samples and the small sample size.

There is a possibility the opinions of clients and staff selected to participate in the study do not reflect the overall homeless population in Ottawa or elsewhere.

Reputational sampling (Schensul, Schensul, & LeCompte, 1999) was utilized to select participants, both staff and clients, with divergent opinions.

In comparison to other North American cities, particularly cities in the United States in which much of the homeless research has been conducted, Ottawa has a relatively small sheltered homeless population. However, by including all three of the men's homeless shelters in Ottawa, the number of shelter environments was maximized.

Housing and health care providers in Toronto have been active in voicing concerns about shelter conditions in their city. In one report several shelters were inspected and only one of the shelters was found properly equipped to store medications securely (The Toronto Disaster Relief Committee (TDRC), 2003). Furthermore, the Toronto Shelter Standards are purposely vague around client medications, allowing for ambiguity as to how they are interpreted (City of Toronto, 2004)

Discussion

Comparison of Revised Model

Adherence literature is very individually-oriented, therefore it is difficult to compare current literature with the revised model that incorporates context, by using a socio-ecological perspective. Of the published models of medication adherence, the focus is on the individual and the aim is to predict adherence, rather than to explore all the relevant factors affecting adherence (Gustafson et al., 2001; Johnson, 2002). Instead, it is more relevant to compare the revised *Homeless Medication Adherence Model* to other ecological models. Ecological models emphasize a systems approach, which highlights the dynamic interplay between situational and intrapersonal factors (Stokols, 1996). The adherence literature has been criticized for its lack of explicit model use, and the predominance of implicit cognitive-behavioural models. These models provide excellent detail of individual predictor factors, but largely ignore contextual variables. The model emerging from this study provides a new orientation for researchers investigating predictors and interventions for medication adherence among the homeless and other institutionalized populations.

The original ecological model of medication adherence provided a basic structure that guided this qualitative research study. The original model was modified to incorporate the emergent themes, and evolved to include a community level where agencies and resources were recognized to influence adherence. Municipal, provincial and federal levels of government were all found to influence medication adherence by having an impact on regulations in housing and health sectors.

Study Participants

This study recruited both shelter staff and clients to provide a broader perspective of the medication adherence issue, one that has rarely been evident in existing research. In fact, the adherence literature has been critiqued for focusing on patients who were willing to participate in research, and excluding those who may not have sought care or those for whom follow-up was difficult (Haynes, McDonald, & Garg, 2002). Although the authors did not specify the homeless population, it was clear from the review of literature that the perspective of homeless clients on medication adherence was lacking.

Overall the clients who were interviewed tended to be older than others in the shelter, with a median age of 57. The majority of clients residing in shelters in Ottawa are aged 35-44 (Eddy, 2004). One explanation for the older age of those interviewed may be timing of the interviews. They were conducted during the day, when younger clients may have been at work. Also, morbidity increases with age, and older clients are often prescribed more medications. This sample may not be representative of younger clients taking medications in the shelter.

The clients who were sampled were nearly all taking some form of psychiatric medication. One reason for this may be due to staff's expressed value for adherence to psychiatric medications more than any other type of medication. Alternatively, the prevalence of psychiatric medication usage may have been inevitable, since the high prevalence of psychiatric illness within the shelters has been well documented (Clarke, Williams, Percy, & Kim, 1995; Harris, 1994; Tutty, 1998; Vamvakas & Rowe, 2001)

Although several staff commented that there was a high degree of shelter staff turnover, the staff who were interviewed were able to provide responses from extensive experience, as they had all been employed for at least three years.

Differences between Clients and Staff.

Clients and staff expressed divergent experiences with medications. However, both revealed how the shelter environment provided an intrinsic tension between adult independent men and the policies that require staff to monitor and regulate clients' behaviour. Medications were just one manifestation of this tension. Other possible areas of tension not explored in this study include the power struggle over shelter policies about hours of admittance, the provision of an allowance, distribution of bus tickets, and the allocation of bed rest⁷.

Both staff and clients discussed medications with a sort of hesitation, as though they were waiting for the discussion about the "real issues." This reluctance was reflected in the responses of some of the clients who felt that medications were not a priority, and by staff who did not always have the knowledge to recognize the dangers of treating medications casually. Staff attitudes can be explained by a lack of training, and a lack of shelter management priority given to medications. For clients, this was related more to the complexities of their life situation.

Implications for Research and Practice

This study suggests that adherence, now recognized to be an issue greater than an individual choice, can be clinically addressed in several ways. Shelter managers are in a position to lobby for appropriate staffing and training of existing staff. Shelter policies

⁷ Bed rest refers to the opportunity to remain in bed during daytime hours when clients are normally prohibited from their rooms. The decision to allow bed rest is most often based on the recommendation of a nurse, but must be approved by shelter staff to be executed.

could be made much more explicit, and reinforced in a substantial orientation of any new staff members. Nurses have an obligation to lobby for appropriate housing for their clients, and this could translate into funding the emergency homeless shelters with long-term care beds and appropriate nursing service on site. Community pharmacists can provide additional information with the delivery of medication with clear instructions for lay staff, which could include how to address clients who are intoxicated. Finally shelter staff need to establish communication links between shelters and with health care providers to better deliver the care they are already providing.

This study provided some preliminary conclusions about medication adherence in homeless shelters from the perspective of both shelter staff and clients. Future research that examines the influence of context on different groups of individuals, not only homeless individuals living in a shelter, would be beneficial. Study findings could be elucidated and verified by repeating the study with a greater number of participants, including homeless women, and non-sheltered homeless. Future research could involve a longitudinal study, concentrating on one dimension of the model, such as following homeless clients as they transition into and out of the shelter. Nurse researchers are encouraged to test the model in practice.

Conclusion

Medication adherence is an important issue for homeless individuals and a concern for the shelter staff responsible for administering medications. Improved medication adherence among the homeless can reduce symptoms of chronic disease, improve quality of life, and by stabilizing chronic conditions, improve access to secure

housing. This study sought to investigate homeless men's experience of taking medications while living in a homeless shelter and the factors that affect their medication adherence. This manuscript illustrates the limitations of viewing adherence to medications as an individual, cognitive choice. It argues the necessity of taking into account the complexity and challenge imposed by a homeless individual's environmental context when they are living in a shelter.

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Abstract

Purpose: This manuscript identifies four distinct areas of concern among sheltered homeless men and it provides recommendations for pharmacists who work with this population.

Background: Pharmacists are in a unique position to address some of the issues regarding the storage and dispensing of medications in homeless shelters.

Methods: A qualitative study that utilized ethnographic methods was conducted in three shelters in Ottawa. Shelter residents, shelter staff, and managers were interviewed using a semi-structured interview guide. Field observations of the physical and social environment were made over a six-month period.

Findings: Six shelter staff and six shelter residents participated in the study. Respondents discussed the importance of the pharmacy and pharmacists to either the continuity of care or coordination of services. The issues of concern included transcription errors on medication administration records (MARs) that have been made by shelter staff, concerns about the safety of taking specific medications with alcohol, less than optimal medication delivery formats, and lack of communication among community pharmacies.

Recommendations: Implementing a standard MAR format would remove the need for shelter staff to transcribe MARs. Information regarding safety of medications with alcohol would clarify for shelter staff, who have very little training with regards to medications, when it may be safe or contraindicated to give medications to intoxicated residents. Pharmacists are encouraged to advocate for medications to be provided in a unit dose format, such as a dosette, for delivery of medications to shelter residents, in order to minimize medication errors. The development of a communication system among pharmacies would improve continuity of care. Pharmacists are encouraged to visit shelters, learn the problems first hand and work with staff to identify mutually acceptable solutions.

Case Study

Arriving to work in time to help out with evening medications at the homeless shelter in Ottawa, Ken, a front-desk staff meets the usual chaos. There are approximately 20 men cajoling to be first to pick up their medications so they can get into line for supper.

As Ken turns towards the first resident with his dosette, he notices that the medication information sheet in the back of the dosette is missing, and he has a moment of apprehension before giving the entire dosette to the resident to take his evening medications. The next resident, smelling strongly of alcohol is asking for his Tylenol #3's. Ken knows that a shelter staff cannot dispense medications. Since this is a controlled act, shelters can only provide "safe storage." Ken gives the resident the entire bottle so he can take his dose. Ken's vision of the resident is obscured for a split second in the chaos, and when the resident returns the bottle, he notices that the level of pills is significantly lower. Again, Ken has a fleeting moment of concern before his thoughts return to the next resident. This time, Ken has difficulty finding the resident's medications in the drug cupboard – it turns out there was not sufficient space for the bubble-packs, and the other staff had stored the medications on the bottom shelf, out of alphabetical order.

Once all of the medications are distributed, Ken turns to his next job: transcribing all the medication sheets for next month, on the shelter-designed medication administration record. Without background training in pharmacology, Ken copies the unfamiliar names from the previous month's sheets, as well as from the information on the back of the dosettes. When Ken is not sure about the name of the medication, he just writes in the time the medication is due, leaving a large blank space.

Introduction

Both shelter staff and health care professionals have suggested that emergency men's shelters are becoming more and more like mini-hospitals because of the increased acuity of shelter residents' health problems. Along with this change is an increase in the number and diversity of medications taken by homeless men using shelters. Providing residents with access to their medications is a complex responsibility, and an increasing concern for shelter staff and health care professionals. This article identifies four distinct areas of concern that have emerged from a recent qualitative study of medication adherence among homeless men using shelters in Ottawa, Canada and it provides recommendations for the pharmacists working with this population.

Background

According to City of Ottawa municipal regulations for emergency men's shelters, this type of housing facility is responsible only for providing safe storage of medication (Freire, 2003). Since dispensing is a controlled act, the role of shelter staff is to remove the medication from storage, and to *offer* the resident his medication. All residents are asked to give any medications to the shelter staff upon registration. There are three men's shelters in the city of Ottawa, with a combined bed capacity of over six hundred individuals per night (Eddy, 2004; Shepherds of Good Hope - Les Bergers de l'Espoir, 2004).

Community pharmacists play an integral role in supporting and educating patients, their support groups, and health practitioners about medications dispensed in the community. Pharmacists can also provide a critical communication link between complex-care clients and care providers to improve medication adherence (Farris et al., 2004). Pharmacists have long been identified as key members of the health care team working with low-income individuals (Goyette, Disco, Leal, & Schwed, 2003; Mangum, 2001). In many Canadian cities, community pharmacists service homeless individuals and shelters by preparing medication administration records (MARs) along with the delivery of medications in unit-dose formats.

Study Methods

A qualitative study using ethnographic methods was conducted in three shelters in Ottawa from October 2003 to March 2004. The purposes of the study were to investigate homeless men's experience of taking medications while living in a homeless shelter and to examine the factors that affect medication adherence. The study aimed to describe

medication adherence as it pertains to homeless men residing in a shelter, from the perspective of the shelter staff and shelter residents.

Residents and shelter front-line staff and managers were interviewed using a semi-structured interview guide. Field observations of the physical and social environment were also made. Information about the resident's current medications were obtained from the shelter medication administration record (MAR), and then corroborated with the resident's self-report. A detailed examination of six MARs was conducted, and information from other MARs was gained during observations of staff and residents when medications were being distributed and signed for. Study methods are detailed in another manuscript, currently under review (Binch, Edwards, Legault & Cragg).

Study Findings

Pharmacists- A Pivotal Role

The majority of respondents discussed the importance of the pharmacy and pharmacists to either the continuity of care or coordination of services.

Interviewer: Could you tell me, do you feel that you have been adequately informed about your medication?

Shelter Resident: No, only if I ask about my medications at my pharmacy. As a matter of fact, I have been with [my pharmacy] a long time and they are really, really good to me. You have to feel comfortable eh? And they make me feel comfortable.

A profile of the variety of medications taken by participating residents is shown in Table 1. It is worth noting that over half of the respondents had been taking a medication for their mental illness, and half had been taking medication for cardiac disease. Two respondents had been taking antibiotics for short-term illnesses.

Table 1

Resident Medication Use by Class

Interview Number	Cardiac Meds	Narcotic	Tranquilizers	Antibiotics	Anti-depressant	Anti-psychotic	Inhalers	Total Number Prescription Medications
1	No	Yes	No	Yes	No	No	No	2
2	Yes	Yes	Yes	No	Yes	No	No	6
3	Yes	Yes	Yes	No	Yes	Yes	Yes	16
4	No	No	No	No	No	Yes	No	1
5	No	No	No	Yes	Yes	Yes	No	4
6	Yes	No	No	No	No	No	No	3

From the study it became evident that pharmacists provide a pivotal communication link between shelter residents and their health care providers in the community. Residents described the pharmacist as a consistent resource over time, often amid changes in medications, changes of health care providers prescribing medication, and changes of place of residence.

Shelter Staff: I think the pharmacies do a better job than we do [of keeping track of clients moving out of the shelter and their medications] ... I think it's because the clients, or someone on behalf of the clients, like if someone ends up in jail or something like that, then they're getting a hold of somebody; they're getting a hold of somebody's worker, they're getting a hold of somebody's probation officer... in turn, they're getting a hold of the pharmacies.

Shelter staff identified pharmacists as an easily accessible and important resource regarding residents and their medications. They often sought out the pharmacist before any other member of the health care team. Often the pharmacy, rather than a physician's office, is first alerted to an individual's change of address to or from a shelter.

A pharmacist who is familiar with shelter policies that may affect medication adherence can take this information into account when dispensing medications to a resident with a shelter address.

Shelter Resident: They ask you when you first get here, "Are you on medication?" Or they take the medications off you because they don't want anybody stealing them. Like I came here, once I came in here and I had some pills on me and I hadn't handed them in yet and someone took my coat and took my pills. [They] gave me back my coat without my pills.

Shelter Staff: All medication is to be kept at the front desk unless it's something like nitro spray, inhalers, cream... urgent stuff like that they can keep on them. But stuff like Tylenol we keep behind the front desk just in case, so people can't o.d. [overdose] on them.

As illustrated by these participants, there are certain shelter policies that can impact upon medication adherence, such as which medications are stored at the front desk. Pharmacists would benefit from knowing the policies of their local shelters.

Issues of Concern

Study findings raise several areas of concern that may be readily addressed by community pharmacists. The issues of concern include transcription errors on MARs made by shelter staff, concerns about the safety of taking specific medications with alcohol, less than optimal medication delivery format, and lack of communication among community pharmacies.

Transcription Errors.

Shelters maintain medication administration records (MARs) in order to monitor who in the shelter has stored medications, and to record when staff have given medications to residents. In the Ottawa shelters, each organization has designed its own MAR. After residents bring their medications into the shelter, staff manually transcribe

medication names from either prescription bottles or the back of dosettes. The research revealed that the MARs contained a number of errors and omissions. For example, the calendar date was missing across the top of several medication records, and proxy information was recorded, such as “morning meds” in place of the actual names of medications.

Shelter Staff: We receive very little [training on medications]. It seems to be common knowledge that all you have to do is put down the medication or give them the medication and they will take it. That's pretty much all our role will be ...nobody here receives training on medications.

Consistently, shelter staff reported that they had received very little training about medications, and none pertaining to transcription.

Safety with Alcohol.

Shelter staff reported concerns about the safety of offering medications to residents they suspect have consumed alcohol. Shelter staff reported inconsistent decisions regarding whether or not to give residents medications when they had been drinking alcohol.

Shelter Staff: If somebody comes in intoxicated, depending on the extent, depending on the time, we'd refer them out to detox. The problem is, if their medication is so urgent they require it, and you bring it to detox, detox will throw it out. No medication, yeah. So it's harmful for them, regardless. If they choose to keep their medication here, that's fine, they miss a dose, they come back in the morning and they can take it, or however their doses are... the problem we have found that was happening a lot, was the clients were coming in higher – severely intoxicated, demanding their medication – and technically it's their medication but then we try and say, “you know you can harm yourself” so we have that liability and we get concerned with that, so we try and refuse them their meds, but again it's their medication, not ours...

Shelter Staff: A front line worker doesn't really have the ...I don't know if you can say legal responsibility or legal ability, they can't really refuse to give medication to somebody unless they've been directed by a higher authority. I mean, if somebody is drunk or what have you, how are they supposed to know this isn't some medication that

they absolutely require, even though they have been drinking. So they can't really refuse to give it.

Alcohol ingestion by residents can be a problem since shelter staff do not have the requisite training to factor in the type of medication before deciding whether or not to give the resident his medications if he has been drinking alcohol. Instead staff estimate potential harm and refuse medications as there is rarely any information on prescription bottles regarding the potential harm of alcohol and medication ingested concurrently.

Medication Delivery Format.

The delivery packaging of medications greatly affects the degree to which medications can be monitored and stored effectively. The study revealed several ways in which shelter medication had been packaged, including dosettes, bubble-packs, pill bottles, company sample packs, and occasionally, sterile urine containers. Bubble packs of medications were especially difficult to fit into the available storage areas, and were often stored out of order, or toppling from shelter resident's bins. The variation in size and shape of medication containers added to the disorganization and difficulty of retrieving medications from storage. Shelter staff identified weekly dosettes as the preferred delivery packaging for medications because they fit into the available storage bins, and the dosettes provide measured, organized doses.

Another issue with non-unit-dose packaging occurred with residents who wanted to leave the shelter and asked for their medications.

Shelter Staff: *...when somebody comes and they've had an incident, or an altercation at the shelter, or, they've had enough of this place and they wanna leave, and so they come to staff and say, "I want all of my medications." That's a difficult thing because sometimes you know that this person is depressed, sometimes you know that this person has a dependency on what they're taking... sometimes you know that this person has got*

beer stashed out there. You know these things, and what do you do? It's their medication.

Staff shared their discomfort with giving medications to residents who had bottles with a large amount of medications. Access to a large amount of medication, such as when it was provided in bottles, concerned staff especially for clients whom they felt might be at risk of harming themselves by misusing the prescribed medication. Staff expressed more difficulty monitoring medication administration when it was provided in large vials compared to unit dose packaging.

Communication Among Pharmacies.

Shelter staff voiced concerns about resident's use of multiple pharmacies to fill prescriptions. One response to this concern by staff was to ask for the file to be flagged at the pharmacy to indicate the risk of poly-pharmacy use.

Shelter Staff: *And [shelter residents] manipulate the system huge. We had one guy who would get a medical book, and he would study it and then go out the next day to doctors' offices with all these symptoms and come back with all the medications... I just think that whole system is not as safe as it could be...I think it's got to be a better sort of communication system. I've talked to [Community pharmacy A], and they do flag [a resident's file], but it stays within their system. And it just seems to me that they should all be on the same system, and if it's flagged at [Community pharmacy B] then it should be flagged at [Community pharmacy A], and it should be flagged in Medicine Hat, Alberta. You know? And that's always been a major issue here...*

A flagged file ensures pharmacists are aware of concerns for requests made by additional pharmacies to fill a prescription using a resident's drug card. However, if a community pharmacy has no link to other pharmacy organizations, a resident's file may only be flagged at the one pharmacy in the city. Considering shelter clients move from one pharmacy to another, it is imperative to have good communication among pharmacies. Currently there is no formal communication system among the shelters to

report on the movement of medication if a client leaves one shelter for another (i.e. if a client has medication, if it was sent with the client, or if medications were returned to the pharmacy). Instead, staff often rely on the community pharmacy to coordinate delivery of medications and in so doing maintain a current record of where the client is residing.

Discussion

Study findings raised several areas of concern regarding medications for shelter staff, shelter residents, and health care providers⁴.

Pharmacists are in a unique position to address some of the issues regarding the storage and dispensing of medications in shelters. Increased shelter staff training could potentially reduce transcription errors, but community pharmacist intervention would provide the most consistent and sustainable approach. Because shelter residents live in a supervised dwelling and because of the frequency of alcohol use, it is especially important for shelter staff to have clear guidelines about when it is safe to give medications to a resident who is intoxicated. By supplying medications in a dosette, adherence can be estimated at a glance. In comparison to dosettes, or other unit-dose packaging, pill bottles may be emptied too quickly, or when lost, an entire month's worth of medications may need replacement. The process to replace a missing or lost prescription is often complicated for homeless persons, as they may have difficulty getting to, and keeping medical appointments. Although it would be most helpful if only one pharmacy serviced all the residents of homeless shelters, this is not easily realized.

⁴ Recommendations are based upon the study conducted in Ottawa, and can be applicable to residents of homeless shelters in other cities. However, pharmacists are encouraged to visit shelters in their own communities to validate and prioritize the concerns, and perhaps initiate their own recommendations.

Some shelter residents who have an established relationship with a community pharmacy prefer to remain with their pharmacy. Instead, a system of communication is needed that provides different pharmacies with access to a resident's recent medication profile.

Recommendations:

This study highlights several recommendations for community pharmacists who dispense medications for sheltered homeless men based on the study conducted in Ottawa.

1. Pharmacies should supply MARs along with all medications delivered to shelters.

Rather than the traditional MAR format (Figure 1), which displays medications individually without any description, a new MAR format (Figure 2) is proposed. The proposed MAR format groups medications according to time: breakfast, lunch, dinner, and bedtime. This new time-grouping of medications better reflects the way in which medications are assembled in dosettes and other unit-dose packaging, it reflects the pattern of activities in shelters, and it emphasizes for staff the time medications are taken as opposed to the types of individual pills. This new MAR format better suits the level of knowledge of shelter staff, who have no medical training, who may not be able to recognize individual pills, and who use the MAR to communicate when all medications in the dosette have been taken by the resident, and whatever those pills may have been. Recently Kroll Computer Systems Inc. (2004) has developed a version of their software that is capable of producing a MAR very similar to the one proposed.

2. Provide information on the MARs and dosette labelling specifically with regards to medication and alcohol. The information could include:

- a) Which medication-alcohol interactions reduces the effectiveness of a medication;
- b) Which alcohol-medication interaction is potentially lethal; and,
- c) Which medications are safe to use, even if a resident is inebriated.

This information can inform front-line staff to decide whether or not to withhold medications when a resident has been drinking alcohol and asks for his medication.

This may increase adherence to medication regimens, particularly for residents who consume alcohol on a regular basis, since more often than not, residents are currently refused their medications if they are intoxicated.

3. Pharmacists can advocate that prescribers stipulate that medication be provided in a unit dose format, such as a dosette. When a pharmacist faxes a medication refill request to a prescriber, the pharmacist could indicate whether or not a dosette would be appropriate. Dosettes are not only effective for all daily, regular medications, but also for some PRN medications. Narcotics that are ordered every six hours can be in a separate unit-dose format. This allows for closer monitoring of medication adherence, and decreases the risks associated with residents leaving the shelter with all of their medications.
4. Establish a linked database between community and hospital pharmacies within the same province. This communication network has the potential to decrease the duplication of prescriptions, and at the same time facilitate the continuity of medications with resident relocation. At this time British Columbia, Prince Edward Island, Manitoba, and Alberta all have advanced pharmacy networks that have the capacity to check for duplication, double-doctoring, and drug utilization reviews

(Health Canada, 2004). Currently Ontario Drug Benefit Plan (ODB) information is available through a province-wide network, but pharmacists only have access to claims' information submitted at their own pharmacy (Health Canada). In order to implement this recommendation, it is imperative to adhere to guidelines of confidentiality, and consent could be obtained upon shelter admission, that allows for discussion between residents and pharmacies.

Conclusion

A recent qualitative study conducted in Ottawa, Canada has identified four distinct areas of concern regarding medication adherence among homeless men using shelters. Recommendations for pharmacists working with this population have been outlined. It is hoped that community pharmacists will take steps towards implementing the recommendations to address the current issues with the sheltered male homeless population. Although it is suspected that many of the issues found in Ottawa are applicable to other cities, pharmacists are encouraged to visit shelters in their own communities, explore problems, and work with shelter residents and staff to identify mutually acceptable, community-based solutions.

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Shepherds of Good Hope - Les Bergers de l'Espoir (2004). Shepherds of Good Hope

Statistics. Retrieved October 18, 2004 from

<http://www.shepherdsofgoodhope.com/>.

Figure 1

Traditional MAR

Medication	Time	June 6	June 7	June 8	June 9	June 10	June 11	June 12
Lasix 80mg po BID	0800 1700							
Ranitidine 150mg po BID	0800 1700							
Altace 2.5mg po OD	0800							
Cephalexin 250mg po QID	0800 1200 1700 2100							

Figure 2

Proposed MAR

Medication	Time	June 6	June 7	June 8	June 9	June 10	June 11	June 12
Morning • Lasix 80mg (2 tabs, yellow round) • Ranitidine 150mg (1 tab, white round) • Altace 2.5mg (1 tab, small white round) • Cephalexin 250mg (1 tab, orange oblong)	0800							
Lunch • Cephalexin 250mg (1 tab, orange oblong)	1200							
Supper • Cephalexin 250mg (1 tab, orange oblong)	1700							
Bedtime • Lasix 80mg (2 tabs, yellow round) • Ranitidine 150mg (1 tab, white round) • Cephalexin 250mg (1 tab, orange oblong)	2100							

Chapter V

Summary and Implications

Summary

This final chapter reviews the manuscripts and the limitations of the research, and then highlights implications for future research, and clinical implications for both the clinical nurse specialist and the multidisciplinary health care team.

Study Purpose and Rationale

The purposes of the study were to investigate homeless men's experiences of taking medications while living in a homeless shelter and the factors that affect medication adherence. The homeless are an understudied population with regard to medication adherence. A socio-ecological orientation was undertaken to examine this problem.

Review of the Manuscripts

Following a review of the literature, the first manuscript described a socio-ecological model that illustrates the way in which personal, medication, social, institutional and system-wide factors influence medication adherence for homeless sheltered males. The model incorporates findings from the literature on adherence. This model is intended for use by nurses who work with the homeless population. The manuscript highlights areas for future research on medication adherence amongst the homeless. The model described in this manuscript guided the questions developed for the interviews with staff and clients living in shelters.

The second manuscript presented the methods and main findings of the qualitative study. Three themes emerged from the data: *Transitions, neither institutional nor*

autonomous, and system discontinuity in communication. These three themes emerged from analysis of interviews with staff and clients, and observations in the shelter. These themes guided development of a revised socio-ecological model. There are important factors related to making the transition into living in a shelter, the ensuing compromise of autonomy over medications, and problems of communication among health care providers and shelter staff that all adversely affect shelter resident's medication adherence.

The third and final manuscript provided practice recommendations for pharmacists based on study findings. Both shelter staff and residents identified the pivotal role pharmacists play in providing a communication link for shelter residents to their care providers in the community. The recommendations in this manuscript suggest that: pharmacists working with men's homeless shelters provide shelter staff with a modified medication administration record specific to unit-dose format medications, pharmacists provide information on the safety of medications and alcohol to shelter staff, and pharmacists advocate to prescribers for medications to be delivered in unit-dose formats, such as dosettes. Finally, it was recommended that pharmacists establish a linked database between community and hospital pharmacies within the same province to improve continuity of care and communication.

Study Limitations

Some limitations are described in the manuscript with the main findings, but other limitations to the research need acknowledgement.

This was the researcher's first attempt at research using ethnographic methods. As such, the skill level for the researcher conducting interviews and making observations

was that of a beginner. Hence, there is the potential that some observations may not have been noted, and interviews in some cases rushed, or prematurely terminated.

The interviews with clients tended to be short in duration in comparison with other ethnographic studies (Thrasher & Mowbray, 1995); they ranged from a half-hour to one hour. At the end of the interview, participants were given an opportunity to provide additional comments. Generally by the end of the client interviews, participants were eager to leave, oftentimes to attend appointments, or to get in line for a meal. One method that previous ethnographers have used is to conduct a second, follow-up, interview to validate the information provided during their interviews and observations (Auerswald & Eyre, 2002). However, with the transient lifestyle of the homeless population this proved unfeasible. Therefore, no member checks of the interview data were conducted.

Interviews were all conducted in a room within each of the shelters. The use of shelter space may have limited staff and client responses, as they may have been concerned about repercussions for providing negative feedback about their experiences within the shelter environment. Staff may have been concerned about repercussions from shelter management, while clients may have been concerned about repercussions from shelter staff. However, the choice of setting was to improve ease of setting up the interviews as they were done on location and did not require transportation to another setting. Participants were invited to select the interview location within the shelter to provide maximum comfort while participating in the study.

An additional limitation of the study may have resulted from the researcher working as a nurse practitioner in the shelter system. Although participants were selected

by reputation sampling, particular staff may have felt compelled to participate. However, every attempt was made to make participants feel at ease in deciding whether or not to participate. It was difficult at times for the researcher to separate information collected from observations during time spent in the shelter for research, from time spent at work. To address the issue of separating research from work observations, the researcher made every attempt to maintain detailed field notes during “research days.” It could be argued that having the researcher immersed in the culture so regularly was also relevant in enriching and validating the data collected.

With Master’s-level research there is a possibility that saturation, or the emergence of common ideas and experiences of subjects as a criterion to stop recruiting clients, may not be achieved. For beginning qualitative researchers, limited data collection is recommended, since the amount of time needed to collect data can be extensive (Creswell, 1998b). Although emerging themes reflected most, if not all of the participants, it could be expected that additional participants would support these themes. However, since the decision to stop interviews was based on practical timelines, there remains a possibility that saturation was not realized.

Future Methodology for Shelter Research

This study provides several suggestions for conducting research with the sheltered homeless population. For instance, for participant recruitment, time of day must be considered, since clients must be out of their dormitory beds early in the morning, and they often only return to the shelter for meals; and shelter staff tend to work various shifts. During this study, the researcher found the client population most accessible on a rainy, or especially cold day when more clients opted to remain in the shelter lobby. It is

important to be flexible with expectations of the time commitment of clients; clients can have limited attention due to mental illness, or can be distracted from participating due to other appointments. Similarly, follow-up interviews with the same client can be particularly challenging. For example, due to shelter policy for client stays, locating a client can be difficult, even with an agreed point of contact. Furthermore, follow-up can be challenging with the lack of clear and direct means of contacting the client. Moreover, the novelty of research participation may expire, and the client may subsequently avoid meeting with the researcher.

Implications and Recommendations

This thesis contributed to the existing body of literature on medication adherence and homeless men. Implications of the research for nursing practice, policy development, nursing education, and future research will now be presented.

Nursing Practice

One of the study findings was the lack of congruence between the background knowledge and skill needed for shelter staff to effectively provide clients' medications in the shelter, and the knowledge that shelter staff possessed. Shelter staff were not trained in basic pharmacology or the principles of medication dispensing, but many staff felt that they needed to be somewhat proficient in these skills in order to minimize any harm to clients. This ambiguity has led to tension, as clients desire autonomy while staff have expressed that they need to closely monitor clients in their "institution." There was also tension with the policy of shelter staff not "dispensing" medications. The policy prohibiting staff from dispensing medication attempts to minimize the level of responsibility assumed by staff. However, this places shelter staff in an awkward

position where they feel responsible to ensure client safety with medications but are powerless to intervene.

To respond to this client-staff tension, one recommendation is for an advanced practice nurse (APN) to provide support to staff in the shelter. An APN, as either a Master's-prepared registered nurse or nurse practitioner, could provide clinical expertise and leadership while on-site in the shelter. For instance, when a client requests his medications, and staff are uncertain about whether or not the client is too intoxicated to take medications, the APN could intervene by providing an assessment of the client and his medications. In some cases the APN could improve medication adherence, as well as remove the clinical decision-making from the shelter staff. This would reinforce staff's role in not dispensing medications, which is a clinical decision. In consultation with the client, in situations in which the shelter has agreed to help cover the cost of medications for a short period of time, and a decision needs to be made about which medications are time-critical, the APN could provide clinical expertise.

An APN could also provide educational workshops to staff on types of medications for diseases with frequent occurrence in shelters. The nurse could also act as a consultant for appropriate client referrals, debriefing with the staff following a client medication management situation. For instance, a nurse practitioner on site could assess a client having a seizure, then triage the client appropriately to either the hospital, or to the family physician to review blood work. Afterwards the nurse practitioner could brief staff on seizure medications, and some of the other signs and symptoms that may result from decreased adherence.

In an effort to improve communication among shelters, the APN could address management, bringing research findings into practice. Shelter management could be informed that shelters and shelter staff are key to medication adherence because of the supervision and resources they provide. Shelter policies need to allow for communication systems between shelters to enhance this role. For instance, currently none of the shelters in Ottawa have a linked system to indicate when a client, and his medications are “referred out¹” to another shelter. The lack of an established communication system was an issue staff identified as a barrier to medication adherence as clients often transition from one shelter to another.

The APN could also advocate with health care professionals to include shelter staff in establishing a client’s plan of treatment, in accordance with regulations for confidentiality. Currently shelter staff are mostly excluded from plans of care established by family doctors and psychiatrists or instructions provided following discharge from hospital. The APN could provide education sessions for members of the health care team regarding the important role of shelter staff in homeless clients’ care while they reside in a shelter. Health professionals should be advised of the system for medication distribution in their community shelter and how staff are limited in not dispensing medications. However, a mutually helpful relationship should be developed so that shelter staff communicate client progress to health professionals, and health professionals in turn provide recommendations that can be supported by shelter staff considering the reality of the shelter environment. APNs could work with both groups to facilitate this connection.

¹ “Referred out” is a term shelter staff use when a client has been asked to relocate to another shelter for the night. It is often a disciplinary measure, but can be in response to reaching capacity.

When a client is transitioning into a shelter, a nurse practitioner, as an APN, could individually assess a client's medication regimen (or lack thereof) in an initial assessment. In this way, the nurse could identify potential barriers to adherence, such as a complex dosing schedule, or overdue renewals of medications and act on these. Alerting community pharmacies to both emerging issues around how medications are dispensed, and the needs of shelter staff for clear, specific instruction could benefit clients living in shelters.

Policy

The APN should be involved politically at the levels of the provincial government, municipal government and local community agencies, to advocate for the health of the homeless. The Registered Nurses Association of Ontario (2004) published a policy statement on homelessness that supports the professional responsibility of nurses to advocate for the homeless, including the provision of appropriate storage of medication, and recognizes that to address these issues in a systematic way, government policies must be addressed.

Provincial Government.

Both staff and client participants of this study recognized the increasing complexity of the health care needs of clients living in the shelters. The APN could advocate for nurses to be employed in the shelter, similar to the staffing of a nursing home or other long-term care facility. This is merited, as participants widely acknowledged that the emergency shelters have become semi-permanent dwellings where homeless individuals stay permanently, or temporarily for months or years. It is time to concede that these "emergency shelters" are often the most stable dwelling for clients, providing the support and routine needed to optimize health and welfare. Any change in

status of the shelter would require a change in funding and staffing mix and a shift in policies. This problem would require the collaboration the Ministry of Municipal Affairs and Housing, and the Ministry of Health and Long-Term Care.

The APN is in an excellent position to petition the Ontario Ministry of Community and Social Services for extended medication coverage, and easier access to the Ontario Drug Benefit (ODB) program.

Municipal Government.

Shelter regulations fall under municipal jurisdiction, and therefore at the municipal level APNs could advocate for more specific and uniform guidelines for medications in shelters. The APN could advocate for the reallocation of some of the funds for emergency shelter beds to funding for long-term care beds within the homeless shelters. The increased nursing supervision of medications that this funding could provide could improve medication adherence by supporting shelter clients and staff.

Community Agencies.

At the shelter-level, APNs could encourage budgeting for staff training on both medication adherence and accessible community resources for questions about medications. Advocating for an on-site nurse might be less expensive than training all of the staff about medications, considering the cost of medication errors and non-adherence. The advanced practice nurse could also play a role in advocating for the deployment of a communication and referral system among shelters. The technology already exists for electronic charting by shelter staff, but it is not being fully utilized because staff require some modifications to the software before fully implementing it.

The APN needs to advocate with local health care professionals for the inclusion of shelter staff on the health care team. The APN could look at strategies to navigate the difficulties with confidentiality as a barrier to providing optimal patient care. For instance, as a licensed health care professional, the shelter nurse could lobby for access to the hospital record-keeping computerized system in Ottawa, OASIS. With an APN in the shelter, shelter staff could be better accepted and included in the health care team.

Education

The socio-ecological approach to health care is already congruent with the way many nurses plan care for their clients, beginning when Nightingale recognized the importance of the environment on health (Schultz & Schultz, 1994). Nurses should use a socio-ecological model to guide assessment, planning and educational interventions, thus addressing critical contextual factors that have an impact on medication adherence.

The adoption of socio-ecological models is in keeping with a multi-disciplinary approach to healthcare, as the models incorporate the reality that health is a bio-psychosocial phenomenon (Grzywacz & Fuqua, 2000), with larger system determinants. As the study findings suggest, with such a complex array of determinants influencing adherence among the homeless, a multi-disciplinary and inter-sectoral approach is required to substantially address the problem of non-adherence. This model highlights the importance of education, not only interdisciplinary, but spanning our usual silos; working across housing, health, political and social service sectors.

The client participants all had contact with the health care system in the year preceding the study. Homeless clients may have contact with nurses in the emergency department, the psychiatric setting, at the community health centre, through mandatory

public health programs, and through visiting “home” nursing. This indicates the need for a mandatory rotation for students, involving homeless individuals, in the basic nursing core curriculum; and suggests the importance of developing a fellowship in urban health for graduate nurses, or for those continuing their education.

Future Research

Thus far intervention studies of adherence have rarely shown statistically significant improvements in adherence and subsequent improvements in clinical outcomes (McDonald, Garg & Haynes, 2002). It could be argued that the study of interventions to improve adherence may be premature, when there is more to learn about how best to target interventions. This study has some preliminary conclusions from the experiences of homeless clients taking medications in a shelter. However, it would be beneficial to repeat the study with a greater number of participants, including homeless women, and non-sheltered homeless, to elucidate and verify the findings. Future research may include a longitudinal study, concentrating on one dimension of the model, such as following homeless clients as they transition into and out of the shelter.

This study has explored the influence of the shelter context on adherence. Certainly future medication adherence research could examine the influence of context on different groups of individuals, not only homeless individuals living in a shelter. For instance, it would be timely to study medication adherence among seniors as they make the transition into institutional long-term care, or retirement facilities.

The tension in the role of the shelter staff working for an institution and caring for autonomous adults is intriguing. In this study the tension has manifested itself with regards to medications. Future research could examine this tension with a more extensive

ethnographic study on the social hierarchy of staff authority, and its implications for health, specifically supports, health practices, and medications. It would be pertinent to include homeless clients, health care providers and shelter staff in a study that further elucidates contributing elements of the tension.

Conclusion

Sub-optimal adherence to medications is a serious issue, which can undermine treatment plans. The homeless are at a greater risk for medication non-adherence than the general population. This study sought to investigate homeless men's experience of taking medications while living in a homeless shelter and the factors affecting their medication adherence. When health professionals view adherence to medications as an individual, cognitive choice, it does not take into account the challenges imposed by a homeless individual's environmental context. Nurses need to adopt a socio-ecological perspective of the issue of medication adherence. In particular, nurses working with homeless clients who are taking medications need to assess their client's physical and social context, and advocate for changes to support them in adhering to their treatment regimens.

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Attention All Front Desk Staff!!



From October, 2003 – January, 2004:

Joanna Binch,
a graduate student at the University of Ottawa will be:
**Conducting interviews with some clients and staff
around medications.**

Joanna is looking for clients who are:

- | |
|--|
| • Men |
| • Over 18 Years of Age |
| • Living in the shelter for at least one week in the past month |
| ○ Currently prescribed more than one medication that needs to be taken daily (with at least one non-narcotic medication) |
| ○ Either poor or excellent at adhering to medication (I need at least one of each) |



If you think that you have an ideal client, please let Joanna know!!

She will next be in your shelter: _____

****Please note that there will be no monetary incentive given to clients who participate****

Appendix B Adherence Literature Review Meta-Analyses

TITLE	MEDICATION STUDIED	METHOD/ CRITERIA	POPULATION/ RECRUITMENT	FINDINGS
Interventions to improve antipsychotic medication adherence: A review of recent literature Dolder, CR, Lacro, JP, Leckband, S, Jeste, DV (2003)	Interventions to improve medication adherence in schizophrenia Grouped as: • Educational • Behavioural • Affective (i.e. family support)	• Literature review	• Reviewed published literature 1980-2001 • 11 out of 21 recruited outpatients, 9 recruited from in- and outpatient • 64% male • Few provided ethnicity info	• Interventions purely educational were least effective • Greatest improvement in adherence seen with combinations of educational, behavioural and affective strategies • Improvements in adherence noted in 8 studies
Interventions for helping patients to follow prescriptions for medications Haynes, RB, McDonald, H, Garg, AX & Montague, P (2003)	1998 Review + 14 new studies: • Asthma (3), H.Pylori (1), HTN (1), COPD (1), Depression (2), Schizophrenia (2), RA (1), HIV (2), Diabetes (2)	• Cochrane Review • 1806 citations found, 14 trials	• Studies from 1976 to 2001 • 1 schizophrenic study recruited subjects in the community-two from hospital admissions • 1 HTN study recruited people from a steel company	• “Even the most effective interventions did not lead to large improvements in adherence and treatment outcomes.”
Improving adherence and persistence: A review and assessment of interventions and description of steps toward a national adherence initiative Krueger, KP, Felkey, BG & Berger, BA (2003)	Interventions grouped as: • Adherence aids • Refill or follow-up reminders • Regimen simplification • Written or oral education • Comprehensive management	• Literature review • Survey pharmaceutical manufacturers and chain pharmacies • Advisory panel reaction to research findings	• 15 manufacturers interviewed • 8 Advisory panel members from all various USA states • Number or dates of literature review articles not specified	• Most successful interventions have some follow-up component and address the underlying reason(s) for non-adherence • Pharmacists can take a leadership role in improving adherence

TITLE	MEDICATION STUDIED	METHOD/ CRITERIA	POPULATION/ RECRUITMENT	FINDINGS
Meta-analysis of trials of interventions to improve medication adherence Peterson, A, Takiya, L, Finley, R (2003)	- Tools & methods to enhance medication adherence 26% involved hypertension meds	- Comprehensive review - Only RCTs - Minimum of 10 subjects per intervention group	- From 1966-2000, 53% of sample studies from 1990-1999 - Possible homeless included: 56% based in physician offices	Interventions to improve adherence, improved 4-11%, but no single strategy best (education, behaviour intervention, combined)
Patient adherence to HIV medication regimens: A review of published and abstract reports Fogarty, L, Roter, D, Larson, S, Burke, J, Gillette, J, Levy, R. (2002)	Interventions designed to increase HIV medication adherence	Comprehensive literature review	20 articles and 74 conference abstracts 82% studies recruited from hospital 5 studies qualitative, others primarily cross-sectional	- Emotional adjustment to HIV and provider support related to adherence - Access to institutional resources associated with adherence - Poor methodological quality of studies 4 out of 5 RCTs found no difference in adherence between intervention and control group
Interventions to enhance patient adherence to medication prescriptions: Scientific review McDonald, HP, Amit, Garg, AX, Haynes, RB (2002)	- Interventions to assist adherence - Most common studied: HTN (8), Schizophrenia (8), Asthma & COPD (5), depression (2), HIV (2), diabetes(2), RA (1), epilepsy (1), CVD (1), acute infections (3)	- Systematically review published RCTs - F/u of at least 80% of group - Of 6568 citations, 549 fully scrutinized, 33 trials met criteria	Records searched from 1967 to Aug 2001	- Even most effective interventions had modest effects - Almost all effective interventions were complex, usually a combination of: self-monitoring, reinforcement, family therapy, reminders, more convenient care, information, additional supervision

TITLE	MEDICATION STUDIED	METHOD/ CRITERIA	POPULATION/ RECRUITMENT	FINDINGS
Patient adherence to treatment: Three decades of research. A comprehensive review Vermeire, E, Hearnshaw, H, Van Royen, P, Denekens, J (2001)	"...Major issues in compliance to prescribed medical interventions."	• "Comprehensive literature search" • Databases specified, but not exclusion/inclusion criteria	• Number of articles not specified	• Compliance research has focused on the extent and determinants of non-compliance, and strategies to improve adherence • Absence of patient's perspective, and MD prescribing practice • Almost 200 variables studied, none consistently related to compliance
Psychosocial interventions to improve medication compliance: A meta-analysis Cook, PF (2000)	Can psychological interventions increase people's medication compliance	• Meta-analysis • Experimental design	• 43 articles included	• Psychosocial interventions to improve medication compliance are efficacious • Combined multi-component treatments are more helpful than single-component interventions • Most likely to produce therapeutic effects: self-monitoring, family counselling, cognitive-behavioural strategies, alternative packaging

TITLE	MEDICATION STUDIED	METHOD/ CRITERIA	POPULATION/ RECRUITMENT	FINDINGS
An integrative review of patient medication compliance from 1990-1998 Wood, W, Gray, J (2000)	Studies about medication compliance Variables: • Characteristics that affect compliance • Common medication errors • Strategies used by patients to • Remember to take their medications • Methods for measuring compliance • Interventions for improving compliance	• Integrative Review	30 research studies included 1990-1998 • 3 qualitative • 10 descriptive • 3 descriptive comparative • 5 descriptive correlational • 6 quasi-experimental • 2 meta-analyses • 1 secondary analysis	• Most common intervention teaching • Lack of consistent operational definition for non-compliance made comparison difficult • Increased frequency of dosing decreases compliance • Trusting provider relationship important • Only 5 of 30 studies from nursing journals, and few identified nurses on the research team • Higher-level design of studies needed
A critical evaluation of the methodology of the literature on medication compliance Nichol, MB, Venturini, F, Sung, JC (1999)	• Included a variety of disease states: Cardiovascular (20), Infectious disease (11), Respiratory (10)	• Literature review • Tool developed using 8 standards, applied this tool to a sample of the literature • Articles needed to have compliance as the focus	• 72 articles from a possible 719 were reviewed • No particular focus on any particular population	• The quality of the compliance research was generally poor • Methodological short-comings make it difficult to assess the validity of study conclusions • Need to have agreement on how to measure adherence

TITLE	MEDICATION STUDIED	METHOD/ CRITERIA	POPULATION/ RECRUITMENT	FINDINGS
Effectiveness of Interventions to Improve Patient Compliance: A Meta-Analysis Roter, D, Hall, JA, Rolande, M, Nordstrom, B, Cretin, D & Svarstad, B (1998)	Compliance interventions classified by: • Educational • Behavioural • Affective Compliance Indicators: • Health outcomes • Direct indicators • Indirect indicators • Subjective report • Utilization	• Meta analysis • Review 1040, only 162 met criteria • 153 studies published between 1977 and 1994 • Studies before 1979 not included, as in another review by Haynes et al.	• "Very few studies reported subject ethnicity, socio-economic status, occupation, or marital status" Possible homeless included: • Studies conducted in a variety of locations, but community settings used in only 10 studies (supermarket, work site, senior centre)	• No single strategy showed any clear advantage, comprehensive interventions combining cognitive, behavioural, and affective components were more effective than single-focus interventions • Provider interventions were directed toward physicians with the exception of one study directed toward nurses and a second directed toward pharmacists.
Should we pay the patient? Review of financial incentives to enhance patient compliance Giuffrida, A, Torgerson, DJ (1997)	• Low income and dental appts. (2) • HTN meds • Immunization • Paed clinic appt. • Immigrants & Tb • Teen moms & appts. (2) • Wt. loss for obese • Cocaine tx. • Homeless & Tb	Systematic lit review •	• From 1976 to 1996 • All conducted in the USA Possible homeless included: • 11 papers met criteria- many involved low-income individuals	• 10 of the 11 studies showed improved patient compliance with the use of financial incentives • No study compared if different amounts of \$ made a difference • "Incentives can be cost effective, particularly for treatment of infectious disease."

TITLE	MEDICATION STUDIED	METHOD/ CRITERIA	POPULATION/ RECRUITMENT	FINDINGS
Systematic review of randomized trials of interventions to assist patients to follow prescriptions for medications Haynes, RB, McKibbon, KA & Kanani, R (1996)	• RCTs of interventions to improve adherence • A narrow range of disorders were studied: HTN (5), Schizophrenia (3), Asthma (1), Epilepsy (1), short-term infections (2)	• Previous systematic review was up-dated • From 1553 citations, 13 RCTs met criteria • Both adherence and tx. effects measured • At least 6 month follow-up	• Study dates from 1972 to 1994	• Less than half of the interventions associated with increases in medication adherence • Interventions that were effective for long-term care were complex: various combinations of more convenient care, information, counselling, reminders, self-monitoring, reinforcement, family therapy, additional supervision

Appendix C

BACKGROUND QUESTIONNAIRE FOR CLIENTS

The following are some general questions about your background and life experience. These questions will help us better understand differences and similarities between other people that we interview, as well as help us better understand your interview responses.

1. In order to have medications paid for by the government, you need a drug card. Do you have a drug card for this month?

- ☐ Yes ☐ No

a) Where do you usually keep your drug card?

2. Nowadays you usually need to show your health card every time you see a doctor. Do you have a valid health card?

- ☐ Yes ☐ No

a) Where do you usually keep your health card?

3. Money can make life easier when you are ill or taking medications, so I'd also like to ask you about this. Where did you get money from this month?

- | | |
|---|--|
| ☐ PNA (Shelter allowance)
☐ ODSP
☐ Employment, estimate \$ _____/
month | ☐ Ontario Works (OW)
☐ Pension
☐ Other _____

☐ No comment |
|---|--|

4. Now I'd like to ask some questions about your use of medications.
In the past 4 weeks, did you take any of the following:

	Did you take this on the advice of a doctor or dentist?		Did you take this at least once a week in the past 4 weeks?	
a) Pain relievers (for example: Aspirin, Advil, Tylenol)	Yes	☐	Yes	☐
	No	☐	No	☐
b) Medicine for the heart or blood pressure	Yes	☐	Yes	☐
	No	☐	No	☐
c) Stomach remedies Or laxatives	Yes	☐	Yes	☐
	No	☐	No	☐
d) Tranquilizers or sleeping pills (for example: Valium, Diazepam, Librium)	Yes	☐	Yes	☐
	No	☐	No	☐
e) Penicillin Or other antibiotics	Yes	☐	Yes	☐
	No	☐	No	☐
f) Cough or cold remedies?	Yes	☐	Yes	☐
	No	☐	No	☐
g) Allergy medicine, or antihistamines	Yes	☐	Yes	☐
	No	☐	No	☐
h) Codeine, Demerol Or Morphine	Yes	☐	Yes	☐
	No	☐	No	☐
i) Anti-depressants	Yes	☐	Yes	☐
	No	☐	No	☐

	Did you take this on the advice of a doctor or dentist?	Did you take this at least once a week in the past 4 weeks?
j) Anti-psychotic or other psychotropic medication	Yes ☐ No ☐	Yes ☐ No ☐
j) Diet pills or stimulants	Yes ☐ No ☐	Yes ☐ No ☐
k) Vitamins	Yes ☐ No ☐	Yes ☐ No ☐
l) Asthma medications such as inhalers or nebulizers?	Yes ☐ No ☐	Yes ☐ No ☐
m) Tb medications?	Yes ☐ No ☐	Yes ☐ No ☐
n) HIV medications?	Yes ☐ No ☐	Yes ☐ No ☐

I'd like to ask you some questions about any other drugs or alcohol that you may use, as these can sometimes affect the medications that you may be prescribed or your ability to take them. Remember, you do not have to

5. At the present time do you smoke cigarettes daily, occasionally or not at all?

- ☐ Daily
- ☐ Occasionally
- ☐ Not at all

6. In the past 12 months, how often did you drink alcoholic beverages?

- ☐ Everyday
- ☐ 4 to 6 times a week
- ☐ 2 to 3 times a week
- ☐ Once a week
- ☐ Once or twice a month
- ☐ Less than once a month

6. Is drug use a part of your life?

- ☐ Yes
- ☐ No

(a) Have you ever used any of the following drugs more than five times in your life?

Have you used it in the last 12 months?

a) Marijuana, cannabis or hash	Yes	☐	Yes	☐
	No	☐	No	☐
b) Cocaine or crack	Yes	☐	Yes	☐
	No	☐	No	☐
c) LSD (acid)	Yes	☐	Yes	☐
	No	☐	No	☐
d) Speed (amphetamines, uppers)	Yes	☐	Yes	☐
	No	☐	No	☐
e) Heroin (dust, horse, junk, smack)	Yes	☐	Yes	☐
	No	☐	No	☐
f) Glue, solvents or gasoline	Yes	☐	Yes	☐
	No	☐	No	☐

Now I'd like to ask you about housing. This will give us an idea of how much you and your medications have had to move. I'd like you to think back over the last 12 months when you answer these questions.

7. What shelters have you spent a night in, in the last 12 months (in any city)?

1. During the past 12 months, did you go to an emergency room at a hospital because of your health?

☐ Yes How many times _____

☐ No

2. Have you spent a night in detox in the last 12 months?

☐ Yes How many times _____

☐ No

3. Have you spent a night in jail in the last 12 months?

☐ Yes How many times _____

☐ No

4. Are there any other places-in Ottawa- that you may have spent a night in the last 12 months?

Finally, the following are some questions about you . . .

5. Are you male ☐ or transgender ☐ ?

6. How old are you? _____

7. What is the highest level of education that you have ever completed?

- ☐ No formal schooling
- ☐ Some primary school
- ☐ Primary school
- ☐ Some secondary or high school
- ☐ Completed secondary or high school
- ☐ Some community college, technical college, CEGEP or nursing program
- ☐ Completed community college, technical college, CEGEP or nursing program
- ☐ Some university (not completed)
- ☐ University degree (completed)
Bachelors, Masters, PhD

Appendix D

BACKGROUND QUESTIONNAIRE FOR SHELTER STAFF

The following are some general questions about your background and work experience. These questions will help us better understand differences and similarities between other staff that we interview, as well as help us better understand your interview responses.

1. What is your position in this organization?

2. Do you currently work at the shelter full-time ☐ or part-time ☐ ?

3. How many months have you been working in the homeless shelter system in Ottawa? _____ months
In other cities? _____ months

4. How many months have you worked at this particular shelter?
_____ months

I'm trying to get an idea of the experience that different shelter staff have with medications. There are no right or wrong answers. These next questions ask about formal training such as a course, or in-depth discussion during your

5. Have you had any formal training in the following:

- a) Legal issues around working with clients and medications ☐ Yes ☐ No
- b) How to record when medications have been taken ☐ Yes ☐ No
- c) Classes of medications and side effects ☐ Yes ☐ No
- d) When you should not give a client medications ☐ Yes ☐ No

The next questions relate to some common issues that you may encounter in your position working with medications. I am asking you about your concern with these issues. It may help to think of a particular time when you were very comfortable

6. To what extent are each of the following a concern for you:

(a) Understanding what a particular medication is used for?

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
not at all concerned							extremely concerned		

(b) Knowing which medications to withhold if a client is intoxicated?

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
not at all concerned							extremely concerned		

(c) The procedure if a client has left the shelter but left their medications behind?

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
not at all concerned							extremely		
concerned									

(d) The organization of the medication cupboard/distribution system?

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
not at all concerned							extremely		
concerned									

(e) Knowing the schedule or times that a medication can be given?

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
not at all concerned							extremely concerned		

(f) Knowing the correct dose of a medication?

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
not at all concerned							extremely concerned		

(g) Ability to intervene if a client does not take their medication on time?

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
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not at all concerned

extremely concerned

Finally, the following are some questions about you . . .

7. Are you male ☐ or female ☐ ?

8. How old are you? _____

8. What is the highest level of education that you have ever completed?

- ☐ No formal schooling
- ☐ Some primary school
- ☐ Primary school
- ☐ Some secondary or high school
- ☐ Completed secondary or high school
- ☐ Some community college, technical college, CEGEP or nursing program
- ☐ Completed community college, technical college, CEGEP or nursing program
- ☐ Some university (not completed)
- ☐ University degree (completed)
Bachelors, Masters, PhD

Appendix E

INTERVIEW GUIDE: SHELTER STAFF

Good morning/evening. My name is Joanna and I am a nurse. I am also a graduate student at the University of Ottawa, and as you know I am conducting a study to learn more about factors that influence medication adherence for men living in a homeless shelter. Thank you for agreeing to participate in this study.

If there are any questions you don't want to answer or if you want to take a break, that's okay. This interview will not last longer than an hour. You will not be paid for your time; it is entirely voluntary. Any questions before we begin?

1. **How did you come to be working at this shelter?**
 - Have you worked at other shelters
 - Other experience working with the homeless in another setting?
2. **Each shelter has its own routine around giving out medications to clients. Could you walk me through what you would do on one of your shifts- focusing mostly on the activities that relate to medications?**
 - Schedule, staff, recording, storage, when to refuse
 - What do you consider the most important thing you do to help clients with their prescription medication?
3. **Individuals who are homeless often move between shelters, or to-and from other housing such as jail or temporary housing. Think of one such client on prescription medications. How was that client's medication routine affected?**
 - How could some of the difficulties be prevented?
4. **Often it is one person or group of people in a client's life who are a source of support. Generally, who would you consider to be the most influential person in a client's life in terms of taking medications as prescribed, or not?**
 - What makes this person unique? What is their role?
 - What more could they do to support the client?
5. **Shelter staff are known for their expertise in helping clients navigate "the system" in order to access health care, or to get a prescription filled. In your opinion, what is most difficult about "the system" when it comes to clients' prescription medications?**
 - Health card, financial situation, appointments
6. **In your opinion, if something could be changed to make it easier for clients to take their medications, what would the change be?**
 - Be as creative as you like
 - At the shelter
 - With friends or health care providers

- With government programs
- 7. Please describe the unique characteristics (in relation to other shelters) of your shelter that should be taken into account in planning, managing and delivering services for clients.**
- Staff
 - Rules/policies, atmosphere
 - Services offered, number of clients served
- 8. Is there anything I didn't ask that you think will help me understand your experience with medications while working in the shelter system?**
- In terms of clients
 - In terms of administrative or shelter staff

Appendix F

INTERVIEW GUIDE: CLIENTS

Good morning/evening. My name is Joanna and I am a nurse. I am also a graduate student at the University of Ottawa. I'd like to talk with you about your experience taking prescribed medications while living in a shelter.

I also want to ask you about factors that make it easier or harder for you to manage your medications as prescribed. Thank you for agreeing to participate in this study.

If there are any questions you don't want to answer or you want to take a break, that's not a problem. If you would like to talk about your feelings with someone after the interview, just let me know and I will refer you to some helpful people that you can talk to. This interview will not last longer than an hour. You will not be paid for your time; it is entirely voluntary. Any questions before we begin?

I'd like to start with some general questions about your background and health.

- 1. How did you come to be staying at this shelter?**
 - Before you were living here, where were you living?
- 2. Perhaps we could just start generally. What comes to mind when I ask about medications?**
 - Do you believe that your medications make a difference to your health?
 - How would you describe the role that medications play in your health?
 - Do you feel that that you have been adequately informed about your medications? (why taking them, dosing, side effects, special requirements)
- 3. Now specifically about your medications, tell me what medications you are currently taking and describe them for me? (See questionnaire)**
- 4. I also want to ask you about factors that make it easier or harder for you to manage your medications as prescribed. In this question I would like you to think specifically about living in this shelter, I'm not as interested in whether or not a medication works for you.**
 - a) Could you start by telling me which of your medications are hardest to take?**
 - Are you aware of the rules or guidelines about your medications?
 - What is it about them that makes it difficult?
 - Schedule?
 - Diet/ food restrictions?
 - Storing your medications?
 - b) Now I'd like to ask about what makes it easier to take a medication. Living in this shelter, what is helpful for you in taking your medications?**

4. **Now I'd like to ask you about the rules of the shelter. Are you aware of any shelter rules about your medications?**
 - Could you tell me about these?
 - Schedule?
 - Storing your medications?
5. **In speaking with some of the other men in the shelter, I have learned that many people move between the different shelters. I would like you to think back to the last time you spent a night at another shelter. What did you do about your medications?**
 - Who helped you?
 - What was the reason that you moved?
 - What would you say is the greatest difference between the shelters in terms of medications?
6. **Concerning shelter staff in the past week, could you tell me about a time that the shelter staff either helped, or did not help you take your medications as they had been prescribed?**
 - How would you like it handled differently next time?
7. **There are a lot of different "outreach workers" that you might meet while living in a shelter. Can you tell me about a time that a nurse who comes to the shelter either helped, or did not help you take your medications as your doctor had prescribed them?**
 - Was it to do with medications themselves? Appointments? Injury or illness prescription?
 - What did they do differently from the staff
8. **Our health care system can seem quite complicated. Sometimes this causes problems for people who are trying to take medications that have been prescribed to them.**
 - What's been really difficult for you? (Health card, financial situation, appointments)
 - What could help?
9. **If you could change something to help you take your medication, could you describe to me what would be different?**
 - At the shelter
 - With friends or health care providers
 - With government programs
10. **Is there anything I didn't ask that you think will help me understand your experience with medications while staying at the shelter?**

Appendix G

Ethics Approval

Appendix H

Letters of Permission from Shelters