

Literature Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations and the US

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Table of Contents

Executive Summary	i
Introduction & Background	i
Impetus for the Literature Review	i
Purpose of the Literature Review	ii
Methodology	ii
Research Challenges	iii
Results & Discussion	iv
Outreach	v
Education & Training	v
Prevention & Awareness Campaigns	v
Harm Reduction	v
Secondary Prevention	vi
Parallel & Collateral Benefits	vi
The Economic Case for Prevention	vi
Research Recommendations	vii
Conclusions	viii
Introduction & Background	1
Epidemiology	1
Canada	1
Globally	3
Australia and New Zealand	3
United Kingdom	3
United States	4
Impetus for the Literature Review	5
The Limitations of a Bio-Medical Approach to Prevention	5
The Federal Initiative to Address HIV/AIDS in Canada	7

Knowledge Transfer and Exchange & Evidence-Based Decision Making	8
PHAC Strategic Plan 2007-2012	8
Prevention Targets Identified by PHAC	9
The ACAP Logic Model	10
Purpose of the Literature Review	12
Evolution of Problem Statement & Intended Outcomes	12
Final Problem Statement & Intended Outcomes	13
Methodology	14
Search Strategies & Eligibility Criteria	14
Demonstrated Evidence	14
Relevant & Recent Research	14
Centralizing Community	15
Data Sources & Search Terms	15
Literature Review Limitations	16
Building on Previous Work: Situating the Literature Review	18
HIV Community-Based Prevention Research: Inherent Challenges	19
General Research Challenges	19
Methodological/Scientific Challenges	19
Incidence and Prevalence Rates	19
Durability	20
Research Markers	21
Ethical Challenges	21
CBO-Specific Research Challenges	22
Logistical Challenges	22
Methodological Challenges	22
The Challenges of Translating Research into Practice: The Gap between the Science and Practice of Prevention	23
The CDC Approach	25
CDC Limitations	27
CDC Successes	27
Successful Canadian Initiatives	29

Results & Discussion	30
Outreach Results	31
Outreach Discussion	34
Education & Training	35
Workshops & Trainings Results	35
Workshops & Trainings Discussion	39
Peer Education Results	40
Peer Education Discussion	42
Prevention & Awareness Campaigns Results	46
Prevention & Awareness Campaigns Discussion	46
Harm Reduction Results	47
Harm Reduction Discussion	48
Secondary Prevention Results	48
Secondary Prevention Discussion	49
Parallel & Collateral Benefits	50
Individual Self-Efficacy, Self-Esteem & Empowerment	50
Individual Economic Enhancement	52
Partnership Development & CBO Capacity-Building	53
Creation of Strong & Supportive Communities	53
The Economic Case for Prevention	55
The Evidence from the US	55
The US National Investment in Prevention	56
Cost-Savings and Cost-Effectiveness of Specific Interventions in the US	56
The Canadian Investment	57
Research Recommendations	58
The Need for Research	58
Areas for CBO Capacity-Building & Future Research	60
Summary & Conclusions	64
The Importance of CBOs in the HIV/AIDS Epidemic	64
Authors' Comments	65

References	67
Appendix A: ACAP Logic Model – Prevention Initiatives	78
Appendix B: Search Descriptors	79
Appendix C: HIV/AIDS Prevention Meta-Analyses & Notable Work	82

Executive Summary

Introduction & Background

More than 20 years after its emergence, HIV/AIDS continues to be a serious public health threat in Canada and throughout the world. It is estimated that 58,000 Canadians were living with HIV infection at the end of 2005. This represents a 16 percent increase over the 2002 estimate of 50,000. With the increase and in some cases a marked resurgence of HIV incidence rates among certain segments of the Canadian population, the epidemiological evidence suggests permanent vulnerability.

Since the HIV/AIDS epidemic began, community-based organizations (CBOs) have brought the lived experiences of persons living with HIV/AIDS (PWHAs) 'to the table', calling attention to the prevention needs of some of the most marginalized people in Canadian Society. In response to emerging and urgent needs, CBOs have provided prevention efforts that have been flexible, timely, innovative and creative.

Impetus for the Literature Review

For over 20 years, the AIDS Community Action Program (ACAP) of the Public Health Agency of Canada (PHAC) has supported community-based organizations in delivering HIV prevention interventions based on the principles of health promotion and community development. Through the commissioning of this literature review, PHAC hopes to come to an understanding of the extent to which community-based prevention programs and approaches, both in Canada and internationally, have been rigorously tested and found to be scientifically credible within the context of preventing the further transmission of HIV.

The impetus for this literature review included a recognition of the limitations of a bio-medical approach to HIV prevention. The role that CBOs have played and continue to play in HIV prevention has been absent in much of the discussion regarding bio-medical approaches (e.g. microbicides, vaccines, increased access to HAART). Additionally, in order to effectively curtail the HIV epidemic in Canada, the *Federal Initiative to Address HIV/AIDS in Canada* calls for the use of

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

evidence to inform programs and policies, as well as a strong community-based and non-governmental response to the epidemic. Researching the role of CBOs in delivering effective prevention initiatives and disseminating those findings reflects a growing recognition within the HIV prevention community that, in order to be effective, prevention planning must be an evidence-based process, informed by the epidemiology and the ongoing evaluation of existing programming. The federal government's recognition of the importance of 'knowledge transfer and exchange' and of community involvement is underscored within the *Public Health Agency of Canada Strategic Plan: 2007-2012*.

Purpose of the Literature Review

The **Problem Statement** that provides the framework for this review is as follows:

What is the relationship between community-based HIV primary- and secondary-prevention best practices on HIV/AIDS incidence rates and/or changes in risk behaviours and/or testing/sero-status determination?

The **Intended Outcome** of this review is as follows:

The identification and assessment of the impact of community-based HIV best-practice primary- and secondary-prevention initiatives on HIV/AIDS incidence rates and/or changes in risk behaviours (including HIV-related knowledge and self-efficacy), and/or testing/sero-status determination, in Canada, Australia, New Zealand, the UK and the US.

Methodology

We present a systematic review of English-language, peer-reviewed articles published between 2000 and 2008 pertaining to community-based HIV prevention interventions in Canada, Australia, New Zealand, the UK and the US. While the focus of this literature review was on studies conducted specifically within community-based settings, a selection of randomized control trials was also included, provided they met the following criteria: a) clear demonstration of community-level research involvement, and/or b) integration of 'diffusion of innovation' theories and practices within the research.

Of the 20 studies described in the literature review, 18 were US-based studies (Coyle et al., 2006, DiClemente et al., 2004, Dowling et al., 2007, French et al., 2000, Gasirowicz et al., 2005, Grinstead et al., 2001, Kalichman et al., 2001, Kellerman et al., 2006, Latkin et al., 2003, Lauby et

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

al., 2000, Masson et al., 2007, Mosenia et al., 2004, Nanin et al., 2004, Rhodes, 2004, Wendell, et al., 2003, Williams et al., 2006, Ross et al., 2006, Sikkema et al., 2000), one was UK-based (Harding et al., 2004) and one was Canadian-based (Leaver et al., 2004). The *Federal Initiative to Address HIV/AIDS in Canada* identifies eight 'vulnerable populations', including men who have sex with men (MSM), women, youth, incarcerated populations, intravenous drug using populations (IDU), Aboriginal/First Nations populations and people from countries where HIV is endemic. Looking to these articulated groups, no peer-reviewed, experimental and/or quasi-experimental research was identified among Aboriginal/First Nations populations, among rural populations, or among people who have emigrated from countries where HIV is endemic. Similarly, while a few studies were found that highlight work being done with youth populations within CBOs (Coyle et al., 2006; DiClemente et al., 2004) and one process evaluation of a 'youth-driven' project was garnered (Hampton et al., 2005), there were no applicable studies regarding prevention programming being conducted by youth-driven CBOs and/or projects in and of themselves.

Research Challenges

Within this literature review, a number of research challenges are identified and discussed, including the inherent difficulty of conducting behavioural and/or bio-medical intervention trials with HIV incidence as the outcome. It is difficult to determine how many infections have been averted by any particular prevention program, delivered by a CBO or otherwise, as the causal chain between delivery of a program and changes in HIV incidence is lengthy and may be affected by a number of external factors. Virtually no research has been conducted that conclusively demonstrates the impact of HIV prevention efforts on final disease outcome, be it incidence rates, or related variables such as deaths due to AIDS. Furthermore, the durability of intervention efforts is not well known. Challenges with recruitment, retention, attrition and adherence in prevention trials have impacted the quality and availability of HIV prevention research. Finally, HIV prevention science relies on subjective self-reports that may relate to activities that are personal and in some cases illicit rather than on biological markers such as incidence rates, and a lack of consensus exists about the validity of these markers.

Ethical considerations also impact research in this field, including issues regarding 'informed consent' and establishing appropriate control conditions in randomized trials of prevention interventions (e.g. the obligation to provide condom counseling to all participants in prevention trials). Any research into prevention that targets PWHAs requires sensitivity to the potential for such research to be politically divisive and stigmatizing. A look at secondary or 'positive' prevention, for example, must be examined within the context of the increased criminalization of HIV non-disclosure within Canada.

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

Within community-based environments, there are additional challenges to the research. Outcome-based evaluation, and the ‘gold standard’ of randomized control trials, require interventions with high program integrity and clearly defined outcome measures, as well the use of control or comparison groups, the ability to track clients over time, large numbers of study participants to achieve the required statistical power necessary to conclude effectiveness, and the human and financial resources to implement and maintain the evaluation activities (e.g. staffing, study participant incentives, ‘wraparound’ services such as childcare and food, etc.). Because of these challenges, many CBOs rely on process evaluations to determine an intervention’s success. Without identifying behavioural outcomes or equivalent comparison groups, process evaluations provide continuing challenges to researchers in determining the effectiveness of a CBO-level HIV prevention initiative, and analysis is often compromised by unclear details of sample and methodology suggesting unreliable conclusions.

Finally, little empirical research has been conducted to study how evidence-based interventions diffuse from research into practice (from clinical trial to “real life” community settings), and even less research has been done in this respect with regard to HIV/AIDS interventions. While systematic reviews and meta-analyses are useful in outlining which interventions work and describing the magnitude of their effect within a research context, they often fail to effectively examine how and why an intervention works, or, perhaps more importantly, why an intervention does not work. Similarly, little research has been conducted about how to effectively move community-level interventions into practice (versus one-on-one counseling and small group risk-reduction interventions which are unlikely to reach the large groups of people who are ‘at risk’).

Results & Discussion

Twenty studies meeting the search requirements are identified and discussed, including HIV prevention interventions pertaining to outreach, workshops/trainings, peer education, prevention/awareness campaigns and secondary prevention. While challenges to the research methodologies, including sample size, participant attrition, generalizability and lack of control or comparison group, affect the irrefutability of a number of the studies reviewed, the collective findings demonstrate that community-delivered HIV prevention interventions can and are successful in altering risky behaviours, increasing testing rates and/or reducing the transmission of HIV.

Outreach

For the purposes of this literature review, 'outreach' is defined as an activity that typically involves trained professionals visiting geographic regions where a target group is known to frequent in an attempt to disseminate information, to provide condoms and/or harm reduction supplies, and/or to refer individuals to related services. Five studies (Kellerman et al., 2006; Dowling et al., 2007; French, 2000; Wendell, et al., 2003; Rhodes, 2004) provide evidence of the efficacy of community-level outreach as an HIV prevention intervention.

Education & Training

'Education and training' is defined as an activity that is typically delivered via workshops and/or training sessions, as well as through the development and distribution of HIV/AIDS education and awareness materials and resources. Six studies (Leaver et al., 2004; Lauby et al., 2000; Harding, 2004; DiClemente, 2004; Grinstead et al., 2001; Williams et al., 2006) provide evidence of the efficacy of community-led workshops and trainings as HIV prevention interventions.

More specifically, 'peer education' typically involves the use of members of a community to affect positive/pro-active behavior, knowledge and attitude change among other members of the same community. Four out of five studies (Latkin, 2003; Sikkema, 2000; Ross, 2006; Mosena et al., 2004) in this literature review present strong findings that HIV/AIDS peer education initiatives can produce substantial beneficial effects with regard to risk reduction and behavior change, while one study (Coyle, 2006) produced limited findings.

Prevention & Awareness Campaigns

Our focus on large scale, broad-reaching media campaigns (often utilizing multi-media messaging sources for wide audiences) that speak to the role of community within the campaign development, implementation, uptake and/or evaluation, produced one single research study (Nanin, 2006). This study highlights the important role of community within the development, implementation and uptake of prevention and awareness campaigns.

Harm Reduction

'Harm reduction' for the purposes of this literature review included syringe exchange programs (SEPs) operated specifically by and within CBOs (versus by health care professionals such as doctors, nurses and/or researchers within larger, institutional and clinic-based settings), and yielded one study (Masson et al., 2007). The findings from this study suggest that CBOs may not be the most optimal environment for syringe exchange services; rather, SEPs that are integrated into

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

public hospital or clinical settings may serve as a valuable strategy to engage hard-to-reach IDU populations in behavioural interventions designed to reduce HIV risk transmission behaviours and to increase access to, or engagement in, the use of secondary and tertiary preventative medical care.

Secondary Prevention

With regards to secondary or ‘positive’ prevention (i.e. prevention among people living with HIV/AIDS), two studies (Kalichman et al., 2001; Gasiorowicz et al., 2005) demonstrate the potential and unique role and impact that CBOs can play in working with their clients/members to prevent further transmission of HIV.

Parallel & Collateral Benefits

A number of studies within our review identified significant outcomes and ‘added benefits’, with regards to findings of specific projects. Some of these parallel and collateral benefits include: individual self-efficacy, self-esteem and empowerment, individual economic enhancement, partnership development and CBO capacity building, and creation of strong and supportive communities.

The Economic Case for Prevention

Extensive research has been conducted in the United States (US) around the economic case for HIV prevention, with cost-savings or cost-effectiveness identified as a national goal as well as a key consideration for the Centers for Disease Control (CDC) in funding allocations, which explicitly instructs HIV prevention community planners to consider the cost-effectiveness of different interventions when ranking them for possible implementation. This literature review demonstrates that prevention efforts in the US are held to high standards regarding both their efficacy/effectiveness and return on investment.

Utilizing an economic threshold evaluation analysis, US researchers have recently called for an investment of \$1.321 billion in prevention, noting that this expenditure would be cost-saving to the United States as a society if it could avert only 22,094 of the expected 160,000 new HIV infections over the next four years. They argue that analysis of the costs of unmet needs should determine the total health care budget to provide necessary, evidence-based prevention services to all those in need (Holtgrave, 2007). Numerous evaluations of specific interventions to determine whether

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant (2009)

the economic benefits resulting from changes in risk behaviour (or other variables) equal or outweigh the costs of designing and implementing the intervention have also been conducted.

Two meta-analyses are presented which document evidence of the cost-effectiveness of interventions, particularly small-group, community-level and outreach-based activities with moderate- to high-risk populations (McKay, 2000; Pinkerton et al., 2002). Overall, many types of HIV prevention interventions have been subjected to cost-effectiveness analyses and found to be either cost-saving or cost-effective relative to other interventions in public health and medicine (Holtgrave & Curran, 2006).

Several peer-reviewed studies noted in this literature review also argue that prevention programs prevent HIV infections. One study compares the 'observed' HIV incidence curve with an incidence curve that would have occurred had HIV prevention programs not been in place. Using conservative assumptions this analysis estimates that from 1988 to 2000, the HIV programs fielded in the US (funded by the CDC) averted between 204,000 and 1,585,000 HIV infections (Holtgrave, 2002). Another study by the same author examines the decline in AIDS deaths from 1995 to 2002 and explores if this was due to prevention, treatment advances (HAART) or some combination thereof. The author concludes that the drop in AIDS deaths may have been due in large part to early prevention efforts, while the subsequent advent of HAART precipitated a more rapid decline that would have otherwise been the case (Holtgrave, 2005).

Applying the economic evaluation technique of threshold analysis to a Canadian context, in 2003, it was estimated that the direct lifetime medical care and treatment costs were \$150,000 to \$160,000 per person. Indirect social costs relating to a loss of productivity and premature death were estimated to be as high as \$600,000 per person (Martin Spigelman Research Associates, 2003). Using these 2003 figures, the current committed investment of \$84.4 million need only prevent 563 new infections per year in order to avoid the equivalent amount in long-term costs associated with medical care (\$150,000 at 563 new infections). Taking into account the combined figure for medical costs and loss of productivity, only 141 new infections need be averted each year (\$600,000 at 141). Averting a total of 563 infections and 141 infections respectively, would represent averting only 17 percent and 4 percent of the new infections estimated or 2005.

Research Recommendations

Based on the identified challenges of garnering 'evidence' on the impact of CBOs on HIV prevention, and the lack of sufficient research in the area, the following recommendations arise from the literature review. These recommendations are suggested as a means to fill in the 'gaps' in

the existing research while meaningfully and effectively involving community in the research process:

1. Resources need to be devoted to documenting and researching interventions developed at the grass-roots level by organizations intimately involved with the communities they serve.
2. Resources need to be allocated towards building the capacity of CBOs to research their locally-developed interventions, ultimately advancing to a randomized controlled trial in the event that early monitoring and evaluation detect positive outcomes.
3. The integration of community input and involvement into the development of HIV prevention research is required from beginning to end.
4. Specific strategies to support vulnerable populations in the development of their own prevention research need to be augmented.
5. The need for HIV/AIDS research must to be balanced against the need for responsiveness.
6. CBOs in Canada need to be sufficiently supported in adopting and adapting existing evidence-based HIV prevention interventions and moving them onto the 'front lines'.
7. Adequate resources are required to assess the long-term effectiveness of community-based HIV prevention interventions.
8. HIV prevention science must be comprehensive and multidisciplinary, incorporating a range of biomedical, behavioural and social science interventions.
9. A 'combination' or 'both ends' approach to HIV/AIDS prevention research is required.
10. Further research is required on integrated care models for HIV primary and secondary prevention.

Conclusions

Based on the results of this literature review, we conclude that CBOs are important, vital and vibrant contributors to Canadian HIV prevention efforts, that prevention interventions are successful when delivered by and within 'community', and that CBOs need increased opportunities for capacity-building in order to effectively evaluate and document these contributions.

Introduction & Background

Epidemiology

Epidemiological data and surveillance statistics clearly indicate that more than 20 years after its emergence, HIV/AIDS continues to be a serious public health threat in Canada as well as internationally.

Canada

All epi-data is from the Public Health Agency of Canada's 2007 HIV/AIDS Epi Update, unless otherwise indicated (Public Health Agency of Canada, 2007).

Prevalence

According to the most contemporary national HIV prevalence estimates, it is estimated that 58,000 Canadians were living with HIV at the end of 2005. This represents a substantial 16 percent increase over the 2002 estimate of 50,000.

Of the total number of people infected, it is believed that 15,800 or 27 percent - more than one in four – are unaware of his or her status. Such persons represent Canada's 'hidden epidemic' and may not be taking the necessary steps to prevent the transmission of HIV.

Incidence

An estimated 2,300 to 4,500 new HIV infections occurred in 2005, compared with an estimated 2,100 to 4,000 new infections in 2002.

MSM

Of the identified risk groups, men who have sex with men (MSM) comprise almost half (46 percent) of those new infections, representing the largest absolute increase in infections from 2002 and making them the most-affected group. In Canada, the proportion of MSM among new infections steadily declined from the start of the epidemic (1981-83) until 1999 and has increased since then.

Heterosexual

Overall, the proportion of new infections attributed to the heterosexual/endemic and non-endemic exposure categories have increased steadily since the beginning of the epidemic. Thirty-seven percent of new infections in Canada are attributed to unprotected heterosexual intercourse, and just under half of those infections acquired through heterosexual contact are among persons born in a country where HIV is endemic.

Persons from Countries Where HIV is Endemic

Persons from HIV-endemic countries are over-represented in the epidemic, representing 16 percent of new infections and yet according to the 2001 Census, comprised only 1.5 percent of the total Canadian population. Persons from HIV-endemic countries have an infection rate 12.6 times higher than other Canadians.

Aboriginal Persons

Aboriginal (First Nations, Inuit and Métis) people continue to be disproportionately affected by HIV/AIDS, constituting 3.3 percent of the total Canadian population yet accounting for 7.5 percent of all prevalent HIV infections and 9 percent of all new infections in 2005. The resulting national infection rate among Aboriginal persons is 2.8 times higher than that of non-Aboriginal persons.

Characteristics of HIV transmission among Aboriginal persons differ from those of the general population, most notably in the exposure category for intravenous drug use (IDU): 53 percent for Aboriginal persons compared to 14 percent among all Canadians. Within Vancouver's Downtown Eastside, a recent study reports that Aboriginal intravenous drug users are contracting HIV/AIDS at twice the rate of non-Aboriginal users (Wood et al., 2008).

The remaining new infections among Aboriginal Canadians are attributed to HIV exposure during heterosexual intercourse (33 percent), MSM (10 percent) and MSM-IDU (3 percent). Prior to 1995, women represented 12.3 percent of reported new AIDS cases among Aboriginal people in Canada; by 2005 this proportion has increased to 38.9 percent.

IDU

In Canada approximately 14 percent of the new infections in 2005 were attributed to unsafe injection drug use. This is down from the 20 percent estimated for 2002, and is consistent with a trend whereby there was a steady increase in the proportion of IDU among new infections until 1996 and then a decrease.

Women

Women represented 27 percent of all new infections in Canada in 2005, up from an estimated 24 percent in 2002. Of those new infections, 76 percent are attributed to heterosexual exposure and the remaining 24 percent attributed to IDU.

Globally

All epi-data is from the UNAIDS 2006 AIDS Epidemic Update, unless otherwise indicated (2006).

Globally, it is estimated that there were 39.5 million people living with HIV in 2006, with 4.3 million new infections that year. The sub-Saharan region of Africa represents the majority of the global prevalence of HIV/AIDS, with an estimated 24.7 million people living with HIV in 2006, and 2.8 million newly infected that same year.

Australia and New Zealand

In Australia, new HIV diagnoses peaked at over 1000 annually in the late-1980's and early-1990's and then declined to between 500 and 600 annually at the turn of the century. In recent years, new diagnoses have been rising –899 in 2004 and 954 in 2005. A resurgence of unsafe sex practices between men appears to be the main factor for the increase in new diagnoses, with more than 2/3 of the new infections occurring among Australia's MSM population.

This upward trend in incidence is also evident in New Zealand, where new HIV diagnoses reached 218 in 2005, the highest number since testing was first initiated in 1985. Unsafe sex between men accounted for 51 percent of these new infections; and heterosexual intercourse accounts for 37 percent.

United Kingdom

In Western Europe, the rate of new HIV diagnoses nearly doubled during the period 1998-2005, with the largest increases being reported in the United Kingdom. Annual, new HIV diagnoses in the UK have doubled since 2000, with 7700 new infections in 2005. Seventy-five percent of new infections in heterosexuals are among people from endemic countries, notably in sub-Saharan Africa. Persons infected in sub-Saharan Africa have the highest prevalence of HIV/AIDS in the UK, slightly more than MSM. MSM represented one third of the new HIV diagnoses in 2005, and the number of new HIV diagnoses among MSM has increased by almost 50 percent since 2000. It is estimated that one third of persons living with HIV in the UK do not know their status.

United States

In the United States (US), there were an estimated 1.2 million persons living with HIV as of 2005. The annual incidence of HIV infection decreased from approximately 160,000 infections in the mid-1980's to approximately 40,000 infections in 1990, where it has remained since. The most common risk factor for HIV infection remains unsafe sex between MSM (accounting for 44 percent of HIV or AIDS diagnoses reported from 2001-2004), followed by unprotected heterosexual intercourse (34 percent) and then IDU (17 percent).

The proportion of women among new HIV or AIDS diagnoses increased dramatically in the US, from 15 percent before 1995 to 27 percent in 2004. In terms of exposure categories, 75 percent of women became infected through unprotected heterosexual sex, while 20 percent acquired HIV through IDU. African-Americans are significantly over-represented in the epidemic, accounting for 13 percent of the total population and 50.5 percent of new HIV/AIDS diagnoses (Holtgrave, 2007). The infection rate for African-American men is 7 times that of white men, and for African-American women, the infection rate is 21 times higher. Forty-nine percent of African-American men diagnosed with HIV or AIDS in 2005 acquired the virus during unprotected sex with another man, while 78 percent of African-American women became infected through unprotected heterosexual intercourse.

Impetus for the Literature Review

The Limitations of a Bio-Medical Approach to Prevention

With the alarming increase and in some cases a marked resurgence of HIV incidence rates among certain segments of the Canadian population, it is clear that the gains posted at the end of 1990's have not been sustained, and the epidemiological evidence suggests 'permanent vulnerability'. The renewed interest in prevention has resulted in increased attention and in some instances allocation of significant resources to important biomedical approaches such as microbicides, antiretroviral prophylaxis, reduction of population or 'community' viral load through antiretroviral therapy, and vaccines. For example, in 2007, the Government of Canada announced it would commit up to \$111 million to the Canadian HIV Vaccine Initiative.

Biomedical approaches are an important component to an integrated approach to prevention, however there is evidence that interventions delivered by health professionals, absent of a community base or context, are less successful (Ross & Williams, 2002). When considering a potentially promising new prevention technology such as microbicides, people will still need to be aware of, know how to use, and be motivated and supported in utilizing such biomedical interventions (Kourtis et al., 2006).

HIV positive people being treated with Highly Active Antiretroviral Therapies (HAART) can have an impact on reducing what is referred to as the 'community viral load'. But antiretroviral therapy is not a cure and not all persons on treatment regimes respond well to the medications. Non-adherence continues to be an issue for a number of reasons, including hard-to-tolerate side effects, complicated and demanding treatment regimens, negative beliefs about treatment efficacy, decline in treatment optimism and depression. Adherence will likely continue to be a significant problem for the growing population of persons living with HIV who are substance abusing, homeless, or suffer from mental illness (Kelly & Kalichman, 2002). Finally, many HIV positive persons who are

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

marginalized are currently not accessing treatment; for example, in British Columbia, Aboriginal people living with HIV are more likely to die from AIDS without ever accessing antiretroviral therapy despite the distribution of these medications free-of-charge (Wood, et al., 2003). Even when accessing antiretroviral therapy, Aboriginal people are more likely to receive double versus triple combination therapy, be less adherent in the first year on therapy and have a physician less experienced with treating HIV (Miller et al., 2006).

Furthermore, while on a population level reduced 'community' viral load could lead to lower sexual transmission of HIV, these prevention gains may well be offset by increases in risk-taking behaviour. Studies have shown that there is a clear link between HIV treatment beliefs and sexual risk behaviours among both HIV-positive and uninfected persons, particularly among gay and bisexual men (Crepaz, et al., 2004; Kalichman et al., 2007; Katz, et al., 2002; Peterson & Bakeman, 2006).

Certainly, the ideal biomedical tool to combat the epidemic is a safe, effective and accessible vaccine to prevent infection. Unfortunately, the quest for such a vaccine has been hampered by a lack of natural adequate human immune response to HIV, and an effective vaccine continues to elude the scientific community.

Finally, and most significantly in terms of the rationale for this literature review, absent in much of the discussion of these biomedical approaches is the role community-based organizations (CBOs) have played and continue to play in HIV prevention. The role of CBOs and 'community-based prevention' have been met with various and iterative definitions throughout the past two decades (Elford & Hart, 2003), notably as prevention that includes and responds to the inclusion of community input in the development, planning, implementing and evaluation of organizations (Richter et al., 2006). Dowsett (2001) argues that 'communities' are not simply aggregations, nor are they merely collectivities, tribes, groups, regions or area, or 'everything outside of government'. Rather, 'communities' are 'sophisticated, cultural processes of active and collective human endeavour in distinct and changing circumstances'. For the purposes of this review, we draw loosely on the definition of a CBO as an organization that disseminates 'health promotion messages that are designed to influence individual behaviour change as well as to strengthen the social norms that support and reinforce such change' (Lauby, et al., 2000).

For over 20 years the AIDS Community Action Program (ACAP) of Public Health Agency of Canada ('PHAC'), together with other public health funding bodies, has supported community-based, non-

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

government groups and organizations in the delivery of HIV prevention interventions based on the principles of health promotion and community development.

Since the HIV/AIDS epidemic began, researchers in the field have been developing a growing body of work and peer-reviewed published studies demonstrating the efficacy of certain prevention interventions. Through the commissioning of this literature review, PHAC hopes to come to an understanding of the extent to which community-based prevention programs and approaches, both in Canada and internationally, have been rigorously tested and found to be scientifically credible within the context of preventing the further transmission of HIV. This evidence and these best practices within community-based HIV prevention initiatives will be highlighted within the literature review in order to contribute to the evolving field of HIV prevention programming and Knowledge Transfer and Exchange (KTE).

The Federal Initiative to Address HIV/AIDS in Canada

The high incidence of HIV in Canada underscores the importance of developing and implementing high quality prevention interventions that reduce the incidence of HIV infection. To successfully curtail the HIV epidemic in Canada, more effective strategies are needed to prevent new infections and provide services for the vulnerable populations identified in the *Federal Initiative to Address HIV/AIDS in Canada* (Martin Spigelman Research Associates, 2003). A key goal of the *Federal Initiative* is to prevent the acquisition and transmission of new infections. The *Federal Initiative* calls for the use of evidence to inform programs and policies, as well as a strong community-based and non-governmental response to the epidemic.

The commission of this review occurs concomitantly with strategic efforts across the country at both government and community levels to re-examine and augment HIV/AIDS prevention efforts. Significantly, in January 2007, PHAC held a pan-Canadian Conference on Prevention, bringing together a broad cross-section of stakeholders - including representatives from community-based organizations, individuals living with HIV/AIDS, researchers, doctors, funders and federal and provincial/territorial policy makers - in order to more effectively align and coordinate these various efforts. Additionally, PHAC is also in the process of developing an HIV/AIDS Policy Framework to be released in 2009. This literature review is an important aspect of the broader coordinated strategy of the *Federal Initiative* in the understanding and commitment to HIV/AIDS prevention.

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant (2009)

Knowledge Transfer and Exchange & Evidence-Based Decision Making

This literature review reflects a commitment expressed within the *Federal Initiative* and by PHAC to Knowledge Transfer and Exchange (KTE). Building capacity and rooting evidence within the HIV ‘community’ facilitates an organic shift from ‘cultures of risk’ into ‘cultures of change’, potentially fostering effective, broad, collective ‘intraventions’ and communities that are self-sustaining rather than requiring constant external interventions (Friedman et al., 2004). Researching the role of CBOs in delivering effective prevention initiatives also reflects a growing recognition within the HIV prevention community that in order to be effective, prevention planning must be an evidence-based process, informed both by the epidemiology and by the ongoing evaluation of existing programming (Baigis & Hughes, 2001). In an era of finite resources and an alarming increase in incidence, there is a growing consensus on the need for ‘scientific rigor’ in the evaluation of prevention programs. With better evaluation data reflecting the efficacy, cost-effectiveness and reach of programs, resources may be strategically invested in interventions that do work. Conversely, interventions that do not work, or are very expensive relative to the number of infections prevented, can be discarded.

Ultimately, improvement in the quality of HIV prevention programs will result in a decrease in the number of new HIV infections. Data collection and evaluation are critical activities to support effective prevention practice, allowing service providers (CBOs and other) as well as funders to begin with a clear understanding of the characteristics of effective interventions, the potential of a particular intervention to help individuals or populations, and the ability to effectively implement this knowledge into programs and services.

PHAC Strategic Plan 2007-2012

The federal government’s recognition of the importance of KTE and community involvement is underscored within the *PHAC Strategic Plan: 2007-2012*, which identifies three core objectives:

Objective #1: To anticipate and respond to the health needs of Canadians (meeting major public health challenges, including HIV/AIDS; addressing determinants and disparities; building public health capacity; fulfilling PHAC's mandate).

Objective #2: To ensure actions are supported by integrated information and knowledge functions (aligning programs and research to support priorities, including surveillance, science and research, and knowledge translation and partnerships).

Objective #3: To further develop PHAC's dedicated, professional workforce by providing it with the tools and leadership it needs and by ensuring a supportive culture (enhancing Agency capabilities and accountabilities).

The *Strategic Plan* provides the framework for engaging partners from all sectors and working collaboratively to reach new levels of engagement with its many partners, including stakeholders, non-governmental organizations and CBOs.

Prevention Targets Identified by PHAC

The federal government along with other key stakeholders has clearly outlined a number of ambitious HIV prevention targets (Canadian Public Health Association, 2006). By 2010 it is expected that:

- The number of new HIV infections each year in Canada drops by 40 percent
- The number of new HIV infections each year among gay men drops by 40 percent
- The number of new HIV infections through IDU drops by 40 percent
- The number of new infections among people from countries where HIV is endemic drops by 40 percent
- The number of new infections among Aboriginal people drops by 40 percent
- The number of new infections in women drops by 40 percent
- The number of new HIV infections among youth drops by 40 percent
- Rates of other sexually transmitted diseases in communities at risk will remain stable or decrease
- One hundred percent of pregnant women in Canada are offered voluntary prenatal HIV testing with quality pre- and post-test counseling and respect for the principle of informed consent
- The proportion of people living with HIV who report that they always practice safer sex increases significantly
- The proportion of people who use injection drugs who never share needles increases significantly

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

- Access to drug treatment, including methadone maintenance treatment, and to harm reduction measures such as needle exchange programs and safe injection sites increases significantly in all jurisdictions in Canada
- Prisoners in all prison systems have access to the same prevention measures available to people in the general population
- Canada increases its contribution to global efforts to develop microbicides and preventive HIV vaccines and implements comprehensive HIV vaccine and microbicide plans

This literature review may serve to contribute to the coordinated prevention planning required to support the efforts being made to meet these laudable national prevention goals.

The ACAP Logic Model

More specifically, the literature review will contribute to KTE by providing evidence and research contiguous with the *ACAP Logic Model – Prevention Initiatives (the Logic Model)*.

The *Logic Model* (found in **Appendix A**) has been developed by PHAC as a tool to advance three Goals specific to the national context found within the *Federal Initiative*, namely:

Goal #1: Prevent the acquisition and transmission of new infections.

Goal #2: Slow the progression of the disease and improve quality of life.

Goal #3: Reduce the social and economic costs of HIV/AIDS to Canadians.

The **Target Groups** outlined within the *Logic Model* represent the eight vulnerable populations identified within the *Federal Initiative*, namely:

- Men who have sex with men (MSM)
- Women
- Youth
- Incarcerated populations
- Intravenous drug using (IDU) populations
- Aboriginal/First Nations populations
- Rural populations
- People from endemic countries

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

People living with HIV/AIDS are also identified as a target population within the *Logic Model*.

The **Key Results Activities, Outputs and Outcomes** within the *Logic Model* are:

Key Results Activities	Outputs	Short Term Outcomes	Intermediate Outcomes	Long Term Outcomes
Outreach	Contacts		Increased testing for HIV, HCV & other STIs	Improved health status of persons living with or vulnerable to HIV
Education & Training	Workshops, training sessions, materials & resources	Increased awareness, knowledge & skills related to HIV prevention	Increased practice of healthy behaviours	
Policy Development	Action plans, protocols, policies & guidelines			
Harm Reduction Resources & Strategies	Partnerships	Increased access to risk/harm reduction resources, services & social supports	Sustained level of HIV prevention messages to target populations	Reduction of social & economic costs of HIV/AIDS to Canadians
Targeted Prevention Awareness Campaigns	Campaigns		Strengthened pan-Canadian response to HIV/AIDS	

Aligning the Literature Review with the *Logic Model* will enhance PHAC's understanding of the HIV epidemic and the role that CBOs have played and can play in achieving the targeted prevention outcomes.

Purpose of the Literature Review

Evolution of Problem Statement & Intended Outcomes

The original purpose of this literature review was to provide a comprehensive review of the literature on community-based HIV prevention practices and the impact, if any, on HIV/AIDS incidence rates. The initial problem statement was:

What is the relationship between community-based HIV primary- and secondary-prevention best practices on HIV/AIDS incidence rates (where ‘primary prevention’ is defined as preventing the acquisition of HIV; and ‘secondary prevention’ is defined as preventing the transmission of HIV)?

As the very idea of HIV prevention and risk is a culturally shifting mediation in meaning and thus understood and acted upon in different ways by different cultures (Slavin, et al., 2004), we determined that the eight vulnerable populations as outlined in the *Federal Initiative* and the *ACAP Logic Model* would comprise a foundational lens for our work.

The initial intended outcome included the identification and assessment of the impact of community-based HIV best-practice primary- and secondary-prevention initiatives on incidence rates in specific Commonwealth nations with similar epidemic demographics, health policies and national health care systems: Canada, Australia, New Zealand and the United Kingdom. While we recognized from the outset the potential wealth of research that existed in the United States (specifically, the CDC), we also recognized that crucial differences existed between Canada’s historical response to the domestic HIV epidemic and that of the US, especially with regards to health promotion and harm reduction efforts. For example, Commonwealth countries, including Canada, Great Britain and Australia, have fostered publicly formed formal organizations by drug users in order to represent and act on behalf of their interest and to conduct HIV and HCV risk reduction programs. Conversely, in the US, ‘extreme stigmatization and repression has made such organizing more difficult’ (Friedman et al., 2004).

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

Upon delving into the literature, however, we recognized the need to revise both the problem statement and the intended outcome of the review. We noted that with a few exceptions, very little research has been published demonstrating explicit linkages between prevention programming (be it delivered by CBOs or otherwise) and HIV/AIDS incidence rates (or related variables such as prevalence, AIDS-related deaths, etc). Given both the sample size and the length of time required, the use of incidence rates as the outcome in a randomized control trial has proven virtually impossible for researchers.

Rather, over the past fifteen years, a substantial body of research has been developed exploring the effectiveness of interventions tailored to assist persons in changing aspects of their sexual or injection-related risk behaviour. The bulk of the published literature concerns the linkages between prevention programming and a) changes in risk behaviours, b) HIV-related knowledge and self-efficacy, and c) testing/sero-status determination. We expanded our problem statement therefore to include those variables.

Furthermore, we noted a lack of primary research sources specific to the Commonwealth nations that we had initially identified as the focus of the literature review; the majority of research in this area has been conducted and published in the United States. Notwithstanding the differences in the philosophical and political underpinnings between the US and Canada, we decided to expand the search to include primary sources from the United States.

Final Problem Statement & Intended Outcomes

Problem Statement:

What is the relationship between community-based HIV primary- and secondary-prevention best practices on HIV/AIDS incidence rates and/or changes in risk behaviours and/or testing/sero-status determination?

Intended Outcome:

The identification and assessment of the impact of community-based HIV best-practice primary- and secondary-prevention initiatives on HIV/AIDS incidence rates and/or changes in risk behaviours (including HIV-related knowledge and self-efficacy), and/or testing/sero-status determination, in Canada, Australia, New Zealand, the UK and the US.

Methodology

Search Strategies & Eligibility Criteria

We systematically reviewed primary HIV prevention literature to find studies measuring the impact of community-based prevention programming on HIV/AIDS incidence rates and/or changes in risk behaviours, HIV-related knowledge and/or testing/sero-status determination.

Demonstrated Evidence

We restricted our search to empirical, peer-reviewed journal articles or book chapters with an emphasis on evaluation with strong research designs s:

Quasi-experimental designs (independent comparison groups assigned without bias, with separate baseline data for the intervention and comparison groups); or

Classical experimental design (participant randomization, blinding to intervention assignment, i.e. cohort or longitudinal studies, randomized controlled studies).

In an effort to ensure the sustainability of results, a concerted focus was placed on documenting long-term studies and studies of greater than 12 months in duration. However, given the general challenges in garnering long-term, proven studies, some studies demonstrating efficacy at three-month and/or six-month follow-up periods were also included in the search parameters.

Relevant & Recent Research

We restricted our search to English-language, peer-reviewed articles or studies published between January 2000 and February 2008 in recognition of the reality that the HIV/AIDS epidemic is constantly evolving (the exception being meta-analyses, which, having been conducted post-2000, may include analysis of studies conducted pre-2000). Since first emerging in the 1980s, the HIV/AIDS epidemic has seen rapid advances in epidemiology, complexity, standards of care and treatment. Researchers have mapped and noted the ways in which various aspects of biomedical

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant (2009)

science and technology have influenced risk perception, behaviour and culture, arguing that the meaning of HIV risk has changed in light of the shifts in biomedical discourse, particularly in relation to gay men and treatments (Flowers, 2001; Slavin et al., 2004). Others have noted the effects of these discourses on health promotion efforts and have argued that social marketing, in particular, has been implicated in the fashioning of certain kinds of 'gay subjects' (Slavin et al., 2004). As such, we intend to reflect the shifting - if not current - snapshot of the epidemic and the resulting conditions this has created for innovation in the design and understanding of prevention interventions.

Centralizing Community

While the focus of this literature review was studies conducted specifically within CBO settings, a selection of randomized control trials was also included. These trials were included, provided they met the following criteria: a) clear demonstration of community-level research involvement, and/or b) integration of 'diffusion of innovation' theories and practices within the research (Backer & Rogers, 1998).

Data Sources & Search Terms

We relied on the EBSCO database and within that the following journals: Academic Search Premier, CINAHL, ERIC, Family & Society Studies Worldwide, LGBT Life, MEDLINE, PsycARTICLES, PsycBOOKS, PsycINFO, PsycEXTRA, Family & Society Studies Worldwide, Social Work Abstracts, and Women's Studies International.

Our descriptors for the search included:

- Terms relating to the eight vulnerable populations identified within the *Federal Initiative* (MSM, women, youth, prison populations, IDU populations, Aboriginal/First Nations populations, rural populations, people from endemic countries);
- Terms relating to the *Logic Model* and the Key Results Activities, Outputs, Short, Intermediate and Long Term Outcomes identified therein;
- Terms relating to primary- and secondary- prevention including incidence rates, risk behaviour, HIV-related knowledge and testing/sero-status determination.

For a full list of the search descriptors used in the literature review, please see **Appendix B**.

Over 6800 articles were subject to a cursory review during the preliminary search, and over 200 articles were selected based on relevance and reviewed in detail. Other studies were in turn located by hand in AIDS Education & Prevention (individual articles reviewed 2000-2008) and from the bibliographies and reference sections of each selected article.

A search of related and relevant government websites was also conducted, including:

- the Public Health Agency of Canada (<http://www.phac-aspc.gc.ca/index-eng.php>)
- Health Evidence (Canada) (<http://health-evidence.ca/>)
- the Canadian Institutes of Health Research (<http://www.cihr-irsc.gc.ca/>)
- Centers for Disease Control and Prevention (US) (<http://www.cdc.gov/>)
- Diffusion of Behavioural Interventions ('DEBI', US) (<http://effectiveinterventions.org/>)
- Cochrane Database of Systematic Reviews (US) (<http://www.cochrane.org/>)
- Australian Department of Health and Ageing (<http://www.health.gov.au/>)
- UK Department of Health (<http://www.dh.gov.uk/en/index.htm>)

The final literature review references 130 articles, including supporting and background documentation.

Literature Review Limitations

This present review has several important limitations. First, the literature reviewed was in the English language, and therefore may not capture any findings available within the French-speaking areas of this country, let alone many other developed countries throughout the world. It is probable that there are a number of relevant studies that have been conducted and written in languages other than English that would shed additional light on our problem statement. It is also possible that a review of this very nature may already have been undertaken in another language. This limitation underscores the need for the identification of existing or future research in this area.

Second, there are several issues which limit the generalizability and possible effectiveness of the research reviewed. Effectiveness is the extent to which an intervention works in the real world, as opposed to efficacy, which is the extent to which an intervention works under the optimal conditions of a highly controlled research environment (Lyles, et al., 2006). The efficacy of the intervention does not always guarantee its effectiveness in practice (Glasgow, et al., 2003). In this

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

review, the community-based interventions were identified as efficacious after being evaluated with a particular target population, in a particular setting, and often within a single site, and it is not certain whether these findings would extend beyond the specific parameters into various 'real-world' settings. Additional research would need to be conducted to determine whether these efficacious interventions work among other high-risk groups (specifically within a Canadian or Vancouver-based context) or in settings not represented in the original study, and to what degree these interventions need to be adapted. Consequently, there remains a pervasive limitation within this review with regards to the generalizability of findings.

Indeed, with respect to each individual study, several of the studies noted their own limitations with regards to participant attrition and/or sample size (Gasirowicz et al., 2005; Harding et al., 2004; Mosen, et al., 2004; Ross, et al., 2006; Williams, et al., 2006). Several of the smaller studies also noted limitations with regards to the specificity of their interventions (DiClemente et al., 2004; Kellerman, et al., 2006; Williams et al., 2006). We did not attempt to rank the effectiveness nor the sustainability of any of the studies' results, despite variations in data collection points (final data was collected anywhere between three-months and several years).

Third, and more collectively, as previously noted, this review was inevitably limited by inherent deficiencies in the quantity and quality of the existing literature, notably with regard to Aboriginal/ First Nations populations, rural populations, people who have emigrated from countries where HIV is endemic and youth. This speaks strongly to the need for strategies that engage these populations in meaningful research, and limits the generalizability of any of our findings. While it is encouraging that many efficacious interventions identified in this review target important populations, some of the populations hardest hit by the HIV/AIDS epidemic or at greatest risk of infection in this country were not represented (Lyles et al., 2007). These population-specific gaps in the literature certainly compromise both arguments for and critiques of the effectiveness of community-based HIV prevention interventions in reaching these vulnerable populations.

Finally, a limitation exists with regards to publication bias. This bias may be at play on two levels – at both the level of the available literature and on the part of our selection of research. A further iteration of this review should include the integration of bias tests such as the 'funnel plot', which compares intervention effects with sample sizes (Macaskill, et al., 2001).

Building on Previous Work: Situating the Literature Review

There have been dozens of well-conducted scientific studies of the efficacy of HIV prevention interventions, including a number of randomized clinical trials. The literature is sufficiently well-developed and a substantive body of meta-analyses have been undertaken in both the Canadian and international context. An overview of some these meta-analyses and the associated research are outlined in **Appendix C**.

While four of the meta-analyses (Herbst et al., 2007; Johnson et al., 2005; Pinkerton, et al., 2001; Wolitski et al., 1999) offer up a few reviews of community-level interventions, only one of which was conducted post-2005 (Harding et al., 2004), the vast majority of the studies documented concern the *efficacy* of the interventions conducted within controlled research environments. The question of *effectiveness* (i.e. whether the interventions will work outside of the research environment in the ‘real-world’) at the community level is not addressed.

HIV Community-Based Prevention Research: Inherent Challenges

General Research Challenges

Methodological/Scientific Challenges

Incidence and Prevalence Rates

There are tremendous challenges inherent in conducting behavioural or even biomedical intervention trials with HIV incidence as the outcome. It is very difficult to say how many infections have been averted by any particular prevention program, delivered by a CBO or otherwise, as the causal chain between delivery of a program and changes in HIV incidence is very long. Any single study that would examine this entire causal chain may prove extraordinarily expensive and complex (Holtgrave, 2007).

As a result virtually no research has been conducted that conclusively demonstrates the impact of HIV prevention efforts (CBO or non) on final disease outcome, be it incidence rates or related variables such as deaths due to AIDS. This is also a reflection of the inconsistencies that exist within Canada and internationally in HIV/AIDS surveillance.

Despite substantial investment by the federal government and other public health agencies, and the work of CBOs and other service providers involved in prevention, HIV incidence rates in Canada and throughout the world continue to increase. From this, a conclusion may be drawn that, as rates of infection have not decreased, programs to prevent HIV infection have not been successful.

Researchers argue, however, that a more accurate way to approach the question of effectiveness is to estimate the number of infections that would have occurred had the programs not been in place. This approach relies on mathematical modeling and the examination of different

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

assumptions about how the epidemic might have continued on the basis of what is known about the natural progression of HIV.

Using this calculated projection approach, several peer-reviewed studies argue that prevention programs do prevent HIV infections. One study compares the 'observed' HIV incidence curve with an incidence curve that would have occurred had HIV prevention programs not been in place. Using conservative assumptions this analysis estimates that from 1988 to 2000, the HIV programs fielded in the US (funded by the CDC) averted between 204,000 and 1,585,000 HIV infections (Holtgrave, 2002). Another study by the same author examines the decline in AIDS deaths from 1995 to 2002 and explores if this was due to prevention, treatment advances (HAART) or some combination thereof. The author concludes that the drop in AIDS deaths may have been due in large part to early prevention efforts, while the subsequent advent of HAART precipitated a more rapid decline that would have otherwise been the case (Holtgrave, 2005). It must be noted that studies such as these rely on a scenario analysis with a high level of uncertainty; hence, there are multiple limitations to this approach.

Durability

The durability of intervention efforts is not well known. Even when looking at behaviour change, as opposed to changes in incidence rates, most research to-date has relied on short- or intermediate-term indicators or outcomes (Auerbach & Coates, 2000).

Challenges with recruitment, retention, attrition and adherence in prevention trials have also impacted the quality and availability of HIV prevention research. This becomes especially evident when trying to conduct research with under-served or highly marginalized populations, such as IDUs, street-entrenched populations, sex workers and mentally ill persons. In these cases, many of the factors that contribute to one's higher risk for HIV infection (e.g. addiction, poverty, unemployment, low educational levels, etc.) are the same factors that lead to challenges with location, treatment, follow-up and evaluation.

Additionally, a 'social desirability bias' may impact the willingness of individuals within a community to participate (Robinson et al., 2002). This often results in significant rates of attrition and loss of follow-up data (Beadnell et al., 2003; Auerbach & Coates, 2000).

Research Markers

It is often not possible to directly observe and measure HIV risk and protective behaviours related to sex and drug use, as these activities are private and in some cases illicit (Hilton, et al., 2001). HIV prevention science relies on self-reports versus biological markers such as incidence rates, and a lack of consensus exists about the validity of these markers (Auerbach & Coates, 2000).

Markers are also highly subjective in the field of harm reduction research which can be costly, hard to contain, hard to control and requires observation and action at a time and in contexts that are unusual for many researchers (Hilton et al., 2001).

Ethical Challenges

Some controversy surrounds the notion of 'informed consent' to research, especially where potential participants are struggling with poverty, have minimal literacy, or have cultural beliefs that do not support questioning authority including medical authority (Auerbach & Coates, 2000).

Another ethical challenge is determining appropriate control conditions in randomized trials of prevention interventions. For example, researchers have an ethical obligation to provide condom counseling to all participants in prevention trials. This obligation makes it difficult to then determine the direct and separate effect of other prevention technologies or approaches in a trial (Auerbach & Coates, 2000).

Any research into prevention that targets persons living with HIV/AIDS needs to be done with a sensitivity to the possibility for such research to be politically divisive and stigmatizing. There are possible adverse consequences of increasing positive prevention, especially given the increasing criminalization of the sexual behaviour of persons living with HIV/AIDS (Gordon, et al., 2005).

Ethical and practical challenges may be observed when recruiting sometimes emotionally traumatized people into a study that specifically asks participants to recount the issues associated with their distress. Researchers may also meet reluctance on the part of many HIV clinicians and service providers to provide referrals as they may have different priorities for their patients (Slavin et al., 2004).

CBO-Specific Research Challenges

The multiple barriers that exist for CBOs when conducting outcome evaluation of their prevention programs has been well-documented in the literature (Begley, et al., 2002; Kegeles, et al., 2005; Napp, Gibbs, Jolly et al., 2002)

Logistical Challenges

There is a lack of consensus as to whether randomized, controlled trials are the only research design that can produce real measures of efficacy of HIV prevention interventions. The randomized trial may be too elusive a 'gold standard' of evidence (Auerbach & Coates, 2000).

Outcome evaluation, and the 'gold standard' of randomized control trials, require interventions with high program integrity and clearly defined outcome measures, the presence of control or comparison groups, the ability to track clients over time, large numbers of study participants to achieve the required statistical power necessary to conclude effectiveness, and the resources (e.g. staffing, study participant incentives, and often "wraparound" services such as childcare and food) to implement and maintain the evaluation activities (Gentry et al., 2002). In reality, public health practitioners are often not afforded the opportunity to conduct such detailed and comprehensive evaluations of interventions, particularly community-level interventions, which are often initiated by and from the community before the mobilization of public health initiatives (Leaver, et al., 2004).

It is not surprising then that CBOs often experience challenges meeting the demands of any type of outcome evaluation, much less a randomized controlled trial. Before committing CBOs to conducting rigorous outcome evaluations, consensus must be reached with funders and other policy makers regarding the levels of funding, technical assistance and training, evaluation expertise and general organizational capacity required.

Methodological Challenges

Whereas outcome evaluations address the viability of results, many CBOs rely on process evaluations to determine an intervention's success. In contrast to outcome evaluations, process evaluations are largely concerned with how an intervention is delivered and often examine the early

development and actual implementation of the strategy or intervention, assessing whether strategies were implemented as planned or whether the expected outputs were actually produced.

On the one hand, process evaluations have been shown to be useful for small community-based agencies to help them describe new, fledgling programs in detail and to understand the processes involved in the success or failure of an intervention (Backett-Milburn & Wilson, 2000; Forrest, et al., 2002). They have also been noted for their ability to illuminate the factors that produce any observed changes in outcomes, for their use as a quality control mechanism for assessing and/or improving the fidelity of intervention implementation, and for their ability to assess whether the intervention matched the needs of the intervention participants or to assess the generalizability of a specific intervention (Harden, et al., 2001).

On the other hand, with a lack in the identification of behavioural outcomes or equivalent comparison group, process evaluations provide continuing challenges to researchers in determining the effectiveness of a CBO-level HIV prevention initiatives as analysis is often compromised by unclear details of sample and methodology suggesting unreliable conclusions. In a systematic review of peer-delivered health promotion for young people, Harden et al. (2001) note that whereas “the evidence from the outcome studies as to the effectiveness of the peer approach was equivocal, the process evaluations overwhelmingly report highly positive appraisals by young people of peer-delivered approaches. This discrepancy, between positive ‘qualitative’ evaluations and the more mixed messages from ‘quantitative’ evaluations ... raises important methodological questions about the reliability of effectiveness conclusion based on ‘qualitative’ studies”.

The Challenges of Translating Research into Practice: The Gap between the Science and Practice of Prevention

In an attempt to ensure standards of scientific validity, many of the research studies demonstrating the efficacy of primary and secondary HIV prevention interventions have used rigorous randomized clinical trial designs. As previously noted, such research has taken place in conditions that are highly controlled.

In order to be effective, the prevention interventions that are developed in such controlled conditions also need to be transferable, relevant, sustainable and applicable to those ‘in the field’. This necessitates adapting an evidence-based intervention in such a manner that it retains potency

among the target population while accommodating itself to the resource constraints of CBOs (Copenhaver, et al., 2007; Elford & Hart, 2003). Ultimately, HIV prevention interventions are delivered not by researchers but by CBOs and other service providers.

Little empirical research has been conducted to study how evidence-based interventions diffuse from research into practice in community settings, and very little has been conducted regarding HIV/AIDS interventions (Kelly et al., 2000; Rebchook, et al., 2006). This is especially problematic when working with populations most vulnerable to, and at risk of, infection (e.g. sex workers whose risk context may vary from city to city, or from situation to situation; as such, results obtained from one particular study involving sex workers may not apply to other groups of sex workers) (Williams et al., 2006).

In the same vein, systematic reviews and meta-analyses are useful in outlining which interventions work and describing the magnitude of their effect within a research context. However, they often fail to effectively examine how and why an intervention works, or, perhaps more importantly, why an intervention does not work. Understanding the processes that underpin the outcome, the context in which the intervention is delivered and issues of implementation also requires qualitative research (Elford & Hart, 2003).

Recognizing that the integration of process evaluation into the design of a controlled trial can generate both outcome data as well as insight into important qualitative aspects of an intervention, some researchers are now calling for an integration or alignment of clinical trials and process evaluations within the community (Elford, et al., 2002; Elford & Hart, 2003), including documentation of research challenges and barriers, and development and implementation of recommendations for working with difficult-to-reach populations. Additional efforts, and thus, resources, are needed to identify, recruit, and retain research participants from vulnerable populations (Robinson et al., 2002).

Some researchers (Romero et al., 2006), note the specific challenge in affecting behaviour change when research participants more readily talk about barriers than translate their new awareness into behaviour change strategies. They therefore recommend the integration of change mechanisms within research, including social support, community resources, education and communication skills, as well as the development of actual 'behaviour change contracts' to encourage participants to make a commitment to one specific change objective.

Finally, very little research has been conducted about how to effectively move community-level interventions into practice (versus one-on-one counseling and small group risk-reduction interventions which are unlikely to reach the large numbers of people who are ‘at risk’). Dowsett (2001) calls for research into HIV/AIDS health education that understands the conditions under which educators work and the resources on which they draw. Locating ‘hands-on’ research within a CBO and with a conceptualization of community that is textured, contextual and dynamic, would offer health educators a way of seeing where they fit within larger communitarian practices and processes, and enables them to better understand the social relations they form with their clients. Moreover, community-level HIV prevention interventions, by their scope, have the potential to be cost-effective and to reach greater numbers of people (Rebchook et al., 2006).

The CDC Approach

In the United States, CBOs are increasingly expected to adopt research standards in conducting evaluation and implementing evidence-based programs that have been tested in randomized control designs. Prevention science research findings tend to be presented at academic conferences or published in professional or scientific journals. Neither of these historic dissemination techniques are especially accessible to CBO staff, particularly front-line service providers; nor do they effectively convey how to implement a particular intervention.

The US Centers for Disease Control (CDC) has developed a multi-pronged approach to assist CBOs in adopting HIV prevention interventions that have been shown to be efficacious in reducing risk behaviour. These approaches include:

The Prevention Research Synthesis (‘PRS’) Project – The PRS team systematically reviews the research published in peer-reviewed journals and applies objective criteria to identify interventions that have been rigorously tested and have demonstrated efficacy in reducing HIV risk. The interventions listed include individual- and group-level behavioural interventions for high-risk populations whose evaluation study was published from 1988 through 2005. Key elements that inform the efficacy review are the type of comparison group, the number of participants, the ways participants are recruited or assigned to groups, the outcomes measured, the follow-up time (level of durability of the prevention), the participant retention rate and the degree to which groups are equivalent in terms of characteristics such as age, race and ethnicity. As of Fall 2007 the team had

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant (2009)

reviewed more than 25,000 HIV publications and identified 49 interventions that they felt demonstrated efficacy in reducing HIV or STD incidence, in reducing HIV-related risk behaviours, or increasing HIV-protective behaviours. These are catalogued on the CDC database in the *Updated Compendium of HIV Prevention Interventions with Evidence of Effectiveness* (<http://www.cdc.gov/hiv/topics/research/prs/index.htm>).

The Replicating Effective Programs ('REP') Project – Once interventions have been catalogued, the REP Team works with researchers, in collaboration with community-based partners, to translate evidence-based interventions into everyday language and develop user-friendly packages of materials. The materials developed include manuals, marketing materials and training (Collins, et al., 2007).

The Diffusing Evidence Based Interventions ('DEBI') Project – Funded by the CDC, the Center on AIDS & Community Health has delivered training on 16 different science-based, efficacious interventions for HIV prevention to the staff of CBOs and state and local health departments. To date, nearly 5000 agencies throughout the United States have been trained through the DEBI Project. DEBI has also begun to develop guidelines on how to adapt the standardized interventions to meet local needs, while still remaining faithful to the core elements of the original intervention (Academy for Educational Development: Center on AIDS and Community Health).

The Characteristics of Reputationally Strong Programs (C-RSP) Project – Developed as a supplement to the PRS Project, the C-RSP Project was introduced in recognition of the important role CBOs have played in prevention. This project identified and profiled 18 innovative, community-based, HIV prevention programs viewed by community partners as successful. Although these programs have not been evaluated by research trials using control or comparison groups and are seldom published, the C-RSP was introduced to help facilitate their dissemination and identify common features that could be widely applied to the field of HIV prevention. The profiled programs gained their reputations because of such features as innovation, organizational commitment, experience with the target population, and use of clearly defined interventions (Centers for Disease Control and Prevention; Eke, et al., 2006).

CDC Limitations

There are some limitations to the work done by the CDC in the dissemination of evidence-based prevention interventions throughout CBOs and public health. The PRS efficacy reviews are based on the intervention's effects within relatively rigorous and controlled research environments. Once again, while scientifically proven, the 'real world' effectiveness of these interventions is unknown. Researchers have suggested in the short-term, specifically targeted research studies in the field examining efficacy (as opposed to effectiveness) could be conducted. In the longer-term, the researchers call for research into effectiveness using experimental or quasi-experimental designs where high-quality performance and outcome measures can be gathered (Lyles et al., 2006). Unfortunately, the CDC/REP Project does not fund retesting of an intervention for either efficacy or effectiveness (Collins et al., 2007).

Another significant limitation of the work done to date is that only nine percent of the intervention evaluation reports housed in the CDC database target MSM, the population most affected by HIV/AIDS in the US and with the highest incidence rates (Collins et al., 2007; Sanchez et al., 2006). Accordingly, some of the highest-risk populations most in need of effective prevention tools (MSM of colour, substance-using MSM) are not the focus of the intervention packages or training available through the REP Project or the DEBI Project (Lyles et al., 2006). The lack of MSM-specific interventions underscores the need identified by CBOs and researchers alike for a wider menu of interventions with full protocols, training materials and facilitator guides targeting all national high-risk populations (Shea, et al., 2006).

CDC Successes

Mpowerment – One example of how an evidence-based HIV prevention program in the US is moving from research to practice at the community level is the Mpowerment Project. This project is a community-building peer-based HIV prevention intervention for young gay/bisexual men between the ages of 18-29, designed to reduce the frequency of unprotected anal intercourse. Developed through an intensive social marketing process with young gay men, the Mpowerment Project is founded on an empowerment model in which young gay men take charge of the project, as well as on the theory of diffusion of innovations, which suggests that people are most likely to adopt new behaviours that have already been accepted by others who are similar to them and whom they respect (Centers for Disease Control and Prevention). Using randomized control trials,

the researchers/developers first established that the intervention was efficacious in terms of reducing risk behaviour and was cost-effective.

The Mpowerment Project was then developed into a package and made available for diffusion to CBOs throughout the US through the CDC's REP Project. Subsequently, the researchers then conducted a longitudinal cohort study to examine how the Mpowerment Project was diffused and being implemented by 69 CBOs in 45 States. They conclude that overall the diffusion was very successful however, in many instances the agencies involved had reinvented or tailored the program either to suit local community needs or, out of necessity, due to insufficient resources. In some cases, core elements of the intervention were dropped or modified, which compromised the program's capacity to change risk behaviour. Based on how the intervention was diffused, the researchers conclude that it is important to continue to develop effective technology exchange systems to help CBOs modify their programs appropriately (Rebchook et al., 2006).

VOICES/VOCES – Another example of a documented success story is the diffusion of VOICES/VOCES, a brief video-based HIV risk reduction intervention targeting African American and Latino heterosexual men and women at risk for HIV infection. Initial evaluation of the intervention showed that VOICES/VOCES was efficacious when delivered at a 'teachable moment,' for instance when a visit to an STD clinic may motivate a person to change behaviour (Centers for Disease Control and Prevention). Originally developed as a clinic-based intervention, the DEBI Project worked with a series of CBOs to successfully adopt and adapt VOICES/VOCES for delivery at sites within the local community. As a result of multiple supports and ample technical assistance provided to the CBOs involved, researchers conclude that implementation of VOICES/VOCES was realized with fidelity to the core elements of the intervention and was therefore effective (Hamdallah, et al., 2006; Harshbarger, et al., 2006).

SISTA – The SISTA intervention, a group-level, gender- and culturally-relevant intervention, was designed to increase condom use with African American women. Within the intervention, five peer-led group sessions are conducted that focus on ethnic and gender pride, HIV knowledge, and skills training around sexual risk reduction behaviours and decision making. According to researchers, subsequent diffusion of the intervention through DEBI represents the successful incorporation of Afro-centric components into the diffusion strategy for this culturally appropriate intervention (Academy for Educational Development: Center on AIDS and Community Health; Prather et al., 2006).

Successful Canadian Initiatives

A little closer to home, the HIV/AIDS Community Based Research Capacity Building Program is a unique program funded by the Canadian Institutes of Health Research (CIHR) that supports BC HIV/AIDS community organizations in a number of aspects of research such as funding, implementation, innovation dissemination of findings and evidence-based integration of results into programming and policy (<http://www.cihr-irsc.gc.ca/e/25835.html>).

Results & Discussion

In total, 20 studies examining the efficacy and/or effectiveness of CBO HIV prevention interventions have been reviewed and organized according to the framework provided by the *ACAP Logic Model*, with the following qualifications:

Firstly, as previously noted, there are five activities identified within the *Logic Model*, namely **Outreach, Education & Training, Policy Development, Harm Reduction, and Targeted Prevention Campaigns**. Our literature review focuses on increased practices of healthy behaviours in the areas of both safer sex and IDU risk reduction in the realm of **Outreach and Education & Training**.

The outcomes associated with the remaining three activities (**Policy Development, Harm Reduction and Targeted Prevention Campaigns**) do not satisfy the Problem Statement, and thus these Activities figured only incidentally in our review. Moreover, while there is a wealth of literature pertaining to the effectiveness of harm reduction, the majority of the literature is focused on interventions that occur at a clinic- vs. community-level, such as syringe exchange programs (SEPs) and supervised injection sites; save Masson's comparison of CBO-delivered vs. hospital-delivered SEPs (2007), these studies have not been included in this review.

Secondly, standardized consensus among the countries or researchers reviewed with regards to intervention activity and intended outcome simply does not exist. For example, the success of some CBO education and training activities is determined by increased knowledge levels or increased testing rates, and success for some outreach activities is determined by decreased reports of unprotected sex. Furthermore, certain degrees of overlap appear to exist between activities (e.g. the delivery of 'outreach' may include aspects of brief, street-level condom distribution, as well as brief skill-development or education sessions, one-on-one counseling and/or case management).

Consequently, while we have used the *Logic Model* to frame the results of our literature review, we have applied a certain degree of subjective flexibility to this structure in order to best articulate commonalities in activities/interventions and in outcomes/findings.

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

Outreach Results

Outreach has long been used by CBOs as an activity to connect with 'hard-to-reach' and vulnerable populations, such as street-entrenched and IDU populations. Outreach typically involves trained professionals visiting geographic regions where a target group is known to frequent in an attempt to disseminate information, to provide condoms, safer injection equipment and/or clean needles, and/or to refer individuals to medical services (*Mediums to Reach Injection Drug Using Populations*, PHAC, <http://www.santevoyage.gc.ca/hepc/pubs/medidu-moyudi00/executive-eng.php?option=email>).

The *ACAP Logic Model* identifies the increase in HIV, HCV and STI testing as the outcome for this activity. In our search, only one study meeting the search criteria aligns outreach activities as defined above (provision of condoms and bleach kits) directly with a testing outcome. This study also includes a comparison to other HIV prevention interventions such as media messaging and counseling and skills-building. Kellerman describes the extent to which community-based HIV prevention outreach strategies reach a sample of high-risk persons and whether such exposure correlates with having been tested for HIV. Data was obtained from the 2000 HIV Testing Survey, an anonymous interview study of men who have sex with men (MSM), injection drug users (IDU), and high-risk heterosexuals (HRH), recruited from venues in seven US states and New York City. Community-level involvement was evidenced at both the formative research stage (e.g. key informants included IDU street outreach program personnel) and the implementation stage (e.g. CBO members performed recruitment and interviewing). Kellerman reports the proportion of persons exposed to three types of interventions: information (media messages, brochures), counseling or skills-building (group counseling, role play, calling an AIDS hotline), and prevention supplies (provision of condoms, bleach kits), stratified by HIV testing status (Kellerman et al., 2006).

Exposure to information interventions was high among the 2491 respondents (85 percent-96 percent) and did not differ by testing status. Use of counseling or skills-building interventions varied by testing status for IDU (8 percent untested versus 41 percent tested) and HRH (14 percent versus 20 percent), but not MSM (15 percent versus 23 percent). Exposure to HIV prevention information was high but exposure to counseling or skills-building interventions was less common and more prevalent among those previously tested. Among tested IDUs, those receiving bleach kits were more likely to report consistent bleach use when injecting with non-sterile needles (25

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

percent versus 9 percent). This latter finding suggests that providing the supplies necessary to engage in risk reduction behaviours is an important component of CBO prevention interventions. The authors argue, therefore, that prevention initiatives should include counseling and testing, skills-building and prevention supplies.

One study (Dowling et al., 2007) examines the combined effects of HIV information dissemination with rapid HIV testing among 'racial/ethnic minority men' at 11 gay pride events in nine US cities from 2004 to 2006. Based on the premise that 25 percent of the estimated one million people with HIV infection in the US do not know their HIV status, and that gay pride events offer a unique opportunity for CBOs to provide HIV-prevention education and outreach, CBO-delivered rapid HIV testing was used as a mechanism to increase the numbers of people being tested.

A total of 543 attendees participating in the assessments reported at the time of the event that they had not had an HIV infection diagnosed previously. Of these, 133 (24 percent) were tested for HIV during the pride event, and eight (6 percent) of those tested during the event had a positive rapid test result. All eight were subsequently confirmed to be HIV positive by Western blot testing. The results of the study demonstrated that rapid HIV testing of ethnic groups at gay pride events by CBOs may be a useful way to enable HIV-infected people to learn their status, and that HIV testing at gay pride events provides an opportunity to identify new HIV infections among MSM outside of health-care settings, particularly MSM from racial/ethnic minority groups.

Other studies examine the efficacy of more traditional CBO-delivered outreach activities in reaching vulnerable and over-represented populations. French (2000) conducted an independent evaluation of a peer-led HIV/STI prevention intervention conducted by Gay Men Fighting AIDS (GMFA) in a public sex environment (PSE). As condom provision was identified as the most needed health promotion activity in PSEs in a survey of gay and bisexual men (n=688) conducted by the researchers, the main aim of the intervention was the distribution of condoms and safer sex literature to PSE users.

During a five-month period, over 100,000 condoms and 2,200 safer sex information packs were distributed by GMFA volunteers to the PSE users. Data collected showed that condoms provided by GMFA, as well as from other sources, were being used in the PSE, and that the peer-led focus of the intervention was acceptable to the PSE users. In addition, high levels of commitment and input from the volunteers contributed considerable added value to the intervention. The

researchers conclude that GMFA was successful in reaching the target population and addressing their needs and demands.

Rhodes (2004) examines an online intervention that was initiated by an AIDS service organization to reduce sexual risk within a geographically-oriented chat room frequented by MSM. Analyses of bio lines, user profiles and chat room discussions were used to understand and characterize the online prevention intervention.

Six predominate discussion topics were identified: a) sexual risk reduction strategies (e.g. safer bare-backing); b) HIV testing options; c) local alternatives for nonsexual social support; d) referrals for youth; e) resources related to 'coming out'; f) access to risk reduction materials and supplies. The perceived anonymity promoted by the internet and the health educator's established relationship with the men in the chat room were noted as factors that contributed to the success of the intervention. This analysis suggests that an online HIV/AIDS prevention intervention may reach MSM inaccessible in more traditional venues.

Only one article (Wendell, et al., 2003) studied the impact of street outreach activities on behaviour change (e.g. increased condom use). In this study 21 CBOs involved in street outreach conducted cross-sectional surveys assessing risk behaviour and exposure to outreach activities in 66 intervention and 13 comparison areas in the US state of Louisiana over a two year period. Surveys were collected from 4950 persons at intervention sites and 1597 persons at comparison sites. After controlling for demographic characteristics and sexual risk factors, the surveys revealed that persons in intervention sites were more likely to use condoms than persons in comparison sites [odds ratio 1.37 (95 percent confidence interval 1.20, 1.56; $P < 0.001$)].

The researchers conclude that: a) contact with an outreach worker mediated condom use; b) study participants were more likely to know where to get free condoms; c) study participants were more likely to use the brand of condom distributed through the program; d) study participants were more likely to have used a condom the last time that they had sex. The findings indicate that street outreach is efficacious in increasing condom use, even when contact with the outreach worker is brief. Street outreach is, therefore, a valuable strategy in communities at increased risk, particularly among persons who are difficult to reach through other interventions.

Outreach Discussion

Each of the studies above provide evidence of the efficacy of community-level outreach as an HIV prevention intervention, although the findings of Dowling et al. (2007), French et al., (2000) and Rhodes (2004) are limited by the lack of either a control or comparison group. The findings suggest that outreach delivered by workers or volunteers indigenous to a targeted community may evoke a level of trust, which in turn allows for an invitation into the intimacy and understanding of high-risk environments. While both Rhodes and French report on the overall success of community-based outreach work, they also discuss its effectiveness in the face of imminent and urgent risk. Findings from Rhodes' study indicate that online 'chatters' were able to interact with the health educator in real time around issues such as bare-backing. This immediacy allowed for follow-up dialogue and more precise tailoring of educational messages. Rhodes suggests that, in many cases, an online intervention may reach MSM in the exact space and time in which they are looking for sex.

Similarly, French notes that, during the development of the study, both health users and outreach workers emphasized the importance of not disrupting the public sex environment (PSE) in order to convey a safer sex message. It was important that any provision of health education was not perceived as 'threatening' or 'intrusive', and that outreach volunteers should avoid directly approaching men in the event that they were received as 'the safer sex police'. As one outreach volunteer in this study explained, cruising is 'not about health, it's about sex. It's about lust, it's about risk'. French also maintains that PSEs are unique in that men are there for purely sexual purposes, unlike some other venues such as bars and nightclubs.

Taken alongside the demonstrated success of Wendell's street outreach study (2003), and the positive results of the Kellerman (2006) study with regard to IDU risk reduction, the research suggests that a core element contributing to the effectiveness of outreach may lie in its timing vis-à-vis the urgency of high risk activities, and invites additional comparative research in this regard. Further, a significant commonality in all the interventions studied is the provision of concrete, usable and immediate safer sex and risk reduction tools, such as condoms and bleach kits.

Generally, little scientifically rigorous research has been conducted in the area of community-based outreach, and in particular with regard to outreach activities in coordination with off-site HIV testing.

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

Despite the broad *Logic Model* outcome associated with outreach, it was beyond the scope of this project to review studies resulting in increased Hepatitis C virus (HCV) and STI testing. Given the prevalence of HCV, it is reasonable to assume that this has constituted a greater research focus in recent years.

Nonetheless, the above-noted examples of ‘insider’ insights garnered around research contexts, factors and effects, highlight the importance of involving CBOs – and peers – in outreach-related intervention and research.

Education & Training

As with outreach, HIV education/training has long been used as a tool to affect behaviour change among vulnerable populations in Canada. This activity is typically delivered via workshops and training sessions, as well as through the development and distribution of HIV/AIDS education and awareness materials and resources. The *ACAP Logic Model* identifies the short-term outcome associated with education and training as an increase in awareness, knowledge and skills related to HIV prevention, and the intermediate-term outcome as an increase in the practice of healthy behaviours, including increased condom use/decreased unprotected sexual intercourse and decreased injection drug use/decreased sharing of drug-related equipment. Other behaviour change outcomes may include a decrease in sexual partners and/or frequency of sexual intercourse, an increase in communication and self-efficacy, and/or abstinence.

Workshops & Trainings Results

HIV prevention education delivered via workshop- and/or skills training-style methods were the most common type of interventions arising in the literature reviewed. Leaver (2004) explores the efficacy of community-level HIV prevention programming for men who have sex with men in Ontario using multilevel methods to examine levels of unprotected intercourse among bisexual men (n=1016) with male and female partners in geographic regions with and without CBO-delivered HIV prevention programming.

Men living in geographic regions with CBO HIV prevention programming available had significantly less frequent unprotected homosexual intercourse with both casual and regular partners (95% CI:

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

OR 0.39 and 0.32, respectively). In contrast, no differences were observed for unprotected heterosexual intercourse (95% CI: OR 1.41 for casual female partners and OR 0.98 for regular female partners, respectively). This study provides evidence supporting the effectiveness of community-level HIV prevention programming and the need for its broader implementation. The study also demonstrates the suitability of multilevel methods for examining the effectiveness of community-level public health programs.

Lauby (2000) examines the effects of a multi-site, community-level HIV prevention intervention on women's condom-use behaviours. This theory-based behavioural intervention was implemented with low-income, primarily African American women in four US urban communities over a three year period. Community-level activities included: a) the development and distribution of project-produced HIV prevention materials; b) the mobilization of a peer network of community volunteers; c) a network of CBOs and businesses that supported the project; d) the delivery of prevention messages by trained outreach specialists through individual contacts and small-group activities. Outcomes were evaluated using data from pre- and post-intervention cross-sectional surveys in matched intervention and comparison communities.

At baseline, 68 percent of the women had no intention of using condoms with their main partners and 70 percent were not using condoms consistently with other partners. After two years of intervention activities, rates of discussion with main sexual partners about condoms were significantly higher in intervention communities than in comparison communities. Intervention communities also had significant increases in the proportion of women who had tried to persuade or convince their main partners to use condoms. The trends for condom use with other partners were similar but not significant. The findings suggest that community-level interventions may need to be implemented and evaluated over several years before increases in condom use become evident, as post hoc analyses of the 1994 and 1995 follow-up surveys found no intervention effects on condom-use behaviour. The intervention effects were not discernible until the 1996 survey, more than two years after the intervention was implemented. Lauby concludes that, while many women at risk for HIV infection are still not using condoms, community-level interventions may be an efficacious way to reach large numbers of women and change their condom-use behaviours, in particular, their behaviour regarding communication with main sex partners.

Harding (2004) analyzes the first outcome evaluation of multi-session group work for HIV prevention among gay men in the UK. This community-based randomized control trial recruited 50

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant (2009)

men, of whom 42 percent were HIV-positive or untested and 32 percent reported status unknown or sero-discordant unprotected anal intercourse (UAI) within the 12 months preceding a popular introductory CBO workshop on sadomasochistic sex.

No knowledge, skills, attitudinal or behavioural differences were detected between intervention and control at baseline. At eight weeks, those attending the group reported significant gains over their control in making sexual choices, physical safety, HIV and STI transmission knowledge, and sexual negotiation skills. At 20 weeks, significant differences remained for HIV and STI transmission knowledge and comfort with sexual choices. Although no behavioural differences were detected, the aims of the National Prevention Strategy were met. Harding appraises this pilot control trial in the light of modest sample size and attrition, and recommendations for establishing behavioural outcomes are presented.

DiClemente (2004) evaluates the efficacy of HIV prevention training in reducing risky sexual behaviours and in enhancing skills and mediators of HIV-preventive behaviours among sexually experienced African American adolescent girls residing in the southern United States. Recruiters screened 1130 girls from this demographic at four community health agencies over a seven year period. This randomized, controlled trial consisted of four four-hour interactive group sessions at a family clinic, delivered by an African American female health educator and two African American female peer educators.

Participants in the intervention reported using condoms more consistently than in the comparison group in the six months preceding the six-month assessment (unadjusted analysis, 61.3 percent vs. 42.6 percent), at the 12-month assessment (unadjusted analysis, 58.1 percent vs. 45.3 percent), and over the entire 12-month period (95 percent CI: adjusted odds ratio, 2.30). Using generalized estimating equation analyses over the 12-month follow-up, adolescents in the intervention were more likely to use a condom at last intercourse, less likely to have a new vaginal sex partner in the past 30 days, and more likely to use condoms with sex partners. They had better condom application skills, a higher percentage of condom-protected sex acts, fewer unprotected vaginal sex acts, and higher scores on measures of mediators. Results demonstrated that an HIV intervention can result in substantial reductions in sexual risk behaviours, including acquisition of a new male sex partner, and markedly enhance theoretically important mediators and skills associated with HIV preventive behaviours among sexually active African American adolescent girls.

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

In 2001, Grinstead designed an eight-session pre-release intervention for HIV-positive inmates designed to decrease sexual- and drug-related risk behaviour and to increase use of community resources after release. The study was conducted within the context of an ongoing collaboration with an academic institution, a CBO and a large California state prison. Nine intervention sessions were delivered over a 30 month period at the prison by community service providers.

Compared with men who signed up for the intervention but were unable to attend, men who received the intervention reported increased use of community resources and less sexual- and drug-related risk behaviour in the months following release. Intervention participants were less likely than comparison group participants to have had sex since release (72 percent vs. 80 percent), and more likely to have used a condom the first time they had sex after release from prison (81 percent vs. 69 percent). They were also less likely to have injected drugs (48 percent vs. 68 percent) or to have shared needles with those who injected drugs (6 percent vs. 40 percent). These results demonstrated that a pre-release risk reduction intervention for HIV sero-positive inmates was feasible, and the program was efficacious in reducing sexual- and drug-related behaviours and in increasing use of community resources after release (Grinstead, et al., 2001).

Williams (2006) evaluates the acceptability and the comparative efficacy of brief peer-led HIV risk reduction interventions to increase condom use during paid anal sex by street-based male sex workers (MSWs) in New York City. Of the 399 street-based MSWs who participated in the evaluation of acceptability, 112 participated in the evaluation of efficacy. Acceptability was evaluated by assessing completion rates. Intervention efficacy was assessed across two brief interventions, a 'standard' and a 'standard-plus' intervention. The primary outcome being evaluated was condom use during paid anal sexual encounters, and changes in drug use, needle use, condom use beliefs, and condom use intention were also assessed.

Results showed that almost two thirds of MSWs enrolled in a brief intervention completed it. Completion rates varied by age, race/ethnicity, sexual orientation and HIV status. Condom use during paid anal sex increased post-intervention. In addition, condom use intentions, positive condom use outcome expectations, and condom use normative expectations increased pre-intervention to post-intervention. There were no significant differences, however, between the standard and the standard-plus brief interventions in any of the outcomes measured. The researchers conclude that brief interventions to reduce HIV risks are acceptable to MSWs and are efficacious for reducing unprotected anal sex during paid sexual encounters.

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

Workshops & Trainings Discussion

All of the literature reviewed provides (Grinstead et al., 2001; Lauby et al., 2000; Leaver et al., 2004; Williams et al., 2006) evidence of efficacy of community-led workshops and trainings as HIV prevention interventions, although Williams' study (2006) compares the CBO delivery of two prevention strategies, and does not employ a non-intervention control group (he argues that working with population as 'hidden and elusive' as MSWs may necessitate the use of a non-randomized sample).

While demonstrating similar positive results, Lauby (2000) takes her analysis of community-based prevention programming a step further, calling for longer-term intensive interventions as effects began to appear only two years after implementation. Further, she maintains that in order to be successful in low-income neighbourhoods, interventions need to address social, economic and cultural issues that affect the target population's access to information and its ability to focus on health-related behaviours. She notes that Intervention techniques that can be sustained by community organizations and sources of continued funding for intervention activities need to be explored so that appropriate and repeated HIV prevention messages reach everyone who is at risk.

While noteworthy for piloting a UK-based randomized control trial within a CBO, ultimately, Harding's research findings are limited and inconclusive. He acknowledges that modest sample size and resources, as well as an attrition rate of 68 percent do not allow him to reach behavioural conclusions with respect to the model of the intervention. He does conclude, however, that multi-session group interventions are feasible, acceptable and efficacious for gay men in the UK, and that it is possible to recruit non-clinic-based high-risk populations to group interventions in CBO settings (2004).

On a final note, while DiClemente's research (2004) offers positive results, he also raises a question pertaining to the inconclusive results of other youth studies (e.g. Coyle et al., 2006), and whether it may be more difficult to change sexual risk behaviours among sexually experienced youth than among samples containing both sexually experienced and non-sexually experienced youth. He suggests that more intensive interventions may be necessary to motivate health-promoting behaviour change among those who are sexually experienced, and that new and innovative intervention research remains critical to optimizing HIV prevention effectiveness tailored to diverse adolescent populations, particularly high-risk youth. Given an environment of limited resources that

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

often limits CBOs to working with young people in-risk vs. pre-risk, this observation underscores the potential complications and challenges in providing effective HIV prevention programming to sexually-active youth.

Peer Education Results

According to the United Nations Office on Drugs & Crime, peer education typically involves the use of members of a given group to affect change among other members of the same group by attempting to modify a person's knowledge, attitudes, beliefs or behaviours, or by modifying norms and stimulating collective action that leads to changes in programs and policies (http://www.unodc.org/pdf/youthnet/action/message/escap_peers_01.pdf). To this end, HIV health promotion messages may have greater credibility when they come from someone who is seen as similar to the 'receiver' of the message (Kelly, 2004). Due to the profound potential of peer education to positively affect behaviour change and shape healthy 'norms', it has played a pivotal role in community-based HIV/AIDS work for over 20 years.

Latkin (2003) examines network-oriented HIV prevention interventions based on social identity theory in the context of peer based outreach delivery to HIV-positive and HIV-negative drug users in the US city of Baltimore. A community sample of 250 was randomly assigned to either an equal-attention control condition, or to a multi-session, small-group experimental condition, which encouraged peer outreach. Ninety-four percent of participants were African American and 66 percent used cocaine or opiates. At follow-up, 92 percent of participants returned. Members of the experimental group were three times more likely to report reduction of injection risk behaviours and four times more likely to report increased condom use with casual sex partners, than members of the control group. Latkin's results indicate that incorporating peer outreach strategies can reduce HIV risk in low-income, drug-using communities.

Ross (2006) reviews the outcomes from an evaluation of Project Wall Talk, a community-based, peer-led HIV prevention education program (a collaboration between the Texas Department of Criminal Justice, AIDS Foundation Houston and other CBOs) implemented in 36 Texas State prison units. Peer educators completed questionnaires prior to receipt of a 40-hour intensive training (n=590) and at nine-month follow-up (n=257). Students (n=2506) completed questionnaires pre- and post-receipt of peer educator-led HIV education sessions.

Peer educators and their students showed significant increases in HIV-related knowledge. Peer educators also showed significant increases in assessment of their skills as educators. For both peer educators and students, significant differences in HIV-related knowledge were indicated across categories of prior educational level attained and race/ethnicity; no such differences were indicated at follow-up. Compared with baseline, a significantly greater proportion of peer educators reported ever having had an HIV test. After receiving peer-led education, a significantly smaller proportion of students reported they knew their HIV status and more indicated plans to take an HIV test. Additionally, in months 12 and 18 following program implementation, the numbers of HIV tests at the five units that implemented the peer education program were roughly twice that of five other matched comparison units without the peer education program. These findings suggest that, at a community level, the spectrum of HIV risk-reduction programs does produce a significant improvement in condom use and related cognitions, although there is a need to cover a greater proportion of the population. The authors conclude that previous exposure to interventions must be a critical covariate in assessing the impact of future interventions.

Sikkema (2000) conducted a randomized, multi-site community-level HIV prevention trial undertaken with women living in 18 low-income housing developments in five US cities. Baseline and 12-month follow-up population risk characteristics were assessed by surveying 690 women at both time points. A community-level intervention was undertaken that included HIV risk reduction workshops and community HIV prevention events implemented by women who were popular opinion leaders among their peers. Results showed that the proportion of women in the intervention developments who had had any unprotected intercourse in the past two months declined from 50 percent to 38 percent, and the percentage of women's acts of intercourse protected by condoms increased from 30 percent to 47 percent. Among women exposed to intervention activities, the mean frequency of unprotected acts of intercourse in the previous two months tended to be lower at follow-up than at baseline. Sikkema concludes that this intervention was efficacious in reducing the risk of HIV infection among this population.

Peer Advocates for Health (PAH) is a community-based program in Chicago designed to increase reproductive health knowledge and improve lifestyle choices among African American adolescent males. Mosena (2004) examines program impact on knowledge, clinic utilization, communication, and condom use among participants. PAH provided training, support, and employment experience to 75 African American males from 15 Chicago high schools who, in turn, reached

4000 adolescents in their own communities, providing them with information and condoms. One-third reported never having had sex; only one had fathered a child.

After one year, the peer educators' knowledge, utilization of clinic services, and communication with partners and peers increased significantly. Condom use remained high, and condom self-efficacy increased. Mosenia concludes with the recommendation that, in order to impact behaviours and lifestyles of high-risk adolescents, programs must provide not only education but also long-term follow-up and support in the context of everyday lives.

Coyle (2006) evaluates All4You!, a theoretically-based curriculum designed to reduce sexual risk behaviours associated with HIV, STIs and unintended pregnancy among students in alternative schools. The study featured a randomized controlled trial involving 24 community day schools in Northern California. A cohort of 988 students was assessed four times during an 18-month period using a self-report questionnaire.

At the six-month follow-up, the intervention reduced the frequency of intercourse without a condom during the previous three months, the frequency of intercourse without a condom with steady partners, and the number of times students reported having intercourse in the previous three months. It also increased condom use at last intercourse. However, these behavioural effects proved no longer statistically significant at the 12- and 18-month follow-ups. The All4You! intervention was efficacious in reducing selected sexual risk behaviours among students in alternative school settings but the effects were modest and short term.

Peer Education Discussion

Latkin (2003), Sikkema (2000) and Ross (2006) all present findings that indicate that HIV/AIDS peer education prevention initiatives can produce substantial beneficial effects with regards to risk reduction and behaviour change within large segments of a target community. Latkin (2003), for example, argues that the performance of the pro-social role of peer outreach worker was intrinsically meaningful for the participants of his study, and that the attendant social recognition was in turn rewarding and motivating, further propelling the peers to engage in HIV advocacy and outreach. Some participants in his study reported that to be respected as peer educators they could not be 'hypocritical', which may have helped to sustain their own behavioural risk reduction.

In addition to its impact on target communities, peer outreach may thus be an important means of self and community empowerment.

Ross' findings (2006) consistently support the efficacy of the peer education program in significantly increasing knowledge and self-assessed skills over the nine months between baseline and follow-up in peer educators. College-educated peer educators were at an advantage for baseline score, but this difference disappeared after training, suggesting that an adequate training program can largely compensate for educational differences in peer education skills. In terms of diffusion of peer educators' knowledge outside the classroom and even outside the prison, the number of times peer educators reported being asked about HIV outside the classroom may be as many as 154,000, representing numerous teachable moments and opportunities to provide accurate information and to model positive attitudes toward safer behaviours. Moreover, more than three quarters of peer educators reported sending information or sharing information by phone with family and friends on the outside, suggesting the potential impact of peers in shifting social norms and averting infections within a community beyond their specific 'job' as peer educators. Ross further notes that via the process of participating in peer education, many peer educators in Project Wall Talk reported significant improvements in their self-esteem, and that many peer educators became paid employees of CBOs after their release from prison as a result of the skills developed in the peer education training process. Ross' findings suggest that basic and generic HIV-reduction interventions in a community do have an impact that is measurable up to a year beyond such interventions and that the 'broad fabric' of HIV interventions from a range of agencies and perspectives do, overall, produce changes in attitudes, beliefs and knowledge in the desired direction. He notes that since the great majority of HIV risk-reduction interventions in the community are unevaluated, analyses such as those presented in his study are needed to understand if the wide-ranging interventions may be atypical and indicate a 'publication bias' toward positive findings. He concludes that if that were the case, insignificant results in evaluating more naturalistic and probably more poorly controlled interventions across a community would be expected.

While Mosena (2004) notes that his research is limited due to small sample size and attrition (40 percent), his data suggests positive program impacts in the areas of knowledge gains and healthy lifestyle choices for the young African American men in his study. He argues that the participants reached a substantial number of their peers in an intentional effort to have an impact in their own

communities, despite a large majority of the participants continuing to report that 'their friends would respect them if they got someone pregnant'. He concludes that, based upon the first four years of the PAH program experience, the long-term potential for individual and community impacts is strong; and suggests that improving behaviour and lifestyle choices among high-risk young men requires programs to provide not only sexual health education, but also the long-term follow-up and support necessary to utilize this information in the context of everyday lives.

Conversely, Coyle's study (2006) produced limited findings. He offers the hypothesis, however, that if educator connectedness played a role, it is logical that the influence of the youth peer educators would wane over time with no further contact between the educators and students, especially given that many of the alternative schools students did not have interpersonal and institutional supports ordinarily available to their peers in more mainstream schools. Anecdotal data showed that a few students had expressed disappointment toward the end of the program suggesting the educators were like other adults in their lives 'who just come and go'. Further, he suggests that alternative school youth may also benefit from a more comprehensive type of intervention, addressing multiple risk behaviours, as their daily lives often reflect numerous risk factors.

Furthering the understanding of the complications affecting youth peer education, based on the concept that youth are going through a period of change and maturation in their cognitive abilities, identity formation, and social skills, Ott (2003) examined how youth peer educators understand and communicate HIV prevention messages. He found that similar beliefs about HIV transmission and risk reduction existed across groups; different, but strong, altruistic roles existed among staff and peer educators; differences in HIV risk perception existed across the three groups. In his study, attention to how preventions are delivered by youth and adults was as important as looking at the workshop content. Altruistic roles took two forms: staff acted as life-skills mentors; peer educators acted as HIV educators. Students were more passive, receiving counseling but not passing it on to others. Staff contextualized HIV risk, whereas peer educators and students emphasized risk. Although similar HIV knowledge across groups suggests program efficacy, Ott concludes that stronger altruistic roles or contextualization of HIV risk may affect how prevention messages are delivered. Ott argues that the content of a message, as measured by beliefs and knowledge about HIV, may be consistent, although factors affecting the delivery of message, such as role identity and perceptions of risk, may differ. He concludes that youth peer education may

present challenges to HIV prevention program planners. If a young peer educator has an incomplete understanding of the topic, different priorities from program staff, or a significantly different style of communication, the peer educator may deliver an altered or diluted risk reduction message (Ott, et al., 2003).

Additionally, while not listed in the previous section, several related studies arose during our review of the literature worth noting in this discussion. Taken together, these studies offer a significant example of the complications associated with the diffusion, generalizability and understanding of applying research. The first study examines the impact of popular opinion leaders on the sexual risk behaviour of gay men attending bars in small mid-Western cities in the US J. A. Kelly et al., 1992). [Again there were two citations here one with just a year] Following the intervention, the proportion of gay men who engaged in unprotected anal intercourse decreased by approximately one-third. The authors subsequently evaluated this approach in bars in other small US towns and found similar results (Kelly et al., 1997). Subsequent US trials yielded similar results in Oregon and California (Kegeles, et al, 1999; Kegeles, et al., 1996).

Conversely, two peer education program studies for gay men in the United Kingdom were conducted and determined to have vastly different results. These studies included two kinds of initiatives; first,) a peer-led HIV prevention initiative, based on a diffusion of innovation model, that was developed for gay men attending gyms in central London (Elford et al., 2002), and second, a bar-based, peer-led community-level intervention to promote sexual health among gay men in Glasgow (Flowers, et al., 2002). In contrast to the positive results found in the US studies, pre- and post-intervention surveys of gym and bar patrons in the UK projects did not show sexual risk behaviour change. The authors of the UK studies questioned the replication and transferability of peer-led, community-level sexual health promotion for gay men 'outwith [sic] the USA and across time', and called for necessity of process evaluations when attempting to research diffusion (Elford et al., 2002). The authors conclude the peer-based programs were not effective under the circumstances in which they were tested.

In 2004, Kelly responded to the published UK research, noting that these studies had overlooked a core component of the US studies, which involved the use of popular opinion leaders rather than peer educators, resulting in the discrepancy in research findings (Kelly, 2004).

While much debate within the scientific community has arisen concerning the effectiveness and application of these interventions targeting gay men, we note them here for two reasons; first to shed light on the complications in bridging the gap between research and community-level HIV prevention efforts, and second to articulate the prominence these studies and the surrounding debate have received within the literature.

Prevention & Awareness Campaigns Results

Our focus on large scale, broad-reaching media campaigns (utilizing multi-media messaging sources for wide audiences) that speak to the role of community within the campaign development, implementation, uptake and/or evaluation, produced one single article, which explored gay men's reactions to a New York City public health campaign concerning crystal meth use within the community (Nanin, 2006).

Beginning in 2004, three distinct crystal methamphetamine campaigns targeting gay men arose in New York City, one of which was developed privately by a local activist and the other two involving varying levels of community input, each encouraging gay and bisexual men to avoid or reconsider using crystal meth. Shortly thereafter, Nanin conducted a cross-sectional survey to assess the gay community's reactions to these pioneering campaigns. Surveys were delivered at two large-scale GLBT community events by individuals who had experience working within the gay community. Among an ethnically-diverse sample of 971 gay and bisexual men, 61.8 percent reported seeing the campaigns. Those who reported ever using crystal meth (83 percent vs. 65 percent), recent use (86 percent vs. 65 percent), and recent use with sex (86 percent vs. 66 percent) were significantly more likely to have seen the campaigns. In general, white men, HIV-negative men, and men not currently using crystal meth responded more positively to the campaigns than their counterparts; yet, more men of colour reported having discussions with partners and friends about their crystal use as a result of these campaigns.

Prevention & Awareness Campaigns Discussion

Two of Nanin's findings (2006) lend understanding to the important role of community within the development, implementation and uptake of prevention and awareness campaigns, namely that

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant (2009)

the campaign resonated more strongly with a very select segment of the gay community, and that the men who reported recent use of crystal meth with sex were more likely to report that the campaigns triggered urges to use, an unfortunate unintended result of the campaigns. He suggests that the campaigns may have been perceived by some gay and bisexual men as trying to instill fear of HIV infection or negative consequences of crystal meth use, hence running the risk of reinforcing these behaviours and encouraging denial. Nanin states that it may behoove creators of HIV and anti-crystal meth campaigns to link with the social networks of particular sectors of gay and bisexual men (e.g. gay and bisexual men of color) in order to create better health promotion messages based on community norms and to disseminate prevention messages more effectively. Nanin's findings suggest that, without substantive community-based involvement from outset to evaluation in order to respond to community complexities, large scale HIV prevention and awareness campaigns may result in limited effectiveness within the target population itself.

It is also important to note that, regardless of whether or not the media campaigns studied by Nanin produced the desired outcome, it appears that they did succeed in raising awareness about the use of crystal meth, getting the many members of New York's gay men's community talking about the issue and evoking some level of reaction. It could be argued that this effect alone provides a 'ground zero' foundation and openness in which communities may come together to develop and foster effective prevention strategies.

Harm Reduction Results

This study examines the effect of syringe exchange program (SEP) settings on the injection practices, health status, and health service utilization patterns of IDUs recruited from a public urban hospital in San Francisco (Masson et al., 2007). One hundred sixty-six participants were randomized to either community- or hospital-based syringe exchange services. In both conditions, risky drug use practices decreased, and physical health functioning improved over time.

Hospital-based SEP attendees had 83 percent more inpatient admissions and 22 percent more ambulatory care visits than those assigned to the community-based SEP condition. The researchers conclude that syringe exchange services that are integrated into public hospital settings may serve as a valuable strategy to engage hard to reach IDU populations in behavioural

interventions designed to reduce HIV risk transmission behaviours and increase access to, or engagement in, the use of secondary and tertiary preventive medical care.

Harm Reduction Discussion

In his study, Masson found that, over time and in both settings, participants' physical health functioning improved and their risky drug use decreased, suggesting that engagement or participation in SEPs may have been associated with reductions in risky drug use. He did not, however, find differences in the frequency of SEP use between settings and concludes that the hospital SEP was not less convenient than community SEPs.

Notably, hospital SEP attendees used inpatient and ambulatory care services more frequently than those assigned to the community-SEP service, indicating that this type of prevention intervention may be best located in clinic-based settings. He proposes that prevention interventions linked to needed medical and/or drug treatment services may increase the likelihood that needed psychosocial services are received. Providing primary care or speciality care at SEPs may address unmet medical care needs and provide opportunities to engage these individuals in longitudinal preventive care services. Masson suggests that the proximity of the hospital SEP to medical services may have reduced barriers to receiving needed care. Hence, he concludes that health service delivery models that increase accessibility to health care services through co-located services may reduce obstacles in the decision to seek care (Masson et al., 2007).

Secondary Prevention Results

Our review of the literature garnered two articles regarding secondary HIV prevention (i.e. prevention among people living with HIV/AIDS, or 'PWHAs'). One study (Kalichman et al., 2001), explores the outcomes of a group intervention aimed at reducing the risk of HIV transmission for PWHAs. Men (n=233) and women (n=99) living with HIV/AIDS were randomly assigned to receive either a five-session group intervention focused on strategies for practicing safer sexual behaviour, or a five-session, contact-matched, health-maintenance support group (standard-of-care comparison). Participants were followed for six months post-intervention.

The intervention to reduce risk of HIV transmission resulted in significantly less unprotected intercourse and greater condom use at follow-up. Transmission-risk behaviours with non-HIV-positive sexual partners and estimated HIV transmission rates over a one-year horizon were also significantly lower for the behavioural risk-reduction intervention group. This study is among the first to demonstrate successful HIV-transmission risk reduction resulting from a behavioural intervention tailored for HIV-positive men and women.

The second study examined the efficacy of prevention case management (PCM) strategies (Gasiorowicz et al., 2005) designed to assist PWHAs in reducing their risk of further transmitting the virus. This study built on the CDC demonstration project (vs. control trial), Prevention With HIV-Infected Persons Project (PHIPP). The PCM intervention combined individual risk reduction counseling with case management to address the psychosocial factors affecting HIV transmission. More than 350 HIV-positive clients participated in PCM in Wisconsin between 2000 and 2003, and 109 clients completed both baseline and follow-up risk assessments.

The percentage of clients reporting risk transmission behaviours, specifically unprotected vaginal intercourse, insertive anal intercourse, or needle sharing with partners of negative or unknown HIV status, declined from 41 percent at baseline to 30 percent at follow-up. Furthermore, clients showed progression through stages of change on seven domains related to HIV transmission risk, including personalizing risk of HIV transmission and sexual risk behaviour.

Secondary Prevention Discussion

In his study, Kalichman (2001) tests an intervention that was delivered by community-based paraprofessionals and mental health counsellors in the context of a community-based service agency that could implement the intervention as a community program. Recognizing the potentially significant and ongoing role that CBOs may play in the lives of PWHAs, he concludes that behavioural interventions should be integrated into PWHA care systems, particularly within HIV/AIDS service organizations (e.g. integrating cognitive and behavioural skills-building interventions into existing and established case management and support groups services).

Gasiorowicz's study (2005) breaks through our traditional understanding and use of HIV prevention interventions and merges 'prevention' with 'support' through his 'prevention case management'

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

model, with encouraging results specific to this population. Changes from the second to the third risk assessment did not show sustained reductions in risk; he maintains, however, that this is consistent with the ‘transtheoretical model’ (Prochaska & DiClemente, 1992), which acknowledges that behaviour change is not a linear process, rather it often involves numerous stages, including relapse. As such, he recommends that long-term results could likely be improved with systematic use of booster sessions that reinforce standard prevention messages and address HIV-positive clients’ most salient individual needs (Gasiorowicz et al., 2005).

Taken together, these studies demonstrate the potential role and impact CBOs can play in working with their clients/members to prevent the further transmission of HIV. Moreover, they draw on the existing client-base, as well as the potential trust and support-based expertise that may already and immediately be available within the CBO environment.

Parallel & Collateral Benefits

A number of studies within our review identified significant outcomes and ‘added benefits’ (e.g. individual participant empowerment and self-efficacy, strengthened communities and CBO capacity building), with regards to findings of specific projects. Some of these parallel and collateral benefits are explored in the studies below.

Individual Self-Efficacy, Self-Esteem & Empowerment

In 2005, Hampton conducted a process evaluation of the Youth Educating About Health (YEAH) program, a sexual health intervention that was directly designed and led by youth in the province of Saskatchewan. For the first stage of the evaluation, Hampton delineated a logic model of the YEAH program outlining components that made it distinct from adult-designed programs.

Five common elements of ‘positive empowerment potential’ were identified in the YEAH program: 1) the program included adult mentors who gave positive reinforcement; 2) the program offered peer approval through use of peer group work; 3) the nature of the experience involved meaningful activities, skill development and active participation; 4) youth were recognized by the community for their work; and 5) the program ensured time for the youth to critically reflect upon their experiences (Hampton, et al., 2005).

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US
Jones & Sargeant (2009)

Based on the premise that most HIV behavioural interventions provide participants with preventive information emphasizing how not to behave, and have neglected to provide attractive and feasible alternatives to risky behaviour, Dickson-Gomez (2004) examines interventions that emphasized cultural strengths. These strengths were explored to assess their effects in removing the stigma of HIV within African American communities. Beginning in 1997, the Self-Help in Eliminating Life-Threatening Diseases (SHIELD) intervention trained injection drug users (n=250) to conduct risk reduction outreach education among their peers.

Many participants saw their outreach as 'work', which gave them a sense of meaning and purpose and motivated them to make other positive changes in their lives. The work-like aspects of outreach (e.g. self-directed, flexible and meaningful) contrasted with the participants' limited work experiences as temporary labourers or in the service industry. Their experiences as drug users provided them with credibility and respect, and many participants were provided with an opportunity to repair their identities damaged by drug use, criminal activities and failure at more widely accepted social roles such as parent or employee. In effect, outreach allowed the participants to serve their own community, allowing them to feel some sense of control over their lives and communities. A number of participants continued to conduct health information outreach with their peers and strangers in public places well after their training ended.

Similar to the findings of Dickson-Gomez, Weeks (2006) examines the Risk Avoidance Partnership (RAP) project, designed to train active drug users as peer/public health advocates bringing a structured, peer-led intervention into the sites where they and their drug-using social networks use illicit drugs. The RAP peer health advocacy training curriculum and peer-led intervention promoted harm reduction among drug users and supported an IDU organization to reduce infectious disease and other harm in the context of injection drug use, crack cocaine use, and sexual activity.

Initial findings suggested that the RAP public health advocates perceived a significant positive role change in themselves while conducting health advocacy work. Many took seriously their responsibilities as peer health advocates promoting harm reduction practices among active drug users, and willingly and successfully carried the peer-led intervention into locations of high-risk drug activity to deliver it to their peers even in the absence of project staff support. As peer health advocates increased their willingness and efforts to engage in active public health work, and as their self-image and sense of self-worth in conducting this activity concurrently improved, their interest in making this role into real employment also increased. The study of the RAP project

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant (2009)

found that of greatest significance to participants, however, was the sense of self-worth derived from making a positive contribution to their communities despite their ongoing struggles with addiction and poverty.

Looking at sexual risk behaviour among gay and bisexual men, Ramirez-Valles (2002) notes that community involvement (e.g. volunteering) with CBOs also has 'protective effects' in the promotion of safer behaviours. Such involvement works in and of itself as a prevention strategy as individuals learn by doing while creating social change. Through volunteering, peers become educated about the risks and prevention measures for HIV/AIDS, develop a sense of community and a positive self-identity in spite of the stigma associated with being gay men in the time of HIV/AIDS, and mobilize their social networks to address the epidemic. Volunteering, therefore, has important public health implications and the author suggests further research into this area.

Individual Economic Enhancement

The JEWEL pilot study examined the efficacy of an economic empowerment and HIV prevention intervention targeting illicit drug-using women (n=50) who were involved in the sex trade in the US city of Baltimore (Sherman, et al., 2006). The intervention was comprised of six two-hour sessions that taught HIV prevention risk reduction and the making, marketing and selling of jewelry. Behaviour change was measured pre- and three months post-intervention.

The intervention's effect on the change in the number of sex trade partners from baseline to follow-up was explored with multiple linear regressions. Participants were 62 percent African American, 5 percent were employed, and the median age was 39 years. Women attended an average of six sessions, and sold over \$7,000 worth of jewelry in eleven sales. In comparing self-reported risk behaviours pre and three-month post intervention, Sherman found significant reductions in the following areas: receiving drugs or money for sex (100 percent vs. 71 percent); the median number of sex trade partners per month (nine versus. three); daily drug use (76 percent vs. 55 percent); the amount of money spent on drugs daily (US\$52.57 vs. US\$46.71); and daily crack cocaine use (27 percent versus 13 percent). In the presence of other variables, income from the jewelry sales was associated with a reduction in the number of sex trade partners at follow-up. One explanation for these reductions is the combined effects of women learning HIV risk reduction skills as well as the positive reinforcement and enhanced belief in their ability to generate licit employment. While

results from the current study suggest that women's exposure to the possibility of gaining licit employment may be related to risk behaviour change, behaviour change sustainability is most likely to succeed if women have access to job training programs and licit employment opportunities. The pilot demonstrates the efficacy of a novel, HIV prevention, economic enhancement intervention based upon HIV sexual risk behaviours and drug utilization patterns.

Partnership Development & CBO Capacity-Building

One US study describes Proyecto SOLAAR, a community-based and culturally-sensitive HIV prevention program for gay and bisexual Latino men (Conner et al., 2005). This program provided an experiential, daylong retreat which focused on personal aspects of the men, ideas about and aspects of their relationship behaviour. The authors studied how the community-based partners built new capacity in the area of social marketing to address the challenge of participant recruitment, and how the collaborative partnership between the HIV service providers and the researchers played a role in the understanding and addressing the recruitment problem, identifying potential solutions and implementing the new social marketing strategy. The authors conclude by advocating for the benefits of the capacity-building experience and of the antecedent conditions that fostered the positive partnership outcomes.

Creation of Strong & Supportive Communities

Friedman (2004) explores the efficacy of 'intravention' prevention activities conducted by and sustained through ongoing actions of members of communities-at-risk as an appropriate goal for HIV intervention activities. Data was drawn from 120 injection drug users in a Brooklyn, New York City neighbourhood with a high population of Latino and African American residents which has seen a decrease in HIV prevalence among IDUs. Little HIV diffusion to young adults within this neighbourhood supported the data results which indicated that most of the IDU participants had actively urged other persons to take actions to protect themselves against the transmission of blood-borne infections or STIs, and that a majority of them had urged others to avoid or stop using drugs.

Eighteen percent of the study sample had also acted as volunteers or organizers at community-based events and/or took part in community events. This data suggests that the common image of IDUs as simply being sources of social and medical problems is inaccurate, and the community

exemplified a self-reinforcing and sustained culture of risk reduction, or 'communities of intravention' - the opposite of a 'culture of risk'. Friedman suggests that behavioural interventions be evaluated for their success or failure at creating outward-focused health communication by participants as well as for their impact on individual risk behaviours.

In 2006, Gilley explored the resistance to discussions of sexuality and the distribution of condoms among Native American Indians in Alaska. This resistance is inspired by long held values about shame and public discussions of sexuality. Also, American Indians have been reluctant to welcome public discussions of HIV/AIDS and sexuality from external entities, such as governmental agencies. As a result, Native peoples have some of the lowest documented condom use rates. However, innovations in culturally integrating condoms and safe sex messages into Native cultural ideals are proving beneficial. One such innovation is the Snag Bag, which incorporates popular Native sexual ideology while working within local ideals of shame to distribute condoms and safe sex materials to sexually active young people and adults. Using snag bags as an example, this research suggests that an effective approach to HIV prevention among Native peoples is not cultural sensitivity but cultural integration. Gilley argues that HIV prevention strategies must move beyond the empty promise of merely culturally-sensitizing ideas about disease cause, and that instead of simply 'translating' HIV/AIDS programming into Native culture, they must be integrated by Native peoples into their own disease theories and contemporary culture (Gilley, 2006).

The Economic Case for Prevention

Preventing the transmission of HIV not only saves lives and alleviates suffering, but also potentially mitigates the immense economic and social costs inherent in each new infection. Hence, beyond the ethical and moral considerations, clear economic justifications exist for increasing investment in combating the epidemic and shoring up prevention efforts. HIV prevention interventions can be both cost-saving (the medical and other costs averted by a prevention program outweigh the cost of service-delivery: a high standard) as well as cost-effective (where the prevention program does not actually save public money but the cost-per-quality-adjust-life-year saved is considered reasonable relative to other readily accepted medical and public health interventions: a lower standard).

It is difficult to precisely determine how many infections the funding of any given prevention program or initiative (be it at a CBO or other service context) has averted because the causal chain between funding the intervention and changes in HIV incidence is too long. While an exact measure of the cost-savings or cost-effectiveness of the effort is not possible, researchers have made use of economic evaluation threshold analysis to set performance standards for prevention programming, and then worked to determine whether or not the program's effectiveness is above or below that threshold (Holtgrave, 2007).

The Evidence from the US

Extensive research has been conducted in the US into the economic case for HIV prevention, with cost-savings or cost-effectiveness identified as a national goal as well as a key consideration for the CDC in funding allocations (Institute of Medicine, 2001). Indeed, the CDC explicitly instructs HIV prevention community planners to consider the cost-effectiveness of different interventions when

ranking them for possible implementation (Pinkerton, et al., 2002) and prevention efforts overall are held to high standards regarding both their efficacy/effectiveness and return on investment.

The US National Investment in Prevention

The cost-savings or cost-effectiveness of HIV prevention as whole within the US has been explored on a macro-level. Since 1990, the annual HIV incidence rate has held steady at 40,000 new infections per year. As of 2007, the net present cost of HIV treatment over a lifetime in the US is estimated to be \$239,253 (Schackman, et al., 2006).

In Fiscal Year (FY) 2007, the CDC's total HIV prevention budget was approximately \$700 million. Allowing for inflation, budget restructuring and nominal dollar cuts, it has been determined that the purchasing power of the CDC's prevention budget is the equivalent of the purchasing power for FY 1993. Using an economic threshold evaluation analysis, researchers have, for instance, called for a current investment of \$1.321 billion in prevention, noting that this expenditure would be cost-saving to the US as a society if it could avert only 22,094 of the expected 160,000 new HIV infections over the next four years. They argue that analysis of the costs of unmet needs should determine the total health care budget to provide necessary, evidence-based prevention services to all those in need (Holtgrave, 2007).

Cost-Savings and Cost-Effectiveness of Specific Interventions in the US

Numerous evaluations of specific interventions to determine whether the economic benefits resulting from changes in risk behaviour (or other variables) equal or outweigh the costs of designing and implementing the intervention have also been conducted.

Two meta-analyses documented persuasive evidence of the cost-effectiveness of interventions, particularly small-group, community-level and outreach-based activities with moderate- to high-risk populations (McKay, 2000; Pinkerton et al., 2002). A number of randomized control trials have been conducted looking at the cost-effectiveness of behaviour interventions with IDUs (both HIV+ and uninfected), regarding needle-sharing and sexual behaviours (Strathdee et al., 2005), and one study examining the cost-effectiveness of a school-based HIV prevention program was also

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

obtained via this review (Wang et al., 2000). Overall, many types of HIV prevention interventions have been subjected to cost-effectiveness analyses and found to be either cost-saving or cost-effective relative to other interventions in public health and medicine (Holtgrave & Curran, 2006). These studies, however, relate to research conducted within the context of an intervention trial as opposed to examining interventions developed or implemented by CBOs, representing a significant gap in the economic evaluation literature and suggesting the need for further research in this area.

The Canadian Investment

Between FY 1993 and FY 2003, the Government of Canada invested \$42.2 million annually in the *Canadian Strategy on HIV/AIDS* (CSHA). By FY 2003, it was estimated that inflation had reduced the real annual value of the investment to less than \$34 million (Martin Spigelman Research Associates, 2003). When the CSHA was being reviewed, the Ministerial Council on HIV/AIDS, the Parliamentary Standing Committee on Health, a variety of experts and a host of community organizations all suggested that a static \$42.2 million investment would be both inadequate and inappropriate. It was further suggested that an investment of \$85 million annually would significantly strengthen Canada's response to the epidemic, representing the equivalent of what was invested in 1990 adjusting for inflation and prevalence. In 2004 the Government of Canada announced that annual federal HIV/AIDS funding would reach \$84.4 million by FY 2008-2009 through the *Federal Initiative*.

Applying the economic evaluation technique of threshold analysis, in 2003, it was estimated that the direct lifetime medical care and treatment costs were \$150,000 to \$160,000 per person. Indirect social costs relating to a loss of productivity and premature death were estimated to be as high as \$600,000 per person (Martin Spigelman Research Associates, 2003). Using these 2003 figures (a conservative approach given inflation), the current committed investment of \$84.4 million need only prevent 563 new infections per year in order to avoid the equivalent amount in long-term costs associated with medical care (\$150,000 @ 563 new infections). Taking into account the combined figure for medical costs and loss of productivity, only 141 new infections need be averted each year (\$600,000 @ 141). Averting a total of 563 infections and 141 infections respectively, would represent averting only 17 percent and 4 percent of the new infections estimated for 2005.

Research Recommendations

The Need for Research

Notwithstanding a cursory review of thousands of articles that fell within the search parameters of this literature review, only 20 described research that could be considered and analyzed as a part of this review. Of these, 18 were US-based studies, one was UK-based and one was Canadian-based. This paucity in relevant and geographically diverse data is striking when viewed in light of the *Federal Initiative's* eight vulnerable populations. Despite our specific efforts to identify a cross-section of population-specific results, no peer-reviewed, experimental and/or quasi-experimental research was identified among Aboriginal/First Nations populations, among rural populations, or among people who have emigrated from countries where HIV is endemic. Similarly, while a few studies focusing on youth populations were obtained (Coyle et al., 2006; DiClemente et al., 2004) within larger CBOs and one process evaluation of a 'youth-driven' project (Hampton et al., 2005), there were no applicable studies on any youth-driven CBOs and/or projects in and of themselves.

This gap in research on CBO prevention interventions is well-documented within the literature. A sample of articles articulating the need for rigorous, comprehensive, culturally- and community-integrative research regarding HIV prevention are outlined below.

(Beatty, et al., 2004) African Americans experience HIV and AIDS at a rate 10 times greater than the US White American population. Although there have been advances in HIV risk-reduction strategies overall, these efforts have not been as successful in decreasing HIV infection in the African American population. This article reviews the research base of HIV prevention interventions to identify research that will lead to the development of more effective prevention strategies for African Americans. Major limitations found in the research include the exclusion of African Americans in studies, particularly those at higher risk, and the lack of using culturally based theory to guide research. Recommendations include conducting research that focuses on structural interventions rather than individuals, controlling for diversity within the African American population,

defining culture when using it in research, and developing a cadre of African American researchers involved in prevention intervention studies.

(Duran & Walters, 2004) Many tribal and urban American Indians and Alaska Native communities have initiated HIV/AIDS prevention and treatment services. The richness, depth, and scope of these efforts, however, are not well known and have not been sufficiently documented in the academic literature. In this article, the authors assess the strengths and weakness of the published literature using the constructs of the socio-ecological framework, discuss the need to apply an 'indigenist' etiology paradigm to HIV/AIDS risk and protection, and define and discusses varied postcolonial approaches to HIV/AIDS prevention, treatment, and healing. The authors propose approaching the problem from 'both ends' of the spectrum - gathering efficacy data on some 'culturally supported interventions' while also testing the efficacy of interventions found effective for non-Native populations in native communities, maintaining that this approach considers community norms, power relations and resistance, cultural beliefs, racial and ethnic identities, and social institutional policies as important targets for change.

(Glik, et al., 2002) This article documents how an entertainment-education approach is used to educate and influence young people about HIV/AIDS, STIs and other health issues in the US. A review of the literature was followed by a two-phase descriptive study of American youth performing arts entertainment-education programs. Nine domains that define the effectiveness of youth HIV prevention entertainment-education interventions were identified and described, including those related to performances, intervention management and audiences. Given the importance of evaluation to the success and effectiveness of intervention programs, these domains were used to construct a framework for entertainment-education research and evaluation efforts, which was a clear weakness in most of the programs studied. The authors argue that this intervention provides a format that maintains the personal nature of interpersonal communication, yet reaches more people in a more timely and consistent manner. Further, he concludes that live audiences are usually more emotionally attuned to the performers, and that messages couched in the language and experience of youth may be more effective than generalized messages delivered via through mass media.

(Majumdar, et al., 2004) The need for more research on HIV and AIDS prevention among Aboriginals, and especially Aboriginal youth, is highlighted throughout the article as a means to improving interventions for this vulnerable population. Insights gained from a culturally-sensitive, *Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US*

HIV/AIDS educational program that targeted a group of Aboriginal adolescents from a local First Nations community in Ontario are discussed, and implications for future HIV/AIDS peer-based prevention efforts using the train-the-trainer technique are considered. The authors conclude that the successful implementation of an HIV/AIDS outreach intervention depends on several factors, including the collaborative efforts of the researcher, the prevention service providers, and the target population, and utilizing local and tribally relevant forms of delivering the message.

(VanOss et al., 2002) The Collaborative HIV Prevention Research in Minority Communities Program was developed to address the simultaneous overrepresentation of communities of colour among those with HIV and under-representation of researchers of colour within the US . The program was designed to help scientists develop their programs of research and obtain significant research funding. The 27-month program has the following elements: small grant funding, a structured summer program, individualized long-term research collaboration, access to behavioural science expertise, and internal peer review of all products. At the time of writing, the 19 program participants, eight of whom had not completed the program, had received almost \$11,000,000 in research funding and had conducted culturally-specific research with communities of colour. In addition, a network of HIV prevention investigators of colour had been created. The authors suggest that developing and supporting researchers of colour and high quality research in communities of colour is one promising avenue for eliminating racial and ethnic health disparities surrounding HIV and other diseases.

Areas for CBO Capacity-Building & Future Research

Based on the challenges of garnering ‘evidence’ on the impact of CBOs on HIV prevention, a number of recommendations have arisen from our review, particularly with regards to filling the ‘gaps’ in meaningfully and effectively involving community in scientific research. Building on the challenges, ideas, strategies and needs articulated by many of the researchers we encountered in our review, we offer the following research recommendations:

1. **Resources need to be devoted to documenting and researching interventions developed at the grass-roots level by organizations intimately involved with the communities they serve.** PHAC and other public health bodies should explore how they can foster knowledge transfer and exchange (KTE) between HIV prevention researchers

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant

and CBOs that are the major providers of HIV prevention programming. Community involvement is a key aspect of any successful integrated approach. CBOs in Canada have created many of their interventions ‘organically’, from their own front-line experiences and unique local circumstances. These interventions are often developed intuitively, in response to tremendous need and an epidemic growing in numbers and complexity. Although many of these interventions may have never been formally evaluated, they may hold great potential, especially if they serve high-risk populations (Eke et al., 2006; Lyles et al., 2006).

2. **Resources need to be allocated towards building the capacity of CBOs to research their locally-developed interventions, ultimately advancing to a randomized controlled trial in the event that early monitoring and evaluation detect positive outcomes.** This would work to further the goal of KTE through existing mechanisms such as the Canadian Institutes of Health Research (CIHR), and in particular, the CIHR Community-Based Research (CBR) Program. The concept of knowledge exchange (as opposed to transfer) recognizes the value that CBOs bring to the process and the mutual benefits associated with translating research into practice, and is important to the work of CBO staff, consumers/clients/members including persons living with HIV, researchers and public health personnel. In the face of the ever-changing epidemic and vulnerable populations, it is critical that community-based efforts be studied to better inform both HIV prevention research and practice (Eke et al., 2006).
3. **The integration of community input and involvement into the development of HIV prevention research is required from beginning to end.** Key stakeholders need to be engaged in a participatory process with involvement at all levels of research: evaluation planning, implementation, dissemination and diffusion. This is necessary to ensure that prevention interventions that are researched, developed and disseminated are relevant to CBOs as well as feasible for them to implement (Eke, et al., 2006; Gilliam et al., 2002).
4. **Specific strategies to support vulnerable populations in the development of their own prevention research need to be augmented.** While there have been a number of recent successes in this area (e.g. the BC HIV/AIDS Community-Based Research Capacity-Building Program, the Cedar Project (Spittal et al., 2007)), this recommendation remains especially salient for Aboriginal/First Nations populations, rural populations, populations

from countries where HIV is endemic, youth and PWHAs. These strategies must define, integrate and respond to culturally-specific ways of gathering and sharing information (Beatty et al., 2004; Duran & Walters, 2004; Gordon et al., 2005), and comprehensive plans for capacity-sharing and collaboration between researchers need to be well-thought out and implemented from the outset (Majumdar et al., 2004).

5. **The need for HIV/AIDS research must to be balanced against the need for responsiveness.** The epidemic is rapidly changing and growing increasingly complex. Prevention interventions need to be responsive to changes in the epidemic in order to be relevant and effective. The effects of restricting the flexibility and responsiveness of scientific research are exemplified by the work done by the US CDC, which while laudable, has distinct limitations. As previously noted, only 9 percent of the intervention evaluation reports housed in the CDC database target MSM (Collins et al., 2007), the population most affected by HIV/AIDS in the US and with the highest incidence rates. Accordingly, some of the highest-risk populations most in need of effective prevention tools (MSM of colour, substance-using MSM) are not the focus of the intervention packages or training available through the REP Project or the DEBI Project (Lyles et al., 2006).
6. **CBOs in Canada need to be sufficiently supported in adopting and adapting existing evidence-based HIV prevention interventions and moving them onto the ‘front lines’.** This entails a capacity building process that goes beyond the mere dissemination of information (Gandelman, et al., 2006; Peterson & Randall, 2006). Those prevention interventions need to be sufficiently robust in that they not only meet the ‘efficacy’ (scientific) criteria, but also meet the ‘effective’ criteria – able to produce positive outcomes under varied, complex, unpredictable and sometimes resource-poor conditions (Collins, et al., 2006).
7. **Adequate resources are required to assess the long-term effectiveness of community-based HIV prevention interventions.** Few studies use follow-up periods of six months or more after the intervention, making a determination regarding the long-term impact challenging (Mize, et al., 2002). Additionally, a commitment to behaviour change is often a multi-stage, multi-year process, including periods of ‘relapse’ (Prochaska & DiClemente, 1992). One- and two-year funding terms for many community-based projects makes it virtually impossible to assess whether or not an intervention is successful. Resources are

needed to allow CBOs the time to implement their initiatives, engage their communities and evaluate their results.

8. **HIV prevention science must be comprehensive and multidisciplinary, incorporating a range of biomedical, behavioural and social science interventions.** This reflects the reality that HIV/AIDS is a complex biological, behavioural and social phenomenon (Auerbach & Coates, 2000).
9. **A 'combination' or 'both ends' approach to HIV/AIDS prevention research is required.** 'Best practices' and 'most effective' interventions must be applied in combination, and must be linked to other efforts to address the macro-social conditions that contribute to disparate vulnerability to HIV (Auerbach & Coates, 2000), or, in other words, the social determinants of health. A balance between 'culturally-supported interventions' and 'evidence-based', efficacious interventions is also recommended, especially with respect to Aboriginal/First Nations populations in Canada (Duran & Walters, 2004).
10. **Further research is required on integrated care models for HIV primary and secondary prevention.** HIV prevention needs to become increasingly imbedded in the context of other services such as housing, drug and alcohol treatment, mental health, employment, and counseling for issues related to 'coming out', etc. (Kelly & Kalichman, 2002). This is especially true given that HIV is an epidemic that impacts the most vulnerable or marginalized in Canadian society.

Summary & Conclusions

The Importance of CBOs in the HIV/AIDS Epidemic

Of the 20 articles reviewed, all but two (Coyle et al., 2006; Masson et al., 2007) present evidence that community-based HIV prevention initiatives can affect increased rates of testing and healthy behaviour changes among high-risk populations. These results alone, however, do not do not adequately articulate the distinct role that CBOs play in delivering HIV prevention interventions. Much of the literature we read described the cost-effective/cost-savings, meaningful and very 'real' benefits of CBOs within the interventions examined and upon the communities they serve. CBOs offer a unique advantage in the areas of responsiveness, flexibility, trust and creativity, resulting in behaviour change that is characterized by individual and collective self-efficacy, self-esteem, empowerment and the creation and augmentation of strong and supportive local communities.

Researchers in the field acknowledge that without the prevention activities of community-based organizations, the HIV/AIDS epidemic could well be greater (Ramirez-Valles, 2002). For example, grassroots activism and the work of CBOs is credited with the equivalent of 'a public health milestone of global importance' in Australia, namely a significant decline in HIV incidence that occurred in the mid-1980s and continued for 20 years (Plummer & Irwin, 2006). Utilizing robust back-projection data, researchers examining the evolution of the epidemic noted that the greatest decline in HIV incidence preceded any significant government or research initiatives. The study indicates that in Australia, the non-government sector/CBOs had the capacity to bring about dramatic reductions in incidence in the absence of extensive research and formal national and regional strategies (e.g. through peer outreach programs for MSM, sex workers, etc.). The researchers, therefore, call for an increased recognition of the importance of proactive 'grassroots' behaviour changes in HIV prevention (Plummer & Irwin, 2006). The value of community-level action in Australia has been recognized by other researchers, along with that country's historic commitment on all levels to harm reduction initiatives, most notably needle exchange and needle provision (Lenton, 2005).

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant

In Canada, community involvement has played a key role in the fight against HIV/AIDS since the beginning of the epidemic, propelling change on both an individual and societal level. Volunteers and activists, many of them persons living with HIV, led the first grassroots care, education and prevention activities and created CBOs to assist some of the most affected populations.

Grassroots organizations continue in many cases to be the primary providers of HIV-related prevention services as well as non-medical care.

CBOs have the advantage of being able to be flexible, timely, inventive and innovative in response to emerging need, including taking on provocative issues and bringing the lived experiences of PWHAs 'to the table'. CBOs make vital contributions to the discourse surrounding politically sensitive issues or interventions in all areas of the prevention, care, treatment and support continuum (e.g. global and domestic access to essential HIV medications, the development of a nationally coordinated HIV/AIDS strategy, needle exchange/supervised injection sites) and call attention to the prevention needs of some of the most marginalized people in Canadian society. CBOs are often staffed by community members, peers, and PWHAs, lending a sense of credibility and understanding of the communities that they serve. CBOs can and do play a vital role in changing HIV risk behaviours, increasing HIV testing rates and reducing HIV transmission.

Authors' Comments

Anecdotally, it would be easy for these two authors to draw on examples from our collective 27 years in the HIV/AIDS movement and to speak to the necessity of community-based work within Canada's response. Retrospectively and somewhat ironically, it may have proven an easier task to bring together and interview a substantive sample size of staff, volunteers, funders and members of CBOs from across this country to narrate the importance of CBOs within their lives and within this movement. Instead, we combed a large body of material only to find that very little literature exists documenting the impact of CBOs on HIV prevention efforts in Canada and globally.

In essence, CBOs mark the 'hidden population' within rigorous scientific research and 'evidence-based' discussions regarding HIV prevention. The *Federal Initiative's* interest in the use of evidence to inform programs and policies and its call for a strong community-based and non-governmental response to the epidemic are underscored by a strong onus on federal leadership: the federal government via the arm of the Public Health Agency of Canada needs to bring CBOs back into the *Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US*

discussion on research and evidence by allocating resources to bolster the capacity of CBOs to effectively document, evaluate and build upon their existing HIV prevention efforts. The potential rewards of such a re-engagement? Nothing less than a vital piece in the creation and implementation of policies and programs that improve the 'health status of persons living with or vulnerable to HIV', and that reduce the 'social and economic costs of HIV/AIDS to Canadians' (Long-term Outcomes, *ACAP Logic Model*).

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Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

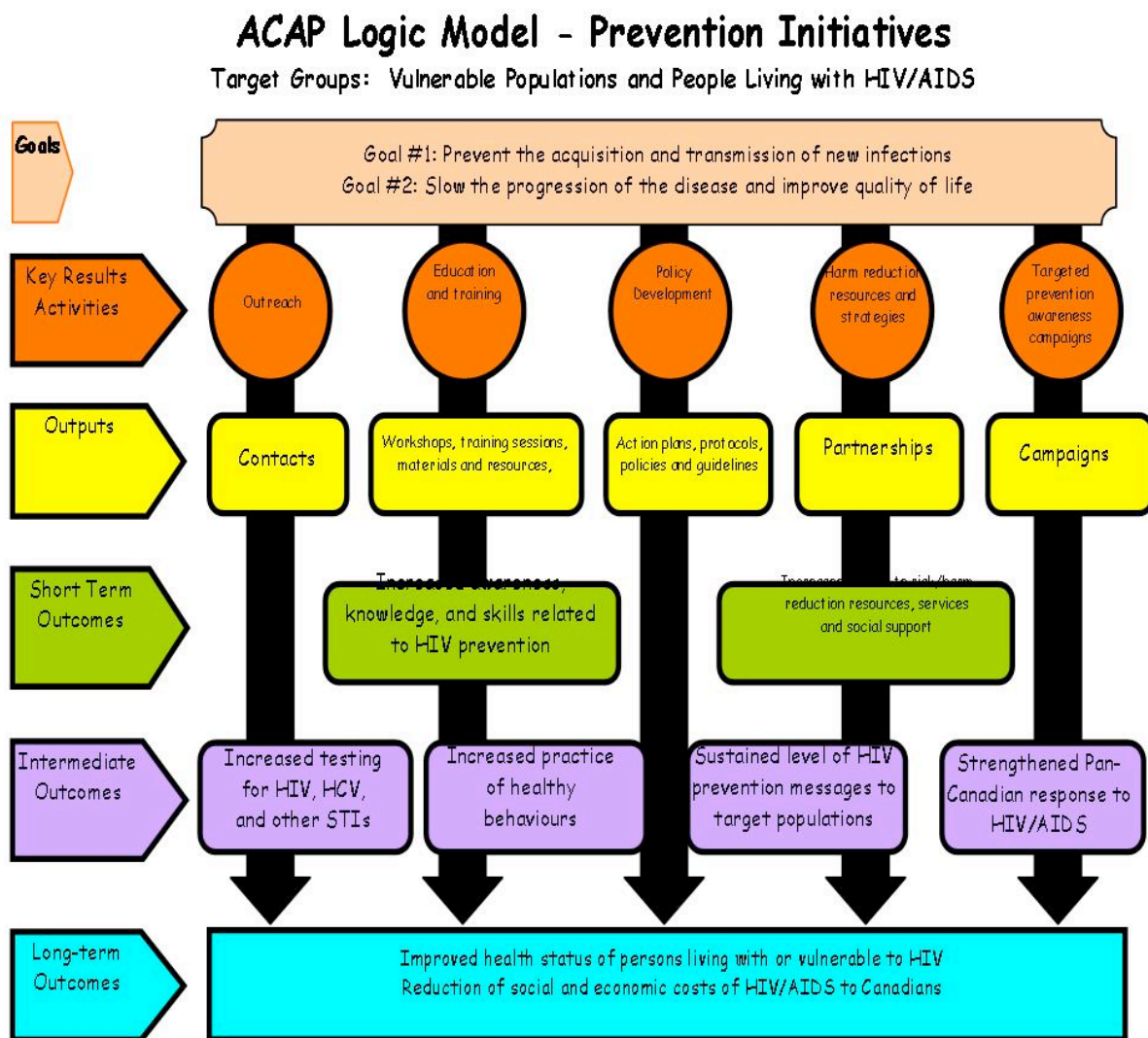
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Appendix A: ACAP Logic Model – Prevention Initiatives



Appendix B: Search Descriptors

Primary Descriptors:

Variable	Search Descriptor
HIV/AIDS Prevention	HIV AND/OR AIDS PREVENT* OR INTERVENT*
Outreach	OUTREACH
Education & Training	EDUCAT* TRAIN* WORKSHOP OR SESSION* INFORM*
Harm Reduction	HARM AND REDUC*
Policy Development	POLIC* GOVERN*
Targeted Prevention Campaigns	TARGET* AND PREVENT* AND CAMPAIGN* SOCIAL AND MARKET* PUBLIC AND AWARE* MEDI*
Gay Men	GAY AND (MEN OR MAN) MSM OR (MEN AND SEX*) QUEER* LGBT
Women	WOM* YOUNG AND WOM* GIRL* FEMALE*

Variable	Search Descriptor
Youth	YOUTH* YOUNG AND (PERSON* OR PEOPLE*) YOUNG AND ADULT* ADOLESCENCE* TEEN*
Aboriginal/First Nations	ABORIG* FIRST AND NATION* INDIGIN* NATIVE METIS INUIT PERSON* OR PEOPLE* OR INDIVIDUAL* OR POPULATION*
IDU	IDU OR (INTRAVENEOUS AND DRUG AND USE*) PERSON* OR PEOPLE* OR INDIVIDUAL* OR POPULATION*
Incarcerated Individuals	INCARCERATE* PRISON* PERSON* OR PEOPLE* OR INDIVIDUAL* OR POPULATION*
Individuals from Countries where HIV is Endemic	ENDEM* AND COUNTR* IMMIGRANT* PERSON* OR PEOPLE* OR INDIVIDUAL* OR POPULATION*
Individuals from Rural Populations	RURAL OR ISOLATE* OR (HARD AND REACH) COMMUNIT* SMALL AND (TOWN* OR CIT*) PERSON* OR PEOPLE* OR INDIVIDUAL* OR POPULATION*

Secondary Descriptors:

Variable	Search Descriptor
Community-Based Prevention	PREVEN* INTERVEN* COMMUNIT* OR (COMMUNIT* AND BASE*)
Evidence	EVID* OR (BEST AND PRACTICE*) OR (EVI* AND BASE*) (QUANTITAT* OR QUALITAT*) AND RESEARCH EFFECTIV* EPI* OR (EPI* AND DATA) INCIDEN* OR (INCIDEN* AND RATE*) INFECT* OR (INFECT* AND RATE*)
Commonwealth Countries	CANAD* NEW AND ZEALAND AUSTRALIA* ENG* OR BRIT* OR UK OR (UNITED AND KINGDOM)
Other	HEALTH AND (PROMOT* OR POPULATION*) RISK* AND (BEHAVIOR* OR BEHAVIOUR*) STIGMA* OR DISCRIM* TEST* OR SERO-STATUS OR (SERO AND STATUS) EDUCAT* AND/OR KNOWLEDGE*

Appendix C: HIV/AIDS Prevention Meta-Analyses & Notable Work

Albarracín et al., 2005) This meta-analysis tests the major theoretical assumptions about behaviour change by examining the outcomes and mediating mechanisms of different preventive strategies in a sample of 354 HIV-prevention interventions and 99 control groups, spanning the past 17 years. There were two main conclusions from this review. First, the most effective interventions were those that contained attitudinal arguments, educational information, behavioural skills arguments, and behavioural skills training, whereas the least effective ones were those that attempted to induce fear of HIV. Second, the impact of the interventions and the different strategies behind them was contingent on the gender, age, ethnicity, risk group, and past condom use of the target audience in ways that illuminate the direction of future preventive efforts.

(Centers for Disease Control and Prevention) The US CDC HIV/AIDS Prevention Research Synthesis Project (PRS) maintains a catalogue of evidence-based interventions on their website. As of November 2007, the PRS has catalogued 31 ‘Best-Evidence Interventions’ and 18 ‘Promising-Evidence Interventions’.

(Copenhaver et al., 2006) The researchers conduct a meta-analysis of randomised behaviour controlled trials to evaluate behavioural HIV risk reduction interventions targeting people who inject drugs. Thirty-seven randomized controlled trials evaluating 49 independent HIV risk reduction interventions with 10,200 participants were included. Compared to controls, intervention participants reduced injection drug use (IDU) and non-IDU, increased drug treatment entry, increased condom use, and decreased trading sex for drugs. Interventions were more successful at reducing IDU when participants were non-Caucasians, when content focused equivalently on drug-related and sex-related risks, and when content included interpersonal skills training specific for safer needle use. Condom use outcomes improved when two intervention facilitators were

used instead of one. IDU outcomes did not decay, but condom use outcomes did. The authors conclude that behavioural interventions reduce risk behaviours among people who inject drugs, especially when interventions target both drug risk and sexual risk behaviours, and when they include certain behavioural skills components. Implications for future interventions are presented.

(Crepaz et al., 2006) The authors conduct a meta-analytic review of HIV interventions for people living with HIV (PLWH) to determine their overall efficacy in reducing HIV risk behaviours and to identify intervention characteristics associated with efficacy. Twelve trials met the stringent selection criteria: randomization or assignment with minimal bias, use of statistical analysis, and assessment of HIV-related behavioural or biologic outcomes at least three months after the intervention. Interventions significantly reduced unprotected sex and decreased acquisition of sexually transmitted diseases. Non-significant intervention effects were observed for needle sharing. As a whole, interventions with the following characteristics significantly reduced sexual risk behaviours: 1) based on behavioural theory; 2) designed to change specifically HIV transmission risk behaviours; 3) delivered by health-care providers or counsellors; 4) delivered to individuals; 5) delivered in an intensive manner; 6) delivered in settings where PLWH receive routine services or medical care; 7) provided skills building, and/or 8) addressed a myriad of issues related to mental health, medication adherence, and HIV risk behaviour. The authors conclude that interventions targeting PLWH are efficacious in reducing unprotected sex and acquisition of sexually transmitted diseases.

(Di Noia & Schinke, 2007) This meta-analytic review examines the efficacy of behavioural interventions in reducing unprotected sex and STI incidence rates among 11, 590 black and Hispanic patients at STI clinics in the US. Results showed that interventions significantly reduced unprotected sex and incident STI and the authors conclude that behavioural interventions provide an efficacious means of HIV/STD prevention for blacks and Hispanics who attend STI clinics. Strategies involving a basis of behavioural theory, formative ethnographic research to inform intervention development, culturally appropriate contents, ethnically matched deliverers, and skills training on correct use of a condom are recommended.

(Grilli, et al., 2002) The authors assess the effects of mass media on the utilisation of health services. Selection criteria included randomised trials, controlled clinical trials, controlled before-and-after studies and interrupted time series analyses of mass media interventions. Twenty studies were included, all using interrupted time series designs. Fifteen evaluated the impact of formal

mass media campaigns, and five of media coverage of health-related issues. The overall methodological quality was variable. Six studies did not perform any statistical analysis, and nine used inappropriate statistical tests (i.e. not taking into account the effect of time trend). All of the studies apart from one concluded that mass media was effective. Despite the limited information about key aspects of mass media interventions and the poor quality of the available primary research, the authors conclude that there is evidence that these channels of communication may have an important role in influencing the use of health care interventions.

(Harling, et al., 2005) This article reviews the evaluation literature published in English or French between 1994 and 2004, and provides an economic analysis of the costs linked to outcomes for various interventions related to HIV prevention, testing and treatment. This meta-analysis notes that research into the efficiency of HIV interventions has advanced significantly, but that large gaps still remain in the data available and notes some deficiencies in the studies that have been performed.

((Herbst et al., 2007) This article presents a systematic review of the effectiveness and economic efficiency of individual-, group-, and community-level behavioural interventions intended to reduce the risk of acquiring sexually transmitted HIV in adult men who have sex with men (MSM). The evidence found in the review showed that individual-level, group-level, and community-level HIV behavioural interventions are effective in reducing the odds of unprotected anal intercourse (range 27% to 43% decrease) and increasing the odds of condom use for the group-level approach (by 81%). Strong evidence also demonstrated that group-level HIV behavioural interventions for adult MSM, particularly those that included a skill-building component, are effective in reducing the odds of having unprotected anal sex and increasing the odds of condom use during anal sex. For community-level HIV behavioural interventions for adult MSM, sufficient evidence showed effectiveness in reducing the odds of unprotected anal sex. Exposure of an HIV risk-reduction intervention to a large number of at-risk individuals in the community can produce substantial community-level change (i.e., greater number of individuals changing behaviour) and have widespread population impact. The authors conclude that the findings are applicable to MSM aged 20 years or older, across a range of settings and populations, assuming that interventions are appropriately adapted to the needs and characteristics of the MSM population of interest. Based on findings from economic evaluation studies, the authors also conclude that group- and community-level HIV behavioural interventions for adult MSM are not only cost effective but also result in actual cost-savings.

Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US

Jones & Sargeant

(Hilton et al., 2001) The aim of these authors from British Columbia was to provide a comprehensive review of literature published between 1990 and 2000 on harm reduction theories and strategies related primarily to licit and illicit drug use. The article also discusses the many challenges inherent in conducting evidence-based research in the harm reduction field.

(Jemmott & Jemmott, 2000) This book chapter reviews literature aimed at identifying effective interventions to reduce the risk of sexually transmitted HIV infections among adolescents in community settings. The authors review 21 evaluation studies examining interventions conducted in community settings and designed to reduce HIV sexual risk behaviour among adolescents. Sixteen of the studies were randomised control trials and five were nonrandomised intervention studies that included a control group. The results demonstrated that theory-based interventions can significantly influence HIV risk-associated sexual behaviour - including condom acquisition, condom use, frequency of unprotected sexual intercourse, and number of sexual partners - among adolescents in a variety of community settings. Of the studies that examined long-term effects, none of the abstinence-based interventions had a significant impact 12 months post intervention whereas several other interventions maintained an impact on condom use 12 months later. These studies also demonstrated that adolescents in HIV risk reduction interventions reported less HIV risk-associated sexual behaviours than did those in structurally similar interventions that concerned other issues.

(Johnson et al., 2005) The authors conduct a systematic review and meta-analysis to locate, characterize, and summarize effects of behavioural HIV prevention interventions for MSM. Fifty-four interventions were reviewed, with 16,224 participants that were evaluated in 40 randomised trials and controlled observational studies with independent comparison groups. Formats included 26 small group interventions, 18 individual-level interventions, and 10 community-level interventions. The authors conclude that behavioural interventions reduce self-reported unprotected sex among MSM.

(Kelly & Kalichman, 2002) This article looks at the advances that have been realized in behavioural research, and describes randomized outcome studies that have been conducted in the US and other countries between 1991 and 2001, as well as identifying key emerging issues in the field.

(Kourtis et al., 2006) This literature review identifies medical and behavioural strategies that were demonstrated effective in decreasing the risk for sexually transmitted HIV infection among adolescents in the US, by examining studies published between 1995 and 2005. The study *Lit Review: The Impact of Community-Based HIV Prevention Interventions in Canada, Commonwealth Nations & the US*

concludes that behavioural interventions with adolescents have been effective, but met with some limitations.

(Lyles et al., 2007) The CDC's HIV/AIDS Prevention Research Synthesis Team (PRST) conducts a systematic review of US-based HIV behavioural intervention research literature from 2000 through 2004 to identify interventions demonstrating best evidence of efficacy for reducing HIV risk. Eighteen interventions met the criteria for best evidence. Significant intervention effects included increased condom use and reductions in unprotected sexual intercourse, number of sexual partners, injection drug use or needle sharing, and newly acquired sexually transmitted infections. The PRST conclude that most of the best-evidence interventions are directly applicable for populations in greatest need of effective prevention programs.

(McKay, 2000) This meta-analysis by a Canadian researcher reviews the literature documenting evaluation research demonstrating favourable behavioural outcomes for HIV prevention interventions with a number of different populations, including adolescents, street youth, STI clinic patients, women heterosexually active men, and men who have sex with men. Based on the interventions reviewed, some common characteristics of behaviourally effective HIV/STI interventions are identified, including: use of theoretical models; incorporation of behavioural skills training; emphasis on promoting condom use; helping clients create a personal sexual health plan; use of community/culturally appropriate strategies; use of peer educators and community opinion leaders; and appropriate intervention duration. The author concludes that the evaluations summarized within the report provide direct evidence that well-designed and implemented interventions can and do help persons modify their sexual behaviour in the direction of risk reduction; and that such interventions can also be cost-effective or cost-saving.

(Mize et al., 2002) This is a meta-analysis of 24 articles published between 1989 and 1997 examining the effectiveness of HIV prevention interventions for women in the US. The article notes that overall the HIV interventions documented demonstrate effectiveness in improving knowledge about HIV/AIDS and sexual risk reduction behaviours for all ethnicities, but that the interventions were consistently less effective for African-American women.

(Semaan et al., 2002) The authors describe 99 experimental and certain quasi-experimental U.S.-based trials, reported or published since 1988, of behavioural and social interventions that measured pre-specified behavioural and biologic outcomes and aimed to reduce risk for HIV infection.

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Jones & Sargeant

(Pinkerton et al., 2002) This is a meta-analysis and review of 16 peer-reviewed studies that assess the cost-effectiveness of interventions to prevent the sexual transmission of HIV in the US. The researchers conclude that there is compelling evidence that interventions to prevent the sexual transmission of HIV can be highly cost-effective, particularly small-group, community-level and outreach-based activities with moderate- to high-risk populations.

(Underhill, Montgomery, & Operario, 2007) The authors assess the effects of sexual abstinence-only programs for HIV prevention among participants in high income countries. Randomised and quasi-randomised controlled trials of abstinence-only programs in any high income country were included. The search identified 13 trials enrolling 15,940 US young people. Compared with various controls, no program affected incidence of unprotected vaginal sex, number of partners, condom use, or sexual initiation. One trial observed adverse effects at short term follow-up (sexually transmitted infections, frequency of sex) and long term follow-up (sexually transmitted infections, pregnancy) compared with usual care, but findings were offset by trials with non-significant results. Heterogeneity prevented meta-analysis. The authors conclude that programs that exclusively encourage abstinence from sex do not appear to affect the risk of HIV infection in high income countries, as measured by self-reported biological and behavioural outcomes.

(Wolitski, 1999) The author evaluates a theory-based community-level intervention to promote progress toward consistent condom and bleach use among selected populations at increased risk for HIV infection in 5 US cities. Role-model stories were distributed, along with condoms and bleach, by community members who encouraged behaviour change among injection drug users, their female sex partners, sex workers, non-gay-identified men who have sex with men, high-risk youth, and residents in areas with high sexually transmitted disease rates. Over a 3-year period, cross-sectional interviews (n=15 205) were conducted in 10 intervention and comparison community pairs. At the community level, movement toward consistent condom use with main and non-main partners, as well as increased condom carrying, was greater in intervention than in comparison communities. At the individual level, respondents recently exposed to the intervention were more likely to carry condoms and to have higher stage-of-change scores for condom and bleach use. The intervention led to significant community-wide progress toward consistent HIV risk reduction.