PUBLIC HEALTH IN ACTION

Immunization Programs in Non-traditional Settings

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ABSTRACT

Background: The Downtown Eastside (DTES) of Vancouver is an inner-city neighbourhood of 10 square blocks where poverty, crowded housing, homelessness, poor nutrition and hygiene, chronic illness, and substance abuse put residents at risk for communicable diseases. The objective of the program was to minimize the burden of illness from vaccine-preventable diseases in this vulnerable population. This article describes the process and lessons learned to enable others to implement similar programs.

Intervention: Influenza and pneumococcal vaccinations were offered in community settings to all persons living in, working in, or visiting the DTES by teams of public health nurses and volunteers in the fall of 1999. Hepatitis A and B vaccinations were offered in January/February 2000. All 4 vaccines were offered in Fall 2000, influenza vaccine alone was offered in Fall 2001 and 2002; and pneumococcal, hepatitis A and B vaccines were offered in June 2002.

Results: During the initial 5-week influenza/pneumococcal immunization blitz, 8,723 persons were immunized; 79% received both vaccines. There was a reduction in visits for pneumonia to local emergency departments in the 3 months following this blitz. During the 5-week 2000 hepatitis A and B vaccination blitz, 3,542 persons were immunized; 58% received both vaccines. A reduction in reported cases of hepatitis A followed. Uptake of influenza vaccine was considerably reduced when offered in combination with 3 other vaccines. To maximize uptake, influenza vaccine was offered alone in subsequent years.

Conclusions: Immunizations can be successfully delivered to high-risk inner-city populations in non-traditional settings, using public health nursing outreach in a blitz format.

La traduction du résumé se trouve à la fin de l'article.

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The Downtown Eastside (DTES) of Vancouver is an inner-city neighbourhood of 10 square blocks and has an estimated resident population of 16,000. Poverty, crowded housing, homelessness, poor nutrition and hygiene, chronic illness, and substance abuse put residents at risk for communicable diseases. The 2001 Census showed there is an over-representation of Aboriginal people and males aged 25-60 years compared to Vancouver and the rest of BC.

An estimated 12,000 injection drug users (IDUs) reside/spend time in the DTES.[1] Because of a high incidence of HIV infection, the Vancouver/Richmond Health Board (VRHB) declared the DTES a public health emergency in 1997. As part of the integrated health approach to this emergency, four vaccine-preventable diseases (hepatitis A, hepatitis B, influenza and *Streptococcal pneumoniae*) were targeted for intervention.

The objective of the program was to minimize the burden of illness from vaccine-preventable diseases in this vulnerable population.

The rate of hepatitis A in the DTES in the first quarter of 1999 was 41.72/100,000 – 6 times the reported rate in Vancouver and 14 times the rate for the rest of BC. High rates of hepatitis C among IDUs in the DTES put them at risk of fulminant hepatitis and death from hepatitis A superinfection.[2] An open cohort of 1,300 IDUs in the DTES reported an 87% prevalence of hepatitis C in the spring of 1999.[3]

In 1997, the reported rate of newly identified hepatitis B infections in Vancouver/Richmond was 255/100,000 – 8 times the reported rate for the rest of BC, and the highest rate in Canada. Non-immune IDUs are at high risk of acquiring and subsequently transmitting hepatitis B virus.[4] Acute hepatitis A may be severe and potentially fatal for patients with underlying chronic hepatitis B.[5]

Annual influenza vaccination is recommended for persons at high risk for influenza-related complications, including those with chronic cardio-respiratory disease, cirrhosis, alcoholism and HIV infection.[6] Pneumococcal vaccination is also recommended for persons with these conditions[7] and for persons living in crowded environments where the risk for pneumococcal infection is high.[8] Crowding is common in DTES shelters and housing.

Because of injection drug use and chronic illnesses, many people in the DTES were eligible for free hepatitis B, hepatitis A and influenza vaccinations prior to 1999. However it is known that medically underserviced adults (e.g., economically disadvantaged/inner-city populations) are at particular risk for under-immunization because they may not access healthcare providers regularly.[9]

There are no other published Canadian programs targeting improved immunization coverage among inner-city adults. In the United States, monetary incentives have been used to encourage hepatitis B uptake in difficult-to-access groups.[10,11] Poor inner-city populations often have barriers to accessing healthcare services, such as lack of telephones and access to transportation, that result in failure of initiatives that work well in other populations.[12,13]

Experience in developing countries has indicated large-scale immunization blitzes, using outreach in non-traditional settings, can be successful in controlling vaccine-preventable diseases such as polio.[14-16] In Mozambique, volunteers conducted door-to-door canvassing, resulting in cities doubling their immunization coverage.[16] We decided that this experience would serve as a model to plan immunization blitzes in the DTES.

PUBLIC HEALTH INTERVENTION

An influenza/pneumococcal vaccination blitz was planned for November 1999, and a hepatitis A and B vaccination blitz for early 2000. To inform the community, a stakeholder meeting was held. Local physicians, clinic representatives, all agencies, mental health and large businesses in the area were invited. Media announcements were made and information posters distributed to planned immunization sites.

A DTES storefront was rented as blitz headquarters. Twelve VRHB nurses and two nurses from the DTES street-nurse program volunteered to be seconded for the blitzes. The nurses received a two-day orientation, which included information on diseases, vaccines, adverse events, street drugs and lingo, harm reduction, mental health issues, safety and street-smart strategies. They were issued yellow jackets with "NURSE" on the back, vaccine bags with "NURSE" on the side, and cell phones.

TABLE I

Sites Visited During the Immunization Blitz

# of Sites	Sites	Times Visited During Blitz	Time of Day
145	Single room occupancy hotels	1 or 2 times	a.m. and p.m.
30	Free/low-cost soup kitchens	weekly	meal times
4	Food banks	weekly	a.m.
50	Community agencies	1 or 2 times	a.m. and p.m.
1	Fixed-site needle exchange	3 times per week	a.m. and p.m.
8	Drop-in centres	bi-weekly	a.m. and p.m.
39	Pubs	1 or 2 times	p.m.
4	Medical clinics	weekly	a.m. and p.m.
1	City jail/pre-trial centre	bi-weekly	a.m.
3	Parks	3 or 4 times per week	nice weather
Many	Streets and alleys	daily	a.m. and p.m.

TABLE II

Immunization Blitz	Vaccine Given			
	Hepatitis A	Hepatitis B	Pneumococcal	Influenza
November 1999			7576	8043
Jan/Feb 2000	3101	2248		
November 2000	1233	978	1086	3718
November 2001				5175
June 2002	1584	1606	1205	
November 2002				4131

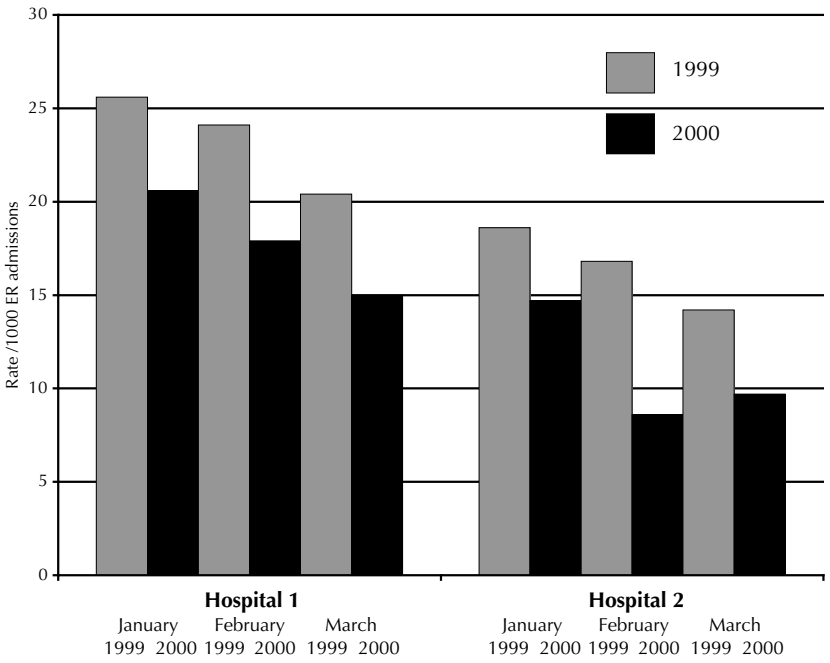

Figure 1. Rate/1000 emergency room admissions with primary diagnosis pneumonia at two hospitals serving Downtown Vancouver

Forty resident volunteers were recruited from the DTES and received a half-day orientation. Volunteer roles included distributing posters, knocking on clients' doors and gathering demographic data. They were issued yellow ponchos with "VOLUNTEER" on the back. They received a $5.00 honorarium and meal for working a three-hour shift.

After orientation, teams of two nurses and one volunteer began the influenza/pneumococcal blitz, visiting sites listed in Table I. Nurses also offered needle exchange, condoms, health education and referrals to medical and addiction services. As necessary, nurses booked return visits to vaccinate more clients.

A questionnaire was used to collect the following demographic information: name, date of birth, residence (Downtown Vancouver/Vancouver other/outside Vancouver), usual clinic/physician, vaccine/lot # given, date and place of immunization. In subsequent blitzes, full address information was collected. These data elements were entered into an ACCESS data-

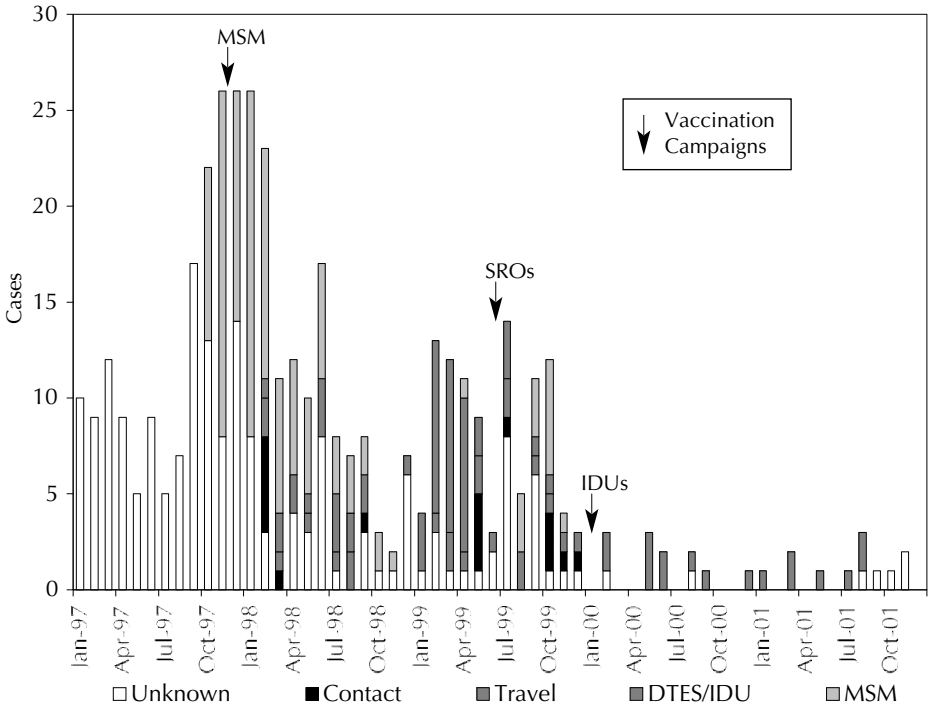

Figure 2. Reported hepatitis A Vancouver 1997-2001 – Risk factors
DTES/IDU = Downtown Eastside/Injection drug user
MSM = Men who have sex with men
SRO = Single room occupancy hotel

base and a hard copy database was produced. Vaccine recipients were provided with wallet-sized vaccine records. In subsequent blitzes, nurses phoned the 'team leader' to determine clients' immunization status and in June 2002, nurses carried a hard copy of the database with them.

This public health initiative was implemented to provide vaccine to persons who qualified, based on the National Advisory Committee on Immunization, and information collected was based on standard immunization practice. Therefore ethical approval was not required.

DTES physicians were requested to adhere to the vaccine administration site protocol when vaccinating their patients. Local physicians, medical clinics, emergency rooms and the immunization nurses were asked to complete and return a one-page adverse event reporting form.

Questionnaires to assess each blitz were distributed to nurses, volunteers, and clients at a random selection of immunization sites. A debriefing was held for the nurses and managerial staff. Emergency admissions for pneumonia at local hospitals and reported hepatitis A cases were reviewed.

Following the first blitz, feedback from the questionnaires and the debriefing were incorporated into the planning and implementation of the second. During the first blitz, nurses were assigned daily to clinics pre-booked by secretaries; this sometimes meant spending considerable time traveling between sites, and gaps between clinics. During the second blitz, the nurses worked in permanent teams covering allotted streets, booking their own clinics. In subsequent blitzes, pre-booking occurred at sites with high uptake of vaccines. Weekly debriefing sessions for the nurses were introduced. To improve consistency in the second blitz, three (versus eight) persons rotated daily as 'team leader', and fewer volunteers were utilized.

In November 2000, influenza vaccine was offered with pneumococcal, and hepatitis A and B vaccines. However as uptake of influenza vaccine was reduced, it was agreed to offer influenza vaccine alone in subsequent years and other vaccines at a different time during the year. Influenza vaccine was therefore offered in isolation in Fall 2001 and 2002 and hepatitis A and B with pneumococcal vaccine in June 2002.

RESULTS

During the 5-week influenza/pneumonia blitz, 8,723 persons were immunized, 8,043 with influenza vaccine and 7,576 with pneumococcal vaccine; 79% received both. Fifty-four percent of those with residence recorded reported living in 'downtown Vancouver', 33% in 'Vancouver other', and 13% 'outside Vancouver' but were visiting or using DTES services when immunized. Of those who reported living in downtown Vancouver, the median age of recipients was 42 years and 74% were male. A more detailed description of the age distribution of recipients and the vaccine coverage survey can be found in a previous report.[17] Immunizations given in the blitzes can be found in Table II.

During the hepatitis A and B vaccination blitz, 3,542 persons were immunized with 5,347 immunizations: 58% received both vaccines. The median age of hepatitis vaccine recipients living in downtown Vancouver was 46 years and 76% were male. During the influenza/pneumococcal blitz, 13% of recipients living in DTES or elsewhere in Vancouver identified a primary care physician and 17% identified clinics they usually attended. Immunization information was sent to these healthcare providers.

During the 1999 influenza/pneumococcal blitz, nine persons reported an adverse event following immunization, including one anaphylaxis, in which a full recovery was made. No adverse events were reported during the 2000 hepatitis blitz. During the Fall 2000 blitz, 3 anaphylactic-type reactions and 8 cases of oculo-respiratory syndrome were reported. No adverse events were reported in the subsequent immunization blitzes.

A survey of consecutive clients at a fixed-site needle exchange and savings/banking institution in Vancouver DTES during the last week of the 1999 blitz found 12% declined appropriate immunization offered by the blitz nurses. Written and verbal evaluations of the blitzes by nurses, volunteers and agencies were generally positive; these surveys have been previously described.[17] Nurses indicated that the experience was a rewarding and exciting challenge, that they felt accepted by the community and that they were making a difference to the health of people in the DTES. Safety generally was not a concern as they felt the community 'watched over them'. Volunteers reported feeling part of the team and enjoyed 'doing something worthwhile'.

A decrease in emergency room visits for pneumonia was noted for 2000. This

information is based on analysis of data from the two hospitals serving downtown Vancouver for the first 3 months of 1999 and 2000 (Figure 1). However the different timing and magnitude of the influenza seasons in those years confound these data.

Data show a marked decrease in the number of hepatitis A cases in the DTES following this blitz and two earlier campaigns in downtown Vancouver: 6,000 doses of vaccine provided to men who have sex with men (December 1997 to end of 1998), and 2,000 doses to residents of DTES housing in July 1999 (Figure 2). From 1992-1997, an average of 152 hepatitis A cases were reported per year in Vancouver (range 101-256). In 2000, only 12 cases were reported for the entire year; 10 were related to travel outside of Canada. Since January 2000, there is no evidence of hepatitis A transmission occurring in the DTES.

DISCUSSION

The lower the vaccination coverage and the higher the burden of vaccine-preventable diseases in a population, the greater the need to improve coverage. Urban, low socio-economic-status populations are particularly vulnerable when immunization rates are low. Therefore, improving coverage in impoverished urban communities should be a priority.[18] The DTES Vancouver population was targeted for improved immunization coverage using an innovative blitz format.

The low numbers of individuals reporting having regular access to a clinic/physician supports the hypothesis that people may not be immunized through a traditional primary caregiver. More than half of recipients of influenza and pneumococcal vaccine at a syringe-exchange program in New York City had no regular source of medical care.[19] The high level of acceptance and reported provider/client satisfaction supports the need and acceptance of outreach programs in inner-city populations. Eighty-six percent of participants interviewed at a syringe-exchange program in NYC agreed to at least one vaccine;[19] this was remarkably similar to the reported acceptance at 2 sites surveyed in Vancouver DTES, where only 12% refused immunization. Every effort was made to ensure adverse event reporting occurred, however there was likely an under-reporting of less severe events in this population. The results indicate that vaccines can safely be given outside of the traditional healthcare settings.

Two major challenges were addressed before the second blitz. First, manageability of the volunteers was improved by reducing the number to 20. Second, the nurses worked in permanent teams and assigned streets, booking their own clinics, ensuring vaccine coverage at all sites.

The immunization database developed is shared with Health Authority-run medical clinics in the DTES and updated as clinics provide ongoing immunization information and future blitzes occur. Information sharing among providers will improve the quality and appropriateness of care, reduce duplication of vaccines and ensure completion of immunization series in a population that are largely without a medical home.

The immunization initiative was intended to reduce potential morbidity and mortality in a population known to be at high risk for vaccine-preventable diseases. The reduction in rates of hepatitis A and pneumonia are preliminary indicators of the success of the program.

We found immunizations can be successfully delivered to high-risk inner-city populations in non-traditional settings, using public health nursing outreach in a blitz format.

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RÉSUMÉ

Contexte : Le Downtown Eastside est un quartier défavorisé de 10 pâtés de maisons au centre-ville de Vancouver. En raison de la pauvreté, des logements surpeuplés, de la clochardise, des problèmes de nutrition et d'hygiène, des maladies chroniques et de l'abus d'alcool ou d'autres drogues qui sévissent dans ce quartier, les résidents y sont vulnérables aux maladies transmissibles. Notre programme visait à réduire le fardeau des maladies évitables par la vaccination pour ce segment démographique vulnérable. Nous en avons décrit le processus et les leçons apprises afin d'aider d'autres intervenants à mettre en œuvre des programmes semblables.

Mesure d'intervention : À l'automne 1999, des équipes d'infirmières et d'infirmiers de santé publique et de bénévoles ont offert les vaccins antigrippal et antipneumococcique en milieu communautaire à tous les habitants, travailleurs et visiteurs du quartier. Les vaccins contre l'hépatite A et B ont été offerts en janvier-février 2000. On a offert les quatre vaccins à l'automne 2000, le vaccin antigrippal seulement à l'automne 2001 et 2002, et les vaccins antipneumococcique et contre l'hépatite A et B en juin 2002.

Résultats : Durant les cinq premières semaines de la campagne-éclair d'immunisation antigrippale/antipneumococcique, 8 723 personnes ont été vaccinées; 79 % ont reçu les deux vaccins. Une baisse des visites à l'urgence pour cause de pneumonie a été constatée dans les hôpitaux locaux au cours des trois mois qui ont suivi la campagne. En 2000, durant les cinq semaines de la campagne-éclair d'immunisation contre l'hépatite A et B, 3 542 personnes ont été vaccinées; 58 % ont reçu les deux vaccins. Il s'en est suivi une baisse des cas déclarés d'hépatite A. L'acceptation du vaccin antigrippal était considérablement réduite lorsque celui-ci était offert en combinaison avec les trois autres vaccins. Pour maximiser l'acceptation, on a donc offert le vaccin antigrippal tout seul les années suivantes.

Conclusions : Il est possible d'immuniser les populations très vulnérables des quartiers déshérités des centres-villes dans un contexte non traditionnel en faisant appel aux services infirmiers de santé publique dans le cadre de campagnes-éclairs.

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Coming Events / Activités à venir

To be assured of publication in the next issue, announcements should be received by **April 1, 2004** and valid as of **June 30, 2004.** Announcements received after **April 1, 2004** will be inserted as time and space permit.

Pour être publiés dans le prochain numéro, les avis doivent parvenir à la rédaction avant le **1er avril 2004** et être valables à compter du **30 juin 2004.** Les avis reçus après le **1er avril 2004** seront insérés si le temps et l'espace le permettent.

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