LAW ENFORCEMENT ACTION PARTNERSHIP
ADVANCING JUSTICE AND PUBLIC SAFETY SOLUTIONS

From: Amos Irwin, Law Enforcement Action Partnership
co-authors: Susan Sherman and Brian Weir, Johns Hopkins University
Ehsan Jozaghi, University of British Columbia

Date: February 26, 2025

Re: HB 845 - Public Health – Overdose and Infectious Disease Prevention Services Program

Position: SUPPORT

To: Maryland House Health and Government Operations Committee

Distinguished Members of the Committee, thank you for the opportunity to present the results of my research on the impact of an overdose and infectious disease prevention site in Baltimore in support of House Bill 845.

I worked with researchers at Johns Hopkins University who have studied Baltimore's population of people who inject drugs and an expert on Vancouver's Insite facility from the University of British Columbia to estimate the impact of an overdose prevention site (OPS) in Baltimore. We assumed that the facility would be modeled on Vancouver's Insite facility, which has thirteen booths. We used research on the costs and benefits of Insite and data on Baltimore's population of people who inject drugs to model the expected costs and benefits of an OPS in Baltimore.

Our study, which was published in the peer-reviewed Harm Reduction Journal, found that a single OPS would save roughly $7.8 million per year at an annual cost of $1.8 million. This means $6.0 million in annual net savings, equivalent to about 30% of the city health department's entire budget for harm reduction and disease prevention.

Study Results

Savings related to…			
HIV	$1,501,928	3.7	new infections prevented
Hepatitis C	$1,443,827	21.2	new infections prevented
Skin and Soft Tissue Infections	$934,952	374.0	hospital days prevented
Overdose Deaths	$2,997,791	5.9	deaths prevented
Ambulance Calls	$80,995	108.0	calls prevented
Overdose Related ER Costs	$106,159	77.8	ER visits prevented

Overdose Related Hospitalization Costs	$67,092	26.8	hospitalizations prevented
Medication-Assisted Treatment	$637,245	121.4	additional people entering treatment
Total Savings	**$7,769,988**		
Costs	**$1,932,252**		
Annual Operating Cost	$1,767,000		
Annualized Upfront Cost	$165,252		
Summary			
Cost-Benefit Ratio: $1 spent generates	$4.02	savings	
Net savings	$5,837,736		

Appendix: Study Methodology

Cost of Operating the Facility

Cost calculations are based on a facility equal in size and scope to Insite. We estimate the annual cost of establishing a new OPS combines both upfront and operating costs. Since we assume the same staffing levels, equipment needs, and other operating cost inputs as Insite, we calculate the operating costs by multiplying the Insite OPS's $1.5 million operating costs by a 4 percent cost of living adjustment between Vancouver and Baltimore (Jozaghi et al., 2015; Expatistan, 2016). Since the upfront costs would depend on the exact location and extent of renovations required, we make a conservative estimate of $1.5 million based on actual budgets for similar facilities and standard per-square-foot renovation costs (Primeau, 2013; MSIC, 2013). We convert this upfront cost into a levelized annual payment by assuming that it was financed with a loan lasting the lifetime of the facility. We determine the levelized annual payment according to the standard financial equation:

$$C = \frac{i(P)}{1-(1+i)^{-N}}$$

where C is the calculated levelized annual cost, i is a standard 10 percent interest rate, P is the $2 million estimated upfront cost, and N is the estimated 25-year lifetime of the facility.

Benefits of Operating the Facility

<u>HIV and Hepatitis C Virus (HCV) savings</u>

Kerr et al. (2005) find that OPS use reduces clients' needle-sharing by 70%. To estimate the impact of reduced needle-sharing on HIV and HCV infection rates, we use an epidemiological "circulation theory" model developed to calculate how needle exchange programs impact HIV infection among PWID. We use the Jacobs et al (1999) model to estimate new HIV infection cases (IHIV):

$$I_{HIV} = iNsd[1-(1-qt)^M]$$

where i is the percentage of HIV-negative PWIDs, N is the total number of needles in circulation; s is the percentage of injections with a shared needle; d is the percentage of injections with an unbleached needle; q is the percentage of HIV-positive PWIDs; t is the chance of transmitting HIV through a single injection with a shared needle; and M is the average number of people injecting with a single shared needle.

We use the same model for HCV:

$$I_{HCV} = iNsd[1-(1-qt)^M]$$

Skin and soft-tissue infection savings

Skin and soft tissue infections are the number one reason for PWID hospital admissions. While uninsured PWID normally wait until their infection becomes serious enough to be admitted to the ER, OPS medical staff provide wound care and medical referrals to treat these infections before they become serious. Lloyd-Smith et al (2010) found that the hospital stays of Insite users were on average 67% shorter. We predict infection care savings according to

$$S_{SSTI} = NhLrC$$

where S_{SSTI} is the annual savings from OPS infection care, N is the number of people using the OPS, h is the hospitalization rate for SSTI, L is the average length of infection-related hospital stay for PWID, r is the 67% stay reduction for OPS users, and C is the average daily cost of a hospital stay.

Averted Overdose Deaths

Marshall et al. (2011) compare the change in overdose deaths within 500 meters of Insite to the change in other Vancouver neighborhoods both before and after the facility's opening. They find a 35 percent reduction in overdose mortality near Insite, compared to a 9 percent reduction further away, suggesting that Insite reduced neighborhood overdose deaths by roughly 26 percent.

We assume that a Baltimore OPS of the same size, also operating near capacity, would reduce overdose deaths in its immediate vicinity by a similar percentage. Most likely this underestimates the facility's impact, since this method only estimates averted overdose deaths within 500 meters of the OPS, though the facility would also reduce overdose more than 500 meters away.

In order to assign value to the loss of life due to overdose, we follow Andresen & Boyd (2010) in considering only the tangible value to society rather than including the suffering and lost quality of life for loved ones. We estimate the tangible value using 30 years of the median wage for Baltimore City, and since the average age of PWID in Baltimore is 35, we convert 30 years of future wages to present value using a discount rate of 3 percent. So the total value of a single overdose death (V) is calculated as:

$$V = \sum_{n=1}^{30} \frac{W}{(1+r)^n}$$

with n equal to 30 years, W as the $25,707 median wage for Baltimore City, and r as the 3 percent discount rate, we find the value to be $503,869.

Medication-Assisted Treatment Savings

Medication-assisted treatment (MAT) programs, principally methadone and buprenorphine maintenance, have been shown to reduce patients' health care needs and criminal activity, as well their drug and alcohol use (Gerstein 1994, Barnett 1999, Zaric 2000, CDC 2002, Flynn et al 2003). Studies estimate that they save taxpayers $4 to $13 for every $1 spent, mostly by reducing users' criminal activity to get money to buy drugs (Cartwright 2000, Gerstein 1994, Health Canada 2002, Harris et al 2005, Hilltop Institute 2007). Studies of Vancouver's Insite show that OPS users are significantly more likely than non-OPS-users to accept referrals to MAT (Wood et al 2006, Wood et al 2007). In Sydney's MSIC, 5.8% of OPS users accepted MAT referrals per year. We estimate the financial benefits of OPS referrals to MAT programs, considering both health care and crime costs, according to the model

$$S_{MAT} = Nr(b-1)T$$

where S_{MAT} is the annual savings due to the OPS increasing MAT uptake, N is the number of PWID who use the OPS, r is the percent of OPS users who access MAT as a result of OPS referrals, b is the cost-benefit ratio for MAT, and T is the cost of one year of MAT.

<u>Ambulance Savings</u>

Overdoses require emergency medical assistance, even when they are not life-threatening. Ambulances are called to the scene of over half of all nonfatal overdoses, at an average cost of around $500 per call. (MSIC 2003) By contrast, almost all overdoses in MSIC, Sydney's OPS, were handled by on-site medical staff and did not result in ambulance calls (MSIC 2003, MSIC 2010). We estimate cost savings of averted ambulance calls for a OPS in Baltimore according to the following model:

$$S_a = Io(c_o - c_i)A$$

where S_a is the annual savings due to the OPS reducing ambulance calls for overdose, I is the annual number of injections in the OPS, o is the rate of nonfatal overdose, c_o and c_i are the rates of overdose ambulance calls outside and inside the OPS, respectively, and A is the average cost of an overdose ambulance call.

<u>Emergency Room Overdose Savings</u>

Emergency response personnel often transport overdose victims to the emergency room for treatment. In one Baltimore study, 72% of PWID who had an ambulance called for an overdose reported being taken to the ER. By contrast, overdoses in OPSs lead to emergency room treatment in less than 1% of cases. With a single Baltimore ER visit averaging $1,364, OPSs reduce medical costs significantly by keeping PWID out of emergency rooms for overdose. We calculate the savings according to:

$$S_{er} = Io(t_o - t_i)F$$

where S_{er} is the annual savings due to the OPS reducing emergency room visits for overdose, I is the annual number of injections in the OPS, o is the rate of nonfatal overdose, t_o and t_i are the rates of ER transport for overdose outside and inside the OPS, respectively, and F is the average cost of an overdose emergency room visit.

Overdose-related hospitalization savings

Overdose victims are occasionally hospitalized for treatment. In one Baltimore study, 26% of PWID who had an ambulance called for an overdose reported being hospitalized. By contrast, overdoses in OPSs lead to hospitalization in less than 1% of cases. With one day in a Baltimore hospital averaging $2,500, OPSs reduce medical costs significantly by keeping PWID out of the hospital for overdose. We calculate the savings according to:

$$S_h = Io(a_o - a_i)E$$

where S_h is the annual savings due to the OPS reducing hospitalization for overdose, I is the annual number of injections in the OPS, o is the rate of nonfatal overdose, a_o and a_i are the rates of hospitalization for overdose outside and inside the OPS, respectively, and E is the average expense of an overdose hospital stay.

For sources or with questions about the study's methodology, sensitivity analysis, discussion, or limitations, please contact me at Amos@LawEnforcementAction.org.