Fentanyl, the Opioid Crisis & the Injection Drug User: Re-Imagining Solutions

Dr. Andrea Sereda, CCFP(EM)

Family Medicine Grand Rounds

Schulich School of Medicine

Sept 2, 2020

London InterCommunity Health Centre

Family Medicine Grand Rounds

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Western

Scientific Planning Committee Disclosure

- **Faculty: Dr. Stephen Wetmore**
  Dr. Scott McKay
  Dr. Richard Pawliszyn

- **Relationships with commercial interests:**

No conflicts of interest.

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Disclosure of Commercial Support

- This program has received no in-kind support.
- This program has received no commercial financial support.

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Faculty/Presenter Disclosure

Presenter: Dr. Andrea Sereda

Relationships with commercial interests:

- Ontario HIV Treatment Network – speaking fee
- Substance Use & Addiction Program - funding

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Mitigating Potential Bias

Presenter received a detailed letter from the Organizing Committee outlining the learning objectives and content expectations for each presentation.

Presentation have been reviewed by a member of the Scientific Planning Committee to ensure balance in content and the absence of bias.

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Learning Objectives

- Understand the landscape of street drugs in Canada
- Comprehend the impacts and challenges of the opioid crisis
- Comprehend the traditional and novel interventions to help keep People Who Use Drugs safe.

Canadian deaths in 4 years: 15000 +

Year	Canada	Ontario	Ontario % Change
2016	3017	867	19%
2017	4100	1265	46%
2018	4588	1471	17%
Jan – June 2019	2142	937	26%

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“

Health

Pandemic worsens Canada's deadly opioid overdose epidemic

Ontario's coroner reported a 25% rise in fatal overdoses as advocates warn of increasingly toxic street drugs

CBC News · Posted: Jun 10, 2020 4:00 AM ET | Last Updated: June 11

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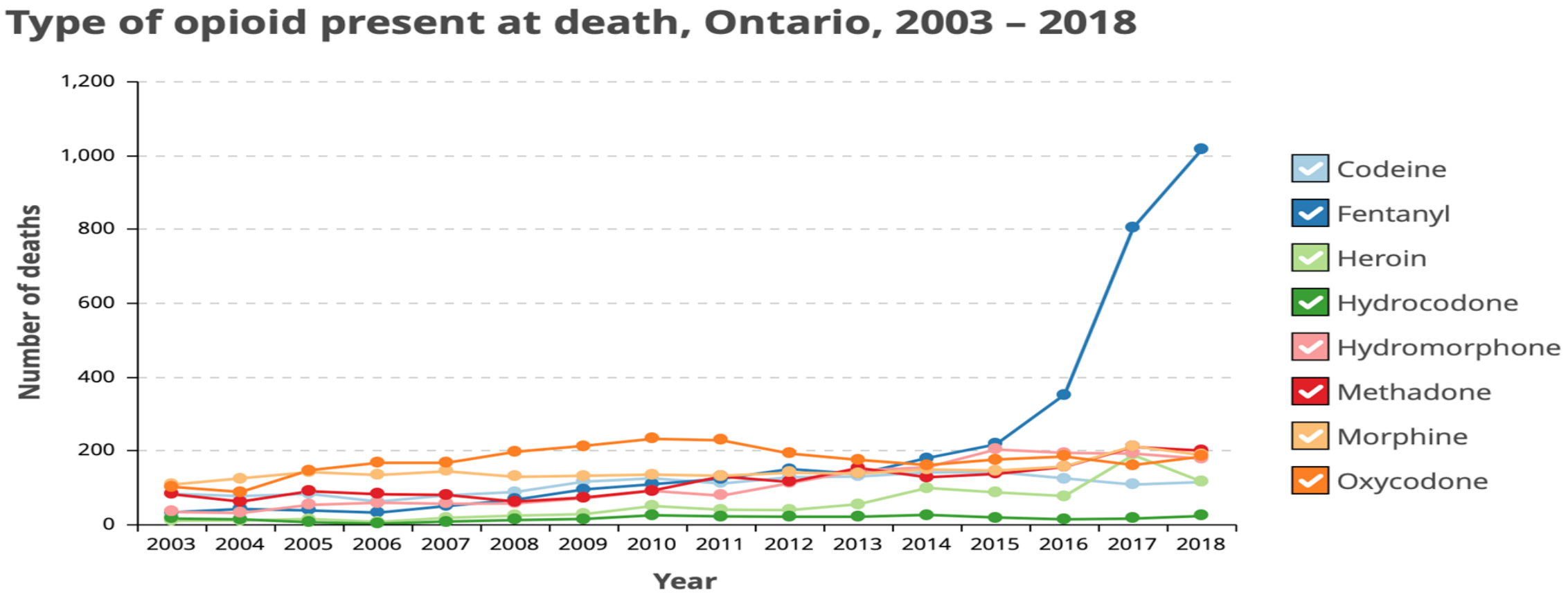
Fentanyl contamination: the largest public health crisis of a generation



Source: Public Health Ontario

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Non-Fatal Overdose Frequency & Impacts

- 49% of people who use drugs overdosed in part 6 months
  - 28% experienced 2+ overdoses in past 6 months
- 70% of PWID witnessed 2+ overdoses in the past 6 months
- 45% of PWID have experienced the loss of a friend or family member to overdose

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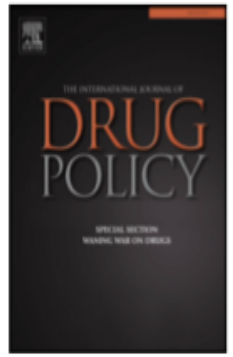
Impacts of increased injection frequency: Fentanyl

Contents lists available at ScienceDirect

International Journal of Drug Policy

journal homepage: www.elsevier.com/locate/drugpo



Research Paper

Associations between perceived illicit fentanyl use and infectious disease risks among people who inject drugs

Barrot H. Lambdin[a,b,c,*], Ricky N. Bluthenthal[d], Jon E. Zibbell[a], Lynn Wenger[a], Kelsey Simpson[d], Alex H. Kral[a]

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Lab analysis of drug samples: Moss Park OPS October 2017

Specimen #2 – Filter (fentanyl)	
Carfentanyl\Norcarfentayl	Major
Fentanyl\Norfentanyl	Intermediate
Heroin\Monoacetylmorphine\Morphine	Minor
Caffeine	Major
Ketamine	Minor
Theobromine	Minor

Specimen #4 – Filter (fentanyl)	
4-ANPP	Intermediate
Acetylfentanyl	Intermediate
Butyrylfentanyl	Minor
Cyclopropyfentanyl\Crotonylfentanyl	Intermediate
Fentanyl\Norfentanyl	Intermediate
Furanylfentanyl\Norfuranylfentanyl	Intermediate
Valerylfentanyl	Minor
6-Acetylcodeine	Intermediate
Heroin\Monoacetylmorphine\Morphine	Intermediate
Codeine	Minor
Methadone	Intermediate
Cocaine\Benzoylecgonine	Major
Levamisole	Intermediate
Caffeine	Intermediate
Citalopram	Minor
Ephedrine	Minor
GHB	Minor
Ketamine	Intermediate

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Fentanyl has changed the status quo

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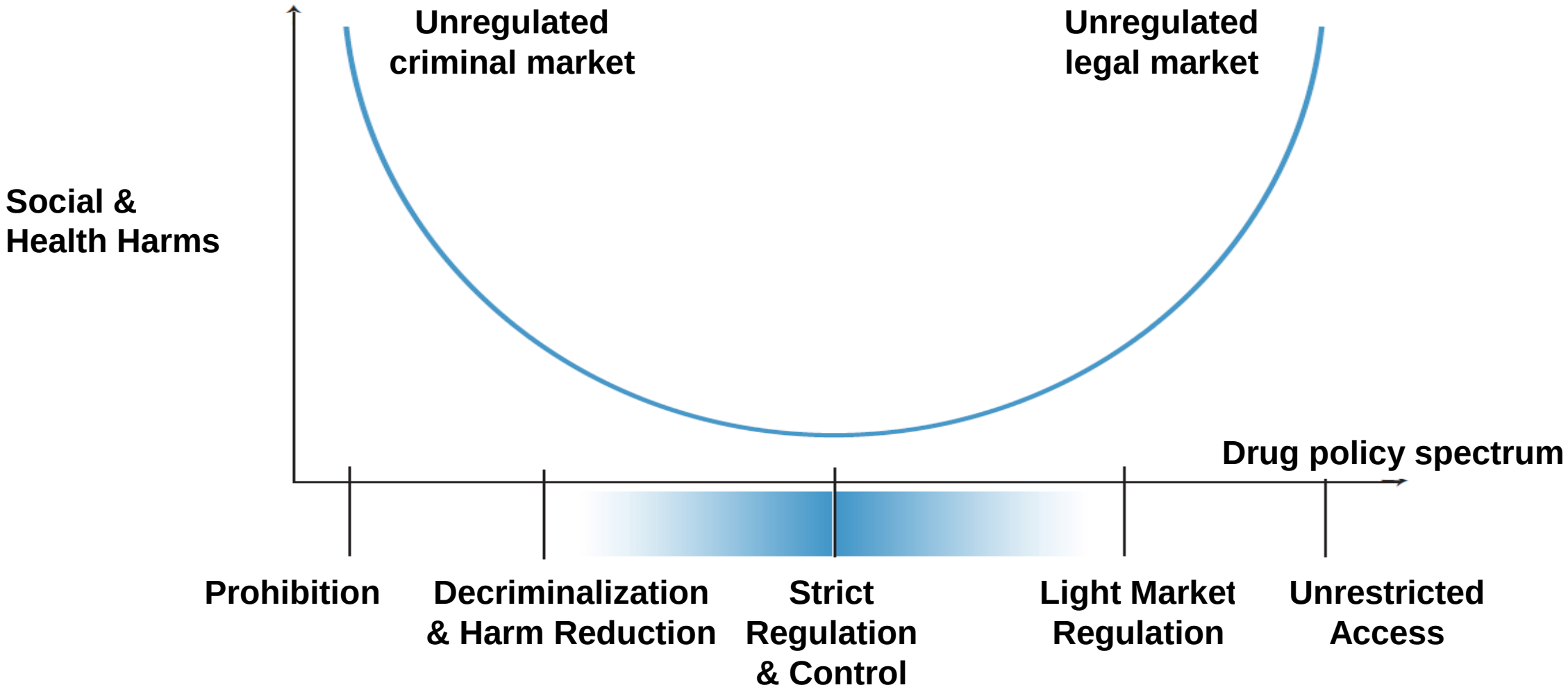
Prohibition



Responses to the Opioid Crisis

- Prescription drug monitoring programs, drug rescheduling & reformulation
- Naloxone distribution
- Supervised consumption sites
- Opioid agonist treatment
- Injectable Opioid Agonist Treatment (iOAT)
- Emergency Safer Opioid Supply programs

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Modeling Health Benefits and Harms of Public Policy Responses to the US Opioid Epidemic

Allison L. Pitt MS, **Keith Humphreys** PhD, and **Margaret L. Brandeau** PhD

Objectives. To estimate health outcomes of policies to mitigate the opioid epidemic.

Methods. We used dynamic compartmental modeling of US adults, in various pain, opioid use, and opioid addiction health states, to project addiction-related deaths, life years, and quality-adjusted life years from 2016 to 2025 for 11 policy responses to the opioid epidemic.

Results. Over 5 years, increasing naloxone availability, promoting needle exchange, expanding medication-assisted addiction treatment, and increasing psychosocial treatment increased life years and quality-adjusted life years and reduced deaths. Other policies reduced opioid prescription supply and related deaths but led some addicted prescription users to switch to heroin use, which increased heroin-related deaths. Over a longer horizon, some such policies may avert enough new addiction to outweigh the harms. No single policy is likely to substantially reduce deaths over 5 to 10 years.

Conclusions. Policies focused on services for addicted people improve population health without harming any groups. Policies that reduce the prescription opioid supply may increase heroin use and reduce quality of life in the short term, but in the long term could generate positive health benefits. A portfolio of interventions will be needed for eventual mitigation.

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De-prescribing increases opioid-related deaths over 5 years

TABLE 2—Estimated Effects of Individual Interventions Over 10 Years: United States, 2016–2025

Intervention	Mean Change[a] Compared With the Status Quo: Discounted Net Present LYs,[b] No. in Thou	Discounted Net Present QALYs,[b]		Heroin Deaths, No. (%)	Total Opioid Deaths, No. (%)
Acute pain prescribing	500 (			900 (–0.6)	–8 000 (–1.6)
Prescribing for transitioning pain	80 (			500 (0.5)	–1 000 (–0.2)
Chronic pain prescribing	40 (			200 (8.2)	3 800 (0.7)
Drug rescheduling	–920 (			600 (42.8)	42 800 (8.3)
PMP	–1 780 (			200 (26.3)	42 300 (8.2)
Drug reformulation	650 (			400 (11.5)	–3 900 (–0.8)
Excess opioid disposal	210 (			500 (1.6)	–2 400 (–0.5)
Naloxone availability	790 (0.012)	670 (0.010)	–8 400 (–4.9)	–12 700 (–3.7)	–21 200 (–4.1)
Needle exchange	210 (0.003)	180 (0.003)	0 (0.0)	–5 900 (–1.7)	–5 900 (–1.1)
MAT	560 (0.008)	940 (0.014)	–2 900 (–1.7)	–9 600 (–2.8)	–12 500 (–2.4)
Psychosocial treatment	440 (0.007)	650 (0.010)	–1 600 (–0.9)	–6 000 (–1.7)	–7 500 (–1.5)

Population health benefits

↑ Naloxone
↑ Needle exchange
↑ Psychosocial treatment
↑ Medicated assisted treatment

Note. LY = life year; MAT = medication-assisted treatment; PMP = prescription monitoring program; QALY = quality-adjusted life year.

[a]Ranges over the 10 base cases are shown in Table H (available as supplement to the online version of this article at http://www.ajph.org).

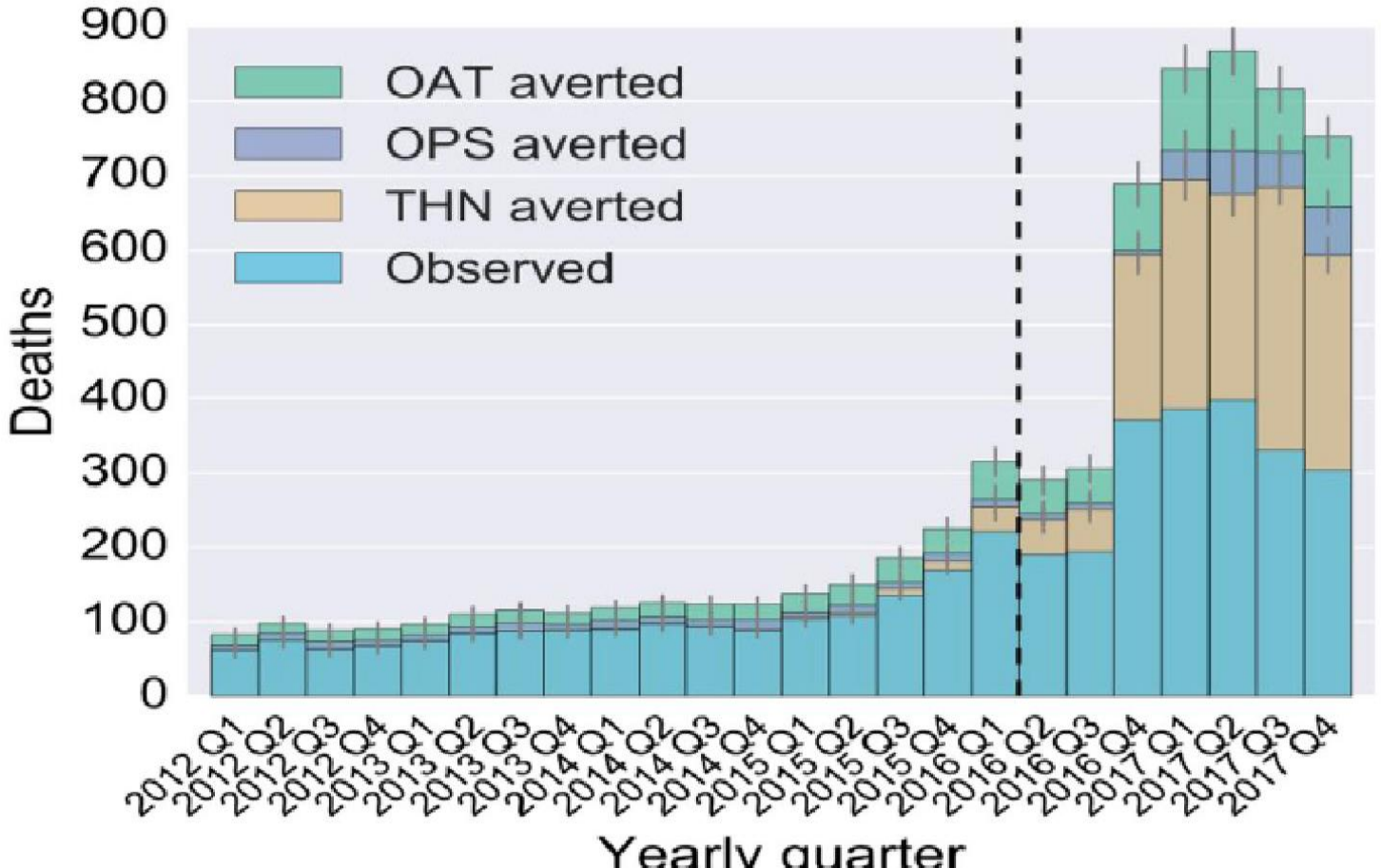
[b]Discounted to 2016.

ADDICTION
SSA SOCIETY FOR THE STUDY OF ADDICTION

Research Report | Full Access

Modelling the combined impact of interventions in averting deaths during a synthetic-opioid overdose epidemic

Michael A. Irvine, Margot Kuo, Jane Buxton, Robert Balshaw, Michael Otterstatter, Laura Macdougall, M. J. Milloy, Aamir Bharmal, Bonnie Henry, Mark Tyndall, Daniel Coombs, Mark Gilbert



Medication-assisted treatment
Overdose prevention sites
Take-home naloxone

Averted 62% of
model-predicted deaths

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Retention in OAT: Methadone

- **Retention in MMT at 1 year among 1st time patients**
  - Northern: 47-49%
  - Southern: 39-41%

- **Median time to discontinuation**
  - Southern Urban: 188 days
  - Northern Rural: 351 days

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ORIGINAL RESEARCH

OPEN

Evaluating the Effectiveness of First-Time Methadone Maintenance Therapy Across Northern, Rural, and Urban Regions of Ontario, Canada

Joseph K. Eibl, PhD, Tara Gomes, MHSc, Diana Martins, MSc, Ximena Camacho, MMath, David N. Juurlink, MD, Muhammad M. Mamdani, PharmD, Irfan A. Dhalla, MD, and David C. Marsh, MD

Retention in OAT: Buprenorphine

Addiction

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RESEARCH REPORT

doi:10.1111/add.12834

A longitudinal comparison of retention in buprenorphine and methadone treatment for opioid dependence in New South Wales, Australia

Lucy Burns[1], Natasa Gisev[1], Sarah Larney[1,2], Timothy Dobbins[3], Amy Gibson[4], Jo Kimber[1], Briony Larance[1], Richard P. Mattick[1], Tony Butler[5,6] & Louisa Degenhardt[1]

National Drug and Alcohol Research Centre, University of NSW, Sydney, Australia,[1] Alpert Medical School, Brown University, Providence, Rhode Island, USA,[2] National Centre for Epidemiology and Population Health, Australian National University, Canberra, Australia,[3] Centre for Health Research, University of Western Sydney, Sydney, Australia,[4] Kirby Institute, University of NSW, Sydney, Australia[5] and Australia School of Public Health and Community Medicine, University of NSW, Sydney, Australia[6]

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Novel Drug Substitution

- iOAT – injectable opioid agonist therapy
- Prescription Heroin
- Safer Supply

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NAOMI (NEJM Aug 2009)

- Diacetylmorphine vs. methadone

- Inclusion criteria
  - opioid dependence an age ≥ 25 years
  - opioid use for ≥ 5 years
  - daily opioid injection
  - previous failure of ≥ 2 opioid dependence treatments

NAOMI (NEJM Aug 2009)

- Reduction in illicit drug use
  - **67% diacetylmorphine group** vs. 48% methadone group
- Retention in treatment
  - **88% diacetylmorphine group** vs. 54% methadone group
- Diacetylmorphine adverse events managed via supervised injections

SALOME (JAMA Psychiatry 2016)

- Injectable hydromorphone vs. injectable diacetylmorphine

- **Primary outcome**
  - Non-inferiority for reducing illicit heroin use at 6 months

- **Results**
  - Illicit heroin use reduced to 3-5 days in prior 30 days both groups
  - High treatment retention in both groups (>80%)

Injectable hydromorphone (iOAT)

- Existing programs
  - Several programs in DTES
  - Ottawa Innercity Health – MOP
  - Canada-wide hopes with SUAP funding

- Prescription Heroin
  - Crosstown Clinic in Vancouver

What is possible in the current context in Ontario?

- Need for coverage for high dose injectable hydromorphone for iOAT
  - Only 10mg/mL injectable hydromorphone available
  - Need for 50mg/mL & 100 mg/mL formulations
- Substantial infrastructure requirements for observed dosing for iOAT
- Need for options outside of urban areas
  - Vancouver iOAT programs developed in distinct geographical area with high concentration of services (housing, social support, medical services)
  - Ottawa iOAT program integrated in housing

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The Opioid Overdose Crisis
The Largest Public Health Crisis of a Generation

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What is Safer Supply?

- NOT addiction treatment program
- Extension of harm reduction
- Goal is to replace contaminated street drugs with prescription alternatives
- Catalyst for engagement with housing and healthcare

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Different models of Safer Supply

- Compassion/Buyer's clubs
- Dr. Tyndall – public health approach
- Dr. Christy Sutherland – tiOAT: observed crushed tablets
- Safer Supply: take home hydromorphone tablets
- Legalization and Regulation?

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Heroin Compassion Clubs

A cooperative model to reduce opioid overdose deaths & disrupt organized crime's role in fentanyl, money laundering & housing unaffordability

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Public Health model

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Tablet iOAT “tiOAT”

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HealthyDebate.ca

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Spectrum of Care: Health Canada Toolkit

Table 1-1 - Approaches to safer supply programs

	Models that can be implemented within existing legislative framework			Other models (out of scope)
	Traditional	**Enhanced**	**Flexible**	**Without prescriber oversight**
Target Population	People with substance use disorder who are seeking treatment.	People with substance use disorder, for whom traditional treatment has been unsuccessful.	People who use illegal substances, whose needs are not met by highly-structured models.	People who use opioids or stimulants.
Models	OAT; iOAT Multiple models.	Adapted iOAT/Tablet iOAT (TiOAT) for safer supply. Multiple options: 1. Comprehensive/dedicated (Crosstown) 2. Integrated/embedded (PHS, MOP); 3. Pharmacy model; Observed consumption. Lower threshold entry to iOAT model of safer supply. These may also include the prescription of regulated stimulants.	Daily dispensed; low threshold; self-titrated; observed and unobserved consumption; hub and spoke (rural areas). Already being done informally in private and primary care practices. Any proof of concept project that meets the requirements of appropriate prescriber involvement (e.g., a medical model) and permissible within the current regulatory and legislative frameworks.	Non-medicalized buyers clubs / compassion clubs.
Evidence	Adheres to current clinical guidelines.	iOAT as treatment has a strong evidence base; TiOAT as lower barrier treatment is being piloted. iOAT and TiOAT as safer supply models require further evaluation.	Requires pilot testing and evaluation to develop an evidence base.	
Characteristics	Medicalized; embedded in addiction treatment and primary care systems; uses contingency management.	Medicalized; embedded in addiction treatment and primary care systems; can require multiple visits a day for observed dosing; contingency management; wrap-around care.	Low threshold, harm reduction and public health informed approach. Embedded in primary care, SCS/OPS/CTS, or housing with pathways to health, social, and addiction treatment services.	Non-medicalized; public health approach.
Goals	Patient led goals: e.g. reduce/stabilize drug use, work towards abstinence.	Patient led goals around reducing illegal drug use or stabilizing use, if desired.	Reduce illegal drug use and related risks.	Provide safer supply of regulated drugs.
	Reduce risks of overdose and harms; Increase engagement with health, social services; provide primary care; reduce petty crime, sex work; reduce reliance on illegal market. Engage with highly marginalized/at risk people who typically do not access health and social services.			

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Safer Opioid Supply

- Our program began in 2016 as a natural extension of hospital based prescribing to mitigate withdrawal symptoms
- Informed by evidence from NAOMI and SALOME studies
- Grown with input and direction from PWUD

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Guiding Principles of SOS

- **Harm reduction** focused (not addiction treatment)
- **Patient determined and directed** outcomes
- **Voices of People Who Use Drugs are prioritized**
- **Low barrier** care
- **Assertive** engagement/creative persistence
- **Non-oppressive** medical care
- **Open door back into healthcare**

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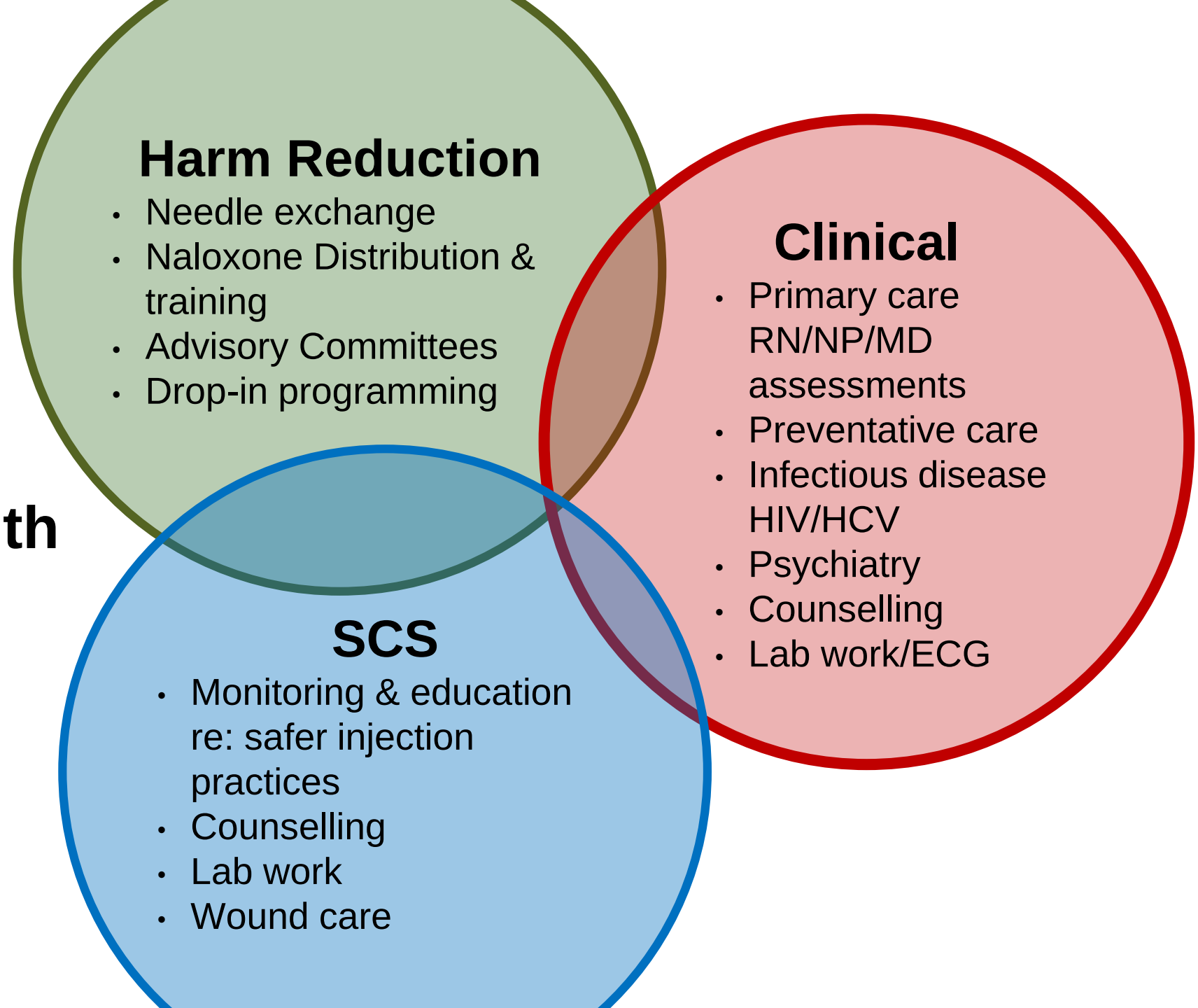
Community Health Centre Model



Inclusion criteria

- Opioid use disorder (DSM 5 defined)
- Opioid use consistent with opioid use disorder during the past 12 months
- Self reported regular illicit toxic drug use
- Previous unsuccessful MMT, buprenorphine or SROM only or currently not interested in attempting MMT, buprenorphine, or SROM only
- Urine drug screen positive for opioid(s) and especially heroin, fentanyl analogues, carfentanil or other substances in toxic street supply
- Have the capacity to consent

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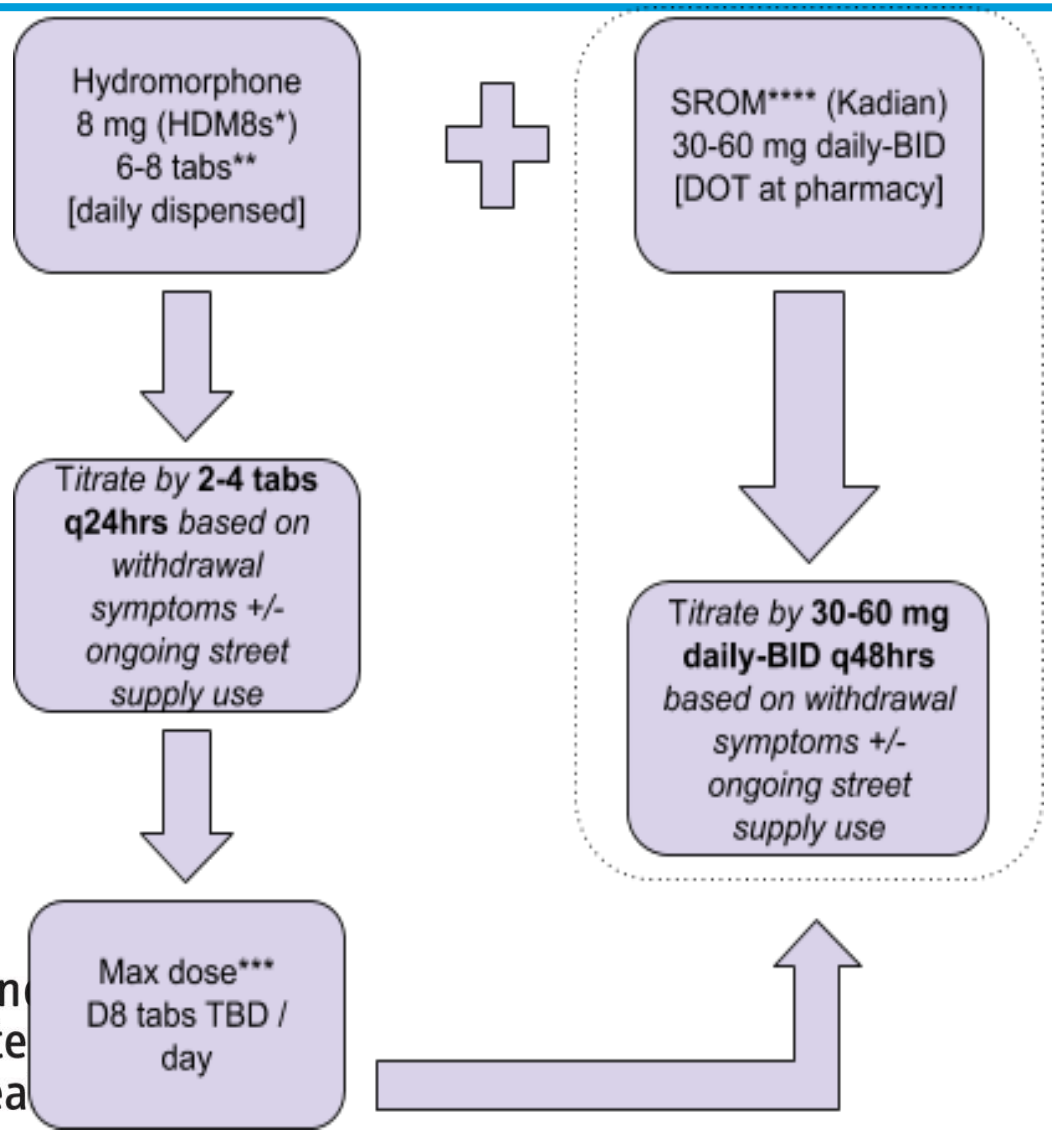
Safer Supply Intake Protocol



- Patients are seen daily during initiation phase (first 1-2 weeks)
- Seen by MD at minimum once weekly thereafter
- Frequent check-ins with NP, RN, SCS, Harm reduction outreach

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Program Doses

- **Hydromorphone**
  - Dose range: 2-30 tabs D8
  - Avg dose: 116mg = 14.5 tabs
  - Median dose: 128mg = 16 tabs

- **DOT Kadian:** 38 patients (33%)
  - Dose range: 20-1000mg
  - Avg dose: 270mg
  - Median dose: 300mg

Why hydromorphone IR?

RESEARCH ARTICLE

A controlled-release oral opioid supports *S. aureus* survival in injection drug preparation equipment and may increase bacteremia and endocarditis risk

Katherine J. Kasper[1], Iswarya Manoharan[2], Brian Hallam[3], Charlotte E. Coleman[1], Sharon L. Koivu[4], Matthew A. Weir[2,5], John K. McCormick[1,5], Michael S. Silverman[1,2,5,6]*

1 Department of Microbiology and Immunology, Western University, London, Canada, 2 Department of Medicine, Western University, London, Canada, 3 Department of Epidemiology and Biostatistics, Western University, London, Canada, 4 Department of Family Medicine, Western University, London, Canada, 5 Lawson Health Research Institute, London, Canada, 6 Division of Infectious Diseases, Western University, London, Canada

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Safer Opioid Supply

- 118 patients
- 4 years of experience and follow-up
- 90% retention rate

  - 5 patients to long term incarceration, 1 patient removed for behavior issues, 2 people were switched to observed model, 3 deaths
- weekly clinic visits
- Hydromorphone IR +/- DOT Kadian (SROM)
- Hydromorphone is daily dispense, take-home doses

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Safer Supply

Patient Characteristics at Intake

- **Intractable chronic IVDU (5-10 years)**
  - ≥ 50% use fentanyl by choice
  - All had fentanyl exposure through contaminated supply
  - At least 40% IDU > 10 years, with half of those 20+ years

- **Gender split** – 39M, 75F, 34%M, 66%F
- **Age range** – 18-60 years

- **Failed trial(s) of methadone/suboxone – 85%**

Safer Supply

Patient Characteristics at Intake

- Homeless on intake: 70 (62%)
- Experience of homelessness: 100%

- Poverty – 112/113 on social assistance
    - OW 45 (39%), ODSP 68 (61%)

- Engagement in sex work to pay for drugs
  – total: 51 (45%), 68% of women, 1 male

- Criminal activity to pay for drugs – 55 (48%)

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Safer Supply

Patient Characteristics at Intake

- **Drug of choice** – opioids, supplemented by crystal meth
- **Route of choice** – 100% IDU

- **Initial utox**
  - 100% opioid pos
  - 83% crystal meth

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Safer Supply

Patient Characteristics at Intake

- **Infectious Complications**
  - Any: 87 (77%)
  - Endocarditis: 29 (26%)
  - Sepsis: 15 (13%)

- **HCV positive:** 89 (79%)

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Safer Supply

Patient Characteristics at Intake

- HIV positive: 30 (27%)
- Taking NO treatment: 4, 13%
- Non-suppressed viremia: 14 (47%)
- CD4 < 200: 5 (16%)
- CD4 zero: 3 (10%)

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RESULTS

Impact on Drug Use

- **Reduction in more harmful drug use habits**
  - reduction in IDU from 100% to…
  - 27 (24%) oral only, 15 (13%) oral/IV combo
- **Reduction in FYL**
  - 30% positive in last 30 days
- **Reduction in crystal meth** 83% to 70%

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Impact on Mortality

ZERO Fatal overdose

1.7% all-cause annual mortality

1.1% annual mortality from complications of injection drug use

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Review of Deaths

- 3 deaths
- 1 completely unrelated to IDU
- 2 deaths from infectious complications
  - both hospitalized patients
  - both had decrease in admissions/number of infections
  - both eventually succumbed

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Mortality among PWID

Supervised injection facility use and all-cause mortality among people who inject drugs in Vancouver, Canada: A cohort study.

Kennedy MC[1,2], Hayashi K[1,3], Milloy MJ[1,2], Wood E[1,2], Kerr T[1,2].

Author information

Abstract

3% per year in non SIF users

1.7% per year for SIF users

Safer Supply
All-cause mortality: 1.7%
Mortality due to infectious complications: 1.1%

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Health outcomes

Management of Infectious Diseases

- **HIV management**
  - rate of positive viremia: 47% at intake to 10%
  - Engagement with HIV team… 100%
  - No new HIV diagnoses

- **Hepatitis C treatment**
  - 31 (26%) engaged with HCV team
  - 16 (13%) treated
  - 15 (13%) work-up to start treatment

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Health Outcomes
Infectious Complications

- **Epidural abscess**
  - 5 since program inception
  - all were supplementing with long acting preparations or fentanyl street supply

- **Rate of endocarditis**
  - ZERO new endocarditis
  - 1/113 (0.08%) recurrent endocarditis

Health outcomes

Engagement with Primary Care

- **Routine care**
  - 100% !!
  - pre-intake most had no FP or didn't see FP
- **Chronic disease mgmt.**
  - 27% now see allied health care
- **Cancer screening**
  - 50 (44%) age appropriate screening like pap, mammo, CRC
- **Mental Health care**
  - SW, outreach and psychiatry
  - connection to outreach teams – 67 (60%)

Rebuilding Trust

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Social outcomes

- **Reduction in homelessness**
  - 62% to 38%
- **Social Assistance -** 74% now on ODSP (60%)

- **Reduction in sex work**
  - 68% to 20%
  - Only man…no longer doing sex work

- **Reduction in crime –** 48% at intake to → 12%

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Next Steps
Research Collaborations

1. **ICES data for LIHC Safer Supply program**
- Funded & in progress

2. **London Health Sciences Centre**
- ED use & admissions study
- Retrospective chart review

3. **Ivey Business School**
- Cost-effectiveness of ESSP

4. **University of Toronto**
- Mixed methods research ESSP programs in 3 cities
- Focus on impacts of ESSP (i.e. diversion)

SOS Guidance document

https://bit.ly/3dR3b8m

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VIDEO

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Keep Six


WE MOURN
THOUSANDS
SAFE SUPPLY NOW
END THE STIGMA
END THE ARRESTS
DRUG PEACE