

Observing from Afar: Continuous Pulse Oximetry for People Who Smoke Opioids to Prevent Overdose Deaths

Project Background:

In 2021, 2,232 people died of an overdose in British Columbia (BC), the highest annual death toll on record.* Smoking opioids has become the most common way to consume opioids and the proportion of overdose deaths from smoking unregulated drugs increased from 31% to 56% between 2016 and 2020.*

Given the rise in smoking-related deaths during the coronavirus disease (COVID-19) pandemic since 2019, our project responded to an urgent need to develop a remote monitoring system that maintains physical distancing and is effective, feasible, and acceptable to staff at overdose prevention services (OPS) when monitoring and responding to people who smoke drugs. Continuous pulse oximetry enables real-time, remote oxygen level monitoring for patients in health care settings. Introducing this technology at OPS for individuals smoking drugs would promote service user and staff safety by allowing monitoring from a safe distance.

Project Purpose:

This project implemented a novel continuous pulse oximetry monitoring protocol using a participatory research approach to improve services at overdose prevention services for people who smoke opioids.

Objectives:

- The main objective is to **evaluate effectiveness, feasibility, and acceptability** of continuous pulse oximetry.
- The secondary objective is to **describe the incidence, timing, duration and severity of hypoxemia while smoking opioids.**

*British Columbia Coroners Service. Illicit Drug Toxicity Deaths in BC January 1, 2011 – December 31, 2021. <https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/illicit-drug.pdf>

*BC Coroners Services Illicit Drug Toxicity Deaths in BC Knowledge Update: Mode of Consumption (Feb 2022) <https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/mode-of-consumption.pdf>

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Project Overview

At four partnering overdose prevention sites in Vancouver and Victoria, we trained: (i) peer researchers on how to run this study, and (ii) staff on a standard response to low oxygen levels.

Peer researchers enrolled participants who smoke opioids at partnering overdose prevention services.

Peer researchers attached the continuous pulse oximeter to participants before smoking opioids.

Continuous pulse oximeters monitored participants' blood oxygen levels while they smoked opioids. Overdose prevention service staff viewed the blood oxygen data in real-time on a remote monitor.

Following the protocol, participants stayed at the overdose prevention service site for 30 minutes of further monitoring.

Findings will be used to develop harm reduction messaging for people who smoke drugs, expand remote monitoring to other overdose prevention services as well as private locations like supported housing across BC, and develop monitoring apps that allow people who use drugs alone to do so more safely.

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Who are Peer Researchers?

Peer researchers are people who use their lived or living experience of substance use in their research practice. Their expertise improves research relevance and validity.

Data collection by peer researchers:

Standardized surveys to collect information on participants that could impact low oxygen levels and overdose: age, gender, employment, housing status, medical history, and substance use history.



Standardized surveys to collect information about participants' perceived risks of smoking opioids and whether they had smoked opioids alone in the past three days (and if so, why).



Structured observations to assess if the study protocol was implemented as planned, and if overdose prevention service staff were able to maintain physical distancing as expected.



Recording times of inhalations, times of any alarms, time required for overdose prevention service staff to respond, and any overdose interventions indicated.



Brief surveys to understand the experience of participants and overdose prevention service staff. Peer researchers also completed a self-survey after each participants' visit reporting their satisfaction and experience with the continuous pulse oximetry monitoring process.

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How to use continuous pulse oximetry

Turn on the remote monitor by pressing the round button on the screen. Clean fingernail with an alcohol swab. Avoid fingernails with nail polish.



Open a new pack of disposable sensors. place the wrist band around the person's wrist. Attach the sensor to the nail that has the longest and widest nail bed.



Tap the Bluetooth chip on the Bluetooth receiver to establish a connection and next place the Bluetooth chip in the red holder on the person's wristband.



Blood oxygen level and heart rate readings should appear on the monitor screen within one minute



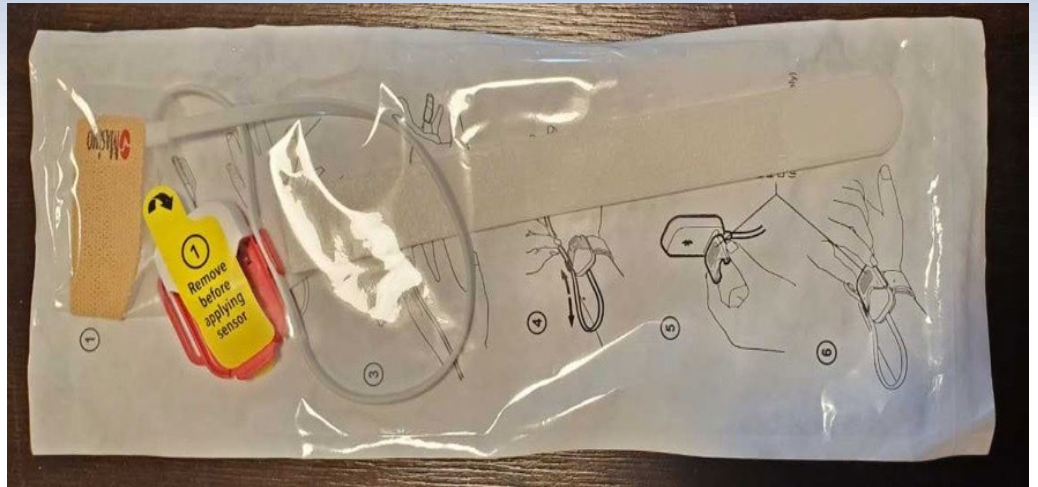
The alarm will sound if the person's blood oxygen levels fall to 90% or below for 15 consecutive seconds..



If the alarm is triggered, assess the individual and implement the appropriate intervention.



Use an alcohol swap to clean the Bluetooth chip after use. Dispose of the sensor and cable.



Sensitivity mode
Blood oxygen level reading
Blue light (red or white indicates faulty)
Bluetooth adaptor
Bluetooth chip
Power "on" button

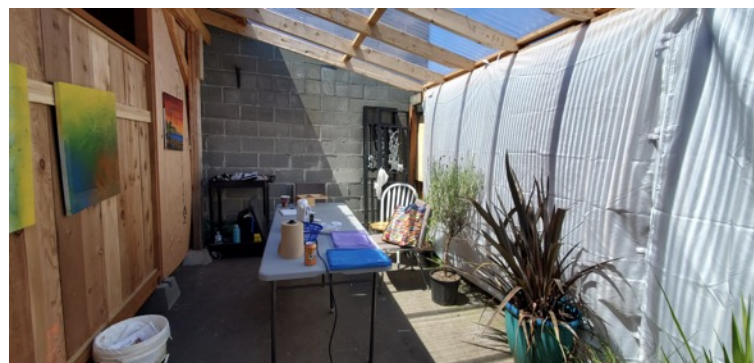
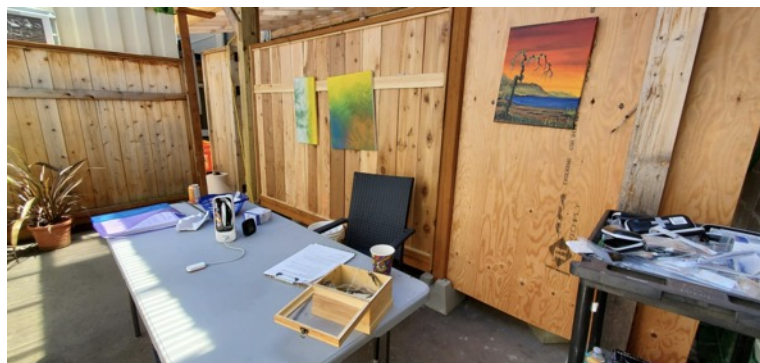


Wristband
Sensor
Red Bluetooth holder

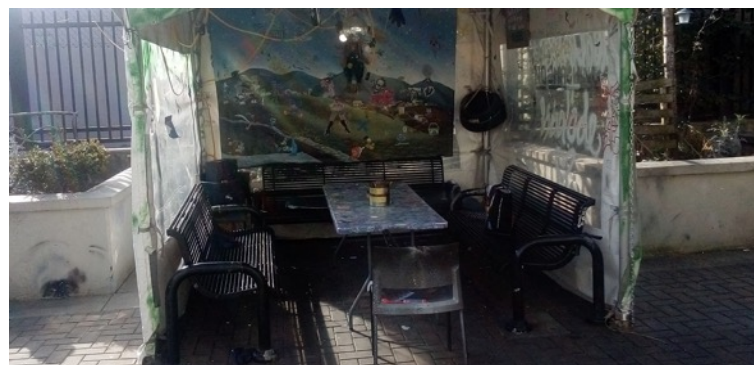
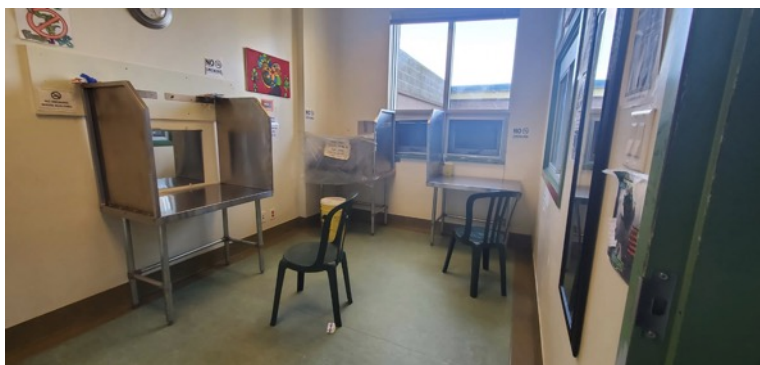
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Project Gallery

SOLID Outreach Society (Victoria)



Rock Bay Landing Shelter (Victoria)



Travelodge run by AIDS Vancouver Island Health & Community Services (Victoria)



Overdose Prevention Society (Vancouver)

