BC Centre for Disease Control
An agency of the Provincial Health Services Authority

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

BCCDC Naloxone Administration Decision Support Tool

Naloxone Administration for Suspected Opioid Poisoning

FOCUS

This Decision Support Tool (DST) is a systematic process for use by regulated health professionals who administer naloxone (with or without an order from an authorized health professional) in the management of a suspected opioid poisoning (overdose) emergency[a].

The term opioid poisoning is used instead of overdose because it is a more accurate term used in toxicology to describe physiological harms that can occur from consumption of opioids. Opioid poisoning reflects the unpredictability and volatility of the toxic unregulated drug supply.

SCOPE

In BC, the Health Professions Act permits all regulated health professionals to administer naloxone for emergency use during suspected opioid poisoning, even when administering a drug may not be within their professional scope of practice [1].

Health professionals should continue to follow provincial and federal legislation and regulations, organizational policies and processes, and applicable health profession regulations. It is recommended that providers take and regularly update naloxone administration and drug poisoning response training (e.g. Toward the Heart's Naloxone Administration Course), CPR training, and/or organizational required training for drug poisoning response.

BACKGROUND

Naloxone is an opioid antagonist that temporarily reverses the effects of opioids by competing for the same opioid receptor sites [2, 3]. Naloxone has no pharmacological effect if administered in the absence of opioids [3, 4]. In most drug poisoning emergencies, intramuscular injection (IM) is the preferred route of administration because it is quickly absorbed in the body and responders can titrate the appropriate dose of naloxone [5, 6]. If available in a healthcare setting, intravenous (IV) is the preferred route of administration [3, 5, 6].

In 2016, naloxone was unscheduled in BC and made available without a prescription when

[a] In Canada, naloxone can be administered by anyone who witnesses a suspected opioid overdose in any setting. This DST is intended to guide professional practice for regulated health professions.

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

used for suspected opioid poisoning emergencies (see the BC Drug Schedules Regulation) [7]. Following this, the Health Professions Act and the Emergency Health Services Act were amended to allow all individuals to administer naloxone for opioid poisoning emergencies regardless of setting. This includes people who are working in settings where emergency administration of naloxone is not within their usual responsibilities or scope of practice at that time (including healthcare professions, first responders, staff, bystanders etc.)[8].

EPIDEMIOLOGY

Deaths from drug poisoning have risen sharply across Canada in recent years. In 2021, 2,267 people died from opioid poisoning, a 22% increase from 1,773 deaths in 2020 [9]. Fentanyl was most frequently detected in BC's illicit drug toxicity deaths (86%), followed by methamphetamines (41%). According to the BC Coroner's Service Death Review Panel of Illicit Drug Toxicity Deaths, drug poisoning deaths disproportionately impact Indigenous peoples, males between the ages of 19-39, persons with mental health disorders, and people experiencing housing instability and poverty [10, 11].

Results from drug checking services in BC reflect the toxicity and unpredictability of the unregulated drug supply. The potency of unregulated fentanyl differs widely and is often found to contain extreme concentrations of fentanyl and other highly potent opioids (e.g. carfentanil). Unknown and harmful substances are routinely detected across the unregulated drug supply, including adulteration of opioids with stimulants, fillers, cutting agents, and other unexpected substances (e.g. levamisole).

At the time of writing, benzodiazepines (benzos) and analogues (e.g. etizolam) have been increasingly identified in the unregulated drug supply across BC [10]. Benzodiazepines combined with opioids can worsen respiratory depression and cause complex drug poisoning presentations, such as prolonged sedation [12]. Further, the ongoing presence of benzodiazepines may contribute to physical dependence. People with benzodiazepine dependence may experience withdrawal symptoms, including withdrawal seizures, if benzodiazepines are abruptly stopped. Due to the lack of oversight and regulation of the current drug supply, novel and harmful substances in the unregulated supply will continue to cause unpredictable and complex drug poisoning presentations.

Up-to-date information can be found on the Unregulated Drug Poisoning Emergency Dashboard

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

Factors associated with opioid poisoning:

Many factors influence the toxicity of opioids and increase the risk for drug poisoning. The likelihood of experiencing an opioid toxicity[b] event or opioid poisoning varies, depending on:

- Route of administration
- Opioid tolerance
- Potency of opioid (e.g. Fentanyl is about 100 times more potent than morphine)
- Presence of adulterants in substances (e.g. xylazine, benzodiazepines)
- Polysubstance use (use of multiple substances at or around the same time) [13]

Factors associated with increased risk for opioid poisoning include:

- Fentanyl use from the unregulated drug supply:
- Decreased tolerance from a period of reduced or no substance use (e.g. incarceration, treatment, detox)
- Using substances alone
- Polysubstance use with other respiratory or central nervous system depressants (e.g. benzodiazepines, alcohol) [14]
- Conditions that compromise respiratory function (e.g. congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), obesity, obstructive sleep apnea) [15]
- Conditions that compromise liver function (e.g. viral hepatitis, cirrhosis, liver failure) [16]

Stigma and drug poisoning

People who use substances experience many barriers to appropriate and high quality healthcare, including judgement, stigma, and discrimination when accessing care. Healthcare professionals are often the first point of contact with the health system for people who use substances and have a significant influence on the quality of care provided [17]. Using people-first language, avoiding judgement, and being aware of harmful practices and language used in healthcare settings can help to address stigma and improve the quality of care for people who use substances[c].

[b] Toxicity is a measure of how harmful or poisonous a substance is.
[c] Visit towardtheheart for more information about naloxone, compassionate engagement, and stigma

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

CLINICAL PRESENTATION OF OPIOID POISONING

The unpredictable and volatile unregulated drug supply and prevalence of polysubstance use contribute to variable clinical presentations.

Opioid poisoning may also include a range of typical symptoms in addition to complex symptoms depending on the individual and the substance(s) consumed.

Typical signs and symptoms of opioid poisoning:

Opioid poisoning is usually characterized by **three key signs and symptoms** [13]:

1. Decreased level of consciousness: unresponsive or decreased responsiveness to verbal and/or painful stimuli.
2. Respiratory depression: not breathing, or slow, irregular, or poor quality of breathing.
3. Pinpoint or constricted pupils (miosis).

Impaired breathing and low levels of oxygen in the body contribute to **other common signs**, including:

- Skin, lips and nailbeds appear blue/purple in lighter skin tones or grey/ashen in darker skin tones
- Cold and clammy skin

Clinical presentation of complex opioid poisoning:

Complex opioid poisonings include the above-mentioned typical signs and symptoms of opioid poisoning in addition to symptoms that can make management more complicated, such as:

- Fentanyl-induced muscle rigidity [18]:
  - Clenched jaw
  - Rigid chest or torso
  - Decorticate posturing (abnormal body posture with arms bent in towards the body, legs straight, and fists clenched)
  - Standing, unable to sit down
  - Fixed/staring gaze, unable to speak
- Dyskinesia (involuntary muscle movements: “flailing”) [18]
- Prolonged sedation from combination of substances (e.g. fentanyl with benzodiazepines) [12]
- Seizures

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

- Bradycardia or arrhythmia
- Vomiting

Similar clinical presentations

Sometimes there may be another cause(s) underlying the clinical presentation that appears similar to opioid poisoning. If the cause of the clinical presentation is unclear or if opioid poisoning is uncertain, administration of naloxone is still recommended, as the risks are relatively low.

The following factors can produce clinical presentations that appear similar to opioid poisoning:

Substances	Medical History	Medical Conditions
• Central nervous system depressants (alcohol, GHB) • Sedative-hypnotics (barbiturates) • Anxiolytics (benzodiazepines) • Carbon monoxide	• Diabetes • Cardiovascular disease • Respiratory disease • Concurrent medications • Seizure disorder • Traumatic brain injury	• Myocardial infarction (heart attack) • Acute neurological infection • Sepsis • Intracranial hemorrhage • Hypoglycemia • Electrolyte disturbances • Cerebrovascular Accident (Stroke)

Ongoing assessment, monitoring, and evaluation of interventions is critical to avoid missing potentially critical clinical conditions.

ASSESSMENT

Conduct initial rapid assessment of the scene and person

1. Assess the scene and implement precautions and procedures:

i. Assess scene to identify hazards and assess risks (e.g. environmental factors, sharps, access to emergency response equipment, etc.)
ii. Apply necessary precautions and measures (e.g. personal protective equipment)
iii. Follow appropriate organizational emergency procedures (e.g. code blue, 911)

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

2. Assess the person to determine if opioid poisoning is suspected:

Assess for opioid poisoning, including typical and complex signs and symptoms of opioid poisoning:

Typical signs and symptoms:

1. Decreased level of consciousness[d]:
    - Drowsiness, sedation, lethargy, or confusion
    - Unresponsive or decreased response to verbal and/or painful stimuli
2. Respiratory depression [19]:
    - Apnea (no breaths) or respiratory depression (less than 10 breaths/min)[5]
    - Slow, irregular, or poor quality of respirations
    - Presence of abnormal sounds, such as choking, gurgling, snoring, or wheezing
    - Decreased oxygen saturation (less than 90% on room air by pulse oximetry)
    - Peripheral (hands/fingernails) or central (lips) cyanosis. Cyanosis in darker skin tones may appear grey/ashen and blue/purple in lighter skin tones.
    - Cold and clammy skin
3. Decreased pupil size
    - Pinpoint or constricted pupils [20]

Complex signs and symptoms:

- Abnormal heart rate or rhythm
- Muscle rigidity
- Abnormal muscle movements
- Signs of hypotension (e.g. dizziness, confusion, syncope)
- Signs of seizure
- Vomiting

If the scene is safe to proceed, precautions have been implemented, and opioid poisoning is suspected, proceed to *Management and Interventions*.

[d] Use organizational endorsed mental status assessment tool, such as the Glasgow Coma Scale (GCS), Alert-Verbal-Pain-Unresponsive (AVPU) Scale, Pasero Opioid-Induced Sedation Scale (POSS), Richmond Agitation and Sedation Scale (RASS), or Stage of Intoxication Scale.

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

MANAGEMENT AND INTERVENTIONS

Respond quickly and follow the SAVE ME steps to respond to suspected opioid poisoning.

Equipment and Scope

Drug poisoning emergency response resources vary based on available assessment equipment, supplemental oxygen and ventilation methods, and mode of naloxone administration. The equipment and resources available depend on provider scope and training as well as organizational policy and procedures.

The following equipment may be available for drug poisoning response:

- **Basic equipment** (e.g. take home naloxone kit): naloxone ampoules and intramuscular syringes (or intranasal naloxone), CPR face shield, basic personal protective equipment (gloves).
- **Advanced equipment** (e.g. crash cart): pulse oximeter, oral and nasopharyngeal airways, bag-valve-mask, simple face mask, supplemental oxygen, suction and yankauer catheters, AED, blood pressure cuff and stethoscope, glucometer, pen light, emergency medications (e.g. epinephrine, glucose tabs, etc.), personal protective equipment, and other emergency supplies.

Most advanced response practices are restricted activities for regulated health professions (e.g. inserting a nasopharyngeal airway). Providers should be aware of their professional scope of practice, organizational policies, and individual competence. See *Scope* section above.

Follow SAVE ME Steps

Follow the SAVE ME steps to manage opioid poisoning (outlined below). Consider available emergency response equipment, provider scope and training, and organizational policy and procedures when determining appropriate actions outlined in the SAVE ME steps.

Stimulate

Assess level of consciousness and elicit response.

1. Try to elicit a response using verbal stimuli:
    - Call their name, ask a question, or make noise.

2. If unresponsive to verbal stimuli, try to elicit a pain response:
    - Squeeze the trapezius muscle or apply pressure to the fingertips [21].

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

3. If they are unresponsive to verbal and painful stimuli, activate the emergency response procedure depending on the setting:
    - Call 911, Code Blue, etc.

Proceed to *Airway*.

Airway

Assess for respiratory depression and maintain patent airway.

1. Determine ventilation and oxygenation status:
    - Assess respiratory rate and quality of respirations.
    - Assess oxygen saturation level using an oximeter (if available) and clinical signs and symptoms of hypoxia.
    - Assess airway patency and protection.

2. Maintain airway:
    - Remove obstructions in the mouth.
    - Insert airway[e].

3. Check for presence of a pulse:
    - If no pulse, begin CPR with compressions and rescue breathing immediately.

4. If ventilation and/or oxygenation is impaired (see list below), proceed to *Ventilate*:
    - Less than ten breaths per minute unassisted, AND/OR
    - Oxygen saturation is less than 90% on room air, AND
    - Unusual breathing sounds AND/OR
    - Airway obstruction or unable to protect the airway.

    [13, 19, 22, 23]

Ventilate

Provide assisted ventilation and oxygenation.

1. Perform head tilt- chin lift or jaw thrust maneuver [24].

[e] Insert oropharyngeal airway (OPA). If unable to insert OPA, consider insertion of nasopharyngeal airway if in professional scope of practice and competent.

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

2. Provide assisted ventilation and supplemental oxygen, proceed to *Evaluate:*
    - Administer 1 breath every 5 seconds using a CPR face shield OR bag-valve-mask with supplemental oxygen until the person is breathing adequately on their own.

If the person starts breathing adequately on their own at any time during the response:

- Place in recovery position.
- Monitor respiratory rate, oxygen saturation, and level of consciousness.
- If respiratory depression recurs, repeat SAVE ME steps.

Evaluate

Reassess clinical status.

1. Reassess ventilation and oxygenation status.
    - Assess respiratory rate and quality of respirations.
    - Assess oxygen saturation level using an oximeter (if available) and clinical signs and symptoms of hypoxia.
    - Assess airway patency and protection. Re-insert airway if necessary.

2. Reassess level of consciousness.
    - Assess verbal and pain stimuli response.

3. Reassess pulse.
    - If no pulse, begin CPR with compressions and rescue breathing immediately.

If respiratory rate is less than 10 breaths per minute unassisted AND/OR oxygen saturation is less than 90% on room air, proceed to *Medication* [19, 22, 23].

Medication

Administer naloxone.

1. Administer naloxone:
    - Inject 0.4 to 0.8 mg (1 to 2 ampoules) intramuscular (IM) to deltoid, vastus lateralis, or ventrogluteal, OR
    - Spray one dose of intranasal spray (4mg) into nostril.

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

Naloxone dosing

Initial dose

The recommended initial naloxone dose ranges between 0.4 to 0.8 mg IM to allow provider discretion with consideration of the local context, current trends in the unregulated drug supply, opioid potency, and clinical judgement.

Providers in settings with basic drug poisoning response resources (e.g. take home naloxone kit) may choose to give a higher initial dose of naloxone (0.8 mg IM) when responding to complex or severe presentations where it is difficult to establish ventilation, such as fentanyl induced muscle rigidity or dyskinesia.

Regulated health professions in community based or clinical settings may be more comfortable to administer a lower initial dose of naloxone with adequate airway management, assisted ventilation, team-based response, and the equipment to monitor and respond rapidly.

Providers should consider the risk of precipitating acute opioid withdrawal associated with multiple naloxone doses with the need to quickly establish adequate ventilation. The risks of an unmanaged opioid poisoning where the person is apneic or near apneic are greater than those associated with acute opioid withdrawal
[3, 4, 25-29].

Subsequent dosing

If there is no response to the initial dose of naloxone, dosing should be escalated due to the presence of highly potent opioids in the unregulated drug supply [3].

Consider subsequent doses administered every 2 minutes IV or every 3 minutes IM according to the following schedule: 0.4 mg, 0.4 mg, 2 mg, 4 mg, and then 10 mg as a final dose if there is a high clinical suspicion of opioid poisoning. If there is no response after this dosing schedule, investigate other causes [13].

Clinical facilities

Appropriate clinical facilities may consider opioid poisoning response protocols with a lower initial dose of naloxone to avoid precipitating withdrawal and alternate dose schedule with escalating doses of naloxone.

Clinical facilities that are equipped with resources for continuous patient monitoring and

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

resuscitation, emergency equipment, and trained healthcare providers may consider alternate dosing of naloxone in accordance with the BC Drug and Poison Information Centre (DPIC) Opioid Overdose Best Practices Guidelines.

Clinical settings should consider the availability of resources, healthcare provider training and experience, and ability to rapidly detect and resuscitate persons experiencing opioid poisoning. This includes adequate regulated provider to patient staffing ratio and training, continuous patient monitoring, and emergency equipment.

Clinical facility policy may wish to consider intravenous (IV) administration of naloxone with initial dosing:
Adults: 0.1 mg IV
Pediatrics: 0.1 mg/kg IV of body weight
[5, 13]

Evaluate & Support
Reassess clinical status.

1. Allow 3 to 5 minutes (or 2 to 4 minutes for severe opioid poisoning presentations) for onset of naloxone. Continue to provide assisted ventilation.

2. Reassess ventilation and oxygenation status:
    - Assess respiratory rate and quality of respirations.
    - Assess oxygen saturation level using an oximeter (if available) and clinical signs and symptoms of hypoxia.
    - Assess airway patency and protection. Re-insert airway if necessary.

    If there is respiratory depression, repeat *Medication* and *Evaluate & Support*:
    - Give another dose of naloxone if respiratory rate is less than ten breaths per minute unassisted AND/OR oxygen saturation is less than 90% on room air.

    If breathing returns to normal, stop SAVE ME steps and support:
    - Place in recovery position.
    - Monitor respiratory rate, oxygen saturation, and level of consciousness.
    - If respiratory depression recurs, repeat SAVE ME steps.

BC Centre for Disease Control
An agency of the Provincial Health Services Authority

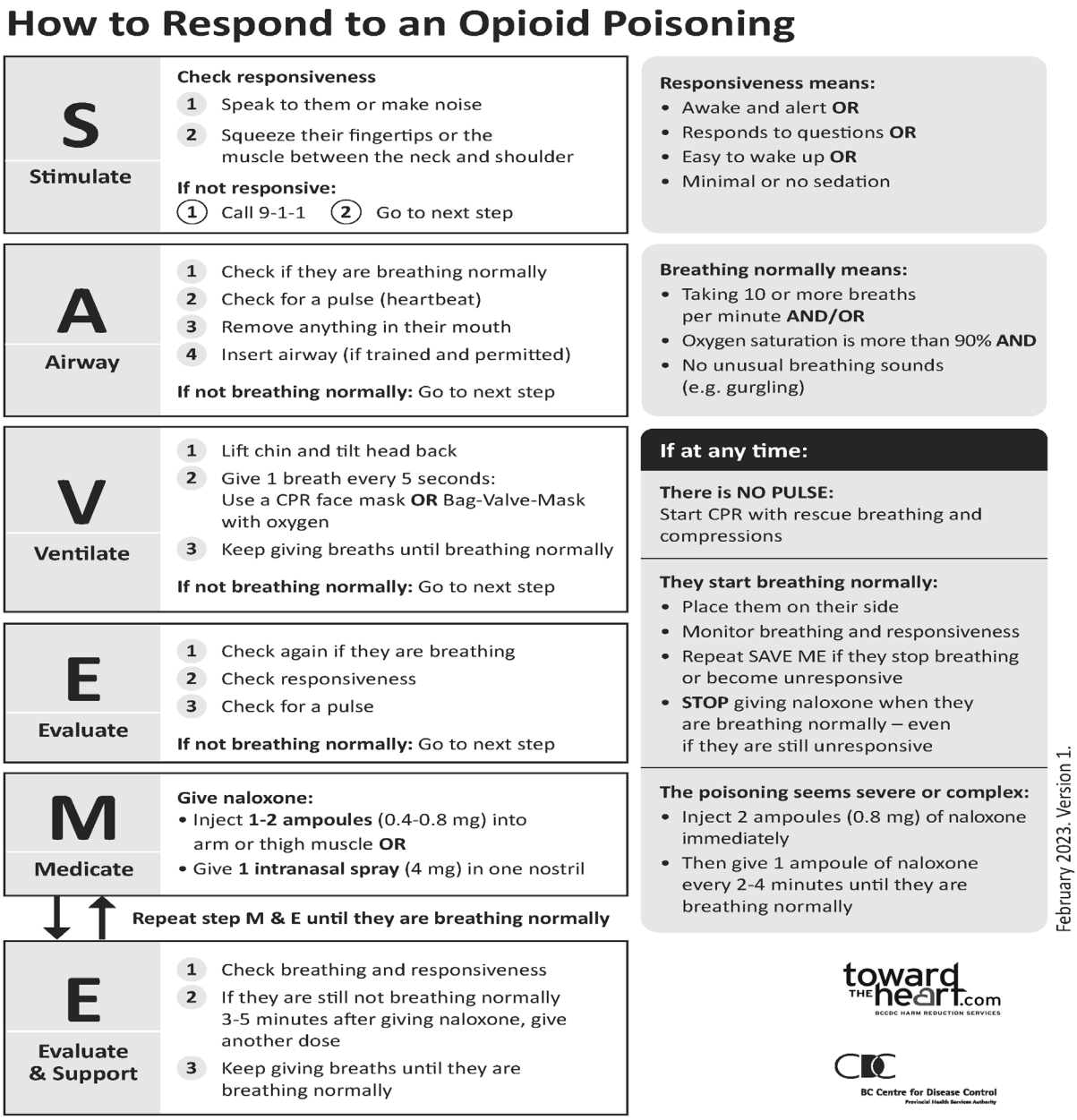
Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

.

SAVE ME Flowchart



Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

Conduct secondary assessment, if clinically indicated

After implementing SAVE ME steps and stabilizing life-threatening conditions, conduct a rapid and systematic secondary assessment, if clinically indicated.

During secondary assessment, ensure ongoing assessment, management, and evaluation including airway management and additional doses of naloxone, as indicated.

Clinical indications for secondary assessment:
• Underlying cause of clinical presentation is unknown or uncertain • New or unresolved signs and symptoms after SAVE ME steps (e.g. prolonged sedation) • If there are new or ongoing clinical issues

The secondary assessment will depend on the situation, including the person's known history, medications, clinical presentation, trends in the unregulated drug supply, and the responder's clinical judgement.

Secondary assessment may include:

- Focused health history (presenting signs and symptoms, allergies, medications, medical history, oral intake, events related to current illness/injury)
- Vital signs and pain assessment
- Blood glucose level
- Neurologic assessment (e.g. pupil size, FAST screen: facial drooping, arm/limb weakness, speech, time of symptom onset)
- Odour (e.g. ethanol, fruity breath)
- Skin assessment (e.g. hydration status, presence of medication patches, colour, temperature, diaphoresis, etc.)
- Signs of infection (e.g. elevated temperature, coughing, wounds, cellulitis)
- Signs of physical trauma (e.g. head injury, bruising, lacerations)
- Signs of seizure
- Cardiovascular assessment (pulse rate and rhythm, apical auscultation, extremities, capillary refill, etc.)Respiratory assessment (auscultate breath sounds, inspect chest, use of accessory muscles, cough and sputum, etc.)

If available, consider referral or consult with an advanced care practitioner (NP or MD) if suspected opioid poisoning appears complex or requires further assessment and clinical

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

management. If there is no access or ability to refer to an advanced care practitioner, escalate to emergency care for further medical assessment and treatment.

Considerations for pregnancy and lactation

Pregnancy

Management of suspected opioid poisoning during pregnancy follows the standard recommendations for suspected opioid poisoning with additional considerations:

- Start with the lowest effective dose of naloxone to avoid precipitating withdrawal [30]: 0.4mg IM. Repeat naloxone every 4 minutes until breathing normally on their own [30].
- If available, use injectable naloxone. The risk for precipitated withdrawal is greater after intranasal administration due to significantly higher plasma levels of naloxone. If IM/IV naloxone is not available, administer 4 mg naloxone intranasally [31].
- If using intranasal naloxone, administer doses based on respiratory rate. If more than one dose of intranasal naloxone is administered, anticipate precipitated withdrawal in the pregnant person and fetus [31].
- After 20 weeks gestation (about 5 months pregnant), the weight of the uterus can cause aortocaval compression in the supine position (lying on the back), decreasing cardiac output and blood pressure [30].
- Relieve pressure and improve circulation by:
  - Tilting the person 15-30 degrees to their left, by wedging pillows/blankets under the right buttock or hip. Note: the right hip should be higher than the left.
  - Manually displace the uterus to the person's left.
  [30]
- Offer and provide nonjudgmental and supportive care following drug poisoning reversal.
- Supportive care and decision-making should be directed by the person who experienced the drug poisoning. There is no duty to report for pregnant persons or the fetus.

Lactation (breastfeeding/chestfeeding)

Administration of naloxone to people who are lactating does not cause infant exposure to naloxone through human milk. Naloxone is excreted in human milk, however, it is not bioavailable when ingested by the infant [2].

While naloxone is not bioavailable to the infant through human milk, administration of naloxone may cause abrupt cessation of opioids available in the milk [2, 5]. The abrupt cessation of opioids may contribute to opioid withdrawal in an infant that has developed opioid tolerance [32, 33].

If naloxone is given to a person breast/chestfeeding an infant, consideration should be given to monitor the person and infant for acute opioid withdrawal. Neonatal opioid withdrawal requires further medical assessment and clinical management to avoid poor health outcomes for the infant.

POTENTIAL COMPLICATIONS

The most common adverse effect of naloxone is acute opioid withdrawal. A severe but rare complication is noncardiogenic pulmonary edema [34, 35].

Acute opioid withdrawal

Naloxone, particularly when multiple doses are administered, can cause acute opioid withdrawal if the person has opioid tolerance [4, 36, 37].

Signs and Symptoms of Acute Opioid Withdrawal		
Tachycardia	Tremor	Anxiety and irritability
Sweating and chills	Nausea and vomiting	Abdominal cramps
Goosebumps	Diarrhea	Muscle and joint pain
Dilated pupils		

Withdrawal from other substances like benzodiazepines and alcohol can present similarly to acute opioid withdrawal and should be differentiated. A clinical tool, such as the Clinical Opiate Withdrawal Scale (COWS), can be used to monitor acute opioid withdrawal.

Noncardiogenic pulmonary edema

Naloxone-induced noncardiogenic pulmonary edema (NCPE) is a rare complication that can occur 12-24 hours after administration of naloxone. Naloxone-induced NCPE is an acute condition where excess fluid in the lungs causes difficulties breathing and makes it difficult for oxygen to be delivered to the body (hypoxia) [34]. NCPE usually presents as acute respiratory distress syndrome (ARDS) characterized by acute onset respiratory distress with dyspnea (shortness of breath), tachypnea (high respiratory rate), increased work of breathing, and hypoxia [38]. NCPE is potentially life-threatening and requires immediate emergency medical treatment. Monitor for hypotension, ventricular tachycardia or fibrillation, and pulmonary edema in patients with pre-existing cardiac disease [34].

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

Considerations for pregnancy and lactation

Data is limited on the use of naloxone during pregnancy [5]. However, emergency administration of naloxone is recommended to treat suspected opioid poisoning during pregnancy as the benefits far outweigh potential risk. Any risks associated with naloxone to reverse an opioid poisoning are significantly less than the harms of oxygen deprivation for the pregnant person and fetus during untreated opioid poisoning [30, 31].

Note that naloxone administered during pregnancy may cause precipitated withdrawal in the pregnant person and fetus. Precipitated withdrawal can result in fetal distress and premature labour [32]. However, administration of naloxone should be prioritized to save the pregnant person's life. Providers are encouraged to ensure adequate airway management and ventilation of the pregnant person and titrate an appropriate dose of naloxone.

MONITORING AND FOLLOW-UP CARE

Naloxone typically wears off in 20-90 minutes, while most opioids last much longer in the body. After administration of naloxone, rebound opioid toxicity (also called secondary opioid poisoning) can occur due to the presence of opioids in the body after naloxone wears off [5, 13].

Following administration of naloxone, monitor respiratory and mental status closely or transfer to emergency care for monitoring (or as per organizational policy).

Recommended observation time	Naloxone dose and/or type and route of opioid use
2 hours	• Less than 0.8mg naloxone IM/SC given, OR • Less than 2mg IN naloxone given AND • Opioid was smoked, insufflated, or injected (*not* ingested), AND • No repeat naloxone doses following initial reversal
6 hours	• More than 0.8 mg naloxone IM/SC required for reversal, OR

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

	• More than 2 mg IN naloxone required for reversal, OR • Substances were taken orally (ingested)
12 hours	• Sustained release opioid taken orally (e.g., methadone, slow-release oral morphine) • Naloxone infusion given (hospital setting)

[13, 39]

If providers are unable to monitor closely, the person declines monitoring, or in cases where providers are unable to respond, discuss harm reduction strategies to prevent or respond to rebound opioid toxicity event [13].

- Support the person to identify a harm reduction safety plan:
  - Recommend the person stays with someone who is able to check breathing and consciousness (at minimum every 15 minutes) for the duration of the recommended observation time, has a take home naloxone kit, and can call for help if needed.
  - Provide harm reduction and drug poisoning prevention resources including information on drug checking, safer supply, overdose prevention services, etc.
- Provide a take home naloxone kit and training.
- Recommend avoiding use of opioids for a minimum of 2-3 hours following the last dose of naloxone due to the risk of rebound opioid toxicity.

The Good Samaritan Drug Overdose Act (GSDOA) provides legal protection for people seeking emergency medical assistance on the scene of a drug poisoning from being charged for conditions related to simple possession (personal use) of a controlled substance, and/or for violation of pre-trial release, probation order, conditional sentence, or parole related to simple possession [40-42].

For more information:

- Government of Canada
- Toward the Heart

Pregnancy and lactation

Fear of child separation and substance use surveillance is a driver of drug poisoning amongst parenting women. Parenting women identify the fear of child welfare involvement

and child separation as reasons to hide substance use and use alone, greatly increasing risks of drug poisoning [43, 44].

After a pregnant person experiences opioid poisoning:

- Discuss the person's preferences and offer urgent or acute care (depending on site resources and location) referral for post-opioid poisoning monitoring for fetal distress and premature labour.

If a person experiences opioid poisoning and is breastfeeding/chestfeeding:

- Administration of naloxone to the person breast/chestfeeding may cause a sudden stop to the amount of opioids available in human milk. This may cause opioid withdrawal in an infant consuming the milk, which requires monitoring and care [2, 5].
- If naloxone is given to a person breastfeeding/chestfeeding an infant, it is important to monitor the infant for acute opioid withdrawal. Escalate care to an advanced care practitioner [32, 33].

CONSULTATION AND/OR REFERRAL

Following opioid poisoning reversal (with or without naloxone administration), determine the need to refer to emergency services and/or further assessment and care.

If the opioid poisoning presentation was complex or severe, consider urgent consultation or referral to advanced care practitioner (NP or MD) for further assessment and clinical management.

Requirements for consult or referral and/or emergency care will be informed by organizational policies and regulated heath profession requirements.

Report unusual drug poisonings

Due to the unpredictability of the toxic unregulated drug supply, emerging trends in the toxic drug supply and drug poisonings provides valuable information for people who use substances and those who respond to drug poisonings.

Providers and people who use substances are encouraged to escalate clusters of unusual or complex drug poisonings including severe drug poisonings or other trends to the BCCDC Harm Reduction and Substance Use Services and to the appropriate regional health authority toxic drug alerting system.

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

People who are pregnant and/or parenting:

People who are pregnant and/or parenting experience drug poisoning and significant substance use related stigma. B.C's child welfare mandate and duty to report guidelines pertain to living children and do not extend to a fetus. Non-punitive policies and relational care are necessary to support caregivers and children.

Substance use or drug poisoning, without indication or concern of risks for harm to child(ren), does not necessitate a report to the Ministry of Children and Family Development (MCFD) or Indigenous Child and Family Services Agency (ICFSA) [45].

Not all substance use affects a parent's ability to provide safe care. There is a duty to report to the MCFD/ICFSA if there are imminent concerns the parent and/or family are unable to provide safe care due to significant impairment in judgement, behaviour, and/or level of consciousness and has not made adequate arrangements for the child's care [45, 46].

Approach care with people who are pregnant and/or parenting following the Provincial Blueprint for a Perinatal Substance Use Continuum of Care, including guiding principles of trauma and violence informed care, Indigenous cultural safety and anti-racism, and harm reduction.

CLIENT EDUCATION

Following drug poisoning response and administration of naloxone, provide personal space, a safe and calm environment, and supportive reassurance as the person becomes reoriented.

Larger doses of naloxone than necessary to reverse opioid intoxication may cause precipitated opioid withdrawal and physical discomfort [4]. Regaining consciousness in an unfamiliar environment without memory of preceding events along with discomfort of withdrawal can cause anxiety, fear, and agitation.

Use a trauma-informed approach to provide the opportunity to debrief the event with the person who experienced drug poisoning. This may include a brief explanation of the events that happened during the drug poisoning and the reasons for naloxone administration (e.g. not breathing, unconscious, etc.).

Provide the person with information about important time considerations:

- Naloxone works for 20-90 minutes in the body.
- Rebound opioid toxicity (another drug poisoning) can happen after the naloxone

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

wears off because most opioids last longer than naloxone.
- If the person has a tolerance to opioids and naloxone has caused acute withdrawal, unpleasant opioid withdrawal symptoms will improve when naloxone wears off.
- If there is naloxone in your body, taking more opioids will not result in euphoric effects.[5]

Discuss recommendations for post-opioid poisoning monitoring and follow-up care:
- Opioid poisoning can return after naloxone wears off in 20-90 minutes.
- Rebound opioid toxicity can cause harm or death if is not managed, including injury from falls, aspiration from vomiting, and brain injury or death from lack of oxygen.
- Stay with a buddy or at a location where there are drug poisoning response resources.[13]

Provide information on harm reduction strategies for future safety planning:
- Avoid using alone. Use with a buddy, a virtual app such as Lifeguard or Brave, a phoneline such as NORS, with an episodic overdose prevention services (eOPS) provider, or at an overdose prevention site (OPS).

For more information see the Toward the Heart Safer Sex and Safer Substance Use information. See the Toward the Heart site finder tool to search for local overdose prevention sites, harm reduction supplies, naloxone distribution sites, and hormone injection supplies. Provide naloxone training and kits.

In BC, group training sessions in drug poisoning prevention and response are available through St. John Ambulance.

Provide information on drug-checking services and toxic drug alerts:
To find local drug checking services, see the BCCSU Drug Checking Sites
- For testing by mail or in person (Vancouver), see Get Your Drugs Tested
- Sign up to receive Toxic Drug and Health Alerts by text message: Text JOIN to 253787 (ALERTS)

If appropriate, provide information on local substance use treatment services and referrals:
- For OAT clinics accepting new patients, see the BC Centre on Substance Use
- For information on perinatal substance use, see the BC Women's Hospital Perinatal Substance Use Program

DOCUMENTATION

Documentation requirements differ across organizations, sites, and between regulated and non-regulated providers. Documentation requirements are determined by organizational guidelines and professional standards and regulations.

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

It is important for all providers to know their organizational documentation requirements related to drug poisoning response. Regulated health professions should also understand their unique professional documentation responsibilities.

Documentation for regulated professions in BC

- Regulated health professions should document according to their organizational requirements and their professional regulatory body's standards and guidelines for practice.

Documentation for nurses:

- Nurses make up a large number of regulated providers who respond to drug poisoning in health settings across BC.
- Nurses (including licensed practical nurses, nurse practitioners, registered nurses, and registered psychiatric nurses) must meet their regulatory body—the BC College of Nurses and Midwives (BCCNM)—guidelines and standards.
- Nurses are required to document all medication administration and safety events.
- Nurses who provide care during drug poisoning response should document medication administration (e.g. naloxone) and emergency events (e.g. drug poisoning response). This means that all drug poisoning response interventions and naloxone administration must be documented in the person's medical record.

Documentation for health authority sites in BC

- Provincial and regional health authority sites using the BC Patient Safety and Learning System (PSLS) should report drug poisoning as a patient safety event in PSLS.
- The PSLS report is not linked to a patient and should not include identifying patient information.
- Sites should follow their health authority policy for guidance on reporting procedures.

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

Public Health Response
Provincial Harm Reduction Services

655 West 12th Ave
Vancouver, BC

harmreduction@bccdc.ca
www.bccdc.ca
www.towardtheheart.com

REFERENCES

1. Laws, B., *Health Professions General Regulation, BC Reg. 275/2008. Health Professions Act*. 2020.
2. Briggs, G., Freeman, R., Towers, C.V., & Forinash, A. , *Drugs in Pregnancy and Lactation 11th Edition*. 2017: Wolters Kluwer.
3. Canada, B., *Product Monograph Including Patient Medication Information. Naloxone Hydrochloride Injection, USP*. 2021.
4. Jordan, M.R., Morrisonponce, D., *Naloxone*. 2022, StatPearls Publishing: Treasure Island (FL).
5. Centre, B.D.a.P.I., *Naloxone – antidote*. 2017: Poison Management Manual.
6. Yousefifard, M., Vazirizadeh-Mahabadi, M. H., Neishaboori, A. M., Alavi, S. N. R., Amiri, M., Baratloo, A., & Saberian, P. , *Intranasal versus Intramuscular/Intravenous Naloxone for Pre-hospital opioid overdose: a systematic review and meta-analysis.* 2020. **4**(2).
7. Laws, B., *Pharmacy Operations and Drug Scheduling Act, Drug Schedules Regulation. BC Reg.106/2022*. 2022.
8. Laws, B., *Emergency Health Services Act. RSBC 1996. C 182.* . 2022.
9. Service, B.C., *Illicit Drug Toxicity Deaths in British Columbia. January 1, 2012 – October 31, 2022*. 2022.
10. Service, B.C., *BC Coroners Service Death Review Panel: A Review of Illicit Drug Toxicity Deaths*. 2022.
11. Belzak, L., & Halverson, J. , *The opioid crisis in Canada: a national perspective.* . Health promotion and chronic disease prevention in Canada: research, policy and practice, 2018. **38**(6): p. 224–233.
12. Boon, M., et al., *Combining opioids and benzodiazepines: effects on mortality and severe adverse respiratory events.* Ann Palliat Med, 2020. **9**(2): p. 542-557.
13. Centre, B.D.a.P.I., *Opioid Overdose Best Practices Guideline*. 2017.
14. Centre, D.a.P.I., *Benzodiazepines and Related Drugs*, in *Poison Management Manual*. 2017.
15. Dolinak, D., *Opioid Toxicity.* Academic Forensic pathology, 2017. **7**(1): p. 19–35.
16. Soleimanpour, H., Safari, S., Nia, K. S., Sanaie, S., & Alavian, S. M., *Opioid drugs in patients with liver disease: a systematic review.* Hepatitis monthly, 2016. **16**(4).
17. Urbanoski, K., et al., *Defining culturally safe primary care for people who use substances: a participatory concept mapping study.* BMC health services research, 2020. **20**(1): p. 1-12.
18. Kinshella, M.L.W., Gauthier, T. & Lysyshyn, M. , *Rigidity, dyskinesia and other atypical overdose presentations observed at a supervised injection site, Vancouver, Canada.* Harm Reduction Journal, 2018. **15**(64).
19. Ontario, C.o.R.T.o., *Oxygen therapy clinical best practice guideline*. 2022.

Provincial Health Services Authority
Province-wide solutions. Better health.

A research and teaching centre affiliated with UBC

20. Coalition, H.R. *Recognizing opioid overdose*. n.d.; Available from: https://harmreduction.org/issues/overdose-prevention/overview/overdose-basics/recognizing-opioid-overdose/
21. Cook, N.F., Braine, M. E., & Trout, R. , *Nurses' understanding and experience of applying painful stimuli when assessing components of the Glasgow Coma Scale.* Journal of clinical nursing, 2019. **28**(21-22): p. 3827–3839.
22. Canada, H.a.S.F.o., *2020 Guidelines for CPR and Emergency Cardiovascular Care (ECC)*, in *Heart & Stroke Foundation of Canada Edition*. 2020.
23. Lam, T., Nagappa, M., Wong, J., Singh, M., Wong, D., & Chung, F., *Continuous Pulse Oximetry and Capnography Monitoring for Postoperative Respiratory Depression and Adverse Events: A Systematic Review and Meta-analysis.* Anesthesia and analgesia, 2017. **125**(6): p. 2019-2029.
24. D., H., *How To Do Head Tilt–Chin Lift and Jaw-Thrust Maneuvers*, in *Merck Manual Professional Version*. 2022.
25. Skolnick, P., *Treatment of overdose in the synthetic opioid era.* Pharmacology & Therapeutics, 2022. **233**(108019).
26. Mégarbane, B., Oberlin, M., Alvarez, J. C., Balen, F., Beaune, S., Bédry, R., Chauvin, A., Claudet, I., Danel, V., Debaty, G., Delahaye, A., Deye, N., Gaulier, J. M., Grossenbacher, F., Hantson, P., Jacobs, F., Jaffal, K., Labadie, M., Labat, L., Langrand, J., … Cerf, C. , *Management of pharmaceutical and recreational drug poisoning.* Annals of Intensive Care, 2020. **10**(1): p. 157.
27. Moe, J., Godwin, J., Purssell, R., O'Sullivan, F., Hau, J. P., Purssell, E., ... & Hohl, C. M. , *Naloxone dosing in the era of ultra-potent opioid overdoses: a systematic review.* Canadian Journal of Emergency Medicine, 2020. **22**(2): p. 178-186.
28. Database, D.a.L., *Naloxone*. 2023, National Library of Medicine (US): Bethesda (MD).
29. Micromedex, I., *Naloxone Hydrochloride*. 2023.
30. Blandthorn, J., Bowman, E., Leung, L., Bonomo, Y., & Dietze, P. , *Managing opioid overdose in pregnancy with take-home naloxone.* Australian and New Zealand Journal of Obstetrics and Gynaecology, 2018. **60**(5): p. E11-E12.
31. Bonomo, Y., Pastor, A., Leung, L., Blandthorn, J., & Dietze, P., *Managing opioid overdose in pregnancy with nasal naloxone.* Australian and New Zealand Journal of Obstetrics and Gynaecology, 2020. **60**(5): p. E11-E12.
32. Patrick, S.W., Barfield, W. D., Poindexter, B. B., Cummings, J., Hand, I., Adams-Chapman, I., ... & Walker-Harding, L. , *Neonatal opioid withdrawal syndrome.* Pediatrics, 2020. **146**(5).
33. Reddy, U.M., Davis, J. M., Ren, Z., & Greene, M. F. , *Opioid use in pregnancy, neonatal abstinence syndrome, and childhood outcomes: executive summary of a joint workshop by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, American Congress of Obstetricians and Gynecologists, American Academy of Pediatrics, Society for Maternal-Fetal Medicine, Centers for*

Disease Control and Prevention, and the March of Dimes Foundation. Obstetrics and Gynecology, 2020. **130**(1): p. 10.

34. Clark, S.B., Soos, M.P. , *Noncardiogenic Pulmonary Edema*. 2021, StatPearls Publishing: Treasure Island (FL).
35. Jiwa, N., Sheth, H., & Silverman, R. , *Naloxone-Induced Non-Cardiogenic Pulmonary Edema: A Case Report.* Drug safety - case reports, 2018. **5**(1): p. 20.
36. Moustaqim-Barrette A, P.K., Williams S, Ferguson M, Moe J, Purssell R, et al. , *Adverse events related to bystander naloxone administration in cases of suspected opioid overdose in British Columbia: An observational study.* PLoS ONE 2021. **16**(10).
37. Pergolizzi, J.V., Raffa, R.B., & Rosenblatt, M.H. , *Opioid withdrawal symptoms, a consequence of chronic opioid use and opioid use disorder: Current understanding and approaches to management.* Journal of Clinical Pharmacy & Therapeutics, 2020. **45**(5): p. 892-903.
38. Diamond, M., Peniston, H.L., Sanghavi, D., et al. , *Acute Respiratory Distress Syndrome*. 2022, StatPearls: Treasure Island (FL).
39. Willman, M.W., Liss, D. B., Schwarz, E. S., & Mullins, M. E. , *Do heroin overdose patients require observation after receiving naloxone? .* Clinical toxicology, 2017. **55**(2): p. 81-87.
40. Canada, G.o., *About the Good Samaritan Drug Overdose Act*. 2021.
41. Heart, T.t. *Good Samaritan Drug Overdose Act (GSDOA)*. 2021; Available from: https://towardtheheart.com/research-projects
42. Canada, G.o., *Good Samaritan Drug Overdose Act (S.C. 2017, c.4).* . 2017.
43. Boyd, J., Maher, L., Austin, T., Lavalley, J., Kerr, T., & McNeil, R. , *Mothers Who Use Drugs: Closing the Gaps in Harm Reduction Response Amidst the Dual Epidemics of Overdose and Violence in a Canadian Urban Setting.* American Journal of Public Health, 2022. **112**(S2).
44. Thumath, M., Humphreys, D., Barlow, J., Duff, P., Braschel, M., Bingham, B., Pierre, S., & Shannon, K. , *Overdose among mothers: The association between child removal and unintentional drug overdose in a longitudinal cohort of marginalised women in Canada.* International Journal of Drug Policy, 2021. **91**(102977).
45. BC, G.o., *Collaborative Practice Protocol for Providing Services for Families with Vulnerabilities: Roles and Responsibilities of the Director (Child, Family and Community Service Act) and the Ministry of Health*. 2019.
46. BC, G.o., *B.C. Handbook for Action on Child Abuse and Neglect for Service Providers*. 2017.