



**1) Definitions**

Use: sporadic consumption without apparent adverse consequences  
 Abuse: frequency of consumption may vary; some adverse consequences / clinical impairments are experienced by user (*dominos begin to fall*)  
 Addiction's 4C's: LOSS of control over substance use WITH craving &/or compulsive use which is continued despite harm. (*major domino effect*)  
 Pseudoaddiction: drug seeking behavior mimicking addiction resulting from under-treatment of pain. (But r/o pain + addiction, e.g. dual diagnosis.)  
 Dependence, physical: a state of adaptation resulting in drug class-specific withdrawal symptoms upon abrupt dose reduction, decreasing drug levels or antagonist administration. (Not to be confused with addiction!)  
 Detoxification-managing acute withdrawal: treatment intended to remove the physiological effects of the addictive substances (protocols)  
 - Social Detox: managed & engaged in recovery; 3-10day stay.  
 - Brief Detox: ~ 24hr observation; not medically managed.  
 Harm Reduction: measures taken to address problems (e.g. social) without necessarily requiring abstinence or cessation of drug use  
 Tolerance: ↓ effect of a drug over time, or ↑ dose required for same effect  
 ⇒ Tolerance & physical dependence should not be confused with addiction. Addiction is characterized by compulsive use of a substance or preoccupation with obtaining it despite evidence that continued use causes harm (physical, emotional, social &/or economic) <sup>2</sup>

**2) Statistics From the Literature (CADUMS 2008)**

- The prevalence of past 12 month cocaine (1.6%), ecstasy (1.4%), speed (1.1%) and methamphetamine (0.2%) use in 2008; comparable to rates reported in 2004.
- The rate of drug use by youth 15-24 years of age remains much higher than that reported by adults 25 years and older: 4x higher for cannabis use (32.7% versus 7.3%), & 9x higher for past-year use of any other illicit drug (15.4% versus 1.7%).
- 72% of non-medical opioids used by students were obtained from home <sup>4</sup>
- The prevalence of harm experienced during the past year due to one's drug use was ~10x higher among youth age 15-24yrs, than among adults age ≥ 25 (10.8% vs 1.1%) {Harm related to social life, health, work, studies, or employment, financial, legal, housing or learning.}
- age adjusted mortality ↑ 5x in urban drug addicts <sup>Boston</sup> <sup>5</sup>
- ~10% report drugs/alcohol as reason for 1<sup>st</sup> ever sexual intercourse <sup>6</sup>

**5) Universal Precautions - Opioid Pain Medicine** <sup>11,12,13</sup>

- ♦ assumes that one can not always determine who will become a problem opioid user; thus, suggests a minimum level to assess & manage risk.
- 1. **Make a Diagnosis** with Appropriate Differential
- 2. Psychological Assessment Including **Risk of Addictive Disorders**; include discussion of urine drug testing (UDT)
- 3. Informed Consent &/or Use of a **Treatment Agreement** (sample<sup>14</sup>)
- 4. Pre/Post-Intervention Assessment of **Pain & Function**
- 5. Appropriate Trial of Opioid Therapy +/- Adjuncts +/- Non-drug Tx
- 6. Have an **"Exit Strategy"** for discontinuing opioids if lack benefit. <sup>11,15</sup>
- 7. Reassessment of Pain Score and Level of Function
- 8. Regularly Assess the **"five A's"**: Analgesia, Activity, Adverse effects, Aberrant behavior & Accurate medical records.
- 9. Periodically Review Pain Diagnosis & Comorbid Conditions, Including Addictive Disorders. Use a *Termination of Controlled Substances Agreement* as needed.
- 10. Document Assessment, Discussions and Progress

**3) Alcohol (EtOH)** <sup>↔</sup> leading cause of serious injury, accidental death & birth defects

- ♦ **A standard drink** = 13.7 grams (0.6 ounces) of pure alcohol or:
  - 12-ounces <sup>341mL</sup> of regular beer (5% EtOH)
  - 5-ounces <sup>142mL</sup> of wine (12% EtOH)
  - 1.5-ounces or a "shot" of 80-proof (40% EtOH) distilled spirits or liquor (e.g. gin, rum, vodka, or whiskey).
 [Also significant caloric intake!!! Evening planner see: <http://www.educational.col.ca/en/evening-planner/>]
- ♦ **Moderate drinking** = describes a lower risk pattern of drinking.
  - No more than 2 drinks in any one day & no more than 9 drinks per week for ♀; 14 drinks per week for ♂.
  - This definition is referring to the amount consumed on any single day & is not intended as an average over several days. See: <http://www.educational.col.ca/en/>
- ♦ **Those who should not drink:**
  - Children, adolescents; individuals of any age who cannot limit their drinking.
  - Women who may become pregnant or who are pregnant.
  - Individuals who plan to drive, operate machinery, or take part in other activities that require attention, skill, or coordination.
  - Those at high risk of DI's: Rx or OTC drugs e.g. disulfiram, metronidazole, CNS depressants? Precaution also in those with chronic/high-dose acetaminophen use.
  - Individuals with certain medical conditions e.g. pancreatitis, cirrhosis, hepatitis?
  - Persons recovering from alcoholism, or having family hx of alcoholism.
- ♦ **Binge drinking:** a pattern of consumption that brings the blood EtOH level to ≥0.08%. Usually corresponds to ≥5 drinks on one occasion for men; or ≥4 drinks/single occasion for women, generally within about 2 hours.

**Related issues:** ♦ maltreatment of others (e.g. child abuse by caregiver) <sup>7</sup>

- ♦ **Psychosocial issues:** "escape", depression, self esteem, suicidal ideation
- ♦ **High risk behaviours:** sexual (abuse, unplanned/unwanted/unprotected), financial, criminal; driving with intoxicated driver; cutting & suicide attempts
- ♦ **Adolescents:** especially vulnerable (neurodevelopment & behaviour)<sup>8</sup>
- ♦ **Problems:** health, ↓ inhibition (violence, aggression), impaired driving...
- ♦ **Recovery** must be functional not just stopping or decreasing use (e.g. identify life skills lacking & move client toward achieving/functioning.)
- ♦ **Toxic Alcohols** e.g. methanol: look for; contact poison centre re. management

**6) Red Flags – Aberrant Rx Drug Use** <sup>16,17</sup>

- Consider Discontinuation / Specialist Referral if...**
1. Prescriptions from multiple physicians (check profile when available)
  2. Frequent visits to emergency room requesting drugs of abuse
  3. Requests from patients from outside local area! Check picture ID!
  4. Stolen, modification or tampering of prescriptions
  5. Polypharmacy with CNS depressants, habituating substances
  6. Forgery, selling, stealing, or using other persons medications
  7. Injecting oral or chewing long-acting formulations
- Reassess Regimen &/or Treatment Agreement if...**
1. Rapid ↑ in opioid doses in chronic non-cancer pain esp. if ≥ 200mg morphine equiv.
  2. Frequent early refills, or excuses for running out of or losing Rx's
  3. Frequent changes of the opioid prescribed
  4. Aversion to concurrent recommended non-opioid tx or UDT
  5. Request for brand-name vs generic & short vs long-acting products
  6. Lack of request for adjunct analgesic refills.
  7. Missed follow-up visits. 8) Unsanctioned non-compliance with regimen

**4) Addiction Screening: CAGE, AUDIT, Other** <sup>9</sup> e.g. SASSI

**C** – have you ever felt the need to Cut down or Change your drinking/drug use?  
**A** – do you get Annoyed when others criticize your drinking/drug use?  
**G** – have you ever felt Guilty about your drinking/drug use for any reason?  
**E** – Eye-opener: Have you ever felt the need for a drink early in the morning to decrease hangover or withdrawal?  
 When assessing a patient's answers to the above questions: one YES suggests caution; ≥ 2 YES' suggests strong caution/need for vigilance.

**AUDIT: 10 questions to assess alcohol use patterns.**<sup>10</sup>

	0	1	2	3	4
1) How often do you have 1 drink containing alcohol?	Never	≥monthly	2-4x/mo	2-3x/wk	4+ x/wk
2) How many drinks do you have on a typical day?	1-2	3-4	5-6	7-9	10+
3) How often do you have 4+ drinks on one occasion?	Never	< 1/mo	1/mo	1/wk	- daily
4) How often last year were you not able to stop drinking?	Never	< 1/mo	1/mo	1/wk	- daily
5) How often last year did you fail to do what was expected...?	Never	< 1/mo	1/mo	1/wk	- daily
6) How often last year have you needed a 1 <sup>st</sup> drink in the AM...?	Never	< 1/mo	1/mo	1/wk	- daily
7) How often last year have you had a feeling of guilt after drinking?	Never	< 1/mo	1/mo	1/wk	- daily
8) How often last year have you not remembered the night before...?	Never	< 1/mo	1/mo	1/wk	- daily
9) Have you/someone else been injured as a result of drinking?	No		Yes, not this yr.		Yes, this yr.
10) Has a relative, friend or doctor been concerned about your drinking?	No				
<b>Total score:</b> 0-7=low risk; 8-15=at risk; >16 likely problems					

**Single Question Screen:** How many times in the past year have you had x or more drinks in a day? (where x = 4 drinks for ♀ & 5 drinks for ♂)  
 (How many times in the past year have you used an illegal drug or used a prescription med for nonmedical reasons?)

**History (Useful questions asked in a non-judgemental fashion):**

Ask 1<sup>st</sup> about socially acceptable drugs: nicotine, caffeine.  
 Ask next about alcohol, specifically beer & wine; quantity used.  
 Then ask about illicit drugs, beginning with marijuana.  
 ⇒ Are illicit drugs available at school/work? Any close friends who use drugs?  
 Obtain collateral information from family & friends as necessary;  
 confirm patient history & assess for recent/sudden behaviour changes.  
 Ask regarding weight loss, sleep disturbance, impotence, gambling, porn.

**Physical findings (intoxication or withdrawal):**

- ♦ Evidence of associated infections, hepatitis, HIV, oral thrush
- ♦ Needle marks (including "hidden" sites), STDs; pupil size, ↑HR, sweating, watery eyes, runny nose, slurred speech, yawning, unsteady gait.
- ♦ Lab: LFTs, Hep B & C screen; drug screens (e.g. UDT as at bottom of page).

**7) Principles of Addiction Treatment** <sup>18</sup>

- 1) No single treatment is appropriate for all; concomitant medications are useful for many; treatment needs to be readily available
- 2) Attend to multiple needs, not just drug use
- 3) Assess for medical, family, vocational, social & legal services
- 4) Ensure adequate time in treatment (≥3 months)
- 5) Arrange for counselling & behavioural therapies individual or group
- 6) Integrate treatment for those with mental disorders
- 7) Acute detoxification is only the 1<sup>st</sup> stage in long-term tx
- 8) Treatment does not need to be voluntary to be effective
- 9) Drug & alcohol use monitoring should be ongoing
- 10) Assess for HIV/AIDS, hepatitis B & C, etc. & provide counselling regarding risk behaviours (sexual contacts, drug use, etc.)
- 11) Expect a long-term process with possible relapses. *Addiction is chronic relapsing*
- 12) Individualize "self-help" & spiritual adjunct support programs

**Emerg Presentation-Possible Causes:** ♦ **Unresponsive:** hypoglycemics, opioids, EtOH, cyanide, CO, tranquilizers, hydrocarbons, barbs. ♦ **Seizures:** hypoglycemics, amphetamines, cocaine, hallucinogens, anticonvulsants, TCAs, PCP, mescaline. ♦ **Hyperthermia:** salicylates, Ecstasy, atropine, phenytoin. ♦ **Hypothermia:** EtOH, opioids, sedative/hypnotics, TCAs, barbs, CO.

**Links:** WHO: [http://www.who.int/topics/substance\\_abuse/en/](http://www.who.int/topics/substance_abuse/en/); Medline Plus: <http://www.nlm.nih.gov/medlineplus/substanceabuseproblems.html>; AAFP: <http://familydoctor.org/online/famdocen/home/common/addictions/basics/586.html>; National Institute on Drug Abuse: <http://www.nida.nih.gov/>; Community Learning Network (CLN): [http://www.cln.org/themes/substance\\_abuse.html](http://www.cln.org/themes/substance_abuse.html); Opioid & Stimulant Identification pics: <sup>20</sup>

**Links-CDN:** Canadian Centre on Substance Abuse (CCSA): <http://www.ccsa.ca/eng/Pages/Home.aspx>; CAMH: <http://www.camh.net/>; [http://www.knowledgex.camh.net/primary\\_care/Pages/default.aspx](http://www.knowledgex.camh.net/primary_care/Pages/default.aspx); SK link<sup>21</sup>

**Pregnancy/Lactation:** [http://www.camh.net/Publications/Resources\\_for\\_Professionals/Pregnancy\\_LactationIndex.html](http://www.camh.net/Publications/Resources_for_Professionals/Pregnancy_LactationIndex.html); National Anti-drug Strategy: <http://www.nationaldrugstrategy.gc.ca/index.html>; Educ/alcohol: <http://www.educational.col.ca/en/>

**Tips for Legitimate Rx's** of drugs causing physical/psychological dependence: 1) **Interval dispensing** to limit the "pill-load"; 2) Determine if **specialist support** needed.

**Responding to aberrant behaviour:** Do not debate the motive; rather get agreement that such behaviour is problematic. Then delve into the root cause of the problem!

**Urine Drug Screening (UDS):** to monitor medication compliance & manage potential drug abuse risk. <sup>19</sup>

- ♦ **Immunoassay:** rapid, inexpensive & preferred for initial screening. **Chromatography:** ↑s delay but ↑ accuracy. Is drug prescribed there? Are any non-prescribed drugs there?
- ♦ Amphetamines &/or Cocaine: detectable 2-3 days; Benzos: 3 days for short acting; Opiates: 1-3days; THC: 3days if single use, ~15days if daily use, 60+ days if long-term/heavy use. ♦ False negatives possible.
- ♦ Assess drug causes for false positives. ♦ Ensure proper collection technique & integrity of specimen.
- ♦ Goal is to improve patient care & communication, not to police!!! Discuss unexpected results with patient.
- ♦ If abuse risk is high, advise of consequences, tighten boundaries, refer to addiction specialist or taper/DC if necessary.



Drugs/Substances of Abuse & slang terms		Signs/Symptoms, Overuse; Health Concerns	Management & Treatment Options; Comments <sup>26,27</sup>
<b>Cannabinoids</b> <sup>28</sup> (THC = delta-9-tetrahydrocannabinol)		⇒ euphoria, impair learning & reaction time; confusion, panic, ↓ balance, coordination; ↑ HR, ↓BP <sup>orthostatic</sup> , ↑appetite → pulmonary disease & cancer (unfiltered smoke); ↑ psychosis risk → <b>assoc. problems:</b> physical, psychological, financial, legal & social (e.g. failure to achieve), ↓testosterone (gynecomastia)	<b>Acute intoxication:</b> 1-3hr; similar to alcohol; changes in mood, perception & functioning can persist <b>Withdrawal syndrome:</b> controversial. ⇒ Cognitive Behavioural Therapy (CBT) & supportive treatment <b>Legal "medicinal" cannabinoid alternatives:</b> ⇒ consider if indicated: see RxFiles Cannabinoids Chart <sup>29</sup> (illegal marijuana use often sign of ↑ risk for other substance abuse; <b>gateway drug</b> . Urine drug testing (UDT) available but remains positive for ~10 days in casual user, 2-4 wks in heavy user, months in chronic heavy user)
<b>Hallucinogens</b> (perceptual, cognitive & ECG Δ's)		⇒ altered state of perception & feeling; persisting flashbacks ⇒ ↑body temp, HR, BP; ↓ appetite, ↑5-HT, ↓sleep, weakness, tremors (LSD & mescaline); mental disorders long-term (LSD)	<b>LSD:</b> most potent; psychedelic effects: onset <1hr; duration <8hrs; psychotic effects persist 2+ days Tx: ⇒ provide calm, supportive environment (still used in college; squares on eyes to absorb) (Psilocybin = magic mushroom, purple passion; chewed ⇒ nervousness & paranoia)
<b>Opioid/Opiate</b>	<b>Codaine</b> - cody, doors & fours, liscad, peyote	⇒ analgesia, euphoria, drowsiness, nausea, constipation, confusion, ↓libido/ED, sweating; sleep apnea. On overdose: resp. depression, coma, death. (With heroin: ⇒ staggering gait.)	<b>Acute toxicity:</b> ⇒ reversed by naloxone <sup>NARCAN</sup> , a narcotic antagonist 0.4 - 2mg IV, may repeat after 2-3minutes, Max 10mg; or intranasal Lasts 45min-4hr. May precipitate withdrawal (agitation severe, anxiety, N&V, diarrhea, yawn, sneeze, rhinorrhea, cramps). (Deaths often associated with co-use/abuse/Rx of benzodiazepines; Contaminants: MPTP parkinsonism, quinine, strychnine).
	<b>Fentanyl</b> <sup>Duragesic</sup> - China girl, TNT, Tango & Cash	⇒ seizures (especially propoxyphene <sup>Darvon-N</sup> , meperidine <sup>Demerol</sup> , tramadol, combo pentazocine <sup>Talwin</sup> + tripeleminamine <sup>T's &amp; blues</sup> )	<b>Withdrawal:</b> lacrimation, rhinorrhea, yawn, dilated pupils, N&V, diaphoresis, chills, ↑HR & BP, myalgia, cramps, diarrhea; anxiety, dysphoria, craving, restless, insomnia, fatigue. Not life-threatening! ◆onset < 8hrs from last use: peaking between 36-72hr; physical withdrawal resolves in 5-10days; longer with methadone onset in 24-48hrs; persists 2-3 wks.
	<b>Heroin</b> - brown sugar, H, junk, skag, smack	→ long-term tolerance, hyperalgesia; ↑death esp with benzos <sup>31</sup>	◆ Symptom Tx: <b>N&amp;V</b> - dimenhydrinate or prochlorperazine; <b>diarrhea</b> - loperamide; <b>myalgias</b> - acetaminophen, naproxen; <b>anxiety, dysphoria, lacrimation, rhinorrhea</b> - hydroxyzine; <b>insomnia</b> - trazodone. Clonidine: see protocols <sup>32</sup> .
	<b>Hydromorphone</b> - Dilaudid, dillies, dilly-2 or -4, beads	◆ Important to distinguish short-term SEs from appropriate use with short & long-term SEs from abuse/addiction	<b>Methadone:</b> very LA opioid; daily admin initial <10-30mg/day; prevent withdrawal without intoxication. TID if for pain. Many DIs: e.g. ↑ or
	<b>Hydrocodone</b> <sup>comboS</sup> - vike, Watson-387	◆ Always check med profile for hx of opioid, benzo, etc. use!	<b>Buprenorphine</b> (+Naloxone not absorbed) <sup>Suboxone</sup> : partial μ agonist; rapid withdrawal alleviation; can cause withdrawal if highly dependant.
	<b>Meperidine</b> - Demerol, demmies	◆ Minimize withdrawal by tapering LA opioids over 7-14* days	<b>Clonidine:</b> α-2 adrenergic agonist; non-opioid tx option; not effective for aches, craving or insomnia. (May be abused.)
<b>Morphine</b> <sup>MS Contin</sup> - M, the down, Miss Emma, ... (red's=200mg; grey's=100mg; peach's=60mg; purple's=30mg)	◆ Overdose risk if restart same dose after abstinence period!	<b>Naltrexone:</b> opioid μ antagonist block analgesia & euphoria; useful after detox-50mg/d; hepatotoxic if high dose FDA, Vivitrol monthly FDA	
<b>Oxycodone</b> <sup>Oxy-Contin</sup> (part rapid release) - Oxy, O.C., killer. (Contaminants may be an issue; eg. heroin-anthrax <sup>30</sup> , botulism. When prescribing, counsel to store properly & avoid sharing!!!)			
<b>Sedatives</b> <sup>CNS Depressants</sup>	<b>Alcohol</b> <sup>33,34,35</sup> - EtOH, booze, liquor ... (zero-order kinetics) ⇒ major fetal harm (e.g. FAS)	⇒ withdrawal esp if >40drinks/wk: tremor; Lab clues: ↑MCV, ↑GGT	<b>Respiratory Depression &amp; Coma:</b> ⇒ tx intubation & ventilation; <b>Hypoglycemia</b> (e.g. with excessive EtOH in kids); ⇒ tx IV glucose
	<b>GHB</b> <sup>Gammahydroxybutyrate</sup> - G, grievous bodily harm, liquid ecstasy ⇒ "date rape" drug; clear liquid	⇒ HA, loss of reflexes, memory; seizures, coma, death <sup>Resp depr</sup>	<b>Alcohol:</b> Social Norms Interventions (limit to "moderate drinking" & avoid binge drinking.) Consider cultural factors.
	<b>Flunitrazepam</b> - R2, Roche, roofies/roofied, rope	⇒ visual & GI disturbance; urinary retention; memory loss	<b>Long-term Stimulus Control</b> (avoid/limit friends & places visited); <b>Coping Skills</b> ; <b>12 Step Facilitation Therapy</b> <sup>http://www.aa.com/12.html</sup>
	<b>ROHYPNOL</b> - "date rape" drug, roofinol	⇒ drowsy, ↓ concentration; fatigue, confusion	<b>Drug Tx:</b> <b>Acute:</b> benzos for tremor (diazepam; lorazepam if hepatic dysfx or elderly; gabapentin <sup>36</sup> ; pregabalin <sup>37</sup> ); thiamine 50mg/d x3, <sup>2</sup> clonidine
	<b>Barbiturates</b> - barbs, reds, phennies, yellows	⇒ impaired coordination, memory & judgement	<b>Long-term Disulfiram</b> compounded from powder <sup>ANTABUSE</sup> ; blocks ALDH enzyme inducing dizziness, flushing, N&V, ↓BP (aversion tx)
	<b>Benzodiazepines</b> - candy, downers, sleeping pills (Ativan, Halcion, Librium, Valium, Xanax, Alprazolam [benzo's])	⇒ sedation, dizzy; ⇒ tolerance/dependence	<b>Naltrexone</b> <sup>ReVia, Depade</sup> ; ↓ reinforcing effect via ↓ response to endogenous opioid. Acamprostate <sup>Campar</sup> ; ↓ modest NNT=10. Topiramate; but SEs. <sup>38</sup>
<b>Methaqualone</b> - ludes, mandrex, quad, quay	⇒ euphoria, depression; coma	<b>GBH:</b> rapid onset ~10min; duration ≤2-4hrs. <b>Flunitrazepam:</b> rapid onset ~15min; duration ≤6hrs	
<b>Stimulants</b>	<b>Amphetamine</b> <sup>DEXEDRINE</sup> - bennies, speed, uppers, ...	⇒ tremor, ↓ coordination, irritable, restless, aggressive; IV trackmarks	<b>Oral benzodiazepine:</b> <b>Acute</b> INTOX. rarely lethal, except with alcohol or CNS depressants; ⇒ flumazenil <sup>ANEXATE inj</sup> (benzo antagonist): useful but may cause acute withdrawal/seizures; avoid routine use. <b>Long-term withdrawal:</b> diazepam or clonazepam tapering protocols
	<b>Methylphenidate</b> <sup>RIITALIN</sup> (Concerta has ↓ abuse risk)	⇒ ↑HR, BP, energy, wt loss; ↑ alertness; ↓ appetite, insomnia nervousness; violence? ⇒ high followed by crash! ⇒ HF; hyperthermia	<b>Cocaine:</b> onset 5min; peak & duration: snort <30-60min, oral <90min, IV <5min; (t 1/2 = 1hr; longer in body packers) most toxicity too brief to treat: anxiety/seizures/↑temp ⇒ benzodiazepine; ↑BP ⇒ nitroprusside; CV toxicity ⇒ benzo ↓ sympathetic stimulation, ASA ↓ thrombus, NTG or CCB (verapamil or diltiazem) ↓ vasoconstriction, O2- (β-blockers: caution, ? labelatol)
	<b>MDMA</b> <sup>3,4-methylenedioxymethamphetamine</sup> - Ecstasy - E, X adulterants common; addictive! - X-TC, Adam, lover's speed	⇒ hallucinogen mild; impaired cognition; ↑temp; toxicity (cardiac, renal & hepatic)	<b>Amphetamines</b> <sup>other:</sup> similar toxicity (& tx) as cocaine but ↑ duration. Strokes: hemorrhagic & ischemic. Life-threatening hyperthermia! Severe psych sx's may persist. <b>Meth:</b> duration 6-8hr; tooth decay. Ritonavir: DI & ↑risk fatal overdose. <sup>39</sup>
	<b>Methamphetamine</b> - crystal meth, speed, ice, jib, (made from pseudoephedrine) gak, glass, white, lady, girls	⇒ aggression, violence, psychotic behaviour; CV & neurological damage	<b>Ecstasy:</b> onset: 20min; peak: 2-3hrs; duration: ~4hrs. Amphetamine like CV effects, rhabdomyolysis, stroke, death <sup>40</sup>
<b>Amphet. analogues</b> designer drugs: [MDA love drug, MDEA Eve; PMA Death (similar to MDMA); MDPV bath salts]	⇒ ↑temp, chest/GI pain, resp failure; HA, seizure, panic; MI, vasoconstriction; talc= pulm fibrosis, HTN; long-term ⇒ excited delirium, rhabdomyolysis	<b>Seizures</b> common cause of ER visits ⇒ usual tx; persisting cognitive impairment. Contaminants (amphetamines common) ⇒ lethal overdose (hyperthermia: tx with rapid cooling +/- dantrolene). Ritonavir: DI & ↑risk fatal overdose. <sup>41</sup> Young-healthy: high risk! ⇒ <b>Long-term:</b> memory & motor impairment; psychosis (grey matter deficit); MI chest pain, stroke. (↑tDA & ↑NE release.) ⇒ Tx: behavioural therapies; the antidepressant bupropion may be useful. [Explosive/fire risk when making!] <sup>42,43</sup>	
<b>Cocaine</b> <sup>Erythrolum coca leaf</sup> - blow, C, candy, coke, snow, rock adulterants common (e.g. levamisole, benzocaine, sugar, talc) <sup>44,45</sup> crack solid 92% pure			
<b>Various</b>	<b>Dissociative Anesthetics</b> (floating, out of body) ◆ Ketamine <sup>Ketalar SV</sup> - K, Kat, cat Valiums, Special K ◆ PCP <sup>Phencyclidine</sup> - angel dust, love boat, peace pill	⇒ ↑HR, ↑BP; impaired motor fx, memory loss, numbness ⇒ ketamine: delirium, depression, respiratory depression, ↓bladder capacity ⇒ PCP: ↓BP, ↓HR; panic, aggression, violence; ↓appetite	<b>Ketamine:</b> duration <1hr, dose dependant. <b>PCP overdose:</b> may last several days causing psychosis & violence; ⇒ restraints & benzodiazepines ⇒ supportive tx: benzos for seizures, external cooling for hyperthermia (block NMDA receptors)
	<b>Steroids, Anabolic</b> - Andriol, testosterone, etc. (may be common in unapproved products)	⇒ acne, hostility, aggression; long term ↑BP, ↓clotting, ↑stroke, hepatic cysts/ca, renal ca; premature growth stagnation.	<b>Abused:</b> by athletes/body-builders ♂: prostate ca, ↓sperm, ↓testicular size, gynecomastia; ♀: menstrual irregularities, hirsutism, etc.
	<b>Volatile Inhalants</b> - solvents, gases, nitrites whippits N2O (toluene: paint, lacquer, glue), poppers liquid gold, rush; puffers	⇒ stimulation, ↓inhibition, HA, N&V, slurred speech, ataxia, ↓coordination, cramps, ↓wt, depression; resp depr, coma	⇒ damage to CV & brain/nervous system; ↑ sudden death cv. {Toluene: ↓K+, ↓void arrhythmia, renal tubular acidosis, abdominal pain, ataxia (may be permanent), resp failure ⇒ supportive tx; avoid arrhythmogenics e.g. epinephrine.}
<b>Other Substances</b> ◆ <b>Bupropion</b> <sup>WELLBUTRIN</sup> ; <b>Caffeine:</b> including energy drinks <sup>46</sup> ; see wt loss chart <sup>47</sup> , withdrawal esp if >100mg/day (HA <sup>50</sup> , fatigue, drowsy, irritable), over ≤ 9 days. <b>Dextromethorphan</b> (DM): euphoria at 5-10x usual dose - <b>Robotripping</b> (sweat, ↑HR, ↑BP, dyskinesias, speech disorders, N&V, mydriasis, photophobia, resp depression), ↑5HT; blocks NMDA. <b>Dimenhydrinate:</b> <b>Gabapentin</b> <sup>NEURONTIN</sup> : snort or inject high doses for cocaine like euphoria (400mg caps of choice); potentiate or ease withdrawal from alcohol, cocaine, etc. <sup>48</sup> ; <b>Pregabalin</b> <sup>LYRICA</sup> : ~ euphoria - 4%. <b>Quetiapine</b> <sup>SEROQUEL</sup> <sup>49</sup> . (quell, baby heroin, Sustic-O, Q-bali = O + cocaine); oral, intranasal, & IV cooked, then injected; use to ↓ benzo withdrawal or as sedative/anxiolytic; dose reported ~ 200mg-2400mg/d; consider alternatives antipsychotics, SSRIs, bupropion, VPA, lithium; ⇒ ↑ lethal arrhythmia, ↓BP, ↑wt, ↑DM.			

BP=blood pressure ca=cancer CV=cardiovascular DM=diabetes ED=erectile dysfx FAS=fetal alcohol syndrome fx=function HA=headache HCV=hepatitis C Hep=hepatitis HR=heart rate LA=long-acting LFTs=liver fx tests N&V=nausea & vomiting SE=side effects Sx=symptoms Tx=treatment wt=weight

**Other Addictions:** Gambling, gaming, porn & sexual addictions/behaviours may also be present/require tx. **Club Drugs (raves):** include Ecstasy, Rohypnol, ketamine, crystal meth, GHB, poppers. **Nicotine** (see chart<sup>50</sup>): cigarettes, cigars, snuff, chew, hookah ⇒ ↑CV/CA

**Impurities & Adulterants:** common! Risk of: bacterial (endocarditis, osteomyelitis, sepsis), fungal, viral (HIV/AIDS) infection in IV drug abusers (needle sharing) & crack cocaine smoking<sup>51</sup>. Talc from tabs crushed for inj. causes pulmonary granulomas. Levamisole rash, neutropenia. Lead.

**Pregnancy:**<sup>52</sup> **Club drugs** (MDMA, Rohypnol, GHB, ketamine), **Cocaine**, & **Alcohol:** avoid (malformations/abortion). **Amphetamines:** weigh benefit/risk/not teratogenic. **Cannabis:** avoid or ↓ (long-term development). **Opioids:** may use; ✓ methadone, or ? buprenorphine without naloxone.<sup>53</sup>

**Management Of Substance Abuse In Emergency** (To contact poison centre in your Canadian province: <http://capcc.ca/provcentres/centres.html> )

**Aim:** ↓ morbidity & mortality; ↓ risk of relapse; consider plan short & long term

**Assessment & Management issues:**

- **Infections:** soft tissue; other (endocarditis, HIV, hepatitis, etc.)
- **Overdose vs Intoxication vs Withdrawal vs Other** (Other e.g. subdural hematoma from fight, stroke, infectious component)
- **Consider detailed assessment if:**
  - o Acknowledgment of drug use
  - o Physical signs e.g. track marks, nasal septum atrophy
  - o Urine drug screen +ve (Note: emergency drug screen is unlikely to significantly affect impact upon management in the ER.)<sup>54</sup>

- **Approach for engagement**
  - o Accept patient autonomy
  - o Non-judgemental approach
  - o Collaborative approach with patient
  - o Confidentiality
  - o Proactive discussion on meds and behaviours
- **Managing Potentially Violent Patient<sup>55</sup>:**
  - o Have a staff & public safety plan!
  - o Maintain autonomy & dignity of users, intervene early, approach patients with caution, don't startle, avoid provocation, be aware of your own demeanour, use calm

language, don't make promises, provide options and choice, remove dangerous objects from your person, know exits, don't turn back on patient, role for distraction, be firm & compassionate, depersonalize issue; avoid confronting, but if necessary maintain distance, avoid corners/cornering, explain intension, ask for facts & encourage reasoning, ask for weapons to be put down not handed over, know how to call for help.

Antipsychotics are not 1<sup>st</sup> line for substance abuse withdrawal. If in a controlled setting, temporary use of a benzodiazepine may be preferred.

**Intoxication: Common Presentations – Possible Causes**<sup>56,57</sup>

- **Unresponsive:** hypoglycemics, narcotics, alcohol, cyanide, carbon monoxide, tranquilizers, hydrocarbons, barbiturates
- **Seizures:** hypoglycemics, amphetamines, cocaine, hallucinogens, anticonvulsants, TCAs, PCP, mescaline; benzodiazepine withdrawal especially high dose ; alcohol withdrawal tremors/seizures
- **Hyperthermia:** salicylates, Ecstasy, atropine, amphotericin B, phenytoin
- **Hypothermia:** ethanol, narcotics, sedatives/hypnotics, TCAs, barbiturates, carbon monoxide.
- **If mixed presentation consider possibility of mixed ingestion!**

For table outlining Toxic Syndromes, see **Goldfrank's Toxicologic Emergencies** text.

**Intoxication Management - [Primary assessment ABCs: airway, breathing, circulation]**

<b>Opioids</b>	Intoxication {coma, lethargy, stupor; constipation, N&V; flushing, pruritis; hypotension; miosis; resp depression} <ul style="list-style-type: none"> <li>♦ supportive tx: regular assessment of cardio/respiratory safety</li> <li>♦ airway protection; ♦ correction of hypoxia</li> <li>⇒ naloxone option: short term duration; balance reversal of resp depression with opioid withdrawal (naloxone can be considered if opioid toxicity suspected).</li> <li>♦ consider type of opioid for duration of risk &amp; naloxone effect</li> <li>♦ consider N-acetyl-para-aminophenol level if overdose cause unknown (r/o acetaminophen as possible agent). CAUTION: depending on timing, a "non-toxic" level can become toxic; consult poison centre</li> </ul>
<b>Stimulant</b>	Supportive tx (agitation, diaphoresis, hypertension, hyperthermia, mydriasis, psychosis, seizures, ↑HR) <ul style="list-style-type: none"> <li>- oral diazepam for agitation &amp; hypertension e.g cocaine induced</li> <li>- IV diazepam or midazolam short acting if severe agitation/anxiety</li> <li>- Optional: sedating antipsychotic</li> <li>- Monitor: hyperthermia, hypothermia, cardiac, electrolytes</li> <li>- HTN: benzodiazepines; alternatively nitroprusside, NTG</li> <li>- α-blockers. (generally avoid β-blockers as will result in unopposed α constriction)</li> </ul>
<b>Alcohol</b>	Supportive tx (immediate life-threatening complications in kids are respiratory depression & hypoglycaemia) <ul style="list-style-type: none"> <li>♦ airway; ♦ IV access (fluid management); correct hypoglycaemia with dextrose soln &amp; electrolytes; ♦ thiamine</li> </ul>

\* Hemodialysis may be an option in life threatening intoxication. Hemodialysis may be useful to remove barbiturates, sedatives, hypnotics, anticonvulsants, alcohols, analgesics, solvents, etc.

**When to Discharge?** ♦ Consider time from last ingestion. ♦ Can they walk unaided?

**Extras (RxFiles - Substance Abuse)**

- o if using cocaine/other stimulants then detox is the only option. Rapid detox is not recommended during pregnancy.
- o Patients should only be "nodding" (falling asleep on methadone) if the dose is too high, they are a new start, or if they using BZD's at the same time – may consider a tox screen to assess if patient is also using any other drugs
- o In Saskatoon methadone doses goes up by 10mg increments and down by 5mg increments for dose adjustments with some physicians.
- o Using both oral LA morphine (Kadian) in addition to methadone when starting patients is sometime done to prevent acute withdrawal & allow for methadone titration (e.g. a few weeks of dual treatment); controversial.
- o IV drug abusers: considerations see reference<sup>58</sup>
- o Other substances of abuse: volatile inhalants, Listerine mouthwash

**Acute Alcohol Intoxication**<sup>59,60</sup>

- **Blood Alcohol Levels (BAL):** <50mg/dl (< 10.9mmol/l): impairment in skills, ↑ talkativeness, relax; >100 mg/dl = impaired judgement, ↓ coordination & reactions, mood/personality change; >200 mg/dl: amnesia, diplopia, N&V; >300-500 mg/dl = ↑ risk of respiratory depression, coma & death
- **DSM-IV:** A) recent EtOH, B) clinically significant behavioural/psychological change e.g. aggression, mood, impairment C) one or more of [1. slurred speech, 2. ↓ coordination, 3. unsteady gait, 4. nystagmus, 5. ↓ attention/memory, 6. stupor/coma, other.]
- **Other effects & associations:** Respiratory, GI, alcoholic hepatitis. ↑ risk of injury, ↑ risk of life years lost, ↑ violent crimes.
- **Tx:** 1) Stabilize patient: [airway, resp fx, prevent aspiration, mechanical ventilation prn, IV access & correction of hypoglycaemia, electrolytes (dextrose, Mg, folate, thiamine, multivitamins); 2) Sedate patient (droperidol, haloperidol); 3) evaluate for chronic EtOH abuse; Ref: Ostacher MJ et al. Impact of substance use disorders on recovery from episodes of depression in bipolar disorder patients: Prospective data from the Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD). *Am J Psychiatry* 2009 Dec 15; [e-pub ahead of print].
- **When to let them leave the emerg?** Consider holding till they can walk out unassisted.

**Management of Cocaine Body Packers**<sup>61</sup>:

Hx: # & type of packets; other agents; GI symptoms; **Investigations:** ECG, CBC/SCR, etc., chest & abdom x-rays; **Management if asymptomatic:** admit, oral gastric lavage till all packets passed; 4 hr observations of vitals after packets passed; light/normal diet, IV access, daily evaluation for intoxication/bowel obstruction.

**Lifespan Spectrum of Complications:** *Pregnancy* - obstetrical complications, fetal distress, stillbirth, low birth weight; *adolescent & young adult* – self inflicted injuries, homicides, premature morbidity; *Later life* - ↑ decline. (Associate health problems: non-fatal overdose, ↑ infections IV and NIDU (HCV; Hepatitis A, B); liver fibrosis cannabis, periodontitis cannabis; psychiatric (psychosis, anxiety, depression) various, cannabis; long-term ↓ cognitive performance.)<sup>62</sup>

**Substance Abuse in Older Adults**<sup>63</sup>: 2005 USA data on treatment programs: Alcohol only (48%), alcohol + 2<sup>nd</sup> illicit substance (52%); 2<sup>nd</sup> substance cocaine 40%, marijuana 29%, opiates 16%, stimulants 5%, other 10%.

♦ **Signs:** headache, ↓ cognitive/memory ability; **Unique features** in elderly: tendency to drink smaller quantities more often, DI with ↑ metabolism of other drugs, Δ in sleep patterns. **Clues:** recent losses, psych hx, family hx of abuse.

ALDH=alcohol dehydrogenase 5HT=serotonin fx=function HCV= hepatitis C virus HX=history NIDU= non-injecting drug users Qt=qt interval RR=respiratory rate

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## Extras Continued:

### Quotes

- ♦ "it takes more than 2½ minutes to assess a patient for a possible opioid prescription" ; a challenge, especially for busy walk-in and minor emergency types of practice
- ♦ "it takes only 30 minutes to argue, but only 30 seconds to write a Rx"; reflecting the realities and frustrations of everyday practice.
- ♦ "Its OK to say 'No'"
- ♦ "I didn't realize how big a problem Rx opioids were on the street"

### UK Study Ranking - most harmful drugs: overall, to individual and to society.

- o Nutt DJ, King LA, Phillips LD: on behalf of the Independent Scientific Committee on Drugs. Lancet. 2010 Oct 29. Drug harms in the UK: a multicriteria decision analysis.
- o BACKGROUND: Proper assessment of the harms caused by the misuse of drugs can inform policy makers in health, policing, and social care. We aimed to apply multicriteria decision analysis (MCDA) modelling to a range of drug harms in the UK. METHODS: Members of the Independent Scientific Committee on Drugs, including two invited specialists, met in a 1-day interactive workshop to score 20 drugs on 16 criteria: nine related to the harms that a drug produces in the individual and seven to the harms to others. Drugs were scored out of 100 points, and the criteria were weighted to indicate their relative importance. FINDINGS: MCDA modelling showed that heroin, crack cocaine, and metamfetamine were the most harmful drugs to individuals (part scores 34, 37, and 32, respectively), whereas alcohol, heroin, and crack cocaine were the most harmful to others (46, 21, and 17, respectively). Overall, alcohol was the most harmful drug (overall harm score 72), with heroin (55) and crack cocaine (54) in second and third places. INTERPRETATION: These findings lend support to previous work assessing drug harms, and show how the improved scoring and weighting approach of MCDA increases the differentiation between the most and least harmful drugs. However, the findings correlate poorly with present UK drug classification, which is not based simply on considerations of harm. FUNDING: Centre for Crime and Justice Studies (UK).

### Salvia leaves (magic mint, diviner's sage, sally D, purple sticky)

- o Member of mint family, smoked or chewed. Contains salvinorin A, a selective kappa opioid receptor antagonist: does not bind to 5HT<sub>2A</sub> receptors like other hallucinogens. Halucinogen effects rapid & last <30min. SE: dysphoria, diuresis, chills, headache, insomnia, exhaustion, loss of control, impaired coordination & judgement (= DANGEROUS!). Sensationalized in SK by Saskatoon media DJ who smoked herb on live broadcast in Dec 2010.

### Angel's Trumpet: (Angel's tears, Apple of Peru, Green Dragon, Devil's trumpet)

- o Alkaloid (atropine, scopolamine) containing flowers & stem. Each flower contains 0.2mg atropine & 0.65mg scopolamine; 3-6 flowers causes hallucinations; 9+ flowers can be life-threatening. Commonly ingested by making a tea. Effects in 1-4hrs; duration 24+hrs. SE: mydriasis, dry mouth, tachycardia, fever, erythema, constipation, ↑↑↑ thirst, retrograde amnesia & anxiety; arrhythmias & CV collapse / respiratory failure in high doses. (= DANGEROUS!)

"Bath Salts" for abuse: are actually designer stimulants (e.g. MDPV, methedrone) being sold in shops & online. *Cloud 9, Ivory Wave, Vanilla Sky, Purple Wave, Blizzard, Blue Silk*, etc. Common in UK, now USA via New Orleans, India, China. Similar effects (↑THR, paranoia, psychosis) & tx as stimulants. May/11 CDC: MMWR- Emergency Department Visits After Use of a Drug Sold as "Bath Salts" --- Michigan, November 13, 2010--March 31, 2011 <http://www.cdc.gov/mmwr/pdf/wk/mm60e0518.pdf>

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