BC DRUG AND POISON INFORMATION CENTRE (DPIC):

WHO WE ARE	• Pharmacists, nurses, medical toxicologists
WHAT DPIC DOES	• Drug Information for Health Professionals • Poison Information Service • Education (professional, public) • Knowledge Translation (newsletters, clinical guidelines, treatment manuals) • Research
DRUG INFORMATION SERVICE	• For BC health care professionals • 0900-1600 hours, weekdays • Toll-free access • Information provided by DPIC's pharmacists • No direct cost to users
WWW.DPIC.ORG	• 26,000 visits each month • Healthcare professional newsletters • Clinical practice guidelines • Health headlines, weblinks • Poison FAQs and poison prevention resources

POISON INFORMATION SERVICE: BC Poison Control Centre

- Service to BC's health professionals & public
- 24-hour toll free access for BC and Yukon
- Specially trained poison specialists
- 31,500 calls annually → 27,500 human exposures; 4,000 information calls

TYPES OF POISON INFORMATION:

PUBLIC	• First Aid for poisonings • Triage • Call backs • Poison prevention
PROFESSIONAL	• Current treatment guidelines • Follow-up advice • Medical toxicology consults
OTHER	• Toxicity & treatment • Street drug info

POISONING FACTS:

- Approximately 1 person in BC is poisoned every 20 minutes
- Over half are children …

PEDIATRIC POISONING:

PEDIATRIC EXPOSURES IN BC	• 11,000 poisonings in < 6 year-olds each year
	  ○ 95% - no toxicity or minimal symptoms
	  ○ 1% - moderate or major outcomes
	  ○ No deaths during this period

MOST COMMON SUBSTANCES INVOLVED	• Cosmetics • Analgesics • Cleaning substances • Foreign bodies • Topical preps • Vitamins • Antihistamines • Pesticides • Cough/cold products • GI preparations • Plants • Antimicrobials
MOST DEADLING SUBSTANCES INVOLVED	• Anthistamines • Opioids • Sedative-hypnotics • Cardiovascular agent • Oral hypoglycemics
MECHANISMS LEADING TO DEATH	• CNS depression and respiratory arrest • Seizures; hypoglycemia • Cardiovascular collapse & cardiac dysrhythmias

ONE PILL CAN KILL LIST	• Amphetamines
	  ○ Amphetamines
	  ○ MDMA
	• Antidepressants
	  ○ Tricyclics
	  ○ Bupropion
	• Cardiac meds
	  ○ Beta blockers
	  ○ CCBs
	  ○ Propafenone
	• Clonidine
	• Hydroxychloroquine
	• Opioids
	  ○ Buprenorphine
	  ○ Fentanyl
	  ○ Methadone
	  ○ Morphine
	  ○ Oxycodone
	• Sulfonylureas

PEDIATRIC POISONING:

"ONE PILL CAN KILL" LIST UPDATED	• Newer formulations → extended release, etc
	  ○ Bupropion XL, Diamicron MR
	• High potency medications
	  ○ Methadone, fentanyl, buprenorphine
	• Indications introducing pills into houses w/ children
	  ○ Buprenorphine for opioid addiction
	  ○ Hydroxychloroquine in rheumatoid arthritis
	  ○ Amitriptyline in chronic pain
	• Medications vary by country

COMMON ERRORS CONTRIBUING TO PEDIATRIC POISONING IN:

COMMUNITY	• Many errors in prescription writing • Wrong product used for filling ○ Look alike, sound alike • Miscalculation • 10-fold error
HOME ENVIRONMENT	• Medication given twice • Wrong medication given • Wrong dose given • Doses given too close together • Took or given someone else's meds • Confused units of measure • Incorrect concentration given • Dispensing cup error

POISON PREVENTION IN PEDIATRICS:

FACTORS CONTRIBUTING TO PEDIATRIC POISONING	• High-potency medications in households • Rx meds in use at the time • Products not in usual place of storage • Disabled child-resistant containers (CRCs) or transfer to non-CRC (blister, dosettes) • Grandparents' meds in 10-20% cases ○ Grandparents' meds out of CRCs 45% of time • Change in routine, illness, moving, visitors

POISON PREVENTION MEASURES	• Child resistant containers
	  ○ Urge all customers to use
	  ○ Re-engage after each use
	• Remind grandparents to keep blister packs & dosettes out of sight/locked up tight
	  ○ Hang up handbags/backpacks
	  ○ Set reminders on watch or cell phone
	• Proper storage
	  ○ Out of reach, out of sight
	• Keep chemicals out of food & drink bottles
	• Safely dispose of unused or outdated medications
	• Store medicines separate from chemicals
	• Read and follow product label instructions

POISON PREVENTION ACTIVITIES	• Distribute pamphlets and poison control centre phone numbers
	  ○ Free materials available at www.dpic.org
	• Instructions for appropriate measuring tools
	• Brown bag events to return old meds
	• Local safety or community health fairs
	  ○ Pharmacy Awareness Week, March
	  ○ Poison Prevention Week
	  ▪ March 18-24, 2018

PREVENTION IDEAS FOR YOUR PHARMACY	• Keep current pediatric med references
	• Separate look-alikes, sound alikes
	• TALL man lettering
	• Review original med prior to dispensing
	  ○ Screen for errors
	  ○ Double check dosage calculation
	  ○ Compare label with product dispensed
	• Request info from MD re: new, unfamiliar
	• Carefully document product, steps, calculation

PEDIATRICS POISONING EXAMPLES:

CLONIDINE:

TOXICITY:	• Miosis, coma, ↓ HR, ↓ BP, apnea
TOXIC DOSE:	• As little as 0.01 mg/kg in young child ○ One or two 0.1 mg tablets
KINETICS:	• Onset usually within 30-60 minutes • Metabolized to inactive metabolites • Elimination half-life: 6-20 hours
DISPOSITION	• Observe asymptomatic child for 4 hours

SULFONYLUREAS:

TOXIC DOSE:	• 1 tablet can cause hypoglycemia
KINETICS:	• Peak hypoglycemic effects: 2 – 10 hours ○ Delayed with Diamicron MR • Duration of effects: 6 – 24 hours • NOTE: if child receives prophylactic IV dextrose, can mask early identification of hypoglycemia
DISPOSITION	• Asymptomatic child should be observed and blood glucose monitored for min of 8-hrs post-ingestion • Monitor overnight through a sleep cycle if ingestion occurs in late afternoon or evening • Give regular meals and snacks • Avoid prophylactic IV dextrose

GENERAL APPROACH FOR AN UNKNOWN PEDIATRIC INGESTION:

- Most pediatric ingestions are benign
- Attempt to ID pills
- If 1-2 unidentified pills are ingested, consider it potentially fatal
- Observe vital signs, ECG, blood glucose
- Admit and observe for at least 12 hours
  - 24 hours for sustained release CCBs
- Additional investigations as needed
- Call Poison Control Centre

POISONING IN YOUTH: SUICIDE

SUICIDE FACTS FOR TEENS	• Suicide is 2nd leading cause of death in teens
	  ○ In BC, Canada, and globally
	• 50% in 17-18 year olds
	• 65% male, 35% female (in BC)
	  ○ 75% male, 25% female (Canada, internationally)
	• Hanging > guns > jumping > overdose (3%) > drowning
	  ○ 14% expressed intent or suicidal ideation online	

INCREASED RISK	POPULATION LEVEL	• Aboriginal youth • LGBTTQ • Children in care • Homeless • Youth justice/law enforcement contact
	INDIVIDUAL LEVEL	• Suicidal behavior • Substance use • Mental disorders • Stressful life events • Bullying • School performance

MOST COMMON SUBSTANCES IN TEEN POISONING	• Analgesics
	  ○ Acetaminophen
	  ○ Ibuprofen
	• Antidepressants
	  ○ SSRIs
	  ○ Bupropion
	• Sedative/hypnotics
	  ○ BZDs
		• Stimulants, street drugs
		• Antihistamines
		  ○ Diphenhydramine
		  ○ Dimenhydrinate
		• Ethanol
		• Cough/cold products
		• Atypical antipsychotics

MOST COMMON SUBSTANCES IN TEEN DEATHS	• Stimulants, street drugs
	  ○ Amphetamines
	  ○ Hallucinogens
	  ○ Heroin
	• Opioid analgesics
	• Ethanol
	• Sedative/hypnotics
	• Carbon monoxide
		• Antidepressants
		  ○ Bupropion
		  ○ Citalopram
		  ○ Venlafaxine
		• CV meds
		  ○ CCB, BBs
		• Antihistamines
		  ○ Diphenhydramine

ADULT POISONING:

CATEGORIES WITH MOST DEATHS	• Opioids • Stimulants, street drugs • Sedatives, hypnotics • Antipsychotics • CV drugs	• Acetaminophen alone or in combination • Antidepressants • Alcohol • Anticonvulsants
FACTORS IN INTENTIONAL POISONING	• Previous suicide attempt • Alcohol, drug or substance use • Hoarding antidepressants, antipsychotics, sedatives • Problems in work or school • Recent serious illness or death in family • Depressed elderly or those living alone	
FACTORS IN UN-INTENTIONAL POISONING	• Multiple meds, complicated regimens • Opioids + other CNS depressants • Not reading and following label • Cluttered medicine cabinets • Alcohol or substance abuse • Transfer meds from original bottle • Storing meds near chemicals	
THERAPEUTIC ERRORS IN ADULTS	• Taking medication twice • Doses taken too close together • Wrong medication taken/given • Mistakenly taking someone else's medication • Incorrect dose	

ROLES FOR PHARMACISTS IN POISON PREVENTION:

- Distribute poison prevention pamphlets and poison control centre #s
- Help to organize daily medicine regimens
- Blister pack daily medicines
- Sponsor "brown-bag" events & medicine cabinet cleanouts
- Participate in local safety or community health fairs
- Participate in harm reduction activities

TIPS FOR YOUR PATENT:

- Ask before your modify your dose
- Read label before taking medicine
- Store products in original containers
- Store medicines and chemicals in separate places
- Keep medicines, blister packs, dosettes out of sight of grandkids
- Keep phone number for the Poison Control Centre

PHARMACIST'S ROLE IN INTENTIONAL OVERDOSE & SUICIDE PREVENTION:

RECOGNIZE WARNING SIGNS	PHYSICAL	• Neglect of personal appearance • Sudden changes in dress • Sudden weight loss/gain
	EMOTIONAL	• Sense of hopelessness, helplessness, sadness, depression • Inability to enjoy friendships • Inability to concentrate • Wide mood changes • Changes in personality
	BEHAVIORAL	• Making a will, putting things in order, giving things away • Threatening suicide, describing methods, previous attempts • Hoarding pills • Changes in friendships, eating, sleeping, major routine changes

ASK ABOUT SUICIDE	• Asking q's will not cause someone to commit suicide
	  ○ It will let them disclose intentions
	• KEY questions:
	  ○ Are you thinking of hurting yourself?
	  ○ Do you have a plan?
	  ○ Have you ever tried before?
	  ○ Do you have support? (family, friends)	

PROVIDE SUPPORT & REFERRAL	• URGENT: immediate support; family/friends, MD, 911 • If not sure, call DPIC • If hasn't taken but upset, call Crisis Centre • Work with MDs (limit pills, prescribe less toxic drugs) • Display pamphlets	

STEPS IN RESPONDING TO A REQUEST FOR POISON INFORMATION?

1. Get background information	• Has someone taken some or the caller worried someone might? • Is the caller the patient?
2. Determine the urgency	• If there has been an ingestion, how long ago? • How is the person now? • What has been done?
3. Understand issues	• Primary toxicity • Who is at risk • Is it likely to be abused • Are 1-2 doses toxic to a child
4. Make a recommendation	• Respond • Refer

INFORMATION RESOURCES:

- **DPIC (24/7 phone service):** 604-682-5050; 1-800-567-8911
- **Electronic:** Lexicomp (Lexi-Tox); Drug Information apps
- **CPS/RxTx**
- **Poison Management Manual (DPIC)**

REFERRAL RECOMMENDATIONS:

- **911:** anyone unconscious, not breathing or having a seizure
- **BC Drug & Poison Information Centre (DPIC)**
  - Poisoning, overdose, substance abuse
  - Chemical exposure ; plant, marine or critter exposure
  - Double dose of multiple medications or of a CV medication
  - You are welcome to phone just for option
- **Crisis Centre:** 1-800-SUICIDE (1-800-784-2433)
  - www.youthinbc.com (for youth chat line)
  - Anyone in crisis who hasn't taken anything yet

EXAMPLES OF ADULT TOXIC DOSES:

CODEINE	**ACUTE**	• Agitation, impaired concentration, tremors, delirium, coma, respiratory depression • Lethal dose in non-tolerant : 7-14 mg/kg (350 – 700 mg in 50 kg)
	CHRONIC	• Mood instability, restlessness, tension • Tolerance to analgesic and euphoric effects • Nausea, constipation at > 180-200 mg/day
TYLENOL	**ACUTE**	• Adults ≥ 7.5 – 10 g or ≥ 200 mg/kg (whichever is less) • Healthy children ≥ 200 mg/kg

	CHRONIC	• Adults ≥ 6 g/day for 2 days or longer in someone without risk factors
		  ○ ≥ 4 g/day with risk factors
		• Children:
		  ○ ≥ 200 mg/kg over 8-24 hours
		  ○ ≥ 150 mg/kg/day for 2 days
		  ○ ≥ 100 mg/kg/day for 3 days or more

SALICYLATE	**ACUTE**	• Mild toxicity: 150 – 200 mg/kg • Severe: 300 – 500 mg/kg
	CHRONIC	• > 100 mg/kg/day for > 2 days

EXAMPLES OF ADULT TOXIC DOSES:

DIPHEN-HYDRAMINE	**TOXIC DOSES**	• ≥ 7.5 – 10 mg/kg or ≥ 300 mg (whichever is less) should be referred to ER
		• In non-tolerant adults & adolescents, 250 – 500 mg can produce hallucinations
		• Life-threatening :
		  ○ 750-1000 mg SZs, cardiac dysrhtymias
		  ○ 20 – 40 mg/kg potentially fatal
		• Tolerant users : 750 – 1600 mg daily

	ACUTE	• Drowsiness, agitation, toxic psychosis, seizures, dystonic reactions • Tachy, QRS prolongation, conduction delays • Hypertension, hyperthermia • Anticholinergic sx : dry mouth; mydriasis; dry; flushed skin; urinary retention; hypoactive bowel sounds
	CHRONIC	• Depressed mood, loss of energy, confusion, inattentiveness, difficulty socializing
	ABRUPT WITH-DRAWAL	• N/V, malaise, increased excitability • Symptom may persist for days

	TXT	• ABCs : airways, seizures
		• Sedation with BDZs for agitation, seizures
		• Monitoring: vital signs, electrolytes, ECG
		• Symptomatic/supportive:
		  ○ Cooling, fluids
		  ○ Sodium bicarbonate for QRS widening

IRON	**TOXIC DOSES**	• > 40 mg/kg elemental iron
		  ○ Potentially serious
		• > 60 mg/kg
		  ○ Potentially lethal

	TOXICITY	• Direct damage to GI mucosa
		  ○ Vomiting, diarrhea, fluid loss
		• Cellular toxicity – oxidative damage
		  ○ Lactic acidosis
		  ○ Hypotension
		  ○ Hepatic failure
		  ○ Coagulopathy
		  ○ Death

	TXT	• Abdominal x-ray and serum iron level
		  ○ Limitations
		• Aggressive GI decontamination
		  ○ Charcoal does not bind
		  ○ Whole bowel irrigation maybe 1st line
		• Antidote: **deferoxamine IV –** chelate iron
		• Aggressive supportive care
		  ○ IV fluids, blood products