PRESCRIBING PRINCIPLES

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OUTLINE

1. Obtaining a thorough medication history
2. Starting and stopping medications
3. Dosing
4. Drug interactions
5. Off label prescribing
6. Documentation
7. Examples of how to write (and not write) prescriptions
Obtaining a Thorough Medication History (BPMH)

+ How do you currently take medication histories?
  
  ▶ What questions do you ask?
  
  ▶ What sources of information do you use?
Components of the Best Possible Medication History (BPMH)

1. **All current and relevant past medications (Rx and non-Rx), & complimentary/alternative medications (CAMs)**

2. **List, for each item, the dose, dosage form, frequency, route, indication, level of patient adherence & info source**

3. **Information sources: the patient, patient’s family, Rx vials/packages, pharmacist/pharmacy, PharmaNet (in BC) primary care provider, & specialists.**

4. **Assess appropriateness of therapies**

5. **Identify and reconcile DISCREPANCIES (what the patient is doing vs. what the care provider believes)**

http://www.saferhealthcarenow.ca/
www.canadapharma.org (Knowledge is best Medicine)
Medication History: TIPS

+ Use both open-ended questions (what, how, why, when) and yes/no questions
+ Use a systematic approach to best get complete information (e.g., meds over last 24 hrs or head to toe)
+ Non-judgmental approach
+ Keep it simple: e.g., avoid medical jargon
+ Avoid leading questions
+ Explore vague responses (non-compliance)
+ Prompt for specific types of medications (e.g., pain, sleep, GI, eye/ear drops, patches, creams/ointments, inhalers)
**Medication History Sample Questions**

**Medication History Script**

Allergies
- Do you have an allergy to or avoid any medications due to side effects?
- What type of reaction do you have?

Prescription Medications
- What prescription medications do you take on a regular basis?
- When do you take them?

Non-prescription Medications
- What non-prescription over-the-counter medications do you take on a regular basis?
- When do you take them?

Herbals, Supplements, Vitamins
- What herbal, natural or homeopathic remedies do you take?
- What vitamins or minerals do you take?
- When do you take them?

**Additional Questions**

Do you use any:
- Eye drops
- Nose sprays
- Puffers (inhalers)
- Medicated lotions or creams
- Medicated patches

Do you receive any:
- Needles (injections)
- Samples from the doctor’s office
- Study medications

Do you take any medication on a regular basis for:
- Sleep
- Your stomach
- Your bowels
- Pain

Did you or your doctor recently change or stop any of your medication?
DOSING PRINCIPLES

1. FOR THE MAJORITY OF CONDITIONS THERE IS RARELY A NEED TO GET AN IMMEDIATE RESULT

2. FOR MANY MARKETED DRUGS, THE RECOMMENDED STARTING DOSES ARE TOO HIGH

3. THE PLACEBO GROUP RESPONSE (NOT THE PLACEBO EFFECT) FOR NUMEROUS CONDITIONS IS APPROXIMATELY 20-40%

4. THERE IS NO RELIABLE WAY TO PREDICT HOW A PATIENT WILL RESPOND TO A DRUG (PHARMACODYNAMICS) OR HOW THEY WILL ELIMINATE A DRUG (PHARMACOKINETICS)

5. APPROXIMATELY ¾ OF SIDE EFFECTS OF DRUGS ARE DOSE RELATED
Seizure prevention | Lethal overdose

**Rat Data**

![Graphs](image)

Fig. 2-2. Quantal dose-response curves based on all-or-none responses. A. Relationship between the dose of phenobarbital and the protection of groups of rats against convulsions. B. Relationship between the dose of phenobarbital and the drug’s lethal effects in groups of rats. (Data adapted from C. R. Craig and F. E. Shideman, J. Pharmacol. Exp. Ther. 176:35, 1971.)
1. THERE IS NO URGENCY TO GETTING A RESPONSE - FIND THE LOWEST EFFECTIVE DOSE FOR YOU OVER THE NEXT FEW MONTHS

2. NO WAY TO KNOW AHEAD OF TIME WHAT DOSE IS THE "BEST" ONE FOR YOU

3. THE TYPICAL RECOMMEND STARTING DOSES FOR MANY MEDICATIONS ARE TOO HIGH

4. STARTING WITH A 1/4 TO AN 1/8 OF THE DOSE - DECREASE THE CHANCE OF SIDE EFFECTS

5. MANY CONDITIONS GET BETTER OVER TIME

6. "YOU" WILL DETERMINE THE CORRECT DOSE

7. YOU MAY GET BETTER BECAUSE OF THE DRUG, OR TINCTURE OF TIME EFFECT
<table>
<thead>
<tr>
<th>Drug</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.25 mg of hydrochlorothiazide</td>
<td>Effective at lowering blood pressure – first marketed at 50 to 200 mg daily</td>
</tr>
<tr>
<td>6.25 mg of captopril</td>
<td>Effective at lowering blood pressure as a single dose and when dosed chronically BID - captopril 25 mg PO TID is still a commonly recommended initial starting dose for hypertension</td>
</tr>
<tr>
<td>25 mg of sildenafil (Viagra)</td>
<td>Effective dose for erectile dysfunction</td>
</tr>
<tr>
<td>25 mg of sumatriptan (Imitrex)</td>
<td>Works almost as well as 100 mg - most drugs in this class a flat dose-response curve is seen at the doses studied</td>
</tr>
<tr>
<td>5 mg daily of fluoxetine (Prozac)</td>
<td>Effect similar to 20 mg 40 mg daily</td>
</tr>
<tr>
<td>0.25 mg of ezetimibe (Ezetrol)</td>
<td>1/40th of the recommended initial starting dose of 10 mg provides 50% of the LDL lowering effect seen with 10 mg</td>
</tr>
<tr>
<td>15 mg of elemental iron daily</td>
<td>As effective for anemia in the elderly as 50 mg and 150 mg with a lower incidence of side effects</td>
</tr>
<tr>
<td>150 mg daily of bupropion (Zyban)</td>
<td>Produces the same rate of smoking cessation at one year as 300 mg daily</td>
</tr>
<tr>
<td>10 mg of atorvastatin</td>
<td>Produces 2/3 of the effect on cholesterol as that seen with an 80 mg (8-fold increase) dose</td>
</tr>
<tr>
<td>200 mg of ibuprofen (Motrin)</td>
<td>As effective as 400 mg for migraine headache</td>
</tr>
<tr>
<td>25 mg of ranitidine (Zantac)</td>
<td>As effective as 125 mg for heartburn relief</td>
</tr>
</tbody>
</table>
1. Not all drugs come in dosage forms that allow small doses to be used

2. The majority of tablets can be split - use a pill cutter

3. Some capsules can be opened

4. Increase the interval

5. Liquid form - pediatric dosage forms may be useful to start
Dosing

If Dying - Give lots
If No hurry - start with at most a 1/2, and maybe even 1/4 to 1/8
“Drugectomies”

In the beginning - until proven otherwise
Assume the drug is wrong
Assume the dose is wrong

Come up with a monitoring plan in conjunction with the patient
Cut dose in 1/2 for a week or two
Cut dose in 1/2 again for a week or two
Then stop
Drug Interactions

Either Pharmacodynamic or Pharmacokinetic

1. Pharmacodynamic - result in additive or antagonistic pharmacological effects

2. Pharmacokinetic - involve induction or inhibition of metabolizing enzymes in the liver or elsewhere, displacement of drug from plasma protein binding sites, alterations in gastrointestinal absorption, or competition for active renal secretion

From http://www.nephrologypharmacy.com/downloads/druginteraction2e.pdf

http://www.drugs.com/drug_interactions.php


iPhone app - Medscape, Epocrates, Lexicomp, Micromedex
# MOST important DDIs

<table>
<thead>
<tr>
<th>Drug</th>
<th>Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warfarin</td>
<td>Thyroid, NSAIDs, cimetidine, fibric acid, barbiturates, sulfinpyrazone</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>Azoles</td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>Propoxyphene, macrolides</td>
</tr>
<tr>
<td>Cyclosporine</td>
<td>Rifampin</td>
</tr>
<tr>
<td>Dextromethorphan</td>
<td>MAOIs</td>
</tr>
<tr>
<td>Digoxin</td>
<td>Clarithromycin</td>
</tr>
<tr>
<td>Ergots</td>
<td>Macrolides</td>
</tr>
<tr>
<td>Ganciclovir</td>
<td>Zidovudine</td>
</tr>
<tr>
<td>MAOIs</td>
<td>Sympathomimetics</td>
</tr>
<tr>
<td>Meperidine</td>
<td>MAOIs</td>
</tr>
<tr>
<td>Methotrexate</td>
<td>Trimethoprim</td>
</tr>
<tr>
<td>Nitrates</td>
<td>Sildenafil</td>
</tr>
<tr>
<td>Pimozide</td>
<td>Macrolides, azoles</td>
</tr>
<tr>
<td>SSRIs</td>
<td>MAOIs</td>
</tr>
<tr>
<td>Theophylline</td>
<td>Quinolones, fluvoxamine</td>
</tr>
</tbody>
</table>

## Duplicate action drugs

- Sedation
- Blood pressure
- Potassium

**PPiS**

*J Am Pharm Assoc 2004;44:142-151*
Off Label Prescribing

- Use of a prescription medication to treat a condition Health Canada has not granted an “indication”
- A medication that is “not indicated” for a particular use, is NOT necessarily contraindicated for that condition?
- How does a drug get an indication for a medical condition?
- What patient populations often do not have indications?
- Must consider each patient’s circumstances when off label prescribing. Document your rationale and monitoring plan
Writing
Prescriptions
Prescription Requirements
ONTARIO College of Pharmacists

1. Date
2. Name and address of patient
3. Name, strength, quantity and form of drug or ingredient(s)
4. Directions for use (include frequency or interval or maximum daily use)
5. Refill authorization (# and interval between refills) - O if left blank
6. Name and College ID of practitioner
7. Signature
Can this prescription be improved?

Amox 250 mg tid

No Refills

Nat O’Pathick
Mr. Peter Pan
1433 Peterson st.
Neverland, ON, M3N 4B8

Amoxicillin 250 mg/ml solution
Sig: tid
Mitte: 21

No Refills
7564

Dr. Nat O’Pathick
233rd Herbal Drive
Toronto, ON
M5R 2R9
416-488-6578
1. Name
2. Address
3. Telephone number
4. College of Naturopathic Physicians Identity Number
5. Imprinted on blank prescription or personalized self-inking stamp
6. Signature
Ontario College of Pharmacists Legislation

Prescriptions need to be either:

+ Written & signed
+ Dictated to a pharmacist by telephone (except straight narcotics)
+ Sent electronically (Faxed)

Prescriptions for medications are active for 1 year from the date on the prescription (except oral contraceptives, which are 2 years)

Pharmacists keep prescriptions for at least 2 years
Common Issues that may result in Medication Errors

+ Illegible handwriting
+ Use of abbreviations
+ Incomplete directions
+ Lack of patient information (allergies)
+ Lack of appropriate dosing information (decimals & trailing zeros)
Prescription Checklist

1. Patient Name*
2. Address*
3. Age/weight
4. Purpose
5. Date*
6. Drug Name*
7. Manufacturer
8. Strength*
9. Mitte(Send)/Quantity*
10. Dosage form
11. Sig(Take)/Directions*
   (Include frequency & daily maximum if PRN)
12. Prescriber Signature*
13. ND ID Number*
14. Prescriber address and phone #*
15. Refills
Which medication is this?

Avandia – rosiglitazone 4 mg
-antidiabetic

Coumadin – warfarin 4 mg
-anticoagulant
Tegretol (carbamazepine) 400 mg orally daily - anticonvulsant

Tequin (gatifloxacin) 400 mg orally daily - quinolone antibiotic
Plendil (felodipine) 20 mg orally every 6 hours
- Calcium channel blocker

Isordil (isosorbid dinitrate) 20 mg orally every 6 hours
Look Alike/Sound Alike Drugs

Bupropion vs. Buspirone
Plavix vs. Paxil
Adderall vs. Inderal
Metoprolol vs. Misoprostol
Tegretol vs. Toradol
Lasix vs. Losec
Flomax vs. Fosamax
Atarax vs. Ativan

National association of Chain Drug Stores has a list www.nacds.org
Additional Prescribing Tips

1. Consider including diagnosis or purpose (if appropriate)
   + Helps confirm medication and provide context for consistent education

2. For children or those < 40 kg
   + Include age or weight
   + List mg/kg dose you used (pharmacist to double check and confirm dose)
   + List dosage form (e.g., liquid preferred)

3. Use generic drug name

4. If you don’t want substitution of your prescription, write the manufacturer’s name OR “Do Not Substitute”

5. Specify: # of Refills and time interval between refills e.g. Repeat 3 x q 30 days
Dr. Nat O’Pathick  
233rd Herbal Drive  
Toronto, ON  
M5R 2R9  
416-488-6578  

Mr. Peter Pan  
1433 Peterson st.  
March 1, 2010  
Neverland, ON, M3N 4B8  

Amoxicillin 250 mg/ml solution  
Sig: tid  
Mitte: 21  

No Refills  
Nat O’Pathick  
7564
Types of Signa (Directions)

+ Usually uses a standard Latin abbreviation
+ Useful shorthand for physicians
+ Aids pharmacists detect forged prescriptions

+ Common Signa: qd, bid, tid, qid, q8h, hs, PRN, pc

+ Note: PRN (alone) is not acceptable when used alone...must include specific frequency, interval or MAX DAILY DOSE and preferentially indication for use

+ E.G. qHS PRN sleep
# Common Latin Rx Terms

<table>
<thead>
<tr>
<th>Latin</th>
<th>Abbrev.</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bis in die</td>
<td>bid</td>
<td>Twice a day</td>
</tr>
<tr>
<td>Ter in die</td>
<td>tid</td>
<td>3 times daily</td>
</tr>
<tr>
<td>Quarter in die</td>
<td>qid</td>
<td>4 times daily</td>
</tr>
<tr>
<td>Ante cibum</td>
<td>ac</td>
<td>Before meals</td>
</tr>
<tr>
<td>Post cibum</td>
<td>pc</td>
<td>After meals</td>
</tr>
<tr>
<td>Hora somni</td>
<td>hs **</td>
<td>At bedtime</td>
</tr>
<tr>
<td>Pro re nata</td>
<td>prn</td>
<td>As needed</td>
</tr>
<tr>
<td>Quaque die</td>
<td>q 3 h</td>
<td>Every 3 hours</td>
</tr>
<tr>
<td>Per os</td>
<td>po</td>
<td>By mouth</td>
</tr>
</tbody>
</table>
ABBREVIATIONS TO AVOID (ISMP)
<table>
<thead>
<tr>
<th>Abbreviation / Dose Expression</th>
<th>Intended Meaning</th>
<th>Misinterpretation</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apothecary symbols</td>
<td>dram minim</td>
<td>Misunderstood or misread (symbol for dram misread for “3” and minim misread as “mL”).</td>
<td>Use the metric system.</td>
</tr>
<tr>
<td>AU</td>
<td>aurio uterque (each ear)</td>
<td>Mistaken for OU (oculo uterque—each eye).</td>
<td>Don’t use this abbreviation.</td>
</tr>
<tr>
<td>D/C</td>
<td>discharge OR discontinue</td>
<td>Premature discontinuation of medications when D/C (intended to mean “discharge”) has been misinterpreted as “discontinued” when followed by a list of drugs.</td>
<td>Use “discharge” and “discontinue.”</td>
</tr>
<tr>
<td>Drug names</td>
<td></td>
<td>Don’t abbreviate the drug name</td>
<td>Use the complete spelling for drug names.</td>
</tr>
<tr>
<td>No zero before decimal</td>
<td>0.5 mg vs .5 mg</td>
<td>Could be mistaken for 5 mg (if the decimal point is faint or not seen.</td>
<td>Use zero before a decimal</td>
</tr>
<tr>
<td>AZT</td>
<td>zidovudine (RETROVI R)</td>
<td>azathioprine</td>
<td>ISMP Dangerous Abbreviations</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Name</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>CPZ</td>
<td>COMPAZINE (prochlorperazine)</td>
<td>chlorpromazine</td>
<td></td>
</tr>
<tr>
<td>DPT</td>
<td>DEMEROL-PHENERGAN-TORAZINE</td>
<td>diphtheria-pertussis-tetanus (vaccine)</td>
<td></td>
</tr>
<tr>
<td>HCl</td>
<td>hydrochloric acid</td>
<td>potassium chloride (The “H” is misinterpreted as “K.”)</td>
<td></td>
</tr>
<tr>
<td>HCT</td>
<td>hydrocortisone</td>
<td>hydrochlorothiazide</td>
<td></td>
</tr>
<tr>
<td>HCTZ</td>
<td>hydrochlorothiazide</td>
<td>hydrocortisone (seen as HCT250 mg)</td>
<td></td>
</tr>
<tr>
<td>MgSO4</td>
<td>magnesium sulfate</td>
<td>morphine sulfate</td>
<td></td>
</tr>
<tr>
<td>MSO4</td>
<td>morphine sulfate</td>
<td>magnesium sulfate</td>
<td></td>
</tr>
<tr>
<td>MTX</td>
<td>methotrexate</td>
<td>mitoxantrone</td>
<td></td>
</tr>
<tr>
<td>TAC</td>
<td>triamcinolone</td>
<td>tetracaine, ADRENALIN, cocaine</td>
<td></td>
</tr>
</tbody>
</table>

ISMP Dangerous Abbreviations
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
<th>Misinterpretation</th>
<th>Correct Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZnSO4</td>
<td>zinc sulfate</td>
<td>morphine sulfate</td>
<td></td>
</tr>
<tr>
<td>Zero after decimal</td>
<td>1.0 vs 1 mg</td>
<td>Misread as 10 mg if the decimal point is not seen</td>
<td>Do not use terminal zeros for doses</td>
</tr>
<tr>
<td>“Nitro” drip</td>
<td>nitroglycerin infusion</td>
<td>sodium nitroprusside infusion</td>
<td></td>
</tr>
<tr>
<td>“Norflox”</td>
<td>norfloxacin</td>
<td>NORFLEX</td>
<td></td>
</tr>
<tr>
<td>ug</td>
<td>microgram</td>
<td>Mistaken for “mg” when handwritten.</td>
<td>Use “mcg.”</td>
</tr>
<tr>
<td>o.d. or OD</td>
<td>once daily</td>
<td>Misinterpreted as “right eye” (OD—oculus dexter) and administration of oral medications in the eye.</td>
<td>Use “daily.”</td>
</tr>
<tr>
<td>TIW or tiw</td>
<td>three times a week.</td>
<td>Mistaken as “three times a day.”</td>
<td>Don’t use this abbreviation.</td>
</tr>
<tr>
<td>per os</td>
<td>orally</td>
<td>The “os” can be mistaken for “left eye.”</td>
<td>Use “PO,” “by mouth,” or “orally.”</td>
</tr>
<tr>
<td>q.d. or QD</td>
<td>every day</td>
<td>Mistaken as q.i.d., especially if the period after the “q” or the tail of the “q” is misunderstood as an “i.”</td>
<td>Use “daily” or “every day.”</td>
</tr>
<tr>
<td>Term</td>
<td>Time/Mode</td>
<td>Misinterpretation</td>
<td>Correct Usage</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>qn</td>
<td>nightly</td>
<td>Misinterpreted as “qh” (every hour).</td>
<td>Use “nightly.”</td>
</tr>
<tr>
<td>qhs</td>
<td>nightly</td>
<td>Misread as every hour.</td>
<td>Use “nightly.”</td>
</tr>
<tr>
<td>q6PM</td>
<td>every evening at 6 PM</td>
<td>Misread as every six hours.</td>
<td>Use 6 PM “nightly.”</td>
</tr>
<tr>
<td>q.o.d. or QOD</td>
<td>every other day</td>
<td>Misinterpreted as “q.d.” (daily) or “q.i.d. (four times daily) if the “o” is poorly written.</td>
<td>Use “every other day.”</td>
</tr>
<tr>
<td>sub q</td>
<td>subcutaneous</td>
<td>The “q” has been mistaken for “every” (e.g., one heparin dose ordered “sub q 2 hours before surgery” misunderstood as every 2 hours before surgery).</td>
<td>Use “subcut.” or write “subcutaneous.”</td>
</tr>
<tr>
<td>SC</td>
<td>subcutaneous</td>
<td>Mistaken for SL (sublingual).</td>
<td>Use “subcut.” or write “subcutaneous.”</td>
</tr>
<tr>
<td>U or u</td>
<td>unit</td>
<td>Read as a zero (0) or a four (4), causing a 10-fold overdose or greater (4U seen as “40” or 4u seen as 44”).</td>
<td>“Unit” has no acceptable abbreviation. Use “unit.”</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
<td>Common Misread</td>
<td>Corrected Usage</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>----------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>IU</td>
<td>international unit</td>
<td>Misread as IV (intravenous).</td>
<td>Use “units.”</td>
</tr>
<tr>
<td>cc</td>
<td>cubic centimeters</td>
<td>Misread as “U” (units).</td>
<td>Use “mL.”</td>
</tr>
<tr>
<td>x3d</td>
<td>for three days</td>
<td>Mistaken for “three doses.”</td>
<td>Use “for three days.”</td>
</tr>
<tr>
<td>BT</td>
<td>bedtime</td>
<td>Mistaken as “BID” (twice daily).</td>
<td>Use “hs.”</td>
</tr>
<tr>
<td>ss</td>
<td>sliding scale (insulin) or ½ (apothecary)</td>
<td>Mistaken for “55.”</td>
<td>Spell out “sliding scale.” Use “one-half” or use “½.”</td>
</tr>
<tr>
<td>&gt; and &lt;</td>
<td>greater than and less than</td>
<td>Mistakenly used opposite of intended.</td>
<td>Use “greater than” or “less than.”</td>
</tr>
<tr>
<td>/ (slash mark)</td>
<td>separates two doses or indicates “per”</td>
<td>Misunderstood as the number 1 (“25 unit/10 units” read as “110” units.</td>
<td>Do not use a slash mark to separate doses. Use “per.”</td>
</tr>
<tr>
<td>Name letters and dose numbers run together (e.g., Inderal40 mg)</td>
<td>Inderal 40 mg</td>
<td>Misread as Inderal 140 mg.</td>
<td>Always use space between drug name, dose and unit of measure.</td>
</tr>
</tbody>
</table>
Protecting Prescription Guidelines

+ Minimize number of pads in use
+ Do not leave visible in office
+ Store in secure place (to avoid theft)
+ Consider writing amounts of desired medications numerically + alphabetically
+ Never sign Rx blanks in advance
+ Write Rx in ink
+ Do not use Rx blanks for notes or memos which can be erased and used for forgery
Documenting Your Prescription

When recommending a treatment for a patient, what information do you document?
Suggestions for Documentation when Writing a Prescription

1. Date
2. Subjective and observed symptoms
3. Assessment of the patient’s problem (if known)
4. Purpose and/or Goal(s) of Medication(s)/Treatment
5. Name, dose, dosage form and quantity of medication prescribed
6. Monitoring plan (efficacy and safety)
7. Discussion you had with patient about treatment and monitoring plan
8. Did you have ‘informed consent’?
9. Signature
Proton pump inhibitors (antacids): possible risk of *Clostridium difficile*-associated diarrhea

Information Update
2012-23
February 16, 2012
For immediate release

OTTAWA - Health Canada is informing Canadians of a possible association between the use of prescription stomach antacids known as proton pump inhibitors (PPIs) and an increased risk of *Clostridium difficile*-associated diarrhea (CDAD).

*Clostridium difficile*, commonly called *C. difficile*, is a bacterium that can cause diarrhea and may lead to more serious intestinal conditions. Healthy people are not usually vulnerable to *C. difficile*. Factors known to increase the risk of infection include advanced age, severe underlying illness, hospitalization, or antibiotic use.

PPIs reduce stomach acid and are widely used to treat conditions such as acid reflux, and stomach and small intestine ulcers. See below for a list of Proton Pump Inhibitors.

There have been a number of studies suggesting a possible link between PPIs and an increased risk of CDAD, particularly in vulnerable patients. Health Canada has been assessing this data on an ongoing basis.

The studies acknowledge important limitations with regard to the impossibility of establishing a definite cause-and-effect relationship between PPIs and an increased risk of CDAD, as there are a number of other factors that may play a role.
MedEffect e-Notice - Proton pump inhibitors (antacids) - Information Update
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Proton pump inhibitors (antacids): possible risk of Clostridium difficile-associated diarrhea

Health Canada is informing Canadians of a possible association between the use of prescription stomach antacids known as Clostridium difficile-associated diarrhea (CDAD).

You can report any suspected adverse reactions to drugs and other health products to the Canada Vigilance Program by visiting the Reporting Adverse Reactions to Drugs page.

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