

## OVER- THE- COUNTER DRUGS

### I. Analgesics → drugs which relieve pain without loss of consciousness

#### A. Antipyretics → drugs which reduce fever

- (1) acetaminophen (Tylenol)
- (2) aspirin (ASA)
- (3) NSAIDs (non-steroidal anti-inflammatory drugs)
  - ibuprofen (Advil, Motrin, Nuprin, etc...)
  - naproxen (Aleve, Naprosyn)

#### B. NSAIDs → drugs which reduce inflammation which leads to pain

- indications: arthritis, muscle soreness, and joint injuries

### II. Analgesic Products

#### A. Aspirin (ASA)

- (1) examples: Anacin, Alka-Seltzer, Empirin, Vanquish, Bufferin
- (2) ASA reduces fever and, at higher doses, decreases inflammation
- (3) ASA is found in combination products: cold / flu items, antacids, allergy medications, etc...
- (4) most common side effects: gastrointestinal (GI) upset, nausea / vomiting  
→ frequent high doses of ASA → GI bleeding → ulcer formation
- (5) buffered ASA (e.g., Bufferin) → ASA + antacid → facilitates tablet dissolution  
→ facilitates absorption of ASA
- (6) enteric-coated ASA (e.g., Ecotrin) → ASA dissolves in small intestine → prevents stomach irritation
- (7) stroke and heart attack prevention:
  - ASA (81 mg/day) → prevents platelet aggregation → prevents formation of blood clots → reduces risk of subsequent heart attacks & strokes

## Aspirin (continued)

- (8) pregnant women should avoid ASA especially during the last trimester since it may increase risk of bleeding (fetus and mother) during labor
- (9) Reye's Syndrome → a rare, potentially fatal condition characterized by vomiting, lethargy, delirium and coma; this syndrome is associated with ASA given to children infected with the flu

### A. Acetaminophen (APAP)

- (1) examples: Tylenol, Anacin-3, Panadol, Datril, etc...
- (2) APAP is available in standard strength (325 mg) and extra-strength (500 mg) dosage forms and is indicated for minor pain, headache, and fever
- (3) advantage over aspirin and NSAIDs → APAP does not usually cause GI upset
- (4) disadvantage → APAP does not have significant anti-inflammatory properties
- (5) APAP overdose → permanent liver damage (hepatotoxicity) → death

### B. Ibuprofen

- (1) examples: Advil, Motrin, Nuprin, Medipren, Rufen, etc...
- (2) ibuprofen generally causes less GI effects than an equivalent dose of ASA
- (3) ibuprofen is indicated for mild-moderate pain due to arthritis, osteoarthritis, and menstrual cramps
- (4) ibuprofen may compromise kidney function in predisposed individuals (primarily elderly patients with cardiovascular and/or kidney diseases)

## III. Appetite Suppressants (Diet Aids, Anorectics, or Anorexics)

### A. Phenylpropanolamine (PPA) Products / Ephedrine (Ma Huang)

- (1) PPA and ephedrine are CNS stimulants which have appetite suppressant effects as well as decongestant properties
- (2) Since recent clinical studies have associated PPA with increased risk of hemorrhagic stroke (bleeding into the brain or into tissue surrounding the brain) in women, the FDA has recalled PPA-containing OTC products. Ephedrine, which also poses cardiovascular and CNS risks, is still on the market.

#### A. Phenylpropanolamine / Ephedrine (continued)

- (3) side effects include → nervousness, restlessness, headache, anxiety, nausea, and hypertension
- (4) patients with hypertension, diabetes, thyroid disease, and cardiovascular disease should avoid OTC stimulants (PPA/ephedrine).

#### B. Benzocaine

- (1) benzocaine, available in gums, candies, and lozenges, acts as a topical anesthetic designed to numb the tongue and taste buds

numb taste buds → inability to taste food → decrease food intake  
→ weight loss

- (2) caution: may interfere with swallowing mechanism → choking

#### C. Bulk-Formers

- absorb liquid in stomach → feeling of fullness → decreased appetite

#### D. Laxatives

- “purges body” by promoting elimination → weight loss

#### E. Diuretics

- water pills → increase urination → decrease body fluid  
→ decreases body weight temporarily

### IV. Cold & Flu Products

- a cold is a self-limiting illness → recovery will occur without medical intervention

#### A. Antihistamines

- antihistamines block the effect of histamine in the respiratory tract
- examples: Benadryl (diphenhydramine) and Chlor-Trimeton (chlorpheniramine)
- antihistamines → relieve sneezing, runny nose, and post-nasal drip  
→ dry up respiratory secretions
- main side effect: drowsiness (sedation)

## B. Decongestants

- decongestants constrict blood vessels in nasal passages → relieve congestion
- example: Sudafed (pseudoephedrine) and phenylephrine
- nasal sprays → Afrin, Neosynephrine, etc...
  - may cause “rebound congestion” if used too frequently

## C. Analgesics / Antipyretics

- analgesics / antipyretics may be combined with cold / flu products to relieve pain and reduce fever

## D. Antitussives (Cough Suppressants)

### (1) Dextromethorphan (DM)

- DM is the most effective OTC cough suppressant
- examples → Robitussin DM and Triaminic DM

### (2) Diphenhydramine

- diphenhydramine is an antihistamine used as a cough suppressant
- example: Benalyn

### (3) Codeine

- codeine-containing cough syrups, available by prescription, are the most effective cough suppressants
- examples → Robitussin AC Syrup and Phenergan with Codeine Syrup

## E. Expectorant → Guaifenesin

- expectorants → thin and loosen respiratory mucus secretions
- example: Robitussin Syrup (plain) contains guaifenesin
- some cough suppressants, such as Robitussin DM, also contain guaifenesin

## V. Hypnotics (Sleepaids)

- examples: Nytol, Nervine, Sominex, Compoz → all contain diphenhydramine
- Excedrin PM → antihistamine + analgesic
- sleepaids should be used for short-term insomnia; if insomnia persists, it may be due to an underlying medical problem (e.g., depression)

## VI. Stimulants

- examples: NoDoz and Vivarin → all contain caffeine (100-200mg)
- side effects include → irritability, anxiety, nervousness, insomnia, headache, palpitations, restlessness, and hypertension

## VII. Anti-Ulcer Drugs

### (1) H<sub>2</sub> Blockers → block gastric acid secretion

- examples: Tagamet (cimetidine), Zantac (ranitidine), Pepcid (famotidine), and Axid (natazidine)

### (2) Antacids

- Maalox: magnesium hydroxide + aluminum hydroxide
- Mylanta: magnesium hydroxide + aluminum hydroxide + simethicone
- Alternagel: aluminum hydroxide
- Milk of Magnesia: magnesium
- Mylicon: simethicone
- Tums: calcium carbonate
- Alka-Seltzer: sodium bicarbonate

### (3) Cytoprotective Agents

- Carafate (sucralfate) → binds to ulcer (GI lesion) forming a protective barrier
- Cytotec (misoprostol) → synthetic prostaglandin E analog which stimulates mucous secretion

### (4) Proton Pump Inhibitors

- Prilosec (omeprazole) → blocks gastric acid secretion by inhibiting the H<sup>+</sup> / K<sup>+</sup> pump in parietal cells (stomach)

## VIII. Guidelines for Self-Medication

- (1) read the product label carefully
- (2) follow the directions for use
- (3) if symptoms worsen or persist, seek professional advise
- (4) OTC drugs do not cure illnesses (OTC drugs relieve symptoms)
- (5) don't use expired or old medications
- (6) store medications properly
- (7) avoid OTC products with identical medications
- (8) consult a pharmacist or other medical professionals for information on OTC drugs select an economical generic OTC product when available (generic vs brand)