

HEALTH NOTES by Evelyn Ames

OTC NSAIDs (non-steroidal anti-inflammatory drugs)

Non-steroidal anti-inflammatory drugs are generally over-the-counter medications that do not require a physician's prescription. When the dosage is higher than the OTC limit per dosage, NSAIDs become prescription (e.g., ibuprofen at 200 mg is OTC whereas a 600-800 mg pill is prescription). The medical uses of NSAIDs are to relieve pain, inflammation, and fever. Names of common generics are ibuprofen (Advil, Motrin), aspirin, naproxen (Aleve), and ketoprofen (Orudis). Acetaminophen (Tylenol) is not a NSAID because it does not pharmacologically affect inflammation.

NSAIDs affect prostaglandins (a family of chemicals produced by cells of the body). Prostaglandins promote "inflammation, pain, and fever; support the blood clotting function of platelets; and protect the lining of the stomach from the damaging effects of acid" (www.medicinenet.com/nonsteroidal). "Prostaglandins are produced within the body's cells by the enzyme cyclooxygenase (COX). There are two COX enzymes, COX-1 and COX-2. Both enzymes produce prostaglandins that promote inflammation, pain, and fever. However, only COX-1 produces prostaglandins that support platelets and protect the stomach. Nonsteroidal antiinflammatory drugs (NSAIDs) block the COX enzymes and reduce prostaglandins throughout the body. As a consequence, ongoing inflammation, pain, and fever are reduced. Since the prostaglandins that protect the stomach and support platelets and blood clotting also are reduced, NSAIDs can cause ulcers in the stomach and promote bleeding" (www.medicinenet.com/nonsteroidal_antiinflammatory_drugs/index.htm).

"NSAIDs vary in their potency, duration of action, how they are eliminated from the body, how strongly they inhibit COX-1 and their tendency to cause ulcers and promote bleeding. Aspirin is a unique NSAID, not only because of its many uses, but because it is the only NSAID that inhibits the clotting of blood for a prolonged period (4 to 7 days). This prolonged effect of aspirin makes it an ideal drug for blood clots that cause heart attacks and strokes." (Medicinenet.com)

Consumer Reports on Health: "All NSAIDs should be used with caution. All can have dangerous side effects, especially stomach ulcers and gastrointestinal bleeding. The FDA has warned that prolonged use at high doses of any NSAID may raise the risk of heart attack or stroke. NSAIDs (except low-dose aspirin) may not be appropriate for people already at risk of heart disease or stroke. Don't take them for long periods of time without consulting a doctor."

http://www.consumerreports.org/health/resources/pdf/best-buy-drugs/2pager_NSAIDs.pdf

The National Digestive Diseases Information Clearinghouse of the National Institutes of Health reports that NSAIDs offer many benefits. "However, people who regularly take these medicines—such as those with chronic conditions like arthritis—are five times more likely to develop peptic ulcers than people who do not take them. Even occasional users of NSAIDs—of any age—can develop a peptic ulcer. But the risk of developing an NSAID induced peptic ulcer increases with dose and frequency of NSAIDs, use of multiple NSAIDs, length of time taking NSAIDs, age—more likely in those age 60 or older, gender—more common in women than men, a history of peptic ulcers, smoking, alcohol use, and use of corticosteroids, such as prednisone."

<http://digestive.niddk.nih.gov/ddiseases/pubs/nsaids/#4>

Interactions of ibuprofen and naproxen with other medications. These two drugs are associated with several suspected or probable interactions that can affect the action of other drugs. They may increase blood levels of lithium by reducing the excretion of lithium by the kidneys. These increased levels may lead to lithium toxicity. They may reduce blood pressure-lowering effects of blood pressure lowering drugs. Why? Prostaglandins play a role in the regulation of blood pressure. People taking blood thinners (e.g., warfarin) should avoid taking ibuprofen and naproxen. (Medicinenet.com) The FDA currently advises those taking OTC naproxen to carefully follow instructions on the label and not exceed 220 milligrams twice daily nor take them longer than ten days. (FDA Safety Watch)

Simple comparison chart of major NSAIDs

Product	Where Effective	Cautions	Comments
Aspirin (ASA)	pain, fever, and inflammation; on medical advice, low dosage daily may prevent heart attack; possible preventive effect against colon cancer.	not to be taken by children under 16 with chicken pox or flu; not for pregnant women (causes bleeding); breast-feeding mothers; those with ASA allergy, gout, ulcers, stomach bleeding. Frequent use can lead to ulcers. Excessive use may upset stomach or cause ringing in ears.	highly effective, inexpensive drug; at least 40% of people have stomach bleeding (usually inconsequential) after taking it. May be helped by taking it with food.
Ibuprofen	pain, fever, inflammation; may inhibit blood clotting	fewer side effects than ASA; but those allergic to aspirin also allergic to this; may cause stomach bleeding; may interfere with diuretic and other anti-hypertensive drugs; children, pregnant and breast-feeding women should take only on medical advice. Caution relates to kidneys and liver.	less toxic in large doses; effective for menstrual cramps; does carry risk to damaging kidneys; may be better for fever and muscle aches accompanying cold since ASA and acetaminophen may promote nasal congestion.
Naproxen	pain, fever, inflammation; may inhibit blood clotting	may cause stomach upset and stomach bleeding in some but less likely to do so than ASA but more often than ibuprofen; not recommended for those with ulcers, asthma, kidney disease, or for heavy drinkers; children under 2 should not take; those under 12 and pregnant or breast-feeding women take only on medical advice	longer-lasting relief; thus good at bedtime; good for menstrual and postpartum pain; for those over 12, daily maximum is two 220 mg tablets with 8 to 12 hours between doses.
Acetaminophen (not NSAID)	aches, pain, fever; useful for children under 16 with chicken pox or flu; or for those allergic to ASA.	high doses over long period may damage liver and kidneys; should not be used by alcoholics or people with liver or kidney disease (hepatitis). Pregnant and breast-feeding women take only on medical advice. Do not mix with alcohol.	will not reduce inflammation; does not cause gastrointestinal bleeding. Reason for hospital use is that it does not thin blood.

Resources: Ksir, Hart, and Ray. *Drugs, Society, and Human Behavior*. 12th ed. McGraw-Hill. 2008.
 (This text is in WWU Wilson Library.)

<http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm125225.htm> (ibuprofen)

<http://www.fda.gov/Drugs/ResourcesForYou/Consumers/QuestionsAnswers/ucm071879.htm> (aspirin)

<http://www.fda.gov/Safety/MedWatch/default.htm> (Med Watch FDA Safety Information and Alert Watch)