Free CE: Maternal Medications and Breastfeeding

Clinical Pearls of Practice: The Internet: A Treasure Hunt for Free Health Information

CSHP’s 2006-2009 Strategic Plan

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- Diablo
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Tech Talk

July/August 2007
Volume 19, Number 4
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Correction

May 1, 2007

To the editor:

In my article, Management of Inpatient Hyperglycemia, in the March/April 2007 issue of CJHP, several phrases and sentences were direct quotes from references. Although the content was attributed correctly to these references, the material was not placed in quotation marks as it should have been. I regret the error.

Sincerely,
Maureen E. Cawley, PharmD, FCSHP
Maternal Medications and Breastfeeding

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Introduction
Human milk is one of nature’s most extraordinary fluids, perfectly balanced to meet all of the nutritional, developmental, and protective needs of the newborn infant. In the last 30 years, as our understanding of the importance of breastmilk and breastfeeding have grown, so has the number of women who have made the decision to breastfeed (Figure 1). As virtually all pregnant and breastfeeding mothers will at some time require a medication, this means that more mothers and their infants will be exposed to medications. Questions about the use of certain medications during breastfeeding concern both women and their health-care providers. Unfortunately, far too many women discontinue breastfeeding on the advice of well-meaning but misinformed physicians, nurses, and pharmacists.

Pharmacists can play an important role in the promotion of breastfeeding and in supporting mothers who are breastfeeding. To be effective, pharmacists must overcome several obstacles:

- Most pharmacists have received little instruction on the topic of medications and breastfeeding.
- There is a tendency to focus on theoretical drug toxicities rather than the real risks of not breastfeeding.
- There is confusion between the risks of medication use during pregnancy versus medication use during breastfeeding.
- Misleading or incorrect information is common. The Physicians’ Desk Reference (PDR) is the poorest source of information.

Most medications are safe for breastfeeding mothers and their infants. As not breastfeeding carries significant risks for both mother and infant, recommending that a mother stop breastfeeding to take a medication is almost never required and should only be done as a last resort.

Breastfeeding as a Public Health Issue
Breastfeeding is recognized worldwide by scientific and medical organizations as a means to improve infant nutrition and maternal health, promote child development and reduce health disparities. The American Academy of Pediatrics (AAP), the American Academy of Family Physicians (AAFP), the American College of Obstetricians and Gynecologists (ACOG), the International Lactation Consultant Association (ILCA), and the American Dietetic Association (ADA) all recommend that infants be exclusively breastfed (meaning they receive no other food or fluid other than breastmilk) for about 6 months. Breastfeeding complemented by appropriate introduction of

Learning Objectives
After reading this article, the reader should be able to:
1. List at least 5 risks/costs of not breastfeeding.
2. Describe the pharmacology of drug transfer into human milk.
3. Characterize medication pharmacokinetics and strategies that can be used to reduce transfer of medications to milk and reduce infant exposure.
4. Identify maternal drugs which are contraindicated with breastfeeding.
5. Discuss the risks of common perinatal medications to the breastfed infant.
6. Access appropriate breastfeeding and drug resources and counsel women appropriately.

Figure 1. Breastfeeding Rates, Mothers Survey

![Graph showing breastfeeding rates over time, labeled In-Hosp and 6 Mo.](source: Ross Products Division of Abbott)
Maternal Medication and Breastfeeding

Table 1. Risks/Costs of Not Breastfeeding

Risks/Costs of NOT Breastfeeding for Infant/Child

Less than optimal development:
- Slightly lower performance on tests of cognitive development, especially for males and preterm infants
- More retinopathy of prematurity in preterm infants

Increase in infant infections/illnesses:
- Bacterial meningitis
- Bacteremia
- Diarrhea
- Respiratory tract infection
- Otitis media
- Urinary tract infections
- Early childhood caries
- Infant botulism
- Necrotizing enterocolitis in preterm infants
- Late onset sepsis in preterm infants

Increase in chronic diseases:
- Diabetes (Type I & Type II)
- Crohn’s disease
- Ulcerative colitis
- Childhood cancer (leukemia & lymphoma)
- SIDS (Sudden Infant Death Syndrome)
- Childhood overweight and obesity

Risks/Costs of NOT Breastfeeding for Mothers

Delayed childbirth recovery and weight loss

Shorter pregnancy interval

Increased maternal illnesses:
- Breast cancer
- Epithelial endometrial cancer
- Ovarian cancer
- Higher cholesterol values
- Rheumatoid arthritis
- Type 2 diabetes

Less parenting skills:
- Less bonding
- Less maternal confidence
- More stress response

Risks/Costs of NOT Breastfeeding for Families, Communities and Society

High cost for formula and feeding devices for family

Higher cost for health care (for preventable diseases)

Costs of manufacture, marketing & distribution of formula

Waste of fuels, resources

Excess landfill waste

Cost of lost work time for parent

Costs to businesses for lost productivity

other foods is recommended for the remainder of the first year and longer. As part of the US Healthy People 2010 Objectives, the national health objectives for breastfeeding are to increase the percentage of women who breastfeed to at least 75% at birth, 50% at 6 months, and 25% at 12 months postpartum. The 2010 Objectives for exclusive breastfeeding are currently 60% through 3 months and 25% through 6 months. The Centers for Disease Control and Prevention (CDC) include breastfeeding promotion as part of their obesity prevention initiatives. The World Health Organization (WHO) recommends that children should continue to be breastfed for up to 2 years of age or beyond, while receiving nutritionally adequate and safe complementary foods. In a recent effort to support this recommendation, the WHO released new growth standards based on the breastfed child as the norm.

Human milk is species-specific and the reference against which all other feeding modalities must be measured. Breastfeeding promotes healthy infants and children by providing optimal nutrition, enzymes, growth, and developmental hormones, direct infection-fighting factors and immunomodulators to decrease risk for a large number of both acute and chronic diseases. Breastmilk and breastfeeding ensure children are ready to learn by providing the optimal mixture of nutritional factors and hormones to enhance cognitive development. Breastfeeding promotes strong families by improving the health of the mother, promoting optimal child spacing, establishing a close bond between mother and infant, and fostering communication and emotional development. Mothers with fewer children, spaced farther apart, can devote the appropriate amount of time to nurturing and responsible parenting.

Breastfeeding also provides significant economic benefits to the family (and the community) by reducing unnecessary expenditures for infant formula, reducing health-care costs, reducing employee absenteeism to care for a sick child, and decreasing scarce resource use and waste. Breastfeeding cost-effectiveness studies, using extremely conservative estimates, reveal that as few as three months of exclusive breastfeeding can save between $331 and $475 per child in healthcare costs during the first year of life. The risks and costs of not breastfeeding to the infant, mother, and society at large are summarized in Table 1. Given the substantial benefits of breastfeeding there are only very few situations in which it should not be pursued.

Breastfeeding Contraindications

As important as breastfeeding is for infants, mothers, families, and communities, there are a few circumstances in which breastfeeding is not recommended. The only infant condition which precludes any breastmilk is galactosemia—a congenital metabolic disorder in which the infant cannot metabolize galactose because of a deficiency of the enzyme galactose-1-phosphate uridylyltransferase. Lactose is a disaccharide composed of glucose and galactose in breastmilk. Infants with galactosemia develop failure to thrive and neurologic problems on human milk.

In general, acute infectious diseases in the mother are not a contraindication to breastfeeding, if such diseases can be readily controlled and treated. Human immunodeficiency virus (HIV) types 1 and 2 are transmitted through human milk. If safe alternative feedings are available (as in the USA), women should be advised not to breastfeed. Human T-cell leukemia virus (HTLV) types 1 and 2 can also be transmitted through breastfeeding with a dose-response effect. Again,
where safe alternatives are available, women should be advised not to breastfeed. Because of the close contact necessary for breastfeeding, women with active tuberculosis should not breastfeed (but may pump and save or feed their milk) until both mother and infant are receiving appropriate antituberculous medications.

There are extremely few maternal medications that contraindicate breastfeeding (Table 2) but these include antimetabolites, some radioactive medications, and street drugs. An additional medication considered contraindicated in breastfeeding mothers is amiodarone, as large amounts (up to 50% of maternal dosage) are excreted into milk, and the drug can affect infant cardiac and thyroid function. However, amiodarone is used in infants for refractive supraventricular tachycardia with good effect.

Anti-lipemic drugs have not been studied and could potentially affect central nervous system development. Clozapine has been associated with neutropenia in nursing infants. Gold salts have been associated with thrombocytopenia in infants and should also be avoided if possible.

### Extent of Medication Use during Pregnancy and Breastfeeding

Medication use during pregnancy and lactation is common. An international study of 14,778 women giving birth at 148 hospitals in 22 countries revealed that antenatally, 14% of women received no medications, while medication takers received an average of 2.9 prescriptions. The majority of prescriptions were for iron and vitamins, followed by antibiotics. During the intrapartum period 79% of the women received an average of 3.3 drugs. Besides analgesics and anesthetics (31.8%), the most commonly prescribed medications were oxytocin (17.5%), ergot derivatives (8.4%), and anti-infectives (5.3%). Of the 91% of women planning to breastfeed in the study, methylergometrin (methyleneveronine) was the most frequently used drug (36%). Approximately 90% of women take some form of medication during the first week postpartum. In a retrospective questionnaire survey of 885 women in Oslo who had given birth 3-5 months before, fewer of those who were still breastfeeding at 4 months (n = 645) were using drugs than those who had stopped breastfeeding before 4 months (n = 240). The number of doses of medication taken was significantly associated with the use of oral contraceptive agents in the non-breastfeeding mothers.

Ito et al reported follow-up of a cohort of women who called in for information concerning the safety of an antibiotic while breastfeeding. In spite of assurances that it was safe to continue nursing and to continue taking the antibiotic, 15% did not initiate the drug treatment and 7% stopped breastfeeding. In a prospective study through the Motherisk Program in Toronto, Canada, of 1110 mothers who called requesting advice, 54 women discontinued breastfeeding either permanently or during the maternal treatment period, and another 218 women did not take the prescribed medication; thus, in 30% of cases either the infant was deprived of breastmilk or the mother was deprived of medical therapy.

### Table 2. Drugs Usually Contraindicated in Breastfeeding: AAP

<table>
<thead>
<tr>
<th>Antimetabolites</th>
<th>Drugs of Abuse</th>
<th>Radiopharmaceuticals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclophosphamide</td>
<td>Amphetamine</td>
<td>Iodine</td>
</tr>
<tr>
<td>Cyclosporine</td>
<td>Cocaine</td>
<td></td>
</tr>
<tr>
<td>Doxorubicin</td>
<td>Heroin</td>
<td></td>
</tr>
<tr>
<td>Methotrexate</td>
<td>Marijuana</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phencyclidine</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3. American Academy of Pediatrics (AAP) Classification System

<table>
<thead>
<tr>
<th>Table #</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table # 1</td>
<td>Cytotoxic drugs that may interfere with cellular metabolism of the nursing infant.</td>
<td>Cyclosporine, methotrexate</td>
</tr>
<tr>
<td>Table # 2</td>
<td>Drugs of abuse for which adverse effects on the infant during breastfeeding have been reported.</td>
<td>Amphetamine, cocaine, heroin, marijuana</td>
</tr>
<tr>
<td>Table # 3</td>
<td>Radioactive compounds that require temporary cessation of breastfeeding.</td>
<td>Copper 64, gallium 67, indium 111</td>
</tr>
<tr>
<td>Table # 4</td>
<td>Drugs for which the effect on nursing infants is unknown but may be of concern.</td>
<td>Anti-anxiety, anti-depressants, chloramphenicol</td>
</tr>
<tr>
<td>Table # 5</td>
<td>Drugs that have been associated with significant effects on some nursing infants and should be given to nursing mothers with caution.</td>
<td>Aspirin, ergotamine, lithium, atenolol, phenobarbital, primidone</td>
</tr>
<tr>
<td>Table # 6</td>
<td>Maternal medication usually compatible with breastfeeding.</td>
<td>Most medications</td>
</tr>
<tr>
<td>Table # 7</td>
<td>Food and environmental agents and breastfeeding.</td>
<td>Chocolate (theobromine), lead</td>
</tr>
</tbody>
</table>
was also smothered. At least 63% of reported cases were in neonates (< 28 days of age), 78% in infants < 2 months, and only 4% occurred in infants > 6 months of age. This suggests decreased drug excretion or special developmental susceptibilities in the younger infants.

Medications of special concern in neonates include narcotics (apnea, bradycardia, cyanosis), phenobarbital and primidone (drowsiness, poor feeding, and failure to thrive), water-soluble β-blocking agents such as atenolol, acebutolol, and sotalol (hypotension, bradycardia, tachycardia, tachypnea), lithium (accumulation and toxicity), some antidepressants (doxepin and citalopram have been associated with central nervous system depression, and fluoxetine with irritability and colic), and long-acting benzodiazepines (sedation and poor feeding). Iodine-containing medications (eg, povidone iodine, SSKI) can release iodine into the mother's bloodstream and cause newborn infant thyroid dysfunction. Hemolytic agents (phenazopyridine and nitrofurantoin) should be avoided in mothers of infants less than one month of age.\(^1\)

**Medication Classification Systems**

To assist clinicians to better assess risk versus benefit for specific drugs and drug classes, classification systems have been offered. The American Academy of Pediatrics\(^2,3\) lists drugs in tables as summarized in Table 3, with most medications in the extensive “compatible with breastfeeding” list in their Table 6.

Metoclopramide and metronidazole, although listed in the AAP reference as “effect unknown but may be of concern,” are routinely given to preterm infants without evidence of harm. The other major classification system for medication use during breastfeeding is by Hale\(^3\) with L1 safest, L2 safer, L3 moderately safe, L4 possibly hazardous, and L5 contraindicated. Hale also includes the FDA pregnancy risk category (A, B, C, D, X) in his discussion of each drug with particular attention to the timing of the drug exposure during gestation.

**Quantitating Infant Drug Exposure**

In the past 20 years, the kinetics of drug entry into human milk have been explored and increasingly understood. Most of the physiochemical properties of drugs that affect transfer (molecular weight, pKa, lipid solubility, protein-binding) are known, but the degree of transfer of each drug must be studied in humans. Rat studies are not predictive of human drug transfer into milk, as the albumin content of rodent milk is many times higher than human milk.\(^3\)

One method of estimating drug exposure is the milk/plasma (MP) ratio, which is the ratio of the concentration of the drug in the milk to the concentration in the maternal plasma at the same time. Unfortunately, the MP ratio presumes that the relationship between the two concentrations remains constant, which in most cases it does not.\(^2\) A ratio of 1 means the concentrations are equal but does not indicate how much medication an infant receives. Most studies have used the maximum or average concentration in mothers’ plasma to calculate the theoretical infant dose via the formula: infant dose = drug concentration in milk x volume of milk ingested.

A more clinically relevant method for estimating the exposure and safety of the medication, however, is to relate the weight-normalized dose received by the mother to that received by the infant via milk. This is termed the “relative infant dose”\(^3\) and is calculated as in Figure 2 and generally expressed as a weight-adjusted percentage of the mother's dose.

A relative infant dose that is a percentage less than 10% of the maternal dosage is generally considered acceptable for full-term, healthy infants; one between 10% and 25% may be used with caution.\(^4\) Unacceptable drugs are those having a RID greater than 25% of maternal dose, drugs with inherent toxicity, or drugs with credible reported toxicity.\(^3\) As the weight-adjusted RID increases, the reported number of adverse infant reactions also increases (Table 4).

In preterm or ill infants the level of concern may need to be lowered, depending on the medication. In considering relative infant dose, it should be noted that many neonates may have been exposed in utero to drugs taken by their mothers and that this level

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**Table 4. Relative Infant Dose vs. Reported Adverse Reactions for 205 Drugs\(^1,35\)**

<table>
<thead>
<tr>
<th>Weight-Adjusted RID</th>
<th>Percentage of Drugs</th>
<th>Reported Adverse Drug Reactions (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 %</td>
<td>47%</td>
<td>0%</td>
</tr>
<tr>
<td>1-4.9%</td>
<td>28%</td>
<td>2%</td>
</tr>
<tr>
<td>5-9.9%</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>10-24.9%</td>
<td>10%</td>
<td>19%</td>
</tr>
<tr>
<td>&gt;25%</td>
<td>3%</td>
<td>100%</td>
</tr>
</tbody>
</table>
of exposure is usually orders of magnitude greater than that received through breastmilk.\textsuperscript{36}

### Synthesis and Variability of Human Milk

A comprehensive review of the anatomy and physiology of the breast and hormonal and local control of lactation can be found in Lawrence and Lawrence.\textsuperscript{20} Milk-producing mammary epithelial cells called lactocytes line a central lumen to form an alveolus, which empties into a small duct and then larger and larger ducts which combine to empty at the nipple. This pattern is repeated throughout the breast tissue leading to multiple grape-like clusters of alveoli, similar to the structure of the lung. Each alveolus is surrounded by a capillary network, that delivers oxygen and nutrients to the lactocytes, and a network of smooth muscle cells, that contract in response to oxytocin, to expel the milk from the alveolus into the ductal system (Figure 3).

The size and number of lactocytes and alveoli increase during pregnancy, while progestins suppress milk production. The fall in progestosterone with delivery of the placenta triggers full milk production (lactogenesis II) by day 2-4 after delivery\textsuperscript{37,57} (Figure 4). Colostrum, a special early milk rich with immunoglobulins, lactoferrin, and maternal lymphocytes and plasma cells, is already present in the breast (lactogenesis I) at the time of birth and is secreted in the first 1-2 days when the junctions between the lactocytes are open. During the first few days of lactation, when the intercellular junctions are open, drugs may more easily pass into the milk (upper arrow path, Figure 5). As the cells enlarge over the first few days with the increase in milk production, the intercellular junctions close, so that most substances, including medications, will need to go through the cells to reach the milk (lower arrow path, Figure 5).

Prolactin, from the anterior pituitary, is the main hormone associated with milk production, but insulin, hydrocortisone, and other hormones are also involved. Oxytocin, from the posterior pituitary, is secreted into the blood in response to nipple stimulation or infant crying: oxytocin acts upon the alveolar myoepithelial cells, causing their contraction and milk ejection or “let-down.” With milk production and emptying, autocrine (local) control supplants endocrine control of milk production, with involution of lactocytes if milk is not removed. A whey protein called the “feedback inhibitor of lactation” (FIL) in the milk appears to exert reversible concentration-dependent autocrine inhibition on milk secretion in the lactating gland.

The composition of human milk changes with stage of lactation from the early colostrum to mature milk, which changes over weeks, months, and years of lactation to meet the needs of the infant at each stage in development. Fat, protein, and carbohydrate concentrations change over the course of the day, in patterns individual to each mother and her infant’s feeding style. The first milk ejected, or “foremilk,” is thin and watery, gradually changing at the end of the feed to creamier, fat-rich “hindmilk.” There is a great deal of individual variation in milk components between mothers at the same stage in lactation. Mothers who deliver prematurely have milk that is somewhat different from mothers who deliver at term, with higher protein, sodium, and immunoglobulins. Interestingly, maternal nutrition does not affect the quality of the milk to a significant degree. Mothers with poor diets will still produce good milk, as the infant gets what he needs at the mother’s expense.

### Factors which affect Drug Transfer

Only drugs that are present in maternal plasma can enter the milk. Drugs that are topically applied, inhaled, or are single intramuscular injections are rarely able to reach concentrations in the plasma compartment that are sufficient for clinically-relevant transfer into breastmilk. Maternal medications must be orally absorbed or given directly intravenously to reach the plasma and then (Figure 6) the milk compartment. The transfer of drugs into human milk is usually accomplished by passive or facilitated diffusion down a concentration gradient, from high concentration (maternal plasma) to low concentration (milk).\textsuperscript{2} Few transport systems for drugs are known to exist in the breast tissue.\textsuperscript{2} During the first few days postpartum, drugs may transfer into colostrum more readily due to open junctions between the cells; however, as the amount of colostrum is low, the absolute clinical dose of the medication is not clinically significant. As the lactocyte begins to enlarge, the tight junctions close, thus reducing drug transfer into the milk.

![Figure 4. Changes in Milk Components during the First Week Postpartum](image)

![Figure 5. Transcellular (left arrows) and Intercellular (right arrows) Medication Molecule Pathways](image)
The retrograde diffusion of drugs from the milk into the plasma is well documented. As the maternal plasma level of medication falls, most drugs diffuse out of the milk to the plasma for excretion. Factors that increase a medication’s transfer into human milk include low molecular weight, low protein binding, basic pH (the drug is ionized at the low pH of 7.0 of human milk and trapped in the milk compartment), high lipid solubility, and drugs with high sustained plasma levels (long half-lives). Maternal factors that affect plasma, and therefore breastmilk medication concentrations, are the drug dose, route and frequency, duration of therapy, hepatic and renal metabolism and excretion, and the composition and volume of her milk.

The amount of milk produced daily by the mother and consumed by the infant controls the overall dose to the infant. Milk volume drops from an average peak of 800 g/day at 3 months to 450 g/day at 12 months (with complementary foods being introduced from 6 months as per American Academy of Pediatrics recommendations) and to 109 g/day by 18 months; thus, the risk of medications to an older infant is very small.

Factors that determine the drug concentration in the infant are the frequency of feedings, the volume of breastmilk consumed, and also whether other foods are being taken. The age and maturity of the infant determine the absorption of the drug from the GI tract, the volume of distribution, the hepatic and renal metabolism and excretion, and the amount of remaining transplacentally-acquired medication. Preterm infants may absorb more medication through an immature, permeable gut, and may be less capable of metabolizing and excreting certain drugs. Drugs that are poorly bioavailable because of instability when exposed to gastric acid or poorly orally absorbed in the infant are ideal for breastfeeding mothers; however, infants can also have non-dose-related toxicities such as allergic sensitization, local effects on the GI tract (eg, antibiotics causing problems such as diarrhea), hemolysis (eg, G6PD deficiency), and blood dyscrasias (eg, chloramphenicol).

Minimizing Infant Drug Exposure
Several practices can minimize drug exposure to the infant. Obviously, breastfeeding mothers should use medications only if they are absolutely necessary. Recognizing that adverse medication events are most common in the first 1-2 months of life, sometimes a medication can be started later, when the infant is older. An alternative route such as topical or inhaled versus systemic might produce lower or minimal plasma levels in the mother and therefore have less transfer to the milk. Many times there are choices possible between medications for the same purpose. Choosing medications that are highly protein bound, of large molecular weight, poorly lipid soluble and either a strong acid or base, may minimize transfer to the milk compartment. Medications with long half-lives should be avoided. Mothers should avoid nursing at times of peak drug concentration. Taking a short-acting medication immediately after nursing and before the infant’s longest sleep period can minimize the mother’s plasma level at feeding time. Using drugs that are poorly absorbed from the infant’s GI tract is particularly effective. With drugs of more concern, substituting feedings of previously expressed milk or formula can be used while the current milk is pumped and discarded for a length of time determined by the elimination half-life of the medication. It is almost never necessary to stop breastfeeding entirely.

Medications that Stimulate Breastmilk Production
Although prolactin levels must be elevated for milk production to occur, higher levels of prolactin do not necessarily increase production, and levels fall in the lactating woman over time, with no

---

**Table 5. Medications that may Increase Milk Yield**

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Prolactin Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dopamine antagonist</td>
<td>Metoclopramide</td>
</tr>
<tr>
<td>Dopamine antagonist</td>
<td>Domperidone</td>
</tr>
<tr>
<td>Pituatory release of TSH &amp; prolactin</td>
<td>Thyroid-releasing hormone (TRH)</td>
</tr>
<tr>
<td>Prolactin release</td>
<td>Human growth hormone (HGH)</td>
</tr>
<tr>
<td>Dopamine antagonist</td>
<td>Chlorpromazine</td>
</tr>
<tr>
<td>Dopamine antagonist</td>
<td>Sulpiride</td>
</tr>
<tr>
<td>Anti-progesterone</td>
<td>Mifepristone (RU-486)</td>
</tr>
<tr>
<td>Increased milk ejection</td>
<td>Oxytocin nasal spray</td>
</tr>
<tr>
<td>Increased milk ejection</td>
<td>Prostaglandin F 2α nasal spray</td>
</tr>
</tbody>
</table>

**Table 6. Drugs that may Reduce Milk Production**

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Drugs that may Reduce Milk Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testosterone</td>
<td>Estrogens</td>
</tr>
<tr>
<td>Progestins (early)</td>
<td>Androgens</td>
</tr>
<tr>
<td>Nicotine</td>
<td>Bromocriptine</td>
</tr>
<tr>
<td>Amantadine</td>
<td>Ergotamine</td>
</tr>
<tr>
<td>Antiparkinson medications</td>
<td>Cabergoline</td>
</tr>
<tr>
<td>Pyridoxine doses over 200 mg/day</td>
<td>Pseudoephedrine</td>
</tr>
<tr>
<td>Diuretics</td>
<td></td>
</tr>
</tbody>
</table>
change in milk volumes. For mothers who have insufficient prolactin secretion, metoclopramide and domperidone are among the commonly used medications (Table 5). Domperidone is not associated with adverse CNS effects (depression). Domperidone is not approved by the Food and Drug Administration (FDA) for marketing in the United States but is sold throughout the rest of the world, including Canada. Despite the FDA warning regarding possible adverse effects in both mother and infant, oral domperidone has been used with an excellent safety record around the world. Because of poor oral bioavailability and low oral dosing (30-60 mg/day), effective maternal plasma levels are low and the relative infant dose is < 0.1% of the weight-adjusted maternal dose.

The use of herbal milk production stimulants is common, but there are no double-blind randomized controlled trials to define efficacy. Fenugreek is the most commonly used herbal for this purpose. As herbal products are not regulated, quality control can be a problem.

**Drugs that Inhibit Lactation**

Several medications are well known to reduce milk production (Table 6). The mechanism underlying decreased milk production may include interference with prolactin secretion and/or with local blood flow to the breast. Bromocriptine is no longer used because of severe adverse events, but cabergoline has proven safer and is now used for both hyperprolactinemia and inhibition of lactation. Oral contraceptives containing estrogens can suppress lactation if used before lactation is well established. Low-dose progestin-only contraceptives are preferred, although these can suppress milk production in some women if used too early postpartum. Decongestants containing pseudoephedrine and diuretics are also associated with reduced milk supply, especially if used chronically.

**Common Perinatal Medications: Anesthesia & Analgesia**

Labor, birth, and breastfeeding comprise a normal, continuous process. Use of pharmacologic agents for pain relief both during labor and after the birth may improve outcomes by relieving suffering, but they may also alter the neurobehavioral state of the infant and have adverse effects on the initiation of breastfeeding. Aspirin, due to its causal association with Reye syndrome, is generally not recommended for breastfeeding women, although the absolute transfer into human milk is negligible, even with arthritic doses. Some NSAIDs, ibuprofen, ketorolac, and indomethacin, have relative infant doses under 1%, have shown very low milk concentrations and low or undetectable infant serum concentrations, and have no reports of adverse effects in infants from breastfeeding during short-term use in the mother. Naproxen has a RID of 3% with a long half-life and the possibility of accumulation in the infant; there has been one report of bleeding and diarrhea. Chronic use of this agent is to be avoided.

Morphine, intravenously (IV), intramuscularly (IM), or via epidural or spinal infusion, appears to be an ideal analgesic for breastfeeding mothers as its passage into milk and oral bioavailability in the infant are low. Similarly, short-acting opiates such as fentanyl show minimal in utero transfer to the fetus and entry into milk. Codeine
and hydrocodone are the most commonly used opiate analgesics in breastfeeding mothers, and are considered safe when used in moderate-to-low doses in mothers with healthy, term infants. Meperidine should be avoided due to reported neonatal sedation when given to breastfeeding mothers postpartum, as well as neonatal cyanosis, bradycardia, and apnea when given during labor. Meperidine is metabolized to normeperidine, which is also analgesic and neurotoxic, and which has a prolonged half-life (62-73 hrs) in newborns.

There are several studies of the effects of epidural analgesia on breastfeeding, but the results are inconclusive because of small sample sizes, cross-over, many confounding variables, and varying breastfeeding outcome measures. If epidural anesthesia is chosen, methods that minimize the dose of medication and motor block should be used. Regional anesthesia (epidural or spinal) is preferred over general anesthesia. Anesthetic gases have a brief plasma distribution phase, so milk levels are likely to be low. Although small amounts may be excreted for hours after use, mothers may breastfeed as soon as they are fully awake, stable, alert, and able to care for themselves. Medications used for induction such as propofol, midazolam, etomidate, or thiopental enter the milk compartment minimally, as they have extremely brief plasma distribution phases (minutes), therefore, their transfer into milk is low to nil. Nalbuphine, butorphanol, and pentazocine levels have not been reported in breastmilk as yet. Both mother and infant should be monitored for psychomimetic reactions (3%).

**Other Perinatal Medications**

Prostaglandin E2 (dinoprostone) is used for cervical ripening and induction of labor. It has a brief half-life (less than 5 minutes); transfer into milk is likely negligible if used briefly. However, oral administration for several days has been used to suppress lactation. Oxytocin has an extremely short half-life and small amounts are known to be secreted in human milk with no side effects in the infant. Indomethacin, nifedipine, terbutaline, and magnesium sulfate are common tocolytics. An infant is likely to be exposed to many times the amounts through the placenta than through breastmilk. In addition, all these medications are used in infants and children. Magnesium sulfate is used both as a tocolytic and as an anticonvulsant in preeclamptic patients. Infants exposed to high levels in utero may exhibit sedation, shallow respirations, and poor feeding after birth. Although magnesium appears to be concentrated in human milk (M:P ratio of ~ 2), oral absorption is very poor, such that the amount in breastmilk is not clinically relevant.

Other medications used in the perinatal period (and at other times) include antihypertensives and anticoagulants. Heparin and low molecular weight (LMW) heparins are large molecules with little to no transfer into milk. In addition, oral bioavailability is extremely low, and no adverse effects have been reported. Warfarin is highly protein bound in the maternal circulation so very little is secreted into human milk. It, along with heparin and LMW heparin, have been approved for use by the AAP.

Antihypertensives are frequently used postpartum and some carry more risk to breastfeeding infants than others. Some beta-blockers (acebutolol, atenolol) have been reported to produce cyanosis, bradycardia, and hypotension in newborns. Safer choices for breastfeeding mothers in this class of medications are metoprolol and propranolol. Angiotensin-converting enzyme (ACE) inhibitors should be used with caution, with captopril and enalapril preferred due to lower milk concentrations. Of the calcium channel blockers, nifedipine or verapamil are preferred due to the low relative infant doses. The older antihypertensives, hydralazine and methyldopa, appear to be safe for breastfeeding mothers.

**Medications during Breastfeeding**

Specific medications should be researched with one of the reference texts or online resources cited. Common topics of interest follow. Most vaccines have been approved by the AAP and the Centers for Disease Control and Prevention for use in breastfeeding mothers. Yellow fever vaccine should only be given to breastfeeding mothers living or traveling to endemic areas. Smallpox (vaccinia) vaccine should not be administered to breastfeeding women. Inactivated influenza vaccine is much preferred over live attenuated virus vaccines, as maternal shedding from the nose or oropharynx during close contact while breastfeeding may transfer the virus to the infant.

**Antimicrobials** are commonly used in breastfeeding mothers, frequently in the immediate postpartum period. Although most antibiotics transfer into milk in very low amounts, they have the potential to alter bowel flora, causing diarrhea in a few infants. The penicillins and cephalosporins have been studied extensively in breastfeeding mothers, with only trace amounts found in milk. All the macrolides (clarithromycin, roxithromycin) are considered safe for breastfeeding women. Erythromycin has very little transfer to milk and is considered safe for breastfeeding mothers, although hypertrophic pyloric stenosis has been linked to its exposure. Azithromycin is found in milk but in a dose significantly less than the dose used clinically in children. Although approved for use in breastfeeding women, the use of fluoroquinolones (ciprofloxacin, oxefloxacin) is controversial. The dose received via milk is far too small to induce arthropathy, but one case of pseudomembranous colitis has been reported.

Data from older studies in rodents revealed metronidazole to be mutagenic or carcinogenic, but this has been discounted in more recent literature. Metronidazole is transferred to milk in moderate amounts, but it is also used in even larger amounts for treating anaerobic infections in preterm and term infants, without any adverse effect. The aminoglycosides (gentamicin, tobramycin) and vancomycin are considered safe for breastfeeding mothers. Erythromycin has very little transfer to milk and is considered safe for breastfeeding mothers, although hypertrophic pyloric stenosis has been linked to its exposure. Azithromycin is found in milk but in a dose significantly less than the dose used clinically in children. Although approved for use in breastfeeding women, the use of fluoroquinolones (ciprofloxacin, oxefloxacin) is controversial. The dose received via milk is far too small to induce arthropathy, but one case of pseudomembranous colitis has been reported.

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Amphotericin and nystatin are both considered safe for breastfeeding women. Fluconazole has a higher transfer into milk (RID of 16%), but this is much lower than the prophylactic and treatment doses used in preterm infants. Acyclovir is given to both infants and adults and is considered safe for breastfeeding mothers. As valaciclovir is rapidly converted to acyclovir, it is also acceptable. There is currently no information about famciclovir transfer into human milk.

Most of the older anticonvulsants have been studied and are appropriate for breastfeeding mothers, although phenobarbital and phenytoin are now rarely used in seizure disorders. Carbamazepine, valproic acid, and phenytoin transfer into milk in moderately low levels. Data for newer agents tiagabine and gabapentin either are lacking or show minimal levels in the infant.
in the young infant enough medication can accumulate to reach one-third of the maternal plasma concentration, although no complications have been reported.\textsuperscript{29} Topiramate transfers significantly, but infant serum concentrations were only 10-20\% of maternal plasma values.\textsuperscript{44} Monitoring the serum level in the infant should help to determine the exposure during breastfeeding.

As the incidence of diabetes is increasing, oral hypoglycemic agents are being used more. Chlorpropamide (RID 10.5\%) and tolbutamide (RID 0.018\%) have been studied, but the second generation sulfonylureas (glipizide, glyburide, glimepiride) have not.\textsuperscript{2} As they induce the release of insulin, they should be used with caution in breastfeeding mothers. The newer biguanides (metformin) and thiazolidinediones (rosiglitazone, pioglitazone), which do not affect the release of insulin, are probably much safer.\textsuperscript{44} Metformin has been used extensively in breastfeeding women who have polycystic ovary syndrome without any reported problems. Women on insulin may breastfeed as the molecule is too large to pass into the milk, and it would be destroyed in the GI tract if it did.

**Thyroid and anti-thyroid medications** are safe for breastfeeding women. Levothyroxine and liothyronine concentrations in milk are too low to affect infant thyroid function.\textsuperscript{44} For hyperthyroid treatment, both propylthiouracil and methimazole have been studied extensively, with propylthiouracil the preferred medication.\textsuperscript{44} The H\textsubscript{2}-antagonists such as famotidine, ranitidine, and cimetidine are excreted in very low amounts in milk and are also given directly to infants in doses far exceeding any in milk.

**Anti-asthmatic medications** are used primarily for the prevention of inflammation and subsequent bronchospasm and are usually inhaled corticosteroids (budesonide, beclomethasone), oral steroids (prednisone and prednisolone), and beta-agonists (albuterol). All are used in infants and children, reach milk in subclinical amounts, and are safe for breastfeeding women and their infants.\textsuperscript{29} Newer agents that block inflammation at the leukotriene level (zarafiyukast, montelukast) also appear safe for use in breastfeeding women.\textsuperscript{29}

All mothers should be advised that hormonal birth control products may reduce milk synthesis.\textsuperscript{44} As noted above, estrogen-containing products have been found to reduce milk production in some mothers, so that if hormonal contraception is desired, the progestin-only “mini-pill” is preferred. Medroxyprogesterone should be given after 6 weeks and after milk supply is well established. The reader is referred to 2 recent papers for a review of all contraceptive choices for breastfeeding women.\textsuperscript{46,47}

**Radioactive medications** should be approached with caution. Most, but not all, radioactive substances can be used in breastfeeding mothers after withholding the milk for an appropriate period.\textsuperscript{44} A useful website for recommendations about specific radiopharmaceuticals is: http://neonatal.ama.ttuhs.edu/lact/. Administration of technetium-99m would, for example, require withholding of breastfeeding for 15 to 72 hours, depending on the amount of radioactivity administered.\textsuperscript{131}iodine is the only radioisotope that requires complete cessation of breastfeeding.\textsuperscript{44} Radiocontrast agents are composed of gadolinium for magnetic resonance imaging (MRI) and iodinated compounds for...
computed tomography (CT). Virtually no gadolinium passes into milk or is orally available to the infant. The few iodinated contrast agents that have been studied also appear safe due to minimal milk transfer and poor oral bioavailability. There is no need to pump and discard any milk after these procedures.

Psychotherapeutic agents present one of the most complicated clinical decision areas for breastfeeding women and their health-care providers. The possible risks to the infant from maternal medications must be weighed against the risks of not breastfeeding. In addition, there are enormous neurobehavioral, developmental, and safety risks to the infant from maternal psychiatric disease, particularly depression, if the mother chooses to breastfeed and not take her medications. A review of all the anxiolytic, antidepressant, anti-manic, sedative, and antipsychotic medications is beyond the scope of this paper and easily accessed in review papers. Some general statements can be made for all psychotropic medications. All psychotropic drugs studied to date appear in milk to some extent:

- The concentration is usually small.
- The plasma half-life is long and the brain half-life is unknown.
- Many medications have biologically active metabolites.
- Transfer to the infant is confirmed for many medications because of presence in the infant's plasma and/or urine.
- Infants have a rapidly developing brain, including receptors involved in neurotransmission.
- Adverse events have occurred almost exclusively in the neonate or very young infant.

Tricyclic antidepressants have been well-studied with amitriptyline, desipramine, nortriptyline, and amoxapine safest for breastfeeding women with a RID of < 1.5%. Although side effects reduce patient compliance, these medications have also been found useful for migraine prophylaxis and chronic pain syndromes. Doxepin should be avoided due to reports of infant sedation, hypotonia, vomiting, and jaundice.

Selective serotonin reuptake inhibitors (SSRIs) have to a large extent replaced tricyclic antidepressants because of improved efficacy, faster onset, and lesser side effects. Sertraline and paroxetine transfer to milk minimally, and no adverse effects have been published in many thousand mothers. At least three case reports of colic, prolonged crying, vomiting, and tremulousness have been reported with fluoxetine, making it a less preferred, but still acceptable SSRI for breastfeeding mothers. Limited information on venlafaxine suggests it is safe as well. Despite low milk levels, the newer SSRIs, citalopram and escitalopram, have had some reports of newborn infant somnolence, making them safer for older infants. A mild neonatal withdrawal syndrome occurring 24 to 48 hours postpartum has been reported in infants exposed in utero to fluoxetine, sertraline, and most commonly, paroxetine.
There is limited information regarding some of the other newer antidepressants. Milk levels of bupropion are reportedly low. Mirtazapine has potent sedative properties but medication transfer to the infant is minimal (1.9% RID). Trazodone (RID 0.6%) revealed no adverse effects in 6 mother-infant pairs, but nefazodone, also with a low RID, had 1 reported case of lethargy and failure to thrive in a preterm infant.48

Intermittent use of benzodiazepines is not associated with sedation in the infant. The short-term use (1-2 weeks) of diazepam, midazolam, or lorazepam appears unlikely to produce problems, but long-term exposure is associated with withdrawal symptoms in the infant.48

Lithium has been the mainstay of treatment for bipolar disorder but must be used in infants only with extreme care. As it has a low molecular weight and is unbound in plasma, it penetrates the milk compartment rapidly, reaching plasma levels in the infant of 30-40% of the maternal level.48 Lithium can be used in breastfeeding women if the infant is monitored closely, including plasma lithium levels and thyroid function. Valproic acid is being used to treat acute mania with a RID of 0.7% reported. The infant should be monitored for liver function and platelet changes.48

The antipsychotic phenothiazines and thioxanthines transfer poorly into milk, but some sedation has been reported in infants. An increase in sleep apnea and sudden infant death syndrome can occur, so these medications are best avoided in the first 6 months of life.48 Transfer of haloperidol, risperidone, and olanzapine into human milk appears to be low but limited information is available. Monoamine oxidase inhibitors (MAOIs) are highly risky and not recommended for breastfeeding mothers.

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From the extensive data available in these review papers and others, it appears that the exposure of most infants to antidepressants and antipsychotics via human milk is clinically insignificant with some exceptions.48 Breastfeeding may be as therapeutic as medication for some mothers, and should not be curtailed or withheld lightly.

Recreational Substances: Legal and Illegal

Substance use is most prevalent in the population of reproductive age.49 Non-judgmental questioning can often elicit a history, which can be confirmed with drug testing of the mother (with informed consent) or the infant. Withholding breastfeeding should never be used as a punishment for substance abuse. On the contrary, nourishing and protecting her infant can be used as motivation for entering a rehabilitation program or making a wise choice to provide substance-free milk to her infant. Both legal (tobacco, alcohol, caffeine) and illegal substances (amphetamines, cocaine, heroin, marijuana, etc) can be abused with significant transfer into milk and effects in the breastfeeding infant.

In the latest policy statement, the AAP removed nicotine (and thus smoking) from its list of contraindicated drugs,23 recommending that all mothers be helped to stop or reduce smoking. Nicotine is present in milk in concentrations between 1.5 and 3 times the simultaneous maternal plasma concentration with an elimination half-life of 60-
Maternal Medication and Breastfeeding

90 minutes in both milk and plasma. As breastfeeding mitigates the increased risk of respiratory illnesses in infants of smoking mothers, the AAP concluded that it was better for the infant for the mother to smoke and breastfeeding than to smoke and not breastfeeding. Smoking cessation gum, patches and medications have not been extensively studied, but appear safer for the breastfeeding infant.

Alcohol transfers into milk quickly with a milk: plasma ratio of ≥ 1. High intake of alcohol may suppress lactation and even moderate intake can flavor the milk. Beer, but not ethanol, has been reported to stimulate prolactin levels and breastmilk production, leading some to believe that the polysaccharide from barley may be the prolactin-stimulating component of beer (non-alcoholic beer appears equally effective). Adult metabolism of alcohol is approximately 1 ounce in 3 hours, so mothers who ingest alcohol in moderate amounts can generally return to breastfeeding as soon as they feel neurologically normal. Chronic or heavy consumers of alcohol should not breastfeed.

Although 1 to 2 caffeine-containing beverages per day are usually acceptable, individual infant tolerance varies, with some infants exhibiting extreme irritability and poor sleeping patterns with heavy maternal caffeine intake. Coffee, teas, and soft drinks are the usual sources, but chocolate and some medications also contain caffeine.

The active component of marijuana, tetrahydrocannabinol (THC), is fat soluble and rapidly distributes into brain and fatty tissue. As the long-term effects of THC on the rapidly developing brain are unknown, and marijuana smoke may increase respiratory illness (like other cigarette smoke), heavy users should be advised not to breastfeed, and should be cautioned to withhold breastfeeding for several hours after occasional use.

The hallucinogenic amphetamines (Ecstasy, Adam, Eve, Harmony, Love) are concentrated in milk and are contraindicated by the AAP as are heroin, phencyclidine (PCP, Angel Dust) and cocaine. Cocaine in milk has been associated with dangerous effects in infants, including choking, vomiting, irritability, hypertension, and arrhythmias as well as seizures when used as a topical anesthetic for sore nipples. Methadone is approved by the AAP with no upper limit as to dose. The relative infant dose is approximately 3% of maternal dose, so there is not enough in breastmilk to prevent infant withdrawal, but there may be enough to ameliorate it.

Resources

As almost no pharmaceutical manufacturer has supported studies of their medications in breastfeeding mothers, none of the package inserts (reproduced in the PDR) have accurate information regarding the use of a particular drug in breastfeeding mothers. Virtually all the package inserts recommend against the use of their medication in breastfeeding women, not because of risk to the infant, but because of legal liability. The PDR is the poorest source of drug and breastfeeding information and should not be used.

The best hard copy sources of information regarding drugs and breastfeeding are: Hale’s Medications and Mothers’ Milk, which is updated every 1-2 years and available in book, PDA, and online.
forms; Drugs in Pregnancy and Lactation by Briggs, Freeman and Yaffe, published every 3-5 years; and Lawrence and Lawrence: Breastfeeding: A Guide for the Medical Profession. A recent, valuable addition to the resource list is TOXNET, an online searchable drugs and lactation database (LactMed) sponsored by the National Institutes of Health through the National Library of Medicine. It is a peer-reviewed and fully-referenced database of drugs to which breastfeeding mothers may be exposed that includes maternal and infant levels of drugs, possible effects on breastfed infants and on lactation, and alternative medications to consider. It is available at: http://toxnet.nlm.nih.gov and click on LactMed.

Conclusion

Ethical concerns about possible harm to the fetus and infant have generally led to the appropriate exclusion of pregnant and breastfeeding women from pre-marketing clinical trials of drug efficacy. As a result, there is little experience with the use of most medications in human lactation at the time they are marketed. The FDA document “Guidance for Industry, Clinical Lactation Studies - Study Design, Data Analysis and Recommendations for Labeling” has been developed to encourage and assist researchers to incorporate lactation studies as a normal part of Phase II clinical drug trials. Pregnancy and lactation occur within the context of a woman's overall health, with breastfeeding women experiencing both acute and chronic conditions needing treatment. It is critical that the effects of medication use during lactation be evaluated and the information made readily accessible to both women and health-care providers, especially pharmacists. This allows all to make informed decisions about the use of medications during lactation and the management of maternal and infant conditions. Without evidence-based counseling, women may undermine their own health by discontinuing needed medications or increase risk to their infant by discontinuing breastfeeding. Pharmacists can aid the clinician in keeping abreast of current research and resources and making clear recommendations as to whether the mother should start or continue to breastfeed. Fortunately, if one medication is unsafe, there are almost always others that have been well-studied and are suitable. A good rule to follow is this: if a medication is safe when given to infants and children, it is safe for breastfeeding mothers.

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1. The risks of not breastfeeding include all the factors below EXCEPT:
   a. An increase in necrotizing enterocolitis for preterm infants.
   b. An increase in childhood overweight and obesity.
   c. An increased risk of maternal breast cancer.
   d. An increased risk of infant urinary tract infections.
   e. An increase in maternal fertility.

2. All of the following medications given during a nursing mother’s hospitalization are compatible with uninterrupted breastfeeding EXCEPT:
   a. Acetaminophen
   b. Cefoxitin
   c. Prednisone
   d. Ibuprofen

3. The hormone primarily responsible for milk ejection (“let-down”) is:
   a. Estrogen
   b. Progesterone
   c. Prolactin
   d. Oxytocin
   e. Transferrin

4. Breastfeeding is contraindicated in which ONE of the following conditions:
   a. Infants with galactosemia
   b. Maternal hepatitis B
   c. Maternal hepatitis C
   d. Maternal mastitis
   e. Infants with cystic fibrosis

5. In which of the following circumstances should it be necessary to delay the initiation of breastfeeding after delivery (for more than 1 hour):
   a. C-section with spinal anesthesia
   b. Mother fatigued due to a long and difficult labor
   c. Mother receiving magnesium sulfate for preeclampsia
   d. All of the above
   e. None of the above

6. Which of the following factors should be considered when choosing drug therapy for a nursing mother?
   a. Age of the infant
   b. Experience with the drug in infants
   c. Relative concentration of the drug in mother’s milk and plasma
   d. Potential long-term effects in the infant
   e. All of the above

7. The mother of a breast-fed infant is going to have surgery (not involving the breast) requiring general anesthesia and an overnight hospital stay. How soon after surgery can she resume breastfeeding?
   a. 1 week
   b. 48 hours
   c. 12-24 hours
   d. 6 hours
   e. When she is fully awake and able to care for herself

8. Of the following, the weight-adjusted relative infant dose (RID) suggested as theoretically safe for the infant is:
   a. < 10 %
   b. < 15 %
   c. < 20 %
   d. < 25 %
   e. < 30 %

9. Drugs usually contraindicated for breastfeeding mothers include all of the drugs below EXCEPT:
   a. Cocaine
   b. Doxorubicin
   c. Iodine
   d. Lithium
   e. Phencyclidine

10. Drugs that may reduce milk production include all the following EXCEPT:
    a. Estrogens
    b. Metoclopramide
    c. Nicotine
    d. Cabergoline
    e. Diuretics
The Internet: A Treasure Hunt for Free Health Information

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The National Library of Medicine describes using the Internet to find health information as being similar to going on a treasure hunt: you could find some real gems, but you could also end up in some strange and dangerous places.1 With over 3600 health-related websites identified in 2005 and an estimated 16 million articles in PubMed, it is no wonder that tracking down useful information may sometimes feel like using a metal detector to find a diamond ring on the beach.2,3 Adding to the challenge of finding useful information is the continual need to evaluate the contents of websites for quality and currency. This article will describe strategies for researching health information via free sites on the Internet and evaluating website content. It will also review features of selected free health-information websites.

Search Strategies and Tools

Before beginning any search, determine how you plan to use the information that you find. This may be influenced by who is going to use the information (you vs. a patient vs. another health-care provider) and how rapidly they need the information. How much detail is needed? Will general information be sufficient or does the information need to respond to a specific inquiry? Do you need to provide an original article published in the medical literature? Do you need information that has been developed, endorsed, or recommended by a medical association? Or would you like to find downloadable information that can be handed to a patient or another health-care provider? Determining the desired level of detail and how familiar you are with the topic will influence the search strategy you choose to use.

Search engines and directories are both easy to use tools. Approximately two-thirds of American adults choose to begin Internet research with a search engine.4 While this is partially because of perceived ease of use, it may also reflect a lack of awareness about directories and the benefits that directories may offer. Whereas search engines work by identifying and extracting specific terms from webpage titles, headings, and text, directories present catalogs of topics that can be browsed. Search engines are most useful when your research topic is very narrow or you are looking for very specific facts. If your topic is general or broad, you are unfamiliar with the subject area, or you would like to browse a number of general relevant sites, using a directory may guide you more quickly to useful results.

Search engines may identify and sort results in a variety of ways. Google™ analyzes and indexes the contents of webpages. On the other hand, AltaVista® creates a cache in which it stores every word on every page it finds. While search engines are easy to use, they often return more results than the user is able to sort through. This is not surprising, since 95% of the text on webpages is composed of the same 10,000 words.5 Other limitations of using a search engine include the necessity of selecting appropriate and specific search terms and a high likelihood that out-of-context sites will be included in the results. Some search engines are not able to capture terms on linked Adobe® portable document format (PDF) files, Microsoft Word® files, or Microsoft PowerPoint® files.

It is important to understand how the output from a particular search engine is sorted and presented. The earliest search engines determined the order of the results by the number of times a search term appeared on the webpage. A webpage on which the search term appeared 10 times would appear higher on the results list than a webpage that only listed the search term once. As search engine technology has evolved, so has the means by which search engines generate their results. Ask.com™ uses a link ranking method called ExpertRank. This system gives weight to websites with links to other websites in the same topic area. Google™ uses a patented technology called PageRank™ to determine the order in which links appear on your results page.6 In the PageRank™ system, a score of 0 to 10 is assigned to each webpage, with a value of 10 having the greatest “relevance.” The PageRank™ score is assigned to each page based on the number of other webpages that link to a specific page. Websites with higher scores appear at the beginning of the results page; whereas, websites with lower scores appear further down the list.

Google™ Scholar (http://scholar.google.com/) is a useful tool that limits its search to peer-reviewed papers, theses, books, abstracts, and articles. Sources include academic publishers, professional societies, preprint repositories, universities, and other scholarly organizations. Unlike its parent search engine, Google™ Scholar ranks its output by weighing the full text of each article, the author, the publication in which the article appears, and how often the piece has been cited in other scholarly literature. The most relevant results will always appear on the first page. If locating original citations of peer-reviewed literature is your desired output, using Google™ Scholar versus the parent Google™ search engines can significantly reduce the number of hits.

Since each search engine has its own method of ranking output, the user should understand how a given search engine does so. In addition, reading the “Help” page of a search engine may aid the user in defining the optimal search terms and specifying limitations (such as limiting output to English language pages updated in a certain time frame). Since different search engines may identify different webpages, you may wish to experiment with various search engines to see which results format you prefer and which tends to return the results you find most relevant.

Directories are essentially catalogs of webpage links. Using directories is helpful when you would like to begin a search by looking for general information on a topic before focusing...
in on specific details. Directories may also be useful when you are not familiar with the topic, and you would like to get a general feel for the associated issues. Although you may get fewer initial hits using this method, the information you find is more likely to be relevant, and you may reach your result more rapidly than by using individual search terms. Useful directory services for health information searches are listed in Table 1.

In practice, using both directories and search engines together during the research process may lead you to a wider variety of quality information. Neither directories nor search engines can account for every possible website. For more detailed tips on search strategies, see the links to online tutorials in Table 2.

Evaluating What You Find

One might assume that because health information has been available on the Internet for more than a decade, the quality of information must have improved over time. The Pew Internet Project reports that approximately 74% of American Internet users feel reassured that they could make appropriate health-care decisions with their search results. In fact, these users are so comfortable that only 10% report that they check the source and date of the webpage “most of the time.” Three quarters of these Internet users seeking health information state they check the source and date “only sometimes,” “hardly ever,” or “never.”

A Department of Health and Human Services survey of frequently-visited health-related sites highlights a disconnect between user perception and website reality: only 4% of websites disclosed the source of information on their pages and only 2% of websites disclosed how the content was updated.

Therefore, there is much room for improvement for websites to appropriately document key features of their content.

Two aspects of evaluating a health-information website need to be considered: disclosure and quality. Objective 11-4 of Healthy People 2010 aims for all health-related websites to publicly disclose the following: identity (sponsorship), purpose, content and content development (source of the information), privacy (policies for protecting confidentiality), user feedback, and content updating.

Table 3 lists questions that an Internet user may ask about a website to determine if appropriate disclosure is present. These may be considered the website’s who, what, where, when, why, and how.

A quick scan of the end of the uniform resource locator (url) describes the nature of the organization that sponsors the website and whether it is commercial, nonprofit, or educational (see Table 4). While commercial sites are not necessarily less credible than noncommercial sites, the reader should make note of the funding source(s) and the potential to influence the content.

Disclosure is only one aspect of evaluating an Internet health-information site. The actual source of the information must be evaluated for credibility separately. Does the site reference peer-reviewed literature or an individual provider’s opinion? Is information based on clinical studies or anecdotal reports? How rigorous was the clinical trial? This is where drug information skills become critical. While consumers may be able to identify the elements of disclosure, they are likely to be less savvy in evaluating the actual quality of the data.

The Health on the Net Foundation (HON) is an organization that promotes appropriate disclosure for online medical and health information (www.hon.ch). It is the most widely-recognized standard-setting organization for the Internet. Sites that meet its code of conduct for disclosure may post the HONcode seal on their pages (Figure 1). Sites must apply for HONcode accreditation. By clicking on the seal, the user may view the date on which the site received the HONcode seal and the last date of review.
The newest generation of the HONcode seal will display the date of accreditation directly on the seal. The HONcode of conduct requires a description of the author's qualifications, a statement that its information should complement a provider-patient relationship, a description of how user privacy is maintained, a citation of the source and date of its references, and support for any claims made. It should also easily identify the editor and webmaster, provide a means of contacting the site organizer, reveal its funding source, and distinguish between advertising support and editorial content. Interestingly, sites not organized by medical professionals may carry the HONcode seal, as long as the site satisfies the code of conduct. For example, a patient's personal website may carry the HONcode seal as long as the individual has disclosed his or her lack of credentials. Other sites with the HONcode seal may state that no one has reviewed the content of the outlinked sites. If a site does not maintain the requirements to maintain the HONcode seal, the site may lose its seal.

Health on the Net offers specialized search tools (HONcode Sites, MedHunt) to limit search results to HONcode accredited sites, medical websites and consumer information. HON Select is a tool that enables searches using medical subject headings (MeSH) and scientific articles, health-care news, and websites. QuackwatchSM is a site run by Quackwatch, Inc, a nonprofit corporation whose purpose is to combat health-related frauds, myths, fads, fallacies, and misconduct. QuackwatchSM maintains an editorial board of physicians and pharmacists who review various websites and textbooks to determine if the claims are substantiated. QuackwatchSM also solicits input from Internet users on questionable claims that may be seen on the Internet and maintains a list of sites they believe contain information that is not substantiated by evidence, even if disclosure appears to be adequate.

**Developing a Core Set of Websites**

An easy way of increasing the efficiency of your research process is to develop and maintain a core set of "go-to" references. By continually visiting the same sites, you become familiar with the nuances of a site more readily and can access the appropriate links efficiently. You may also reduce the time spent sifting through a large number of "hits" or extraneous information as a result of using a search engine.

### Table 1. Selected Directories for Health Information Searches

<table>
<thead>
<tr>
<th>Site</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardin MetaDirectory of Internet Health Sources</td>
<td><a href="http://www.lib.uiowa.edu/hardin/md/index.html">www.lib.uiowa.edu/hardin/md/index.html</a></td>
</tr>
<tr>
<td>Healthfinder</td>
<td><a href="http://www.healthfinder.gov">www.healthfinder.gov</a></td>
</tr>
<tr>
<td>Healthweb</td>
<td><a href="http://www.healthweb.org">www.healthweb.org</a></td>
</tr>
<tr>
<td>MedlinePlus</td>
<td><a href="http://medlineplus.gov/">http://medlineplus.gov/</a></td>
</tr>
<tr>
<td>MedWeb at Emory University</td>
<td><a href="http://www.medweb.emory.edu/medweb/">www.medweb.emory.edu/medweb/</a></td>
</tr>
</tbody>
</table>

### Table 2. Selected Internet Tutorials

<table>
<thead>
<tr>
<th>Site</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUNY Albany Internet TutorialsSM</td>
<td><a href="http://www.internettutorials.net">www.internettutorials.net</a></td>
</tr>
</tbody>
</table>

### Table 3. Evaluating an Internet Health Information Site

<table>
<thead>
<tr>
<th>Who?</th>
<th>Who runs and pays for the website?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Who writes and/or reviews the information for accuracy?</td>
</tr>
<tr>
<td></td>
<td>Who is on the editorial board for the site?</td>
</tr>
<tr>
<td>What?</td>
<td>What is the purpose of the website?</td>
</tr>
<tr>
<td></td>
<td>What is the original source of the information on the website?</td>
</tr>
<tr>
<td></td>
<td>What claims does the website make…are these too good to be true?</td>
</tr>
<tr>
<td>Where?</td>
<td>Where on the site is information regarding the sponsor documented?</td>
</tr>
<tr>
<td>When?</td>
<td>When was the information last reviewed and/or updated?</td>
</tr>
<tr>
<td>Why?</td>
<td>Does the site collect information about its visitors, and if so, why?</td>
</tr>
<tr>
<td></td>
<td>Does the site have links to other sites, and if so, why?</td>
</tr>
<tr>
<td>How?</td>
<td>How is information selected, reviewed and referenced?</td>
</tr>
<tr>
<td></td>
<td>How can you contact the site organizer?</td>
</tr>
<tr>
<td></td>
<td>How does the site manage interactions with users?</td>
</tr>
<tr>
<td></td>
<td>How can users verify the accuracy of information they receive via email?</td>
</tr>
</tbody>
</table>

### Table 4. Uniform Resource Locator (url) Sponsors

<table>
<thead>
<tr>
<th>URL ending</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>.com</td>
<td>Generally commercial</td>
</tr>
<tr>
<td>.edu</td>
<td>Universities, medical schools, health-care facilities</td>
</tr>
<tr>
<td>.gov</td>
<td>Federal government</td>
</tr>
<tr>
<td>.mil</td>
<td>Military, including military health centers</td>
</tr>
<tr>
<td>.org</td>
<td>Non-profit groups focused on research and education</td>
</tr>
</tbody>
</table>

**National Library of Medicine Resources**

The National Library of Medicine (NLM) maintains several electronic resources that may be useful to both health-care providers and consumers. These may be accessed from the Databases and Electronic Resources page (http://www.nlm.nih.gov/databases/) or the NLM Gateway (http://gateway.nlm.nih.gov/gw/). A search tool available on the NLM Gateway homepage enables the user to search across multiple NLM databases simultaneously. General and specialty information written for health-care providers and consumers may be accessed. Because these resources are developed and supported by the federal government, there are no advertisements on the pages. Many NLM databases contain links to other NLM...
databases. The links to selected NLM resources may be found in Table 5.

MedlinePlus is a very comprehensive directory and immediate source of referenced information on over 700 health topics. Each health topic offers links to sites that discuss prevention, diagnosis, treatment, disease management, clinical trials, organizations, and general statistics. There are also links to information specific to specialty populations such as seniors, children, women, and men. The latest news on specific health topics and links to community references are contained with most entries. MedlinePlus also offers downloadable drug information handouts from USP DI® and the American Society of Health-System Pharmacists® (MedMaster™). Another useful feature of MedlinePlus for both consumers and health-care providers is the large assortment of diagrams and pictures, including interactive slide show tutorials.

The Developmental and Reproductive Toxicology Databases (DART®) and LactMed are two NLM databases that offer information on pregnancy and lactation. DART® provides links to the primary literature on the results of exposure to specific pharmacologic agents during pregnancy. The user may enter and search by a specific drug name. LactMed references information on drug levels in the nursing mother’s blood and breastmilk, possible effects of the drug in the breastfed infant and on lactation, and American Academy of Pediatrics (AAP) category of the drug. LactMed also provides information on alternatives to consider in the event a particular agent is not suitable for use while breastfeeding.

DailyMed is a NLM database that contains over 2200 prescribing information documents (package inserts). It is a one-stop alternative to searching multiple individual product or manufacturer websites to download a package insert. By clicking on tabs, specific sections of the package inserts such as indications, warnings and adverse reactions may be accessed. DailyMed also offers links to MedlinePlus®, LactMed, MedWatch, and information on clinical trials (ClinicalTrials.gov).

Other Free Sites for Health-care Providers

Medscape® (www.medscape.com) is one of several commercial websites managed by WebMD® Corporation. It is an integrated web product that offers a wide variety of information such as disease state overviews, conference updates, downloadable drug information handouts and an Ask the Expert section. Medscape® also offers continuing education articles and access to selected free articles from online journals, including the American Journal of Health-System Pharmacists, Pharmacotherapy, Annals of Pharmacotherapy, and Journal of the American Pharmacists Association. The “Latest News” section captures headlines from the Food and Drug Administration (FDA) website, Centers for Disease Control (CDC), and a variety of medical association meetings. The conference updates are succinct and enable the reader to quickly review key presentations from the meeting. You can customize Medscape® so that the front page contains the information you want. In addition to information for health-care providers, Medscape® offers patient education centers that include a variety of printable resources for patients and a link to WebMD.com, the parent organization’s site for consumers. Medscape® requires a one-time free registration.

MedicineNet.com and eMedicine.com are two other websites for health-care providers managed by the WebMD® Corporation. MedicineNet.com has a more narrow scope than Medscape®. It contains information on diseases and conditions, procedures, prevention, and tips for healthy living. MedicineNet.com also offers downloadable audio segments (podcasts). eMedicine.com describes itself as a clinical knowledge base for health-care professionals. It contains articles on 7000 diseases and disorders and current practice guidelines in 59 specialties. Many of the articles are in continuing medical education format, ensuring a comprehensive and balanced view. eMedicine.com contains a feature that permits the user to electronically highlight any medical term and receive a definition, as well as links to other articles in the eMedicine database and Medline. This site also links directly to PubMed and RxList.com, which is the Internet Drug Index for WebMD®.

Drugs.com™ contains information on over 24,000 prescription and nonprescription medicines. It is owned and operated by the Drugsite Trust, a privately held trust owned by two New Zealand pharmacists. Though it is not affiliated with any pharmaceutical companies, it does accept advertising from manufacturers. The information at Drugs.com™ is extracted from established medical information sources including Wolters Kluwer Health, Physicians’ Desk Reference®, Cerner Multum, Thomson Micromedex®, and Stedman’s Medical Dictionary. This information is not altered from its source prior to inclusion on the site. Drugs.com also contains a drug interaction checker, pill identification tool, and latest pharmaceutical news.

While the FDA website (www.fda.gov) can be challenging to search, it is a good site

Table 5. Selected National Library of Medicine Resources

<table>
<thead>
<tr>
<th>Content</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Trials information</td>
<td><a href="http://clinicaltrials.gov">http://clinicaltrials.gov</a></td>
</tr>
<tr>
<td>Consumer Health Information</td>
<td><a href="http://medlineplus.gov">http://medlineplus.gov</a></td>
</tr>
<tr>
<td>Developmental and Reproductive Toxicology Database (DART®)</td>
<td><a href="http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?DARTETIC">http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?DARTETIC</a></td>
</tr>
<tr>
<td>Health Hotlines (toll free numbers for health-related organizations)</td>
<td><a href="http://healthhotlines.nlm.nih.gov/">http://healthhotlines.nlm.nih.gov/</a></td>
</tr>
<tr>
<td>NIH Senior Health</td>
<td><a href="http://nihsioniorhealth.gov/">http://nihsioniorhealth.gov/</a></td>
</tr>
<tr>
<td>Practice guidelines, including AHRQ Evidence Reports and AHGPR Consumers Guides (HSTAT or Health Services/Technology Assessment Text)</td>
<td><a href="http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat">http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat</a></td>
</tr>
<tr>
<td>Toxicology Data Network (TOXNET)</td>
<td><a href="http://toxnet.nlm.nih.gov/">http://toxnet.nlm.nih.gov/</a></td>
</tr>
</tbody>
</table>
### Table 6. Selected Free Websites to Locate Specific Types of Health Information*

<table>
<thead>
<tr>
<th>Topic</th>
<th>Suggested sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative and complementary medicines, dietary supplements</td>
<td><a href="http://www.cfsan.fda.gov/list.html">www.cfsan.fda.gov/list.html</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.naturalstandard.com">www.naturalstandard.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ods.od.nih.gov/health_information/health_information.aspx">www.ods.od.nih.gov/health_information/health_information.aspx</a></td>
</tr>
<tr>
<td>Children as the audience</td>
<td><a href="http://www.kidshealth.org">www.kidshealth.org</a></td>
</tr>
<tr>
<td>Clinical trials</td>
<td><a href="http://www.centerwatch.com">www.centerwatch.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://ClinicalTrials.gov">http://ClinicalTrials.gov</a></td>
</tr>
<tr>
<td>Continuing education for pharmacists</td>
<td><a href="http://www.powerpak.com">www.powerpak.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.uspharmacist.com">www.uspharmacist.com</a></td>
</tr>
<tr>
<td>Disease state overview</td>
<td><a href="http://www.eMedicine.com">www.eMedicine.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.MedicineNet.com">www.MedicineNet.com</a></td>
</tr>
<tr>
<td></td>
<td>MedlinePlus see Table 5 for url</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medscape.com">www.medscape.com</a></td>
</tr>
<tr>
<td>Drug interaction checker</td>
<td><a href="http://www.drugs.com">www.drugs.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medscape.com">www.medscape.com</a></td>
</tr>
<tr>
<td>Drug monographs</td>
<td><a href="http://www.ahcpr.gov/consumerabout.com">www.ahcpr.gov/consumerabout.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.drugs.com">www.drugs.com</a></td>
</tr>
<tr>
<td></td>
<td>MedlinePlus (click on Drug Information) see Table 5 for url</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medscape.com">www.medscape.com</a></td>
</tr>
<tr>
<td>Free downloadable article reprints</td>
<td><a href="http://www.doaj.org">www.doaj.org</a> (Directory of Open Access Journals)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.freemedicaljournals.com">www.freemedicaljournals.com</a></td>
</tr>
<tr>
<td></td>
<td>Highwire.stanford.edu</td>
</tr>
<tr>
<td>Formulary information</td>
<td><a href="http://ca.mccdrugs.com">http://ca.mccdrugs.com</a> (California health plans only)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.epocrates.com">www.epocrates.com</a></td>
</tr>
<tr>
<td></td>
<td>(commercial and Medicare Part D plans)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medicare.gov">www.medicare.gov</a> (Medicare Part D and Medicare Advantage plans only)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medi-cal.ca.gov">www.medi-cal.ca.gov</a> (non-managed health care Medi-Cal; click “Contract Drugs List”)</td>
</tr>
<tr>
<td></td>
<td>Individual websites of specific health plans (extent of information may vary; plan membership may be required for some plans)</td>
</tr>
<tr>
<td>Health and drug information in layperson language</td>
<td>MedlinePlus see Table 5 for url</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medscape.com">www.medscape.com</a></td>
</tr>
<tr>
<td></td>
<td>(see Patient Education Centers)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.pdrhealth.com">www.pdrhealth.com</a></td>
</tr>
<tr>
<td>Late-breaking news from medical meetings</td>
<td>Medscape® (see “Latest Medical News” or “Medscape Today News”)</td>
</tr>
<tr>
<td></td>
<td>Professional association websites</td>
</tr>
<tr>
<td>Medical dictionary</td>
<td><a href="http://www.drugs.com">www.drugs.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medical-dictionary.com">www.medical-dictionary.com</a></td>
</tr>
<tr>
<td></td>
<td>MedlinePlus see Table 5 for url</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.wikipedia.com">www.wikipedia.com</a></td>
</tr>
<tr>
<td>New drug approvals</td>
<td><a href="http://www.centerwatch.com">www.centerwatch.com</a> (click on “Drug Directories)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.fda.gov">www.fda.gov</a> (click on “Product Approvals” then “Latest Drug Approvals” for prescription drugs)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medsco.com">www.medsco.com</a> (click on “Physicians” then “Drugs in Development”)</td>
</tr>
<tr>
<td>Package inserts</td>
<td><a href="http://www.brandname.com">www.brandname.com</a> (insert product brand name)</td>
</tr>
<tr>
<td></td>
<td>DailyMed (package inserts for over 2000 drugs)</td>
</tr>
<tr>
<td></td>
<td>see Table 5 for url</td>
</tr>
<tr>
<td></td>
<td>Drugs@FDA at <a href="http://www.accessdata.fda.gov/scripts/cder/drugsatfda/">http://www.accessdata.fda.gov/scripts/cder/drugsatfda/</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.manufacturername.com">www.manufacturername.com</a> (insert manufacturer name)</td>
</tr>
<tr>
<td>Pregnancy and lactation</td>
<td>DART® see Table 5 for url</td>
</tr>
<tr>
<td></td>
<td>LactMed see Table 5 for url</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.otispregnancy.org">www.otispregnancy.org</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.perinatology.com/exposures/druglist.htm">www.perinatology.com/exposures/druglist.htm</a></td>
</tr>
<tr>
<td>Prices</td>
<td><a href="http://www.drugstore.com">www.drugstore.com</a></td>
</tr>
<tr>
<td>Product specific/ commercial</td>
<td><a href="http://www.brandname.com">www.brandname.com</a> (insert product brand name)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.manufacturername.com">www.manufacturername.com</a> (insert manufacturer name)</td>
</tr>
<tr>
<td>Professional issues</td>
<td><a href="http://www.aphanet.org">www.aphanet.org</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.ashp.org">www.ashp.org</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.cpha.com">www.cpha.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.csp.org">www.csp.org</a></td>
</tr>
<tr>
<td></td>
<td>(note: some sections of the above websites may require membership)</td>
</tr>
<tr>
<td>Safety alerts and product recalls</td>
<td><a href="http://www.drugs.com">www.drugs.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.eMedicine.com">www.eMedicine.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.fda.gov">www.fda.gov</a> (click “Recalls, Product Safety” then click “MedWatch”)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medscape.com">www.medscape.com</a></td>
</tr>
<tr>
<td></td>
<td>(see “Latest Medical News” or “Medscape Today News”)</td>
</tr>
<tr>
<td>Tablet/capsule identification</td>
<td><a href="http://www.drugs.com">www.drugs.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.eMedicine.com">www.eMedicine.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medscape.com">www.medscape.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.rxlist.com">www.rxlist.com</a></td>
</tr>
<tr>
<td>Textbooks (full text online)</td>
<td><a href="http://www.merckmedicus.com">www.merckmedicus.com</a></td>
</tr>
<tr>
<td></td>
<td>NLM Gateway</td>
</tr>
<tr>
<td>Treatment guidelines</td>
<td><a href="http://www.cdc.gov">www.cdc.gov</a> (Centers for Disease Control website)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.guideline.gov">www.guideline.gov</a></td>
</tr>
<tr>
<td></td>
<td>HSTAT see Table 5 for url</td>
</tr>
<tr>
<td></td>
<td>Professional association websites</td>
</tr>
<tr>
<td>Vaccines</td>
<td><a href="http://www.aap.org">www.aap.org</a> (American Academy of Pediatrics)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.cdc.gov">www.cdc.gov</a> (Centers for Disease Control website)</td>
</tr>
<tr>
<td>Downloadable patient information handouts – specific drugs</td>
<td><a href="http://www.fda.gov">www.fda.gov</a> (see “Information for . . .” Section in lower right hand corner of home page)</td>
</tr>
<tr>
<td></td>
<td>MedlinePlus see Table 5 for url</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medscape.com">www.medscape.com</a></td>
</tr>
<tr>
<td>Downloadable patient information handouts – miscellaneous health issues</td>
<td><a href="http://www.fda.gov">www.fda.gov</a> (see “Information for . . .” section in lower right hand corner of home page)</td>
</tr>
<tr>
<td></td>
<td><a href="http://familydoctor.org">http://familydoctor.org</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.fda.gov">www.fda.gov</a> (see “Information for . . .” section in lower right hand corner of home page)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.jama.org">www.jama.org</a> (see JAMA patient page)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.medscape.com">www.medscape.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.merckmedicus.com">www.merckmedicus.com</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.otispregnancy.org">www.otispregnancy.org</a> (Fact Sheets on use of specific drugs in pregnancy)</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.pharmacy.ca/gov/consumers/fact_sheet_series.htm">www.pharmacy.ca/gov/consumers/fact_sheet_series.htm</a></td>
</tr>
<tr>
<td></td>
<td>(Board of Pharmacy consumer fact sheets)</td>
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<tr>
<td></td>
<td><a href="http://www.postgradmed.com">www.postgradmed.com</a> (click “Patient Notes”)</td>
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<tr>
<td></td>
<td><a href="http://www.safemedication.co">www.safemedication.co</a></td>
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<tr>
<td></td>
<td>LactMed</td>
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<td></td>
<td>DART</td>
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* This list contains representative examples and is not all-inclusive. The order of the urls listed is not intended to reflect a preferred ranking, value or suggested order in which the links should be accessed.
Pharmacists recognize our positive chemistry.

Washington Hospital Healthcare System in Fremont, California is a 337-bed, not-for-profit, state-of-the-art acute care general hospital. We provide a full range of medical services to our local growing communities.

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www.whhs.com

with which to be familiar. In particular, the “FDA News” section on the first page provides a quick daily overview of key actions of the FDA. A variety of downloadable fact sheets for patients and health-care providers are available at various locations on the site. The “Information for” sections found on the lower right hand corner of the home page direct the user to many of these resources. Other key sections of the FDA website to be familiar with include the “Recalls and Product Safety” section and the Orange Book to access information on bioequivalence.

If you are in need of a full text article, free articles may be accessed via the sites indicated in Table 6. If you are a volunteer faculty member or a member of your school of pharmacy alumni association, you may be eligible to access the full text of articles via the school’s library. Inquire with your school of pharmacy or alumni association contact.

Free Sites for Consumers

The Medical Library Association (MLA) maintains a list of the “top ten” most useful websites and directories for consumers (see Table 7). The MLA encourages Internet users to review sponsorship, currency, and presentation format (eg, factual vs. opinion), primary information source, and whether the website is intended to address consumers or professionals. The “top ten” list is broad in that it addresses a variety of diseases and topics; however, 3 sites that provide general medical information (Familydoctor.org, MedlinePlus, and MayoClinic.com) are included. MLA also describes a broader series of specific sites for patients with cancer, diabetes, and heart disease in its resource, “A User’s Guide to Finding and Evaluating Health Information on the Web.”

Santa Clara Valley Medical Center (SCVMC) located in the heart of Silicon Valley has been serving Santa Clara County for over 100 years. We are a 450 + bed county facility, teaching hospital affiliated with Stanford Medical school, and schools of pharmacy at the University of the Pacific and UCSF. SCVMC is actively seeking qualified and dedicated professionals with a passion for excellence to join our inpatient pharmacy team. We offer highly competitive salaries, outstanding benefits, and a dynamic work environment.

- Night Shift Pharmacists
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- Decentralized Pharmacists
- Staff Clinical Pharmacists
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Clinical Coordinator,
Inpatient Pharmacy
408-885-2382
751 South Bascom Ave
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An equal opportunity employer
Keeping up with the Medical Literature

The Internet contains a variety of tools to help you keep up to date with the medical literature. Citations and/or abstracts may be sent to you via email directly from PubMed or individual journal websites. Individual journals may also send you an electronic table of contents so that you may quickly scan the abstracts and contents of various journals. Some sites, such as Medscape®, will email a general update on a variety of topics. These are only useful if you check email regularly and read the update. Try one or two e-updates and see if you can keep up with them. You may also wish to try saving selected links alphabetically in the “favorites” section of your web browser. Check these sites once or twice weekly in lieu of receiving additional email. Routinely review your list of core websites, and delete them from your favorites if you do not look at them frequently.

Conclusion

The Internet continues to be a commonly-used and useful tool for researching health information. It has replaced trips to the library for many research tasks; however, the information contained on the Internet is not infallible and needs to be critically evaluated before applying it to make a health-care decision. Pharmacists should be able to evaluate information for their own use and also offer tips to consumers who use the Internet to find health information. Internet users should be familiar with a variety of search techniques to maximize the likelihood of finding useful information. Using multiple search strategies for a single research request may help confirm the quality and usefulness of the results found. Developing and maintaining a core set of websites may help increase efficiency and improve familiarity with various formats for the presentation of information.

Acknowledgement

Thank you to Angie Graham, PharmD, for serving as the feature coordinator of *The Internet: A Treasure Hunt for Free Health Information.*

References


Table 7. The Medical Library Association’s Top Ten Websites Recommended for Consumers

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>URL</th>
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<tbody>
<tr>
<td>National Cancer Institute</td>
<td><a href="http://www.cancer.gov">http://www.cancer.gov</a></td>
</tr>
<tr>
<td>Centers for Disease Control and Prevention</td>
<td><a href="http://www.cdc.gov">http://www.cdc.gov</a></td>
</tr>
<tr>
<td>American Academy of Family Physicians</td>
<td><a href="http://familydoctor.org">http://familydoctor.org</a></td>
</tr>
<tr>
<td>Department of Health and Human Services</td>
<td><a href="http://www.healthfinder.gov">http://www.healthfinder.gov</a></td>
</tr>
<tr>
<td>UCSF AIDS Research Institute</td>
<td><a href="http://hivinsite.ucsf.edu">http://hivinsite.ucsf.edu</a></td>
</tr>
<tr>
<td>Nemours Foundation’s Center for Children’s Health Media</td>
<td><a href="http://www.kidshealth.org">http://www.kidshealth.org</a></td>
</tr>
<tr>
<td>Mayo Clinic</td>
<td><a href="http://www.mayoclinic.com">http://www.mayoclinic.com</a></td>
</tr>
<tr>
<td>Various medical societies in the U.S.</td>
<td><a href="http://medem.com">http://medem.com</a></td>
</tr>
<tr>
<td>National Library of Medicine Consumer Health Information</td>
<td><a href="http://medlineplus.gov">http://medlineplus.gov</a></td>
</tr>
<tr>
<td>New York state, local and federal health resources for consumers</td>
<td><a href="http://noah-health.org">http://noah-health.org</a></td>
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</tbody>
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Reference: http://mlanet.org/resources/medspeak/topten.html (last updated 9/12/06)
CSHP’S 2006-2009 Strategic Plan
Implementation Date: July 1, 2007

In 2006, at the conclusion of the process that resulted in the development by the CSHP Board of Directors and Committee on Goals of a 3-year strategic plan and a method to support yearly operational plans, CSHP looked to the future with a comprehensive roadmap that preserved the best practices of prior CSHP strategic plans, while allowing for expanded innovation and growth. Since July 1, 2006, the 2006-2007 operational plan has been managed by the executive vice president through the committee on goals at the direction of the board.

Applying this new approach, implementation of the 2006-2009 strategic plan continues with modifications to Goal #1, key strategies (indicated by strikethrough or bold/underlined text) and an operational plan updated by the committee on goals and approved by the board for implementation July 1, 2007. As the process plays out, further refinements to the strategic plan may yet be put into action before the final implementation July 1, 2008, based on decisions that could be made during the August 5-6, 2007, board strategic planning session.

For a full description of the genesis of this 3-year strategic plan, first implemented July 1, 2006, please read “CSHP’s 2006-2009 Strategic Plan, Implementation Date: July 1, 2006” on page 26 of the California Journal of Health-System Pharmacy: July/August 2006, Volume 18, Number 4. This and other issues of CJHP are available to members only on the CSHP website at www.cshp.org.

Goal #1: Representative Governance
CSHP provides a responsive environment that fosters and supports member participation in policy and organizational development.

Objectives
- Increase member access to governance processes.
- Support a dynamic, outcome-based, member-centric strategic planning process.
- Employ knowledge-based strategies to ensure governance accountability and process improvement.
- Increase activities related to the development of relevant professional policies.
- Increase leadership development programs.

Strategies**
- Ensure quality, accessibility, and accountability in CSHP’s governance processes.
- Engage members and regional chapters by improving CSHP’s communication tools and systems for disseminating information and receiving member input.
- Expand opportunities for CSHP members to learn more about CSHP governance and develop a leadership ladder program to increase member participation as future leaders of the organization.

** I = immediate, M = medium, and L = long range goals

Goal #2: Pharmacy Practice
CSHP advances the practice of its members.

Objectives
- Become a major force at the health-care table regarding regulatory and legislative issues.
- Integrate appropriate elements of the ASHP 2015 Initiative into CSHP activities.
- Align educational offerings with emerging issues, future trends and breakthrough developments.
- Enhance and promote member recognition programs that identify and recognize members practicing in an exemplary manner.
- Recognize and promote best practices in pharmacy.
- Increase awareness of the requirements for serving the needs of an ethnically- and culturally-diverse health-care population, both clients and providers.

Strategies
- Create a government affairs strategy at the state and local level to assure that pharmacists practice to the full extent of their education and training.
- Enhance the visibility of health-system pharmacists to other health professions and the lay public.
- Promote safe medication use.
- Promote appropriate ASHP 2015 Initiatives.
- Advocate residencies and fellowships.
- Visit, promote, and showcase best practices of the membership.
- Advocate the advancement of the role of pharmacy technicians.
- Promote the appointment of CSHP members to local and state boards, commissions, task forces, and committees.

Goal #3: Organizational Direction
CSHP uses innovative approaches to provide consistent direction to its members and key publics.

Objectives
- Increase the reach of CSHP and regional chapter public relations activities.
- Identify members who would successfully promote CSHP’s vision and mission.
• Expand strategic relationships with external organizations.
• Enhance collaboration among CSHP, its regional chapters, and divisions.
• Capture, disseminate and promote the use of best practices in organizational programs.
• CSHP, its regional chapters, and divisions demonstrate that they embrace CSHP’s vision.

Strategies
I Promote systems that identify members who can effectively participate in public relations activities.
I Assure that the CSHP Vision Statement is widely understood and integrated into chapter and division planning.
I Evaluate and assess current and potential strategic relationships to optimize their value to CSHP.
M Support and coordinate a comprehensive public relations plan that integrates local and statewide programs in support of CSHP positions and activities.
M Support a public relations educational program that integrates local and statewide activities.
M Expand members’ knowledge and skill as it relates to integrating public relations / customer service into their daily professional activities.
L Promote chapter and division organizational programs and activities that encourage infusion of best practices.

Goal #4: Membership Value
CSHP will be a thriving progressive organization with members who find participation relevant and rewarding.

Objectives
• Assure activities that provide relevance and value.
• Support programs that lead to increased membership.
• Increase volunteer opportunities.
• Increase networking opportunities.
• Identify and utilize health-system pharmacist demographics to improve member services.
• Attract and retain under-represented groups to reflect the diversity in the pharmacy community.

Strategies
I Develop policies and programs that assure ongoing professional relevance and value to members.
I Integrate member satisfaction measures into all Society services and programs.
M Create services and programs that meet the needs of student pharmacists and new graduates.
M Capitalize on technologies to expand program exposure and member utilization.
L Promote research programs that evaluate the impact of the pharmacist in patient care.
I Support programs that attract and retain new members.

Goal #5: Infrastructure and Technological Excellence
CSHP is a forward thinking organization that invests in infrastructure and technology that supports its volunteers and staff.

Objectives
• Become an association employer and volunteer organization of choice.
• Support the development of staff and volunteer expertise and systems to meet the future needs of the organization.
• CSHP technologies and systems present a seamless interface to the members and the public.
• Support technology and systems that expand and enhance the collaborative relationship among individual members, regional chapters, divisions, external customers, and CSHP.

Strategies
I Give priority to programs that insure the growth of the Society.
M Develop an operational plan that fully utilizes and integrates the talents and skills of staff and volunteers.
M Support activities that lead to process improvement and innovation.
M Give priority to programs that support the mission and vision of the Society.

After August 1, 2007, copies of CSHP’s 2006-2009 Strategic Plan and the 2007-2008 Operational Plan will be available for members only on the CSHP website (www.cshp.org). From the home page select “About,” scroll down to “Operational Documents” then logon at the prompts with last name and membership ID (or other password, if you changed it).◆

Pediatric Clinical Pharmacist

At Children’s Hospital & Research Center Oakland, it is our privilege and our passion to provide extraordinary care for all children. We offer an extensive array of clinical, research and community services that benefit children and families throughout the region and around the world.

We’re seeking a full time benefited Pediatric Clinical Pharmacist to serve patients by ensuring the safe and age appropriate dosing, preparation, and use of medication.

Requirements:
• California Pharmacist License
• Previous inpatient pharmacy experience

We offer highly competitive salaries, comprehensive benefits and a wonderful environment for our employees. Please apply online at: childrenshospitaloakland.org or contact Patrick Fleming via email at: pnelson@mail.cho.org or by calling 510-428-3651.

EVE

CHILDREN’S HOSPITAL & RESEARCH CENTER OAKLAND

Pediatric Clinical Pharmacist

At Children’s Hospital & Research Center Oakland, it is our privilege and our passion to provide extraordinary care for all children. We offer an extensive array of clinical, research and community services that benefit children and families throughout the region and around the world.

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EVE

CHILDREN’S HOSPITAL & RESEARCH CENTER OAKLAND
Got PR?

Rose Ellis, RPh
CVSHP President 2007, CSHP Public Relations Chairperson 2007, CVSHP Public Relations Chairperson 2007
Clinical Pharmacist, St. Joseph's Medical Center, Stockton

Have you ever taken a public relations or marketing class or seminar in or out of your professional training? As a pharmacy practitioner (or student), has “public relations” ever crossed your mind within the scope of your practice? Are these terms somewhat nebulous functions belonging with the word “professional”? Well, if you answered no, no, and yes to these questions, you are not alone.

Among ourselves, pharmacists gather to learn the latest in drug information and to talk shop. Public relations (PR) and marketing are relegated to health fairs and walks, but rarely is PR approached as a personal campaign. Perhaps our tight-knit community has underestimated its intrinsic ability and responsibility to actively engage in PR and marketing services.

Public relations is defined as the methods and activities employed to establish and promote a favorable relationship with the public. And, marketing is everything a group does to acquire customers and maintain a relationship with them. These terms define what seem to be incidental encounters with patients and other health care professionals on a daily basis, but these individual meetings can have a tremendous impact on how we are perceived by the public. So, what do we do?

On January 22, 2007, CSHP held Regional Chapter meetings for Public Relations (and Membership Committee) chairpersons. The PR chairpersons agreed that the various types of pharmacy practices were mostly unknown to the general public AND to other health-care professionals. It was apparent that a slogan or tag line was required. The message needs to get out!

The PR Committee developed the slogan “Just Ask” as a welcome sign for people to approach the white-coated apothecarian. Several tried and true marketing/PR tools were suggested: pins, badges, post-its, stickers, note pads, lanyards, bumper stickers, pens, etc. This was a good start, but we decided that a general media promotion would offer greater exposure to an audience outside of an individual’s practice setting. The PR committee also encouraged regional issue campaigns to highlight practices in particular areas.

Thanks to a bit of serendipity, something interesting just fell into the committee’s lap. In March, an email was received by the CSHP PR chairperson stating that ASHP was launching its PR campaign called, “Just Ask.” Well, as great minds think alike, the PR committee is now reviewing ASHP’s material. We plan to use their tools and media appointments as they coincide with our goals.

We currently have the responsibility to move our profession forward to be recognized as a partner in critical and acute care …

One of our goals is to make “Just Ask” a signature phrase for CSHP/ASHP. Pharmacists wearing the “Just Ask” pin will be open to answer any health-care-related questions that present themselves. And, yes, there may be those practitioners who shy away from the one-to-one contact. We offer these practitioners an opportunity to enlighten others about their role in this well-trusted profession. Individually and collectively, pharmacists throughout California can open the avenues to first-hand information about medications, regional services available, and regional health activities, and present an individual face with the “Just Ask” logo.

Some practitioners may be concerned about the real benefits to becoming “involved” in this campaign. Consider how various companies present beautiful ads in various media—television, radio, print, and even Internet—then the public discovers that their establishment is nothing like the commercial. Ring any bells? Do we want to follow in those footsteps or keep on our own track? CSHP’s PR campaign will only be as good as the people who are behind it: The last thing we should be is part of an unfulfilled promise.

Our underutilized (and underpaid) services are based on a twenty to thirty-year-old image: it is no longer slap and pour, or count and fill. We currently have the responsibility to move our profession forward to be recognized as a partner in critical and acute care, promoting positive health outcomes, and insuring professional medication management to create cost reductions to the patients and third-party-insurance companies.

We can talk about practicing pharmacists in anticoagulation clinics, diabetes clinics, lipid clinics, home infusion, certified diabetest educators, pediatric care, compounding, research, kinetics, patient education, nutrition, geriatrics, psychiatric drugs, and whatever specialized program in which you’re involved. Most importantly, we can talk to people about their personal concerns.

Each CSHP member can begin recruiting non-members with this win-win campaign for pharmacists and their patients. We can work side-by-side to cut through all of the misinformation and clarify the wealth of knowledge available in a CSHP pharmacist. Every practitioner can carry the “Just Ask” campaign and, when asked, share it with every notable encounter—patients, doctors, nurses, respiratory therapists, laboratory technicians, educators, ministers, caregivers, etc.

CSHP pharmacists are urged to make a promise to promote the profession. Each pharmacist carries so much information that can benefit his/her patient. Along with the pharmacology, medicinal chemistry, biochemical, therapeutics, pharmaceutics, and law, comes the best part—the heart and soul. This is what fuels our practice and our goals. ♦
CSHP and the 2007 California Legislature

Larry Schallock, BS
CSHP GAAC Chair-elect

The California Legislature is back in session and reviewing over 2,500 bills for possible enactment. Patient safety and medication errors are quickly becoming a major health-care focus this year. In March 2007, the Medication Errors Panel, established in 2005 by SCR 49 (Speier), presented its findings and, as a result, several pieces of legislation have been introduced that are being monitored through CSHP’s Governmental Affairs Advisory Committee (GAAC).

One of the major pieces of legislation is the California Patient Medication Safety Act that addresses “Prescription Drugs: Labeling Requirements” – SB 472 authored by Senator Ellen Corbett (D-San Leandro). Studies indicate that many consumers do not clearly understand how to take their medications, resulting in medication errors. This legislation would develop specific criteria for standardized labels that pharmacies would use by January 1, 2009. A panel under the auspices of the California Board of Pharmacy (BOP) will develop the best practices for a universal label in California. Areas to be considered in the design of the label include: increased understandability of information on the labels, improved directions, legible font sizes and types and placement of information that is patient focused. The panel will have 10 months to review and recommend the prescription label to the BOP. The BOP will adopt the standardization of labels by October 31, 2008, and report their actions to the appropriate legislative committees. CSHP, as a major stakeholder, continues to work with Senator Corbett to incorporate provisions acceptable to the CSHP membership.

SB 966 by Senator Joseph Simitian (D-Palo Alto) addresses consumer pharmaceutical drug disposal. Flushing medications down the toilet or tossing them out in the trash has increased environmental concerns. The legislation, with an effective date of July 1, 2008, proposes to require retailers—such as pharmacies—to accept outdated pharmaceutical drugs—both prescription and OTC—for proper disposal. Controlled substances are exempt from this requirement due to federal and state laws. The retailer cannot charge any fees to the consumer, nor will any funds be available from the state to cover costs. Other alternatives such as a voluntary program, specified drop-off locations, or using a hazardous waste facility have been suggested as alternatives to the mandatory program. CSHP and its legislative advocate Bryce W. A. Docherty continue to discuss these various alternatives with Senator Simitian.

Senator Jenny Oropeza (D-Long Beach) has proposed SB 615 to set up a Pharmacy Technician Scholarship and Loan Program. This bill establishes a program to provide scholarships for educational expenses of pharmacy technician students and to also repay qualified educational loans of technicians who agree to work in areas of the state where there is an unmet priority need. The fund will obtain monies from a $10 fee with each pharmacy technician license renewal and each pharmacy. In addition other monies may be donated by private sources in business, industry, and foundations. CSHP supports this legislation.

Another influential bill is SB 993, co-authored by Senators Sam Aanestad (R-Grass Valley) and Ron Calderon (D-Montebello). The sponsors of the legislation state the bill expands the scope of practice of psychologists to prescribe psychotropic medications, thus increasing access to mental health services. The legislation sets up an educational process to enable the psychologist to prescribe, but only for medications in the psychotropic field. One concern is that the educational requirements do not match the scope of practice. CSHP is strongly opposed to this legislation because patients may be put “at risk for drug-related medical problems” if the psychologist is not familiar with the medications used for other medical conditions and the potential drug-drug interaction and drug-disease states that are a part of safe medication management. This bill was defeated in the Senate Business, Professions, and Economic Development Committee on April 24, but was granted reconsideration for further review in the 2008 legislative session. CSHP was part of the coalition that worked to defeat this legislation.

To see other legislative positions and current status of bills, visit the Government Affairs section of the CSHP webpage: go to “CA legislation” and then “Legislation Tracked 2007.” Also, it is very helpful and informative if you let your local legislator know your position on any of these bills. Stop by their local office and let them know who you are and your opinions regarding your practice setting.◆
We all know how stressful it can be when JCAHO inspection time comes around. Having the right attitude is key to a successful outcome. You can prepare yourself by knowing the Joint Commission’s standards and how they apply to pharmacy.

Be familiar with medications on your “high alert” list. National Patient Safety Goal 3 for 2007 is to “improve the safety of using medications.” Do you know what your pharmacy has implemented, changed, or revised to comply with this goal? If not, ask your director, supervisor, or lead technician to explain the processes that have been put in place to address this goal. An example is implementation of a High Alert Policy, where a facility adds safety measures to selected medications that have resulted in significant but preventable patient harm. All handlers of the products should be alerted to exercise extra caution. Some of the special precautions may include labeling the medication with extra warning stickers, using packaging with an identifying marker as “high risk,” or adding alerts to medication that are high risk medications within automatic dispensing cabinets.

Know which medications have TALLman lettering at your facility. There are many medications that sound alike and look alike, and this leads to potentially choosing the wrong product. TALLman lettering uses capital letters to spell the stressed syllables of the medication name to visually alert staff members to distinguish between products. Examples are predNISone vs. prednISOLone and hydrALAzine vs. hydrOXYzine. The use of TALLman lettering should be consistent in automated dispensing cabinets, the computer system the hospital uses for patients’ medication profiles, and institution-approved pre-formatted order forms.

Make sure the patient cassettes are clean and free of clutter. Is everything locked that needs to be secure? Is the pharmacy or your work area clean? You would be surprised how much cleanliness can impact a survey. A clean and tidy environment can have a positive impact on the impression you make on the inspector.

Be prepared to explain what your role is as a pharmacy technician in the care of a patient. Some considerations on how you impact patient care are by:

- Delivering medications to the correct areas and patients in a timely manner,
- Double-checking that you are delivering the right medication,
- Double-checking what you are refilling in automated dispensing cabinets, and delivering the right medication to the right pocket, and
- Removing expiring medications from the dispensing area and automation dispensing cabinets.

Keep on top of emails that come from your leadership group: they usually contain information to keep you informed of changes and updates. Attend staff meetings to hear the latest on what is happening in the pharmacy department. Look for posted memos, newsletters, policies, or procedures that address medications. When in doubt, ASK! These are just a few examples of what you can do to prepare for a survey. I hope you find them helpful and, most of all, useful. Don’t forget, if you are doing things the right way to begin with, you have nothing to fear.

Mission Hospital is a 317-bed acute care facility serving all of south Orange County and houses the region’s designated Level II Trauma Center. Located in Mission Viejo, Mission Hospital offers a complete array of top-quality healthcare services.

Pharmacist plays an integral role in achieving positive outcomes. As a Mission Hospital Pharmacist, your input will be valued, your skills recognized and your contributions rewarded.

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Apply online at www.mission4health.com.
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Contact Vanessa Begin at 949.364.1400 x7408

Registration for the August 27, 2007, through September 28, 2007, testing window for the National Pharmacy Technician Certification Examination opened June 18, 2007. All applications for the August/September testing window must be received by the deadline of August 3, 2007. Please visit www.ptcb.org to register online, where you will also find various tools to assist you with the examination process. If you took the certification examination during the February/March 2007 testing window, you will be able to check your test results online.
Diablo Chapter

**Judy Lee**  
DSHP Newsletter Editor  

Greetings from the Diablo Society of Health System Pharmacists (Fairfield to Hayward). 2006 provided an eventful year for us.  

**Community Outreach:** Our annual visit to the Concord Senior Center was well-received and provided the seniors with blood pressure screenings and brown bag reviews of their medications. Our members also assisted the seniors with filling out Vial of Life information so that in case of emergency medical personal will know what medications the patient takes.

Each year during Poison Control Week we provide information for our members to educate children in the schools about poisonings. **Beckilynn Catalli** used the information for presentations to elementary children. She challenged 3rd graders to go on a Safari hunt in their homes in search of household poisons. Beckilynn provided kindergarteners with a worksheet to determine if household items were food or not. The children also had fun trying to open various safety lock on cabinet doors. The children were asked if they knew what a pharmacist is and one little girl said, “it is someone who likes to go to Disneyland.” The imagination of children is magical!

In September, our members participated in a 5K Heart Walk coordinated by Membership Chair Yelena Katkova to bring attention about heart disease. Many of our members walked with their respective hospitals. Local hospitals set up tables to promote nutrition, health/safety warnings, exercise, stress release massages, and regular check ups.

**Continuing education programs:** Our chapter provided 8 to 10 accredited CE programs on a variety of topics that interest both inpatient and outpatient pharmacists, thanks to the efforts of Co-chairs **Debbie Sasaki-Hill** and **Donna Fitzgerald.** Topics included cardiac drugs, pharmacy law, benign prostate hypertrophy, and more.

**Membership:** Our membership stays steady with 180 members, including 10 technicians. Technicians **Koni Alli** (treasurer) and **Donna Fitzgerald** (co-continuing education chairperson) are active on the board. We are excited to welcome back **Sian Carr-Lopez, Phillip Drum, Felix Tsui,** and **Winston Lee** to the board.

Congrats to **Jerry Gonzales,** 2007 DSHP president, for being honored with Fellowship status at Seminar 2006 in Sacramento. Our members volunteered at Seminar as room facilitators and moderators, decorated rooms for evening events, and assisted at the golf tournament. We were represented at the House of Delegates by **Teresa Halperin, Denise Omen, Jerry Gonzales, Johnny Wong, Lucian Cheng,** and **Yelena Katkova.**

In October, our 15th Annual Night Out With Industries (NOWI) chaired by Past and President-elect **Denise Omen** was a huge success. After the dinner and CE program, we awarded our local chapter Technician of the Year awards to **Koni Alli** and **Donna Fitzgerald** for their contribution to their jobs and to our association. We installed our 2007 officers and ended the evening with a mock casino gaming area with raffle prizes for their tickets.

2007 brings another exciting year of events. Along with continuing our previous year activities, this year we are involving interns and residents in our quarterly newsletter. Another event we are planning is a social mixer with the area pharmacy schools including PACIFIC, UCSF, and Touro.

Touro University’s newly founded student association has been invited to attend our monthly meeting to help develop their involvement at CSHP meetings.

Sierra Chapter

**Corbin Bennett, PharmD, MPH**  
President 2007

The Sierra Society of Health-System Pharmacists (SSHP) is keeping members active and educated in 2007. Over the past year and during the upcoming 6 months, we are focusing on providing continuing education, actively participating in community events and fundraisers, and providing networking opportunities at social events.

Sierra began the year by installing new officers at our annual Installation Dinner in January. New officers include: President Corbin
Bennett, President-elect Danny Vera, Secretary Wenee Liu, and Treasurer Scott Shimamoto. During his installation speech, Corbin thanked outgoing President Marisa Mendez for her leadership during the past year. Sierra also specifically recognized Sandra Mooney, technician extraordinary, with a lifetime achievement award for her incredible dedication to the chapter as well as to CSHP’s Technician Division.

Sierra continues to offer a vast array of continuing education programs behind the leadership of CE Coordinator Jennifer Trytten. For 2007, Sierra will have provided 8 different CE programs along with haute cuisine from the finest restaurants in Fresno. We also plan to provide self-funded CE programs highlighting trends in the profession as well as updates on law and the Board of Pharmacy.

We continue to remain active in the local community through participation in charity and fundraising events. In May, SSHP members completed the American Cancer Society Relay for Life and raised nearly $1000 under the direction of member Bruce Manzo. Members also provided guidance for impressionable youth at the Fresno Chamber of Commerce Job Fair, also held in May. In August, SSHP will host the First Annual Scholarship Poker Tournament in conjunction with the Fresno-Madera Pharmacists Association. Participants will “go all in” while raising money for local pharmacy students.

Sierra is also having fun in 2007. In April, we held our annual Industry Night. Coordinated by member Sandra Mooney, the theme was Casino Night. Over 50 members and spouses, and 13 industry sponsors attended the boisterous event. Board members ran casino games while emcee Joel Weber provided entertainment through his humorous wit.

In May, members were treated to dinner at the ballpark and a fireworks display while watching the Fresno Grizzlies (Giants affiliate) upend the meager Las Vegas 51’s (Dodgers). In September, SSHP will host a wine mixer for members and local pharmacy students at the Woodward Lake Clubhouse in Fresno. Self-proclaimed oenophiles Danny Vera and Corbin Bennett are coordinating the event that will provide guidance for first-time wine tasters in a casual atmosphere.

The SSHP Board looks forward to continued service to our members and local community in the year to come!

Loma Linda Student Chapter

■ Andrea Balog
LLU SP Treasurer

Our ASHP/CSHP student chapter completed a successful year with a continued goal of encouraging members to get involved in our profession and in serving the community.

During our first general meeting, Goldie Malek ’07 (delegate) and Washington Ubillus ’07 (delegate) presented the current policies for discussion. Paul Coggiola ’07 (delegate) organized the Clinical Skills Competition on our campus; then the winners, Tina Liu ’07 and Edward Yoo ’07, represented Loma Linda School of Pharmacy (LLU SP) at CSHP Seminar in Sacramento. Students returned from Seminar with a strengthened commitment to advancing the future of our profession and pursuing pharmacy practice residency opportunities.

We also participated in various community service activities. These included the NBC4 Health and Fitness Expo, the Healthy Neighborhoods Celebration Health Fair at SACHS Clinic, and medical mission trips to Mexico. To celebrate American Pharmacists Month, we volunteered at several events coordinated by the APhA/CPhA student chapters, including free a blood pressure screening and “brown bag” medication review for over 200 people at the Project Hypertension Health Fair at LLUMC. At the closing of this celebration week, our chapter held a fundraiser and social event at a local Cold Stone Creamery, where our faculty advisor, Dr. Nancy Kawahara and other faculty served ice cream to our students, faculty, staff, and guests.

Educational opportunities included a NCPA-hosted, thought-provoking presentation on our campus, featuring Dr. John Abramson, clinical instructor at Harvard Medical School and author of Overdosed
America: The Broken Promise of American Medicine. Then we attended symposia and the residency showcase at the 41st ASHP Midyear Clinical Meeting in Anaheim. We were proud to support our P3 and P4 members presenting their research projects at the poster session.

Several of our officers are also active members of other organizations. Andrea Balog ’08 (treasurer), Liz Trang ’08, Nyla Balquiedra ’08 (vice president), and Mona Ghomeshi ’07 (secretary) created an outstanding poster for the Phi Lambda Sigma (PLS) Charles Thomas Leadership Challenge Grant, featuring our PLS-initiated mock interviews for residencies. It was presented at the APhA Annual Meeting in Atlanta, GA. Four of our members, including our president, Jasmine Putnam ’08, also competed among the top 8 schools in the AMCP 7th Annual National Pharmacy and Therapeutics Committee Competition in San Diego.

On the local level, most of our chapter officers have been serving as student liaisons to ISHP including volunteering at the annual ISHP installation banquet. We are looking forward to volunteering at the upcoming CSHP Seminar as well. During our most recent general meeting, Dr. Paul Norris, ISHP president, emphasized the main reasons for getting involved in pharmacy organizations and being informed about legislative issues that affect the future of our profession.

Finally, our current plans include collaboratively promoting our student chapter along with the CPhA student chapter, organizing a T-shirt fundraiser, and further promoting local, regional, and national networking opportunities for our student pharmacists.

As the region’s only academic medical center and inland Northern California’s only level 1 trauma center, UC Davis Health System is at the forefront of the latest discoveries and best treatments. UC Davis has inland Northern California’s only National Cancer Institute-designated cancer center and one of the nation’s largest clinical trial programs. University of California offers its employees some of the most attractive employment packages and career opportunities available.
CSHP Member Larry Strom Given Honorary Membership in ASHP

CSHP extends special congratulations to long-time CSHP member Lawrence R. Strom II, PharmD, FASHP, FCSHP, whose many contributions to ASHP have earned him honorary membership. CSHP presidential officers stated in their letter to ASHP: “As evidenced by his CV, Dr. Strom’s dedication to ASHP over the years has been extensive. He has served in many different capacities, including chairing several different committees. Perhaps the one thing he is most proud of is his work on ASHP Residency accreditation.

“Dr. Strom worked tirelessly for CSHP, serving as president and executive vice president/CEO over his many years...Through his involvement with CSHP, our annual fall meeting, Seminar, became the largest education meeting held by any state affiliate, second only in attendance to the ASHP Midyear Clinical meeting. Dr. Strom is 1 of only 6 CSHP members to be awarded both the Pharmacist of the Year and the CSHP Distinguished Service Award, the 2 highest awards bestowed by our Society.

“Dr. Strom retired from the Kaiser Permanente Medical Care program in 1998 with over 35 years of service.” Today it is CSHP’s pleasure to thank him for his years of service and congratulate him on becoming one of ASHP’s newest honorary members.

New CE Session Available Online

Top-notch continuing education is available right at your desktop with the launch of HealthSystemCE.org (formerly PharmacyCE.org). Topics range from patient safety and the prevention of medication errors to Joint Commission-related topics, pharmaceutical care (such as infectious disease, cardiology, and update on the management of diabetes), pharmacy technician issues, pharmacy management, and subject matter relevant to home-care pharmacy. In addition to meeting CE re-licensure or recertification requirements for pharmacists and certified pharmacy technicians, programs may also serve to meet Joint Commission training requirements of accrediting bodies such as Joint Commission and others.

This website provides easy access to these home study programs and allows you to print your CE statement of credit directly from your computer, immediately upon successful completion of the post-tests and program evaluations. In order to insure that you can benefit from this exciting opportunity, please update your contact information, especially your current email address, at www.cshp.org, or send the information to Tanisha@cshp.org, or call Tanisha South at 916/447-1033 x103.

Christine Antczak Joins the CSHP Board as Director-elect

In February the CSHP Board of Directors reluctantly accepted the resignation of Director-elect Fran Hopkins for health reasons. In order to fill what would have become her position as a full voting board member in January, Director-elect Brian Kawahara agreed to forego his elect year and moved into the vacant position. Kawahara was sworn into office by President Alan Endo on April 20, 2007.

Observing guidelines from the CSHP Bylaws, President Endo contacted Christine Antczak of the San Diego Society of Health-System Pharmacists, the candidate from the 2006 election with the next highest number of votes. Antczak quickly agreed to join the board, received a personal orientation on March 27, and attended her first board meeting in April. As a result of these changes, Kawahara’s term of office will expire 2009; Antczak will serve until October 2010.

CSHP Members receive ASHP Award

CSHP is proud to announce that for 2007 the following CSHP members have become ASHP Fellows:

- Jennifer Cupo-Abbott, PharmD, FCSHP, FASHP
- Betty Dong, PharmD, FCSHP, FASHP
- Lisa Gunther-Lum, PharmD, FCSHP, FASHP
- Rita Jew, PharmD, FASHP

Congratulations for receiving an honor well earned!

Poster Abstracts from Seminar 2006 Now Available Online!

CSHP is pleased to announce the online publication of a special issue of CHP devoted to poster abstracts from Seminar 2006. Through abstracts, pharmacy practitioners share their learning experiences with colleagues. Visit www.cshp.org and select “2006 Poster Abstracts” from the home page to read abstracts for posters in three categories: descriptive reports, evaluative studies, and specialty forum.

Invest in the Future of Pharmacy: Sponsor a Student

Invest of the future of pharmacy by sponsoring a student or students to attend Seminar 2007—Palm Springs. Seminar is an exciting opportunity for students to gain insight into the profession that can’t be found in a classroom. Sponsorships are only $85: the cost of student registration. Sponsoring one or more students is easy: you list the student’s name or school of pharmacy or have us assign your student for you. While attending Seminar, you will proudly display a “Sponsor-a-Student” ribbon on your name badge. In addition, you will have the opportunity to meet your student(s) at a special reception! Look for “Sponsor-a-Student” on the registration brochure, or for more information, please contact tanisha@cshp.org or call Tanisha South at 916/447-1033 x103.

A Palm Springs Treat: Sponsor Goodies for Student Programming

The 2007 Seminar Management Team (SMT) has a lot in store for everyone, as we prepare to “Spring Forward Under the Sun” in Palm Springs. In addition to many new programs for pharmacists, we have added
numerous unique and exciting programming opportunities for the future of the profession, student pharmacists. Recognizing that local associations play a major role in recruiting and retaining student membership, the SMT invites all local chapters to become involved in student programming at Seminar 2007 by sponsoring a special treat or raffle prize for events like the Quiz Bowl, Sponsor a Student Reception, and the Student/Resident Mixer. Donations or raffle prizes can be anything from a sweet snack to gift cards. For more information, please contact Tanisha@cshp.org or call Tanisha South at 916/447-1033 x103.

Misplaced your Membership Information?

Have you have misplaced your membership card or do you need a new one? If so, please send an email message to Tanisha@cshp.org or call Tanisha South at 916/447-1033 x103 to request one. Although today membership cards are sent only on request, we are investigating a more efficient way to process them. When we do, every member will be sent a replacement card.

CSHP Hires Tia Desplancke, Governance & Project Management Specialist

CSHP is happy to welcome Tia Desplancke, CSHP’s newest full-time employee. Tia has worked in various health-care organizations, most recently at Long Beach Memorial Center as an Executive Secretary in Pharmacy Administration and the UCSF School of Pharmacy. In that environment, she worked with 4th-year pharmacy students and residents. Tia’s experience working directly with pharmacists and pharmacy students has uniquely prepared her for her new position at CSHP.

CSHP Staff Takes on Global Warming

CSHP staff has acknowledged that everyone can play a part in reducing the effects of climate change. Thanks to the team of Tia Desplancke, Sunny Garbutt, and Caithlin Wood, the CSHP office recently implemented a few processes that have the potential to save money for the Society and help in whatever small way to reduce global warming. Although the exact solution hasn’t been discovered yet, Desplancke is pursuing a method for CSHP to recycle the reams of paper currently discarded as trash; Wood is on track to having some percentage of that paper be post-consumer content; and Garbutt has encouraged staff to turn off lights at every possible opportunity, all computers and monitors each evening, and print duplex (two-sided) at every possible opportunity.

CSHP & CPhA Respond to ‘20/20’ Report on Pharmacy Errors

The report about pharmacy errors that aired on ABC’s 20/20 program on Friday, March 30, raised several concerns about the role of pharmacy technicians, medication error reporting, and patient counseling in chain drug stores. CSHP together with CPhA responded with a joint press release available at www.cshp.org, select “CSHP News” from the home page.

CSHP Awards $6,000 in Regional Chapter Grants

Eight regional chapters applied to CSHP for 2006-07 Grants: The following 6 chapters were each awarded $1,000 to conduct their worthy programs:

- USC Student Chapter: Celebration of Senior: Senior Prom and Health Education Fair
- Sacramento Valley: Walking the Path to Health
- Pacific Student Chapter: Advertisement and Distribution of Universal Medication Form
- San Diego: Poison Prevention Program
- Orange County: Brown Bag Day at CalOptima
- Golden Empire: “My Meds” Community Awareness

National Hospital & Health-System Pharmacy Week: October 21-27, 2007

ASHP sponsors this week-long celebration during October, American Pharmacists Month. The week will focus on the important contributions made by pharmacists and technicians to promote the safety and well-being of patients in our nation’s health care institutions. Use National Pharmacy Week to spread your message to two important audiences: your peers and patients. Visit www.cshp.org for ideas to help make your observance a standout.

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CSHP Vision Statement

Leading pharmacy practice in patient care and medication management

CSHP Mission Statement

CSHP is a professional society of pharmacists and associates who serve patients and the public by promoting wellness and the best use of medications.

The mission of CSHP is to:

- Serve as an organization through which the membership pursues its common professional goals.
- Provide leadership for the profession and support for its members.
- Represent its members before private and public agencies and health care professional organizations.

Goals:

- To promote rational, patient oriented medication therapy across the continuum of care.
- To foster optimal and responsible use of medication related technologies.
- To promote pharmacists as integral members of the health-care team in order to allow full utilization of their clinical skills and knowledge of the medication use process in each health-care setting.
- To serve as a primary advocate for advancing professional practice, optimizing patient outcomes, and improving the quality of patient care.
- To promote pharmaceutical services that use sound pharmaco-economic principles.
- To advocate the pharmacist’s value to patients by ensuring that appropriate clinical services and the medication use process are applied to their benefit.
- To promote public health by fostering optimal and responsible use of medications, including education for proper use and/or controlled use of medications.
- To promote competency in the profession by offering state of the art education and training programs.
- To promote progression of the profession of pharmacy by supporting innovative means of delivering pharmaceutical care and services.

Last updated and approved by the CSHP House of Delegates 11/07/04
ASHP Call for Nominations
Elected and Appointed Positions

Annually, ASHP asks each of its state affiliates for the names of members who want to serve in an appointed or elected capacity. These names are provided to ASHP’s incoming president-elect and nominating committee for consideration during the annual appointment and nomination processes.

Individuals wishing to be considered should provide the following information:

1) A copy of your CV
2) A brief statement that details your:
   a) Qualifications
   b) Experience
   c) Areas of special expertise
   d) Previous involvement with ASHP or CSHP, and
   e) Any special characteristics that might help ASHP achieve a balance of perspectives and diversity.

If you would like the CSHP Board of Directors to forward your name to ASHP to be considered for appointment, please complete and FAX the attached form, including the information outlined above, to CSHP at 916-447-2396. Please respond no later than August 30, 2007. Thank you!

Name: ____________________________________________________________
Email: ___________________________ Phone: (_____) __________________

Yes, please recommend me to ASHP for the following office/council:

**ELECTED OFFICES**

**ASHP Board of Directors** (Must be a primary member of a Section to be nominated)

- President-elect
- Board Member
- Chair, House of Delegates

**Sections**

- Executive Committee of the ASHP Section of Clinical Specialists and Scientists
- Executive Committee of the ASHP Section of Home, Ambulatory & Chronic Care Practitioners
- Executive Committee, Section of Inpatient Care Practitioners
- Executive Committee, Section for Pharmacy Practice Managers

**APPOINTED POSITIONS**

**Councils of the Society**

- Council on Pharmacy Management
- Council on Pharmacy Practice
- Council on Education and Workforce Development

**Forums**

- Executive Committee of New Practitioners and Residents Forum
- Executive Committee of the ASHP Pharmacy Student Forum

**Commissions**

- Commission on Credentialing
- Commission on Goals
- Commission on Affiliate Relations

**Advisory Bodies to the ASHP Board**

- Ad Hoc Advisory Panel on Population-Based Medication Use
- Advisory Committee on the United States Pharmacopoeia Convention
- Pharmacy Technician Advisory Group

To be considered, you must include the following:

- A copy of your CV
- A brief statement that details your: (a) qualifications, (b) experience, (c) areas of special expertise, (d) previous involvement with ASHP or CSHP, and (e) any special characteristics that might help ASHP achieve a balance of perspectives and diversity.

APSA Holds Annual Awards Banquet and Officer Installation
April 19, 2007

Lisa Lum, PharmD, FCSHP, FASHP

On April 19, the USC School of Pharmacy American Pharmacy Student Alliance (APSA) held its Annual Awards Banquet and Officer Installation ceremony at Santorini’s Café in Pasadena. APSA is a pharmacy student umbrella organization representing five professional pharmacy organizations: ASHP, APhA, CSHP, CPhA, and IPSF.

The evening started with a sophisticated slide presentation showing APSA members’ participation at CSHP Seminar, CPhA Outlook, ASHP Midyear, and other events. CSHP Faculty Student Liaison William Gong and CPhA Faculty Student Liaison Michael Wincor each made a short speech. Dean Pete Vanderveen expressed his pride in APSA and the students’ accomplishments.

The program was attended by CSHP Treasurer Lisa Gunther Lum, CPhA Past President Brian Komoto and his wife, Mary, and CPhA Director of Membership Theresa Andrews. Both CSHP and CPhA were presented with a small plaque noting APSA’s appreciation for their parent organization’s support.

CSHP Treasurer Lisa Lum (left) with CPhA Membership Director Theresa Andrews and CPhA Past President Brian Komoto at the APSA banquet.
Call For Volunteers!

Seminar 2007 will be held
October 18 – 21, 2007
Palm Springs, CA

The Management Team is looking for pharmacists, residents, technicians, and students to help put together a successful Desert Oasis (aka Seminar 2007 Meeting) in Palm Springs. We need session moderators, room monitors, and other volunteers to assist with the registration desk, hospitality event, and exhibit hall.

This is an excellent opportunity to get involved with the organization and contribute to the pharmacy profession, and what better place to do it than down by luscious greens! It only takes a little effort from everyone to help make this party a success!

An invitation-only reception will be held on Friday evening to recognize volunteers who work 4 hours or more. Please contact CSHP.

Complete the following and fax or mail to Sabrina Carroll at CSHP
725 30th Street, Suite 208 • Sacramento, CA 95816 • Fax (916) 447-2396
e-mail: sabrina@cshp.org

☑ Yes, I want to volunteer at Seminar 2007 in Palm Springs!

Name: __________________________
Address: _________________________
City, State, Zip: ___________________
Phone: __________________________
Email: __________________________

Preferred Task:

☐ Moderator (introduces speaker)
☐ Monitor (lights, handouts, timing, etc)
☐ Registration Desk
☐ Hospitality Desk
☐ Exhibit Hall

Dates available:
☐ 10/18  ☐ 10/19  ☐ 10/20
☐ 10/21
The latest information on
Cardiovascular Diseases
Diabetes/Dyslipidemia
Critical Care
Infectious Diseases
Pulmonary Diseases
USP Chapter 797
JCAHO Updates

Seminar 2007 brings the latest CE updates in:
- Anticoagulation Therapy 2007–New Challenges for Health Systems
- Anti-Thrombotic Therapy in ACS
- Atrial Fibrillation
- CHF–New Developments and Guidelines
- Obesity Epidemic–“The SuperSize Country”
- New Drugs for Diabetes
- Childhood Obesity/Cholesterol Screening in Children
- Use of Insulin in the Patient with Diabetes
- Peripheral Arterial Disease
- Guidelines Hepatitis C – An Update
- Potential Impact on Patients and Health-care Infrastructure
- Sedation in the Intensive Care Unit
- ICU Infection–Changes in Approach to Empiric Therapy
- Living with HIV
- Acute Exacerbation of COPD
- HIV Updates
- Common Thyroid Disorders
- ICU Pneumonia
- Public Risk of Avian Influenza
- UTI in The Elderly
- Human Papilloma Virus and Cervical Cancer
- AND MORE!

Join CSHP at Seminar 2007 Palm Springs

Featuring Keynote Speaker:
Deane Wolcott, MD
Director of Development, Aptium Oncology Inc.

Pay-for-performance & Oncology:
Quality Care, Outcome, Cost…
A Complex Balance for Hospitals?

Across the world, cancer care is recognized as one of the most complex disease states to treat. Cancer is comprised of anywhere between 130-150 diseases, with multiple causes and treatments. Given this complex nature, patients have been placed in a situation where the appropriate therapy can be the difference between life and death. Deane Wolcott, MD, presents this dynamic situation and the concern of pay-for-performance (P4P) as a viable solution to reward those who provide the best possible patient care. Dr. Wolcott trained in psychiatry at the UCLA Neuropsychiatric Institute and continues on the clinical faculty of the David Geffen School of Medicine at UCLA (Los Angeles, California). He has spent his career working at the interface of psychiatry and medicine, with special emphasis on psychiatric aspects of cancer and symptom management in cancer patients. He has led the development of psychosocial oncology and symptom management/palliative care services for Aptium Oncology in the US for the last 15 years.

Dr. Wolcott is a very strong believer in the multidisciplinary approach to treating and managing complex diseases and has been a friend to the profession of pharmacy along the way. He has played a supportive role in the advancement of pharmacists in all facets of daily cancer care but most recently as palliative care leaders within their California network of cancer centers. He has also had roles within Aptium Oncology supporting the development of clinical information systems and continues as vice president for clinical program development where he actively is involved, working from both corporate offices in Los Angeles as well as the United Kingdom.

Seminar 2007
October 18-21, 2007, Palm Springs, CA
Palm Springs Convention Center and Wyndham Hotel
Registration Begins July 1

Top photo provided courtesy of Palm Springs Bureau of Tourism
We make a difference by standing out from the crowd.

Let Scripps make a difference in your career—and your life. From competitive salaries and outstanding benefits to on-site massages and lifelong learning opportunities, we take good care of our employees.

Discover the Scripps difference online at,
www.scripps.org/JoinUs
I’m learning a lot here, like how much my opinion matters.

Every day, I bring everything I’ve learned to work with me. And I use my pharmacy knowledge to make a valuable contribution to our patients’ well-being. At Catholic Healthcare West, we all contribute to the healing process. It’s what our mission calls for. I’m happy to be able to share my knowledge with others. And I’m glad CHW has so much to share in return.

CHW Hospitals, which make up the 8th largest hospital system in the nation, are currently seeking qualified candidates for the following positions:

• Pharmacists
• Pharmacy Technicians
• Leadership Opportunities

CHW. The Strength Within.

To find out more or apply online, visit our website at:

WWW.CHWCAREERS.ORG

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