

Contraindications to Breastfeeding Medications and Mother's Milk

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Caveats

- **Breast milk is food of choice for virtually all human infants**
- **Contraindications are RARE**
- **Except in cases of cancer and Wilson's disease, need for medication is not a reason to wean**
- **Theoretical risks must be measured carefully against projected benefits**
- **Each individual mother-infant pair must be evaluated in their own unique situation**

Contraindications to Breastfeeding

- **Maternal HIV**
- **Maternal HTLV-1 and HTLV-2**
- **Maternal metabolic disease: Wilson's disease**
- **Infant Galactosemia**
- **Maternal Drugs**
 - Drugs of abuse
 - Chemotherapy/radiation

Maternal HIV

- **Breastfeeding transmission rates 10-20%**
 - Strain of HIV
 - Maternal illness
 - Maternal immune status
 - Exclusive breastfeeding vs. mixed feeding
 - Mastitis
 - Availability of antiretroviral therapy
 - When HIV was acquired
 - Newly acquired HIV transmission 29%

WHO HIV Dual Policy

- **Developed Countries:** If access to sanitary breast milk substitute and medical care available, counsel no breastfeeding
- **Third World Countries:** Where these conditions are not met, and in an environment where infectious disease and malnutrition are primary cause of infant death, infant is more likely to survive if breastfed: counsel exclusive breastfeeding

HIV Research Questions

- **Exclusive breastfeeding and rapid weaning decreases maternal-child transmission of HIV?**
- **HIV-2 less transmissible than HIV-1?**
- **Effect of antiretrovirals on viral load and breast milk transmission?**
- **Effect of freezing or rapid brief heating to inactivate HIV in expressed milk?**

HTLV-1 and HTLV-2

- **Closely related retroviruses**
- **Breast milk transmission rates of approximately 20% for HTLV-2**
- **In Japan, breast milk is expressed and frozen before feeding to infants**
- **In US, CDC recommends no breastfeeding**

Maternal Wilson's Disease

- **Autosomal recessive disorder associated with excess copper uptake**
- **Incidence is 30 cases in 1 million**
- **Treated with penicillamine, contraindicated in breastfeeding because binds copper, magnesium and iron**

Infant Galactosemia

- **Autosomal recessive disorder**
- **Incidence in US 1 in 62,000 births**
- **Deficiency of enzyme galactose-1-phosphate uridylyltransferase causes inability to break down lactose into glucose and galactose**
- **Usually diagnose with newborn screening**
- **Symptoms: FTT, HSM, cataracts, developmental delay**
- **Lactose-free diet contraindicates breastfeeding**

Maternal Drugs

- **Antineoplastics**
- **Radioactive compounds**
 - Wait 4-5 half-lives before resuming breastfeeding

Maternal Substance Abuse

- **Most commonly encountered contraindication, but extent of problem varies widely**
 - Active drug abuse clearly contraindicated
 - Past history of substance abuse with negative toxicology screens clearly OK
 - Some cases much less clear, e.g. mother intends to refrain

Maternal Substance Abuse

- **Allow immediate skin-to-skin contact**
- **OB and pediatrician determine if breastfeeding allowable and to counsel mother regarding risks**
- **If breastfeeding allowable, should be frequent, exclusive and fully supported**
- **Refer to social services**

Infections NOT a Contraindication

- **All common maternal infections compatible with breastfeeding**
 - Upper respiratory infections
 - Gastrointestinal infections
 - Urinary tract infections
- **Hepatitis A: careful hand washing and vaccine**
- **Hepatitis B: babies receive HBIg and HBV**
- **Hepatitis C: OK unless mother has severe liver failure or co-infection with HIV**

Infections that are NOT Contraindicated

- **CMV:** no problem if baby full-term
- **Herpes:** breastfeed unless active herpetic lesion on breast
- **Measles:** give infant Ig, EBM OK for 72 hrs isolation
- **Lyme disease:** OK after maternal treatment begun
- **Active TB:** EBM OK; breastfeed after 2 wks of treatment
- **Varicella:**
 - VZIG and temp isolation regardless of feeding method
 - After VZIG OK to give EBM
 - After neonatal period, no separation

Nutritional Conditions NOT Contraindicated

- **Veganism: advise intake of a regular source of vitamin B12**
- **Poor diet: evidence that breast milk will still be of high quality**
- **Coffee lover: one or two caffeinated beverages daily OK**

Environmental Hazards

- **Breast milk is the healthiest choice in a contaminated world**
- **NOT a contraindication to breastfeed under normal circumstances**
 - Lead
 - Mercury
 - Cadmium
 - Radionuclides
 - Perchlorates

Smoking

- **Discouraged, but not a contraindication to breastfeeding**
- **Children of smoking mothers**
 - Better overall health if breastfed
 - Fewer URIs if breastfeed
 - Less likely to die of SIDS if breastfed

Smoking

- **Counsel mothers to**
 - Minimize smoking
 - Smoke 2.5 hours before nursing
 - Smoke outside
 - Do not hold infant while smoking

Alcohol

- **Recognize that beer and wine are standard beverages in many parts of the world**
- **Rapidly absorbed, peaks in 30-60 minutes in milk**
- **Significant and uniform change in odor of milk**

Alcohol

- **Infants sucked more but consumed less. Mothers did not perceive infant consumed less**
- **Physician should avoid recommending, but also avoid prohibiting, occasional drink**
- **For occasional drink, mothers can be advised to avoid nursing for two hours to minimize effect on infant**

Only Medications Contraindicated for Breastfeeding Mothers

- **Chemotherapeutic agents**
- **Radioactive compounds – wait 4-5 half lives before resuming breastfeeding**

Mechanism of Drug Entry

- **Primarily by diffusion, but also secretory methods**
- **Pass from maternal plasma compartment through capillary wall into the alveolar cells to penetrate milk**
- **During first 10-14 days postpartum, large gaps exist between alveolar cells which enhance drug absorption**
- **Subsequently cells swell, closing intracellular gaps and limiting access**

Factors Determining Penetration

- **Maternal plasma level**
- **Protein binding**
- **Lipophilicity**
- **Ion trapping**
- **Oral bioavailability**
- **Molecular weight**

Maternal Plasma Level

- **Drugs enter and exit milk as a function of mother's plasma level**
- **Medications with low plasma levels generally safe with nursing**
 - Beta 2-adrenergics
 - Inhaled corticosteroids
 - Intranasal steroids
 - Topical medicines not applied to nipple

Protein Binding and Lipophilicity

- **Drugs highly protein-bound remain in maternal plasma and don't penetrate tissues or milk**
 - Most important parameter in choosing a safe drug for a nursing mother
- **Conversely, avoid extremely lipid soluble drugs which penetrate milk freely**
 - Especially true of CNS depressants

Oral Bioavailability

- **Refers to whether medication ingested makes its way to plasma**
- **Understand well in adults, less understood in infants**
- **Generally far less than one percent of the maternal dose of a drug will ultimately find its way into the milk and subsequently the infant**

Oral Bioavailability

- **Factors that may determine absorption**
 - Acid milieu of stomach
 - Presence of calcium/milk in stomach
 - Liver sequestration
 - Examples: Gentamycin, Rocephin, Morphine, MgSO_4

Molecular Weight

- **Drugs with molecular weights of less than 300 considered small and enter into milk in relatively higher concentrations**
 - Alcohol
- **Drugs with high molecular weights basically unable to penetrate human milk**
 - Heparin
 - Insulin
 - Remicade

Ion Trapping

- **Due to lower pH of milk, physiochemical structure of some drugs change and prevent its perfusion back to maternal circulation**
 - pKa is the pH at which the drug is equally ionic and non-ionic
 - More ionic drug less capable of transferring from milk back to maternal plasma
- **pKa >7.2 may become ion trapped**
 - Iodides such as SSKI, Betadyne, I-131
 - Lithium

Drugs that Decrease Milk Supply

- **Nicotine**
- **Alcohol**
- **Bromocryptine**
- **Estrogen-containing oral contraceptives**
- **Progesterone contraceptives implicated if begun in early post partum period before milk supply is established**

In Choosing Medications for Nursing Mothers

- **Choose drugs for which published data are available when possible**
- **Review the data on the drug: don't use PDR**
- **Use more caution with neonates and premies**
- **Choose drugs with higher protein binding and shorter half-life**
- **If necessary, determine time-to-peak interval and advise mother to feed accordingly**
- **Weigh risks of medication against risks of not being breast-fed**

Hale's Lactation Risk Category

- **L1 Safest:** Drug taken by a large number of breastfeeding women without any observed adverse effects in infant
- **L2 Safer:** Drug studied in a limited number of breastfeeding women without any observed adverse effects in infant
- **L3 Moderately Safe:** No controlled studies in breastfeeding women, but risk of untoward effects is possible; or controlled studies show only minimal non-threatening adverse effect

Hale's Lactation Risk Category

- **L4 Possibly Hazardous: Positive evidence of risk to breastfed infant or to breast milk production, but benefits may outweigh risks**
- **L5 Contraindicated: Studies in breastfeeding mothers have demonstrated significant and documented risk to infant. Risk clearly outweighs benefit of breastfeeding**

Selected References

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Questions?