

Breastfeeding and medicines

After completing this tutorial, you will be able to:

- Describe the advantages of breastfeeding.
- Outline the factors that affect whether a medicine is compatible with breastfeeding.
- Give practical advice to minimise risks associated with the use of medicines in breastfeeding mothers, and know where to look for information.

Why this subject matters...

It is important that pharmacists can support women to make informed decisions about the use of medicines in breastfeeding. You may not be asked about this subject often, but it is necessary to know the basics so that you can advise and support your patients appropriately.

Breastfeeding benefits

Breastfeeding has advantages over formula feeding. Breast milk provides the ideal nutrients for a human infant, with maximum bioavailability. It also encourages closeness between infant and mother from an early age. Breastfeeding imparts hormones, immunoglobulins and other bioactive molecules to the infant that stimulate its immune system, allowing healthy microbial colonisation and protecting against infant infection. It may also provide health benefits to the mother in terms of decreased risk of some forms of breast cancer and osteoporosis, and long-term benefits to the infant such as a reduced likelihood of type II diabetes and obesity. Unlike formula feeding, no complex sterilisation procedure is required and it is free.



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Some of the benefits of breastfeeding, and misconceptions about it, are reviewed by the [NHS](#) website and the [La Leche League](#) provides a wealth of information to support breastfeeding mothers. You should watch [this short video](#) where specialist midwife Bella Dale explains the practicalities of breastfeeding and what women need to think about when they start to breastfeed for the first time.

However, women need to be careful about taking medicines when they breastfeed, and the rest of the learning materials on this site are concerned with this issue.

Choosing a medicine

The evidence to support the use of individual medicines in breastfeeding mothers is usually based on data of limited quantity and quality. Nonetheless, most medicines are considered compatible with breastfeeding, although there are some exceptions. As described on the previous page, advising a woman not to breastfeed is not a 'no risk' option because of the proven benefits over formula feeding.

Almost all medicines pass into breast milk, but the extent to which this occurs varies, as does the ability of a medicine to harm the neonate or affect lactation. It is therefore important to understand the factors that impact on these processes. There may be unknown mechanisms that influence transfer into breast milk, but known factors include:

Maternal plasma concentration

Drugs with a low maternal plasma concentration are less likely to pose a problem to breastfed infants. Some drugs are not absorbed from the maternal gut at all (e.g. nystatin, Fybogel) or are absorbed very poorly (e.g. oral vancomycin). Others have short half-lives, are cleared very quickly, and are therefore less likely to accumulate in breast milk (e.g. epoprostenol, lidocaine, ibuprofen).

Protein binding

Drugs that are highly protein bound are less likely to pass from the bloodstream into breast milk. Highly protein bound drugs include warfarin and propranolol.

Acid-base balance

Breast milk is slightly acidic compared to blood. Drugs that are weak bases can become ionised in milk, this makes them more water soluble and so less able to diffuse back out into blood, which can result in accumulation within milk. Examples of weak bases include amoxicillin and dexamfetamine. Conversely, weak acids tend not to accumulate in milk (e.g. ibuprofen, some diuretics).



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Fat solubility

Lipophilic drugs preferentially dissolve in the fatty globules in milk, although fat is only a small proportion of the overall milk volume. More importantly, lipophilicity allows passage across the lipid alveolar epithelium of the breast, whereas passage of water soluble drugs is inhibited by this membrane. Lipophilic drugs include benzodiazepines and amitriptyline.

Absorption from infant's gut

Many non-oral drugs given to the mother enter her milk, but due to their physicochemical properties are not significantly absorbed from the infant's gut or are broken down within it. Examples include gentamicin, dopamine and insulin.

Lactation inhibition

Drugs that can inhibit milk production may make breastfeeding difficult or impossible by interfering with hormonal mechanisms or fluid balance. Examples include bromocriptine, high-dose diuretics, anabolic steroids, some antipsychotics, and moderate/heavy regular alcohol intake. However, drugs at normal medicinal doses may be less likely to interfere with lactation once it is established, which occurs around 6-8 weeks post-partum.

Toxicity of the drug

Some drugs are potentially very toxic to babies, even in small amounts, and must be avoided when breastfeeding (e.g. some cytotoxic agents, cocaine). Others are natural to the body and unlikely to be harmful unless given in huge doses (e.g. iron, potassium, vitamin C). Some drugs are commonly administered uneventfully to full-term neonates in doses much bigger than they could be exposed to via breast milk (e.g. penicillins, aciclovir, fluconazole). In cases where a drug with potential neonatal side effects is still used whilst breastfeeding, infants should be monitored and/or alternatives with lower milk transfer chosen if possible.

It is not known whether drugs affecting CNS neurotransmission can cause behavioural or emotional problems in the exposed neonate in later life (e.g. antidepressants, antipsychotics, antiepileptics).

Neonatal clearance

If the newborn has already been exposed to a drug in pregnancy without ill effects, this may give healthcare professionals greater confidence in encouraging the mother to breastfeed. However, during pregnancy the *mother* clears all drugs from the infant's circulation; after delivery drug elimination relies solely on the *neonate's* clearance mechanisms. Therefore, even if a newborn has already been exposed to a drug during pregnancy without ill effect, this is not an indicator of the drug's safety during breastfeeding.

Neonatal kidney and liver function is not optimal at birth, and drugs given via breast milk may accumulate. This is of special concern where drugs have CNS depressant effects (e.g. opioids). This risk of accumulation is greater in premature infants or in those with kidney or liver disease, particularly if the drug has a long half-life as well (e.g. fluoxetine, some antipsychotics). Even in a healthy, full-term infant it might be better to select a shorter-acting medicine for use during breastfeeding if you have a choice.

Reducing risk

Consider the following points when advising on medicine use in a breastfeeding mother:

- If the drug is not essential it should be avoided, or a non-pharmacological approach used instead.
- There may be alternative drugs that are safer to use. However, choice of drug should be based primarily on suitability for the patient and their condition, and then compatibility with breastfeeding assessed.



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- Frequency of breastfeeding varies a lot according to age. For example, a newborn baby might feed every hour, whereas a one-year-old infant may be feeding only twice a day. This means it's important to ask about the feeding regimen before

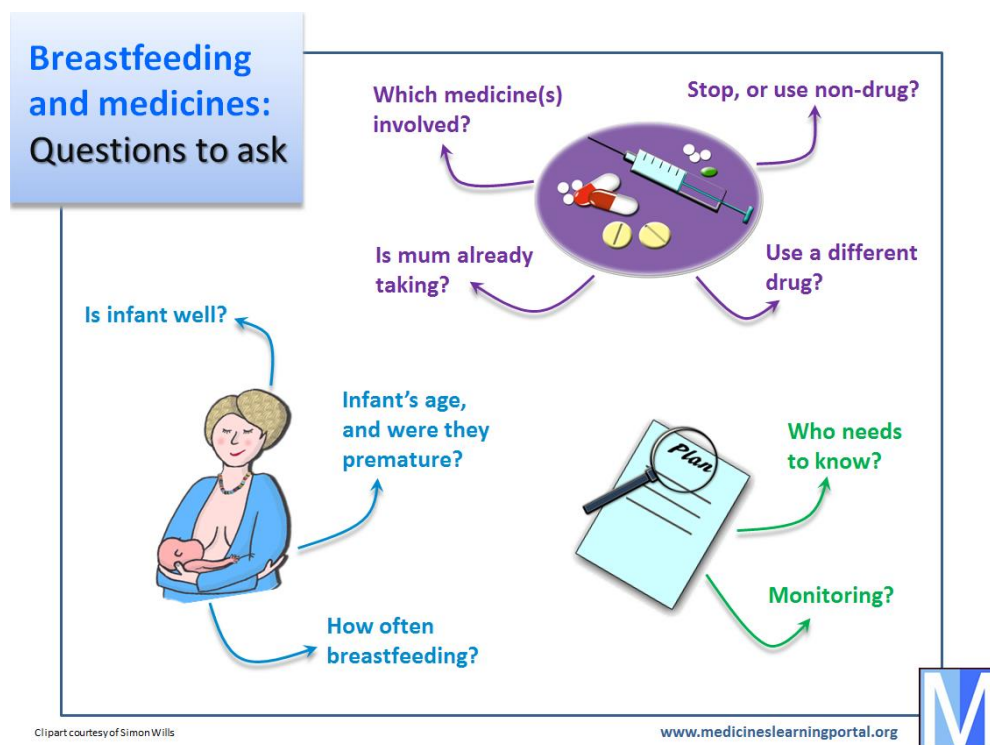
suggesting how the administration of medicines might fit in. For example, it would be pointless suggesting that a mother takes a long-acting medicine at bedtime to reduce infant exposure, if she feeds him throughout the night.

- Similarly, breastfeeding immediately before a dose, in an attempt to reduce exposure to peak plasma levels, might not be a practical option.
- For a *very* short course of treatment (less than 48 hours) breastfeeding could be interrupted temporarily, but longer interruption can make resumption difficult. This option should be avoided if at all possible.
- As in any situation where the risk of side effects must be minimised: avoid multiple drugs with similar potential adverse reactions; use minimum doses and dosage forms that limit systemic exposure (e.g. inhalers); avoid new drugs and medicines with long half-lives if possible.

The [UK Drugs In Lactation Advisory Service \(UKDILAS\)](http://www.ukdilas.org) is an NHS specialist centre for medicine use in breastfeeding mothers. It offers guidance online or you can ring the service for advice.

Suggested questions

You'll usually have to seek more information about a patient and her medicines before answering a clinical question about use of medicines in breastfeeding. There are some [general questions to ask](#) when problem solving, but there are some questions that are more specific to patients who are breastfeeding.



They may not apply to every situation you come across, but here are some questions you should be thinking about in practice:

The Medicine

- Which medicine(s) is the breastfeeding mother taking?
- Could the medicine be stopped, or a non-drug option chosen instead? *In any clinical situation it's appropriate to discontinue a medicine if, for example, it's no longer needed or not working.*
- What different medicines might be suitable if the current medicine is a less satisfactory choice in breastfeeding? *It's useful to know if any alternatives are under consideration or might be the prescriber's next choice. Similarly, a different medicine might have already been tried unsuccessfully and you need to know this.*
- Has mum already been taking the medicine? *Find out if the infant has already been exposed to the medicine in pregnancy or breastfeeding, and whether any potential problems have been identified such as side effects or withdrawal symptoms.*

The Infant

- Is the infant well? *Is there anything to suggest that the infant may be at increased risk of drug harm (e.g. kidney or liver dysfunction)?*
- How old is the infant, and is he/she premature or full-term? *This might affect clearance and susceptibility to side effects.*
- How often is the baby being fed, and are they relying exclusively on breast milk? *This determines the extent of drug exposure via breast milk.*



Going Forward

- Who else needs to know about the advice you give? *For example, you might need to know who can amend the patient's therapy if necessary, counsel the patient, or document your advice in the patient's notes.*
- If any monitoring of mother or baby is required during breastfeeding, who will do this?

Information sources

There are many potential sources for clinical questions about medicines in mothers who are breastfeeding; here are some recommended examples:

UKDILAS offers online advice about medicines in breastfeeding mothers as a series of online Q&As. Type the name of a medicine into the search engine on the [SPS website](#), select it from the dropdown list, then scroll to the bottom of the page to look at the 'Lactation Safety Information' section. There is also a list of all its breastfeeding Q&As [here](#).



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LactMed is the Drugs and Lactation Database. It is a helpful, free, online resource produced by the National Library of Medicine in the US.

Hale's **Medication in Mothers' Milk** is a helpful place to start for information about most drugs in breastfeeding. It is available as a book or you can subscribe [online](#). This source can be very useful for pharmacokinetic data.

Drugs in Pregnancy and Lactation by Briggs et al. may assist you, depending upon the nature of the question you're looking into. It is available [online](#) via the publisher and in a paper format, although the online version is more up-to-date. The book **Drugs During Pregnancy and Lactation** by Schaefer et al. is also useful.

SPCs have variable content and often make statements based on legal concerns rather than evidence.

Choose your search terms carefully in **Embase** and **Medline** – you can use the term 'breast feeding' in both databases, but Embase uses 'breast milk' while Medline prefers 'milk, human'. In England, most NHS sites access these databases via [Athens](#). Your library or or a senior pharmacist will show you how to log in.

Be careful about conducting a general internet search on this subject. If you do, you may like to look at our brief guide to [evaluating websites about medicines](#).

Next steps in learning...

This tutorial has covered the core knowledge you need on this subject, but there are some more in-depth resources which will help extend your knowledge about breastfeeding and the use of medicines in women who breastfeed:

- [Clinical Knowledge Summaries](#) (CKS) has evidence-based advice on managing various medical concerns in breastfeeding such as nipple soreness and caring for women with a low milk production or excess milk supply.
- There is a helpful [BMJ review](#) on how to manage breastfeeding problems in the community (May 2014) that is available via Athens.
- The Best Beginnings charity have produced a film [From Bump to Breastfeeding](#), which is endorsed by five Royal Colleges. It aims to motivate the next generation of mothers to make a supported choice to breastfeed. Films can be viewed online in English and several other languages including Urdu, Bengali, Polish and Somali.
- The [Academy of Breastfeeding Medicine](#) is a worldwide organisation with members from over fifty countries. It has published 25 clinical protocols for managing issues connected with breastfeeding. These include the management of mastitis, and jaundice in the breastfed infant, as well as the use of galactogogues, antidepressants, analgesics, and contraception.

