DOI: 10.1111/tog.12728
The Obstetrician & Gynaecologist
http://onlinetog.org
2021;23:94–102

Review

Breastfeeding and drugs

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Accepted on 7 December 2020. Published online 24 March 2021.

Key content

- Most commonly used medications such as paracetamol, most antibiotics and inhalers are considered safe for women to use during lactation.
- Most drugs taken by a breastfeeding woman will be expressed in small volumes in the breast milk. The amount depends on several factors, including the drug dose, the size of the molecule, the protein binding and lipid solubility of the drug, the age of the infant and volume of milk consumed.
- Data regarding short-term and long-term effects of maternal medication use on breastfed infants are limited.
- There is no direct evidence of impaired lactation with most commonly used medications, but some medications, such as decongestants (pseudoephedrine/phenylephrine), high-dose diuretics and the combined oral contraceptive pill, may inadvertently adversely affect maternal milk supply.
- Women need accurate and balanced advice regarding safety of medication in breastfeeding to avoid early or inappropriate cessation of medications in the lactation period.

Learning objectives

- Understand the pharmacokinetics of common medications used in the lactation period.
- Understand the impact of drugs on the breastfed infant.
- Be familiar with the current literature on drug safety and lactation to enable appropriate counselling.

Keywords: breastfeeding / contraception / drugs / maternal physiology / postnatal care

Please cite this paper as: Mullin S, Burden C, Standing J, Neuberger F. Breastfeeding and drugs. *The Obstetrician & Gynaecologist* 2021;23:94–102. https://doi.org/10.1111/tog.12728

Introduction

Many women choose to breastfeed their infants and most drugs can be taken safely by lactating mothers. However, there is a paucity of quality data on the safety of many prescribed drugs during breastfeeding. Standard reference texts, such as the British National Formulary,[1] are limited in their usefulness to aid professionals when weighing up the risk and benefits of prescribing for mother and baby. Clinicians are put into challenging situations in which they must advise caution in the use of drugs, not because of any direct evidence of harm, but simply because of a lack of high-quality studies. Medication use during breastfeeding has also been shown to shorten the duration of breastfeeding; this is often thought to be associated with restrictive advice given by healthcare professionals and maternal fear of harming their newborn baby.[2,3] This Review summarises the drug safety data of several key groups of commonly prescribed medications and provides clinicians with a practical and structured approach to discussing medication with breastfeeding women.

Common drugs used in the lactation period

Table 1 shows some preferred commonly used medications during lactation.

The woman in pain

Analgesia is a routine requirement for women postnatally. Women are commonly discharged home with analgesia after caesarean section, instrumental delivery and perineal tear repair. However, increasingly, complex analgesia requirements are becoming commonplace antenatally. Pre-existing chronic back pain, fibromyalgia and symphysis pubic dysfunction often precipitate prolonged use of opioid

Table 1. Preferred commonly used medications during lactation

Type of drug	Preferred drugs	Drugs to avoid
Analgesics	Paracetamol Ibuprofen Dihydrocodeine	Codeine phosphate
Antibiotics	Co-amoxiclav Flucloxacillin Metronidazole Ciciprofloxacin (short-term use)	Nitrofurantoin in babies with G6PD deficiency or <8 days old
Antidepressants	Sertraline	
Antihypertensives	Enalapril Nifedipine/others calcium channel blockers Labetalol/beta blockers such as atenolol	ACEIs other than enalapril Diuretics Angiotensin receptor blockers
Drugs for inflammatory disorders	Prednisolone (up to 40 mg daily) Mononclonal antibodies	
AEDs	Most AEDs are not considered to not be harmful; data are limited	Phenobarbital, primidone (caution)
Contraceptives	Progesterone-only pill Contraceptive injections IUD/IUS Combined oral contraceptive pill (from 6 weeks postpartum) Contraceptive patch	

ACEIs = angiotensin-converting-enzyme inhibitors; AEDs = anti-epileptic drugs; IUD = intrauterine device; IUS = intrauterine system

analgesics in the postpartum period. See Box 1 for summary recommendations.

Paracetamol

Pharmacokinetics

Paracetamol is a non-opioid analgesic, with no anti-inflammatory action. Its rate of oral absorption is largely dependent on the speed of gastric emptying.

Drug levels in maternal and infant blood

Levels of paracetamol peak in breast milk approximately 1–2 hours after ingestion.[4] Data from studies suggest that infants are exposed to between 1.1 and 3.6% of maternal weight-adjusted dose.[4–6]

Box 1. Analgesia key messages

- Paracetamol and ibuprofen are considered to be safe and are recommended as preferred analgesics for breastfeeding mothers. They have no known effect on lactation.
- Variation in maternal metabolism of codeine renders infant exposure unpredictable. It is not recommended for use in breastfeeding women, but dihydrocodeine is safe to prescribe short term.

Effects of drug on infant

Paracetamol is routinely prescribed to infants from birth. Evidence regarding the safety of paracetamol and breastfeeding – although reassuring – is limited and relatively old. Studies are small, uncontrolled and largely single-dose exposure.

Ibuprofen

Pharmacokinetics

Ibuprofen is a nonsteroidal anti-inflammatory drug of the 2-arylpropionic acid (2-APA) class. The absorption of ibuprofen is rapid and complete when given orally.[7] It has a short plasma half-life, which gives a low risk of accumulation.[8]

Drug levels in breast milk and infant blood

A study of 12 women taking 400 mg of ibuprofen 6-hourly postpartum showed the drug was undetectable in breast milk.[9] A further study measured ibuprofen levels in breast milk at approximately 0.06% of the typical infant dose of 10 mg/kg every 8 hours.[10]

Effects of drug on infant

The literature reports at least 23 cases of no adverse effects on infants breastfed by mothers taking ibuprofen.[10–12] There is no known effect of ibuprofen on lactation or ability to breastfeed.

Codeine

Pharmacokinetics

Codeine is metabolised to morphine, norcodeine and codeine-6-glucuronide (80%) via cytochrome P450 2D6 (CYP2D6), and to morphine-6-glucuronide by UDP-glucuronosyltransferase-2B7 (UGT2B7). Codeine has very weak analgesic activity; its analgesic properties are provided by its metabolites. There is considerable genetic variability among patients in both enzymes required to metabolise codeine. This can result in varied amounts of the drug in breast milk.[13]

Drug levels in breast milk and infant blood

The breast milk of seven mothers who were 1–3 days postpartum and taking 60 mg codeine every 4–6 hours for

an average of four doses was sampled up to 6 hours after a dose for codeine and morphine concentrations.[14] Using the peak codeine and morphine milk levels from this study, an exclusively breastfed infant would receive an estimated 1% of the maternal weight-adjusted dosage. Of relevance is that codeine's primary active metabolite (codeine-6-glucuronide) was not measured in this study, and results probably underestimate infant exposure.[14,15] The plasma clearance of morphine is prolonged in newborn infants compared to older infants and children.[13,16] The morphine:codeine ratio is noted to be higher in infant serum.

Effects of drug on infant

A fatal case of morphine toxicity in a breastfed infant following maternal codeine use has led the Medicines and Healthcare Products Regulatory Agency (MHRA) and European Medicines Agency (EMA) to contraindicate its use in breastfeeding women.[17,18] A study investigating the case found the mother to be an ultrarapid metaboliser of codeine.[19]

Maternal codeine use has also been associated with asymptomatic bradycardia, apnoea and cyanosis in infants.[20,21] A study compared the frequency of drowsiness in breastfed infants whose mothers took paracetamol and codeine with that of infants whose mothers took paracetamol alone. Infants exposed to codeine had a 16.7% frequency of drowsiness compared with 0.5% of those exposed to paracetamol alone.

Effects on lactation and breast milk

Codeine can increase serum prolactin. However, the prolactin level in a mother with established lactation may not affect her ability to breastfeed.

Dihydrocodeine

Unlike codeine, the analgesic properties of dihydrocodeine (DHC) are largely attributed to the parent compound and usually unaffected by an individual's metabolism.[22,23] Although DHC is also metabolised to dihydromorphine via CYP2D6, this occurs in much smaller quantities. Evidence shows that even in rapid metabolisers, less than 10% of urinary metabolites were derivatives of dihydromorphine.[24] UK Medicines Information (UKMi) supports the use of dihydrocodeine in breastfeeding women at the lowest dose for the shortest duration.[25]

Aspirin

Pharmacokinetics

Aspirin is rapidly metabolised to salicyclic acid, which is readily excreted into breast milk at disproportionately high levels.[26]

Effects of drug on infant

Reye's syndrome has been associated with aspirin given to infants for viral infections, but its association with breast milk is unknown. There are reports that a 16-day-old infant whose mother was taking 3.9 g/day of aspirin for arthritis developed metabolic acidosis with a salicylate serum level of 240 mg/L and salicylate metabolites in the urine.[27] There are further reports of thrombocytopenia, fever and petechiae in a 5-month-old breastfed infant after her mother took aspirin for a fever over 5 days.[28] There is no known effect of aspirin on lactation or a woman's ability to breastfeed.[26]

Aspirin is not the pain relief of choice during breastfeeding; however, the occasional use of low dose aspirin (75 mg to 300 mg daily) would not be expected to increase risks to a breastfeeding infant because only small amounts are known to be detectable in breast milk.[26]

Tramadol

Pharmacokinetics

Tramadol is centrally acting and structurally related to codeine and morphine. It contributes to analgesic activity via several different mechanisms. Tramadol and the metabolite O-desmethyl-tramadol (M1) are agonists of the mu opioid receptor. Tramadol also inhibits the reuptake of serotonin and noradrenaline, which results in inhibitory effects on pain transmission in the spinal cord. In adults, tramadol has 70–100% oral bioavailability. Women who are extensive metabolisers may have increased levels of M1 in breast milk.

Drug levels in breast milk and infant blood

The excretion of tramadol into breast milk is low and even lower amounts of its active metabolite are detected.[29]

Effects of drug on infant

The ability of preterm and newborn babies to metabolise M1 is limited.[30] A study of 75 breastfed infants whose mothers were taking 100 mg tramadol 6-hourly for pain relief post caesarean section were compared with 75 controls. Paediatric assessment using the Neurologic and Adaptive Capacity score revealed no difference between the groups.[31]

Effects on lactation and breast milk

As with codeine, tramadol can increase serum prolactin. In a mother who has established lactation, an increase in prolactin may not affect her ability to breastfeed.[32]

Morphine

Pharmacokinetics

Morphine is metabolised to inactive morphine-3-glucoronide (60%) and active morphine-6-glucoronide (10%). Peak

plasma levels are achieved within 15–20 minutes of intramuscular and subcutaneous administration, and within 30–90 minutes of oral administration.[33] Peak levels are much lower after oral use owing to extensive first pass metabolism.

Drug levels in breast milk and infant blood

The plasma clearance of morphine is prolonged in very young infants compared with older infants and children. Clearance is thought to approach adult levels at about 2 months of age. One study showed that epidural morphine given as labour analgesia was undetectable in the breast milk of 80% of participants' colostrum 24–100 hours post-epidural.[34] Regarding long-term morphine use, a study followed a group of women and infants who were treated for opiate dependency with slow-release oral morphine. Breastfed infants had lower average measures of neonatal abstinence syndrome, less morphine requirement, shorter durations of treatment abstinence and shorter length of admission compared with non-breastfed infants.[35]

Effects of drug on infant

Therapeutic doses of morphine, for example for postoperative analgesia, are unlikely to be harmful to the infant in the short term.[36] It is recommended to observe infants for sedation and poor feeding.

Effects on lactation and breast milk

A national survey compared women who received spinal or epidural only, spinal or epidural plus another medication, and other pain medication only and no analgesia. Women who were prescribed any medications were found to have approximately twice the risk of delayed lactogenesis (over 72 hours) compared with women who had no analgesia.[37]

The woman with an infection

Pregnancy is a subtle state of immunosuppression, which is characterised by a reduction in proinflammatory host responses to infection. It is thought that this state persists until approximately 3–4 months postpartum.[38] Commonly treated infections in breastfeeding women include caesarean and perineal wound infection, suspected endometritis, mastitis and urinary tract infections. See Box 2 for summary recommendations.

Box 2. Antibiotics key messages

- Tetracyclines are safe in short courses while breastfeeding, although longer duration of use (for example, for acne treatment) should be avoided whenever possible.
- Trimethoprim or nitrofurantoin are preferable to ciprofloxacin for routine urinary tract infection. Nitrofurantoin should be avoided in the first 8 days of life.
- On occasion, altered gastrointestinal flora in infants, resulting in diarrhoea and thrush, has been reported with the use of penicillin antibiotics. They are still considered safe for breastfeeding mothers.
- No special precautions are required when treating breastfeeding mothers for methicillin-resistant *Staphylococcus aureus* infection with vancomycin or teicoplanin.

Co-amoxiclav

Co-amoxiclav (amoxicillin and clavulanic acid) is considered safe as a broad-spectrum antibiotic therapy for use in the context of breastfeeding.

Pharmacokinetics

Amoxicillin is a β-lactam antibiotic, which inhibits peptidoglycan synthesis (a key component of the bacterial cell wall). Clavulinic acid is a β-lactam with an ability to inactivate some bacterial β-lactamase, thus preventing the inactivation of amoxicillin.

Drug levels in breast milk and infant blood

An exclusively breastfed infant could be expected to receive approximately 0.1 mg/kg amoxicillin with a co-amoxiclav dose of 500 mg three times daily. This is equivalent to between 0.25% and 0.5% of a standard infant dose.[26]

Effect of drug on infant

Limited evidence suggests that side effects in infants of mothers taking co-amoxiclav are uncommon. Occasional reports of restlessness, diarrhoea and rash exist in the literature.[26]

Effect on lactation and breastfeeding

There is no evidence of any significant effect of co-amoxiclav on lactation or breastfeeding.

Flucloxacillin

Pharmacokinetics

Flucloxacillin is a β-lactam antibiotic with a particular effect on Gram-positive organisms.

Drug levels in breast milk and infant blood

Limited studies suggest that drug levels in breast milk are low.

Effect of drug on infant

The literature includes occasional reports of diarrhoea and thrush in infants with penicillin use, but this has not been thoroughly investigated.[26]

Effect on lactation and breastfeeding

Flucloxacillin remains a safe choice of antibiotic for breastfeeding mothers.

Metronidazole

Pharmacokinetics
Metronidazole is bactericidal by inhibiting nucleic acid synthesis in bacterial cells. Orally, metronidazole is absorbed well with more than 90% bioavailability. Absorption is unaffected by infection.[39]

Drug levels in breast milk and infant blood
There is no body of evidence regarding topical or vaginal metronidazole and breastfeeding. After topical administration, plasma levels are approximately 1% of that after a 250 mg oral dose.[26] Only water or gel-based preparations are recommended to be applied to the breast because ointment-based preparations may result in increased exposure from feeding. Metronidazole is well distributed in breast milk; infants are exposed to less than the standard paediatric doses, but hydroxymetronidazole (metronidazole's active metabolite) also adds to total infant exposure.[26] The American Academy of Pediatrics recommends withholding breastfeeding for 12–24 hours after single-dose administration.[40] This is because of concerns regarding metronidazole-associated carcinogenesis and mutagenesis in vitro. However, this is not the case in the UK, and the relevance of these findings has been questioned against the body of evidence suggesting that metronidazole is well tolerated in routine clinical practice.

Effect of drug on infant
There are case reports of candidal infections and diarrhoea associated with metronidazole use. A trial suggested that oral and rectal colonisation with *Candida* might be more prevalent in infants exposed to metronidazole.[26]

Effect on lactation and breastfeeding
Anecdotally, metronidazole has been said to alter the taste of breast milk and prevent feeding. However, there are no published data to suggest that metronidazole negatively affects lactation or the ability to breastfeed.

Ciprofloxacin

Pharmacokinetics
Ciprofloxacin is a fluroquinolone antibiotic. It works largely via inhibition of DNA gyrase and topoisomerase IV.

Drug levels in breast milk and infant blood
Topical use of ciprofloxacin, for example as eye or ear drops, poses negligible risk to breastfeeding infants.[26] Ten lactating women were given 750 mg ciprofloxacin orally for three doses. Milk levels were measured after the third dose and it was estimated that an infant would receive a maximum of approximately 0.57 mg daily.[41]

Effect of drug on infant
Ciprofloxacin has traditionally been withheld during breastfeeding and not administered to infants because of concerns regarding effects on developing joints. However, a systematic review of 1000 infants showed no difference between those exposed to ciprofloxacin and controls.[42] A case of pseudomembranous colitis in a 2-year-old infant with a previous history of necrotising enterocolitis was attributed to maternal self-treatment with ciprofloxacin.[43]

Tetracyclines

Pharmacokinetics
Tetracyclines are protein synthesis inhibitors and are bacteriostatic in nature. They inhibit translation by binding to the 30S ribosomal subunit.

Drug levels in breast milk and infant blood
A group of 10 women were given 100 mg doxycycline orally. Average peak and trough levels estimated that a solely breastfed infant would be exposed to approximately 6% of the maternal weight-adjusted dose.

Effects of drug on infant
It has been previously stated that doxycycline is contraindicated during breastfeeding owing to possible staining of infants' teeth or bone deposition of tetracyclines. However, available literature suggests that short-term use is unlikely to be harmful because low levels are present in breast milk and absorption by the infant is inhibited by calcium in breast milk.[26]

Nitrofurantoin
Nitrofurantoin is contraindicated for use directly in infants under 1 month old or in those with glucose-6-phosphate dehydrogenase (G6PD) deficiency because of the potential for haemolysis. Levels of nitrofurantoin are low in breast milk. It is thought that the time of greatest risk for haemolysis in term newborns without G6PD deficiency might be as soon as 8 days after delivery.[26] For this reason, although nitrofurantoin doses in breast milk are low, alternative antibiotics are preferable for use in mothers of infants under 8 days of age, or in neonates of any age with G6PD deficiency. It is thought to be safe to use while breastfeeding outside these parameters.

Vancomycin and teicoplanin
These antibiotics are the mainstay of treatment for methicillin-resistant *Staphylococcus aureus* (MRSA).

Although evidence is limited, vancomycin is poorly absorbed orally and is therefore unlikely to reach the bloodstream of breastfed infants.[26] As a result, no precautions are required. Teicoplanin is not orally absorbed and is therefore unlikely to affect breastfed infants.[26]

The woman with anxiety and depression

Antidepressants

Choice of antidepressant during breastfeeding will largely be dictated by medication taken throughout pregnancy. As per antenatally, abrupt cessation or change of medication is not recommended. Depression is known to have a significant effect on the likelihood of a woman breastfeeding. An observational study of 2859 women showed that women who took antidepressant medication throughout pregnancy were 37% less likely to breastfeed.[44] Women who commenced antidepressants in the third trimester were 75% less likely to breastfeed.[44] Healthcare professionals must recognise this relationship and reassure and support women whenever possible. See Box 3 for summary recommendations.

Selective serotonin reuptake inhibitors

Sertraline. Sertraline is the selective serotonin reuptake inhibitor (SSRI) of choice. There are low levels of sertraline in breast milk, therefore quantities ingested by the infant are usually small. Sertraline is not usually detectable in infant serum, although studies have found its weakly active metabolite (desmethylsertraline) in small quantities.

Fluoxetine. The average level of fluoxetine is higher in breast milk than with most other SSRIs. Although there has been reports of colic and drowsiness in a small number of infants, no long term adverse developmental outcomes were reported.[45,46] It is not recommended to stop fluoxetine for breastfeeding, if it is required by the mother. Breastfed infants should be monitored for side effects and adequate weight gain.

Effects on lactation and breastfeeding. Mothers taking an SSRI during pregnancy and breastfeeding may struggle with breastfeeding. It is difficult to clarify whether this is associated with their disease state, medication use or a combination of the two.[47]

Tricyclic antidepressants

Levels of amitriptyline and its metabolites are low in breast milk; however, other medications with fewer active metabolites may be preferred. The literature reports one outcome of a neonate suffering drowsiness and sedation, which was attributed to amitriptyline use.[48] As with use of tricyclic antidepressants (TCAs) outside of pregnancy, the relatively low levels required for overdose can make other medications preferable.

Other antidepressants

Venlafaxine. The dose transferred to infants in breast milk is relatively high, although no adverse outcomes have been reported.[26]

Box 3. Antidepressants key messages

- Choice of antidepressant postpartum will largely depend on the choice of drug used during pregnancy.
- Depression is an independent risk factor for early cessation of breastfeeding, so these women require enhanced support.
- Sertraline is the medication of choice for breastfeeding mothers.
- As with tricyclic antidepressants outside of pregnancy, the low levels required for overdose can render other medications preferable.

The woman with high blood pressure

On discharge from hospital, essential and pregnancy-related hypertension are largely managed in a primary care setting. See Box 4 for summary recommendations.

Venous thromboembolism and breastfeeding

Breastfeeding mothers can continue to feed as normal while taking heparin, warfarin and low-molecular-weight heparin (LMWH).

Warfarin

Very low levels of warfarin are excreted into breast milk. In one study, warfarin was not detected in the breast milk of 13

Box 4. Antihypertensives key messages

- First-line treatment for hypertension in women who wish to breastfeed is enalapril, and nifedipine for women of Black African or Caribbean family origin.[49]
- No adverse effects have been reported in infants exposed to nifedipine in breast milk.[26]
- Enalapril is poorly excreted in breast milk. As a result, it is not expected to cause side effects in exposed infants.[26]
- It is recommended that breastfeeding women avoid diuretics or angiotensin receptor blockers.[49]
- Uncontrolled blood pressure (i.e., >150/100) can be managed with a combination of nifedipine (or amlodipine) and enalapril.
- Adding or swapping atenolol or labetalol to this combination is also appropriate if the above proves ineffective or is not tolerated.
- When treating hypertension in breastfeeding women, once-daily regimens should be used when possible.

mothers who were anticoagulated with 2–12 mg daily.[50] In the infants, there was no effect on vitamin K-dependent clotting factors or any reports of bleeding.[50] No special precautions are required for breastfeeding mothers.

Low-molecular-weight heparin

Owing to its large molecular weight of 2000–8000 Daltons, enoxaparin is not expected to be excreted into breast milk or absorbed by an infant.[51] There is limited evidence to suggest there are no adverse effects on breastfed infants.[52,53]

Direct oral anticoagulants

Direct oral anticoagulants (DOACs) are not currently recommended as first-line treatment for venous thromboembolism in pregnant or breastfeeding women because there is a paucity of safety data. Limited evidence suggests that a maternal dose of rivaroxaban 30 mg daily is excreted in low levels in milk.[26]

The woman with complex medical problems

Women with complex medical problems often receive thoughtful and individualised care antenatally, with specialised input from maternal medicine teams. Without careful planning for the postnatal period, medication adherence can fluctuate in women in this group. Widespread fear of negative effects of medication on the infant via breastfeeding must be discussed in detail with the woman antenatally.

Asthma

Beta-2 agonists and steroidal inhalers are safe to use and continue using while breastfeeding. Montelukast is excreted in low levels in breast milk and is used therapeutically for children as young as 6 months of age.[26] Breastfeeding can continue as normal with short courses of high-dose steroids, for example prednisolone 40 mg.[54]

Steroids

Prednisolone is thought to be safe to use while breastfeeding in doses up to 40 mg per day to treat asthma, rheumatoid arthritis and inflammatory bowel disease. Prednisolone is extensively bound to plasma proteins, so is poorly excreted into breast milk. The largest data set comes from the National Transplantation Pregnancy Registry, which reports 124 women with transplants have taken prednisolone while breastfeeding 169 infants for periods as long as 48 months, with no apparent infant harm.[55]

Monoclonal antibodies

There is a paucity of safety data for many monoclonal antibody medications; however, their pharmacokinetic profile is reassuring. Monoclonal antibodies exist as large protein-bound molecules, thus their excretion in breast milk is likely to be minimal. Absorption is also thought to be minimal because their structure means they are likely to be destroyed in the infant's gastrointestinal tract.[56] Furthermore, commonly used drugs including adalimumab and infliximab have shown no adverse effects in exposed infants.[26] Until more data become available, caution should be exercised when breastfeeding a newborn or preterm infant.

Antiepileptic drugs

In many reports of anticonvulsant use during breastfeeding, women studied were taking a combination of drug therapies. Some anti-epileptic drugs (e.g. phenytoin, carbamazepine) enhance the metabolism of other drugs, whereas others (e.g. valproic acid) slow the metabolism of other drugs.[26] As a result, the relationship between the maternal dosage and the concentration in breast milk is difficult to clarify.[26]

Levetiracetam

Levetiracetam is excreted in low levels in breast milk and is considered safe to use during breastfeeding.[26] Some evidence suggests that levetiracetam might reduce the breast milk supply in some women.[57]

Lamotrigine

Women taking lamotrigine are encouraged to breastfeed. Infants have serum concentrations that reflect maternal serum and milk lamotrigine concentrations.[26] Therefore, prompt serum monitoring and dose adjustments are necessary after delivery because maternal serum levels can increase postpartum.[26]

Sodium valproate

In contrast to pregnancy, sodium valproate has a reassuring safety profile and can be recommenced during breastfeeding.[58]

Contraception and breastfeeding

Emergency contraception

The levonorgestrel-containing emergency contraceptive pill carries no special precautions and women are free to continue breastfeeding with its use. This is similar for the intrauterine device (IUD), which can be sited from 28 days postpartum. If ulipristal acetate (ellaOne®; Cenexi, Osny, France) is preferred, the Family Planning Agency advises women to avoid breastfeeding for 1 week.[58] During this time it is advised to express and discard so as to not affect supply.

Contraception key messages

Lactational amenorrhoea can be up to 98% effective as a method of contraception if the following criteria are met:[59]

- A woman is fully breastfeeding both day and night

- An infant is younger than 6 months old
- A woman is amenorrhoeic[60]

In all other circumstances, contraception is required from 21 days postpartum. Breastfeeding women are safe to use the following methods from any time after birth:

- Progesterone-only pill
- Contraceptive injection – when using within 6 weeks of delivery, women are more likely to experience heavy and irregular bleeding.

From 6 weeks postpartum, breastfeeding women are eligible to use:

- The combined oral contraceptive pill
- The contraceptive patch

Prior to this, the estrogen component may affect milk production.

The copper IUD or levonorgestrel-releasing intrauterine system (IUS; Mirena®; Bayer, Whippany, NJ) can also be fitted within 48 hours of giving birth.

How to tackle medication adherence in breastfeeding women

- Clinicians must ensure they are confident in counselling women about the risks of taking medication while breastfeeding. Hesitance and a limited knowledgebase can drastically affect a woman's motivation to take medication and breastfeed.
- Women with mental health problems need added support and reassurance, both with the establishment of breastfeeding and the importance of their medication when required.
- Women with complex medical problems need a careful discussion antenatally with regards to the safety of their medications during breastfeeding.

Box 5 provides some useful resources.

Box 5. Useful resources

Drugs and Lactation Database (LactMed): https://www.ncbi.nlm.nih.gov/books/NBK501922/
The Breastfeeding Network: https://www.breastfeedingnetwork.org.uk
UK Teratology Information Service: http://www.uktis.org
The British National Formulary: https://bnf.nice.org.uk
National Institute for Health and Care Excellence Clinical Knowledge Summary – Hypertension in Pregnancy: https://cks.nice.org.uk/hypertension-in-pregnancy
Royal College of Physicians – Acute Care Toolkit 15: https://www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-15-managing-acute-medical-problems-pregnancy
NHS Start4Life – Breastfeeding: https://www.nhs.uk/start4life/baby/breastfeeding/

Conclusion

Most medications are safe to use while breastfeeding. However, there remains a paucity of safety data for some new and emerging drugs. A careful risk–benefit discussion with women is essential to ensure safety and optimal adherence. Uncertain or inconsistent advice from medical professionals is likely to affect both medication adherence and duration of breastfeeding. A holistic and individualised approach is required to provide the best care for mother and baby.

Disclosure of interests

There are no conflicts of interest.

Contribution to authorship

FN instigated, wrote and edited the article. SM researched and wrote the article. CB and JS edited the article. All authors approved the final version.

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