Integrated Family Delivered Neonatal Care

Expert in your baby's care

Chapter 11.
Medication and drug chart

Parent educational material for app

Imperial Neonatal Service, Imperial College Healthcare NHS Trust

Imperial College Healthcare NHS
NHS Trust

Medications and drug charts

Babies in the neonatal intensive care unit are usually treated with several medications, which are prescribed by the medical team.

The nurses check the drug charts regularly in shifts and prepare the prescribed medications for each baby. To reduce chance for any errors, two nurses check the medications, to ensure they give the correct dose and timing.

Aims for this chapter

- You may want to understand which medication is given to your Baby and why. This chapter will help you to learn more about the most frequently used medications.
- Your Baby may need some medications once discharged home. During the weeks before discharge you can start learning how to administer these oral medications with our nurses.

Imperial College Healthcare NHS Trust

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Most frequent medications used in our neonatal unit

Drug	Why needed?	Doses/time See drug chart prescription	Preparation	Route
Benzyl penicillin	Antibiotics used as first line in treatment of early infection (within the first 72 hours of age) in combination with Gentamycin.	Benzyl penicillin stops bacteria from forming their protective wall. This helps to prevent bacterial population growing	Slow intravenous bolus over a minimum of 3–5 minutes.	Intravenous
Bepanthen®	Nappy rash. Routinely used after discharge if indicated.	Apply after nappy changes for the treatment of nappy rash. Bepanthen is a barrier cream. Barrier creams provide the skin with an extra protective layer. The cream shields the skin while it heals.	Bepanthen® ointment	Topical
Caffeine citrate	Management of neonatal apnoea. Caffeine can stimulate breathing in premature babies, therefore prevents shallow breathing. Caffeine is routinely used for babies below 30–32 weeks' gestation. Reassess requirement for caffeine when baby reaches a corrected gestational age of 30 weeks as most babies can stop treatment at this age.	Maintenance dose: 12mg caffeine citrate/kg/dose every 24 hours (once a day) The dose of caffeine does not need to be readjusted with baby's current weight unless they have persistent apnoea.	Caffeine citrate 20mg in 1ml. It is not necessary to dilute caffeine injection or caffeine oral solution with oral feed.	Oral

Carmellose sodium	Eye drops to facilitate lubrication of eyes for retinopathy of prematurity (ROP) examination.	One drop as necessary. Carmellose and other products in the same family are good at holding onto water so they help to keep eyes nice and moist.	Preservative-free eye drops 0.5% and 1% as a single use.	Eye drops
Cefotaxime	Antibiotics used as second line for treatment of suspected bacterial infection.	It stops bacteria from forming their protective wall. This helps to prevent bacterial population growing	Intravenous bolus over 3–5 minutes	Intravenous
Chloralhydrate	Sedation used for procedures, or additionally to other medications like morphine.	30–50 mg/kg/dose repeated as necessary.	Oral liquid 100mg in 1mL.	Oral or rectal
Chlorthiazide	Diuretics used for babies with evolving chronic lung disease to facilitate weaning of respiratory support. Babies discharged home on oxygen may need to continue on diuretics at home as well. Usually used in combination with Spironolactone.	10–20mg/kg/dose every 12 hours. Start at lowest dose and stop treatment if there is no clinical response after 48–72 hours. Usually used for short course 5-7 days.	Oral liquid 250mg in 5mL (Diuril®); unlicensed preparation.	Oral
Cyclopentolate hydrochloride	Eye drops to facilitate ROP checks.	1 drop into each eye every 15 minutes for 1 hour before eye examination.	Preservative-free eye drops 0.5% as a single use	Eye drops

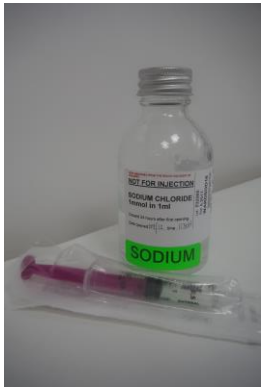
Dalivit 	Multivitamins given to babies on the neonatal unit when fed on breast milk and fortifier not given. Dalivit® contains a combination of vitamin A, several B vitamins, vitamin C and vitamin D too.	Dalivit® drops 0.6mL (14 drops) once daily.	At least 6mL of feed must be used to dilute each 0.6mL Dalivit®. Dalivit is only given when the nasogastric tube (NGT) is in place. It is not usual for a baby to go home on Dalivit. .	Via NGT
Folic acid	Vitamin supplements given to babies in the neonatal unit when fed on breast milk and fortifier not given.	0.5 mg (1 ml) once weekly.	12 mL of feed must be used to dilute each dose of folic acid. Do not mix folic acid in the same feed with any other oral supplement.	Via NGT
Furosemide	Stronger diuretics usually used only for short-term course.	Furosemide works on the kidney's tubules and has a more pronounced affect than other diuretics.	Oral liquid 10mg in 1mL	Oral or sometimes intravenous
Gentamycin	Antibiotics used as first line in treatment of early infection (within the first 72 hours of age) in combination with benzyl penicillin. Sometimes used for severe late infection as targeted treatment.	Gentamycin stops bacteria from making the protein they need to survive. Dosing is dependent on a number of factors including weight, gestational age at birth and days of life.	Intravenous bolus over 3–5 minutes or infusion over 30 minutes.	Intravenous
Healthy Start vitamins	Multivitamins for breastfed babies at home after discharge.	7 drops once a day for premature babies on unfortified breast milk.	It is not necessary to dilute with oral feed.	Oral

	Also used for extra vitamin D supplementation in the neonatal unit.	Note: The routine dose for full term babies on breast milk is 5 drops once a day, but this isn't sufficient for preterm babies.		
Ibuprofen	This painkiller is used in the neonatal unit to close persistent ductus arteriosus (PDA) for preterm babies.	Usually given as a course over 3 days. Three doses given at 24 hourly intervals. If the ductus arteriosus reopens a second course of 3 doses may be given.	Short infusion over 15 minutes.	Intravenous
Inotrope infusions (dopamin, dobutamin, adrenalin, noradrenalin)	Strong medications given to critically ill babies to maintain blood pressure and support the contractility of the heart.	Given as continuous infusion usually via central line access.	Given as continuous infusion, dose titrated on response.	Intravenous

Iron (Sytron) 	Iron supplementation, supporting red cell production in bone marrow.	1ml once a day. Oral liquid (Sytron®).	Via NGT: at least 12ml of feed must be used to dilute each 1mL of Sytron®. Oral: 1ml of milk must be used to dilute each 1mL of Sytron®. Do not mix iron in same feed as any other oral supplement. In the neonatal unit we give iron with milk feeds at 17.00 to separate it from administration of phosphate or other medications. As baby comes up to be ready for discharge these timings may be altered. This will be agreed with parents.	Oral or via NGT
Meropenem	Strong antibiotics used as third line in severe sepsis or meningitis for critically ill babies	Meropenem is related to benzyl penicillin but it is effective against a wider range of bacteria.	Slow intravenous bolus	Intravenous
Morphine	Strong analgesic medication given to critically ill babies (especially if ventilated) for pain relief.	Given as continuous infusion.	Given as continuous infusion, dose titrated on response.	Intravenous
Nystatin	Antifungal prophylaxis for all babies on antibiotics, parenteral nutrition, babies with a central line, and for those requiring ventilation via an endotracheal tube.	Babies less than 1kg: 50,000 units (0.5mL) every 6 hours. Babies 1kg or greater: 100,000 units (1mL) every 12 hours.	Oral liquid 100,000units in 1mL.	Oral
Oral potassium	Management of hypokalaemia (low potassium level in blood).	Given orally 0.5–1mmol/kg/dose potassium every 12 hours with feed.	Oral liquid (Kay-Cee-L®) 7.5% containing 1mmol potassium and	Oral

			1mmol chloride in 1mL.	
Omeprazole	To treat reflux esophagitis. Some babies are discharged home on this medication if reflux symptoms persist. Omeprazole helps to reduce the amount of acid produced by the stomach, and helps in management of reflux.	0.7 mg/kg/dose once daily. Maximum daily 2.8mg/kg/dose. Doses rounded as per formulary.	1. If given via NGT: Capsules 10mg (Losec®). 2. If not given via NGT: Dispersible tablets 10mg (Losec Mups®).	Oral
Paracetamol	For pain relief related to procedure, vaccination, injury. It can also be given as a trial to close PDA when other treatment is contraindicated.	10–20 mg/kg/dose every 8–12 hours as necessary. Maximum cumulative dose in 24 hours depends on weight, gestation and postnatal age.	Oral liquid 120mg in 5mL.	Oral
Phenylephrine chloride	Eye drops to facilitate ROP checks.	One drop into each eye one hour before examination. Repeat after 20 minutes. Check after a further 20 minutes and repeat if not dilated.	Eye drops (minims) 2.5%	Eye drops

Phosphate (sodium acid phosphate) 	Phosphate supplement to support bone development in premature babies and prevent premature bone disease, osteopaenia.	0.5–1.0 mmol/dose every 12 hours, twice daily. Dose may need to be increased depending on laboratory results.	Sodium acid phosphate oral liquid containing 1mmol phosphate in 1mL. At least 8mL of feed must be used to dilute each 0.5mmol phosphate. If baby goes home on phosphate this can be diluted in 1ml of milk and given orally.	Oral or via NGT
Piperacillin with Tazobactam (tazocin)	Antibiotics used as second line for treatment of suspected bacterial infection.	The tazobactam stops the piperacillin from being attacked by the bacteria. This allows the piperacillin to stop bacteria forming their protective wall and prevents bacterial population growing.	Intravenous infusion over 30 minutes or as an intravenous bolus over 3–5 minutes without further dilution.	Intravenous
Ranitidine	To treat reflux esophagitis. Some babies are discharged home on this medication if reflux symptoms persist. Ranitidine helps to reduce the amount of acid produced by the stomach, and helps in management of reflux.	2mg/kg/dose every 8 hours. Maximum dose 3mg/kg/dose every 8 hours.	Oral liquid 15mg in 1mL.	Oral

Sodium chloride 	Sodium supplement. Optimal sodium supplementation is important for growth and brain development.	Administer as necessary. Normal maintenance is around 3–4mmol sodium/ kg over 24 hours. Dose may need to be increased depending on laboratory results. See drug chart.	Oral liquid containing 1mmol sodium in 1mL. At least 3.5mL of feed must be used to dilute each 0.5mmol of sodium.	Oral
Spironolactone	Diuretics used for babies with evolving chronic lung disease to facilitate weaning of respiratory support. Babies discharged home on oxygen may need to continue on diuretics at home as well. Usually used in combination with chlorthiazide.	0.5–1.0 mg/kg/dose every 12 hours. Start at lowest dose and stop treatment if there is no clinical response after 48–72 hours. Usually used for short course 5-7 days.	Oral liquid 1mg in 1mL.	Oral
Sudocrem	Nappy rash. Routinely used after discharge if indicated.	Apply after nappy changes for the treatment of nappy rash. Sudocrem® is a barrier cream. Barrier creams provide the skin with an extra protective layer. The cream shields the skin while it heals.	Sudocrem® cream	Topical

Vancomycin	Strong antibiotics used as second line for treatment of suspected bacterial infection.	Dosing is dependent on a number of factors including weight, gestational age at birth and weight, GA and days of life. Levels are taken regularly to make sure we have just the right amount of medication is given	Intravenous infusion over a 60 minutes.	Intravenous
Vitamin K1 **(phytomenadione)**	Prevention of vitamin K deficiency bleeding.	In our unit 0.4mg/kg of vitamin K is given orally once weekly until 42 days of age if baby meets criteria.	Injection of 2mg in 0.2mL (Konakion MM® paediatric).	Oral At birth given intramuscularly or intravenously. Repeat doses are given orally to older babies.
Breast milk fortifier (BMF)  	BMF contains protein, vitamins and minerals, which help compliment expressed breast milk (EBM). Usually started at 2–3 weeks of age. Very small babies discharged home on exclusive breastfeeding may continue on BMF with close monitoring by our dietitian.	According to drug chart and dietitian advice. Usually built up as half strength and full strength.	1. If EBM is given by tube in hospital, BMF will be prepared by our nurses based on the preparation guidelines. The photos below show how to prepare BMF at home. 2. Once the NGT has been removed, and baby is breastfeeding, prepare concentrated BMF solution as per photos below and give via syringe or bottle-teat prior to breastfeeding, at a frequency recommended by the dietitian.	Oral Please note that while on the neonatal unit, gloves must be worn for making up BMF. However, on discharge home you don't need to wear gloves, you only need to wash your hands thoroughly.

How to give oral medications to your Baby after discharge

When your Baby no longer has a tube, any medicines they will need will have to be given to them orally.

Breastfed babies will need to continue to have seven drops of Healthy Start vitamins and 1ml of Sytron daily until they are around six months old.

These medications can be mixed with a few millilitres of milk and given slowly and gently by syringe, into the corner of your Baby's mouth. Make sure that your Baby is wide awake if you choose this method. If given too quickly to a sleepy baby this may make them splutter.

Another method is to put the medication mixed with milk into a teat and allow your Baby to suck from it.

If you have chosen to formula-feed your Baby, any medications can be put into a small volume of the feed and given at the start of the feed when your Baby is wide awake.

Giving BMF at home

Your Baby may need to continue to have breast milk fortifier once their NGT has been removed. This can be achieved in a variety of ways that best support the way you have chosen to feed your Baby.

Breast milk fortifier should be made and then given as a concentrate as detailed below.

If you are breastfeeding, you can give the small volume of concentrate in 3ml of milk by syringe, gently into the corner of your Baby's mouth as you would a medication, or you could give the concentrated BMF by bottle or in a teat.

It's up to you whereabouts in the feed you choose to give it, but it's probably best given at the beginning of the feed when your Baby is alert and more able to manage. It can be a bit of tricky skill for you both to master initially and if given too quickly it may make your Baby cough and splutter. You should then breastfeed your Baby as you normally would. The BMF will be diluted in your Baby's tummy.

If you choose to give it by teat without a bottle, you can syringe the concentrate straight into the teat whilst it is in your Baby's mouth. Your Baby should be able to manage to remove the concentrate from the teat if they are awake and alert. You should then breastfeed your Baby.

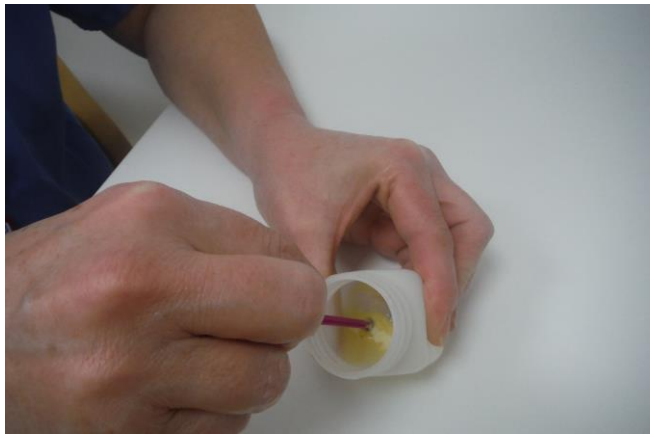
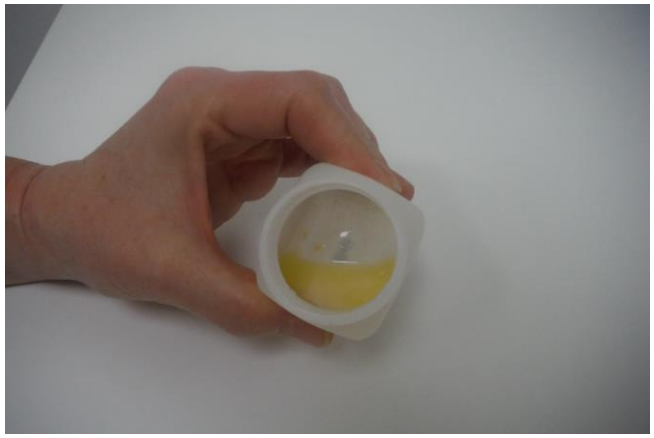
If you have made the choice to express and bottle-feed your Baby, you should add the concentrated BMF to a minimum of 25ml of your freshly expressed breast milk and feed to your Baby as soon as possible to avoid storage of fortified milk.

Concentrated BMF should not be stored in the fridge. If you don't use it just throw it away.

How to prepare concentrated BMF at home

1. Prepare all the necessary equipment in a clean environment.
2. Open the BMF sachet and put it in a suitable container for mixing.
3. Add 3ml of breast milk to the powder.
4. Mix the milk and the BMF powder thoroughly.
5. When ready, the BMF concentrate should be homogenous, with no lumps and a slightly yellow colour.
6. Use the prepared 4ml BMF concentrate.

1.	2.	3.
		

4.	5.	6.
		

Key messages and reflection:

After this chapter you should be able to:

- understand what medications your Baby is given and why
- follow your Baby's drug chart about what medication is given to your Baby and timing of them
- be ready to learn how to administer oral medications as part of discharge planning. This competency needs to be signed off by your Baby's nurse following a one-to-one practical teaching session.

Further learning in this topic

If you wish to know more:

- ask your Baby's nurse to show you the drug chart so you can follow the medications and its timings
- ask our neonatal team at any time
- use this app or your Parent Binder to record notes and questions
- attend small group teaching with the pharmacist about medications.

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Resources

Neonatal Formulary, Imperial College Healthcare NHS Trust

BMF guidelines, Imperial College Healthcare NHS Trust