

Foreword about using this tool:

This Antibiotic Prescription Screening and Counselling sheet is a supporting tool to help inform the information provided to patients, including how to take antibiotics and their common side effects. This sheet summarises information from the British National Formulary (BNF) and Electronic Medicines Compendium (EMC) and can support pharmacy teams and other healthcare professionals when screening an antibiotic prescription (for example interactions and pregnancy/breast feeding considerations). Please refer to the accompanying user guide for this resource on how to use it.

This tool is designed to support healthcare professionals and may not account for individual circumstances of patients, nor is it a complete replication of the information. It should not be used as sole basis for decision making, nor replace healthcare professional consultations. Please ensure you are using the most up to date version of this tool published on the TARGET website. This information is up to date at point of review and not all antibiotics are covered; the BNF and EMC should be reviewed for the most up to date information.

General advice:

- Take doses at regular intervals throughout the day.
- Take antibiotics exactly as prescribed. Never save them for future use. Never share them with others.
- If you don't start to feel better within a few days of starting antibiotics, contact your prescriber for advice.
- Return unused antibiotics for safe disposal. Do not dispose of down sinks, toilets or in the bin.

Managing common side effects

Bloating/indigestion: Eat smaller meals and eat/drink slowly. Try to avoid lentils, beans, peas and onions.

Diarrhoea: Drink plenty of water or squash to avoid dehydration.

Mild stomach cramps: Eat/drink slowly and have smaller, more frequent meals. Rest and try to relax. Try placing heat pads/hot water bottle on the stomach.

Mild skin reactions/allergy: Try using an emollient cream, gentle, fragrance-free moisturiser, or an antihistamine.

Mild headaches: Rest and drink plenty of water or squash. Avoid alcohol. Paracetamol/ibuprofen may help if appropriate.

Nausea: Avoid rich/spicy foods. Some antibiotics can be taken with or after food to ease symptoms.

Vomiting: Take small, frequent sips of water or squash to avoid dehydration.

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Antibiotics other than those named in the first column should be checked individually, as class-effects may apply					
	Information to support counselling patients		Information to support clinical screening of prescriptions		
Antibiotic	Counselling points	Common Side Effects	Cautions*	Severe Interactions*	Pregnancy and Breastfeeding
Amoxicillin	<p>How to take:</p> <ul style="list-style-type: none"> Take with or without food Alcohol in moderation is unlikely to cause problems 	<ul style="list-style-type: none"> Nausea Vomiting Diarrhoea Skin rashes/allergy 	<ul style="list-style-type: none"> Risk of convulsions in patients with impaired renal function, those receiving high doses or those with predisposing factors (e.g. history of seizures, treated epilepsy or meningeal disorders) 	<ul style="list-style-type: none"> Increased risk of methotrexate toxicity- manufacturer advises monitoring May affect INR in patients on warfarin. Oral anticoagulant dose changes may be necessary 	<p><u>Pregnancy:</u> Not known to be harmful</p> <p><u>Breastfeeding:</u> Trace amount in milk but appropriate to use</p>
Clarithromycin	<p>How to take:</p> <ul style="list-style-type: none"> Take with or without food Alcohol in moderation is unlikely to cause problems <p>Monitoring/ points to note:</p> <ul style="list-style-type: none"> In individuals with hepatic impairment, if signs of hepatic disease occur e.g. anorexia, jaundice, dark urine, itchy skin or tender abdomen, discontinue and contact doctor Monitor glucose levels with concurrent sulfonylureas/insulin - can cause hypoglycaemia. Withhold statins during antibiotic course 	<ul style="list-style-type: none"> Nausea Vomiting Stomach cramps Diarrhoea Dyspepsia Altered sense of taste Insomnia Headaches Rash, hyperhidrosis 	<ul style="list-style-type: none"> Clarithromycin prolongs the QT interval -consult SmPC for relevant contra-indications, cautions and interactions associated with QT prolongation With impaired hepatic function or with potentially hepatotoxic drugs With concomitant oral hypoglycaemics or insulin. 	<ul style="list-style-type: none"> Clarithromycin is an inhibitor of drug metabolism -check SmPC for clinically-significant interactions Caution with medicines that are mainly metabolised by CYP3A4 (some are contraindicated) Medicines that are inducers of CYP3A (e.g. rifampicin, phenytoin, carbamazepine, phenobarbital, St. John's wort) may induce the 	<p><u>Pregnancy:</u> Manufacturer advises avoid, particularly in the first trimester, unless potential benefit outweighs risk</p> <p><u>Breastfeeding:</u> Manufacturer advises avoid unless potential benefit outweighs risk—present in milk</p>

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			<ul style="list-style-type: none"> • With moderate to severe renal impairment • With hydroxychloroquine/ chloroquine in patients with risk factors for cardiac events • May aggravate myasthenia gravis 	metabolism of clarithromycin <ul style="list-style-type: none"> • Use with statins can cause myalgia/rhabdomyolysis • May affect INR in patients on warfarin and increase the effects of other anticoagulants 	
Co-amoxiclav	How to take: <ul style="list-style-type: none"> • Take with food to minimise potential GI intolerance • Alcohol in moderation is unlikely to cause problems. Best to avoid alcohol if feeling nauseous with co-amoxiclav 	<ul style="list-style-type: none"> • Diarrhoea • Oral/genital thrush • Nausea • Vomiting • Skin rashes/allergy 	<ul style="list-style-type: none"> • With hepatic impairment • Convulsions may occur with impaired renal function/high doses 	<ul style="list-style-type: none"> • Risk of methotrexate toxicity. Manufacturer advises monitor • May affect INR in patients on warfarin. Oral anticoagulant dose changes may be needed 	<u>Pregnancy:</u> Not known to be harmful <u>Breastfeeding:</u> Trace amounts in milk but safe to use
Doxycycline	How to take: <ul style="list-style-type: none"> • Swallow whole with a full glass of water, whilst sitting or standing (to avoid oesophageal irritation) • Taking with food may reduce stomach irritation or nausea • Do not drink alcohol during treatment as it may reduce the effectiveness of treatment 	<ul style="list-style-type: none"> • Hypersensitivity reactions • Skin can be more sensitive to strong sunlight or UV light – protect skin and avoid light exposure • Headache 	<ul style="list-style-type: none"> • Should not be given to children less than 12 years • With alcohol dependence 	<ul style="list-style-type: none"> • May affect INR in patients on warfarin • Avoid use with isotretinoin and systemic retinoids – increased risk of benign intracranial hypertension • May increase ciclosporin plasma concentrations – 	<u>Pregnancy:</u> Do not use in pregnancy – risk of adverse effect on teeth and skeletal development <u>Breastfeeding:</u>

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	<ul style="list-style-type: none"> Oral antacids, calcium and iron supplements decrease absorption of doxycycline; leave a 2 to 3 hours dose interval 	<ul style="list-style-type: none"> Nausea Vomiting Diarrhoea Oesophageal irritation/ulceration 		manufacturer advises monitoring <ul style="list-style-type: none"> Increased risk of lithium toxicity – manufacturer advises avoid/adjust dose 	Avoid as tetracyclines excreted in milk
Erythromycin	<p>How to take:</p> <ul style="list-style-type: none"> Take with food to reduce nausea Alcohol in moderation unlikely to cause problems Grapefruit/grapefruit juice may increase chance of side effects with erythromycin <p>Monitoring/ points to note:</p> <ul style="list-style-type: none"> Withhold statins during antibiotic course; can cause myalgia/rhabdomyolysis 	<ul style="list-style-type: none"> Nausea Vomiting Stomach cramps Diarrhoea Loss of appetite Bloating and indigestion 	<ul style="list-style-type: none"> Erythromycin prolongs the QT interval -consult SmPC/BNF for relevant contra-indications, cautions and interactions associated with QT prolongation With impaired hepatic function or with potentially hepatotoxic drugs With hydroxychloroquine / chloroquine in patients with risk factors for cardiac events May aggravate myasthenia gravis 	<ul style="list-style-type: none"> Erythromycin is an inhibitor of cytochrome P450 -check SmPC for clinically-significant interactions With QT prolonging medication May affect INR in patients on warfarin and increase effects of other oral anticoagulants Increases exposure to ciclosporin – avoid/monitor May increase exposure to theophylline. Monitor and reduce theophylline dose if needed Erythromycin should not be used during and two weeks after treatment with CYP3A4 inducers (e.g. rifampicin, 	<p><u>Pregnancy:</u> Use only if benefit outweighs risk. Most studies found no link with cardiac/other defects, or with miscarriage</p> <p><u>Breastfeeding:</u> Small amounts in milk – not known to be harmful</p>

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			<ul style="list-style-type: none"> Risk of hypertrophic pyloric stenosis in neonate under 2 weeks 	phenytoin, carbamazepine, phenobarbital, St. John's wort)	
Flucloxacillin	How to take: <ul style="list-style-type: none"> Take on an empty stomach 60 minutes before food or at least 2 hours after Take with a full glass of water (250ml) Do not lie down immediately after taking flucloxacillin capsules Alcohol in moderation is unlikely to cause problems 	<ul style="list-style-type: none"> Nausea Vomiting Diarrhoea 	<ul style="list-style-type: none"> Increased risk of hepatic reactions in patients with hepatic impairment, those over 50 years old, those with underlying disease Hypokalaemia can occur with high doses of flucloxacillin or in presence of other risk factors for hypokalaemia 	<ul style="list-style-type: none"> May affect INR in patients on warfarin. May affect INR in patients on warfarin Increased risk of methotrexate toxicity. Manufacturer advises monitor. Risk of high anion gap metabolic acidosis with paracetamol. Patients at high risk are : those with severe renal impairment, sepsis or malnutrition especially if maximum daily doses of paracetamol are used. Manufacturer advises caution. 	<u>Pregnancy:</u> Not known to be harmful <u>Breastfeeding:</u> Trace amounts in milk but appropriate to use

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Metronidazole	<p>How to take:</p> <ul style="list-style-type: none"> Swallow tablets whole with water, after food Do not drink alcohol while taking and for at least 48 hours after finishing the course <p>Monitoring/ points to note:</p> <ul style="list-style-type: none"> Urine may appear darker during treatment 	<ul style="list-style-type: none"> Nausea Vomiting Diarrhoea Taste disturbances 	<ul style="list-style-type: none"> With active or chronic severe peripheral and CNS disease 	<ul style="list-style-type: none"> May affect INR in patients on warfarin Increased risk of lithium toxicity – manufacturer advises avoid/adjust dose and monitor Risk of toxicity with busulfan is increased. Manufacturer advises monitor 	<p><u>Pregnancy:</u> Use if benefit outweighs risk – avoid high doses</p> <p><u>Breastfeeding:</u> Significant amount in milk, avoid high single doses. May give milk a bitter taste</p>
Nitrofurantoin	<p>How to take:</p> <ul style="list-style-type: none"> Take with or after food/milk to aid absorption and avoid gastric upset Bioavailability increased by food or medicines that delay gastric emptying Alcohol in moderation is unlikely to cause problems <p>Monitoring/ points to note:</p> <ul style="list-style-type: none"> Look out for acute pulmonary reactions in week 1 of treatment, and development of non-productive/ progressive/persistent cough in courses longer than 6 months (especially elderly patients) Seek medical advice if following symptoms develop: <ul style="list-style-type: none"> pulmonary (trouble breathing, shortness of breath, a lingering cough, 	<ul style="list-style-type: none"> Nausea Vomiting Diarrhoea Dark yellow/brown urine Loss of appetite Headaches Dizziness/feeling sleepy 	<ul style="list-style-type: none"> Contra-indicated in infants less than 3 months old, G6PD deficiency and porphyria Avoid in renal impairment/CKD Anaemia Diabetes Electrolyte imbalance Folate/vitamin B deficiency In individuals with pulmonary disease, hepatic dysfunction or neurological disorders 		<p><u>Pregnancy:</u> Avoid at term – may produce neonatal haemolysis</p> <p><u>Breastfeeding:</u> Avoid, small amounts in milk but enough to produce haemolysis in G6PD-deficient infants</p>

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	<p>coughing up blood or mucus, or pain or discomfort when breathing)</p> <ul style="list-style-type: none"> hepatic (yellowing of the skin or eyes, upper right abdominal pain, dark urine and pale or grey-coloured stools, itching or joint pain and swelling) haematological or neurological adverse reactions e.g. peripheral neuropathy 				
Phenoxyethyl penicillin (Pen V)	<p>How to take:</p> <ul style="list-style-type: none"> Take 30 minutes before or at least 2 hours after food. Alcohol in moderation is unlikely to cause problems 	<ul style="list-style-type: none"> Hypersensitivity Nausea Vomiting Diarrhoea Skin rash/allergy 		<ul style="list-style-type: none"> May affect INR in patients on warfarin/other coumarins May increase risk of toxicity with methotrexate. Manufacturer advises monitor. 	<p><u>Pregnancy:</u> Not known to be harmful</p> <p><u>Breastfeeding:</u> Trace amounts in milk but appropriate to use</p>
Trimethoprim	<p>How to take:</p> <ul style="list-style-type: none"> Take with or without food Alcohol in moderation is unlikely to cause problems <p>Monitoring/ points to note:</p> <ul style="list-style-type: none"> In long-term use: counsel regarding signs and symptoms of blood disorders. Inform patient to seek immediate medical attention if symptoms such as fever, sore 	<ul style="list-style-type: none"> Mild rash/itching Nausea Vomiting Diarrhoea Headache Electrolyte imbalance 	<ul style="list-style-type: none"> Risk of hyperkalaemia – monitor serum electrolytes Predisposition to folate deficiency Acute porphyrias Renal impairment 	<ul style="list-style-type: none"> May affect INR in patients on warfarin/other coumarins Avoid if taking methotrexate – contact prescriber for an alternative May increase risk of neutropenia with 	<p><u>Pregnancy:</u> Avoid- especially in 1st trimester</p> <p><u>Breastfeeding:</u> Not known to be harmful in short term use</p>

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	throat, rash, mouth ulcers, purpura, bruising or bleeding develop			clozapine. Manufacturer advises avoid	
Quinolones (Ciprofloxacin and Levofloxacin) *Only prescribe if other commonly recommended antibiotics are inappropriate*	How to take: <ul style="list-style-type: none"> Take with or without food Take ciprofloxacin: <ul style="list-style-type: none"> at least 2 hours before or after dairy products (e.g. milk, yoghurt) or drinks with added calcium at least 1-2 hours before or 4 hours after antacids; calcium, aluminium, magnesium or iron supplements; phosphate binders; didanosine formulations and sucralfate Take levofloxacin at least 2 hours before or after iron/zinc salts; aluminium/magnesium containing antacids or didanosine formulations and sucralfate Monitoring/ points to note: <ul style="list-style-type: none"> May affect reaction time and impair driving or tasks such as operating machinery. These effects are enhanced by alcohol Avoid exposure to excessive sunlight during treatment and for 48 hours after stopping treatment 	<ul style="list-style-type: none"> Nausea Vomiting Diarrhoea GI discomfort Tendon damage Headache, insomnia Dizziness Arthropathy (in children) Corneal deposits (topical eye use) 	<ul style="list-style-type: none"> Avoid if history of tendon disorders or taking corticosteroids In patients with epilepsy; can trigger seizures or lower the seizure threshold May induce convulsions If over 60 years old, renal impairment, solid organ transplant patient, or otherwise predisposed to tendon disorders May cause hepatic necrosis/failure Psychiatric reactions and other central nervous system effects may occur. Existing depression or 	<ul style="list-style-type: none"> May affect INR in patients on warfarin/other coumarins Increased risk of methotrexate toxicity with ciprofloxacin Increased risk of methotrexate toxicity with ciprofloxacin Avoid concomitant use of NSAIDs – risk of seizures increases Increase clozapine concentration. Monitor adverse effects and adjust dose. Affects concentration of phenytoin and fosphenytoin. Monitor concentration and adjust dose 	<u>Pregnancy:</u> Manufacturer advises to avoid <u>Breastfeeding:</u> Manufacturer advises to avoid

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	<ul style="list-style-type: none"> may cause blood glucose disturbances; usually in diabetic patients on treatment <p>Discontinue and seek medical advice:</p> <ul style="list-style-type: none"> at first signs of mood changes, distressing thoughts, feelings about suicide/self-harm, or any central nervous system effects, including severe tiredness, anxiety, memory or severe sleeping problems patients should tell friends/family to look out for mood changes/any symptoms that warrant discussion with their doctor if neurological reactions occur, including peripheral neuropathy if tendon disorders, muscle pain/weakness, joint pain/swelling occur if changes in vision, taste, smell or hearing occur if signs of hepatic disease Seek immediate medical attention with sudden-onset abdominal, chest or back pain, for rapid-onset shortness of breath or new-onset heart palpitations, or ankle/foot/abdomen swelling 		<p>psychosis may worsen</p> <ul style="list-style-type: none"> Increased risk of aortic aneurysm and dissection. Small risk of heart valve regurgitation. In patients pre-disposed to QT prolongation/arrhythmias May cause blood glucose disturbances; usually in diabetic patients on treatment Individuals with G6PD deficiency May exacerbate myasthenia gravis 		
Co-trimoxazole (Trimethoprim and Sulfamethoxazole)	<p>How to take:</p> <ul style="list-style-type: none"> Take with or without food 	<ul style="list-style-type: none"> Diarrhoea Nausea 	<ul style="list-style-type: none"> Avoid in infants less than 6 weeks old, 	<ul style="list-style-type: none"> Avoid use in patients taking methotrexate 	<p><u>Pregnancy:</u> Avoid-teratogenic risk</p>

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	<ul style="list-style-type: none"> • Taking with food can minimise the possibility of GI disturbance • Alcohol in moderation unlikely to cause problems • Maintain adequate fluid intake <p>Monitoring/ points to note:</p> <ul style="list-style-type: none"> • Inform patients of signs/symptoms of life-threatening reactions and to monitor closely for skin reactions e.g. circular red patches of skin often with blisters • In long-term use: counsel regarding signs and symptoms of blood disorders. Seek immediate medical attention if symptoms such as fever, sore throat, rash, mouth ulcers, purpura, bruising or bleeding develop 	<ul style="list-style-type: none"> • Severe skin reaction • Headache • Electrolyte imbalance • Fungal overgrowth 	<p>due to risk of kernicterus</p> <ul style="list-style-type: none"> • Co-trimoxazole is associated very rare but life-threatening adverse reactions - see SmPC • Risk of hyperkalaemia – monitor serum electrolytes • With severe atopy and bronchial asthma deficiency • With G6PD deficiency • In elderly patients – increased risk of side effects • In predisposition to folate deficiency 	<ul style="list-style-type: none"> • May affect INR in patients on warfarin/other coumarins • May increase risk of neutropenia with clozapine. Manufacturer advises avoid 	<p>especially in 1st trimester and neonatal haemolysis and methaemoglobin aemia in 3rd trimester</p> <p><u>Breastfeeding:</u> Small risk of kernicterus in jaundiced infants and of haemolysis in G6PD-deficient infants</p>

More information available from:

[BNF British National Formulary - NICE \(https://bnf.nice.org.uk/\)](https://bnf.nice.org.uk/) and [BNFC \(British National Formulary for Children\) | NICE electronic medicines compendium \(https://www.medicines.org.uk/emc/\)](https://www.medicines.org.uk/emc/)
[bumps - best use of medicine in pregnancy \(medicinesinpregnancy.org\)](https://www.medicinesinpregnancy.org/)
[Useful Patient Information Leaflets for children available at: www.medicinesforchildren.org.uk](http://www.medicinesforchildren.org.uk)

Please seek further advice regarding pregnancy and breastfeeding from your local Medicines Information and Advice Service

References:

*not exhaustive

Version 4

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<https://www.nhs.uk/medicines/>

Medicines for Children Patient Information Leaflets. London: Royal College of Paediatrics and Child Health, Neonatal & Paediatric Pharmacists Group, WellChild. Available at: www.medicinesforchildren.org