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Aciclovir	
Pronunciation	Ah-sik-low-veer
AKA	Zovirax®
Legal Status	5% Aciclovir Cream – GSL for the treatment of cold sores. Other preparations are POM.
Medicine Group	Antiviral
Conditions Treated	Herpes zoster (shingles), Herpes simplex infection (e.g. cold sores, genital herpes), occasionally Varicella zoster (chickenpox).
Pharmacology	
Mechanism of Action	Aciclovir binds to viral DNA polymerase and therefore incorporates into viral DNA and encourages termination of the DNA chain.
Routes of Administration	**Enteral** – tablet, dispersible tablet, oral suspension **Parenteral** – solution for infusion, powder for solution for infusion, eye ointment, cream
Half Life	2–4 hours
Full Effect	4–6 days
Common Side Effects	Nausea, vomiting, diarrhoea, fatigue.
Interactions	It can cause increased exposure when used alongside certain asthma medications (*aminophylline and theophylline*).
Overdose Symptoms	Confusion, hallucinations, agitation, seizures. Fluids can be beneficial as these people are at risk of developing crystals in the urine which will damage the kidneys.
Potential Callouts	Minimal association with ambulance attendance.
Did You Know?	Aciclovir, among other antivirals, are based upon substances found naturally in marine sponges [1].

Paramedic Pocketbook of Prescription Medications, First Edition. Rose Matheson.

Acetylcysteine	
Pronunciation	As-seat-isle-sist-een
AKA	NACSYS® (nack-sis), Mucolight®
Legal Status	POM
Medicine Group	Mucolytics
Conditions Treated	COPD, cystic fibrosis
Pharmacology	
Mechanism of Action	Mucous is made up of macromolecules called 'mucins' which contain disulphide bonds. Acetylcysteine disrupts these bonds, breaking down mucous and reducing the viscosity. Acetylcysteine also activates the ciliated epithelium which further helps exportation of mucous.
Routes of Administration	**Enteral** – effervescent tablet **Parenteral** – solution for infusion, eye drops
Half Life	2 hours
Full Effect	1 hour
Common Side Effects	Gastrointestinal complications can occur with oral preparations.
Interactions	Acetylcysteine can increase the risk of hypotension with **Glyceryl Trinitrate**.
Overdose Symptoms	No severe effects from oral preparations but large doses of intravenous forms can cause anaphylactoid reactions and hepatic failure.
Potential Callouts	Unlikely to be the cause of a call out.
Did You Know?	Acetylcysteine is also given as an antidote in paracetamol overdose in acute hospital settings.

Alendronic acid	
Pronunciation	As written
AKA	Alendronate, *'calcium'*
Legal Status	POM
Medicine Group	Bisphosphonates
Conditions Treated	Treatment and prevention of osteoporosis.
Pharmacology	
Mechanism of Action	Inhibits osteoclasts from breaking down bone.
Routes of Administration	**Enteral** – tablet, effervescent tablet, oral solution
Half Life	10 years once incorporated into bone
Full Effect	1 month
Common Side Effects	Can cause oesophageal ulcers and oesophagitis.
Interactions	Increased risk of gastrointestinal irritation if given alongside high-dose **aspirin** or **ibuprofen**.
Overdose Symptoms	Upper gastrointestinal upsets such as indigestion or stomach ulcers may occur. Treat with milk or antacids.
Potential Callouts	Overdose may present as chest pain and there is a rare side effect of biphosphates which is necrosis of the bone of the jaw.
Did You Know?	Absorption is reduced by food.

Alginates	
Pronunciation	Al-g(hard g)-in-ates
AKA	Gaviscon©, Pepto-Bismol©
Legal Status	GSL
Medicine Group	Antacids
Conditions Treated	Indigestion, acid reflux
Pharmacology	
Mechanism of Action	Alginates form a raft on top of stomach acid which protects the oesophagus from acid should the contents breach the oesophageal sphincter.
Routes of Administration	**Enteral** – oral tablet or solution
Half Life	The half-life is not documented; however, the effect of alginates will wear off in around 4 hours once the stomach empties.
Full Effect	Within 10 minutes
Common Side Effects	Gastrointestinal symptoms such as abdominal pain and diarrhoea.
Interactions	Avoid taking certain antibiotics and hormonal medications within 2 hours of taking alginates.
Overdose Symptoms	An overdose is likely to cause abdominal pain and the person might be at risk of an obstruction.
Potential Callouts	When a person is suffering from indigestion-like pain, this should raise high suspicion for a myocardial infarction until proven otherwise. Consider a potential bowel obstruction in people who have consumed large volumes of alginates.
Did You Know?	Alginates are derived from seaweed.

Allopurinol	
Pronunciation	Allo-pure-i-nol
AKA	Zyloprim®, Alloprim®
Legal Status	POM
Medicine Group	Xanthine-Oxidase Inhibitors
Conditions Treated	Gout
Pharmacology	
Mechanism of Action	By inhibiting the action of xanthine-oxidase, less uric acid is produced and therefore available in the blood stream where it can accumulate in the joints of the body.
Routes of Administration	**Enteral** – tablet, mouthwash
Half Life	0.5–1.5 hours
Full Effect	Several weeks
Common Side Effects	Rashes and skin reactions.
Interactions	No interactions with prehospital medications; however, be aware of concurrent therapy with *ACE Inhibitors* and *diuretics* as they can exacerbate gout.
Overdose Symptoms	Adverse effects noted after ingestion of 20 g. Symptoms include nausea, vomiting, diarrhoea and dizziness. Encourage hydration to promote diuresis.
Potential Callouts	Unlikely due to allopurinol alone. However, consider gout flare-up in unilateral joint pain with no history of trauma.
Did You Know?	Allopurinol is one of the medications that can cause severe reactions such as Stevens–Johnson Syndrome and DRESS Syndrome.

Amitriptyline	
Pronunciation	Am-eh-trip-ta-lean
AKA	Elavil®
Legal Status	POM
Medicine Group(s)	Antidepressant (Tricyclic)
Conditions Treated	Depression, neuropathic pain, migraines.
Pharmacology	
Mechanism of Action	As an antidepressant, amitriptyline works by reducing the reuptake of serotonin and noradrenaline, so there is more available in the synaptic cleft. As an analgesic, amitriptyline is suspected to work by blocking sodium, potassium and NMDA receptors in the brain and spinal cord which helps reduce transmission of nerve pain signals.
Routes of Administration	**Enteral** – tablet or solution
Half Life	25 hours
Full Effect	1–6 weeks
Common Side Effects	Drowsiness, QT Prolongation, anticholinergic syndrome.
Interactions	Amitriptyline increases the effects of **adrenaline**. **Furosemide, glyceryl trinitrate** and **nitrous oxide** increase the risk of hypotension. **Furosemide** can also increase the risk of hyponatraemia. **Diazepam, Midazolam** and **Morphine** increase the CNS depressant effects of amitriptyline.
Overdose Symptoms	These extend from anticholinergic effects to cardiac arrests. Arrythmias are often seen and an ECG typically shows a prolonged PR interval, widening QRS, QT prolongation, ST depression and T wave inversion. There is often a form of heart block seen and can progress to cardiac arrest. Give activated charcoal within one hour of ingestion and rapid transfer to hospital.
Potential Callouts	Overdoses can be fatal and so need a low threshold for admission. Sodium Bicarbonate can be given by some critical care paramedics as a treatment.
Did You Know?	Amitriptyline may alter blood sugar levels, so these should be monitored closely in those with diabetes. However, this recommendation is based on animal studies [2].

Amlodipine	
Pronunciation	Am-lod-i-peen
AKA	'Blood pressure tablets'
Legal Status	POM
Medicine Group	Antihypertensive – Calcium Channel Blockers – Dihydropyridines
Conditions Treated	Hypertension, angina, heart failure
Pharmacology	
Mechanism of Action	Calcium is involved in the contraction of both smooth muscle and cardiac muscle cells. By blocking calcium channels, this allows muscle to relax which causes vasodilation which helps reduce blood pressure and cardiac workload.
Routes of Administration	**Enteral** – tablet, oral suspension and oral solution
Half Life	35–50 hours (Longer in hepatic impairment)
Full Effect	1 day
Common Side Effects	Abdominal pain, dizziness, drowsiness, flushing, headache, nausea, palpitations, peripheral oedema, skin reactions, tachycardia and vomiting.
Interactions	**Glyceryl trinitrate** and **nitrous oxide** can increase the risk of hypotension.
Overdose Symptoms	Excessive hypotension and reflex tachycardia. Reflex tachycardia is a response to a drop in blood pressure where the heart rate increases to try and compensate.
Potential Callouts	Overdoses may present as widespread shock. People who are recently put on amlodipine may present with sudden onset tachycardia, postural hypotension or lower limb swelling.
Did You Know?	Amlodipine is a dihydropyridine calcium channel blocker and all medicines in this group end in -dipine.

Amoxicillin	
Pronunciation	Amox-i-sill-in
AKA	N/A
Legal Status	POM
Medicine Group	Antibiotics – Penicillins – Beta-Lactam antibiotic
Conditions Treated	Bacterial Infections – commonly respiratory infections
Pharmacology	
Mechanism of Action	Amoxicillin attacks the beta-lactam ring which is part of the integral structure of the bacterial peptidoglycan cell wall. As the wall weakens, the cell will rupture and die.
Routes of Administration	**Enteral** – capsule, powder for suspension **Parenteral** – powder for solution for injection
Half Life	1 hour
Full Effect	3 days
Common Side Effects	Be aware of undiagnosed allergies to penicillin. Diarrhoea and vomiting can be common. Interestingly, a rare side effect is a black, furry tongue!
Interactions	Amoxicillin increases the anticoagulant effect of *acenocoumarol* and *warfarin*, so INR should be monitored during antibiotic treatment. *Methotrexate* may increase the risk of toxicity when given with amoxicillin, so should be monitored. *Phenindione* increases the risk of bleeding when taken with amoxicillin.
Overdose Symptoms	Gastrointestinal upset in the short term and rarely fatal.
Potential Callouts	Suspected allergic reactions following administration.
Did You Know?	When someone is incorrectly treated with amoxicillin when suffering with glandular fever, they will develop an extensive maculopapular rash [3]. For this reason, phenoxymethypenicillin is the better choice for suspected bacterial infections of the upper airway.

Anakinra	
Pronunciation	Anna-kin-ra
AKA	Kineret®
Legal Status	POM
Medicine Group	Disease Modifying Antirheumatic Drugs (DMARDs)
Conditions Treated	Rheumatoid arthritis, cyclic fever syndromes (e.g. Stills Disease, Cryopyrin associated periodic syndromes (CAPS)).
Pharmacology	
Mechanism of Action	Anakinra works by binding to interleukin-1 type receptors which block the action of the body's natural inflammatory cytokines which trigger the symptoms of inflammation.
Routes of Administration	**Parenteral** – intramuscular injection
Half Life	4–6 hours
Full Effect	3 months
Common Side Effects	Headache, neutropenia
Interactions	No interactions with prehospital medicines but those due to receive vaccinations should avoid use of anakinra.
Overdose Symptoms	No toxic doses or symptoms noted.
Potential Callouts	People on DMARDs are more susceptible to neutropenia but studies suggest DMARDS might protect from sepsis [4].
Did You Know?	Anakinra is made through a form of biotechnology using the natural process of *Escherichia coli* recombinant production of proteins to make large amounts of anakinra.

Apixaban	
Pronunciation	App-ix-iban
AKA	Eliquis© *'A Pixie ban'*
Legal Status	POM
Medicine Group	Direct Oral Anti-coagulants (DOAC)
Conditions Treated	Atrial Fibrillation, pulmonary embolism and prevention or treatment of DVT.
Pharmacology	
Mechanism of Action	Apixaban inhibits Factor Xa within the clotting cascade and thus prevents thrombus development. Apixaban does not influence platelets.
Routes of Administration	**Enteral** – tablets
Half Life	12 hours
Full Effect	3–4 hours
Common Side Effects	Risk of bleeding, anaemia, bruising
Interactions	**Aspirin, clopidogrel, heparin, ibuprofen** and **Tenecteplase** all increase the risk of bleeding.
Overdose Symptoms	People should be monitored for bleeding. There is a specific antidote called *Andexanet alfa* which can be used to reverse apixaban overdoses.
Potential Callouts	Consider the risks of severe bleeding in those on apixaban; especially alongside other medications that cause bleeding (e.g. NSAIDs, SSRIs) following trauma or medical reasons.
Did You Know?	Apixaban is still a relatively new drug only being approved in Europe in 2011.

Aripiprazole	
Pronunciation	Ar–ee-pip-pra–zoll
AKA	Abilify©
Legal Status	POM
Medicine Group	Anti-psychotic 2nd Generation
Conditions Treated	Schizophrenia and mania
Pharmacology	
Mechanism of Action	The action of aripiprazole is thought to be related to activation of D2 and 5HT receptors in the central nervous system.
Routes of Administration	**Enteral** – tablets, orodispersible tablet, oral solution **Parenteral** – solution for injection, powder and solvent for suspension for injection
Half Life	75 hours
Full Effect	4–6 weeks
Common Side Effects	Restlessness, nausea
Interactions	**Chlorphenamine, Diazepam, midazolam** and **morphine** increase sedentary effects. **Furosemide, glyceryl trinitrate** and **nitrous oxide** increases the risk of hypotension. Aripiprazole reduces the effect of *levodopa*.
Overdose Symptoms	Lethargy, hypertension, tachycardia, nausea, vomiting and diarrhoea. The person will require monitoring until recovered.
Potential Callouts	Aripiprazole may be involved in multiple medicinal product overdoses.
Remember	Although it sounds like other medications like omeprazole, clotrimazole and metronidazole, these are all different groups of medicines.

Aspirin	
Pronunciation	As written
AKA	Acetylsalicylic Acid, Blood thinners, *'baby aspirin'*, Anadin©, Alka Selzer©, Beechams®
Legal Status	GSL
Medicine Group	Analgesic (NSAID), Antiplatelet, Antipyretic
Conditions Treated	Prevention of clot formation, active treatment of STEMI and TIA, acute pain, AF and prevention of pre-eclampsia.
Pharmacology	
Mechanism of Action	Aspirin prevents the formation of prostaglandins through inhibiting the COX-1 and COX-2 enzymes. Prostaglandins are inflammatory substances that are responsible for a lot of inflammation processes in the body. This includes the production of Prostaglandin E1 which is known to elicit fever and Thromboxane A2 which activates new platelets to aggregate at a site of inflammation.
Routes of Administration	**Enteral** – tablet, dispersible tablet, gastro-resistant tablet Suppository
Half Life	3–4 hours
Full Effect	20–30 minutes
Common Side Effects	Dyspepsia and increased risk of haemorrhage is common. Not suitable for under 16 years due to risk of Reyes Syndrome. Be aware of bronchospasm in some asthmatics.
Interactions	Several severe interactions with medications that increase the risk of bleeding (this includes **clopidogrel, hydrocortisone, ibuprofen, Tenecteplase** – benefit is likely to outweigh risk in emergency settings).
Overdose Symptoms	Common features include vomiting, dehydration, tinnitus, vertigo, deafness, sweating, bounding pulses, warm extremities and hyperventilation.
Potential Callouts	People may suffer indigestion or spontaneous bleeding due to ingestion of aspirin.
Did You Know?	Aspirin was originally derived from a substance in the bark of a willow tree [5].

Atenolol	
Pronunciation	Aten-oh-lol
AKA	Tenormin®
Legal Status	POM
Medicine Group	Beta Blockers (selective)
Conditions Treated	Hypertension, angina, cardiac arrhythmias, hyperthyroidism and migraine prophylaxis.
Pharmacology	
Mechanism of Action	Atenolol is a selective beta blocker which means it acts primarily on Beta-1-adrenergic-receptors which are found in cardiac muscle. Beta-1-adrenergic receptors are normally activated by the sympathetic nervous system which will increase heart rate, so by blocking these receptors it prevents an increase in heart rate.
Routes of Administration	**Enteral** – tablet, oral suspension, oral solution
Half Life	6 hours
Full Effect	2 weeks
Common Side Effects	Gastrointestinal discomfort, hypotension
Interactions	**Adrenaline** can cause hypertension and bradycardia. **Amiodarone** can increase adverse cardiovascular events – benefits outweigh risk in cardiac arrest situation. **Syntometrine**© will increase vasoconstriction. **Furosemide, Glyceryl trinitrate** and **nitrous oxide** increase the risk of hypotension with atenolol.
Overdose Symptoms	Bradycardia, hypotension, cardiac insufficiency and bronchospasm. Use of activated charcoal and laxatives are advised to remove any unabsorbed drug. Atropine in high doses may be effective against bradycardia. Treatment in hospital required with *glucagon* or *dobutamine* IV infusion.
Potential Callouts	Atenolol may cause hypotension or symptomatic bradycardia resulting in a syncope.
Did You know?	Atenolol has been shown through randomised controlled trials to be as effective as a placebo in controlling hypertension; however, it was shown to have a protective function against strokes [6].

Atorvastatin	
Pronunciation	Ah-tor-va-stat-in
AKA	*'statins'*
Legal Status	POM
Medicine Group	Statins/HMG-CoA reductase inhibitors
Conditions Treated	High cholesterol/myocardial infarction prevention
Pharmacology	
Mechanism of Action	Atorvastatin works by inhibiting the action of an enzyme called HMG-CoA reductase which is involved in the production mevalonate, which is a precursor of 'bad' cholesterol LDL. The lower level of cholesterol also increases the number of LDL receptors in the liver and therefore reducing the number of free LDL in the bloodstream.
Routes of Administration	**Enteral** – tablet, chewable tablet and oral suspension
Half Life	14 hours
Full Effect	4 weeks
Common Side Effects	Epistaxis, myalgia, hyperglycaemia, joint swelling, pain, URTIs
Interactions	Statins can interact with conditions such as diabetes, interstitial lung disease and muscle toxicity. **Amiodarone** increases exposure to atorvastatin. **Paracetamol** increases the risk of hepatotoxicity. Grapefruit increases potency of atorvastatin.
Overdose Symptoms	An overdose of atorvastatin is likely to affect liver function and/or muscle toxicity, so LFTs and CK should be monitored.
Potential Callouts	Non traumatic muscle pain, hyperglycaemia and liver disease can all occur as a result of atorvastatin.
Did You Know?	Statins can increase the risk of rhabdomyolysis and myositis which might present as non-traumatic muscle pain in those who have recently started statins or take statins and have a risk of developing rhabdomyolysis (e.g. through excessive exertion or a long lie).

Atovaquone/Proguanil (hydrochloride)	
Pronunciation	Ato-va-k-own Pro-go-an-nil
AKA	Malarone®, Maloff Protect®
Legal Status	POM
Medicine Group	Antimalarial
Conditions Treated	Prophylaxis of malaria
Pharmacology	
Mechanism of Action	Atovaquone and proguanil work to kill off the schizont stage of the *Plasmodium falciparium* life cycle which is the parasite that causes malaria. They do this by inhibiting mitochondrial action and the synthesis of nucleic acids in the parasite.
Routes of Administration	**Enteral** – Tablet
Half Life	2–3 days
Full Effect	2 days
Side Effects	Abdominal pain, appetite decreased, cough, depression, diarrhoea, dizziness, fever, headache, nausea, skin reactions, sleep disorders, vomiting.
Interactions	**Metoclopramide** decreases the concentration of atovaquone.
Overdose Symptoms	The noted side effects are expected with an overdose and treatment should be symptomatic.
Potential Callouts	Malaria can still present up to one year after returning from a malarial country and it is worth noting that diarrhoea and vomiting will reduce the absorption of antimalarials. Symptoms may only appear after cessation of the prophylaxis. Symptoms include cyclic fevers and chills, muscle pain, headache, confusion and gastrointestinal symptoms.
Did You Know?	Atovaquone/proguanil is often the favoured antimalarial due to its lack of serious side effects and short dosing regimen. However, it is also the most expensive antimalarial regime available [7].

Azathioprine	
Pronunciation	Az-ath-eye-o-preen
AKA	Imuran©
Legal Status	POM
Medicine Group	DMARD
Conditions Treated	Treatment of ulcerative colitis/Crohn's Disease/ rheumatoid arthritis
Pharmacology	
Mechanism of Action	Azathioprine is a pro-drug that is broken down into its active form of 6-mercaptopurine but its precise mechanism of action is unknown. Theories that exist include inhibition of T and B cells and purine synthesis.
Routes of Administration	**Enteral** – tablet **Parenteral** – powder for solution for injection
Half Life	4–6 hours
Full Effect	6–12 weeks
Common Side Effects	Nausea, increased risk of infections, pancreatitis, risk of malignancies.
Interactions	*Allopurinol* and *Trimethoprim* increases risk of haematological toxicity, so azathioprine dose needs to be reduced. *Calcium-channel blockers* (e.g. *ramipril*) increase the risk of anaemia/leukopenia with azathioprine, so should be monitored. Concurrent use when receiving vaccines can increase risk of infection and may need to be avoided.
Overdose Symptoms	Long-term overdose is more common than acute cases and symptoms include unexplained infections, ulceration of the throat and increased bruising and bleeding. Evidence of acute overdose showed mild leukopenia and altered liver function but a good recovery.
Potential Callouts	Sepsis due to supressed immune function or anaemia due to medication interactions.
Did You Know?	Azathioprine is falling out of favour due to a link between its use and developing skin cancer [8].

Azithromycin	
Pronunciation	Az-ee-throw-mice-in
AKA	N/A
Legal Status	POM
Medicine Group	Antibiotic (macrolide)
Conditions Treated	Multiple bacterial infections including respiratory, skin and genitourinary infections.
Pharmacology	
Mechanism of Action	Macrolide antibiotics such as azithromycin work by inhibiting bacterial protein synthesis and therefore preventing bacterial proliferation.
Routes of Administration	**Enteral** – tablet, capsule, or oral suspension **Parenteral** – Powder for solution for infusion, eye drops
Half Life	2–4 days
Full Effect	7 days
Common Side Effects	Eye pain, joint pain, gastrointestinal complaints, neurological and skin changes.
Interactions	No specific interactions with ambulance medications. Azithromycin can increase potency of certain medications including *direct oral anticoagulants* (e.g. *apixaban*).
Overdose Symptoms	A surprising symptom of a macrolide antibiotic overdose can be loss of hearing, but it can also include nausea, vomiting and diarrhoea. Activated charcoal can be given if within an hour of ingestion.
Potential Callouts	Unlikely to be the cause of a call-out but consider increased bleeding risk with concurrent therapy with *direct oral anticoagulants* (e.g. *apixaban*).
Did You Know?	Azithromycin is associated with Stevens–Johnson Syndrome which is a systemic reaction to certain medications that causes flu-like symptoms followed by a widespread, painful blistering rash.

References for A

1 Lin, SC., Lehman, CW., Stewart, AK., Panny, L., Bracci, N., Wright, JLC., Paige, M., Strangman, WK. and Kehn-Hall, K. Homoseongomycin, a compound isolated from marine actinomycete bacteria K3-1, is a potent inhibitor of encephalitic alphaviruses. Antiviral Res [internet] 2021 191(102087). [cited 2023 03 23]. Available at: https://doi.org/10.1016/j.antiviral.2021.105087

2 Chadwick, W., Wilson, G., van de Venter, M., Oelofsen, W. and Roux, S. Shifts in metabolic parameters surrounding glucose homeostatsis resulting from tricyclic antidepressant therapy: implications of insulin resistance? J Pharm Pharmacol 2007 59 p95–103. Available at: https://doi.org/10.1211/jpp.59.1.0013

3 Chew, C. and Goenka, A. Question 2: Does amoxicillin exposure increase the risk of rash in children with acute Epstein-Barr virus infection? Arch Dis Childhood 2016 101(5) p500–502. Available at: https://doi.org/10.1136/archdischild-2015-310364

4 Richter, A., Listing, J., Schneider, M., Klopsch, T., Kapelle, A., Kaufmann, J., Zink, A. and Strangerfeld, A. Impact of treatment with biologic DMARDs on the risk of sepsis or mortality after serious infection in patients with rheumatoid arthritis. Clin Epidemiol Res 2016 75 p1667–1673. Available at: https://doi.org/10.1136/annrheumdis-2015-207838

5 Moon, JS. The tale of aspirin: a weeping willow to soothe your sorrows. Anaesthesiology 2022 137 p643

6 Carlberg, B., Samuelsson, O. and Lindholm, LH. Atenolol in hypertension: is it a wise choice? Lancet [internet] 2004. [cited 2023 10 26]. Available at: https://doi.org/10.1016/S0140-6736(04)17355-8

7 Bryan, JP. Cost considerations of malaria chemoprophylaxis including use of primaquine for primary or terminal chemoprophylaxis. Am J Trop Med Hyg 2006 75(3) p416–420

8 Inman, GJ., Wand, J., Nagano, I., Alexandrov, Lb., Purdie, KJ., Taylor, RG., Sherwood, V., Thomson, J., Hogan, S., Spender, LC., South, AP., Stratton, M., Chelala, C., Harwood, CA., Proby, CM. and Leigh, IM. The genomic landscape if cutaneous SCC reveals drivers and a novel azathioprine associated with mutational signature. Nat Commun 2018 9 p3667. Available at: https://doi.org/10.1038/s41467-018-06027-1