

High Risk Drugs

Part 1

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Learning Outcomes

By the end of this webinar you will be able to:

- Understand the key high risk drugs listed in the GPhC framework.
- Understand key information associated with high risk drugs, as well as the medical emergencies associated with them and their management.






High Risk Drugs from the GPhC Framework


1. antibiotics
2. anticoagulants
3. antihypertensives
4. chemotherapy
5. insulins
6. antidiabetic drugs
7. drugs with a narrow therapeutic index
8. non-steroidal anti-inflammatory drugs
9. methotrexate
10. opiates
11. parenteral drugs







1. Antibiotics

- Gentamicin
- Vancomycin
- Quinolones









Vancomycin: Monitoring

- Auditory function
- Renal function
- Full blood count
- Serum potassium
- Urinalysis

Vancomycin: Warning Signs

- Hearing loss, vertigo, dizziness, tinnitus
- Nephrotoxicity
- 'Red Man Syndrome'
- Blood disorders
- Skin disorders
- Phlebitis







Vancomycin: Actions Needed

- Advise patient to report immediately to a doctor if any warning signs occur

Vancomycin: Interactions

- Ciclosporin, aminoglycosides, polymixin antifungals
- Loop diuretics
- Suxamethonium






Quinolones: Monitoring


Special caution and monitoring of side effects if used in:

- The elderly
- Patient with kidney disease
- Those who have had an organ transplant
- Those who are taking corticosteroids

Quinolones: Warning Signs

• Tendinitis	• Neuropathies associated with paraesthesia
• Tendon rupture	• Depression
• Arthralgia	• Fatigue
• Pain in extremities	• Memory impairment
• Gait disturbance	• Sleep disorders
	• Impaired hearing, vision, taste and smell







Quinolones: Actions Needed

- Advise patient to report immediately to a doctor if any warning signs occur

Quinolones: Interactions


• Macrolides	• Sucralfate
• Antacids	• NSAIDs
• Calcium carbonate	• Warfarin
• Ferrous sulphate	• Corticosteroids






2. Anticoagulants

- Vitamin K antagonist oral anticoagulants
- Non-vitamin K antagonist oral anticoagulants:
 - Direct thrombin inhibitors
 - Direct Xa inhibitors
- Indirect thrombin inhibitors:
 - Unfractionated heparin
 - Low molecular weight heparins (LMWH)
 - Fondaparinux







Apixaban: Monitoring

- aPTT, INR, haemoglobin, urea & electrolytes and liver function tests
- Baseline CrCl
- Monitor patients for signs of bleeding or anaemia. Stop treatment if severe bleeding occurs

Apixaban: Warning Signs

- Bleeding
- An unexplained fall in haemoglobin and/or haematocrit or blood pressure
- Nausea, bruising, anaemia, hypotension, thrombocytopenia, rash







Apixaban: Actions Needed

- Advise patient to report immediately to a doctor if any of the warning signs occur
- Monitor patients for signs of bleeding or anaemia
- Stop treatment if severe bleeding occurs
- Patients should be provided with an alert card and advised to keep it with them at all times

Apixaban: Interactions

• Anti-platelet drugs	• Certain azole antifungals	• Rifampicin
• Blood thinners	• HIV protease inhibitors	• St John's Wort
• SSRIs		• Seizure controlling drugs







Edoxaban: Monitoring

- aPTT, INR, haemoglobin, urea & electrolytes and liver function tests
- Baseline renal function and during treatment when clinically necessary
- Baseline LFTs and repeat periodically if treatment lasts longer than a year
- Monitor patients for signs of bleeding or anaemia

Edoxaban: Warning Signs

- Bleeding
- Anaemia, hypersensitivity, epistaxis, nausea, rash and pruritus







Edoxaban: Actions Needed

- Advise patient to report immediately to a doctor if any of the warning signs occur
- Monitor patients for signs of bleeding or anaemia
- Stop treatment if severe bleeding occurs
- Patients should be provided with an **alert card** and advised to keep it with them at all times

Edoxaban: Interactions

- Anti-platelet drugs
- Blood thinners
- SSRIs
- SNRIs
- Rifampicin







Rivaroxaban: Monitoring

- aPTT, INR, haemoglobin, urea & electrolytes and liver function tests
- Baseline CrCl

Rivaroxaban: Warning Signs

- Bleeding
- Nausea, vomiting, diarrhoea, constipation, dyspepsia, abdominal pain, hypotension, dizziness, headache, renal impairment, haemorrhage, pain in extremities, pruritus, rash, dry mouth, thrombocytopenia, tachycardia, syncope, angioedema, malaise; rarely jaundice, oedema







Rivaroxaban: Actions Needed

- Advise patient to report immediately to a doctor if any of the warning signs occur
- Monitor patients for signs of bleeding or anaemia
- Stop treatment if severe bleeding occurs
- Patients should be provided with an **alert card** and advised to keep it with them at all times

Rivaroxaban: Interactions

- Anti-platelet drugs
- Blood thinners
- SSRIs
- Certain azole antifungals
- HIV protease inhibitors
- Rifampicin
- St John's Wort
- Seizure controlling drugs







Dabigatran: Monitoring

- aPTT, INR, haemoglobin, urea & electrolytes and liver function tests
- Baseline CrCl followed by regular monitoring of CrCl

Dabigatran: Warning Signs

- Bleeding
- Nausea, vomiting, dyspepsia, gastro-intestinal ulcer, diarrhoea, abdominal pain, dysphagia, gastro-oesophageal reflux, oesophagitis, anaemia, haemorrhage less commonly hepatobiliary disorders, thrombocytopenia







Dabigatran: Actions Needed

- Advise patient to report immediately to a doctor if any of the warning signs occur
- Monitor patients for signs of bleeding or anaemia
- Stop treatment if severe bleeding occurs
- Patients should be provided with an alert card and advised to keep it with them at all times

Dabigatran: Interactions

• Ciclosporin	• Aspirin
• Ketoconazole	• NSAIDs
• Rifampicin	• St John's Wort







LMWH: Monitoring

• anti-factor Xa assay (anti-Xa)	• Platelet count
• Renal function	• Potassium levels

LMWH: Warning Signs

- Bleeding
- Headache
- Hepatic enzyme increases (mainly transaminases > 3 times the upper limit of normality)
- Rare: Hyperkalaemia







LMWH: Actions Needed

- Advise patient to report immediately to a doctor if any of the warning signs occur
- Monitor patients for signs of bleeding
- Avoid the use of aspirin as this can increase the risk of bleeding
- Avoid intramuscular injections and arterial punctures, if possible

LMWH: Interactions


- Anticoagulants
- NSAIDs
- Aspirin
- Thrombolytic agents







3. Antihypertensives

- ACE Inhibitors and ARBs (Angiotensin II Receptor Antagonists)









Monitoring

- Blood pressure
- Patients with strongly activated RAAS
- Renal function
- Serum electrolytes

Warning Signs

- Dizziness, headache
- Hypotension, orthostatic blood pressure decreased, syncope
- Abnormal renal function
- Water retention
- Anuria, confusion, nausea, vomiting and dehydration







Actions Needed

- Advise patients to report immediately to a doctor if any warning signs occur
- Dry, irritating cough
- Routine blood test
- For hypertension, the first dose should preferably be given at bedtime
- Advise patients to drink adequate (not excessive) volumes of fluid each day
- Sick days

Interactions


- Lithium
- Other drugs that increase serum potassium
- Aliskiren







4. Chemotherapy

- Systemic (oral, IV, SC, IM)
- Regional (intrathecal, intraarterial)









Common Side effects

- Extravasation of IV drugs
- Nausea and vomiting
- Bone marrow suppression
- Other

Warning Signs


- Feeling unwell and/or have two temperature readings of 37.5°C or above
- Develop shivering episodes / flu-like symptoms
- Uncontrolled gum/nose bleeds or unusual bruising
- Diarrhoea and/or uncontrolled vomiting
- Develop mouth ulcers that stop patient from eating or drinking






Actions Needed



- Advise patient to attend their nearest A&E department if they develop signs of **neutropenic sepsis** and not to take paracetamol without seeking advice
- Advise patient to report immediately to a doctor if any **side-effects** occur
- For a drug that causes severe or moderate emesis, antiemetics should always be prescribed on a regular basis
- Advise patient to maintain good oral hygiene to avoid mucositis






5 & 6. Insulins & Antidiabetic drugs


- Insulins
- Antidiabetic medicines











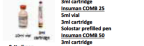








Insulins

Rapid-acting	
Short-acting	
Intermediate-acting	
Long-acting	





Hampshire Hospitals  NHS Foundation Trust			
TYPE & BRAND	WHEN TO PRESCRIBE/ADMINISTER	ONSET/PEAK ACTION/DURATION OF ACTION	PRODUCT DETAILS TO AID IDENTIFICATION
Rapid Acting HumALOG NovoRAPID Apidra	Give JUST BEFORE or JUST AFTER a meal. Normally given 3 times a day with meals.	 Onset: 10-20mins Peak: 1-3hrs Duration: 2-5hrs	 Apidra Humalog NovoRapid Insulin prefilled pen
Short Acting (Soluble) HumULIN S Actrapid InsUMAN RAPID	Give 15-30 minutes BEFORE a meal.	 Onset: 30 mins Peak: 2-4 hrs Duration: up to 8 hrs	 Actrapid Humulin S Insulin Rapid Insulin prefilled pen
Intermediate HumULIN I InsUTARD InsUMAN BASAL	Give ONCE or TWICE daily. Times should be in line with patient history & advice of healthcare team.	 Onset: 1-2hrs Peak: 4-12hrs Duration: up to 24hrs	 Insulin Basal Insulin I Insulin Urd Insulin prefilled pen
Long acting Lantus (Glargine) Levemir (Detemir) Tresiba (Degludec)	Give ONCE or TWICE daily. Times should be in line with patient history & advice of healthcare team.	 Onset: 1-2 hrs Peak: 4-12hrs Duration: up to 24hrs	 Tresiba Levemir Lantus Insulin prefilled pen
Mixtures HumULIN M3 InsUMAN COMB 15 InsUMAN COMB 25 InsUMAN COMB 50	Give 30 minutes BEFORE a meal. Normally given twice a day before breakfast & evening meal.	 Onset: 30mins Peak: 2-8 hrs Duration: 14-20hrs	 Humulin M3 Insulin COMB 15 Insulin COMB 25 Insulin COMB 50 Insulin prefilled pen
Mixture (Faster onset) HumALOG Mix25 HumALOG Mix50 NovoMIX 30	Give JUST BEFORE or JUST AFTER a meal. Normally given twice a day before breakfast & evening meal. Can be given with each meal.	 Onset: 10-20mins Peak: 1-4 hrs Duration: up to 24hrs	 Humalog Mix 25 Humalog Mix 50 NovoMix 30 Insulin prefilled pen



Hypoglycaemia


- Defined as a blood glucose level of less than 4.0 mmol/l
- Symptoms include:**
 - Shaking
 - Sweating
 - Palpitation
 - Hunger
 - Pins and needles in lips and tongue
 - Slurring of speech
 - Confusion
 - Convulsions
 - Unconsciousness
- Initially glucose 10–20 g is given by mouth either in liquid form or as granulated sugar or sugar lumps. If necessary, this may be repeated after 10–15 minutes
- Hypoglycaemia which causes unconsciousness** is an emergency in which Glucagon 1 mg im should be administered
- Alternatively, glucose **intravenous infusion 20%** may be given intravenously






Diabetic Ketacidosis

- IV fluids immediately
 - Establish monitoring regime appropriate to patient; generally hourly blood glucose (BG) and hourly ketone measurement, with at least 2 hourly serum potassium for the first six hours
 - Clinical and biochemical assessment of the patient
- Restoration of circulating volume
- Potassium replacement
- Fixed rate intravenous insulin infusion



<div>  Antidiabetic drugs </div>		
Class	Mechanism of action	Side effects
Sulfonylureas		
Meglitinides		
Biguanides		
Thiazolidinediones		
Alpha-glucosidases inhibitor		
Dipeptidyl-peptidase-4 (DPP-4) inhibitors		
Glucagon-like peptide-1 (GLP-1) agonist		
Sodium glucose cotransporter 2 (SGLT2) inhibitors		
