

## Chapter 6. Endocrine

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### Key

	<p><b>Red drug</b> see <a href="#">GMMMG RAG list</a>  <i>Click on the symbols to access this list</i></p>
	<p><b>Amber drug</b> see <a href="#">GMMMG RAG list</a>  <i>Click on the symbols to access this list</i></p>
	<p><b>Green drug</b> see <a href="#">GMMMG RAG list</a>  <i>Click on the symbols to access this list</i></p>
	<p><b>If a medicine is unlicensed this should be highlighted in the template as follows</b>  <b>Drug name U</b></p>
	<p><b>Not Recommended</b></p>
	<p><b>Over the Counter</b>            In line with NHS England guidance, GM do not routinely support prescribing for conditions which are self-limiting or amenable to self-care. For further details see <a href="#">GM commissioning statement</a>.</p>
<b>Order of Drug Choice</b>	<p>Where there is no preferred 1<sup>st</sup> line agent provided, the drug choice appears in alphabetical order.</p>

<b>BNF chapter</b>	<b>6</b>	<b>Endocrine</b>
<b>Section</b>	<b>6.1</b>	<b>Drugs used in Diabetes</b>
<b>Subsection</b>	<b>6.1.1</b>	<b>Insulin</b>
<b>Subsection</b>	<b>6.1.1.1</b>	<b>Short-acting insulin</b>
<b>Soluble insulin</b>		
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>Patients starting on insulin should receive an insulin passport; See <a href="#">the adult patient's passport to safer insulin use</a> (NPSA). A passport should be provided by the prescriber initiating treatment</li> <li>The NPSA issued an alert in June 2010 for the <a href="#">safer administration of insulin</a>.</li> <li>All patients starting on insulin <a href="#">must inform the DVLA and also their motor vehicle insurance company</a>.</li> <li>Insulins are available in a variety of vial, cartridge and pre-loaded pen presentations. Not all cartridges fit all pens.</li> <li><a href="#">NICE NG17: Type 1 diabetes in adults: diagnosis and management</a></li> <li><a href="#">NICE NG28: Type 2 diabetes in adults: management</a></li> <li><a href="#">NICE NG19: Diabetic foot problems: prevention and management</a></li> <li><a href="#">MHRA DSU: Direct-acting antivirals for chronic hepatitis C: risk of hypoglycaemia in patients with diabetes (December 2018)</a></li> </ul>		
<b>First choice</b>	<b>Actrapid®</b> (Insulin human, Novo Nordisk) <ul style="list-style-type: none"> <li>10ml vial</li> </ul>	
<b>Alternatives</b>	<b>Humulin S®</b> (Insulin human, Eli Lilly) <ul style="list-style-type: none"> <li>3ml cartridge (via Autopen® Classic or HumaPen®)</li> <li>10ml vial</li> </ul> <b>Insuman® Rapid</b> (Insulin human, Sanofi) <ul style="list-style-type: none"> <li>3ml cartridge (via KlikSTAR® or Autopen® 24)</li> </ul>	
<b>Rapid acting insulin analogues</b>		
<b>First choice</b>	<b>Trurapi®▼</b> (Insulin aspart, Sanofi) <ul style="list-style-type: none"> <li>3ml cartridge (via JuniorSTAR®, Tactipen®, AllStar® and AllStar PRO® pens)</li> <li>3ml prefilled disposable pen</li> <li>10ml vial</li> </ul>	
<b>Alternatives</b>	<b>Apidra®</b> (Insulin glulisine, Sanofi) <ul style="list-style-type: none"> <li>3ml cartridge (via KlikSTAR® or Autopen® 24)</li> <li>3ml prefilled disposable pen</li> <li>10ml vial</li> </ul> <b>Admelog®▼</b> (Insulin lispro, Sanofi) <ul style="list-style-type: none"> <li>3ml cartridge (via JuniorSTAR®, Tactipen®, AllStar® and AllStar PRO® pens)</li> <li>3ml prefilled disposable pen</li> <li>10ml vial</li> </ul> <b>NovoRapid®</b> (Insulin aspart, Novo Nordisk) <ul style="list-style-type: none"> <li>3ml cartridge (via FlexPen® or FlexTouch® devices)</li> <li>3ml prefilled disposable pen,</li> <li>10ml vial</li> <li>1.6ml PumpCart (for infusion pumps)</li> </ul>	

<p><b>Grey drugs</b></p> <p>Items which are listed as Grey are deemed not suitable for routine prescribing but may be suitable for a defined patient population</p>	<p><b>Fiasp®</b> (Insulin aspart, Novo Nordisk)</p> <ul style="list-style-type: none"> <li>3ml cartridge (via FlexTouch® devices)</li> <li>3ml prefilled disposable pen</li> <li>10ml vial</li> </ul> <p>Only for use in patients who:</p> <ul style="list-style-type: none"> <li>Are pregnant or planning a pregnancy</li> <li>Have post-prandial glucose &gt;10 mmol at 2 hours</li> </ul>	<p><b>G<sub>n</sub></b> following specialist advice</p> <p><a href="#">Criterion 3 (see RAG list)</a></p>
	<p><b>Lyumjev®</b> (Insulin lispro, Eli Lilly)</p> <ul style="list-style-type: none"> <li>100 units/mL prefilled disposable pen, cartridge or vial</li> <li>200 units/mL prefilled disposable pen</li> </ul> <p>Only for use in patients with type 1 and type 2 diabetes, including patients using insulin pumps, who have significant post-prandial hyperglycaemia (&gt;10 mmol/L at 2 hours) despite optimised use of conventional rapid acting insulin analogues (Humalog®, Novorapid® or Apridra®).</p> <p>Available in strengths of 100 units/mL and 200 units/mL.  <b>Care should be taken to ensure the correct dose is selected for prescribing, dispensing and administration.</b></p>	<p><b>G<sub>n</sub></b> following specialist advice</p> <p><a href="#">Criterion 2 (see RAG list)</a></p>

**Subsection 6.1.1.2 Intermediate and long acting insulin**

**Additional notes**

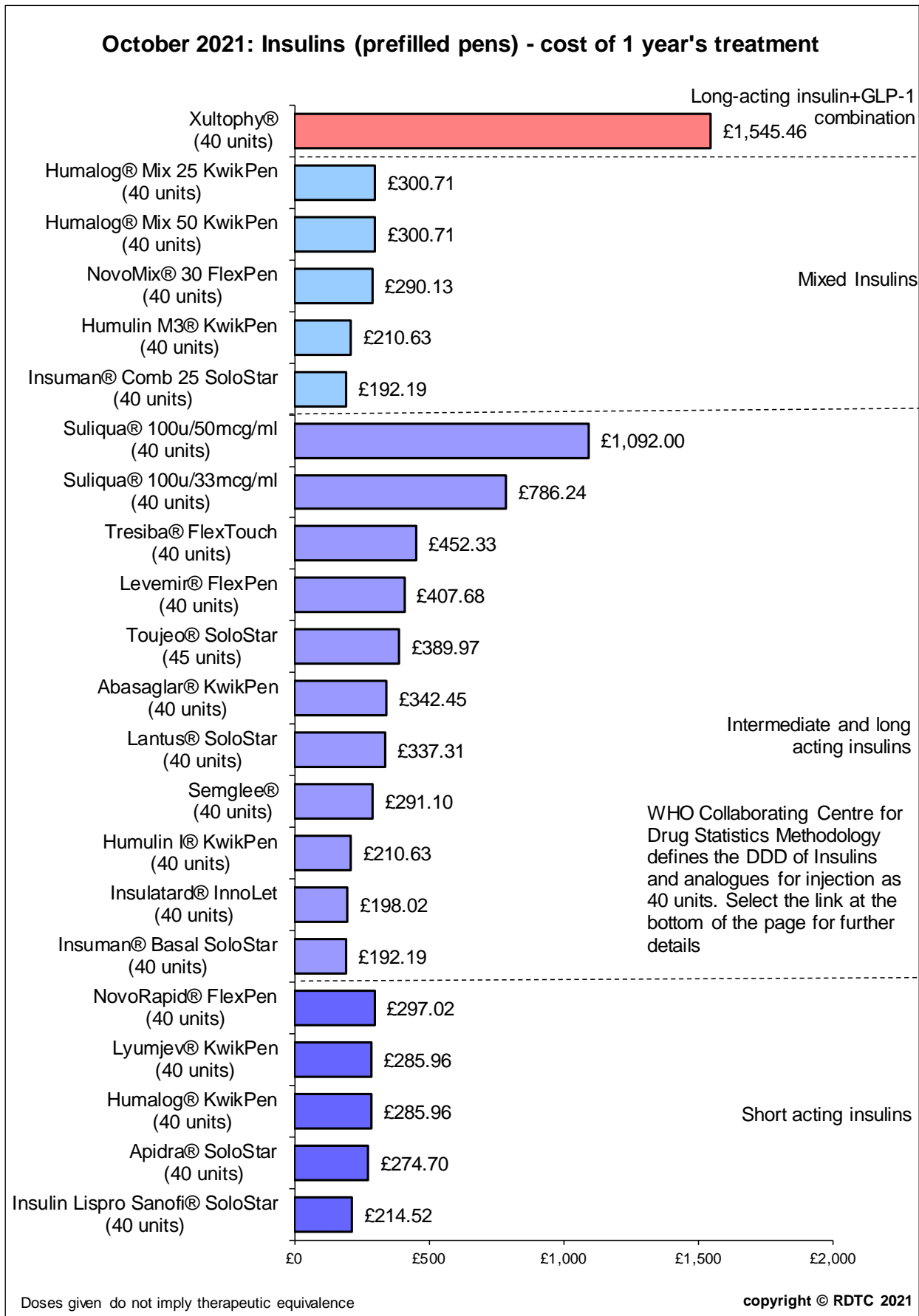
- Any decision to commence an insulin analogue needs to be balanced carefully against the lack of long term safety data and increased prescribing costs (see Key Therapeutic Topics on [type 2 diabetes medicines optimisation priorities](#) and [safer insulin prescribing](#) for more information).
- The NICE guideline on type 2 diabetes; [NICE NG28: Type 2 diabetes in adults: management](#) recommends that, when insulin therapy is necessary, **human NPH (isophane) insulin** (e.g. Insuman® Basal, Insulatard®, or Humulin I®) **is the preferred option**. Long-acting insulin analogues have a role in some patients, and can be considered for those who fall into specific categories e.g. those who require assistance from a carer or healthcare professional to administer their insulin injections, or those with problematic hypoglycaemia. **However, for most people with type 2 diabetes, long-acting insulin analogues offer no significant advantage over human NPH insulin and are much more expensive.**

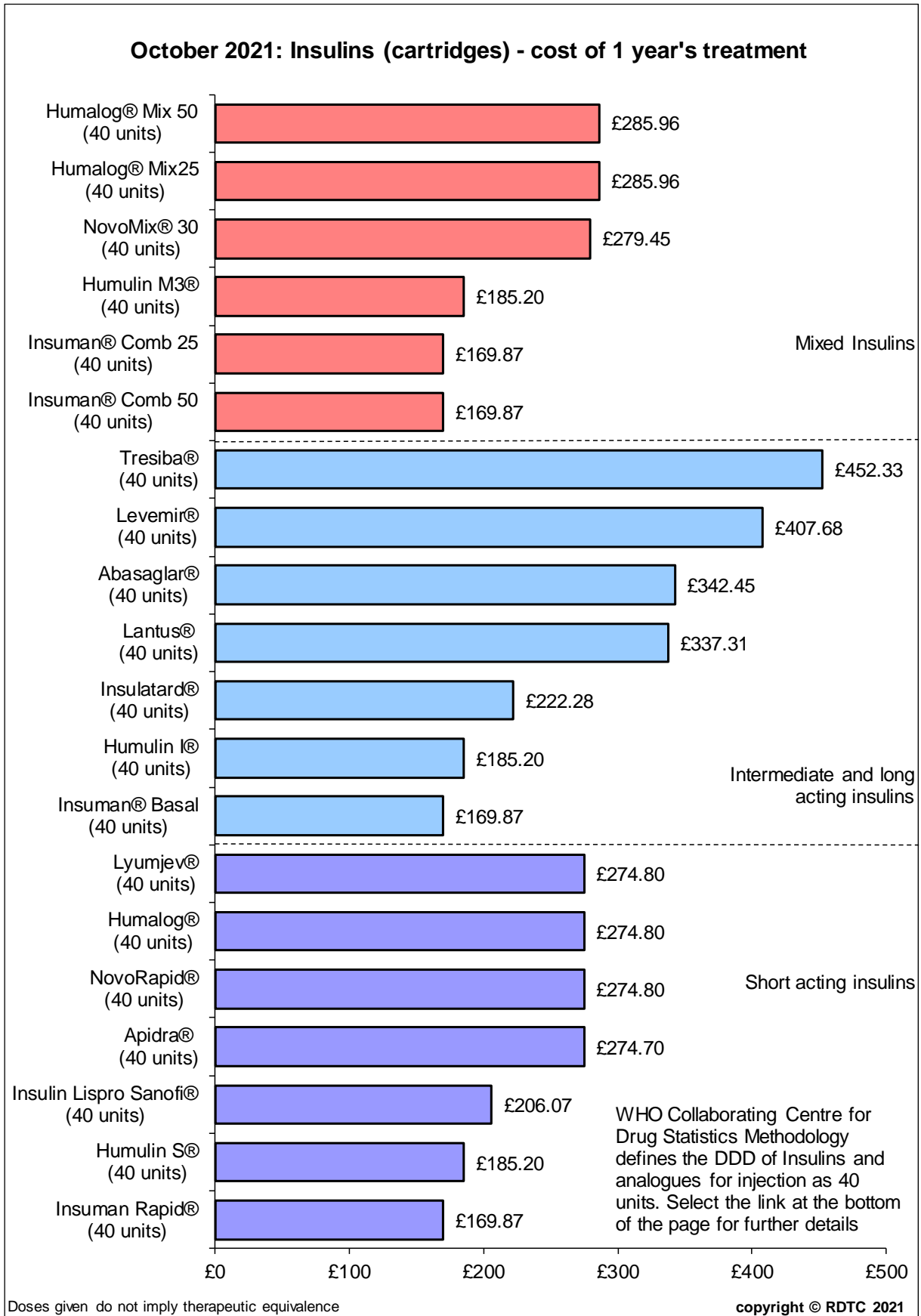
**Intermediate Acting Insulin (Isophane)**

<p><b>First choice</b></p>	<p><b>Insuman® Basal</b> (Sanofi-Aventis)</p> <ul style="list-style-type: none"> <li>3ml cartridge (via <i>ClikSTAR®</i> or <i>Autopen® 24</i> devices)</li> <li>3ml prefilled disposable pen – <i>SoloSTAR®</i></li> </ul>	<p><a href="#">NICE NG28: Type 2 diabetes in adults: management</a></p>
<p><b>Alternatives</b></p>	<p><b>Insulatard®</b> (Novo Nordisk)</p> <ul style="list-style-type: none"> <li>3ml cartridge (via <i>NovoPen® 5</i> device)</li> <li>3ml prefilled disposable pen - <i>InnoLet®</i></li> <li>10ml vial</li> </ul> <p><b>Humulin I®</b> (Lilly)</p> <ul style="list-style-type: none"> <li>3ml cartridge (via <i>HumaPen® Luxura</i> device)</li> </ul>	

	<ul style="list-style-type: none"> <li>• 3ml prefilled disposable pen – <i>KwikPen</i><sup>®</sup></li> <li>• 10ml vial</li> </ul>	
<b>Long Acting Insulin Analogues</b>		
<b>First choice</b>	<p><b>Semglee</b><sup>®</sup>▼ (Insulin glargine, Mylan)</p> <ul style="list-style-type: none"> <li>• 3ml prefilled disposable pen</li> </ul> <p><b>Abasaglar</b><sup>®</sup> (Insulin glargine, Eli Lilly)</p> <ul style="list-style-type: none"> <li>• 3ml cartridge (via HumaPen Savvio<sup>®</sup>)</li> <li>• 3ml prefilled disposable pen (via <i>KwikPen</i><sup>®</sup>)</li> </ul>	<a href="#">NICE NG28: Type 2 diabetes in adults: management</a>
<b>Alternatives</b>	<p><b>Levemir</b><sup>®</sup> (Insulin detemir, Novo Nordisk)</p> <ul style="list-style-type: none"> <li>• 3ml cartridges (via NovoPen <sup>®</sup> 4 device)</li> <li>• 3ml prefilled disposable pen - FlexPen<sup>®</sup> or Innolet<sup>®</sup> (only for patients with manual dexterity problems)</li> </ul>	<a href="#">NICE NG17: Type 1 diabetes in adults: diagnosis and management</a>
<p><b>Grey drugs</b></p> <p>Items which are listed as Grey are deemed not suitable for routine prescribing but may be suitable for a defined patient population</p>	<p><b>Toujeo</b><sup>®</sup> (insulin glargine 300 units/mL, Sanofi)*</p> <ul style="list-style-type: none"> <li>• 1.5mL prefilled disposable pen (SoloStar<sup>®</sup>)</li> <li>• 3ml prefilled disposable pen (DoubleStar<sup>®</sup>)**</li> </ul> <p>Toujeo is a high-strength insulin* preparation. It may be considered as an option in people with Type 1 or Type 2 diabetes when one or more of the following criteria are met:</p> <ol style="list-style-type: none"> <li>There is a requirement for flexible timing of injection (+/-3 hours) due to reliance on 3rd party assistance to administer insulin.</li> <li>There is pain as a consequence of high injection volumes of standard-strength insulin (high insulin dose alone is not a reason to switch).</li> <li>There are unacceptable nocturnal hypoglycaemic episodes despite intensive management on other basal analogues. This must be supported by appropriately recorded data (e.g. glucose monitoring device/blood glucose diaries)</li> </ol> <p><b>* Toujeo preparations must always be prescribed by brand and device to minimise the risks associated with the prescribing, dispensing, and administration of high strength insulins.</b></p> <p><b>** Toujeo DoubleStar administers two units of insulin per click:</b> there is a risk patients could receive double the dose of insulin if the wrong Toujeo product is dispensed or the Toujeo DoubleStar is used incorrectly by assuming one click is equivalent to one unit of insulin.</p>	<p><b>G<sub>n</sub></b> following specialist advice</p> <p><a href="#">Criterion 2 (see RAG list)</a></p> <p><a href="#">FMESG recommendation</a></p>

	<p><b>Tresiba®</b> (insulin degludec, Novo Nordisk)</p> <ul style="list-style-type: none"> <li>• 100 units/mL prefilled disposable pen or cartridge</li> <li>• 200 units/mL prefilled disposable pen</li> </ul> <p>For treatment of type 1 or type 2 diabetes, only for use:</p> <ol style="list-style-type: none"> <li>If there is particular concern about nocturnal hypoglycaemia despite optimisation of medication regimen</li> <li>For patients with an unpredictable lifestyle (e.g. shift workers)</li> <li>For patients who need help from a carer or healthcare professional to administer injections [NEW from <a href="#">NICE NG17</a>]</li> </ol> <p>Available in strengths of 100 units/mL and 200 units/mL.  <b>Care should be taken to ensure the correct dose is selected for prescribing, dispensing and administration.</b></p>	<p><b>G<sub>n</sub></b> following specialist initiation  <a href="#">Criterion 3 (see RAG list)</a></p>
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**Biphasic Insulin**

**First choice**

**Soluble/isophane Mixtures**

**Humulin M3<sup>®</sup>** (Lilly)

- 3ml cartridge (via *HumaPen<sup>®</sup> Luxura* device)
- 3ml prefilled disposable - *KwikPen<sup>®</sup>*
- 10ml vial

**Insuman<sup>®</sup> Comb 25** (Sanofi-Aventis)

- 3ml cartridge (via *ClikSTAR<sup>®</sup>* or *Autopen<sup>®</sup> 24* devices)
- 3ml prefilled disposable pen - *SoloSTAR<sup>®</sup>*

**Insuman<sup>®</sup> Comb 50** (Sanofi-Aventis)

- 3ml cartridge (via *ClikSTAR<sup>®</sup>* or *Autopen<sup>®</sup> 24* devices)

**Alternatives**

**Intermediate Acting Analogue Mixtures**

**NovoMix<sup>®</sup> 30** (Novo Nordisk)

- 3ml cartridge (via *NovoPen<sup>®</sup> 4* device)
- 3ml prefilled disposable pen - *FlexPen<sup>®</sup>*

**Humalog<sup>®</sup> Mix25** (Lilly)

- 3ml cartridge (via *HumaPen<sup>®</sup> Luxura* device)
- 3ml prefilled disposable pen - *KwikPen<sup>®</sup>*
- 10ml vial

**Humalog<sup>®</sup> Mix50** (Lilly)

- 3ml cartridge (via *HumaPen<sup>®</sup> Luxura* device)
- 3ml disposable prefilled pen - *KwikPen<sup>®</sup>*

**Additional notes**

- Biphasic analogue insulin (Novomix, Humalog Mix) do not offer any advantage over conventional human biphasic insulin in terms of efficacy, long term outcomes or safety but they cost considerably more.

**Subsection**

**6.1.1.2 Animal insulins**

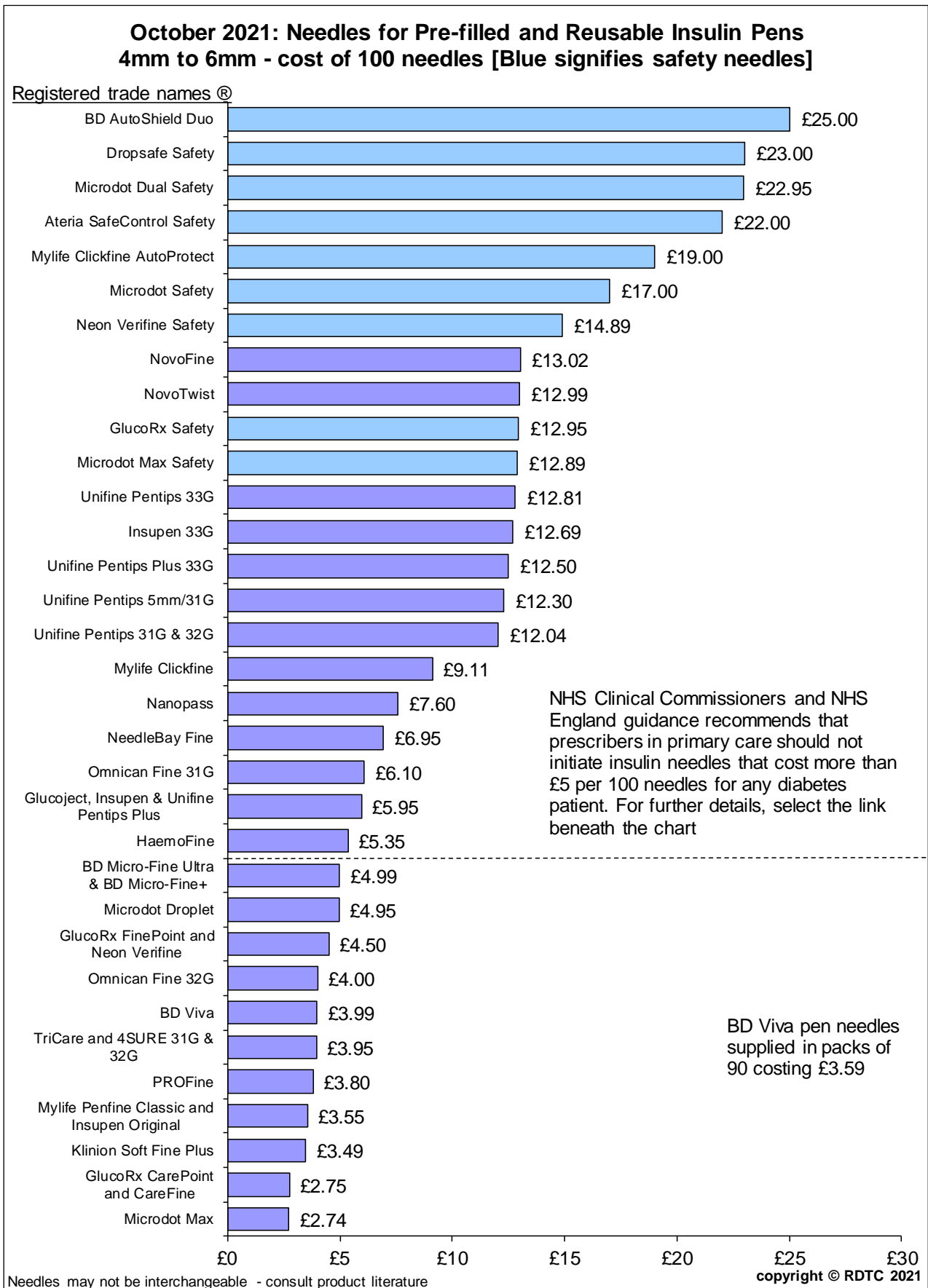
**Bovine and Porcine Insulin**

**Additional notes**

- Some long-standing type 1 diabetic patients may be on animal insulin. These are made by the company Wockhardt and come in 10ml vials or 3ml Cartridges that fit into the *Autopen Classic<sup>®</sup>* which is available on prescription
- Patients need not be transferred to human insulin unless clinical need dictates
- Human insulin and analogues should be used in preference to animal insulin




<b>Subsection</b>	<b>6.1.1.3 Hypodermic equipment</b>	
Lancets, needles, syringes and accessories are listed under Hypodermic Equipment in Part 1XA of <a href="#">the Drug Tariff</a> .		
<b>Lancets</b>		
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>There are many different lancets available. Prescribing of lancets should be based on the compatibility of the device the patient has.</li> <li>Finger-pricking devices are not prescribable on the NHS</li> </ul>		
<b>Needles</b>		
<b>First choice</b>	4mm 31G needles	
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>First choice should usually be a 4mm needle to reduce injection pain</li> </ul>		
<b>Do Not Prescribe</b>	<b>Pen needles 8 mm, 10 mm or 12 mm in length</b>  <b>Pen needles costing in excess of £5 per 100</b> See cost comparison chart below	<u>Criterion 1 (see RAG list)</u>  <u>Criterion 2 (see RAG list)</u> <u>NHS England Items which should not be routinely prescribed in primary care: Guidance for CCGs</u>
<b>Insulin pumps</b>		
Insulin pumps and pump consumables specifically used for the deployment of the device are commissioned via Monitored Approval within CCGs, in line with <a href="#">NICE TA151</a>		



[Items which should not routinely be prescribed in primary care: Guidance for CCGs](#)

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<b>Needle clipping device</b>		
<b>First choice</b>	<b>BD Safe-Clip®</b>	Should be given to all patients who do not have a sharps bin
<b>Alternatives</b>	<b>Sharpsguard®</b> 1 litre & 5 litre sharps bin <b>Sharpsafe®</b> 1 litre sharps bin	5 litre sharps bins are suitable for regular users of injectables, e.g. insulin & insulin pumps.
<b>Subsection</b>	<b>6.1.2 Anti Diabetic drugs</b>	
<b>Subsection</b>	<b>6.1.2.1 Sulphonylureas</b>	
<b>First choice</b>	<b>Gliclazide</b> Immediate release tablets 40mg, 80mg <b>Glimepiride</b> Tablets 1mg, 2mg, 4mg	
<b>Do Not Prescribe</b>	<b>Chlorpropamide</b> Tablets  <b>Gliclazide MR</b> Modified release tablets (e.g. Diamicon® MR)	<u>Criterion 1 (see RAG list)</u>   <u>Criterion 2 (see RAG list)</u>
<b>Subsection</b>	<b>6.1.2.2. Biguanides</b>	
<b>First choice</b>	<b>Metformin</b> Tablets 500mg, 850mg	
<b>Alternatives</b>	<b>Metformin modified release</b> Tablets 500mg, 750mg, 1g	
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>Metformin modified release should only be used where the standard metformin tablets have been tried and are not tolerated due to GI problems. Any new prescription of the SR preparation should be reviewed soon after initiation (recommend checking HbA<sub>1c</sub> after 3 months and assess patient for adherence to treatment / adverse effects), discontinue if not tolerated or ineffective.</li> <li>Metformin can be used in pregnancy under specialist supervision see <a href="#">NICE NG3: Diabetes in pregnancy</a> and <a href="#">MHRA DSU: Metformin in pregnancy: study shows no safety concerns, March 2022</a></li> <li>Liquid formulations of metformin are available, however prescribers should note these are significantly more expensive, and should assess the requirement for a liquid preparation on an individual patient basis.</li> <li>In line with <a href="#">NICE PH38: Type 2 diabetes: prevention in people at high risk</a>, metformin can be used to reduce the risk or delay the onset of T2DM in adult, overweight patients with impaired glucose tolerance and/or increased HbA<sub>1c</sub> who are: <ul style="list-style-type: none"> <li>at high risk of developing overt T2DM <b>and</b></li> <li>still progressing towards T2DM despite implementation of intensive lifestyle change for 3-6 months</li> </ul> </li> </ul>		

<b>Subsection</b>		<b>6.1.2.3 Other antidiabetic drugs</b>
<b>Thiazolidinediones (Glitazones)</b>		
<b>First choice</b>	<p><b>Pioglitazone</b> Tablets 15mg, 30mg, 45mg</p>	<p><a href="#">NICE NG28: Type 2 diabetes in adults: management</a></p> <p><a href="#">NICE NG49: Non-alcoholic fatty liver disease (NAFLD): assessment and management</a></p> <p><a href="#">MHRA DSU: Pioglitazone bladder cancer, Aug 2011</a></p> <p><a href="#">MHRA DSU: Pioglitazone cardiovascular safety, Jan 2011</a></p>
<b>Dipeptidylpeptidase-4 inhibitors (Gliptins)</b>		
<p><b>Notes</b></p> <p><a href="#">MHRA DSU: Gliptins: Risk of pancreatitis, Sept 2012</a></p> <p>Acute pancreatitis associated with gliptins has been reported. Inform patients of the symptoms of acute pancreatitis. If pancreatitis is suspected, the DPP-4 inhibitor should be discontinued.</p> <ul style="list-style-type: none"> <li>• Only continue DPP-4 inhibitor therapy if the person has had a beneficial metabolic response (a reduction of at least 0.5 percentage points in HbA1c in 6 months) –as per NICE CG87.</li> <li>• Monotherapy: Saxagliptin, Sitagliptin and Linagliptin – only if metformin contra-indicated or not tolerated. Alogliptin is not licensed for monotherapy.</li> <li>• Renal impairment: <ul style="list-style-type: none"> <li>○ Alogliptin: Dose reduced to half of the recommended dose (12.5mg once daily) in moderate renal impairment. In patients with severe renal impairment one-quarter of the recommended dose (6.25mg once daily) should be administered.</li> <li>○ Linagliptin: No dose adjustment required.</li> <li>○ Saxagliptin: Dose reduced to 2.5mg for use in moderate to severe renal impairment; caution in patients with severe renal impairment due to very limited experience of use in this group of patients.</li> <li>○ Sitagliptin: Dose is 50mg per day for use in moderate renal impairment and 25mg per day for use in severe renal impairment.</li> </ul> </li> <li>• There are no head-to-head trial data to support the use of any gliptin over another in relation to patients who may fast during Ramadan.</li> </ul>		
<b>First choice</b>	<p><b>Alogliptin</b> Tablets 6.25mg, 12.5mg, 25mg tablets</p>	<p></p> <p><a href="#">NICE NG28</a></p> <p><a href="#">MHRA DSU: DPP4 inhibitors: risk of acute pancreatitis (Sept 2012)</a></p>
<b>Alternatives</b>	<p><b>Saxagliptin</b> Tablets 5mg</p> <p><b>Sitagliptin</b> Tablets 25mg, 50mg, 100mg</p> <p><b>Linagliptin</b> Tablets 5mg</p>	<p>Linagliptin is an alternative for use in patients with moderate or severe renal impairment (CrCl &lt;50ml/min, eGFR &lt;59ml/min)</p>

**Gliptin plus metformin**

Only to be prescribed where there is a genuine issue with adherence to therapy


<b>First choice</b>	<b>Alogliptin plus metformin</b> Tablets 12.5mg plus metformin 1000mg	
<b>Alternatives</b>	<b>Saxagliptin plus metformin</b> Tablets 2.5mg plus metformin 850mg / 1g	
	<b>Sitagliptin plus metformin</b> Tablets 50mg plus metformin 1g	
	<b>Linagliptin plus metformin</b> Tablets 2.5mg plus metformin 850mg/1g	Linagliptin is an alternative for patients with renal impairment (CrCl <50ml/min, eGFR <59ml/min)

**GLP-1 receptor mimetics (glucagon-like peptide-1)**


**Notes**

- GLP-1 mimetics should only be considered as third-line therapy in accordance with [NICE NG28](#)
- GLP-1 mimetics should only be continued if reduction of at least 1% point in HbA<sub>1c</sub> AND a weight loss of at least 3% of initial body weight at 6 months
- For individuals with type 2 diabetes and established cardiovascular disease, GLP-1 receptor agonist therapies with proven cardiovascular benefit (currently dulaglutide, liraglutide, semaglutide) should be considered

**DAILY GLP-1 receptor mimetics**

<b>First choice</b>	<b>Liraglutide (Victoza®)</b> Disposable pen 0.6mg, 1.2mg	 <a href="#">NICE NG28: Type 2 diabetes in adults: management</a>
<b>Alternatives</b>	<b>Lixisenatide (Lyxumia®)</b> Disposable pen 10mcg, 20mcg	
	<b>Semaglutide (Rybelsus®)</b> Oral tablets 3mg, 7mg, 14mg  Where a patient expresses a preference for the oral option, prescribers should discuss that there are injectable options in the same class with proven cardiovascular benefit.  An agent with proven cardiovascular benefit would be preferable to oral semaglutide in patients with established cardiovascular disease or high cardiovascular risk. This includes all patients with diabetes of 10 years duration plus one other risk factor (e.g. age over 50, hypertension, dyslipidaemia, smoking, or obesity).	

**WEEKLY GLP-1 receptor mimetics**

<b>First choice</b>	<b>Semaglutide (Ozempic® ▼)</b> Solution for injection. Disposable pen 0.25mg, 0.5mg and 1.0mg  <b>NB: semaglutide pre-filled pens contain FOUR doses per pen</b>	 <a href="#">NICE NG28: Type 2 diabetes in adults: management</a>
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<b>Alternatives</b>	<p><b>Dulaglutide (Trulicity®▼)</b> Disposable pen 0.75mg, 1.5mg, 3 mg, 4.5 mg</p> <p><b>Exenatide (Bydureon®)</b> Disposable pen 2mg</p> <p><b>NB: dulaglutide and exenatide pre-filled pens contain ONE dose per pen</b></p>	
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**Sodium glucose cotransporter-2 (SGLT-2) inhibitors**

**Notes**

- In individuals with type 2 diabetes and established cardiovascular disease, SGLT2 inhibitors with proven cardiovascular benefit should be considered. See [chapter 2](#) for use of SGLT2 inhibitors in heart failure.
- For individuals with type 2 diabetes and diabetic kidney disease, SGLT2 inhibitors with proven renal outcome benefit should be considered. See SPC for details of dosing and kidney function.

[NICE NG28: Type 2 diabetes in adults: management](#)

[NICE NG203: Chronic kidney disease: assessment and management](#)

[NICE TA390: Canagliflozin, dapagliflozin and empagliflozin as monotherapies for treating type 2 diabetes](#)

[MHRA DSU: SGLT2 inhibitors: updated advice on the risk of diabetic ketoacidosis, April 2016](#)

[MHRA DSU: Updated advice on increased risk of lower limb amputation \(mainly toes\), March 2017](#)

[MHRA DSU: SGLT2 inhibitors: reports of Fournier’s gangrene \(necrotising fasciitis of the genitalia or perineum\), February 2019](#)

[MHRA DSU: SGLT2 inhibitors: monitor ketones in blood during treatment interruption for surgical procedures or acute serious medical illness, March 2020](#)

<b>First choices</b>	<p><b>Canagliflozin (Invokana®)</b> Tablets 100mg, 300mg</p>	<p><a href="#">NICE TA315: Canagliflozin in combination therapy for treating type 2 diabetes.</a></p>
	<p><b>Dapagliflozin (Forxiga®)</b> Tablets 5mg, 10mg</p>	<p><a href="#">NICE TA288: Dapagliflozin in combination therapy for treating type 2 diabetes</a> <a href="#">NICE TA418: Dapagliflozin in triple therapy for treating type 2 diabetes</a></p> <p><a href="#">MHRA DSU: Dapagliflozin (Forxiga): no longer authorised for treatment of type 1 diabetes mellitus, Dec 2021</a> Dapagliflozin 5mg is no longer authorised for the treatment of patients with T1DM and should no longer be used in this population.</p>
	<p><b>Empagliflozin (Jardiance®▼)</b> Tablets 10mg, 25mg</p>	<p><a href="#">NICE TA336: Empagliflozin in combination therapy for treating type 2 diabetes</a></p>
<b>Alternative</b>	<p><b>Ertugliflozin (Steglatro®▼)</b> Tablets 5mg, 15mg</p>	<p><a href="#">NICE TA572: Ertugliflozin as monotherapy or with metformin for treating type 2 diabetes</a> <a href="#">NICE TA583: Ertugliflozin with metformin and a dipeptidyl peptidase-4 inhibitor for treating type 2 diabetes</a></p>

**Other antidiabetic agents (no class)**

<b>First choice</b>	<p><b>Repaglinide</b> Tablets 500micrograms, 1mg, 2mg</p>	
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<b>Alternatives</b>	<b>Nateglinide</b> Tablets 60mg, 120mg, 180mg	
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>Nateglinide only licensed for use in combination with metformin. Cautioned in moderate hepatic impairment.</li> <li>Repaglinide can be given as monotherapy or in combination with metformin. It should be avoided in patients &gt;75 years old and in patients with severe liver disease.</li> </ul>		
<b>Subsection</b>	<b>6.1.3 Diabetic ketoacidosis</b>	
Refer to national diabetic ketoacidosis guidance for management of this condition: <a href="#">The Management of Diabetic acidosis (full report)</a>		
<b>Subsection</b>	<b>6.1.4 Treatment of hypoglycaemia</b>	
<b>First choice</b>	Patients will normally be able to recognise and self-treat hypoglycaemia themselves with fast acting carbohydrate – e.g. 2 teaspoons of sugar, small glass of fruit juice, Coca-Cola® or Lucozade® Energy Original or 4 glucose tablets. This would be followed by the next meal if due or a snack e.g. sandwich, fruit or biscuits.	
<b>Alternatives</b>	<p><b>Glucogel®</b> Oral gel tube. Pack Size: box of 3 tubes (containing 10g of glucose in each 23g tube)</p> <p><b>Glucagen® Hypokit</b> Injection: 1mg NB: Family members can be taught to inject Glucagen® in emergencies where the patient becomes unconscious during a hypoglycaemic event.</p>	<p>Only to be used in specific circumstances as most patients will be able to take oral sugar</p> <p>If the patient is unconscious or experiencing frequent hypoglycaemic episodes (this may be an option first-line)</p>
<b>Subsection</b>	<b>6.1.5 Treatment of diabetic neuropathy</b>	
<b>Diabetic neuropathy</b> See <a href="#">chapter 4</a> section 4.7.3 (Neuropathic pain), and <a href="#">GMMMG Guideline for Primary Care: Neuropathic Pain in Adults</a> .		
<b>Subsection</b>	<b>6.1.6 Diagnostic and monitoring devices for diabetes mellitus</b>	
<b>Blood monitoring</b>		
Each CCG will have their own agreed choice of blood glucose testing meters and corresponding test strips, due to local procurement arrangements. <a href="#">GMMMG recommendation on FreeStyle Libre Flash Glucose Monitoring System</a> <a href="#">DVLA current guidance</a> states there must be appropriate blood glucose monitoring for patients receiving insulin therapy. This has been defined by the Secretary of State’s Honorary Medical Advisory Panel on Driving and Diabetes as no more than 2 hours before the start of the first journey and every 2 hours while driving. DVLA also provides advice for testing for blood glucose for patients receiving medication with a higher risk of causing hypoglycaemia.		

<b>Urinalysis – Glucose</b>		
	<b>Diastix®</b>	
<b>Urinalysis – Ketones</b>		
	<b>Ketostix®</b> N.B. Tests for ketones by patients are rarely required unless they become unwell.	
<b>Alternatives</b>	All other test strips should only be used in clinics for proteinuria / microalbuminuria and renal screening.	



<b>Chapter</b>	<b>6</b>	<b>Endocrine</b>
<b>Section</b>	<b>6.2</b>	<b>Thyroid and antithyroid drugs</b>
<b>Subsection</b>	<b>6.2.1</b>	<b>Thyroid hormones</b>
<a href="#">NICE NG145: Thyroid disease: assessment and management</a>		
<b>First choice</b>	<b>Levothyroxine</b> Tablets 25 microgram, 50 microgram, 100 microgram	<a href="#">MHRA DSU: Levothyroxine: new prescribing advice for patients who experience symptoms on switching between different levothyroxine products, May 2021</a>
<b>Grey drugs</b> Items which are listed as Grey are deemed not suitable for routine prescribing but may be suitable for a defined patient population	<b>Liothyronine</b> Where levothyroxine has failed, endocrinologists treating patients under the NHS may recommend liothyronine in exceptional circumstances for individual patients after a carefully audited trial of at least 3 months duration, in line with BTA guidance. Such patients should be reviewed at least annually by their NHS Endocrinologist.  <b>Liothyronine</b> Hypothyroid crisis and short-term use post-thyroid surgery only	<b>G<sub>n</sub></b> following specialist initiation <a href="#">Criterion 2 (see RAG list)</a>  <b>R</b> for new patients only <a href="#">Criterion 2 (see RAG list)</a>
<b>Do Not Prescribe</b>	<b>Liothyronine combination products and unlicensed thyroid extract products</b> Including Armour Thyroid and ERFA Thyroid	<a href="#">Criterion 2 (see RAG list)</a>
	<b>Liothyronine</b> For resistant depression. There is very limited evidence for thyroid hormones in depression. Where thyroid hormones are necessary due to hypothyroidism, treatment should be initiated with standard levothyroxine. All psychiatric patients currently receiving liothyronine should be reviewed by a consultant NHS psychiatrist	<a href="#">Criterion 2 (see RAG list)</a>  See: <a href="#">NHSE guidance on items not for routine prescribing in primary care</a> , and <a href="#">RMOG Guidance on Liothyronine</a>
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>Micrograms should not be abbreviated</li> </ul>		
<b>Subsection</b>	<b>6.2.2</b>	<b>Antithyroid hormones</b>
<b>First choice</b>	<b>Carbimazole</b> Tablets 5mg, 20mg	
<b>Alternatives</b>	<b>Propylthiouracil</b> Tablets 50mg	<b>G<sub>n</sub></b> following specialist initiation Prescribing to remain with specialist care until stable. <a href="#">CKS: propylthiouracil cautions and contraindications. Adverse effects include hepatitis, hepatic failure.</a>

<b>Chapter</b>	<b>6</b>	<b>Endocrine</b>
<b>Section</b>	<b>6.3</b>	<b>Corticosteroids</b>
<b>Subsection</b>	<b>6.3.1</b>	<b>Replacement therapy</b>
<b>First choice</b>	<b>Fludrocortisone acetate</b> Tablets (scored) 100 micrograms	When prescribing fludrocortisone do not abbreviate micrograms.
<b>Subsection</b>	<b>6.3.2</b>	<b>Glucocorticoid therapy</b>
<b>First choice</b>	<b>Prednisolone (NOT enteric coated)</b> Tablets 1mg, 5mg, 25mg	
	<b>Hydrocortisone</b> Tablets 10mg, 20mg Injection (as sodium phosphate) 100mg in 1ml Injection (as sodium succinate) 100mg	<a href="#">MHRA DSU: Hydrocortisone muco-adhesive buccal tablets: should not be used off-label for adrenal insufficiency in children due to serious risks (December 2018)</a>
	<b>Dexamethasone</b> Tablets 500 microgram, 2mg Injection (as sodium phosphate) 4mg/ml Oral solution SF 2mg/5ml	
<b>Alternatives</b>	<b>Betamethasone</b> Injection 4mg in 1ml Soluble tablets 500 microgram	
	<b>Methylprednisolone</b> Injection (as sodium succinate) 40mg, 125mg, 500mg, 1g, 2g (Solu-Medrone) Depot Injection (as acetate – aqueous suspension) 40mg/ml (Depo-Medrone) Tablets 100mg	<a href="#">MHRA DSU: Methylprednisolone injectable medicine containing lactose (Solu-Medrone 40 mg): do not use in patients with cows' milk allergy, Oct 2017</a>

**Additional notes**

- Steroid cards should be issued to all patients who are prescribed steroids for longer than 3 weeks.

<b>Do Not Prescribe</b>	<b>Prednisolone enteric coated tablets</b>	<a href="#">Criterion 2 (see RAG list)</a>
	<b>Prednisone MR tablets</b> (e.g. Lodotra®)	<a href="#">Criterion 2 (see RAG list)</a>
	<b>Hydrocortisone MR tablets</b> (e.g. Plenadren®)	<a href="#">Criterion 2 (see RAG list)</a>

<b>Chapter</b>	<b>6</b>	<b>Endocrine</b>
<b>Section</b>	<b>6.4</b>	<b>Sex hormones</b>
<b>Subsection</b>	<b>6.4.1</b>	<b>Female sex hormones and their modulators</b>
<b>Subsection</b>	<b>6.4.1.1</b>	<b>Oestrogens and HRT</b>

**Additional notes**

The MHRA provides information on risks and benefits of HRT: [MHRA DSU: Hormone Replacement Therapy, March 2007](#)

[NICE NG23: Menopause: diagnosis and management](#)

Some low dose preparations only provide relief from menopausal symptoms.

Other preparations offer relief from menopausal symptoms plus osteoporosis prophylaxis – check BNF.

**Sequential combined therapy – for women with a uterus**

<b>Options</b>	<p><b>Elleste Duet®</b> Tablets 1mg, 2mg Estradiol 1mg / 2mg plus Estradiol 1mg / 2mg + norethisterone 1mg</p>	Patches should be reserved for use in patients with diabetes, liver disease or severe side effects
	<p><b>Femoston®</b> Tablets 1mg, 2mg Estradiol 1mg / 2 mg plus Estradiol 1 mg/2 mg + dydrogesterone 10 mg</p>	
	<p><b>Evorel Sequi®</b> Patches Estradiol 50 micrograms plus Estradiol 50 micrograms + norethisterone acetate 170 micrograms</p>	

**Continuous combined therapy – for women with a uterus**

<b>First choice</b>	<p><b>Premique® low dose</b> Tablets conjugated oestrogen 300micrograms + medroxyprogesterone acetate 1.5mg</p>	
<b>Alternatives</b>	<p><b>Kliovance®</b> Tablets Estradiol 1mg + norethisterone acetate 500micrograms</p>	

	<p><b>Kliofem®</b> Tablets Estradiol 2mg + norethisterone acetate 1mg</p>	
	<p><b>Femoston conti®</b> Tablets Estradiol 0.5mg + dydrogesterone 2.5mg Estradiol 1mg + dydrogesterone 5.0mg</p>	
	<p><b>Evorel conti®</b> Patches Estradiol 50micrograms/24 hours + norethisterone acetate 170micrograms/24hours</p>	Patches should be reserved for use in patients with diabetes, liver disease or severe side effects
<b>Do Not Prescribe</b>	<b>Bazedoxifene/conjugated oestrogens</b> Modified release tablets (Duavive®)	<u><a href="#">Criterion 1 (see RAG list)</a></u>
<b>Unopposed oestrogen – for women without a uterus</b>		
<b>First choice</b>	<p><b>Premarin®</b> Tablets Conjugated oestrogen 300micrograms, 625micrograms, 1.25mg</p>	
<b>Alternatives</b>	<p><b>Elleste-Solo®</b> Tablets Estradiol 1mg, 2mg</p>	
	<p><b>Evorel®</b> Patches Estradiol 25, 50, 75, 100micrograms</p>	Patches should be reserved for use in patients with diabetes, liver disease or severe side effects
<b>Others</b>		
	<p><b>Raloxifene hydrochloride</b> Tablets 60mg</p>	<u><a href="#">NICE TA161: Osteoporosis - secondary prevention including strontium</a></u>
<b>Subsection</b>	<b>6.4.1.2. Progestogens and progesterone receptor modulators</b>	
	<p><b>Medroxyprogesterone acetate</b> Tablets 2.5mg, 5mg, 10mg <b>Norethisterone</b> Tablets 5mg</p>	

**Progesterone receptor modulators**

**Ulipristal acetate**

Tablets 5mg (Esmya®)

For the intermittent treatment of moderate to severe symptoms of uterine fibroids in adult women who have not reached menopause when uterine fibroid embolisation and/or surgical treatment options are not suitable or have failed.

**R**

[MHRA DSU, Ulipristal acetate 5mg \(Esmya\): further restrictions due to risk of serious liver injury, Feb 2021](#)

[NICE NG88: Heavy menstrual bleeding: assessment and management](#)



<b>Subsection</b>	<b>6.4.2. Male sex hormones and antagonists</b>	
<b>Testosterone and esters</b>		
	<p>Intramuscular Injection  <b>Testosterone enatate</b> 250mg/ml, 1ml amp  <b>Testosterone undecanoate</b> 250mg/ml (Nebido®), 4ml amp</p> <p>Implant  <b>Testosterone 100mg, 200mg</b></p> <p>Gel 60g multi-dose dispenser  <b>Testosterone 2%</b> (Tostran®)</p> <p>Gel 30 x 5g sachets  <b>Testosterone 1%</b> (50mg/5ml) (Testogel®)</p> <p>Oral  <b>Testosterone</b> (Restandol®)  Capsules 40mg</p>	<p><b>G<sub>n</sub> Following specialist advice</b>  See information for primary care on <a href="#">testosterone preparations for hypogonadism in adult men</a></p>
	<p><b>Mesterolone</b>  Tablets: 25mg</p>	
<p><b>Grey drugs</b>  Items which are listed as Grey are deemed not suitable for routine prescribing but may be suitable for a defined patient population</p>	<p><b>Testosterone (off-label)</b>  2% gel 60g multi-dose dispenser (Tostran®)  1% gel 30 x 5g sachets (50mg/5ml) (Testogel®)</p> <p>For menopausal women with low sexual desire (hypoactive sexual desire disorder, HSDD), only if HRT alone is not effective.</p> <p>Tostran comes in a multi-dose canister providing measured doses, thus may more easily allow administration of lower doses. Not for use in non-menopausal women</p>	<p><b>G<sub>n</sub> following specialist initiation</b>  <a href="#">Criterion 3 (see RAG list)</a></p>
<p><b>Do Not Prescribe</b></p>	<p><b>Testosterone patches</b>  (e.g. Intrinsic®)</p>	<p><a href="#">Criterion 1 (see RAG list)</a></p>
<b>Other male sex hormones and antagonists</b>		
	<p><b>Finasteride</b>  Tablets: 5mg</p>	<p><a href="#">MHRA DSU (2017): Finasteride: rare reports of depression and suicidal thoughts</a></p>

<b>Chapter</b>	<b>6</b>	<b>Endocrine</b>
<b>Section</b>	<b>6.5</b>	<b>Hypothalamic and pituitary hormones and anti-oestrogens</b>
<b>Subsection</b>	<b>6.5.1.</b>	<b>Hypothalamic and anterior pituitary hormones and anti-oestrogens</b>
<b>Anti-oestrogens</b>		
<b>First choice</b>	<b>Clomifene</b> Tablets: 50mg	<b>R</b>
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>Clomifene is only indicated for patients in whom ovulatory dysfunction has been demonstrated and other causes of infertility have been excluded or adequately treated</li> </ul>		
<b>Anterior pituitary hormones – Corticotrophins</b>		
<b>This section is managed in Specialist care therefore is not considered in this formulary.</b>		
<b>Anterior pituitary hormones - Gonadotrophins</b>		
<b>This section is managed in Specialist care therefore is not considered in this formulary.</b>		
<b>Growth hormone</b>		
	<b>Somatropin</b> Injection (s/c) 6mg (16unit cartridge) (Humatrope®) 12mg (36unit cartridge) (Humatrope®)  MiniQuick® injection (s/c) Genotropin® (MiniQuick®) injection 0.2mg (0.6unit), 0.4mg, 0.6mg, 0.8mg, 1mg, 1.2mg, 1.4mg, 1.6mg, 1.8mg, 2mg	<b>G<sub>n</sub></b> following specialist initiation <a href="#">NICE TA64: Growth hormone deficiency (adults) August 2003</a>  <b>R</b> Adults, except in proven primary and secondary hypopituitarism.
<b>Growth hormone receptor antagonists</b>		
	<b>Pegvisomant (Somavert®)</b> Injection 10mg, 15mg, 20mg	<b>R</b>
<b>Hypothalamic hormones</b>		
<b>This section is managed in Specialist care therefore is not considered in this formulary</b>		

<b>Subsection</b>	<b>6.5.2 Posterior pituitary hormones and antagonists</b>	
<b>Posterior pituitary hormones</b>		
<b>First choice</b>	<p><b>Desmopressin</b></p> <p>Tablets</p> <p>100microgram, 200micrograms</p>	
<b>Alternatives</b>	<p><b>Desmopressin</b></p> <p>Sublingual tablets</p> <ul style="list-style-type: none"> <li>• 60micrograms (DDAVP® melt)</li> <li>• 120micrograms (Desmomelt®)</li> <li>• 240micrograms (Desmomelt®)</li> </ul> <p>Nasal spray 6ml (60 sprays)</p> <ul style="list-style-type: none"> <li>• 10micrograms per metered spray</li> </ul>	
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>• <a href="#">MHRA DSU: Desmopressin nasal spray: Removal of the primary nocturnal enuresis (bedwetting ) indication, Sept 2007</a></li> </ul>		
<b>Antidiuretic hormone antagonists</b>		
	<p><b>Demeclocycline</b></p> <p>For treating hyponatraemia associated with syndrome of inappropriate antidiuretic hormone (SIADH)</p>	<p><b>R</b> for new patients only (October 2021)</p>
	<p><b>Tolvaptan<sup>▼</sup> (Jinarc®)</b></p> <p>For treating autosomal dominant polycystic kidney disease <b>only</b> as per NICE TA358</p> <p>Tablets</p> <p>15mg, 30mg, 45mg and 15mg</p> <p>60mg and 30mg</p> <p>90mg and 30mg</p>	<p><b>R</b></p> <p><a href="#">NICE TA358: Tolvaptan for treating autosomal dominant polycystic kidney disease</a></p>



<b>Chapter</b>	<b>6</b>	<b>Endocrine</b>
<b>Section</b>	<b>6.6.</b>	<b>Drugs affecting bone metabolism</b>
<b>Subsection</b>	<b>6.6.1.</b>	<b>Calcitonin and parathyroid hormone</b>
<b>Additional notes:</b>		
<a href="#">NICE TA160: Raloxifene for the primary prevention of osteoporotic fragility fractures in postmenopausal women</a>		
<a href="#">NICE TA161: Raloxifene and teriparatide for the secondary prevention of osteoporotic fragility fractures in postmenopausal women</a>		
<a href="#">NICE TA464: Bisphosphonates for treating osteoporosis</a>		
<a href="#">MHRA DSU: Bisphosphonates: atypical femoral fractures, June 2011</a>		
<a href="#">MHRA DSU: Bisphosphonates: very rare reports of osteonecrosis of the external auditory canal, Dec 2015</a>		
<a href="#">MHRA DSU: Strontium ranelate: cardiovascular risk—restricted indication and new monitoring requirements, March 2014</a>		
<b>First choice</b>	<b>Teriparatide</b> (Forsteo®) 250micrograms/ml 2.4ml pre-filled pens	<b>R</b> For Specialist use only <a href="#">NICE TA161: Raloxifene and teriparatide for the secondary prevention of osteoporotic fragility fractures in postmenopausal women</a>
<b>Alternatives</b>	<b>Parathyroid hormone</b> Injection s/c: 1.61mg (14 dose)	<b>R</b> For Specialist use only
<b>Subsection</b>	<b>6.6.2. Bisphosphonates and other drugs affecting bone metabolism</b>	
<b>Bisphosphonates</b>		
<b>Additional notes:</b>		
<a href="#">NICE TA464: Bisphosphonates for treating osteoporosis</a>		
<b>First choice</b>	<b>Alendronic acid</b> Tablet: 70mg (once weekly preparation)	<b>G<sub>n</sub></b> NB: not licensed for use in men, but this is common practice
<b>Alternatives</b>	<b>Risedronate</b> Tablet: 35mg (once weekly preparation)	<b>G<sub>n</sub></b>
	<b>Ibandronic acid</b> Tablets: 150 mg Solution for injection: 3 mg/3mL	<b>G<sub>n</sub></b> tablets <b>R</b> solution for injection
	<b>Sodium clodronate</b> Tablets: 800mg	<b>Specialist initiation only</b>
	<b>Zoledronic acid</b> Solution for infusion vial: 4mg/5ml Infusion bottles: 4mg/100ml, 5mg/100ml	<b>R</b> Specialist use only

Do Not Prescribe	Alendronic acid with vitamin D Tablets	Criterion 2 (see RAG list)
<b>Other drugs affecting bone metabolism</b>		
	<b>Denosumab (Prolia®)</b> – Osteoporosis in men & women Injection s/c 60mg/ml x 1ml	 <a href="#">MHRA DSU: Denosumab 60mg (Prolia): should not be used in patients under 18 years due to the risk of serious hypercalcaemia, May 2022</a>
	<b>Denosumab (Xgeva®)</b> - Oncology indication Injection s/c 120mg/ml x 1.7ml	 <b>Specialist use only</b>
<b>Additional notes:</b> <ul style="list-style-type: none"> <li>• <a href="#">NICE TA204: Denosumab – Osteoporotic fractures</a></li> <li>• <a href="#">MHRA DSU: denosumab, Feb 2013</a></li> <li>• <a href="#">MHRA DSU: denosumab, Sept 2014</a></li> <li>• <a href="#">MHRA DSU: denosumab and osteonecrosis of the jaw, July 2015</a></li> <li>• <a href="#">MHRA DSU: denosumab (Prolia, Xgeva): reports of osteonecrosis of the external auditory canal</a></li> <li>• <a href="#">MHRA DSU: denosumab (Xgeva)- risk of clinically significant hypercalcaemia following discontinuation</a></li> <li>• <a href="#">MHRA DSU: denosumab (Xgeva) – study data show new primary malignancies reported more frequently compared to zoledronate</a></li> <li>• <a href="#">MHRA DSU: Denosumab 60mg (Prolia): increased risk of multiple vertebral fractures after stopping or delaying ongoing treatment, August 2020</a></li> </ul>		

<b>Chapter</b>	<b>6</b>	<b>Endocrine</b>
<b>Section</b>	<b>6.7.</b>	<b>Other endocrine drugs</b>
<b>Subsection</b>	<b>6.7.1.</b>	<b>Bromocriptine and other dopaminergic drugs</b>
<b>First choice</b>	<p><b>Bromocriptine</b> Tablets 1mg, 2.5mg</p> <p><b>Cabergoline</b> Tablets 500micrograms</p>	See BNF chapter 4, section 4.9.1. for use in Parkinson's disease
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>MHRA: <a href="#">Ergot derived dopamine agonists: risk of fibrotic reactions in chronic endocrine uses</a> (2014)</li> </ul>		
<b>Subsection</b>	<b>6.7.2</b>	<b>Drugs affecting gonadotrophins</b>
<b>Gonadorelin analogues</b>		
<b>First choice</b>	<p><b>Goserelin</b> Intradermal implant 3.6mg (every 28 days) 10.8mg (3 monthly)</p> <p><b>Leuprorelin</b> Prefilled dual chamber syringe (DCS) 3.75mg (monthly) 11.25mg (every 3 months)</p>	<p><b>A</b> (for licensed indications) See section 8.3.4.2. – leuprolinor use in prostate cancer and section 8.3.4.1. for use in breast cancer</p> <p><b>R</b> (for long term, &gt;6 months use, for precocious puberty, testosterone castration in sex offenders and all unlicensed uses)</p>
<b>Alternatives</b>	<p><b>Buserelin</b> Nasal spray 150micrograms/metered spray Injection (s/c) 1mg/ml</p> <p><b>Nafarelin</b> Nasal spray 200micrograms/metered spray</p>	<b>R</b>
<b>Additional notes</b>		
<ul style="list-style-type: none"> <li>Goserelin and leuprorelin are included in this section for endometriosis only. Please refer to chapter 8 for other indications.</li> <li>Gonadorelin analogues are contraindicated for use longer than 6 months (do not repeat), where there is undiagnosed vaginal bleeding, in pregnancy and in breast-feeding.</li> </ul>		

<b>Subsection</b>	<b>6.7.3. Metyrapone</b>	
	<b>Metyrapone</b> Capsules 250mg	<b>For specialist use only</b>
<b>Additional notes</b> <ul style="list-style-type: none"> <li>Metyrapone is used for Cushing’s syndrome, often in a lower dose combination with aminoglutethamide to reduce side effects.</li> </ul>		