

Chapter 6. Endocrine

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Key

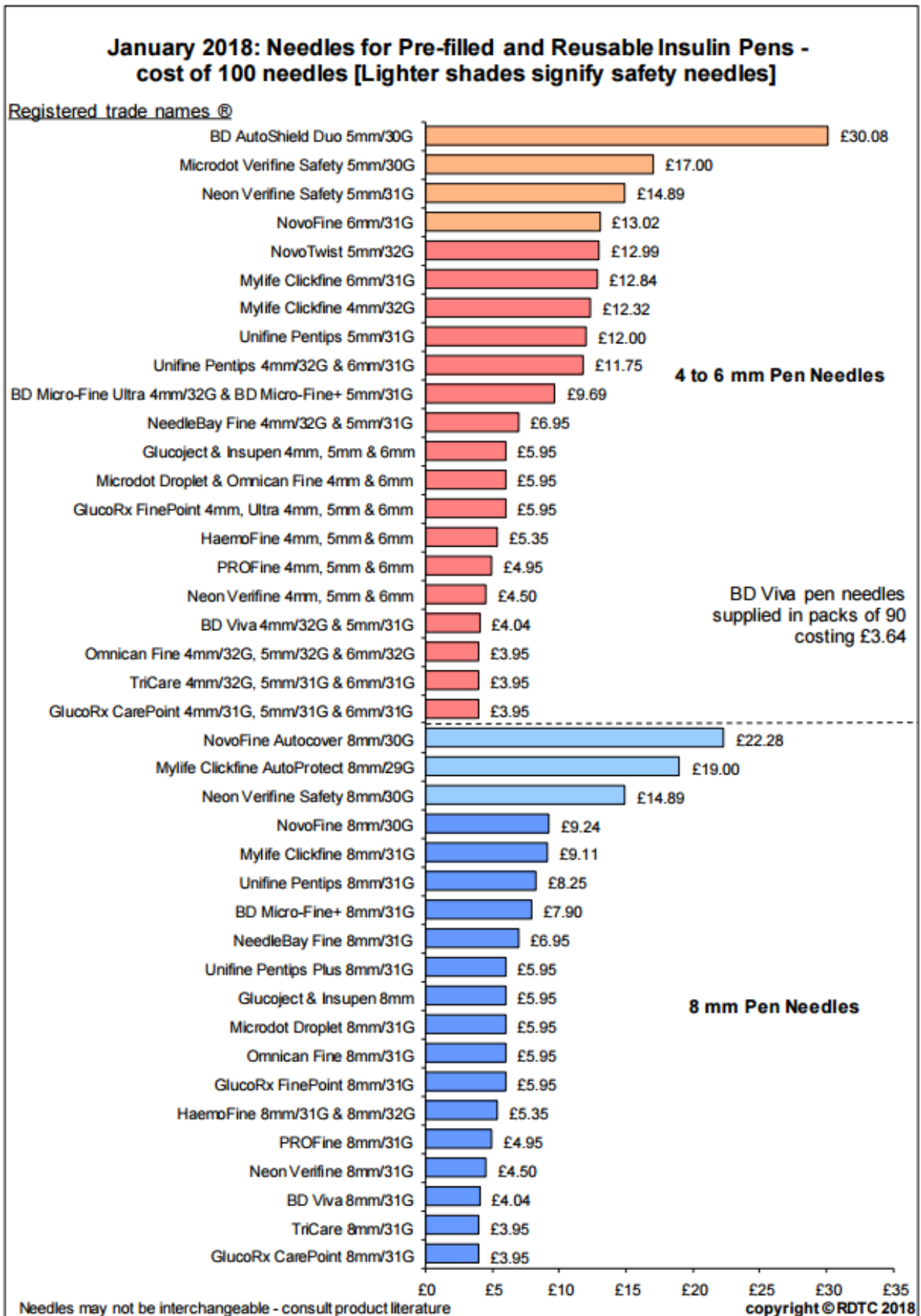
	Red drug see GMMMG RAG list <i>Click on the symbols to access this list</i>
	Amber drug see GMMMG RAG list <i>Click on the symbols to access this list</i>
	Green drug see GMMMG RAG list <i>Click on the symbols to access this list</i>
U	If a medicine is unlicensed this should be highlighted in the template as follows Drug name U
	Not Recommended
OTC	Over the Counter
Order of Drug Choice	Where there is no preferred 1 st line agent provided, the drug choice appears in alphabetical order.

BNF chapter	6	Endocrine
Section	6.1	Drugs used in Diabetes
Subsection	6.1.1	Insulin
Subsection	6.1.1.1	Short-acting insulin
Soluble insulin		
Additional notes		
<ul style="list-style-type: none"> Patients starting on insulin should receive an insulin passport; See the adult patient's passport to safer insulin use (NPSA). A passport should be provided by the prescriber initiating treatment The NPSA issued an alert in June 2010 for the safer administration of insulin. All patients starting on insulin must inform the DVLA and also their motor vehicle insurance company. Insulins are available in a variety of vial, cartridge and pre-loaded pen presentations. Not all cartridges fit all pens. NICE NG17: Type 1 diabetes in adults: diagnosis and management NICE NG28: Type 2 diabetes in adults: management NICE NG19: Diabetic foot problems: prevention and management 		
First choice	Actrapid® (Novo Nordisk) <ul style="list-style-type: none"> 10ml vial 	
Alternatives	Humulin S® (Lilly) <ul style="list-style-type: none"> 3ml cartridge (via Autopen® Classic or HumaPen®) 10ml vial Insuman® Rapid (Sanofi-Aventis) <ul style="list-style-type: none"> 3ml cartridge (via KlikSTAR® or Autopen® 24) 	
Rapid acting insulin analogues		
First choice	Apidra® (Sanofi-Aventis) <ul style="list-style-type: none"> 3ml cartridge (via KlikSTAR® or Autopen® 24) 3ml prefilled disposable pen 10ml vial Humalog® (Lilly) <ul style="list-style-type: none"> 3ml cartridge (via Autopen® Classic or HumaPen®) 3ml prefilled disposable pen 10ml vial 	
Alternatives	NovoRapid® (Novo Nordisk) <ul style="list-style-type: none"> 3ml cartridge (via NovoPen® devices) 3ml prefilled disposable pen, 10ml vial 	

Subsection	6.1.1.2 Intermediate and long acting insulin	
<p>Additional notes</p> <ul style="list-style-type: none"> 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 NPC document 'Key Therapeutic Topics' for full 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. Insulatard®, Humulin I® or Insuman® Basal) 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)		
First choice	<p>Insuman® Basal (Sanofi-Aventis)</p> <ul style="list-style-type: none"> 3ml cartridge (via <i>ClikSTAR®</i> or <i>Autopen®</i> 24 devices) 3ml prefilled disposable pen – <i>SoloSTAR®</i> 5ml vial 	NICE NG28: Type 2 diabetes in adults: management
Alternatives	<p>Insulatard® (Novo Nordisk)</p> <ul style="list-style-type: none"> 3ml cartridge (via <i>NovoPen®</i> 4 device) 3ml prefilled disposable pen - <i>InnoLet®</i> 10ml vial <p>Humulin I® (Lilly)</p> <ul style="list-style-type: none"> 3ml cartridge (via <i>HumaPen® Luxura</i> device) 3ml prefilled disposable pen – <i>KwikPen®</i> 10ml vial 	
Long Acting Insulin Analogues		
First choice	<p>Abasaglar®▼ (Insulin Glargine, Eli Lilly)</p> <ul style="list-style-type: none"> 3ml cartridge (via <i>HumaPen Savvio®</i>) 3ml prefilled disposable pen (via <i>KwikPen®</i>) 	GM NTS: Insulin Glargine Biosimilars for T1DM and T2DM NICE NG28: Type 2 diabetes in adults: management
Alternatives	<p>Levemir® (Insulin Detemir, Novo Nordisk)</p> <ul style="list-style-type: none"> 3ml cartridges (via <i>NovoPen®</i> 4 device) 3ml prefilled disposable pen - <i>FlexPen®</i> or <i>Innolet®</i> (only for patients with manual dexterity problems) 	
Biphasic Insulin		
First choice	<p>Soluble/Isophane Mixtures</p> <p>Humulin M3® (Lilly)</p> <ul style="list-style-type: none"> 3ml cartridge (via <i>HumaPen® Luxura</i> device) 3ml prefilled disposable - <i>KwikPen®</i> 10ml vial 	

	<p>Insuman® Comb 25 (Sanofi-Aventis)</p> <ul style="list-style-type: none"> • 3ml cartridge (via <i>ClikSTAR®</i> or <i>Autopen® 24</i> devices) • 3ml prefilled disposable pen - <i>SoloSTAR®</i> • 5ml vial <p>Insuman® Comb 15 (Sanofi-Aventis)</p> <ul style="list-style-type: none"> • 3ml cartridge (via <i>ClikSTAR®</i> or <i>Autopen® 24</i> devices) <p>Insuman® Comb 50 (Sanofi-Aventis)</p> <ul style="list-style-type: none"> • 3ml cartridge (via <i>ClikSTAR®</i> or <i>Autopen® 24</i> devices) 	
<p>Alternatives</p>	<p>Intermediate Acting Analogue Mixtures</p> <p>NovoMix® 30 (Novo Nordisk)</p> <ul style="list-style-type: none"> • 3ml cartridge (via <i>NovoPen® 4</i> device) • 3ml prefilled disposable pen - <i>FlexPen®</i> <p>Humalog® Mix25 (Lilly)</p> <ul style="list-style-type: none"> • 3ml cartridge (via <i>HumaPen® Luxura</i> device) • 3ml prefilled disposable pen - <i>KwikPen®</i> • 10ml vial <p>Humalog® Mix50 (Lilly)</p> <ul style="list-style-type: none"> • 3ml cartridge (via <i>HumaPen® Luxura</i> device) • 3ml disposable prefilled pen - <i>KwikPen®</i> 	
<p>Additional notes</p> <ul style="list-style-type: none"> • 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. 		
<p>Subsection</p>	<p>6.1.1.2 Animal insulins</p>	
<p>Bovine and Porcine Insulin</p>		
<p>Additional notes</p> <ul style="list-style-type: none"> • 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 <i>Autopen Classic®</i> 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 		

Subsection	6.1.1.3 Hypodermic equipment	
Lancets, needles, syringes and accessories are listed under Hypodermic Equipment in Part 1XA of the Drug Tariff .		
Lancets		
Additional notes		
<ul style="list-style-type: none"> • There are many different lancets available. Prescribing of lancets should be based on the compatibility of the device the patient has. • Finger-pricking devices are not prescribable on the NHS 		
Needles		
First choice	4mm 31G needles	
Alternatives	8mm 31G needles 12mm 29G needles	
Additional notes		
<ul style="list-style-type: none"> • First choice should usually be a 4mm needle to reduce injection pain • Only those needles that are less than £6 for pack of 100 are on-formulary (see cost comparison chart below) 		



Needle clipping device		
First choice	BD Safe-Clip®	Should be given to all patients who do not have a sharps bin
Alternatives	Sharpsguard® 1 litre sharps bin Sharpsafe® 1 litre sharps bin	
Subsection	6.1.2 Anti Diabetic drugs	
Subsection	6.1.2.1 Sulphonylureas	
First choice	Gliclazide Tablets 40mg, 80mg Glimepiride Tablets 1mg, 2mg, 4mg	
Subsection	6.1.2.2. Biguanides	
First choice	Metformin Tablets 500mg, 850mg	
Alternatives	Metformin modified release Tablets 500mg, 750mg, 1g	
Additional notes		
<ul style="list-style-type: none"> 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_{1c} after 3 months and assess patient for adherence to treatment / adverse effects), discontinue if not tolerated or ineffective. Metformin can be used in pregnancy under specialist supervision see NICE NG3: Diabetes in pregnancy 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. NICE PH38: Type 2 diabetes: prevention in people at high risk 		
Subsection	6.1.2.3. Other antidiabetic drugs	
Thiazolidinediones (Glitazones)		
First choice	Pioglitazone Tablets 15mg, 30mg, 45mg	NICE NG28: Type 2 diabetes in adults: management NICE NG49: Non-alcoholic fatty liver disease (NAFLD): assessment and management MHRA DSU: Pioglitazone bladder cancer, Aug 2011 MHRA DSU: Pioglitazone cardiovascular safety, Jan 2011

Dipeptidylpeptidase-4 inhibitors (Gliptins)		NICE NG28
First choice	Alogliptin ▼ Tablets 6.25mg, 12.5mg, 25mg tablets	MHRA DSU: SGLT2 inhibitors: updated advice on increased risk of lower-limb amputation (mainly toes) MHRA DSU: SGLT2 inhibitors: updated advice on the risk of diabetic ketoacidosis (April 2016) Linagliptin is an alternative for use in patients with moderate or severe renal impairment (CrCl <50ml/min, eGFR <59ml/min)
Alternatives	Saxagliptin Tablets 5mg Sitagliptin Tablets 25mg, 50mg, 100mg Linagliptin Tablets 5mg	
Gliptin plus metformin		Only to be prescribed if genuine issue with adherence to therapy
First choice	Alogliptin plus metformin ▼ Tablets 12.5mg plus metformin 1000mg	
Alternatives	Saxagliptin plus metformin Tablets 2.5mg plus metformin 850mg / 1g Sitagliptin plus metformin Tablets 50mg plus metformin 1g Linagliptin plus metformin Tablets 2.5mg plus metformin 850mg/1g	Linagliptin is an alternative for patients with renal impairment (CrCl <50ml/min, eGFR <59ml/min)
Additional notes		
MHRA DSU: Gliptins: Risk of pancreatitis, Sept 2012 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.		
<ul style="list-style-type: none"> • 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. • Monotherapy: Saxagliptin, Sitagliptin and Linagliptin – only if metformin contra-indicated or not tolerated. Alogliptin is not licensed for monotherapy. • Renal impairment: <ul style="list-style-type: none"> ○ 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. ○ Linagliptin: No dose adjustment required. ○ 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. ○ Sitagliptin: Dose is 50mg per day for use in moderate renal impairment and 25mg per day for use in severe renal impairment. • 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. 		

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

First choice DAILY preparation	Lixisenatide (Lyxumia®) ▼ Disposable pen 10mcg, 20mcg	NICE NG28: Type 2 diabetes in adults: management
Alternative DAILY preparation	Liraglutide (Victoza®) Disposable pen 0.6mg, 1.2mg	
First choice WEEKLY preparation	Dulaglutide (Trulicity®) ▼ Disposable pen 0.75mg and 1.5mg	
Alternative WEEKLY preparation	Exenatide (Bydureon®) Disposable pen 2mg	

Additional 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_{1c} 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 liraglutide) should be considered

Sodium glucose cotransporter-2 (SGLT-2) inhibitor

	<p>Canagliflozin (Invokana®)▼ Tablets 100mg, 300mg</p> <p>Dapagliflozin (Forxiga®) Tablets 5mg, 10mg</p> <p>Empagliflozin (Jardiance®)▼ Tablets 10mg, 25mg</p>	<p>NICE TA390: Canagliflozin, dapagliflozin and empagliflozin as monotherapies for treating type 2 diabetes</p> <p>NICE TA315: Canagliflozin in combination therapy for treating type 2 diabetes. June 2014</p> <p>NICE TA288: Dapagliflozin in combination therapy for treating type 2 diabetes June 2013</p> <p>NICE TA336: Empagliflozin in combination therapy for treating type 2 diabetes</p> <p>NICE TA418: Dapagliflozin in triple therapy for treating type 2 diabetes</p> <p>MHRA DSU: SGLT2 inhibitors: updated advice on the risk of diabetic ketoacidosis, April 2016</p> <p>MHRA DSU: Updated advice on increased risk of lower limb amputation (mainly toes), March 2017</p>
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Additional notes

- In individuals with type 2 diabetes and established cardiovascular disease, SGLT2 inhibitors with proven cardiovascular benefit (currently empagliflozin and canagliflozin) should be considered

Other antidiabetic agents (no class)		
First choice	Repaglinide Tablets 500micrograms, 1mg, 2mg	
Alternatives	Nateglinide Tablets 60mg, 120mg, 180mg	
Additional notes		
<ul style="list-style-type: none"> Nateglinide only licensed for use in combination with metformin. Cautioned in moderate hepatic impairment. <p>Repaglinide can be given as monotherapy or in combination with metformin. It should be avoided in patients >75 years old and in patients with severe liver disease.</p>		
Subsection	6.1.3 Diabetic ketoacidosis	
<p>Refer to national diabetic ketoacidosis guidance for management of this condition: The Management of Diabetic acidosis (full report)</p>		
Subsection	6.1.4 Treatment of hypoglycaemia	
First choice	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.	
Alternatives	<p>GlucoGel® Oral gel tube (containing 10g of glucose in each 23g weight tube) Pack Size: box of 3 tubes</p> <p>GlucaGen® Hypokit 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>
Subsection	6.1.5 Treatment of diabetic nephropathy and neuropathy	
Diabetic neuropathy		
This section of the formulary should be used in conjunction with chapter 4 section 4.7.3 (Neuropathic pain)		
First choice	<p>Amitriptyline U Tablets 10mg, 25mg, 50mg</p> <p>Duloxetine Capsules 60mg</p>	<p>GMMMG neuropathic pain guideline</p> <p>NICE CG173: Neuropathic pain in adults: pharmacological management in non-specialist settings</p>

Alternatives	<p>Gabapentin Capsules 100mg, 300mg, 400mg</p> <p>Nortriptyline U Tablets 10mg, 25mg</p> <p>Pregabalin Capsules 25mg, 50mg, 75mg, 100mg, 150mg, 200mg, 225mg, 300mg</p> <p>Capsaicin cream 0.075%</p>	<p>MHRA DSU: Gabapentin (Neurontin): risk of severe respiratory depression, Oct 2017</p> <p>Noritriptyline is useful if the patient gains benefit with amitriptyline but experiences side/adverse effects.</p> <p>Pregabalin should be prescribed as twice daily dosing to improve patient adherence, reduce overall treatment cost and is as efficacious as thrice-daily.</p>
Subsection	6.1.6 Diagnostic and monitoring devices for diabetes mellitus	
Blood monitoring		
<p>Each CCG will have their own agreed choice of blood glucose testing meters and corresponding test strips, due to local procurement arrangements.</p> <p>GMMMG recommendation on FreeStyle Libre Flash Glucose Monitoring System</p> <p>DVLA current guidance 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.</p>		
Urinalysis – Glucose		
	Diastix®	
Urinalysis – Ketones		
	Ketostix® N.B. Tests for ketones by patients are rarely required unless they become unwell.	
Alternatives	All other test strips should only be used in clinics for proteinuria / microalbuminuria and renal screening.	
Chapter	6 Endocrine	
Section	6.2 Thyroid and antithyroid drugs	
Subsection	6.2.1 Thyroid hormones	
First choice	Levothyroxine Tablets 25 microgram, 50 microgram, 100 microgram	
Additional notes		
<ul style="list-style-type: none"> Micrograms should not be abbreviated 		
Subsection	6.2.2 Antithyroid hormones	
First choice	Carbimazole	

	Tablets 5mg, 20mg	
Alternatives	<p>Propylthiouracil</p> <p>Tablets 50mg</p>	<p>G_n</p> <p>Prescribing to remain with specialist care until stable.</p> <p>FDA: Propylthiouracil induced liver failure, April 2010</p>

Chapter	6	Endocrine
Section	6.3	Corticosteroids
Subsection	6.3.1	Replacement therapy
First choice	Fludrocortisone acetate Tablets (scored) 100 micrograms	
Additional notes		
<ul style="list-style-type: none"> When prescribing fludrocortisone do not abbreviate micrograms. 		
Subsection	6.3.2.	Glucocorticoid therapy
First choice	Prednisolone (NOT enteric coated) Tablets 1mg, 5mg, 25mg Hydrocortisone Tablets 10mg, 20mg Injection (as sodium phosphate) 100mg in 1ml Injection (as sodium succinate) 100mg Dexamethasone Tablets 500 microgram, 2mg Injection (as sodium phosphate) 4mg/ml Oral solution SF 2mg/5ml	
Alternatives	Betamethasone Injection 4mg in 1ml Soluble tablets 500 microgram Methylprednisolone Injection (as sodium succinate) 40mg, 125mg, 500mg, 1g, 2g (Solu-Medrone) Depot Injection (as acetate – aqueous suspension) 40mg/ml (Depo-Medrone) Tablets 100mg	
<p>MHRA DSU: Methylprednisolone injectable medicine containing lactose (Solu-Medrone 40 mg): do not use in patients with cows' milk allergy, Oct 2017</p>		
Additional notes		
<ul style="list-style-type: none"> Steroid cards should be issued to all patients who are prescribed steroids for longer than 3 weeks. 		



Chapter	6	Endocrine
Section	6.4	Sex hormones
Subsection	6.4.1.	Female sex hormones and their modulators
Subsection	6.4.1.1.	Oestrogens and HRT
<p>Additional notes</p> <p>The MHRA provides information on risks and benefits of HRT: MHRA DSU: Hormone Replacement Therapy, March 2007</p> <p>Some low dose preparations only provide relief from menopausal symptoms.</p> <p>Other preparations offer relief from menopausal symptoms plus osteoporosis prophylaxis – check BNF.</p>		
<p>Sequential combined therapy – for women with a uterus</p>		
Options	<p>Elleste Duet® Tablets 1mg, 2mg Estradiol 1mg / 2mg plus Estradiol 1mg / 2mg + norethisterone 1mg</p> <p>Femoston® Tablets 1mg, 2mg Estradiol 1mg / 2 mg Plus Estradiol 1 mg/2 mg + dydrogesterone 10 mg</p> <p>Evorel Sequi® Patches Estradiol 50 micrograms plus Estradiol 50 micrograms + norethisterone acetate 170 micrograms</p>	<p>NICE NG23: Menopause: diagnosis and management</p> <p>Patches should be reserved for use in patients with diabetes, liver disease or severe side effects</p>
<p>Continuous combined therapy – for women with a uterus</p>		
First choice	<p>Premique® low dose Tablets conjugated oestrogen 300micrograms + medroxyprogesterone acetate 1.5mg</p>	

Alternatives	<p>Kliovance® Tablets Estradiol 1mg + norethisterone acetate 500micrograms</p> <p>Kliofem® Tablets Estradiol 2mg + norethisterone acetate 1mg</p> <p>Femoston conti® Tablets Estradiol 0.5mg + dydrogesterone 2.5mg Estradiol 1mg + dydrogesterone 5.0mg</p> <p>Evorel conti® Patches Estradiol 50micrograms/24 hours + norethisterone acetate 170micrograms/24hours</p>	<p>Patches should be reserved for use in patients with diabetes, liver disease or severe side effects</p>
Unopposed oestrogen – for women without a uterus		
First choice	<p>Premarin® Tablets Conjugated oestrogen 300micrograms, 625micrograms, 1.25mg</p>	
Alternatives	<p>Elleste-Solo® Tablets Estradiol 1mg, 2mg</p> <p>Evorel® Patches Estradiol 25, 50, 75, 100micrograms</p>	<p>Patches should be reserved for use in patients with diabetes, liver disease or severe side effects</p>
Others		
	<p>Raloxifene hydrochloride Tablets 60mg</p>	<p>NICE TA161: Osteoporosis - secondary prevention including strontium</p>
Subsection	6.4.1.2. Progestogens and progesterone receptor modulators	
	<p>Medroxyprogesterone acetate Tablets 2.5mg, 5mg, 10mg</p> <p>Norethisterone Tablets 5mg</p>	
Progesterone receptor modulators		
<p>Ulipristal acetate (Esmya®) has been temporarily removed from this section of the GMMMG formulary pending the outcome of the MHRA safety review. Prescribers should refer to this safety guidance when considering the ongoing prescribing of Esmya® in their patients.</p>		


Subsection	6.4.2. Male sex hormones and antagonists	
Testosterone and esters		
	<p>Intramuscular Injection</p> <p>Testosterone enatate 250mg/ml, 1ml amp</p> <p>Testosterone undecanoate 250mg/ml (Nebido®), 4ml amp</p> <p>Implant</p> <p>Testosterone 100mg, 200mg</p> <p>Transdermal preparations</p> <p>Testosterone 2% (Tostran®)</p> <p>Gel 60g multi-dose dispenser</p> <p>Testosterone 1% (50mg/5ml) (Testogel®)</p> <p>Gel 30 x 5g sachets</p> <p>Oral</p> <p>Testosterone (Restandol®)</p> <p>Capsules 40mg</p>	
	<p>Mesterolone</p> <p>Tablets 25mg</p>	
Other male sex hormones and antagonists		
	<p>Finasteride</p> <p>Tablets</p> <p>5mg</p>	<p>MHRA DSU (2017): Finasteride: rare reports of depression and suicidal thoughts</p>

Chapter	6	Endocrine
Section	6.5	Hypothalamic and pituitary hormones and anti-oestrogens
Subsection	6.5.1.	Hypothalamic and anterior pituitary hormones and anti-oestrogens
Anti-oestrogens		
First choice	Clomifene Tablets 50mg	R
Additional notes		
<ul style="list-style-type: none"> Clomifene is only indicated for patients in whom ovulatory dysfunction has been demonstrated and other causes of infertility have been excluded or adequately treated 		
Anterior pituitary hormones – Corticotrophins		
This section is managed in Specialist care therefore is not considered in this formulary.		
Anterior pituitary hormones - Gonadotrophins		
This section is managed in Specialist care therefore is not considered in this formulary.		
Growth hormone		
	Somatropin 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	A NICE TA64: Growth hormone deficiency (adults) August 2003 R Adults, except in proven primary and secondary hypopituitarism.
Growth hormone receptor antagonists		
	Pegvisomant (Somavert®) Injection 10mg,15mg, 20mg	R
Hypothalamic hormones		
This section is managed in Specialist care therefore is not considered in this formulary		

Subsection	6.5.2 Posterior pituitary hormones and antagonists	
Posterior pituitary hormones		
First choice	<p>Desmopressin</p> <p>Tablets</p> <p>100microgram, 200micrograms</p>	
Alternatives	<p>Desmopressin</p> <p>Sublingual tablets</p> <ul style="list-style-type: none"> • 60micrograms (DDAVP® melt) • 120micrograms (Desmomelt®) • 240micrograms (Desmomelt®) <p>Nasal spray 6ml (60 sprays)</p> <ul style="list-style-type: none"> • 10micrograms per metered spray 	
Additional notes		
<ul style="list-style-type: none"> • MHRA DSU: Desmopressin nasal spray: Removal of the primary nocturnal enuresis (bedwetting) indication, Sept 2007 		
Antidiuretic hormone antagonists		
	<p>Tolvaptan[▼] (Jinarc®) – for treating autosomal dominant polycystic kidney disease only as per NICE TA358</p> <p>Tablets</p> <p>15mg, 30mg,</p> <p>45mg and 15mg</p> <p>60mg and 30mg</p> <p>90mg and 30mg</p>	<p>R</p> <p>NICE TA358: Tolvaptan for treating autosomal dominant polycystic kidney disease</p>

Chapter	6	Endocrine
Section	6.6.	Drugs affecting bone metabolism
Subsection	6.6.1.	Calcitonin and parathyroid hormone
Additional notes: NICE TA160: Osteoporosis – primary prevention NICE TA161: Osteoporosis -secondary prevention including strontium MHRA DSU: Bisphosphonates: atypical femoral fractures, June 2011 MHRA DSU: Bisphosphonates: very rare reports of osteonecrosis of the external auditory canal, Dec 2015 MHRA DSU: Strontium ranelate: cardiovascular risk—restricted indication and new monitoring requirements, March 2014		
First choice	Teriparatide (Forsteo®) 250micrograms/ml 2.4ml pre-filled pens	 For Specialist use only NICE TA161: Osteoporosis -secondary prevention including strontium
Alternatives	Parathyroid hormone (Preotact®) 1.61mg (14 dose) Injection s/c	 For Specialist use only
Subsection	6.6.2. Bisphosphonates and other drugs affecting bone metabolism	
Bisphosphonates		
First choice	Alendronic acid Tablet 70mg (Once weekly preparation) Risedronate Tablet 35mg (Once weekly preparation)	NICE TA161: Osteoporosis -secondary prevention including strontium NICE TA160: Osteoporosis – primary prevention
Alternatives	Sodium clodronate Tablets 800mg Zoledronic acid Solution for infusion vial 4mg/5ml Infusion bottles 4mg/100ml, 5mg/100ml	Specialist initiation only  Specialist use only NTS recommendation: zoledronic acid

Other drugs affecting bone metabolism

	<p>Denosumab▼ Injection s/c 60mg/ml x 1ml</p>	<p> A</p> <p>NICE TA204: Denosumab – Osteoporotic fractures</p> <p>MHRA DSU: denosumab (Prolia, Xgeva): reports of osteonecrosis of the external auditory canal</p> <p>MHRA DSU: denosumab, Feb 2013</p> <p>MHRA DSU: denosumab, Sept 2014</p> <p>MHRA DSU: denosumab and osteonecrosis of the jaw, July 2015</p> <p>NTS recommendation: denosumab for the treatment of osteoporosis in men</p>
	<p>Strontium ranelate▼ Sachet granules 2g</p>	<p>Specialist initiation only</p> <p>NICE TA161: Osteoporosis -secondary prevention including strontium</p> <p>MHRA DSU: Strontium ranelate: cardiovascular risk—restricted indication and new monitoring requirements, March 2014</p>

Chapter	6	Endocrine
Section	6.7.	Other endocrine drugs
Subsection	6.7.1.	Bromocriptine and other dopaminergic drugs
First choice	<p>Bromocriptine Tablets 1mg, 2.5mg</p> <p>Cabergoline Tablets 500micrograms</p>	See BNF chapter 4, section 4.9.1. for use in Parkinson's disease
Additional notes		
<ul style="list-style-type: none"> MHRA: Ergot derived dopamine agonists: risk of fibrotic reactions in chronic endocrine uses (2014) 		
Subsection	6.7.2	Drugs affecting gonadotrophins
Gonadorelin analogues		
First choice	<p>Goserelin Intradermal implant 3.6mg (every 28 days) 10.8mg (3 monthly)</p> <p>Leuprorelin Prefilled dual chamber syringe (DCS) 3.75mg (monthly) 11.25mg (every 3 months)</p>	<p>A (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>R (for long term, >6 months use, for precocious puberty, testosterone castration in sex offenders and all unlicensed uses)</p> <p>A (for licensed indications) See section 8.3.4.2. – for use in prostate cancer</p> <p>R (for long term, >6 months use, for precocious puberty, testosterone castration in sex offenders and all unlicensed uses)</p>
Alternatives	<p>Buserelin Nasal spray 150micrograms/metered spray Injection (s/c) 1mg/ml</p> <p>Nafarelin Nasal spray 200micrograms/metered spray</p>	R
Additional notes		
<ul style="list-style-type: none"> Goserelin and leuprorelin are included in this section for endometriosis only. Please refer to chapter 8 for other indications. 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. 		

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