



# Guidelines for the Pharmacological Management of Attention Deficit Hyperactivity Disorder (ADHD) in Children, Young People and Adults

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**Target Audience:**

This guideline must be read and understood by all staff involved in the management of service users with ADHD

# **Guidelines for the Pharmacological Management of Attention Deficit Hyperactivity Disorder (ADHD) in Children, Young People and Adults**

## **1. Introduction**

These guidelines are for the pharmacological management of ADHD in children, young people and adults in Hertfordshire Partnership University NHS Foundation Trust (HPFT) services.

ADHD is a common neurodevelopmental disorder characterised by inappropriate levels of activity and impulsivity and an impaired ability to sustain attention.<sup>1</sup> Those affected have difficulty regulating their activities to conform to expected norms, and often fail to achieve their potential. Many have comorbid difficulties such as developmental delays, specific learning problems and other emotional and behavioural disorders. Severe ADHD may be diagnosed as hyperkinetic disorder, which is characterised by a more severe disturbance with significant hyperactivity.<sup>2</sup>

Although ADHD begins in childhood, research has shown that it can continue through to adulthood for some. Approximately 15% of children with ADHD retain the diagnosis by age 25. A much larger proportion (65%) are in partial remission, with persistence of some symptoms associated with continued impairment. In adults, social and occupational problems can be caused by difficulties in concentrating, paying attention to detail and completing tasks, together with impulsivity and an inability to plan ahead. Moreover, ADHD is commonly associated with mental health, addiction or behavioural problems.<sup>3</sup>

The NICE ADHD guidelines (CG72)<sup>4</sup> state that a diagnosis of ADHD in children, young people and adults should only be made by a paediatrician, specialist psychiatrist, or other appropriately qualified healthcare professional with training and expertise in the diagnosis of ADHD. For a diagnosis of ADHD, based on a complete history and evaluation of the patient, symptoms of hyperactivity/impulsivity and/or inattention should:

- meet the diagnostic criteria in DSM-IV or ICD-10 (hyperkinetic disorder), and
- be associated with at least moderate psychological, social and/or educational or occupational impairment based on interview and/or direct observation in multiple settings, and
- be pervasive, occurring in two or more important settings including social, familial, educational and/or occupational settings

## **2. Purpose and Scope**

To provide guidance on the safe and effective prescribing of medication to children, young people and adults diagnosed with ADHD within HPFT.

The following reference sources should also be consulted alongside these guidelines:

- [NICE CG 72](#): Attention deficit hyperactivity disorder. Diagnosis and management
- [NICE TAG 98](#): Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder (ADHD) in children and adolescents
- [British Association for Psychopharmacology](#): Evidence-based guidelines for the pharmacological management of attention-deficit hyperactivity disorder (2014)
- The Maudsley Prescribing Guidelines in Psychiatry
- BNF
- BNF for children

## **3. Treatment for school-age children, young people and adults with ADHD<sup>4</sup>**

A diagnosis of ADHD based on either DSM-IV or ICD-10 criteria must be present and documented, prior to commencing pharmacological treatment. Such treatment should be initiated by an appropriately qualified specialist with expertise in ADHD and must not be initiated if the diagnosis is uncertain, or benefit unlikely. Pharmacological treatment should always form part of a comprehensive treatment plan that includes psychological, behavioural, educational and occupational interventions.

Continued prescribing and monitoring may be performed by general practitioners, under shared care arrangements (see ADHD Shared Care Protocol).

Drug therapy is not recommended for pre-school children and parent-training/education programmes are the first-line treatment.

For school-age children and young people with moderate impairment, parent-training/education programmes are usually the first-line treatment. CBT and/or social skills training may also be offered. Pharmacological treatment is NOT indicated as the first-line treatment in this group and should be reserved for those:

- with severe symptoms and impairment
- with moderate levels of impairment who have refused non-drug interventions
- whose symptoms have not responded sufficiently to parent-training/education programmes or group psychological treatment

For adults with either moderate or severe impairment, drug therapy should be the first-line treatment unless the person would prefer a psychological approach. Drug treatment should only be started under the guidance of a psychiatrist, nurse prescriber specialising in ADHD, or other clinical prescriber with training in the diagnosis and management of ADHD. CBT may also be considered. Clinicians are supported in prescribing for adults with ADHD by the NICE CG 72<sup>4</sup> and BAP (British Association of Psychopharmacology) guidelines<sup>6</sup>.

#### **4. Transition to adult services<sup>4</sup>**

Young people with ADHD receiving treatment and care from CAMHS or paediatric services should normally be transferred to adult services if they continue to have significant symptoms of ADHD. A young person should be re-assessed at school leaving age to establish the need for continuing treatment in to adulthood. Transition should be planned in advance by both referring and receiving services. A lack of treatment during the transitional period typically results in increased morbidity in adulthood.

During the transition to adult services, a formal meeting involving CAMHS and/or paediatrics and adult psychiatric services should be considered, and full information provided to the young person about adult services. The young person, and when appropriate the parent or carer, should be involved in the planning.

#### **5. Choice of drug therapy**

In children and young people for whom drug treatment is appropriate, NICE recommends methylphenidate, atomoxetine and dexamfetamine as options, within their licensed indications. The decision about which product to prescribe should be based on specific criteria, such as the presence of comorbid conditions (see General Treatment Principles below and Table 1). Methylphenidate is generally the first-line choice, followed by atomoxetine.<sup>1,5</sup>

Following a decision to start drug treatment in adults with ADHD, methylphenidate should normally be tried first. Atomoxetine or dexamfetamine should be considered in adults unresponsive or intolerant to an adequate trial of methylphenidate (this should usually be about six weeks). Caution should be exercised when prescribing dexamfetamine to those likely to be at risk of stimulant misuse or diversion.<sup>4</sup>

NICE TA98 and CG72 both pre-date the availability of lisdexamfetamine dimesylate and licensed guanfacine in the UK. Their place in therapy is indicated in Table 1 below.

The '[Choice and Medication](#)' website has a number of [Handy Charts](#) which may help the prescriber and patient and / or his or her parent or guardian to decide which medication is the most suitable.

When discussing treatment options with an adult, child, young person and/or his or her parent or guardian, written information should be provided along with information about how to access further information if needed. Patient information leaflets are available from the [Choice and Medication](#) website.

\*Antipsychotics are not recommended for the treatment of ADHD in children, young people and adults.

## 6. Patient monitoring<sup>4,5,6,7</sup>

### Baseline assessment

Prior to commencing pharmacological treatment for ADHD, children, young people and adults should have a full pre-treatment assessment, which should include the following:

- Full mental health and social assessment.
- Full history and physical examination, including:
  - assessment of history of exercise syncope, undue breathlessness and other cardiovascular symptoms
  - heart rate and blood pressure - plotted on a centile chart for children and young people; [Blood Pressure Charts](#) (Also refer to Appendix 1 & 2: Blood Pressure Table – Boys & Girls)
  - height and weight - plotted on a growth chart for children and young people; [RCPCH Girls Growth Chart 2-18 years](#) and [RCPCH Boys Growth Chart 2-18 years](#) Weight only for adults - plotted on a weight/BMI chart [Height / Weight Chart - NHS Choices](#)
  - family history of cardiac disease and examination of the cardiovascular system if deemed appropriate
- An electrocardiogram (ECG) if there is a past medical or family history of serious cardiac disease, a history of sudden death in young family members, or abnormal findings on cardiac examination. Further specialist cardiac evaluation should be considered in such cases.
- Risk assessment for substance misuse and drug diversion in young people and adults.
- For girls of child-bearing potential, it is important to discuss contraception and the risks of pregnancy, and to consider the safety of prescribing medication in pregnancy.
- Prior to prescribing guanfacine, in addition to the monitoring above, it is necessary to conduct a baseline evaluation to identify patients at increased risk of somnolence and sedation, hypotension and bradycardia, QT-prolongation arrhythmia and weight increase/risk of obesity.

### On-going monitoring

#### Height

- Measure every 6 months in children and young people and plot on a growth chart (see above under 'Baseline assessment' for links to growth charts). This must be reviewed by the healthcare professional responsible for treatment.
- If growth is significantly affected by drug treatment (i.e. the child or young person has not met the height expected for their age), the option of a planned break in treatment over school holidays should be considered to allow 'catch-up' growth to occur.

#### Weight

- Measure 3 and 6 months after commencement of drug treatment and every 6 months thereafter in children, young people and adults. Plot weight on the relevant growth/weight chart for children, young people and adults (see above under 'Baseline assessment' for links to growth/weight charts). This must be reviewed by the healthcare professional responsible for treatment.
- If there is evidence of weight loss associated with drug treatment for ADHD consider the following strategies to reduce weight loss or manage decreased weight gain:
  - take medication either with or after food, rather than before meals
  - recommend additional meals or snacks early in the morning or late in the evening when the stimulant effects of certain medicines have worn off
  - obtain dietary advice
  - encourage consumption of high-calorie foods of good nutritional value

- consider changing the medication if weight loss persists
- Patients treated with guanfacine may show an increase in their weight, therefore monitoring of weight should be done on a 3-monthly basis for the first year of treatment and 6-monthly monitoring thereafter.  
Strategies to reduce weight gain, or manage increased weight gain must be discussed with the patient and or parent/carer(s).

#### **Heart rate and blood pressure (refer to Appendix 1 & 2)**

- Monitor and record (on a centile chart for children and young people) before and after each dose change and routinely every 3 months. (See above under 'Baseline assessment' for links to centile charts).
- For people who have sustained resting tachycardia, arrhythmias or a systolic blood pressure greater than the 95<sup>th</sup> percentile (or a clinically significant increase) measured on two occasions should have their dose reduced and be referred to a paediatrician or adult physician.

#### **Psychiatric disorders**

- Development of *de novo* or worsening of pre-existing psychiatric disorders should be monitored at every adjustment of dose and then at least every 6 months and at every visit with the specialist or GP.

#### **Risk of diversion, misuse and abuse**

- Patients should be monitored for the risk of diversion, misuse and abuse of CNS stimulants such as methylphenidate, dexamphetamine and lisdexamphetamine. For children and young people prescribed stimulant drugs, monitor for changes in the potential for drug misuse and diversion, which may come with changes in circumstances and age.

## **7. General treatment principles<sup>4</sup>**

Prescribers should have good knowledge of the medicines used for the treatment of ADHD and their different preparations, including their pharmacokinetic profiles, thus allowing treatment to be tailored effectively for an individual (refer to BNF and relevant Summary of Product Characteristics - SPCs).

Prescribers must be familiar with Controlled Drug (CD) legislation governing the prescription and supply of stimulant drugs which have a misuse potential and risk of diversion.

During titration, the dose should be gradually increased until there is adequate control of symptoms and behaviour and improvement in education and/or relationships and side-effects are tolerable.

Effects and side-effects of drug treatment must be routinely monitored and recorded in the relevant electronic patient record (EPR). A dose reduction should be considered if side-effects become troublesome.

If there is a choice of more than one appropriate drug, the product with the lowest cost (taking into account the cost per dose and number of daily doses) should be prescribed.

Following an adequate response, drug treatment for ADHD should be continued for as long as it is clinically effective. This should be reviewed annually.

NICE recommends when deciding to treat children or young people with drugs, professionals should consider:

- Methylphenidate for ADHD without significant comorbidity
- Methylphenidate for ADHD with comorbid conduct disorder
- Methylphenidate or atomoxetine when tics, Tourette syndrome, anxiety disorder, stimulant misuse or risk of stimulant diversion are present

- Atomoxetine if methylphenidate has been tried and has been ineffective at the maximum tolerated dose, or the child or young person is intolerant to low or moderate doses
- In consultation with a specialist, dexamfetamine may be considered in children and young people whose ADHD is unresponsive to a maximum tolerated dose of methylphenidate or atomoxetine

Dose titration should be slower if tics or seizures are present. Also, monitor for emergence or worsening of tics at every dose adjustment. If stimulant drug related tics emerge, reduce dose of the stimulant drug, consider changing to atomoxetine, or stop drug treatment.

If seizures are exacerbated in a child or young person with epilepsy, or de novo seizures emerge following initiation of methylphenidate or atomoxetine, discontinue the drug immediately.

Dexamfetamine may be considered as an alternative in consultation with a specialist.

Following an adequate treatment response, NICE advise that drug treatment be continued for as long as it remains clinically effective. The need for continued drug treatment should be reviewed at least annually. This should involve a comprehensive assessment of clinical need, benefits and side effects. The effect of missed doses, planned dose reductions and brief periods of no treatment should be evaluated. NICE state that drug holidays, although not routinely recommended, may be considered.

**TABLE 1: ADHD Medication – Dosing Guidance, Formulation(s) and Additional Prescribing Information (Adapted from NICE CG 72 Guidance)<sup>4,5,7,8,9,10,11</sup>**

|  | Dosing Guidance   | Formulation(s)   | Additional Prescribing Information  |
|--|---|--|---|
| <p><b>METHYLPHENIDATE</b><br/><b>(First-line: children and adults)</b></p> <p>CNS Stimulant<br/><i>Schedule 2 CD</i></p> | <p><b><u>CHILDREN 6 – 17 YEARS:</u></b></p> <p><b>Immediate release (IR) formulations</b><br/>5mg once or twice daily (breakfast and lunch), increasing daily dose by weekly increments of 5-10mg. Licensed max. dose 60mg daily</p> <p><b>Modified release (MR) formulations</b><br/><b>Concerta XL</b> 18mg once daily in the morning, increased in steps of 18mg every 1 week, then adjusted according to response. Licensed max. dose 54mg daily</p> <p><b>Delmosart XL</b> 18mg once daily in the morning, increased in steps of 18mg every 1 week, then adjusted according to response. Licensed max. dose 54mg daily</p> <p><b>Matoride XL</b> 18mg once daily in the morning, increased in steps of 18mg every 1 week, then adjusted according to response. Licensed max. dose 54mg daily</p> <p><b>Xenidate XL</b> 18mg once daily in the morning, increased in steps of 18mg every 1 week, then adjusted according to response. Licensed max. dose 54mg daily</p> | <p><b>IR formulations:</b><br/>Ritalin® 10mg<br/>Medikinet® 5mg, 10mg and 20mg tablets<br/>(preferable during initial dose titration, particularly if flexible dose regime required)</p> <p><b>MR formulations*:</b><br/>Concerta XL® (18mg, 27mg, 36mg and 54mg tablets)<br/>Delmosart® XL (18mg, 27mg, 36mg and 54mg tablets)<br/>Matoride XL® (18mg, 36mg and 54mg tablets)<br/>Xenidate XL (18mg, 27mg, 36mg and 54mg tablets)<br/>Equasym XL® (10mg, 20mg and 30mg capsules)<br/>Medikinet XL® (10mg, 20mg,</p> | <ul style="list-style-type: none"> <li>▪ Methylphenidate is indicated as part of a comprehensive treatment programme for ADHD in children 6 years of age and over when remedial measures alone prove insufficient</li> <li>▪ Begin with low doses and titrate dose against symptoms and side-effects over 4-6 weeks, until dose optimisation is achieved</li> <li>▪ MR formulations may be preferred over IR formulations for the following reasons: <ul style="list-style-type: none"> <li>- improving adherence</li> <li>- reducing stigma (no dose during school hours)</li> <li>- avoiding problems associated with storing and administering CDs at school</li> <li>- diminished rebound symptoms and addressing impairment later in the day</li> <li>- concerns re: misuse or diversion</li> </ul> </li> <li>▪ The different types of products are not interchangeable and the BNF recommends prescribing by brand name to avoid the risk of destabilisation from different release characteristics of the XL products dispensed generically</li> <li>▪ In children and young people in whom methylphenidate has been tried and has been ineffective at the maximum tolerated dose, or the individual is intolerant to low or moderate doses of this drug, consider atomoxetine</li> <li>▪ In adults unresponsive or intolerant to an adequate trial of methylphenidate (approximately 6 weeks), atomoxetine, dexamfetamine or lisdexamfetamine should be considered</li> <li>▪ Common adverse effects include insomnia, nervousness, headache, decreased appetite, abdominal pain and other gastrointestinal symptoms and cardiovascular effects such as tachycardia,</li> </ul> |

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|  | <p><b>Equasym XL</b> 10mg once daily in the morning, before breakfast, increased at weekly intervals if necessary. Licensed max. dose 60mg daily</p> <p><b>Medikinet XL</b> 10mg once daily in the morning, with breakfast, adjusted at weekly intervals according to response. Licensed max. dose 60mg daily</p> <p><b><u>ADULTS:</u></b><br/><b>(unlicensed for initiation in adults)</b><br/>Begin with low doses (5 mg three times daily for IR formulations or the equivalent MR dose)<br/>Increase dose according to response up to a maximum of 100 mg/day<br/><b>Higher doses than the licensed maximum daily doses only to be given under the direction of a specialist</b></p> | <p>30mg and 40mg capsules)</p> <p>*MR preparations should be prescribed by BRAND to ensure correct formulation is dispensed</p> | <p>palpitations and minor increases in blood pressure. For full details refer to relevant SPC</p> <ul style="list-style-type: none"> <li>▪ Associated with a worsening of pre-existing anxiety, agitation or tension and also with the onset or exacerbation of motor and verbal tics; monitor regularly</li> </ul>   |
| <p><b>ATOMOXETINE</b><br/><b>(Second-line: children and adults)</b></p> <p><i>(Selective noradrenaline reuptake inhibitor)</i></p> | <p><b><u>CHILDREN</u></b><br/><b>Child 6-17 years up to 70 kg body weight:</b> initially 0.5mg/kg/day. Increase dose after 7 days according to response, to a maintenance dose of approximately 1.2mg/kg/day<br/>*High daily doses to be given under the direction of a specialist; maximum 1.8mg/kg/day; maximum 120mg/day<br/><b>(Doses above 100mg/day not licensed)</b></p> <p><b>Child 6-17 years over 70 kg body weight:</b> use a total starting dose of 40mg/day. Increase dose after 7 days according to response up to a maintenance dose of 80mg/day.</p>   | <p>Strattera®10mg, 18mg, 25mg, 40mg, 60mg, 80mg, 100mg capsules</p> <p>Strattera® 4mg/1ml oral solution sugar-free</p>          | <ul style="list-style-type: none"> <li>▪ Atomoxetine is indicated for the treatment of ADHD in children of 6 years and older, in adolescents and in adults as part of a comprehensive treatment programme and under specialist supervision</li> <li>▪ Offer a single daily dose, or 2 divided doses to minimise side-effects</li> <li>▪ Where a satisfactory clinical response is not achieved when taken as a single daily dose, the individual may benefit from taking it as twice daily evenly divided doses in the morning and late afternoon, or early evening</li> <li>▪ Consider in individuals unresponsive or intolerant to an adequate trial of methylphenidate</li> <li>▪ Consider first-line if tics, Tourette's syndrome, anxiety disorder, stimulant misuse or risk of stimulant diversion are present</li> <li>▪ Consider if psychotic symptoms emerge after starting treatment with a stimulant drug</li> </ul> |



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|  | <p>*High daily doses to be given under the direction of a specialist; maximum 120mg/day<br/> <b>(Doses above 100mg/day not licensed)</b></p> <p><b><i>ADULTS – Atomoxetine doses in BNF may differ from those in product literature (licensed in adults)</i></b></p> <p><b>Up to 70 kg body weight:</b> initially 0.5mg/kg/day. Increase dose after 7 days according to response, to a maintenance dose of approximately 1.2 mg/kg/day</p> <p>*High daily doses to be given under the direction of a specialist; maximum 1.8mg/kg/day; maximum 120mg/day<br/> <b>(Dose maximum of 120mg not licensed)</b></p> <p><b>Over 70 kg body weight:</b> initially 40mg/day. Increase dose after 7 days according to response; maintenance 80-100mg daily</p> <p>*High daily doses to be given under the direction of a specialist; maximum 120mg/day<br/> <b>(Dose maximum of 120mg not licensed)</b></p> |  | <ul style="list-style-type: none"> <li>▪ When switching from a stimulant to atomoxetine, continue stimulant for first 4 weeks of treatment</li> <li>▪ Trial the maintenance dose for 6 weeks to determine effectiveness</li> <li>▪ Common adverse effects include abdominal pain, decreased appetite, nausea and vomiting, early morning awakening, irritability and mood swings. Increased heart rate and small increases in blood pressure were observed in clinical trials. For full details refer to SPC</li> <li>▪ Suicidal thoughts and behaviours have been reported; ensure patients and their parents/carers are informed and told to promptly report clinical worsening, suicidal thoughts/behaviour, irritability, agitation or depression. Observe closely during initial months of treatment or after a dose change</li> <li>▪ In rare cases it may cause liver damage; advise individuals of this risk and to seek prompt medical attention in the case of abdominal pain, unexplained nausea, malaise, darkening of the urine, or jaundice. Routine liver function tests are not recommended</li> <li>▪ In young people and adults monitor for sexual dysfunction and dysmenorrhoea</li> <li>▪ In January 2012 the MHRA published the following safety guidance regarding BP:<br/> Atomoxetine causes clinically important increases in blood pressure or heart rate, or both, in a small proportion of patients. Atomoxetine should not be used in patients with severe cardiovascular or cerebrovascular disorders.<br/> Thorough pre-treatment screening and regular monitoring of cardiovascular status is recommended. Specialist cardiac evaluation and advice should be sought if pre-treatment findings suggest cardiac disease or history, or if symptoms suggesting cardiac disease are found during treatment</li> </ul> |
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| <p><b>DEXAMFETAMINE</b><br/><b>E</b><br/><b>(Preferred third-line: children)</b><br/><b>(Second-line: adults)</b></p> <p>(CNS stimulant)<br/>Schedule 2 CD</p> | <p><b><u>CHILDREN</u></b><br/>Child aged 6-17 years: initially 2.5mg two or three times daily, increased according to response by 5mg at weekly intervals, increasing to a maximum of 20mg/day. Up to 40mg/day may occasionally be required</p> <p><b><u>ADULTS</u></b><br/><b>(unlicensed in adults)</b><br/>Begin with low doses of 5 mg twice daily.<br/>Increase dose weekly according to response, up to a maximum of 60 mg/day.<br/>Offer divided doses, usually between 2 and 4 times daily</p> | <p>5mg tablets<br/>1mg/ml oral solution</p>   | <ul style="list-style-type: none"> <li>▪ Dexamfetamine is indicated for children with refractory hyperkinetic states</li> <li>▪ Begin with low doses and titrate dose against symptoms and side-effects over 4-6 weeks, until dose optimisation is achieved</li> <li>▪ Consider if ADHD is unresponsive to maximum tolerated dose of methylphenidate or atomoxetine in refractory hyperkinetic states</li> <li>▪ Common adverse effects include insomnia, nervousness, headache, decreased appetite, abdominal pain and other gastrointestinal symptoms and cardiovascular effects such as tachycardia, palpitations and minor increases in blood pressure. For full details refer to relevant SPC</li> </ul>  |
| <p><b>LISDEXAMFETAMINE</b><br/><b>(Alternative third-line: children)</b><br/><b>(Second-line: adults)</b></p> <p>(CNS stimulant)<br/>Schedule 2 CD</p>         | <p><b><u>CHILDREN</u></b><br/><b>Child 6-17 years:</b> Initially 30mg once daily in the morning, increased in steps of 20mg every 1 week if required. Maximum dose 70mg/day</p> <p><b><u>ADULTS</u></b><br/><b>(licensed in adults)</b><br/>Initially 30mg once daily in the morning, increased in steps of 20mg every 1 week if required. Maximum dose 70mg/day</p>   | <p>Elvanse® 20mg, 30mg, 40mg, 50mg, 60mg and 70mg capsules</p> <p>Elvanse Adult® 30mg, 50mg and 70mg capsules</p> | <ul style="list-style-type: none"> <li>▪ Elvanse is indicated as part of a comprehensive treatment programme for ADHD in children aged 6 years and over when response to previous methylphenidate treatment is considered clinically inadequate</li> <li>▪ Consider if ADHD is unresponsive to maximum tolerated dose of methylphenidate, atomoxetine and the preferred third-line drug, dexamfetamine</li> <li>▪ Elvanse Adult is indicated as part of a comprehensive treatment programme for ADHD in adults</li> <li>▪ 25mg of lisdexamfetamine is the molecular equivalent to 10mg of dexamfetamine</li> <li>▪ Discontinue if response is insufficient after 1 month</li> <li>▪ Common adverse effects include insomnia, nervousness, headache, decreased appetite, abdominal pain and other gastrointestinal symptoms and cardiovascular effects such as tachycardia, palpitations and minor increases in blood pressure. For full details refer to relevant SPC</li> </ul> |
| <p><b>GUANFACINE</b><br/><b>(Fourth-line:</b></p>  | <p><b><u>CHILDREN</u></b><br/>Initial dose of 1mg daily, given either in</p>   | <p>Intuiniv® 1mg, 2mg, 3mg or 4mg</p>   | <ul style="list-style-type: none"> <li>▪ Guanfacine is indicated for the treatment of ADHD in children and adolescents 6-17 years old for whom</li> </ul>  |

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| <p><b>children only)</b></p> <p>(Selective alpha 2A-adrenergic receptor agonist)</p> <p><b>Prescribing to remain in secondary care</b></p> | <p>the morning or the evening, titrated according to response in increments of not more than 1mg a week to a maximum of 4mg daily in children aged 6–12 years and up to 7mg daily, depending on body weight, in adolescents aged 13–17 years, corresponding to a usual dose range of 0.05–0.12mg/kg/day</p> | <p>prolonged release tablets</p> | <p>stimulants are not suitable, not tolerated, or have been shown to be ineffective. Guanfacine must be used as a part of a comprehensive ADHD treatment programme, typically including psychological, educational and social measures</p> <ul style="list-style-type: none"> <li>▪ Prior to prescribing, it is necessary to conduct a baseline evaluation to identify patients at increased risk of somnolence and sedation, hypotension and bradycardia, QT-prolongation arrhythmia and weight increase /risk of obesity. This evaluation should address a patient's cardiovascular status including blood pressure and heart rate, documenting comprehensive history of concomitant medications, past and present co-morbid medical and psychiatric disorders or symptoms, family history of sudden cardiac/unexplained death and accurate recording of pre-treatment height and weight on a growth chart</li> <li>▪ Careful dose titration and monitoring is necessary at the start of treatment with guanfacine since clinical improvement and risks for several clinically significant adverse reactions (syncope, hypotension, bradycardia, somnolence and sedation) are dose and exposure related. Patients should be advised that somnolence and sedation can occur, particularly early in treatment or with dose increases. If somnolence and sedation are judged to be clinically concerning or persistent, a dose decrease or discontinuation should be considered</li> <li>▪ When stopping guanfacine, the dose must be tapered with decrements of no more than 1 mg every 3 to 7 days, and blood pressure and pulse should be monitored in order to minimise potential withdrawal effects, in particular increases in blood pressure and heart rate.</li> </ul> |
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## 8. Comparative cost of ADHD Drug Treatment (Drug Tariff & eBNF – Jan 2017)

| Drug and dose range                              | Annual Cost        |
|--|--------------------|
| Methylphenidate IR 5-60mg daily                  | £39.39 - £425.88   |
| Methylphenidate M/R (Concerta XL) 18-54mg daily  | £405.47 - £957.06  |
| Methylphenidate M/R (Equasym XL) 10-60mg daily   | £325 - £910        |
| Methylphenidate M/R (Medikinet XL) 10-60mg daily | £325 - £875.16     |
| Atomoxetine 10-80mg daily                        | £690.17 - £920.27  |
| Atomoxetine Liquid 10-80mg daily                 | £340 - £2125       |
| Dexamfetamine 5-20mg daily                       | £321.75 - £1287    |
| Lisdexamfetamine 30-70mg daily                   | £757.12 - £1081.08 |
| Guanfacine 1-7mg daily                           | £728 - £1841.84    |

## 9. Duration, discontinuation and continuity of treatment<sup>4</sup>

Following an adequate treatment response, drug treatment for ADHD should be continued for as long as it remains clinically effective. This should be reviewed at least annually.

Drug holidays are not routinely recommended for children and young people, however consideration should be given to finding the best pattern of use together with the individual and their parent or carer; this may include periods without drug treatment.

For adults, an individual treatment approach is important and the need for adapting patterns of use must be reviewed at least annually, including the effect of drug treatment on co-existing conditions and mood changes.

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11. Rakesh Magon (2016). Attention Deficit Hyperactivity Disorder in Adults. *InnovAiT*, 0(0), 1–8. DOI: 10.1177/1755738016642792Magon: [ADHD in Adults](#)

## Blood Pressure Table – Boys (Appendix 1)

**(Diagnosis, Evaluation and Treatment of High Blood Pressure in Children and Adolescents; US Dept. Health and Human Services; Revised May 2005)**

**Blood Pressure Levels for Boys by Age and Height Percentile\***

| Age (Year) | BP Percentile<br>↓ | Systolic BP (mmHg)       |      |      |      |      |      |      | Diastolic BP (mmHg)      |      |      |      |      |      |      |
|------------|--------------------|--------------------------|------|------|------|------|------|------|--------------------------|------|------|------|------|------|------|
|            |                    | ← Percentile of Height → |      |      |      |      |      |      | ← Percentile of Height → |      |      |      |      |      |      |
|            |                    | 5th                      | 10th | 25th | 50th | 75th | 90th | 95th | 5th                      | 10th | 25th | 50th | 75th | 90th | 95th |
| 1          | 50th               | 80                       | 81   | 83   | 85   | 87   | 88   | 89   | 34                       | 35   | 36   | 37   | 38   | 39   | 39   |
|            | 90th               | 94                       | 95   | 97   | 99   | 100  | 102  | 103  | 49                       | 50   | 51   | 52   | 53   | 53   | 54   |
|            | 95th               | 98                       | 99   | 101  | 103  | 104  | 106  | 106  | 54                       | 54   | 55   | 56   | 57   | 58   | 58   |
|            | 99th               | 105                      | 106  | 108  | 110  | 112  | 113  | 114  | 61                       | 62   | 63   | 64   | 65   | 66   | 66   |
| 2          | 50th               | 84                       | 85   | 87   | 88   | 90   | 92   | 92   | 39                       | 40   | 41   | 42   | 43   | 44   | 44   |
|            | 90th               | 97                       | 99   | 100  | 102  | 104  | 105  | 106  | 54                       | 55   | 56   | 57   | 58   | 58   | 59   |
|            | 95th               | 101                      | 102  | 104  | 106  | 108  | 109  | 110  | 59                       | 59   | 60   | 61   | 62   | 63   | 63   |
|            | 99th               | 109                      | 110  | 111  | 113  | 115  | 117  | 117  | 66                       | 67   | 68   | 69   | 70   | 71   | 71   |
| 3          | 50th               | 86                       | 87   | 89   | 91   | 93   | 94   | 95   | 44                       | 44   | 45   | 46   | 47   | 48   | 48   |
|            | 90th               | 100                      | 101  | 103  | 105  | 107  | 108  | 109  | 59                       | 59   | 60   | 61   | 62   | 63   | 63   |
|            | 95th               | 104                      | 105  | 107  | 109  | 110  | 112  | 113  | 63                       | 63   | 64   | 65   | 66   | 67   | 67   |
|            | 99th               | 111                      | 112  | 114  | 116  | 118  | 119  | 120  | 71                       | 71   | 72   | 73   | 74   | 75   | 75   |
| 4          | 50th               | 88                       | 89   | 91   | 93   | 95   | 96   | 97   | 47                       | 48   | 49   | 50   | 51   | 51   | 52   |
|            | 90th               | 102                      | 103  | 105  | 107  | 109  | 110  | 111  | 62                       | 63   | 64   | 65   | 66   | 66   | 67   |
|            | 95th               | 106                      | 107  | 109  | 111  | 112  | 114  | 115  | 66                       | 67   | 68   | 69   | 70   | 71   | 71   |
|            | 99th               | 113                      | 114  | 116  | 118  | 120  | 121  | 122  | 74                       | 75   | 76   | 77   | 78   | 78   | 79   |
| 5          | 50th               | 90                       | 91   | 93   | 95   | 96   | 98   | 98   | 50                       | 51   | 52   | 53   | 54   | 55   | 55   |
|            | 90th               | 104                      | 105  | 106  | 108  | 110  | 111  | 112  | 65                       | 66   | 67   | 68   | 69   | 69   | 70   |
|            | 95th               | 108                      | 109  | 110  | 112  | 114  | 115  | 116  | 69                       | 70   | 71   | 72   | 73   | 74   | 74   |
|            | 99th               | 115                      | 116  | 118  | 120  | 121  | 123  | 123  | 77                       | 78   | 79   | 80   | 81   | 81   | 82   |
| 6          | 50th               | 91                       | 92   | 94   | 96   | 98   | 99   | 100  | 53                       | 53   | 54   | 55   | 56   | 57   | 57   |
|            | 90th               | 105                      | 106  | 108  | 110  | 111  | 113  | 113  | 68                       | 68   | 69   | 70   | 71   | 72   | 72   |
|            | 95th               | 109                      | 110  | 112  | 114  | 115  | 117  | 117  | 72                       | 72   | 73   | 74   | 75   | 76   | 76   |
|            | 99th               | 116                      | 117  | 119  | 121  | 123  | 124  | 125  | 80                       | 80   | 81   | 82   | 83   | 84   | 84   |
| 7          | 50th               | 92                       | 94   | 95   | 97   | 99   | 100  | 101  | 55                       | 55   | 56   | 57   | 58   | 59   | 59   |
|            | 90th               | 106                      | 107  | 109  | 111  | 113  | 114  | 115  | 70                       | 70   | 71   | 72   | 73   | 74   | 74   |
|            | 95th               | 110                      | 111  | 113  | 115  | 117  | 118  | 119  | 74                       | 74   | 75   | 76   | 77   | 78   | 78   |
|            | 99th               | 117                      | 118  | 120  | 122  | 124  | 125  | 126  | 82                       | 82   | 83   | 84   | 85   | 86   | 86   |
| 8          | 50th               | 94                       | 95   | 97   | 99   | 100  | 102  | 102  | 56                       | 57   | 58   | 59   | 60   | 60   | 61   |
|            | 90th               | 107                      | 109  | 110  | 112  | 114  | 115  | 116  | 71                       | 72   | 72   | 73   | 74   | 75   | 76   |
|            | 95th               | 111                      | 112  | 114  | 116  | 118  | 119  | 120  | 75                       | 76   | 77   | 78   | 79   | 79   | 80   |
|            | 99th               | 119                      | 120  | 122  | 123  | 125  | 127  | 127  | 83                       | 84   | 85   | 86   | 87   | 87   | 88   |
| 9          | 50th               | 95                       | 96   | 98   | 100  | 102  | 103  | 104  | 57                       | 58   | 59   | 60   | 61   | 61   | 62   |
|            | 90th               | 109                      | 110  | 112  | 114  | 115  | 117  | 118  | 72                       | 73   | 74   | 75   | 76   | 76   | 77   |
|            | 95th               | 113                      | 114  | 116  | 118  | 119  | 121  | 121  | 76                       | 77   | 78   | 79   | 80   | 81   | 81   |
|            | 99th               | 120                      | 121  | 123  | 125  | 127  | 128  | 129  | 84                       | 85   | 86   | 87   | 88   | 88   | 89   |
| 10         | 50th               | 97                       | 98   | 100  | 102  | 103  | 105  | 106  | 58                       | 59   | 60   | 61   | 61   | 62   | 63   |
|            | 90th               | 111                      | 112  | 114  | 115  | 117  | 119  | 119  | 73                       | 73   | 74   | 75   | 76   | 77   | 78   |
|            | 95th               | 115                      | 116  | 117  | 119  | 121  | 122  | 123  | 77                       | 78   | 79   | 80   | 81   | 81   | 82   |
|            | 99th               | 122                      | 123  | 125  | 127  | 128  | 130  | 130  | 85                       | 86   | 86   | 88   | 88   | 89   | 90   |

| Age<br>(Year) | BP<br>Percentile<br>↓ | Systolic BP (mmHg)       |      |      |      |      |      |      | Diastolic BP (mmHg)      |      |      |      |      |      |      |
|---------------|-----------------------|--------------------------|------|------|------|------|------|------|--------------------------|------|------|------|------|------|------|
|               |                       | ← Percentile of Height → |      |      |      |      |      |      | ← Percentile of Height → |      |      |      |      |      |      |
|               |                       | 5th                      | 10th | 25th | 50th | 75th | 90th | 95th | 5th                      | 10th | 25th | 50th | 75th | 90th | 95th |
| 11            | 50th                  | 99                       | 100  | 102  | 104  | 105  | 107  | 107  | 59                       | 59   | 60   | 61   | 62   | 63   | 63   |
|               | 90th                  | 113                      | 114  | 115  | 117  | 119  | 120  | 121  | 74                       | 74   | 75   | 76   | 77   | 78   | 78   |
|               | 95th                  | 117                      | 118  | 119  | 121  | 123  | 124  | 125  | 78                       | 78   | 79   | 80   | 81   | 82   | 82   |
|               | 99th                  | 124                      | 125  | 127  | 129  | 130  | 132  | 132  | 86                       | 86   | 87   | 88   | 89   | 90   | 90   |
| 12            | 50th                  | 101                      | 102  | 104  | 106  | 108  | 109  | 110  | 59                       | 60   | 61   | 62   | 63   | 63   | 64   |
|               | 90th                  | 115                      | 116  | 118  | 120  | 121  | 123  | 123  | 74                       | 75   | 75   | 76   | 77   | 78   | 79   |
|               | 95th                  | 119                      | 120  | 122  | 123  | 125  | 127  | 127  | 78                       | 79   | 80   | 81   | 82   | 82   | 83   |
|               | 99th                  | 126                      | 127  | 129  | 131  | 133  | 134  | 135  | 86                       | 87   | 88   | 89   | 90   | 90   | 91   |
| 13            | 50th                  | 104                      | 105  | 106  | 108  | 110  | 111  | 112  | 60                       | 60   | 61   | 62   | 63   | 64   | 64   |
|               | 90th                  | 117                      | 118  | 120  | 122  | 124  | 125  | 126  | 75                       | 75   | 76   | 77   | 78   | 79   | 79   |
|               | 95th                  | 121                      | 122  | 124  | 126  | 128  | 129  | 130  | 79                       | 79   | 80   | 81   | 82   | 83   | 83   |
|               | 99th                  | 128                      | 130  | 131  | 133  | 135  | 136  | 137  | 87                       | 87   | 88   | 89   | 90   | 91   | 91   |
| 14            | 50th                  | 106                      | 107  | 109  | 111  | 113  | 114  | 115  | 60                       | 61   | 62   | 63   | 64   | 65   | 65   |
|               | 90th                  | 120                      | 121  | 123  | 125  | 126  | 128  | 128  | 75                       | 76   | 77   | 78   | 79   | 79   | 80   |
|               | 95th                  | 124                      | 125  | 127  | 128  | 130  | 132  | 132  | 80                       | 80   | 81   | 82   | 83   | 84   | 84   |
|               | 99th                  | 131                      | 132  | 134  | 136  | 138  | 139  | 140  | 87                       | 88   | 89   | 90   | 91   | 92   | 92   |
| 15            | 50th                  | 109                      | 110  | 112  | 113  | 115  | 117  | 117  | 61                       | 62   | 63   | 64   | 65   | 66   | 66   |
|               | 90th                  | 122                      | 124  | 125  | 127  | 129  | 130  | 131  | 76                       | 77   | 78   | 79   | 80   | 80   | 81   |
|               | 95th                  | 126                      | 127  | 129  | 131  | 133  | 134  | 135  | 81                       | 81   | 82   | 83   | 84   | 85   | 85   |
|               | 99th                  | 134                      | 135  | 136  | 138  | 140  | 142  | 142  | 88                       | 89   | 90   | 91   | 92   | 93   | 93   |
| 16            | 50th                  | 111                      | 112  | 114  | 116  | 118  | 119  | 120  | 63                       | 63   | 64   | 65   | 66   | 67   | 67   |
|               | 90th                  | 125                      | 126  | 128  | 130  | 131  | 133  | 134  | 78                       | 78   | 79   | 80   | 81   | 82   | 82   |
|               | 95th                  | 129                      | 130  | 132  | 134  | 135  | 137  | 137  | 82                       | 83   | 83   | 84   | 85   | 86   | 87   |
|               | 99th                  | 136                      | 137  | 139  | 141  | 143  | 144  | 145  | 90                       | 90   | 91   | 92   | 93   | 94   | 94   |
| 17            | 50th                  | 114                      | 115  | 116  | 118  | 120  | 121  | 122  | 65                       | 66   | 66   | 67   | 68   | 69   | 70   |
|               | 90th                  | 127                      | 128  | 130  | 132  | 134  | 135  | 136  | 80                       | 80   | 81   | 82   | 83   | 84   | 84   |
|               | 95th                  | 131                      | 132  | 134  | 136  | 138  | 139  | 140  | 84                       | 85   | 86   | 87   | 87   | 88   | 89   |
|               | 99th                  | 139                      | 140  | 141  | 143  | 145  | 146  | 147  | 92                       | 93   | 93   | 94   | 95   | 96   | 97   |

## Blood Pressure Table – Girls (Appendix 2)

**(Diagnosis, Evaluation and Treatment of High Blood Pressure in Children and Adolescents; US Dept. Health and Human Services; Revised May 2005)**

**Blood Pressure Levels for Girls by Age and Height Percentile\***

| Age (Year) | BP Percentile<br>↓ | Systolic BP (mmHg)       |      |      |      |      |      |      | Diastolic BP (mmHg)      |      |      |      |      |      |      |
|------------|--------------------|--------------------------|------|------|------|------|------|------|--------------------------|------|------|------|------|------|------|
|            |                    | ← Percentile of Height → |      |      |      |      |      |      | ← Percentile of Height → |      |      |      |      |      |      |
|            |                    | 5th                      | 10th | 25th | 50th | 75th | 90th | 95th | 5th                      | 10th | 25th | 50th | 75th | 90th | 95th |
| 1          | 50th               | 83                       | 84   | 85   | 86   | 88   | 89   | 90   | 38                       | 39   | 39   | 40   | 41   | 41   | 42   |
|            | 90th               | 97                       | 97   | 98   | 100  | 101  | 102  | 103  | 52                       | 53   | 53   | 54   | 55   | 55   | 56   |
|            | 95th               | 100                      | 101  | 102  | 104  | 105  | 106  | 107  | 56                       | 57   | 57   | 58   | 59   | 59   | 60   |
|            | 99th               | 108                      | 108  | 109  | 111  | 112  | 113  | 114  | 64                       | 64   | 65   | 65   | 66   | 67   | 67   |
| 2          | 50th               | 85                       | 85   | 87   | 88   | 89   | 91   | 91   | 43                       | 44   | 44   | 45   | 46   | 46   | 47   |
|            | 90th               | 98                       | 99   | 100  | 101  | 103  | 104  | 105  | 57                       | 58   | 58   | 59   | 60   | 61   | 61   |
|            | 95th               | 102                      | 103  | 104  | 105  | 107  | 108  | 109  | 61                       | 62   | 62   | 63   | 64   | 65   | 65   |
|            | 99th               | 109                      | 110  | 111  | 112  | 114  | 115  | 116  | 69                       | 69   | 70   | 70   | 71   | 72   | 72   |
| 3          | 50th               | 86                       | 87   | 88   | 89   | 91   | 92   | 93   | 47                       | 48   | 48   | 49   | 50   | 50   | 51   |
|            | 90th               | 100                      | 100  | 102  | 103  | 104  | 106  | 106  | 61                       | 62   | 62   | 63   | 64   | 64   | 65   |
|            | 95th               | 104                      | 104  | 105  | 107  | 108  | 109  | 110  | 65                       | 66   | 66   | 67   | 68   | 68   | 69   |
|            | 99th               | 111                      | 111  | 113  | 114  | 115  | 116  | 117  | 73                       | 73   | 74   | 74   | 75   | 76   | 76   |
| 4          | 50th               | 88                       | 88   | 90   | 91   | 92   | 94   | 94   | 50                       | 50   | 51   | 52   | 52   | 53   | 54   |
|            | 90th               | 101                      | 102  | 103  | 104  | 106  | 107  | 108  | 64                       | 64   | 65   | 66   | 67   | 67   | 68   |
|            | 95th               | 105                      | 106  | 107  | 108  | 110  | 111  | 112  | 68                       | 68   | 69   | 70   | 71   | 71   | 72   |
|            | 99th               | 112                      | 113  | 114  | 115  | 117  | 118  | 119  | 76                       | 76   | 76   | 77   | 78   | 79   | 79   |
| 5          | 50th               | 89                       | 90   | 91   | 93   | 94   | 95   | 96   | 52                       | 53   | 53   | 54   | 55   | 55   | 56   |
|            | 90th               | 103                      | 103  | 105  | 106  | 107  | 109  | 109  | 66                       | 67   | 67   | 68   | 69   | 69   | 70   |
|            | 95th               | 107                      | 107  | 108  | 110  | 111  | 112  | 113  | 70                       | 71   | 71   | 72   | 73   | 73   | 74   |
|            | 99th               | 114                      | 114  | 116  | 117  | 118  | 120  | 120  | 78                       | 78   | 79   | 79   | 80   | 81   | 81   |
| 6          | 50th               | 91                       | 92   | 93   | 94   | 96   | 97   | 98   | 54                       | 54   | 55   | 56   | 56   | 57   | 58   |
|            | 90th               | 104                      | 105  | 106  | 108  | 109  | 110  | 111  | 68                       | 68   | 69   | 70   | 70   | 71   | 72   |
|            | 95th               | 108                      | 109  | 110  | 111  | 113  | 114  | 115  | 72                       | 72   | 73   | 74   | 74   | 75   | 76   |
|            | 99th               | 115                      | 116  | 117  | 119  | 120  | 121  | 122  | 80                       | 80   | 80   | 81   | 82   | 83   | 83   |
| 7          | 50th               | 93                       | 93   | 95   | 96   | 97   | 99   | 99   | 55                       | 56   | 56   | 57   | 58   | 58   | 59   |
|            | 90th               | 106                      | 107  | 108  | 109  | 111  | 112  | 113  | 69                       | 70   | 70   | 71   | 72   | 72   | 73   |
|            | 95th               | 110                      | 111  | 112  | 113  | 115  | 116  | 116  | 73                       | 74   | 74   | 75   | 76   | 76   | 77   |
|            | 99th               | 117                      | 118  | 119  | 120  | 122  | 123  | 124  | 81                       | 81   | 82   | 82   | 83   | 84   | 84   |
| 8          | 50th               | 95                       | 95   | 96   | 98   | 99   | 100  | 101  | 57                       | 57   | 57   | 58   | 59   | 60   | 60   |
|            | 90th               | 108                      | 109  | 110  | 111  | 113  | 114  | 114  | 71                       | 71   | 71   | 72   | 73   | 74   | 74   |
|            | 95th               | 112                      | 112  | 114  | 115  | 116  | 118  | 118  | 75                       | 75   | 75   | 76   | 77   | 78   | 78   |
|            | 99th               | 119                      | 120  | 121  | 122  | 123  | 125  | 125  | 82                       | 82   | 83   | 83   | 84   | 85   | 86   |
| 9          | 50th               | 96                       | 97   | 98   | 100  | 101  | 102  | 103  | 58                       | 58   | 58   | 59   | 60   | 61   | 61   |
|            | 90th               | 110                      | 110  | 112  | 113  | 114  | 116  | 116  | 72                       | 72   | 72   | 73   | 74   | 75   | 75   |
|            | 95th               | 114                      | 114  | 115  | 117  | 118  | 119  | 120  | 76                       | 76   | 76   | 77   | 78   | 79   | 79   |
|            | 99th               | 121                      | 121  | 123  | 124  | 125  | 127  | 127  | 83                       | 83   | 84   | 84   | 85   | 86   | 87   |
| 10         | 50th               | 98                       | 99   | 100  | 102  | 103  | 104  | 105  | 59                       | 59   | 59   | 60   | 61   | 62   | 62   |
|            | 90th               | 112                      | 112  | 114  | 115  | 116  | 118  | 118  | 73                       | 73   | 73   | 74   | 75   | 76   | 76   |
|            | 95th               | 116                      | 116  | 117  | 119  | 120  | 121  | 122  | 77                       | 77   | 77   | 78   | 79   | 80   | 80   |
|            | 99th               | 123                      | 123  | 125  | 126  | 127  | 129  | 129  | 84                       | 84   | 85   | 86   | 86   | 87   | 88   |

| Age<br>(Year) | BP<br>Percentile<br>↓ | Systolic BP (mmHg)       |      |      |      |      |      |      | Diastolic BP (mmHg)      |      |      |      |      |      |      |
|---------------|-----------------------|--------------------------|------|------|------|------|------|------|--------------------------|------|------|------|------|------|------|
|               |                       | ← Percentile of Height → |      |      |      |      |      |      | ← Percentile of Height → |      |      |      |      |      |      |
|               |                       | 5th                      | 10th | 25th | 50th | 75th | 90th | 95th | 5th                      | 10th | 25th | 50th | 75th | 90th | 95th |
| 11            | 50th                  | 100                      | 101  | 102  | 103  | 105  | 106  | 107  | 60                       | 60   | 60   | 61   | 62   | 63   | 63   |
|               | 90th                  | 114                      | 114  | 116  | 117  | 118  | 119  | 120  | 74                       | 74   | 74   | 75   | 76   | 77   | 77   |
|               | 95th                  | 118                      | 118  | 119  | 121  | 122  | 123  | 124  | 78                       | 78   | 78   | 79   | 80   | 81   | 81   |
|               | 99th                  | 125                      | 125  | 126  | 128  | 129  | 130  | 131  | 85                       | 85   | 86   | 87   | 87   | 88   | 89   |
| 12            | 50th                  | 102                      | 103  | 104  | 105  | 107  | 108  | 109  | 61                       | 61   | 61   | 62   | 63   | 64   | 64   |
|               | 90th                  | 116                      | 116  | 117  | 119  | 120  | 121  | 122  | 75                       | 75   | 75   | 76   | 77   | 78   | 78   |
|               | 95th                  | 119                      | 120  | 121  | 123  | 124  | 125  | 126  | 79                       | 79   | 79   | 80   | 81   | 82   | 82   |
|               | 99th                  | 127                      | 127  | 128  | 130  | 131  | 132  | 133  | 86                       | 86   | 87   | 88   | 88   | 89   | 90   |
| 13            | 50th                  | 104                      | 105  | 106  | 107  | 109  | 110  | 110  | 62                       | 62   | 62   | 63   | 64   | 65   | 65   |
|               | 90th                  | 117                      | 118  | 119  | 121  | 122  | 123  | 124  | 76                       | 76   | 76   | 77   | 78   | 79   | 79   |
|               | 95th                  | 121                      | 122  | 123  | 124  | 126  | 127  | 128  | 80                       | 80   | 80   | 81   | 82   | 83   | 83   |
|               | 99th                  | 128                      | 129  | 130  | 132  | 133  | 134  | 135  | 87                       | 87   | 88   | 89   | 89   | 90   | 91   |
| 14            | 50th                  | 106                      | 106  | 107  | 109  | 110  | 111  | 112  | 63                       | 63   | 63   | 64   | 65   | 66   | 66   |
|               | 90th                  | 119                      | 120  | 121  | 122  | 124  | 125  | 125  | 77                       | 77   | 77   | 78   | 79   | 80   | 80   |
|               | 95th                  | 123                      | 123  | 125  | 126  | 127  | 129  | 129  | 81                       | 81   | 81   | 82   | 83   | 84   | 84   |
|               | 99th                  | 130                      | 131  | 132  | 133  | 135  | 136  | 136  | 88                       | 88   | 89   | 90   | 90   | 91   | 92   |
| 15            | 50th                  | 107                      | 108  | 109  | 110  | 111  | 113  | 113  | 64                       | 64   | 64   | 65   | 66   | 67   | 67   |
|               | 90th                  | 120                      | 121  | 122  | 123  | 125  | 126  | 127  | 78                       | 78   | 78   | 79   | 80   | 81   | 81   |
|               | 95th                  | 124                      | 125  | 126  | 127  | 129  | 130  | 131  | 82                       | 82   | 82   | 83   | 84   | 85   | 85   |
|               | 99th                  | 131                      | 132  | 133  | 134  | 136  | 137  | 138  | 89                       | 89   | 90   | 91   | 91   | 92   | 93   |
| 16            | 50th                  | 108                      | 108  | 110  | 111  | 112  | 114  | 114  | 64                       | 64   | 65   | 66   | 66   | 67   | 68   |
|               | 90th                  | 121                      | 122  | 123  | 124  | 126  | 127  | 128  | 78                       | 78   | 79   | 80   | 81   | 81   | 82   |
|               | 95th                  | 125                      | 126  | 127  | 128  | 130  | 131  | 132  | 82                       | 82   | 83   | 84   | 85   | 85   | 86   |
|               | 99th                  | 132                      | 133  | 134  | 135  | 137  | 138  | 139  | 90                       | 90   | 90   | 91   | 92   | 93   | 93   |
| 17            | 50th                  | 108                      | 109  | 110  | 111  | 113  | 114  | 115  | 64                       | 65   | 65   | 66   | 67   | 67   | 68   |
|               | 90th                  | 122                      | 122  | 123  | 125  | 126  | 127  | 128  | 78                       | 79   | 79   | 80   | 81   | 81   | 82   |
|               | 95th                  | 125                      | 126  | 127  | 129  | 130  | 131  | 132  | 82                       | 83   | 83   | 84   | 85   | 85   | 86   |
|               | 99th                  | 133                      | 133  | 134  | 136  | 137  | 138  | 139  | 90                       | 90   | 91   | 91   | 92   | 93   | 93   |