

Paediatrician friendly IAP Growth Charts for 0-18 years

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Growth is the fundamental physiologic process that characterizes childhood. Secular trends in growth patterns are followed as indicators of children's health on a population level. Growth can be worrisome along two variables: height (short stature) and velocity (growth failure). Anthropometry is an invaluable tool in the hands of a paediatrician to monitor growth. We must get into the habit of regularly plotting these anthropometric data on the appropriate growth chart until the age of 18 years, and this will help in picking up the reason for failure to thrive early and thereby help to reduce expensive investigations.

Growth charts are invaluable tools in the assessment of childhood nutrition and growth. Indian academy of pediatrics (IAP) produced and recommended IAP 2015 Growth charts for monitoring Indian children between the age of 5 to 18 years and recommended simplified WHO growth charts for monitoring of children under the age of five years. A combined WHO – IAP height and weight chart allows us to monitor growth from birth to 18 years on a single chart and relation between child's height and Mid parental height (MPH) can be readily observed on the same chart even for children younger than 5 years which is not possible on the split chart (separate charts for under 5 and older children).

IAP 2015 BMI charts were designed to define overweight and obesity at 23 and 27 kg/m² adult equivalent BMI cut off and overweight and obese lines were colour coded as orange and red, respectively. However, deriving BMI involves a calculation (weight in KG/ Height in Meters squared) which takes time and hence is often omitted by a busy practitioner. Prevalence of overweight and obesity increases in children as they get older especially beyond the age of 8 years. A quick BMI screening tool based on weight for height that eliminates the need to calculate BMI will help to rapidly decide if a child is overweight, obese, normal or underweight. The tool has 3 lines which depict obese (OB), overweight (OV) and underweight (UW), the overweight line is orange and obese line is red (same colour code as the IAP BMI charts). Based on where the child's weight lies on y axis for the height on x axis, the child can be classified as having BMI within the normal range (between UW and OV lines), overweight (between OV and OB lines), obese (above the OB line) or underweight (under the UW line).

Mid parental height is necessary to understand child's genetic potential so that child's current height percentile can be checked against MPH percentile. MPH is based on parents' heights, but again involves a calculation and plotting at 18 years to know the mid parental percentile. Mid parental height (MPH) calculation is gender specific and the formula is Father's height + mother's height divided by 2 and then subtract 6.5 cm for a girl or add 6.5 cm for a boy. Paediatricians find this cumbersome and hence MPH assessment often gets omitted. Here we present a MPH percentile lookup tool which was designed in such a way that by joining the father's height on left to the mother's height on the right (both in CM) gives the MPH percentile (on the middle line) for that specific gender. e.g. joining mothers' height of 150 cm to father's height of 170 cm gives an approximate value of 25th percentile of MPH on both scales. Using formula for a boy the MPH is 166.5 cm and for a girl it is 154.5 cm. These correspond to 25th percentile of height both for boys and girls at 18 years confirming the accuracy of the lookup scale.

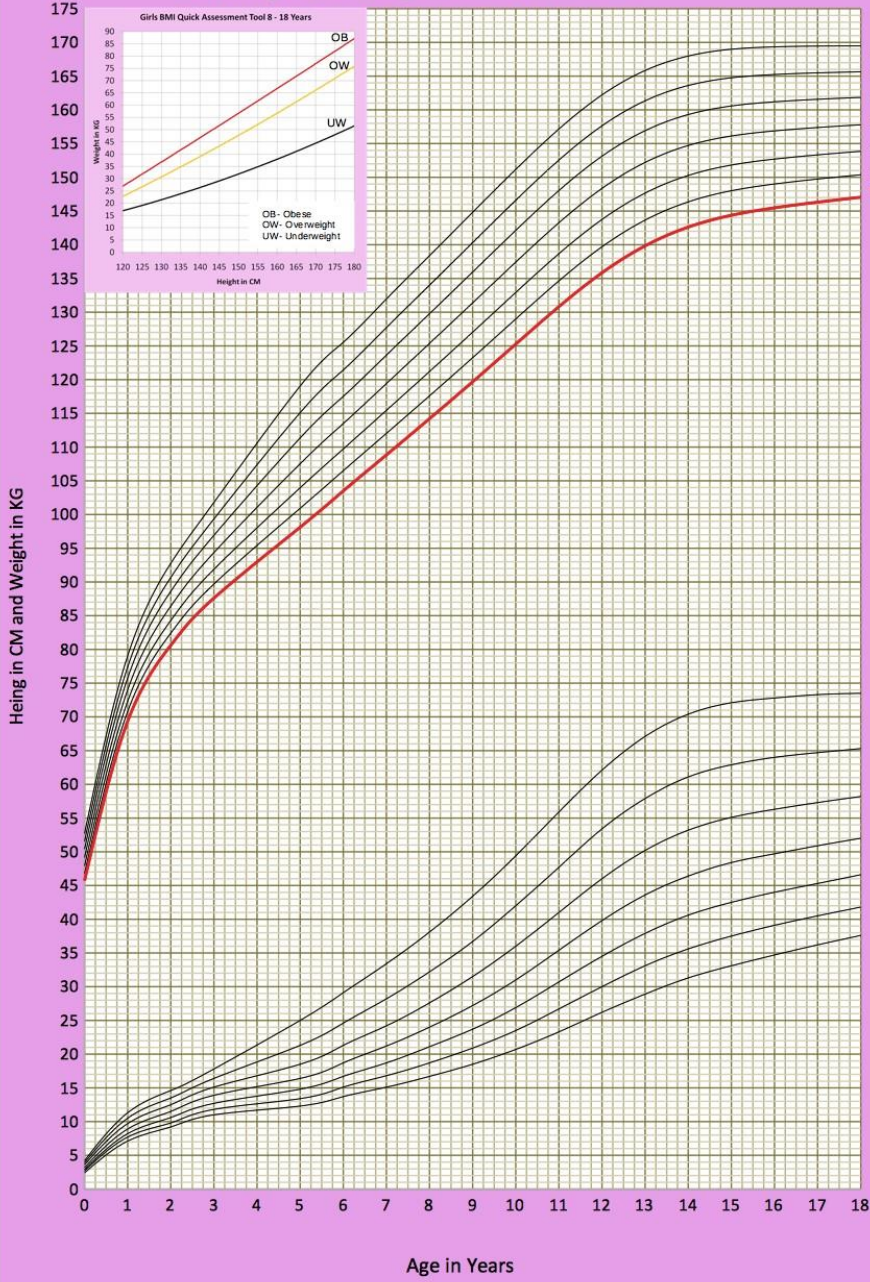
We present here user-friendly growth charts for Paediatrician's everyday use. No calculations are involved while using these charts, neither for BMI nor for MPH. Anthropometry remains the most

important and powerful tool in the hands of paediatricians to screen for normality and to pick up children with growth disorders. In a busy clinic, less calculations the pediatrician must perform the better. Both these important parameters can be read off directly from the tools provided on the chart.

An important reason for the popularity of United Kingdom Royal College of Paediatrics and Child Health (UK RCPCH) growth charts is that along with the standard percentile lines many tools such as the MPH percentile calculator, lower percentile lines and BMI z score look up tool are provided which eliminate calculations. No such attempt has been made to incorporate all these tools in the IAP growth chart so far although it is the need of the hour. We believe that this need will be fulfilled by these user-friendly charts.

The percentile curves for height and weight in children below the age of 1 year are placed too close together, making it cumbersome to plot and despite using statistical smoothing, a small blip is evident at junction of 5 years (where WHO and IAP charts meet). In future charts we hope to improve these shortcoming

Girls Height and Weight Charts 0 - 18 Years

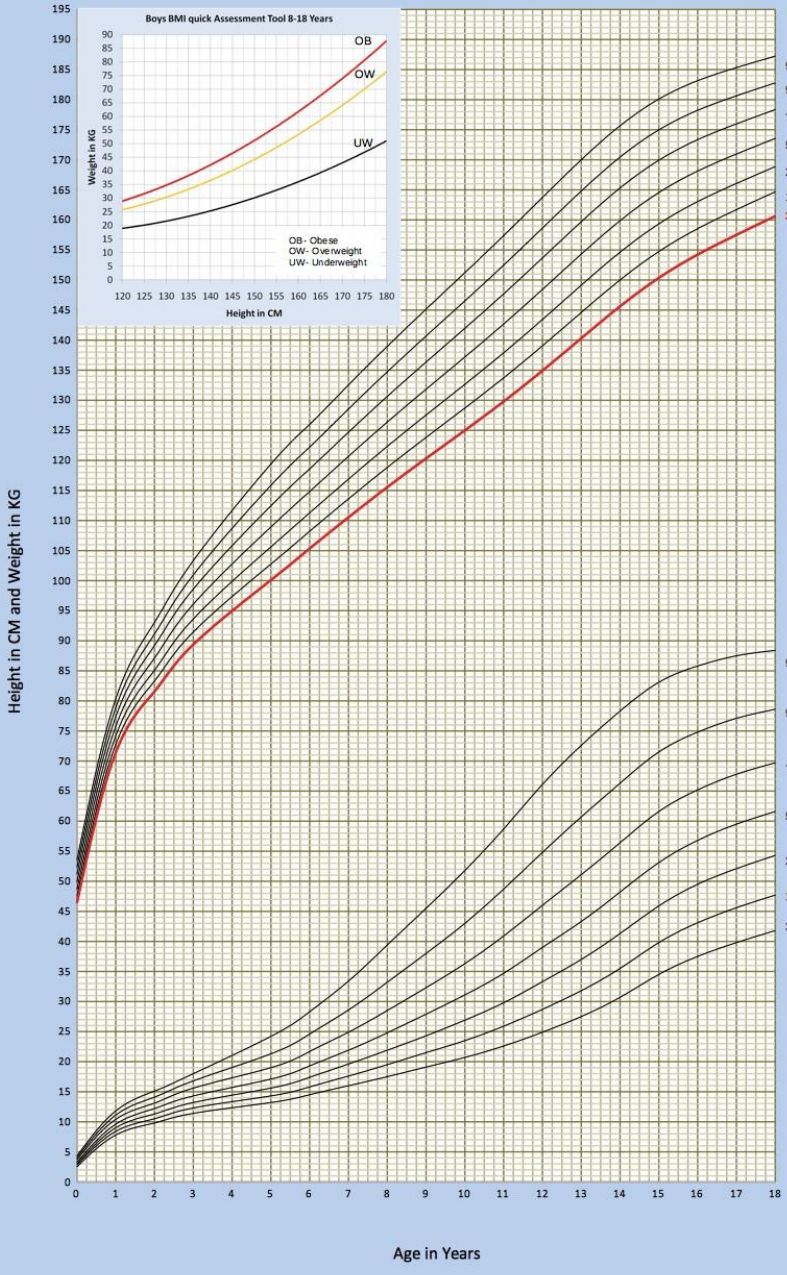


MPH Percentile Calculator

Father's Height	MPH Centile	Mother's Height
150		137
151		138
152		139
153		140
154		141
155		142
156		143
157		144
158		145
159	3rd	146
160		147
161		148
162		149
163	10th	150
164		151
165		152
166		153
167	25th	154
168		155
169		156
170		157
171	50th	158
172		159
173		160
174		161
175	75th	162
176		163
177		164
178		165
179	90th	166
180		167
181		168
182		169
183	97th	170
184		171
185		172
186		173
187		174
188		175
189		176
190		177

3(Short below this line)

Boys Height and Weight Chart



MPH Percentile Calculator

Father's Height	MPH Centile	Mother's Height
150		137
151		138
152		139
153		140
154		141
155		142
156		143
157		144
158	3rd	145
159		146
160		147
161		148
162		149
163	10th	150
164		151
165		152
166		153
167		154
168	25th	155
169		156
170		157
171		158
172		159
173	50th	160
174		161
175		162
176		163
177		164
178	75th	165
179		166
180		167
181		168
182	90th	169
183		170
184		171
185		172
186		173
187	97th	174
188		175
189		176
190		177

References:

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