# Insulin-like Growth Factor 1 (IGF-1), Serum Reference Intervals

As circulating IGF-I values show considerable variation between patients, a reference population must contain a suitably large number of individuals.

Analysis is performed on the Diasorin Liaison XL Analyzer. Calibration is traceable to the 1st WHO International Standard for Insulin-like Growth Factor 1 NIBSC code 02/254.

Diasorin carried out a reference range study on 4419 individuals (2813 pediatric, 1606 adult) from an apparently healthy population. The central 95% range values were established following CLSI guideline C28-A3 and applying centile smoothing by the Royston-Wright method ("A method for establishing age-specific reference intervals ("normal ranges") based on fractional polynomials and exponential transformation", Royston P and Wright EM. Journal of the Royal Statistical Society: Series A (Statistics in Society) 1998;161:79-101.

| Age (y) | Females µg/L | Males µg/L |
|---|---|---|
| 0 | 8 - 131 | 11 - 100 |
| 1 | 9 - 146 | 12 - 120 |
| 2 | 11 - 165 | 13 - 143 |
| 3 | 13 - 187 | 14 - 169 |
| 4 | 15 - 216 | 15 - 200 |
| 5 | 19 - 251 | 16 - 233 |
| 6 | 24 - 293 | 17 - 269 |
| 7 | 30 - 342 | 18 - 307 |
| 8 | 39 - 396 | 20 - 347 |
| 9 | 49 - 451 | 23 - 386 |
| 10 | 62 - 504 | 29 - 424 |
| 11 | 76 - 549 | 37 - 459 |
| 12 | 90 - 581 | 49 - 487 |
| 13 | 104 - 596 | 64 - 508 |
| 14 | 115 - 591 | 83 - 519 |
| 15 | 121 - 564 | 102 - 520 |
| 16 | 122 - 524 | 119 - 511 |
| 17 | 120 - 479 | 131 - 490 |
| 18 | 117 - 436 | 137 - 461 |
| 19 | 113 - 399 | 137 - 428 |
| 20 | 109 - 372 | 133 - 395 |
| 21 | 107 - 351 | 127 - 364 |
| 22 | 105 - 337 | 120 - 338 |
| 23 | 103 -326 | 112 - 316 |
| 24 | 102 - 317 | 105 - 298 |

| Age (y) | Females µg/L | Males µg/L |
|---|---|---|
| 25 | 100 - 311 | 99 - 283 |
| 26 | 98 - 305 | 94 - 271 |
| 27 | 96 - 301 | 90 - 262 |
| 28 | 93 - 297 | 87 - 255 |
| 29 | 91 - 293 | 84 - 250 |
| 30 | 89 - 290 | 83 - 246 |
| 31 | 87 - 286 | 82 - 244 |
| 32 | 85 - 283 | 82 - 243 |
| 33 | 83 - 280 | 82 - 242 |
| 34 | 82 - 279 | 82 - 242 |
| 35 | 81 - 278 | 83 - 241 |
| 36 | 80 - 277 | 83 - 240 |
| 37 | 80 - 277 | 83 - 239 |
| 38 | 79 - 276 | 83 - 238 |
| 39 | 78 - 274 | 83 - 238 |
| 40 | 76 - 271 | 82 - 237 |
| 41 | 75 - 267 | 81 - 236 |
| 42 | 73 - 263 | 80 - 235 |
| 43 | 71 - 258 | 78 - 233 |
| 44 | 69 - 253 | 76 - 230 |
| 45 | 66 - 249 | 74 - 227 |
| 46 | 64 - 246 | 72 - 225 |
| 47 | 62 - 243 | 71 - 224 |
| 48 | 60 - 240 | 69 - 224 |
| 49 | 59 - 238 | 68 - 225 |

| Age (y) | Females µg/L | Males µg/L |
|---|---|---|
| 50 | 57 - 236 | 67 - 225 |
| 51 | 55 - 235 | 66 - 225 |
| 52 | 53 - 234 | 65 - 222 |
| 53 | 52 - 233 | 64 - 218 |
| 54 | 51 - 233 | 62 - 214 |
| 55 | 49 - 234 | 61 - 210 |
| 56 | 48 - 235 | 59 - 206 |
| 57 | 47 - 236 | 58 - 204 |
| 58 | 46 - 238 | 56 - 203 |
| 59 | 44 - 240 | 55 - 203 |
| 60 | 43 - 241 | 53 - 206 |
| 61 | 41 - 243 | 51 - 209 |
| 62 | 40 - 244 | 49 - 214 |
| 63 | 38 - 244 | 46 - 219 |
| 64 | 36 - 244 | 43 - 225 |
| 65 | 34 - 241 | 40 - 231 |
| 66 | 32 - 238 | 37 - 236 |
| 67 | 30 - 235 | 34 - 240 |

| Age (y) | Females µg/L | Males µg/L |
|---|---|---|
| 68 | 28 - 231 | 31 - 243 |
| 69 | 27 - 228 | 29 - 245 |
| 70 | 26 - 226 | 27 - 246 |
| 71 | 24 - 224 | 26 - 245 |
| 72 | 24 - 222 | 25 - 242 |
| 73 | 23 - 221 | 24 - 236 |
| 74 | 22 - 220 | 23 - 229 |
| 75 | 21 - 218 | 22 - 221 |
| 76 | 20 - 216 | 22 - 212 |
| 77 | 20 - 214 | 21 - 204 |
| 78 | 19 - 210 | 20 - 196 |
| 79 | 18 - 206 | 19 - 189 |
| 80 | 18 - 200 | 18 - 184 |
| 81 | 18 - 193 | 17 - 180 |
| 82 | 17 - 186 | 16 - 177 |
| 83 | 17 - 179 | 16 - 176 |
| 84 | 17 - 173 | 16 - 176 |
| ≥85 | 17 - 167 | 15 - 177 |