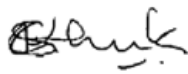
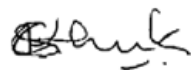


| TEST         | CODE        | UNIT                 | GENDER | AGE (from-to) | RANGE       | Reference                     | Method in Use   |
|--------------|-------------|----------------------|--------|---------------|-------------|-------------------------------|---|
| Erythrocytes | HRBC        | x10 <sup>12</sup> /L | M/F    | 0D            | 3.9 - 5.5   | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|              |             |                      |        | 1D - 2D       | 4.0 - 6.6   |                               |   |
|              |             |                      |        | 3D - 6D       | 4.0 - 6.6   |                               |   |
|              |             |                      |        | 7D - 12D      | 3.9 - 6.3   |                               |   |
|              |             |                      |        | 13D           | 3.9 - 6.3   |                               |   |
|              |             |                      |        | 14D - <1M     | 3.6 - 6.2   |                               |   |
|              |             |                      |        | 1M - <2M      | 3.0 - 5.4   |                               |   |
|              |             |                      |        | 2M - <3M      | 2.7 - 4.9   |                               |   |
|              |             |                      |        | 3M - <6M      | 3.1 - 4.5   |                               |   |
|              |             |                      |        | 6M - <2Y 1M   | 3.7 - 5.3   |                               |   |
|              |             |                      |        | 2Y 1M - <7Y   | 3.9 - 5.3   |                               |   |
| Haemoglobin  | HHBO        | g/dL                 | M/F    | 0D - 2D       | 13.5 - 19.5 | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|              |             |                      |        | 3D - 6D       | 14.5 - 22.5 |                               |   |
|              |             |                      |        | 7D - 13D      | 13.5 - 21.5 |                               |   |
|              |             |                      |        | 14D - <1M     | 12.5 - 20.5 |                               |   |
|              |             |                      |        | 1M - <2M      | 10.0 - 18.0 |                               |   |
|              |             |                      |        | 2M - <3M      | 9.0 - 14.0  |                               |   |
|              |             |                      |        | 3M - <6M      | 9.5 - 13.5  |                               |   |
|              |             |                      |        | 6M - <2Y 1M   | 10.5 - 13.5 |                               |   |
|              |             |                      |        | 2Y 1M - <6Y   | 11.5 - 13.5 |                               |   |
| 6Y - 12Y     | 11.5 - 15.5 |                      |        |               |             |                               |   |
| Haematocrit  | HHCT        | L/L                  | M/F    | 0D            | 0.42 - 0.60 | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|              |             |                      |        | 1D - 6D       | 0.45 - 0.67 |                               |   |
|              |             |                      |        | 7D - 13D      | 0.42 - 0.66 |                               |   |
|              |             |                      |        | 14D - <1M     | 0.39 - 0.63 |                               |   |
|              |             |                      |        | 1M - <2M      | 0.31 - 0.55 |                               |   |
|              |             |                      |        | 2M - <3M      | 0.28 - 0.42 |                               |   |
|              |             |                      |        | 3M - <2Y      | 0.29 - 0.41 |                               |   |
|              |             |                      |        | 2Y - <2Y 1M   | 0.33 - 0.39 |                               |   |
|              |             |                      |        | 2Y 1M - <6Y   | 0.34 - 0.40 |                               |   |
| 6Y - 12Y     | 0.35 - 0.45 |                      |        |               |             |                               |   |



| TEST                                | CODE    | UNIT                | GENDER | AGE (from-to) | RANGE      | Reference                     | Method in Use   |
|-------------------------------------|---------|---------------------|--------|---------------|------------|-------------------------------|---|
| Mean Cell Volume                    | HMCV    | fL                  | M/F    | 0D            | 98 - 118   | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|                                     |         |                     |        | 1D - 6D       | 95 - 121   |                               |   |
|                                     |         |                     |        | 7D - 13D      | 88 - 126   |                               |   |
|                                     |         |                     |        | 14D - <1M     | 86 - 124   |                               |   |
|                                     |         |                     |        | 1M - <2M      | 85 - 123   |                               |   |
|                                     |         |                     |        | 2M - <3M      | 77 - 115   |                               |   |
|                                     |         |                     |        | 3M - <6M      | 74 - 108   |                               |   |
|                                     |         |                     |        | 6M - <2Y 1M   | 70 - 86    |                               |   |
|                                     |         |                     |        | 2Y 1M - <6Y   | 75 - 87    |                               |   |
| 6Y - 12Y                            | 77 - 95 |                     |        |               |            |                               |   |
| Mean Cell Haemoglobin               | ZHMCH   | pg                  | M/F    | 0D - 6D       | 30 - 40    | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|                                     |         |                     |        | 7D - <3M      | 29 - 39    |                               |   |
|                                     |         |                     |        | 3M - <6M      | 24 - 34    |                               |   |
|                                     |         |                     |        | 6M - <1Y      | 25 - 33    |                               |   |
|                                     |         |                     |        | 1Y - <12Y     | 24 - 34    |                               |   |
| 12Y                                 | 25 - 34 |                     |        |               |            |                               |   |
| Mean Cell Haemoglobin Concentration | ZHMCHC  | g/dL                | M/F    | 0D - 12Y      | 32 - 36    | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
| Platelets                           | HPLAT   | x10 <sup>9</sup> /L | M/F    | 0D - 12Y      | 150 - 450  |                               |   |
| Leucocytes                          | HWBCO   | x10 <sup>9</sup> /L | M/F    | 0D            | 9.0 - 30.0 | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|                                     |         |                     |        | 1D - 6D       | 9.0 - 34.0 |                               |   |
|                                     |         |                     |        | 7D - 13D      | 5.0 - 21.0 |                               |   |
|                                     |         |                     |        | 14D - <6M     | 5.0 - 19.5 |                               |   |
|                                     |         |                     |        | 6M - <2Y      | 6.0 - 17.5 |                               |   |
|                                     |         |                     |        | 2Y - <6Y      | 6.0 - 17.0 |                               |   |
|                                     |         |                     |        | 6Y - <10Y     | 5.0 - 15.0 |                               |   |
|                                     |         |                     |        | 10Y - 12Y     | 4.5 - 13.5 |                               |   |



| TEST        | CODE      | UNIT                | GENDER | AGE (from-to) | RANGE      | Reference                     | Method in Use   |
|-------------|-----------|---------------------|--------|---------------|------------|-------------------------------|---|
| Neutrophils | ZHNEUTPRT | x10 <sup>9</sup> /L | M/F    | 0D            | 6.0 - 26.0 | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|             |           |                     |        | 1D - 6D       | 5.0 - 21.0 |                               |   |
|             |           |                     |        | 7D - 13D      | 1.5 - 10.0 |                               |   |
|             |           |                     |        | 14D - <1M     | 1.0 - 9.5  |                               |   |
|             |           |                     |        | 1M - <3M      | 1.0 - 9.0  |                               |   |
|             |           |                     |        | 3M - <1Y      | 1.0 - 8.5  |                               |   |
|             |           |                     |        | 1Y - <6Y      | 1.5 - 8.5  |                               |   |
|             |           |                     |        | 6Y - <10Y     | 1.5 - 8.0  |                               |   |
|             |           |                     |        | 10Y - 12Y     | 1.8 - 8.0  |                               |   |
| Lymphocytes | ZHLYMPRT  | x10 <sup>9</sup> /L | M/F    | 0D            | 2.0 - 11.0 | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|             |           |                     |        | 1D - 6D       | 2.0 - 11.5 |                               |   |
|             |           |                     |        | 7D - <1M      | 2.0 - 17.0 |                               |   |
|             |           |                     |        | 1M - <6M      | 2.5 - 16.5 |                               |   |
|             |           |                     |        | 6M - <2Y      | 4.0 - 13.5 |                               |   |
|             |           |                     |        | 2Y - <4Y      | 3.0 - 9.5  |                               |   |
|             |           |                     |        | 4Y - <6Y      | 2.0 - 8.0  |                               |   |
|             |           |                     |        | 6Y - <10Y     | 1.5 - 7.0  |                               |   |
|             |           |                     |        | 10Y - 12Y     | 1.5 - 6.5  |                               |   |
| Monocytes   | ZHMONOPRT | x10 <sup>9</sup> /L | M/F    | 0D            | 0.2 - 1.8  | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|             |           |                     |        | 1D - 13D      | 0.2 - 1.9  |                               |   |
|             |           |                     |        | 14D - <1M     | 0.2 - 1.8  |                               |   |
|             |           |                     |        | 1M - <6M      | 0.2 - 1.4  |                               |   |
|             |           |                     |        | 6M - <4Y      | 0.2 - 0.9  |                               |   |
|             |           |                     |        | 4Y - 12Y      | 0.2 - 0.8  |                               |   |
| Eosinophils | ZHEOSPRT  | x10 <sup>9</sup> /L | M/F    | 0D - 13D      | 0.0 - 0.8  | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
|             |           |                     |        | 14D - <1M     | 0.0 - 0.6  |                               |   |
|             |           |                     |        | 1M - 12Y      | 0.0 - 0.5  |                               |   |
| Basophils   | ZHBASOPRT | x10 <sup>9</sup> /L | M/F    | 0D - 12Y      | 0.0 - 0.3  | See Note to File<br>on Page 4 | Johannesburg - Beckman<br>LH500/LH750<br><br>Pretoria - Beckman LH750 |
| Retics      | HRET...   | %                   | M/F    | 0D - <6M      | 3.0 - 7.0  |                               |   |
|             |           |                     |        | 6M - 12Y      | 0.0 - 2.0  |                               |   |



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12 October 2009

To Whom It May Concern

Haematology Reference Ranges

Please note that on investigation into the history of the origin of the haematology reference ranges at Lancet, it would appear that, historically, Lancet Adult Haematology reference ranges for Johannesburg were adopted from the South African Institute of Medical Research, (SAIMR), now known as the National Health Laboratory Services (NHLS).

These ranges were then checked by the Lancet Haematology department in Johannesburg sometime in the late 1980s using 100 normal patients.

The Haematology reference ranges for the coastal level were determined in the 1980's by Ferguson, Roux and Partners, a local laboratory in Durban, now known as Ampath Trust. These were then adopted by all the coastal laboratories.



The Paediatric Haematology reference ranges for Johannesburg were adopted from Wintrobe in the 80's.

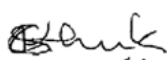
Unfortunately all this happened long before the laboratories were accredited and they did not keep the documentation in perpetuity as we do now.

Please note that these ranges have been deemed acceptable for the local population by the pathologists' serving these practices over the last 30 years, and that we accept these as our references ranges.

Dr. Jessica Trusler  
MEDICAL DIRECTOR  
BARC S.A. Clinical Trials Laboratory

JOINT VENTURE OF BARC INTERNATIONAL WITH LANCET LABORATORIES  
PRACTICE NO: 5201005  
DIRECTORS: Dr Paul Magrez (Belgium), J. Albrecht (Belgium), Dr P.R. Cole (South Africa)  
Dr J. Trusler (Medical Director)

|   |   |  |  |  |
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| <b>19 November 2009</b>   |   |  |  |  |
| <b><u>No Reference Ranges for FBC Differential Counts Reported in %</u></b>   |   |  |  |  |
| <p>Please note that the reference ranges for the differential counts reported in percentage (%) have not been included in the BARC SA Haematology Reference Ranges, as these are derived from a calculation between the absolute differential counts and the total white cell count. As the differential counts reported in absolute values vary there are no set reference ranges for the differential counts expressed in percentage (%).</p> |   |  |  |  |
| <br><hr/> <b>Dr. Jessica Trusler</b><br>Medical Director<br>BARC SA Clinical Trials Laboratory   |   | <hr/> <b>19 November 2009</b><br>Date  |  |  |
| <p>Page 1 of 1</p>  |   |  |  |  |
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Glenda Kuntashula (Quality Assurance Manager)