Quality Control in Haematology

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Quality Control

- To ensure that the quality of work remains within a predetermined standard.
Reference Method

- An exactly defined technique which provides sufficiently accurate and precise data for it to be used to assess the validity of other methods.
QC Material

- Standards
  - Values are assigned by a reference method
  - Used to calibrate analytical instruments
    - International standards (WHO)
    - Secondary Standards (Calibrators)
      - Commercial
      - Laboratories

- Controls
  - Values assigned are approximate
QC Materials in Haematology

- Haemoglobin
- Blood Cells
- Plasma
- Internal Quality Control
  - Measurements on specially prepared material
  - Repeated measurements on routine specimens
  - Statistical analysis of routine test data

- External Quality Control
  - Retrospective analysis
  - Specially prepared material
  - Comparison
    - Between laboratory
    - Between methods
## Dispersion around the Mean

<table>
<thead>
<tr>
<th>Group-I</th>
<th>Group-II</th>
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<tbody>
<tr>
<td>2.5</td>
<td>7.3</td>
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<td>4.5</td>
<td>8.4</td>
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<td>7.2</td>
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<td>9.6</td>
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<td>9.8</td>
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<td>10.5</td>
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<tr>
<td>11.7</td>
<td>10.1</td>
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<tr>
<td>13.2</td>
<td>10.2</td>
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<tr>
<td>14.1</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Mean: 9.1
Range: 2.5-14.5

Mean: 9.2
Range: 7.3-10.3
Standard Deviation (SD)

• $\pm 1$ SD: 70%
• $\pm 2$ SD: 95%
• $\pm 3$ SD: 99%
Statistical Methods in QC

- Range
- Standard Deviation (SD)
- Coefficient of Variation (CV)
- Confidence Interval (CI)
QC in Practice

- Calibration of Instruments with Standards
  - Six monthly
  - Fluctuation in results (LJ Charts, EQA)
  - After repair/service
- Control Charts (LJ Charts)
  - Daily
  - With each batch of specimens
- Patient Samples
  - Daily
- Duplicate measurements on patient samples
  - Daily
- Statistical analysis of patient’s data
  - MCV, MCH, MCHC etc.
- Correlation Checks