epoc Blood Analysis System with NXS Host

Summary of Analytical Methods and Performance

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Summary of Analytical Methods and Performance

epoc Blood Analysis System with NXS Host

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- Chloride
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- Glucose
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Performance data
The data summarized here are compiled from user performance verifications of the epoc® Blood Analysis System, performed as part of the implementation process.

Precision
The precision data provided for each analyte are the pooled averages of the precision data from performance verifications from 1–12 user sites.

Method comparison
Method comparison studies were performed by individuals who were thoroughly familiar with the operation, maintenance, and control of both the epoc system and comparative method systems before starting. Testing was performed at all sites using blood collected in either blood gas syringes or in green-top evacuated tubes. Some samples were spiked with concentrated solutions to create samples with concentrations throughout the reportable range of each analyte. Each plot included in this summary is from 1–3 sites and is representative of the comparison of the epoc Blood Analysis System to each instrument.

Glossary
Accuracy is how close a result is to its true value.

Precision is reproducibility—how closely multiple results obtained from the same sample agree with each other.

n is the number of data points included in the data set.

x represents the comparison method in regression analysis.

y represents the test method in regression analysis.

Slope describes the angle of the line that provides the best fit of the test and comparison results. A perfect slope would be 1.00. Deviations from 1.00 are an indication of proportional systematic error.

Intercept (int’t) or y-intercept describes where the line of best fit intersects the y-axis. The y-intercept should be an indication of constant systematic error.

Sy.x describes the scatter of the data around the line of best fit. It provides an estimate of the random error between the methods and includes both the imprecision of the test and comparison methods, as well as possible matrix effects that vary from one sample to another. Sy.x will never be 0 because both methods have some imprecision.

r or correlation coefficient describes how closely the results between the two methods change together. The lower the r value, the more scatter there is in the data. The main use of r is to help assess the reliability of the regression data—r should never be used as an indicator of method acceptability.

Methodologies
pH is measured by potentiometry using a pH-selective membrane electrode. The concentration of hydrogen ions is obtained from the measured potential using the Nernst equation.

$pCO_2$ is measured by potentiometry using a membrane-covered pH-sensing electrode. The electrode voltage is proportional to the dissolved carbon dioxide concentration through the Nernst equation.

$pO_2$ is measured by amperometry using a membrane-covered oxygen-sensing cathode electrode. The oxygen reduction current is proportional to the dissolved oxygen concentration.

$TCO_2$ is measured based on a modified Henderson-Hasselbalch equation, using pH and $pCO_2$ and calibrated to match the International Federation of Clinical Chemistry (IFCC) Reference Measurement Procedure for Total Carbon Dioxide. Therefore, it is metrologically traceable to the IFCC TCO$_2$ reference method.

Sodium is measured by potentiometry using an ion-selective membrane electrode. The concentration of sodium ions is obtained from the measured potential using the Nernst equation. The epoc sodium measurement is an undiluted (direct) method. Values may differ from those obtained by dilutional (indirect) methods.

Potassium is measured by potentiometry using an ion-selective membrane electrode. The concentration of potassium ions is obtained from the measured potential using the Nernst equation. The epoc potassium measurement is an undiluted (direct) method. Values may differ from those obtained by dilutional (indirect) methods.

Ionized calcium is measured by potentiometry using an ion-selective membrane electrode. The concentration of calcium ions is obtained from the measured potential using the Nernst equation.

Chloride is measured by potentiometry using an ion-selective membrane electrode. The concentration of chloride ions is obtained from the measured potential using the Nernst equation.

Hematocrit is measured by AC conductometry using two gold electrodes. The conductance of the blood sample in the fluidic path between the two electrodes, after correction for variable plasma conductivity through the measurement of sodium and potassium concentration, is inversely proportional to the hematocrit value.
Glucose is measured by amperometry. The sensor comprises an immobilized enzyme first layer coated onto a gold electrode of the electrode module, with a diffusion barrier second layer. The glucose oxidase enzyme is employed to convert glucose to hydrogen peroxide:

\[
\text{Glucose oxidase} \
\beta\text{-D-glucose} + \text{O}_2 + \text{H}_2\text{O} \rightarrow \text{D-gluconic acid} + \text{H}_2\text{O}_2
\]

and then uses an amperometric sensor to detect the enzymatically produced hydrogen peroxide. Peroxide detection is by redox-mediated (ABTS [2,2'-azino-bis 3-ethylbenzothiazoline-6-sulfonic acid] diammonium salt) horseradish peroxidase (HRP)-catalyzed reduction on a gold electrode.

\[
\text{H}_2\text{O}_2 + \text{HRP}^{\text{red}} \rightarrow \text{HRP}^{\text{ox}} \\
\text{HRP}^{\text{ox}} + \text{Red} \rightarrow \text{Ox} + \text{HRP}^{\text{red}} \\
\text{Ox} + e^- \rightarrow \text{Red}
\]

The reduction current is proportional to the concentration of glucose in the test fluid. The epoc glucose result is reported as plasma-equivalent glucose concentration.

Lactate is measured by amperometry. The sensor comprises an immobilized enzyme first layer coated onto a gold electrode of the electrode module, with a diffusion barrier second layer. The lactate oxidase enzyme is employed to convert lactate to hydrogen peroxide:

\[
\text{Lactate oxidase} \
\beta\text{-D-lactate} + \text{O}_2 + \text{H}_2\text{O} \rightarrow \text{Pyruvic acid} + \text{H}_2\text{O}_2
\]

and then uses an amperometric sensor to detect the enzymatically produced hydrogen peroxide. Peroxide detection is by redox-mediated (ABTS [2,2'-azino-bis 3-ethylbenzothiazoline-6-sulfonic acid] diammonium salt) horseradish peroxidase (HRP)-catalyzed reduction on a gold electrode.

\[
\text{H}_2\text{O}_2 + \text{HRP}^{\text{red}} \rightarrow \text{HRP}^{\text{ox}} \\
\text{HRP}^{\text{ox}} + \text{Red} \rightarrow \text{Ox} + \text{HRP}^{\text{red}} \\
\text{Ox} + e^- \rightarrow \text{Red}
\]

The reduction current is proportional to the concentration of lactate in the test fluid.

BUN/Urea is measured by potentiometry using an ammonium ion-selective electrode coated onto a gold electrode, covered with an enzymatic membrane second layer. The urease enzyme is employed to convert urea to ammonium ions:

\[
\text{Urea} + \text{H}_2\text{O} + 2\text{H}^+ + \text{Urease} \rightarrow 2\text{NH}_4^+ + \text{CO}_2
\]

and then uses a potentiometric ion-selective electrode to detect the enzymatically produced ammonium ion. The concentration of ammonium ions is obtained from the measured potential using the Nernst equation.

Creatinine is measured by amperometry. Each creatinine sensor is a three-layer enzyme electrode comprising a first immobilized enzyme creatinine-conversion underlayer coated onto a gold electrode, a second immobilized enzyme creatine screening layer, and a third diffusion barrier layer.

The creatinine electrode underlayer contains the enzymes creatinine amidohydrolase, creatine amidinohydrolase, and sarcosine oxidase, which convert creatinine to hydrogen peroxide in an enzyme product cascade:

\[
\text{Creatinine amidohydrolase} \\
\text{Creatinine} + \text{H}_2\text{O} \rightarrow \text{Creatine} \\
\text{Creatinine amidinohydrolase} \\
\text{Creatinine} + \text{H}_2\text{O} \rightarrow \text{Sarcosine} + \text{Urea} \\
\text{Sarcosine oxidase} \\
\text{Sarcosine} + \text{O}_2 + \text{H}_2\text{O} \rightarrow \text{Glycine} + \text{Formaldehyde} + \text{H}_2\text{O}_2
\]

References:
pH Method Comparison

<table>
<thead>
<tr>
<th>pH</th>
<th>X: Radiometer ABL 700 System</th>
<th>Y: epoc System</th>
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<tr>
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<td>42</td>
<td>32</td>
</tr>
<tr>
<td>slope</td>
<td>1.015</td>
<td>0.923</td>
</tr>
<tr>
<td>int't.</td>
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<td>Sy.x</td>
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<td>0.010</td>
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<td>r</td>
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<th>X: RAPIDLab® 1265 Blood Gas System by Siemens Healthineers</th>
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<td>0.010</td>
</tr>
<tr>
<td>r</td>
<td>0.998</td>
<td>0.992</td>
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</table>
**pH**

X: Nova Biomedical CRITICAL CARE XPRESS System
Y: epoc System

\[ n = 43 \]
\[ \text{slope} = 0.996 \]
\[ \text{int.} = -0.004 \]
\[ \text{Sy.x} = 0.017 \]
\[ r = 0.982 \]

**pH**

X: IRMA TRUPOINT System
Y: epoc System

\[ n = 33 \]
\[ \text{slope} = 1.117 \]
\[ \text{int.} = -0.865 \]
\[ \text{Sy.x} = 0.010 \]
\[ r = 0.993 \]
**pCO₂ Method Comparison**

### Precision

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
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<tbody>
<tr>
<td>Level 1</td>
<td>24</td>
<td>67.2</td>
<td>2.30</td>
<td>3.41%</td>
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<tr>
<td>Level 3</td>
<td>25</td>
<td>20.8</td>
<td>0.68</td>
<td>3.25%</td>
</tr>
</tbody>
</table>

### pCO₂

**X: Abbott I-STAT System**

**Y: epoc System**

\[
\begin{align*}
Y_m (\text{test}) & \quad X_m (\text{comparative}) \\
0 & \quad 0 \\
25 & \quad 25 \\
50 & \quad 50 \\
75 & \quad 75 \\
100 & \quad 100 \\
125 & \quad 125 \\
150 & \quad 150 \\
\end{align*}
\]

- n = 41
- slope = 1.058
- int't. = -4.60
- Sy.x = 2.03
- r = 0.996

**pCO₂**

**X: RAPIDLab 1265 Blood Gas System by Siemens Healthineers**

**Y: epoc System**

\[
\begin{align*}
Y_m (\text{test}) & \quad X_m (\text{comparative}) \\
0 & \quad 0 \\
25 & \quad 25 \\
50 & \quad 50 \\
75 & \quad 75 \\
100 & \quad 100 \\
125 & \quad 125 \\
150 & \quad 150 \\
\end{align*}
\]

- n = 25
- slope = 1.000
- int't. = -0.91
- Sy.x = 1.24
- r = 0.999

**pCO₂**

**X: Radiometer ABL 700 System**

**Y: epoc System**

\[
\begin{align*}
Y_m (\text{test}) & \quad X_m (\text{comparative}) \\
0 & \quad 0 \\
25 & \quad 25 \\
50 & \quad 50 \\
75 & \quad 75 \\
100 & \quad 100 \\
125 & \quad 125 \\
150 & \quad 150 \\
\end{align*}
\]

- n = 26
- slope = 0.977
- int't. = -0.24
- Sy.x = 1.63
- r = 0.995

**pCO₂**

**X: IL GEM PREMIER 3000 System**

**Y: epoc System**

\[
\begin{align*}
Y_m (\text{test}) & \quad X_m (\text{comparative}) \\
0 & \quad 0 \\
25 & \quad 25 \\
50 & \quad 50 \\
75 & \quad 75 \\
100 & \quad 100 \\
125 & \quad 125 \\
150 & \quad 150 \\
\end{align*}
\]

- n = 52
- slope = 1.002
- int't. = -0.34
- Sy.x = 2.47
- r = 0.995
**pCO₂**

X: Nova Biomedical CRITICAL CARE XPRESS System  
Y: epoc System

\[ n = 46 \]
\[ \text{slope} = 1.006 \]
\[ \text{int.'t.} = 2.86 \]
\[ Sy.x = 2.88 \]
\[ r = 0.975 \]

**pCO₂**

X: IRMA TRUPOINT System  
Y: epoc System

\[ n = 32 \]
\[ \text{slope} = 1.047 \]
\[ \text{int.'t.} = -2.49 \]
\[ Sy.x = 1.56 \]
\[ r = 0.979 \]
**pO₂ Method Comparison**

### Precision Table

<table>
<thead>
<tr>
<th>Level</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
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<tbody>
<tr>
<td>Level 1</td>
<td>24</td>
<td>63.7</td>
<td>4.46</td>
<td>7.00%</td>
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<tr>
<td>Level 3</td>
<td>25</td>
<td>185.6</td>
<td>6.46</td>
<td>3.48%</td>
</tr>
</tbody>
</table>

---

**pO₂**

- **X:** Abbott I-STAT System
- **Y:** epoc System

![Graph](image1)

- $n = 42$
- slope = 0.949
- int. = 7.86
- Sy.x = 4.78
- $r = 0.997$

---

**pO₂**

- **X:** RAPIDLab 1265 Blood Gas System by Siemens Healthineers
- **Y:** epoc System

![Graph](image2)

- $n = 24$
- slope = 1.018
- int. = 3.64
- Sy.x = 4.04
- $r = 0.998$

---

**pO₂**

- **X:** Radiometer ABL 700 System
- **Y:** epoc System

![Graph](image3)

- $n = 51$
- slope = 0.919
- int. = 9.01
- Sy.x = 5.80
- $r = 0.995$

---

**pO₂**

- **X:** IL GEM PREMIER 3000 System
- **Y:** epoc System

![Graph](image4)

- $n = 32$
- slope = 0.947
- int. = 14.20
- Sy.x = 8.50
- $r = 0.987$
### pO₂

**X:** Nova Biomedical CRITICAL CARE XPRESS System  
**Y:** epoc System

- $n = 43$
- slope $= 0.900$
- Intt. $= 11.32$
- $Sy.x = 7.30$
- $r = 0.997$

### pO₂

**X:** IRMA TRUPOINT System  
**Y:** epoc System

- $n = 31$
- slope $= 1.047$
- Intt. $= -6.60$
- $Sy.x = 5.13$
- $r = 0.971$
TCO₂ Method Comparison

<table>
<thead>
<tr>
<th>TCO₂ mmol/L</th>
<th>Precision</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>0.23</td>
<td>1.2%</td>
</tr>
<tr>
<td></td>
<td>Level 3</td>
<td>132</td>
<td>30.8</td>
<td>0.54</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

**TCO₂**

X: Abbott ARCHITECT System  
Y: epoc System

\[ Y_m (\text{test}) \]  
\[ X_m (\text{comparative}) \]

\[ n = 86 \]
\[ \text{slope} = 0.98 \]
\[ \text{int}' = 2.2 \]
\[ \text{Sy.x} = 1.17 \]
\[ r = 0.973 \]

**TCO₂**

X: Dimension® EXL™ Integrated Chemistry System by Siemens Healthineers  
Y: epoc System

\[ Y_m (\text{test}) \]  
\[ X_m (\text{comparative}) \]

\[ n = 65 \]
\[ \text{slope} = 1.05 \]
\[ \text{int}' = 0.8 \]
\[ \text{Sy.x} = 1.17 \]
\[ r = 0.974 \]

**TCO₂**

X: Beckman Coulter DxC System  
Y: epoc System

\[ Y_m (\text{test}) \]  
\[ X_m (\text{comparative}) \]

\[ n = 40 \]
\[ \text{slope} = 1.12 \]
\[ \text{int}' = -2.1 \]
\[ \text{Sy.x} = 0.58 \]
\[ r = 0.989 \]

**TCO₂**

X: Dimension Vista® Intelligent Lab System by Siemens Healthineers  
Y: epoc System

\[ Y_m (\text{test}) \]  
\[ X_m (\text{comparative}) \]

\[ n = 144 \]
\[ \text{slope} = 1.18 \]
\[ \text{int}' = -3.7 \]
\[ \text{Sy.x} = 1.0 \]
\[ r = 0.977 \]
TCO$_2$
X: Roche COBAS System
Y: epoc System

n = 80
slope = 1.02
int. = 1.2
Sy.x = 1.04
r = 0.981
## Sodium Method Comparison

### Sodium mmol/L

<table>
<thead>
<tr>
<th>Precision</th>
<th>n</th>
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<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>27</td>
<td>113</td>
<td>0.82</td>
<td>0.73%</td>
</tr>
<tr>
<td>Level 3</td>
<td>27</td>
<td>166</td>
<td>1.07</td>
<td>0.64%</td>
</tr>
</tbody>
</table>

### Na⁺

**X: Abbott I-STAT System**  
**Y: epoc System**

- **n = 63**  
- **slope = 0.927**  
- **int. = 10.19**  
- **Sy.x = 2.55**  
- **r = 0.982**

### Na⁺

**X: RAPIDLab 1265 Blood Gas System by Siemens Healthineers**  
**Y: epoc System**

- **n = 26**  
- **slope = 1.057**  
- **int. = −5.30**  
- **Sy.x = 2.77**  
- **r = 0.922**

### Na⁺

**X: Radiometer ABL 700 System**  
**Y: epoc System**

- **n = 26**  
- **slope = 1.010**  
- **int. = −0.01**  
- **Sy.x = 2.55**  
- **r = 0.987**

### Na⁺

**X: IL GEM PREMIER 3000 System**  
**Y: epoc System**

- **n = 58**  
- **slope = 1.000**  
- **int. = 1.42**  
- **Sy.x = 1.05**  
- **r = 0.919**
**Na⁺**

X: Beckman Coulter DxC System

Y: epoc System

\[
\begin{align*}
&n = 25 \\
slope = 0.975 \\
int. = 4.49 \\
Sy.x = 2.00 \\
r = 0.981
\end{align*}
\]

**Na⁺**

X: Ortho Clinical Laboratories VITROS System

Y: epoc System

\[
\begin{align*}
&n = 35 \\
slope = 0.947 \\
int. = 6.70 \\
Sy.x = 1.25 \\
r = 0.871
\end{align*}
\]
Potassium Method Comparison

<table>
<thead>
<tr>
<th>Precision</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>27</td>
<td>2.1</td>
<td>0.043</td>
<td>2.04%</td>
</tr>
<tr>
<td>Level 3</td>
<td>27</td>
<td>6.3</td>
<td>0.075</td>
<td>1.20%</td>
</tr>
</tbody>
</table>

\[ r = 0.999 \]
\[ X: \text{Radiometer ABL 700 System} \]
\[ Y: \text{epoc System} \]

K*
\[ X: \text{Abbott I-STAT System} \]
\[ Y: \text{epoc System} \]
\[ n = 38 \]
\[ \text{slope} = 0.980 \]
\[ \text{int} = 0.07 \]
\[ \text{Sy.x} = 0.099 \]
\[ r = 0.997 \]

K*
\[ X: \text{RAPIDLab 1265 Blood Gas System by Siemens Healthineers} \]
\[ Y: \text{epoc System} \]
\[ n = 26 \]
\[ \text{slope} = 1.019 \]
\[ \text{int} = -0.08 \]
\[ \text{Sy.x} = 0.141 \]
\[ r = 0.995 \]

K*
\[ X: \text{IL GEM PREMIER 3000 System} \]
\[ Y: \text{epoc System} \]
\[ n = 31 \]
\[ \text{slope} = 0.959 \]
\[ \text{int} = 0.13 \]
\[ \text{Sy.x} = 0.090 \]
\[ r = 0.995 \]

K*
\[ X: \text{Radiometer ABL 700 System} \]
\[ Y: \text{epoc System} \]
\[ n = 26 \]
\[ \text{slope} = 1.023 \]
\[ \text{int} = -0.11 \]
\[ \text{Sy.x} = 0.082 \]
\[ r = 0.999 \]
**K**

X: Nova Biomedical PHOX System  
Y: epoc System

- $n = 43$  
- slope = 1.042  
- int’t. = –0.18  
- $Sy.x = 0.122$  
- $r = 0.995$

**K**

X: Ortho Clinical Laboratories VITROS System  
Y: epoc System

- $n = 54$  
- slope = 0.965  
- int’t. = –0.07  
- $Sy.x = 0.072$  
- $r = 0.985$

**K**

X: Beckman Coulter DxC System  
Y: epoc System

- $n = 26$  
- slope = 0.991  
- int’t. = 0.19  
- $Sy.x = 0.063$  
- $r = 0.998$

**K**

X: Dimension Integrated Chemistry System by Siemens Healthineers  
Y: epoc System

- $n = 43$  
- slope = 0.948  
- int’t. = 0.13  
- $Sy.x = 0.101$  
- $r = 0.997$
Ionized Calcium Method Comparison

<table>
<thead>
<tr>
<th>Ionized Calcium mmol/L</th>
<th>Precision</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1</td>
<td></td>
<td>26</td>
<td>1.53</td>
<td>0.019</td>
<td>1.25%</td>
</tr>
<tr>
<td>Level 3</td>
<td></td>
<td>27</td>
<td>0.67</td>
<td>0.009</td>
<td>1.40%</td>
</tr>
</tbody>
</table>

**Ca**

X: Abbott I-STAT System
Y: epoc System

![Graph 1](image1)

n = 39
slope = 0.997
int’l. = 0.00
Sy.x = 0.025
r = 0.991

**Ca**

X: RAPIDLab 1265 Blood Gas System by Siemens Healthineers
Y: epoc System

![Graph 2](image2)

n = 44
slope = 0.960
int’l. = 0.04
Sy.x = 0.047
r = 0.969

**Ca**

X: Radiometer ABL 700 System
Y: epoc System

![Graph 3](image3)

n = 25
slope = 1.004
int’l. = −0.05
Sy.x = 0.035
r = 0.997

**Ca**

X: IL GEM PREMIER 3000 System
Y: epoc System

![Graph 4](image4)

n = 31
slope = 0.979
int’l. = 0.06
Sy.x = 0.027
r = 0.979
Ca**

X: Nova Biomedical PHOX System
Y: epoc System

- $n = 43$
- slope = 0.986
- int't. = 0.00
- $Sy.x = 0.039$
- $r = 0.994$
Chloride Method Comparison

<table>
<thead>
<tr>
<th>Chloride mmol/L</th>
<th>Precision</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td></td>
<td>20</td>
<td>76</td>
<td>0.53</td>
<td>0.69%</td>
</tr>
<tr>
<td>Level 3</td>
<td></td>
<td>20</td>
<td>125</td>
<td>0.94</td>
<td>0.76%</td>
</tr>
</tbody>
</table>

Chloride
X: Abbott I-STAT System
Y: epoc System

\[ r = 0.990 \]

Chloride
X: Roche COBAS 6000 System
Y: epoc System

\[ n = 50 \]
\[ \text{slope} = 0.982 \]
\[ \text{int} = 5.032 \]
\[ \text{Sy.x} = 1.250 \]
\[ r = 0.990 \]

Chloride
X: ADVIA® Clinical Chemistry System by Siemens Healthineers
Y: epoc System

\[ n = 64 \]
\[ \text{slope} = 0.989 \]
\[ \text{int} = -0.525 \]
\[ \text{Sy.x} = 1.033 \]
\[ r = 0.995 \]

Chloride
X: Beckman Coulter DxC System
Y: epoc System

\[ n = 63 \]
\[ \text{slope} = 0.990 \]
\[ \text{int} = 1.611 \]
\[ \text{Sy.x} = 1.670 \]
\[ r = 0.982 \]
Chloride
X: Radiometer ABL 800 System
Y: epoc System

n = 56
slope = 1.040
int. = –4.866
Sy.x = 0.545
r = 0.995
Hematocrit Method Comparison

<table>
<thead>
<tr>
<th>Hematocrit %PCV</th>
<th>Precision</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td></td>
<td>26</td>
<td>25</td>
<td>0.56</td>
<td>2.28%</td>
</tr>
<tr>
<td>Level 3</td>
<td></td>
<td>26</td>
<td>44</td>
<td>1.16</td>
<td>2.61%</td>
</tr>
</tbody>
</table>

**Hct**

X: Radiometer ABL 825 System  
Y: epoc System

- n = 38  
slope = 0.996  
int' = –0.4  
Sy.x = 1.81  
r = 0.982

**Hct**

X: RAPIDLab 1265 Blood Gas System by Siemens Healthineers  
Y: epoc System

- n = 23  
slope = 1.051  
int' = –4.0  
Sy.x = 2.61  
r = 0.971

**Hct**

X: Abbott I-STAT System  
Y: epoc System

- n = 29  
slope = 0.944  
int' = 2.2  
Sy.x = 1.40  
r = 0.991

**Hct**

X: IL GEM PREMIER 3000 System  
Y: epoc System

- n = 57  
slope = 1.037  
int' = –2.8  
Sy.x = 2.83  
r = 0.920
Hct
X: Nova Biomedical PHOX System
Y: epoc System

n = 34
slope = 1.052
int. = –3.6
Sy.x = 1.76
r = 0.986

Hct
X: Sysmex XE System
Y: epoc System

n = 18
slope = 0.983
int. = –0.4
Sy.x = 1.96
r = 0.971

Hct
X: Beckman Coulter LH System
Y: epoc System

n = 29
slope = 1.067
int. = –0.3
Sy.x = 1.86
r = 0.984

Hct
X: Microcentrifugation (spun)
Y: epoc System

n = 63
slope = 0.963
int. = 0.9
Sy.x = 2.01
r = 0.970
**Glucose Method Comparison**

<table>
<thead>
<tr>
<th>Glucose mg/dL</th>
<th>Precision</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td></td>
<td>27</td>
<td>41.9</td>
<td>1.24</td>
<td>2.96%</td>
</tr>
<tr>
<td>Level 3</td>
<td></td>
<td>27</td>
<td>278</td>
<td>6.84</td>
<td>2.46%</td>
</tr>
</tbody>
</table>

**Glucose**

X: Radiometer ABL 700 System  
Y: epoc System

n = 24  
slope = 1.048  
int't. = -1.7  
Sy.x = 5.49  
r = 0.995

**Glucose**

X: Abbott I-STAT System  
Y: epoc System

n = 41  
slope = 1.015  
int't. = 1.8  
Sy.x = 5.59  
r = 0.999

**Glucose**

X: IL GEM PREMIER 3000 System  
Y: epoc System

n = 31  
slope = 1.042  
int't. = 11.9  
Sy.x = 11.07  
r = 0.989

**Glucose**

X: RAPIDLab 1265 Blood Gas System by Siemens Healthineers  
Y: epoc System

n = 22  
slope = 1.052  
int't. = 4.0  
Sy.x = 15.75  
r = 0.990
**Glucose**

X: Nova Biomedical CRITICAL CARE XPRESS System  
Y: epoc System

- n = 44
- slope = 1.021
- int't. = –4.7
- Sy.x = 6.43
- r = 0.994

**Glucose**

X: Ortho Clinical Laboratories VITROS System  
Y: epoc System

- n = 41
- slope = 1.018
- int't. = 0.8
- Sy.x = 6.82
- r = 0.998

**Glucose**

X: Beckman Coulter DxC System  
Y: epoc System

- n = 24
- slope = 1.057
- int't. = –10.5
- Sy.x = 7.71
- r = 0.996

**Glucose**

X: Dimension Integrated Chemistry System by Siemens Healthineers  
Y: epoc System

- n = 43
- slope = 1.016
- int't. = –2.7
- Sy.x = 7.49
- r = 0.997
Lactate Method Comparison

<table>
<thead>
<tr>
<th>Lactate mmol/L</th>
<th>Precision</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level 1</td>
<td>27</td>
<td>0.97</td>
<td>0.045</td>
<td>4.67%</td>
</tr>
<tr>
<td></td>
<td>Level 3</td>
<td>28</td>
<td>5.96</td>
<td>0.225</td>
<td>3.77%</td>
</tr>
</tbody>
</table>

Lactate
X: Abbott I-STAT System
Y: epoc System

Lactate
X: Radiometer ABL 700 System
Y: epoc System

Lactate
X: RAPIDLab 1265 Blood Gas System by Siemens Healthineers
Y: epoc System

Lactate
X: IL GEM PREMIER 4000 System
Y: epoc System

Lactate
X: Abbott I-STAT System
Y: epoc System

Lactate
X: Radiometer ABL 700 System
Y: epoc System

Lactate
X: RAPIDLab 1265 Blood Gas System by Siemens Healthineers
Y: epoc System

Lactate
X: IL GEM PREMIER 4000 System
Y: epoc System

n = 36
slope = 0.998
int. = 0.113
Sy.x = 0.480
r = 0.996

n = 23
slope = 1.019
int. = -0.207
Sy.x = 0.132
r = 0.999

n = 51
slope = 1.011
int. = 0.101
Sy.x = 0.258
r = 0.995

n = 46
slope = 1.025
int. = 0.130
Sy.x = 0.564
r = 0.993
Lactate
X: Ortho Clinical Laboratories VITROS System
Y: epoc System

\[ n = 42 \]
\[ \text{slope} = 0.938 \]
\[ \text{int.} = 0.155 \]
\[ \text{Sy.x} = 0.398 \]
\[ r = 0.989 \]

Lactate
X: Roche MODULAR System
Y: epoc System

\[ n = 48 \]
\[ \text{slope} = 1.039 \]
\[ \text{int.} = -0.067 \]
\[ \text{Sy.x} = 0.264 \]
\[ r = 0.996 \]

Lactate
X: Dimension Integrated Chemistry System by Siemens Healthineers
Y: epoc System

\[ n = 20 \]
\[ \text{slope} = 0.987 \]
\[ \text{int.} = -0.033 \]
\[ \text{Sy.x} = 0.120 \]
\[ r = 0.999 \]
BUN Method Comparison

### BUN mg/dL

<table>
<thead>
<tr>
<th>Precision</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>137</td>
<td>49.9</td>
<td>1.12</td>
<td>2.2%</td>
</tr>
<tr>
<td>Level 3</td>
<td>132</td>
<td>4.9</td>
<td>0.13</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

**BUN**

X: Dimension Integrated Chemistry System by Siemens Healthineers  
Y: epoc System

- \( n = 64 \)
- \( \text{slope} = 0.93 \)
- \( \text{int}t. = 0.3 \)
- \( \text{Sy}.x = 1.0 \)
- \( r = 0.999 \)

**BUN**

X: Dimension Vista Intelligent Lab System by Siemens Healthineers  
Y: epoc System

- \( n = 146 \)
- \( \text{slope} = 0.95 \)
- \( \text{int}t. = 0.2 \)
- \( \text{Sy}.x = 1.6 \)
- \( r = 0.997 \)

**BUN**

X: Beckman Coulter DxC System  
Y: epoc System

- \( n = 39 \)
- \( \text{slope} = 0.95 \)
- \( \text{int}t. = 1.3 \)
- \( \text{Sy}.x = 0.7 \)
- \( r = 0.999 \)

**BUN**

X: Abbott ARCHITECT System  
Y: epoc System

- \( n = 86 \)
- \( \text{slope} = 0.93 \)
- \( \text{int}t. = 0.7 \)
- \( \text{Sy}.x = 0.7 \)
- \( r = 0.997 \)
BUN
X: Roche COBAS System
Y: epoc System

n = 121
slope = 1.00
int' = 0.2
Sy.x = 1.8
r = 0.996
## Creatinine Method Comparison

### Creatinine mg/dL

<table>
<thead>
<tr>
<th>Precision</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>%CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>20</td>
<td>0.91</td>
<td>0.045</td>
<td>4.93%</td>
</tr>
<tr>
<td>Level 3</td>
<td>20</td>
<td>4.54</td>
<td>0.191</td>
<td>4.21%</td>
</tr>
</tbody>
</table>

### Creatinine

**X:** ADVIA Clinical Chemistry System by Siemens Healthineers  
**Y:** epoc System  

![Graph](image1)

- $n = 53$  
- slope = 1.063  
- int. = $-0.115$  
- $r = 0.998$

**Creatinine

**X:** Abbott I-STAT System  
**Y:** epoc System  

![Graph](image2)

- $n = 63$  
- slope = 0.955  
- int. = $0.075$  
- $r = 0.999$

### Creatinine

**X:** Beckman Coulter AU680 System  
**Y:** epoc System  

![Graph](image3)

- $n = 63$  
- slope = 1.028  
- int. = $-0.008$  
- $r = 0.999$

**Creatinine

**X:** Roche COBAS 6000 System  
**Y:** epoc System  

![Graph](image4)

- $n = 50$  
- slope = 1.069  
- int. = $0.089$  
- $r = 0.996$
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