Collection of “Dose Calibrator” Settings

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Motivation

• Review of existing radionuclide calibrator calibration figures
• Comparison of figures determined at different NMIs
• Guidance for users
What to collect

• Measurements related to primary measurements
• Type of ionization chamber
  – NPL
  – Other
• Monte Carlo simulations – not collected
• Brachytherapy?
• Future – measurements by other than NMIs
What to record

- Excel spreadsheet (Other calibrators)

<table>
<thead>
<tr>
<th>NMI</th>
<th>Manufacturer (MF)</th>
<th>Model</th>
<th>S/N</th>
<th>Radionuc</th>
<th>Solution</th>
<th>Container</th>
<th>Soln Vol (mL)</th>
<th>MF Cal Factor (CF)</th>
<th>NMI CF</th>
<th>NMI CF Unc (%)</th>
<th>Diff at MF CF (%)</th>
<th>ANM/AMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSTO</td>
<td>Capintec</td>
<td>CRC-712M</td>
<td>18F</td>
<td>18F</td>
<td>FDG, 0.1 mol/L HCl</td>
<td>10 mL Wheaton Vial</td>
<td>0.1</td>
<td>439</td>
<td>443</td>
<td>12</td>
<td>2.7%</td>
<td>0.8%</td>
</tr>
<tr>
<td>ANSTO</td>
<td>Capintec</td>
<td>CRC-712M</td>
<td>18F</td>
<td>18F</td>
<td>FDG, 0.1 mol/L HCl</td>
<td>10 mL Wheaton Vial</td>
<td>1</td>
<td>439</td>
<td>446</td>
<td>12</td>
<td>2.7%</td>
<td>1.4%</td>
</tr>
<tr>
<td>ANSTO</td>
<td>Capintec</td>
<td>CRC-712M</td>
<td>18F</td>
<td>18F</td>
<td>FDG, 0.1 mol/L HCl</td>
<td>10 mL Wheaton Vial</td>
<td>4.5</td>
<td>439</td>
<td>459</td>
<td>11</td>
<td>2.4%</td>
<td>4.0%</td>
</tr>
<tr>
<td>ANSTO</td>
<td>Capintec</td>
<td>CRC-712M</td>
<td>18F</td>
<td>18F</td>
<td>FDG, 0.1 mol/L HCl</td>
<td>10 mL Wheaton Vial</td>
<td>9</td>
<td>439</td>
<td>473</td>
<td>15</td>
<td>3.2%</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

Comment | Year | Ref
|--------|------|------------------|
Reporting

• Factors reported in many ways
  – Calibration figure
    • Dial setting
    • Current/Activity
  – Nuclide efficiency
  – Correction factor
  – Geometry correction factor
  – Geometry correction components
Reporting, cont.

- Response at incorrect setting occasionally given
- Manufacturers recommended setting not always given
- Geometry usually well documented
- “Guidance/Calibrate your own” statement not always included
- Uncertainty not always given
Reporting Recommendations?

- Calibration figure vs Correction factor vs Nuclide efficiency?
- Include Manufacturers Setting
- Include bias introduced by using incorrect setting
- Uncertainty
  - In calibration figure
  - In activity
What to do with the information

• Submit to ICRM meeting
• Journal of Nuclear Medicine
• Journal of Nuclear Medicine Technologists

• Publish NPL calibration figures separately?
The collection so far

• NMI publications
  – 32 pdf documents
  – 4 paper copies
  – 5 identified, but don’t have
  – 4 brachytherapy

• 10 non-NMI

• Bibliography included in meeting CD
Questions?
Comments?
More references?