Status of Radiotherapy
and results of TLD postal dose quality audit in Ukraine

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Introduction

• The information about status of radiotherapy in Ukraine has been collected by the IAEA's annual survey DIRAC for all Ukrainian radiotherapy departments in 53 Oncology centers through National Coordinator – Grigorev Institute for Medical Radiology (IMR).

• Ukraine participates in IAEA/WHO TLD postal audit of dose calibration quality for radiotherapy beams since 1998 (IMR – National Coordinator).

• National TC-Project UKR/6/010 “Developing and Implementing a National Quality Control System by Strengthening the Knowledge and Capacity of Medical Physics at Radiotherapy Departments” (2012-2013) was realized during 2012-2013.
Radiotherapy equipment of RT departments in Ukraine

<table>
<thead>
<tr>
<th>RT Departments</th>
<th>Teletherapy units</th>
<th>Simulators</th>
<th>BT units</th>
<th>TPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-60</td>
<td>Linac</td>
<td>CT</td>
<td>Co-60</td>
<td>Ir-192</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X-ray</td>
<td></td>
<td>EBRT</td>
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<td></td>
<td></td>
<td>BT</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>80</td>
<td>23</td>
<td>36</td>
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<td>12</td>
</tr>
</tbody>
</table>

**RT units age:**
- 23 LA
- 23 Co-60 - less 10 years
- 12 Co-60 - 10/20 years
- 45 Co-60 - 20 and more
• During the period 1998-2015 the 48 Oncology Centers took part in IAEA/WHO TLD - audit. A total number of checked radiation beams were 356 (15-25 beams year). The results of the audit showed that about 25-30% of teletherapy units exceeded the 5% acceptance error limit.

• In the framework of National TC-Project UKR/6/010 there were organized three training workshops for medical physicists of Oncology centers.

• 25 complete sets of the equipment for clinical dosimetry were provided for radiotherapy departments of Oncology Hospitals of Ukraine under this IAEA TC-project.

• After training of medical physicists and the use of modern clinical dosimetry sets the results of TLD-audit in 2014 demonstrated the positive impact on improvement of the quality of clinical dosimetry in RT departments.

• The limit of acceptance error 5% was exceeded only for two teletherapy units (about 6% of total number audited units).
Discussion/conclusions

• The annual DIRAC survey of radiotherapy departments gives a possibility to monitor and assess the situation regarding equipment and staff in RT departments of Ukraine.
• The level of radiotherapy facilities is not sufficient for quality treatment for patients requiring radiotherapy.
• The main priority needs of radiotherapy departments in Ukraine identified through DIRAC survey and TLD-audit include are:
  ✓ modernization of RT Departments – Linear Accelerators, CT simulators and treatment planning systems;
  ✓ replacement of radiation sources for Cobalt radiotherapy units;
  ✓ permanent training of medical staff including medical physicists.