IAEA experiences with QUATRO audits

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Introduction of comprehensive audit

- The IAEA has recognized the need to audit medical radiation technology (diagnostics & therapy)
- Numerous requests received by IAEA
- IAEA International Basic Safety Standards is a foundation
- EC Directive 97/43/Euratom: EU countries are recommended to implement clinical audits
- IAEA methodology for comprehensive clinical audit has been developed and published for radiotherapy, nuclear medicine and diagnostic radiology
QUATRO audit

• Formal request by a RT centre
• QUATRO audits are conducted by a Team of RO, MP and RTT
• Typical duration is 5 days including
  – entrance briefing
  – audit activities: tour of RT centre, interviews, review of documentation, procedures, observation of practical work, physics measurements
  – exit briefing: feedback to the RT centre, preliminary conclusions, commendations and recommendations
• QUATRO Team report (restricted circulation)
QUATRO activities 2005–2017

- >5 audits
- 2-5 audits
- 1 audit

Training of auditors and regional QUATRO workshops in all world regions

91 QUATRO missions to date: Africa (9); Asia (21 + 10 re-audits); Europe (33 + 4 re-audits + 1 QUATRO physics audit); Latin America (12 + 1 re-audit)
Detailed analysis was performed of 31 QUATRO Team reports from QUATRO audit missions organized in first 10 years to 21 countries in the Europe Region. These missions were conducted by 26 different QUATRO experts: 10 ROs, 8 MPs, 8 RTTs).
Audited centres treat 500-8000 pts/year; 6 centres do not have brachytherapy

Patient throughput: 300-1400 pts/machine/year for teletherapy and 50-1000 pts/machine/year for brachytherapy

Staff workload: 104-526 pts/RO/year, 159-966 pts/MP/y, 68-273 pts/RTT/ year.

Staff and equipment shortages were recorded in >50% centres.
Analysis of 31 QUATRO reports:

- 11 audited centres were recognized as centres operating at a high competence level.
- 600 commendations and 759 recommendations were issued by 31 QUATRO Teams.

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QUATRO in Europe: overall results

Strengths:
- Adequate staff qualifications (in particular MPs), dedication and enthusiasm (all staff)
- Good communication within and across disciplines
- Adequate quality of facilities
- Excellent dosimetry and adequate equipment QC
- Adequate QA of multiple clinical processes
- Well organized radiation protection and safety programmes.

Weaknesses:
- Equipment shortages and/or sub-optimal equipment use
- Staff shortages: MP, RO, RTT
- Lack of institutional support for staff continuous development
- Deficiencies in QMS and QA procedures
- Insufficient training: RTT, RO, MP
- Inconsistent treatment protocols
- Structural and organizational issues.

Note: Centres recognized as operating at a high competence level were adequately staffed.
QUATRO audits to 12 RT centres took place with 1 re-audit; centres were selected in a regional meeting to include a range of technology levels.

México (MEX)
Caracas (VEN)
Sao Paulo (BRA)
San Salvador (ELS) x 2
Panamá (PAN)
Cochabamba (BOL)
Santiago (CHI)
Tegucigalpa (HON)
Guatemala (GUA)
San José (COS) x 2 + 1 re-audit
Main findings in Latin America

- 40% health systems do not prioritize cancer as a public health issue
- 3/12 centres do not practice brachytherapy
- One department designated “centre of competence”
- Centres had sufficient staff numbers
- Local training programmes for MPs and RTT were scarce; 4/12 centres offered education programmes for RO and MP
- Absence of quality management programmes
- >50% centres had long waiting lists
- Inequities based on the economics of patients were identified
- 50% centres did not meet international requirements in radiation protection.
Recommendations in Latin America

Recommendations to 12 radiotherapy centres:
• Infrastructure: new facilities (10), immobilization (6), dosimetry (6), RT imaging (4)
• Staff: communications (11), RTT training (5), all staff training (4)
• RT process: lack of protocols and policies for multiple clinical processes (12)
• Department and institution organization: quality management system (10), radiation safety (8).

Recommendations to governments
• Support and invest more funds in radiation oncology (8)
• Consider cancer as a problem of the public health and create national cancer control plan (5).
Conclusions

• QUATRO audits provide a tool for improvement of radiotherapy practices in cancer centres.

• Countries can adopt QUATRO methodology as part of the national comprehensive quality system or perform self-audits at the department level.
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