

**Project Title** Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy

**Oracle Project Number** 2060119

**Objectives** To review, harmonize and upgrade quality assurance and quality control programmes in radiotherapy departments of two major regional hospitals in Croatia to avoid accidental exposure during therapeutic procedures.

**General Project Data**

**Field(s)** (6F) Radiation Metrology and Dosimetry

**APC Code(s)** (F ) Human Health

**Project Achievements**

Background:

There have been six radiotherapy departments in Croatia with similar facilities and equipment. Croatian radiation protection laws insist on QA/QC programmes in all radiotherapy departments, but the programmes in them were inconsistent and had many shortcomings thus there was a low level of implementation. As the upgrade of QA/QC programmes is a long term objective, a graduated approach was chosen to introduce pilot in Department of Radiotherapy and Oncology in two hospitals. Later they can be expanded from these pilot projects to the others until the full national coverage. Agency was requested to review, harmonize and upgrade quality assurance and quality control programmes in radiotherapy departments of two major regional hospitals in Croatia University Hospitals in Osijek and Rijeka - to avoid accidental exposure during therapeutic procedures.

Outputs:

The aim of the first scientific visits was how to set up and implement a QA/QC program in the radiotherapy department and to compare it will lessons learned in two radiotherapy departments. Agency provided a complete set of handbooks and manuals from the setting up a radiotherapy programme including clinical, medical physics, radiation protection and safety aspects up to the QC/QA via the practical work of the radiotherapy departments up to the audits. The main aim of the scientific visit was to analyze the organization of working flow (timetable, schedules) with a special look into the questions concerning quality control of the whole working process in a radiation therapy unit (department). Visit was designed in order to improve the process at home-concerning improvement of the ordinary steps in every day work, but mainly to get the idea how to solve some obstacles and to improve the surveillance and quality control of the whole process of radiation therapy planning and performing. A specific training focused on QA/QC of the medical physics aspects of radiotherapy treatment process from treatment preparation to delivery with special emphasis on commissioning of treatment machines and their implementation in clinical practice; on equipment related QA, treatment plan verification and in vivo dosimetry in advanced clinic setting. Theory and practical lessons learned helped to upgrade and harmonization of QA/QC systems in two regional radiotherapy departments

Radiotherapy equipment QC protocols, which insure optimal equipment conditions for safe delivering of the prescribed dose, were upgraded and harmonized at two major regional hospitals.

Clinical protocols for radiation therapy procedure (patient positioning and dose verification) were also implemented at two major regional hospitals. QA/QC procedures at radiotherapy department have been included in hospital QA manual. Two major regional centres have now qualified staff trained in QA/QC procedures. Awareness of importance of QA/QC for the optimal and safe delivery of the prescribed dose to the target volume is built. National professional bodies can now review reports from the two pilot hospitals and recommend QA/QC programmes to be established in all radiotherapy departments in Croatia. Regulatory framework for the QA/QC programmes of radiotherapy has been put in place

Outcome:

Harmonised QA/QC system established in radiotherapy departments of two major regional hospitals in Croatia (in Osijek and Rijeka) under the project, provided pathway for the establishment of QA/QC system in the whole country as requested by the Croatian radiation protection law. Next step is the expansion at the national level from recent pilot project to all six radiotherapy departments in Croatia, in which professional societies and regulatory body (State office for radiation protection) have their role.

<b>ACC Sector</b>		<b>Project Status</b>	Completed on 2014-06-01
<b>Original Funding</b>	Core	<b>1st Year Of Approval</b>	2009
<b>Estimated Duration</b>	3 year(s)		

**IAEA Personnel**

<b>Programme</b>	CHUPOV, Andrei	TCEU	Europe Section 2
<b>Management Officer</b>			
<b>Section Head</b>	SALMINS, Andrejs	TCEU	Europe Section 2
<b>Technical Officer(s)</b>	IZEWSKA, Joanna	NAHU	Dosimetry and Medical Radiation Physics Section

**Recipient Institutes and Counterpart(s)**

Croatia	University J.J. Strossmayer; University J.J. Strossmayer; Medical Faculty; Osijek (FAJ, Dario)
Croatia	University Hospital Osijek; Department of Oncology and Radiotherapy; Osijek (KASABASIC, Mladen)
Croatia	University Clinical Hospital Rijeka; Department of Radiotherapy and Oncology - Croatia; Rijeka (JURKOVIC, Slaven )

### Current Year Financial Status

Fund	Component	Current Year Disbursement	Current Year Unliquidated Obligation	Previous Year Disbursement	Previous Year Unliquidated Obligation	Current Year Implementation	Total Implementation	Total Disbursement
	<b>Grand Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

### Financial Approvals

#### Core Approvals

Year	Experts	Meetings/Worksh ops	Fellowships	Scientific Visits	Training Courses	HR Total	Equipment	Subcontracts	Miscellaneous	PR Total	Total Approval
2009	10,100.00	0.00	0.00	20,000.00	0.00	30,100.00	56,000.00	0.00	0.00	56,000.00	86,100.00
2010	0.00	0.00	0.00	0.00	0.00	12,870.00	0.00	0.00	0.00	50,000.00	62,870.00
2011	17,000.00	0.00	7,200.00	0.00	0.00	24,200.00	0.00	0.00	0.00	0.00	24,200.00

#### Footnote Approvals

Year	Experts	Meetings/Workshops	Fellowships	Scientific Visits	Training Courses	HR Total	Equipment	Subcontracts	Miscellaneous	PR Total	Total Approval
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### Experts

Task	Task title/Participant Name	Nationality	Candidate approached	Submitted: Accepted:a	Withdrawn:w Rejected:r	Start Date	End Date	Duration (days)	Field: 6F
90	<b>Staff Travel Mission(Project Management/Review)</b> Mission 01 JD Submitted: 2009-06-22 Duty Station : Zagreb( CRO ) DEUFRAINS, Katherina GFR Lydia					2009-09-01	2009-09-03	2	

### Meetings/Workshops

Task	Task title/Participant Name	Nationality	Candidate approached	Submitted: Accepted:a	Withdrawn:w Rejected:r	Start Date	End Date	Duration (days)	Field: 6F
9001	<b>Kick-Off Meeting for Project CRO6008</b> Mission 01 JD Submitted: 2009-02-03 Duty Station : Vienna( AUS ) FAJ, Dario CRO JURKOVIC, Slaven CRO					2009-03-02	2009-03-02	0	
9002	<b>Meeting on the Project CRO6008</b> Mission 01 JD Submitted: 2010-03-12 Duty Station : Elsewhere( AUS ) FAJ, Dario CRO					2010-03-30	2010-03-30	0	

<b>Task</b>	<b>Task title/Participant Name</b>	<b>Nationality</b>	<b>Candidate approached</b>	<b>Submitted:s Accepted:a</b>	<b>Withdrawn:w Rejected:r</b>	<b>Start Date</b>	<b>End Date</b>	<b>Duration (days)</b>
	JURKOVIC, Slaven	CRO				2010-03-30	2010-03-30	0

**Fellowships**

No	Name	Nominated	Awarded:a Non-awarded:n Withdrawn:w	Host Country	Type	Proposed:p Accepted:a Rejected:r	Anticipated Start Date	Start Date	End Date	Proposed Duration
CRO10005	Mr. KASABASIC, Mladen	2010-02-01	2010-07-27 a	GFR	I	2010-08-09 a	2010-08-30	2010-08-30	2010-09-29	00/100

TC Field: Radiation Medicine and Health(6A)(CRO10005)

Training: training in the following  
 3D TPS  
 CT Simulation  
 Corformal 3D radiotherapy  
 MLC  
 QA

Host Institute(s): The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008).  
 Technische Universität Dresden; Universitätsklinikum Carl Gustav Carus Dresden, Dresden

**Scientific Visits**

No	Name	Nominated	Awarded: Non-awarded: Withdrawn:w	Host Country	Type	Proposed:p Accepted:a Rejected:r	Anticipated Start Date	Start Date	End Date	Proposed Duration
<b>CRO09007</b>	<b>Ms. BEGOVIC, Nives</b>	<b>2009-04-03</b>	<b>2009-06-09 a</b>	<b>BEL</b>	<b>I</b>	<b>2009-10-29 a</b>	<b>2010-01-11</b>	<b>2010-01-11</b>	<b>2010-01-15</b>	<b>00/7</b>
TC Field:	Radiation Medicine and Health(6A)(CRO09007)									
Training:	Setting up and implementation of a QA/QC program in the radiotherapy department. The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008).									
Host Institute(s):	Université Catholique de Louvain; Faculté de médecine; Université Catholique de Louvain Faculte de medecine Cliniques Universitaires St. Luc, Bruxelles									
<b>CRO09008</b>	<b>Ms. PAVLOVIC- RUZIC, Ira</b>	<b>2009-04-03</b>	<b>2009-06-09 a</b>	<b>BEL</b>	<b>I</b>	<b>2009-10-29 a</b>	<b>2010-01-11</b>	<b>2010-01-11</b>	<b>2010-01-15</b>	<b>00/7</b>
TC Field:	Radiation Medicine and Health(6A)(CRO09008)									
Training:	Setting up and implementation of a QA/QC program in the radiotherapy department. The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008).									
Host Institute(s):	Université Catholique de Louvain; Faculté de médecine; Université Catholique de Louvain Faculte de medecine Cliniques Universitaires St. Luc, Bruxelles									
<b>CRO09009</b>	<b>Ms. SMILOVIC RADOJCIC, Deni</b>	<b>2009-04-08</b>	<b>2009-06-09 a</b>	<b>BEL</b>	<b>I</b>	<b>2009-10-29 a</b>	<b>2010-01-11</b>	<b>2010-01-11</b>	<b>2010-01-15</b>	<b>00/7</b>
TC Field:	Radiation Medicine and Health(6A)(CRO09009)									
Training:	Setting up and implementation of a QA/QC program in the radiotherapy department. The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008).									
Host Institute(s):	Université Catholique de Louvain; Faculté de médecine; Université Catholique de Louvain Faculte de medecine Cliniques Universitaires St. Luc, Bruxelles									
<b>CRO09010</b>	<b>Mr. FAJ, Dario</b>	<b>2009-04-09</b>	<b>2009-06-16 a</b>	<b>BEL</b>	<b>I</b>	<b>2009-10-29 a</b>	<b>2010-02-22</b>	<b>2010-02-22</b>	<b>2010-02-26</b>	<b>00/7</b>
TC Field:	Radiation Medicine and Health(6A)(CRO09010)									
Training:	Setting up and implementation of a QA/QC program in the radiotherapy department. The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008).									
Host Institute(s):	Université Catholique de Louvain; Faculté de médecine; Université Catholique de Louvain Faculte de medecine Cliniques Universitaires St. Luc, Bruxelles									
<b>CRO09011</b>	<b>Ms. KOTROMANOVIC, Zdenka</b>	<b>2009-04-09</b>	<b>2009-06-16 a</b>	<b>BEL</b>	<b>I</b>	<b>2009-10-29 a</b>	<b>2010-02-22</b>	<b>2010-02-22</b>	<b>2010-02-26</b>	<b>00/7</b>
TC Field:	Radiation Medicine and Health(6A)(CRO09011)									
Training:	Setting up and implementation of a QA/QC program in the radiotherapy department. The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008).									
Host Institute(s):	Université Catholique de Louvain; Faculté de médecine; Université Catholique de Louvain Faculte de medecine Cliniques Universitaires St. Luc, Bruxelles									
<b>CRO09012</b>	<b>Ms. POPARIC, Andrea</b>	<b>2009-04-09</b>	<b>2009-11-17 w</b>	<b>BEL</b>	<b>I</b>	<b>2009-10-29 a</b>				<b>00/7</b>
TC Field:	Radiation Medicine and Health(6A)(CRO09012)									

No	Name	Nominated	Awarded: Non-awarded: Withdrawn:w	Host Country	Type	Proposed: Accepted: Rejected:r	Anticipated Start Date	Start Date	End Date	Proposed Duration
Training:	Setting up and implementation of a QA/QC program in the radiotherapy department. The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008).									
Host Institute(s):	Université Catholique de Louvain; Faculté de médecine; Université Catholique de Louvain Faculté de médecine Cliniques Universitaires St. Luc, Bruxelles									
<b>CRO10004</b>	<b>Mr. KOKIC, Ivan</b>	<b>2009-11-16</b>	<b>2009-11-20 a</b>	<b>BEL</b>	<b>I</b>	<b>2010-01-15 a</b>	<b>2010-02-22</b>	<b>2010-02-22</b>	<b>2010-02-26</b>	<b>00/7</b>
TC Field:	Radiation Medicine and Health(6A)(CRO10004)									
Training:	Setting up and implementation of a QA/QC program in the radiotherapy department. The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008).									
Host Institute(s):	Université Catholique de Louvain; Faculté de médecine; Université Catholique de Louvain Faculté de médecine Cliniques Universitaires St. Luc, Bruxelles									
<b>CRO10009</b>	<b>Mr. JURKOVIC, Slaven</b>	<b>2010-06-09</b>	<b>2010-07-07 a</b>	<b>SLO</b>	<b>I</b>	<b>2010-07-13 a</b>	<b>2010-07-26</b>	<b>2010-07-26</b>	<b>2010-07-30</b>	<b>00/7</b>
TC Field:	Radiation Metrology and Dosimetry(6F)(CRO10009)									
Training:	The SV should cover the following:  - having the opportunity to compare the existing protocols of the University Hospital Rijeka with clinically proven protocols in an established radiotherapy department - getting the tools to update and improve the existing protocols on QA/QC programme at the radiotherapy department of the University Hospital Rijeka - to learn about design and a practical implementation of QA programme in an advanced radiotherapy departments The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy(CRO6008).									
Host Institute(s):	Institute of Oncology Ljubljana, Ljubljana									
<b>CRO11008</b>	<b>Ms. SVABIC, Manda</b>	<b>2011-01-24</b>	<b>2011-05-18 a</b>	<b>ITA</b>	<b>I</b>	<b>2011-05-23 a</b>	<b>2011-06-06</b>	<b>2011-06-06</b>	<b>2011-06-17</b>	<b>00/14</b>
TC Field:	Radiation Metrology and Dosimetry(6F)(CRO11008)									
Training:	The training should focus on QA/QC of the medical physics aspects of radiotherapy treatment process from treatment preparation to delivery with special emphasis on commissioning of treatment machines and their implementation in clinical practice. In addition to equipment related QA, the training should involve patient specific QA, including independent MU calculation, treatment plan verification and in vivo dosimetry in advanced clinic setting. The training requested is related to the IAEA's TC project entitled: Upgrading the Quality Assurance and Quality Control Programmes in Radiotherapy (Oracle Project Number:2060119)(CRO6008).									
Host Institute(s):	Azienda Ospedaliera Santa Maria della Misericordia, Udine									

## Training Courses

## Equipment

WP	PO Num	Total Value	Order Date	Status	Vendor Name	Vendor Location
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1	200994207	500	each	Training Fee	2011/01/26	APPROVED	Universite Catholique de Louvain Faculte de medecine	2010/12/31
1	201080651	500	each	Training Fee	2011/01/26	APPROVED	Universite Catholique de Louvain Faculte de medecine	2010/12/31
1	FTS-35626	500	each	PartyNumber:206860 KOKIC, MR.. Ivan  Non Staff	2014/01/30	APPROVED	Université Catholique de Louvain; Faculté de médecine;	
1	201080657	500	each	Training Fee	2011/01/26	APPROVED	Universite Catholique de Louvain Faculte de medecine	2010/12/31
1	FTS-4156	600	each	429216 SVABIC, Ms. Manda Staff SVABIC, Ma (Training Non Staff Management and Placement Fee)	2011/05/31	APPROVED	Abdus Salam International Centre for Theoretical	
2		500	each	429216 SVABIC, Ms. Manda Staff SVABIC, Ma (Training Non Staff Tuition)				
1	200994227	500	each	Training Fee	2011/01/26	APPROVED	Universite Catholique de Louvain Faculte de medecine	2010/12/31
1	FTS-35634	2500	each	PartyNumber:206860 KOKIC, MR.. Ivan  Non Staff	2014/01/30	APPROVED	Université Catholique de Louvain; Faculté de médecine;	
1	FTS-4155	1816	each	429216 SVABIC, Ms. Manda Staff DSA: ITA(Udine), 5 -18 June 2011, 13 nights @ \$196=\$2548=EUR 1781, Exch	2011/05/31	APPROVED	SVABIC, Ms Manda	
2		42	each	Rate: 0.699000000953674 Contingency, 1 country, \$50 429216 SVABIC, Ms. Manda Staff Other (Mileage: 150km x 2 x .02c)				
1	201080654	500	each	Training Fee	2011/01/26	APPROVED	Universite Catholique de Louvain Faculte de medecine	2010/12/31