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International Conference on Advances in Radiation Oncology ICARO

27–29 April 2009
Vienna, Austria

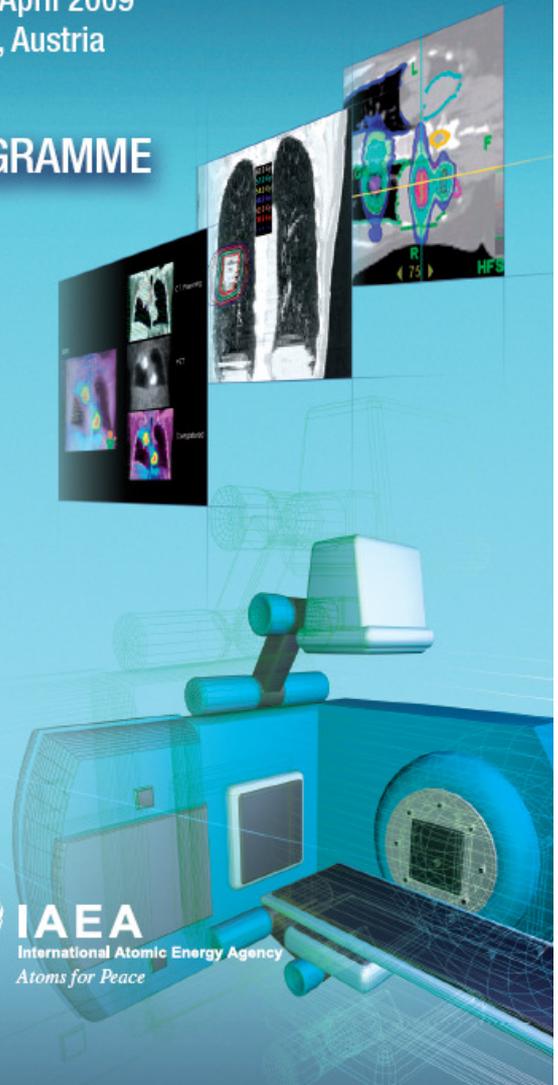
PROGRAMME



IAEA
International Atomic Energy Agency
Atoms for Peace

CN-170

09-09 341



International Conference on Advances in Radiation Oncology ICARO

27–29 April 2009

Organized by the



International Atomic Energy Agency

Co-sponsored by the



American Association of Physicists in
Medicine (AAPM)



American Brachytherapy Society (ABS)



American Society for Radiation Oncology
(ASTRO)



European Society for Therapeutic
Radiology and Oncology (ESTRO)



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Asociación Latinoamericana de Terapia
Radiante Oncológica (ALATRO)



European Association of Nuclear
Medicine (EANM)



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Medical Physics (EFOMP)



International Network for Cancer
Treatment Research (INCTR)



International Organization for Medical
Physics (IOMP)



Trans Tasman Radiation Oncology Group
(TROG)



International Union Against Cancer
(UICC)

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IBA Dosimetry

IBt-BEBIG

INVAP S.E.

Isodose Control bv

LAP Laser GmbH

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Panacea Medical Technologies Pvt Ltd

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The contributions have been used to support scientists from developing countries in attending this conference.

The fact that the IAEA has made available facilities for companies to exhibit at the conference does not imply that it endorses the equipment and products exhibited.

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Scientific Secretary: E. Salminen

Conference Coordinators: T. Niedermayr

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Administrative Support: L. Barrios

Exhibition Coordinator: M. Obauer-de Bruyker

Location of the Conference

International Atomic Energy Agency
Vienna International Centre (VIC)
M Building
UNIDO Boardroom + Room I, *Level M01*
IAEA Boardroom, *Level M02*
Wagramer Strasse 5
1400 Vienna, Austria

Tel.: (+43 1) 2600 0
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Working Language: English

Resolutions: No resolutions may be submitted for consideration on any subject; no votes will be taken.

TIMETABLE

Sunday, 26 April 2009

15:00–18:00 Registration Gate 1

Monday, 27 April 2009

08:00 Registration Gate 1

09:00–09:30 Session 1: Opening Addresses

09:30–09:40 *Short break*

09:40–10:40 Session 2: An Overview of Advanced Techniques in RT: IMRT, IGRT, Radiosurgery

10:40–11:00 Keynote Lectures

11:00–12:30 Session 3: 3a: Advances in Chemo-RT for Cervical and H&N Cancer
Parallel Sessions 3b: Commissioning and Implementing a QA Programme for New Technologies

12:30–14:00 *Lunch Break*

Lunch Forum I: Refresher Course on Transition from 2-D to 3-D Conformal Radiotherapy and IMRT

Side Event 1: Clinical Trials: Global Quality Improvement
A lunchtime symposium

14:00–15:30 Session 4: IMRT: Are you ready for it?

15:30–17:00 Session 5: Poster Briefing and Viewing
Poster Session

17:00–18:30 *Reception hosted by the IAEA*

Tuesday, 28 April 2009

08:30–09:30 Session 6: Plenary Keynote Lectures
Imaging in Radiotherapy Planning

09:30–10:30 Session 7: Plenary Round Table Discussion
Cost and Economic Analyses in Radiation Oncology

10:30–11:00 *Coffee Break*

11:00–12:30 Session 8: 8a: Current Trends in Brachytherapy
Parallel Sessions 8b: How to set up a QA Programme

12:30–14:00 *Lunch Break*

Focus on Commercial Exhibits

13:00–13:30 Side Event 2: Presentation on PACT

13:45–16:30 Side Event 3: PACT/NAHU Meeting with Manufacturers of Diagnostics & Radiotherapy Equipment
(by invitation only)

14:00–16:00 Session 9: Training, Education and Staffing: Getting Ready for New Technologies
Plenary Keynote Lectures

16:00–16:15 *Coffee Break*

16:15–17:15 Session 10: Training, Education and Staffing: Focus on LMI Countries
Plenary Round Table Discussion

Wednesday, 29 April 2009

08:30–09:30 Session 11: Co-60 — no time for retirement?
Plenary - Round Table Discussion

09:30–10:30 Session 12: IMRT/IGRT/Adapted RT: Clinical Challenge and Evidence
Plenary

10:30–11:00 *Coffee Break*

11:00–12:30 Session 13: 13a: Radiotherapy in Paediatric Oncology
Parallel Sessions 13b: Reducing Late Radiation Toxicities

12:30–14:00 *Lunch Break*

Lunch Forum II: Altered Fractionation in Cure and Palliation

14:00–15:30 Session 14: 14a: Radiation Oncology, Radiobiology
Plenary Poster Highlights 14b: Medical Physics

15:30–15:45 *Coffee Break*

15:45–16:45 Session 15: Do we need proton therapy?
Plenary - Debate

16:45–17:15 Session 16: Closing Session
Plenary

Display of posters:

Monday to Wednesday, 27–29 April 2009

All poster presenters are requested to attend to their respective posters during the Poster Session at *M01*, 15:30–17:00 on Monday, 27 April 2009.

Commercial exhibits:

Will be shown at *MOE & M01*

from Monday to Wednesday, 27–29 April 2009.

SUNDAY, 26 APRIL 2009

15:00–18:00 Registration and distribution of
conference material
Set-up of exhibits and posters

MONDAY, 27 APRIL 2009

08:00 Registration and distribution of
conference material (*continued*)

09:00–09:30 SESSION 1: Plenary
UNIDO Board Room OPENING

ADDRESSES

W. Burkart, IAEA
A.M. Cetto, IAEA
R.K. Chhem, IAEA

09:30–10:40 *Short Break*

09:40–10:40 SESSION 2: Plenary
UNIDO Board Room KEYNOTE LECTURES
An Overview of Advanced Techniques
in RT: IMRT, IGRT, Radiosurgery

Chair: P. Andreo, Sweden
Co-Chair: E. Salminen, IAEA
Rapporteur: G.S. Ibbott, USA

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
001 (invited)	J. Van Dyk	AAPM	Overview of advanced techniques in radiation therapy
002 (invited)	L.B. Marks	ASTRO	Technical innovations in radiation oncology: A clinician's perspective
003 (invited)	P. Andreo	Sweden	Advanced radiotherapy with small and IMRT beams: Limitations of current dosimetry
10:40–11:00	<i>Coffee Break — MOE</i>		

Monday, 27 April 2009

11:00–12:30 **SESSION 3: PARALLEL SESSIONS**
UNIDO Board Room **3a:**
Advances in Chemo-RT for Cervical
and Head & Neck Cancer

Chair: **S.K. Shrivastava, India**
Co-Chair: **E.H. Zubizarreta, IAEA**
Rapporteur: **K. Kiel, USA**

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
	E.H. Zubizarreta	IAEA	Introduction
004 (invited)	S.K. Shrivastava U. Mahantshetty H.B. Tongaonkar S. Gupta R. Engineer <i>et al</i>	India	Are we justified for concomitant chemo-radiation in advanced stage cancer cervix?
006 (invited)	R. Ferrigno	Brazil	Advances in chemo-RT for cervical and head & neck cancer
007	O. McArdle J.B. Kigula- Mugambe	Uganda	Contraindications to cisplatin-based chemotherapy in the treatment of cervical cancer in Sub-Saharan Africa

IAEA Board Room **3b:**
Commissioning and Implementing a
QA Programme for New Technologies

Chair: **J. Van Dyk, AAPM**
Co-Chair: **S. Vatnitskiy, IAEA**
Rapporteur: **G.S. Ibbott, USA**

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
008 (invited)	J. Van Dyk	AAPM	Commissioning and implementing a QA programme for new technologies
009 (invited)	W.P.M. Mayles	UK	Introduction of RapidArc™: An example of commissioning and implementing a QA programme for a new technology
010	T. Kron	Australia	Image guidance in the radiotherapy treatment room: An opportunity to learn, to improve practice and to generate evidence
011	J.R. Hiatt G.A. Cardarelli D.E. Wazer E.S. Sternick	USA	Principles and practice of electronic brachytherapy

12:30–14:00 *Lunch Break*

Monday, 27 April 2009

12:30–14:00 LUNCH FORUM I

UNIDO Board Room Refresher Course on Transition from 2-D to 3-D Conformal Radiotherapy and IMRT

Chair: M.S. Huq, AAPM
Co-Chair/Rappor.: E. Rosenblatt, IAEA

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
012	S. Vatnitskiy	IAEA	The transition from 2-D to 3-D conformal radiotherapy – IAEA guidelines
013 (invited)	M.S. Huq	AAPM	Implementing 3-D conformal radiotherapy and IMRT in clinical practice: Recommendations of IAEA-TECDOC-1588
014 (invited)	P.E. Novaes	Brazil	From 2-D to 3-D conformal radiation therapy (3-D CRT) and IMRT: The AC Camargo Hospital experience
015	I. Chon D. Chi J. Alert R. Alfonso C. Roca	Cuba	Transition from 2-D to 3-D conformal radiotherapy in high grade gliomas: The Cuban experience

12:30–14:00 SIDE EVENT 1
**IAEA Board Room Clinical Trials:
Global Quality Improvement
A lunchtime symposium**

- Introduction
Coen Hurkmans, EORTC-ROG
- Information about the usefulness of trial QA
 - General overview of trial quality improvement
Edwin Aird, EORTC-ROG
 - Improved patient treatment due to ERDA and phantom measurements
Geoffrey Ibbott, RPC
- Sketch of future additional objectives of trial QA
 - Clinical trial databases: accurate 3D RT data coupled to clinical outcome will boost radiotherapy improvements
Stefano Gianolini, MSS
- Sketch of the objectives of our global working party and current status
Martin Ebert, TROG
- Questions/remarks from the audience and discussion.

Monday, 27 April 2009

14:00–15:30 **SESSION 4: Plenary**
UNIDO Board Room **DEBATE**
 IMRT: Are you ready for it?

Chair: **B. Mijnheer, ESTRO**
Co-Chair: **E.H. Zubizarreta, IAEA**
Rapporteur: **G.S. Ibbott, USA**
 M. Joiner, ESTRO

Panel Members: **M. Zelefsky, ABS**
 L.B. Marks, ASTRO
 S. Vynckier, Belgium
 V. Khoo, ESTRO
 S.K. Shrivastava, India
 D. Van der Merwe, South Africa

15:30–17:30 **SESSION 5: POSTER SESSION**
M01 **Briefing and Viewing**

**5a: Posters related to Radiation Oncology,
Radiobiology**

Chair: **P. Scalliet, ESTRO**
 M. Gospodarowicz, UICC

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
080P	T.J. Wall	ASTRO	Volunteer outreach to radiation oncology facilities outside of North America
081P	E.B. Alves P.E.R.S. Novaes R.M. Bussolotti M.J. Buscariol M.D.L. De Melo et al.	Brazil	Anesthesia in radiotherapy - 1048 procedures in children
082P	A.F.Y. Centrone M.J. Chen J.C.C. Nonato I.C.D. Mingione A.S. Barros et al.	Brazil	A successful alternative to provide radiotherapy services in paediatric cancer care for low-income populations in Brazil
083P	M. De Melo P. Novaes E. Alves G. Teixeira J. Salvajol	Brazil	Cervical carcinoma in women under 25 years old
084P	D.E.E. Moura K.W. Boccaletti	Brazil	PTV coverage evaluation when comparing 3-D with 2-D techniques for breast treatment planning

Monday, 27 April 2009, Poster Session 5a (continued)

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
085P	C.B. Neviani M.A. Miziara R. Miziara A.C.A. Pellizzon H.A Carvalho et al.	Brazil	Results and complications of high dose-rate brachytherapy associated with 2-D or 3-D external beam irradiation in prostate cancer
086P	R.C. Villar P.J. Cecilio R.A. Rubo A. Oliveira E.F.D.A. Oliveira et al.	Brazil	IMRT in paediatric patients: When the indication is an advantage
087P	R. Ospino I. Vásquez R. Cendales H. Machado	Colombia	Implementation of 3-D CRT and IMRT for prostate cancer: A three year experience at the National Cancer Institute of Colombia
088P	P. Sminia R. Mayer Presented by: I. Zeh	Netherlands Austria	Recurrent glioma: Is re-irradiation a feasible option?
089P	P. Vos	ESTRO	Design and evaluation of a national programme to increase the capacity for radiation oncology
090P	B. Paskeviciute M. Weckesser S. Könemann	Germany	Impact of ¹⁸ F-FDG-PET/CT on staging and radiation treatment planning of patients with primary locally advanced pelvic malignancies
091P	B.N. Patil A.C. Dey A.K. Kohli K.V.S. Sastry	India	Future of cobalt-60 in the treatment of cancer
092P	K. Lavrenkov C. Singh J.A. Christian M. Partridge E. Niotsikou et al.	Israel India UK	IMRT for functional lung avoidance in radiotherapy of non-small cell lung cancer: An update of a planning study
093P	I. Jaradat L. Abu-Arida A. Al-Mousa Presented by: L. Mula Hussain	Jordan	CT-based planning for craniospinal irradiation
094P	I. Jaradat S. Ramahi L. Mula Hussain	Jordan	Establishing plaque therapy for ocular tumours in Jordan

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
095P	S.M. Qatarneh A. Nour S. Al-Heet A. Al-Mousa	Jordan	Conformal forward radiation treatment planning using PET/CT and lymphatic Atlas based target volume definition
096P	S. Wadi-Ramahi S. Heet F. Waqqad I. Rashdan N. Al-Nassir Presented by: S.M. Qatarneh	Jordan	In-house low cost shield for pregnant radiotherapy patients
097P	V. Kim T. Antropova	Kazakhstan	Transition from 2-D to 3-D conformal radiotherapy of brain malignant gliomas
098P	B.C.R. Devi Tieng Swee Tang	Malaysia	Tolerability of chemo-radiation in patients undergoing treatment for cervical cancer in Sarawak, Malaysia
099P	D.W.Y. Wong G.C.C. Lim F.N. Lau N. Abdullah I. Fuad A.Z. Bustam	Malaysia	Development of specialist training programme in clinical oncology: The Malaysian experience
100P	G. Stevens W. Stevens S. Purchuri J. Kolbe B. Cox	New Zealand	Analysis of ethnic and regional disparities and appropriate intervention rate for the use of radiotherapy in lung cancer in New Zealand
101P	E. Oyekunle M. Aweda	Nigeria	Effects of radiotherapy on cancer patients infected with HIV/AIDS in Nigeria
102P	N. Begum	Pakistan	Experience and problems of managing a randomized clinical trial in a low income and a low resource country, Pakistan: A success story
103P	N.A. Laghari K. Akhtar Naseema M. Nadeem	Pakistan	To compare treatment outcome with ring and Fletcher type applicators in brachytherapy of carcinoma cervix
104P	H. Mahmood	Pakistan	The role of brachytherapy in cancer cervix experience at the Nuclear Medicine, Oncology and Radiotherapy Institute (INORI)
105P	K.R.G. Britton Y. Takai K. Nemoto Y. Ogawa M. Mitsuya et al.	Panama Japan Panama	Image-guided IMRT for prostate cancer: Influence of organ motion correction associated with acute toxicity and quality of life

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
106P	P. Kamnerdsupaphon V. Lorvidhaya I. Chitapanarux E. Tharavichitkul V. Sukthomya	Thailand	Definitive radiotherapy in young patients newly diagnosed with nasopharyngeal carcinoma
107P	P. Siraprapasiri T. Siraprapasiri Y. Kongthanasat	Thailand	Total lymphocyte count in HIV/AIDS patients with carcinoma during radiation therapy
108P	V. Sukthomya K. Katanyoo I. Chitapanarux P. Kamnerdsupaphon V. Lorvidhaya	Thailand	A randomized trial comparing between two fractionation schedules in the treatment of metastatic bone pain
109P	C. Nasr L. Kochbati D. Hentati K. Mahjoubi A. Abbassi et al.	Tunisia	Vaginal vault brachytherapy in low risk endometrial cancer
110P	P. Sempere	Venezuela	Evolution 2-D to 3-D: Craniospinal irradiation
111P	E.C. Raslawski M.L. Mairal	Argentina	Retinoblastoma: Treatment of one eye. Comparative analysis of external radiotherapy techniques
112P	E.C. Raslawski C. Figueroa M. Bonduel M.L. Mairal	Argentina	Experience in total body irradiation in one institution
113P	C. Campos	Brazil	Adapting the linear accelerator room to perform electron intraoperative radiotherapy for early breast cancer
114P	A.C.A. Pellizzon R. Miziara M. Miziara C. Neviani C. Soares R.C. Fogaroli	Brazil	Image guided high dose rate brachytherapy as salvage for recurrent prostate cancer after definitive external beam radiotherapy
115P	E. Gershkevitsch M. Kuddu	Estonia	Collaboration with the IAEA to improve cancer care in Estonia
116P	E. Lartigau	France	Robotic extracranial stereotactic radiotherapy in lung, liver and head and neck tumours: The role of the CyberKnife®
117P	M. Coffey G. Vandeveldde A. Osztavics E. Rosenblatt	Ireland Belgium Austria IAEA	Train the trainers

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
118P	V. Kostylev	Russian Federation	Strategy of the system physico-technical development of radiation oncology in Russia
119P	M.C. Lopes B.C. Ferreira J. Mateus M. Capela	Portugal	Implementing IMRT for head & neck – the steps of the process
120P	N.S. Karamyan H.M. Galstyan S.K. Karamyan	Armenia	Dermatoradiotoxicity during radiotherapy
121P	S. Afroz A.M.M.S. Alam A.F.M. Kamaluddin	Bangladesh	Experience of transition from 2-D to 3-D radiation therapy in a centre of a developing country
122P	G. Menegussi L.N. Rodrigues R.C. Villar M.A. Silva R. Rubo et al.	Brazil	Establishing a QA programme in radiosurgery
123P	A. Gouvea de Lima R.C. Villar W. Nadalin I. Snitcovsky	Brazil	Efficacy evaluation of prophylactic low energy laser application in patients with chemotherapy and radiotherapy-induced oral mucositis
124P	An Jusheng Huang Manni Song Yongmei Wu Lingying Zhan Qinmin	China	Preliminary study of genes related to the concomitant chemoradiotherapy sensitivity in advanced uterine cervical squamous cell carcinomas
125P	R. Engineer S.K. Shrivastava P.J. Shukla K. Mohandas U. Mahantshetty et al.	India	Concurrent chemo-radiotherapy versus radiotherapy with boost in locally advanced unresectable rectal cancers. A randomized phase II study
126P	V. Goel R. Engineer S. Jamema U. Mahantshetty Z. Master et al.	India	Locally advanced inoperable carcinoma pancreas and gall bladder treatment with concurrent chemoradiation using tomotherapy based IMRT and IGRT: Case series
127P	A.K. Kohli	India	Role of the Board of Radiation & Isotope Technology (BRIT) in combating cancer in India
128P	S.K. Shrivastava U. Mahantshetty S.V. Jemima R.K. Kinshikar R. Engineer	India	A Phase II randomized trial comparing IMRT with conventional radiation therapy in stage IIB carcinoma cervix: An audit

Monday, 27 April 2009, Poster Session 5a (continued)

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
	et al.		
129P	N. Gombodorj L. Bold	Mongolia	Comparison of gross tumour volume and planning target volume with 3-D conformal radiotherapy planning versus 2-D
130P	D.A. Dawotola V.I. Odigie A.T. Ajekigbe A. Adamua	Nigeria	Adjuvant radiotherapy in 'peculiar' African breast cancer
131P	E. Oyekunle R. Obed	Nigeria	Radiation dose optimization and risk estimation to patients undergoing HDR brachytherapy with ring applicators
132P	M. Mejía A. Mejía A. Alveo	Panama	Treatment outcome of 3-D conformal radiation therapy for localized prostate cancer: Preliminary experience
133P	A.C.A. Pellizzon P.E.R.S. Novaes J.V. Salvajoli R.C. Fogaroli	Brazil	Hypofractionated external beam radiotherapy and interstitial HDR brachytherapy for intermediate and high risk prostate cancer
134P	P. Orellana G. Váldez F. Barriga	Chile	Treatment of malignant pheocromocitoma with high dose (800 mCi) of ¹³¹ I MIBG in a young female. How to prevent and manage secondary side effects
135P	S. Soetopo B.H. Suryawati L. Lasminingrum B. Hidayat F. Anwari et al.	Indonesia	Angiogenesis of VEGF-A and MVD as the predictor of accelerated fractionation radiotherapy efficacy on nasopharyngeal carcinoma
136P	G. Jones N. Jones	Canada	Benchmark use of 3-D conformal planning dose-volume histograms to predict use of intensity modulated radiotherapy under resource constraints
137P	A.C. Dey A.K. Kohli	India	Development of indigenous HDR brachytherapy equipment: An effort towards affordable cancer treatment in India
138P	R. Miralbell S.A. Roberts E.H. Zubizarreta J.H. Hendry	Switzerland UK IAEA UK	Dose-fractionation sensitivities of low/middle/high risk prostate cancer deduced from eight international primary institutional datasets

Monday, 27 April 2009

5b: Posters related to Medical Physics

Chair: K.-A. Johansson, ESTRO
B. Mijnheer, ESTRO

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
140P	M.A. Ebert D.J. Joseph A. Haworth N.A. Spry S. Bydder et al.	Australia	Establishing the efficacy of radiation oncology - standardizing the collection and validation of 3-D treatment planning data
141P	S. Afroz S. Hossain S. Reza	Bangladesh	Value of whole body bone SPECT for metastatic work-up in clinical oncology: A study with 120 patients
142P	C.E. de Almeida R. Ochoa C. Austerlitz et al.	Brazil USA Brazil	Absorbed dose to water FeSo4-based standard for ¹⁹² Ir HDR brachytherapy
143P	J.R. Dias H.L. Martins K.W. Boccaletti J.V. Salvajoli	Brazil	Contrast materials influence at computed tomography in 3-D radiotherapy planning for thorax tumours
144P	N. Gesheva-A. E. Dimitriou	Bulgaria	Integration and commissioning of the cobalt unit Terabalt 80-ASC into TPS Oncentra MasterPlan
145P	J. Canessa T. Massardo P. Arteaga G. Cerda J. Ilzauspe et al.	Chile	Radioisotopic therapy for neuroendocrine tumours with radiolabeled somatostatin analogues in Chile
146P	E. Larrinaga-C. R. Alfonso-L. I. Silvestre Patallo F. Garcia-Yip	Cuba	Dosimetric characterization of an aSi-based EPID for patient-specific IMRT QA
147P	C. Pesznyák I. Polgár P. Zaránd	Hungary	Dosimetric verification of radiotherapy treatment planning systems in Hungary
148P	O.A. García-Garduño J.M. Lárraga-Gutiérrez P. Ballesteros-Zebadúa A. Celis Miguel	Mexico	Output factors of small photon beams using GafChromic EBT film

Monday, 27 April 2009, Poster Session 5b (continued)

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
149P	J.M. Lárraga-Gutiérrez O.A. García-Garduño P. Ballesteros-Zebadúa O. Galván de la Cruz A. Celis Miguel	Mexico	Commissioning of IMRT for small intracranial lesions
150P	G. Stevens	New Zealand	Barriers to implementation of new technology in radiation oncology: The New Zealand experience
151P	D.A. Dawotola V.I. Odigie F. Igbinoba A.R. Oyeseun S.O. Ojebode V. Sharma	Nigeria South Africa	Cost implication of usage of cobalt teletherapy machine versus linear accelerator in a developing country
152P	P. Wolowiec P. Kukołowicz K. Lis	Poland	Pretreatment verification of dose calculation and delivery by means of measurements with PLEXITOM® phantom
153P	J. Rostkowska M. Kania W. Bulski B. Gwiazdowska	Poland	TLD audits in non-reference conditions in radiotherapy centres in Poland
154P	F. Ribeiro M.C. Oliveira S. Macedo A. Oliveira O. Santos et al.	Portugal	QA programme implementation for computerized treatment planning systems
155P	A. Chervyakov E. Baranov E. Kusnetsova V. Khrunov	Russian Federation	Implementation of linac quality control for IMRT technique
156P	M. Fomintseva T. Bochkareva D. Grischuk	Russian Federation	Testing of treatment planning system in aspect of transitioning from 3-D to IMRT
157P	M. Lavrova V. Rebyakova T. Tatarinov	Russian Federation	Practical aspects of radiochromic films implementation for clinical QA
158P	F.K.C. Chin P. Salleh V.K. Sethi	Singapore	Transition of 2-D to 3-D craniospinal irradiation and resulting quality improvement: An IAEA/RCA RAS6048 project of Singapore

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
159P	J. Jeyasugiththan N. Jeyakumaran N. Sivayogan U. Sutharsini	Sri Lanka	Tissue equivalent absorption in combined wax and rubber layers using 1.25 MeV gamma ray
160P	M.K. Saeed O. Moustafa O.A. Yasin C. Tuniz	Sudan Italy	Doses to patients from photoneutrons emitted in a medical linear accelerator
161P	E. Nilsson M. Berglund Å. Palm	Sweden	A method for testing the Linac jaw position of adjacent fields using the EPID
162P	R. Chakarova A. Bäck M. Gustafsson Å. Palm	Sweden	Superficial dose distribution in breast for tangential photon beams, clinical examples
163P	C. Kakanaporn S. Fuk-on P. Iampongpaiboon	Thailand	Use of an amorphous silicon electronic portal imaging device for fast and accurate MLC leaf position verification
164P	T. Sanghangthum T. Pawlicki S. Suriyapee	Thailand USA Thailand	Applications of statistical process control to radiotherapy quality control
165P	N. Kodaloglu	Turkey	Comparison of dose distributions of Novalis Brainlab treatment planning system, Monte Carlo (BEAMnrc and DOSRZnrc) and in vivo dosimetric measurement methods
166P	Dong Han Lee So Hei Seo Dong Oh Sin Mi Sok Kim Chang Hoon Rhee	Korea, Republic of	Evaluation of radiation dose for stereotactic radiosurgery systems in Korea
167P	O. Solodyannykova	Ukraine	Radionuclide study of sentinel lymph nodes in patients with breast cancer
169P	M.L. Mairal S. Paidon D.B. Feld E.C. Raslawski	Argentina	Analysis of dose uniformity in total body irradiation for paediatric patients
170P	R. Delgado Aguirre	Bolivia	First steps in 3-D radiotherapy in Bolivia with ⁶⁰ Co
171P	S. Heyden M. Kretschmer F. Wuerschmidt L. Mueller	Germany	Clinical usage of a novel verification system for intensity modulated radiation therapy

Monday, 27 April 2009, Poster Session 5b (continued)

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
172P	M. Allahverdi T. Allahverdi Pourfallah N. Riahi Alam M. Ay	Iran, Islamic Republic of	Verification of LGP prediction in gamma knife in presence of inhomogeneities using PAGAT polymer gel dosimeter
173P	M.A. Mosleh-Shirazi S.M.J. Mortazavi M.R. Maheri	Iran, Islamic Republic of	Production of a new type of low-cost high density concrete for shielding megavoltage radiotherapy bunkers
174P	V. Bairac D. Sorfoni N. Samet L. Gutu	Republic of Moldova	CT-based intracavitary brachytherapy for gynaecologic tumours: First experience
175P	K. Chelminski W. Bulski P. Kaminski J. Rostkowska M. Kania et al.	Poland	Results of practical implementation of film dosimetry for routine verification of IMRT plans
176P	A. Janse van Rensburg	South Africa	What is an appropriate radiotherapy technology? A Pretoria Academic Hospital perspective
177P	A. Quarneti A. De Rosa C. Mara A. Patiño B. Tasende	Uruguay	Implementation of a quality assurance RT clinical programme using ISO 900: 2000, IAEA-TECDOC-I040 and QUATRO checklist
178P	C. Flannery	USA	Regulating emerging technologies
179P	W. Nyakodzwe	Zimbabwe	Effectiveness of in vivo dosimetry as a tool for QA in radiotherapy
180P	P.C. Besa A. Viera J. Delgado P. Besa	Chile	University based IMRT implementation in Chile
181P	M. Nápoles Y. Yanes Y. Ascención R. Alfonso C. Calderón	Cuba	Pre-clinical commissioning of plans with an aperture based IMRT treatment planning system
182P	C.A. Castellanos	Dominican Republic	Building of a low cost calibrated density phantom to perform quality assurance to comply with IAEA TRS-430 protocol
184P	A. Osorio M.A. Ortega E. Hernández L. Ureta	Guatemala	Elaboration and commissioning of a phantom for quality control in a linac based stereotactic radio surgery system

Monday, 27 April 2009, Poster Session 5b (continued)

<i>No. of Poster IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Poster</i>
185P	T. Kataria Sethi N. Janardhan R. Nair	India	Absolute dose measurement as a verification tool for patient specific QA in IMRT
186P	R. Phurailatpam B. Zade T. Gupta R. Jalali Z. Master et al.	India	Intensity modulated radiation therapy for craniospinal irradiation using helical tomotherapy: Initial experience from planning to delivery
187P	S. Sathiyam M. Ravikumar S.S. Supe	India	Dosimetric characteristics of 2-D ion chamber array matrix for IMRT dose verification
188P	S. Sharma S.V. Jamema U.M. Mahantshetty et al.	India	Inverse planning simulated annealing (IPSA) planning for 3-D image based HDR brachytherapy in cervical cancers: A dosimetric study
189P	M. Salouti M.H. Babaei H. Rajabi M.J. Rasaei F. Johari Daha et al.	Iran, Islamic Republic of	A new biologic radiopharmaceutical for targeted therapy of breast cancer: ¹⁷⁷ Lu labelling of Mab PR81 and quality control
190P	S. Wadi-Ramahi J. Khader Presented by: S.M. Qatarneh	Jordan	4-D CT imaging technique for conformal forward planning in lung tumours
191P	K.R. Muralidhar Madhusudhansresty R. Lochan Sha et al.	India	The role of deep inspiration breath hold with active breathing control and image-guided radiation therapy for patients treated with lung cancers
192P	E. Bolješiková M. Zemanová M. Švantnerová et al.	Slovakia	Implementation of IMRT techniques in treatment of head & neck tumours
17:00–18:30	Reception hosted by the IAEA — <i>MOE</i>		

TUESDAY, 28 APRIL 2009

08:30–09:30 **SESSION 6: Plenary**
UNIDO Board Room **KEYNOTE LECTURES**
 Imaging in Radiotherapy Planning

Chair: **R.K. Chhem, IAEA**
Co-Chair: **M. Dondi, IAEA**
Rapporteurs: **K. Kiel, USA; G.S. Ibbott, USA**

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
016 (invited)	C. Messa	Italy	PET/CT: Is there a role in RT planning?
017 (invited)	Ting-Yim Lee	Canada	New advances in CT: Dose reduction and functional imaging
018 (invited)	V. Grégoire	ESTRO	Functional image-based adaptive IMRT: Dream or reality?

09:30–10:30 **SESSION 7: Plenary**
UNIDO Board Room **ROUND TABLE DISCUSSION**
 Cost and Economic Analyses
 in Radiation Oncology

Chair: **P. Scalliet, ESTRO**
Co-Chair: **E. Salminen, IAEA**
Rapporteur: **K. Kiel, USA**

Panel members: **A. Boyer, AAPM**
 Y. Lievens, ESTRO
 R. Sarin, India
 D. Van der Merwe, South Africa
 M. Gospodarowicz, UICC

10:30–11:00 *Coffee Break — M0E*

Tuesday, 28 April 2009

11:00–12:30 **SESSION 8: PARALLEL SESSIONS**
UNIDO Board Room **8a:**
 Current Trends in Brachytherapy

Chair: **J.L.M. Venselaar, Netherlands**
Co-Chair: **E. Rosenblatt, IAEA**
Rapporteur: **K. Kiel, USA**

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
019 (invited)	J.L.M. Venselaar M.J. Rivard	Netherlands USA	Current issues and trends in brachytherapy: A medical physics perspective
020 (invited)	R. Pötter	Austria	Potential and limitations of image-guided brachytherapy in cervical cancer
021 (invited)	M. Zelefsky	ABS	New directions in prostate brachytherapy
022	W. Tigeneh	Ethiopia	A prospective randomized study comparing three fractionation regimens of HDR brachytherapy for cancer of uterine cervix stages IIB and IIIB

IAEA Board Room **8b:**
 How to set up a QA Programme

Chair: **T. Knöös, ESTRO**
Co-Chair: **J. Izewska, IAEA**
Rapporteur: **G.S. Ibbott, USA**

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
023 (invited)	T. Knöös	ESTRO	Current trends in QA for radiotherapy
024 (invited)	G.S. Ibbott	USA	Developing a QA programme for cooperative group clinical trials
025 (invited)	K.Y. Cheung K.H. Yu A.T.C. Chan	China	How to set up a quality assurance programme
026 (invited)	P. Scalliet	ESTRO	Setting up a QA programme: ESTRO's recommendations

12:30–14:00 *Lunch Break*

FOCUS ON THE COMMERCIAL EXHIBITS

Tuesday, 28 April 2009

13:00–13:30 **SIDE EVENT 2**
MOE **Presentation on the IAEA's Programme
of Action for Cancer Therapy (PACT)**

13:45–16:30 **SIDE EVENT 3**
IAEA Board Room **PACT/NAHU Meeting
with Manufacturers of Diagnostics
& Radiotherapy Equipment
(by invitation only)**

14:00–16:00 **SESSION 9: Plenary**
UNIDO Board Room **KEYNOTE LECTURES**
**Training, Education and Staffing:
Getting Ready for New Technologies**

Chair: **R.K. Chhem, IAEA**
Co-Chair: **A. Meghzifene, IAEA**
Rapporteurs: **G.S. Ibbott, USA**
 M. Joiner, ESTRO
 K. Kiel, USA

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
027	R.K. Chhem	IAEA	Training and educating the medical specialist: The CanMEDS model
028 (invited)	T. Van Deven	Canada	" <i>He who can does. He who cannot, teaches.</i> " A blueprint for the partnership between professional educators and medical education
029 (invited)	K. Hibbert	Canada	Cultivating a capacity for phonetic action to address the needs of diverse learners
030 (invited)	P.C. Engel-Hills	South Africa	Educating radiation therapists in developing countries
031 (invited)	K. Inamura	AFOMP	Training, education and staffing: Getting ready for new technologies
032	E. Salminen A. Meghzifene	IAEA	IAEA support for education and training of staff in radiation oncology
16:00–16:15	<i>Coffee Break — MOE</i>		

Tuesday, 28 April 2009

16:15–17:15 **SESSION 10: Plenary**
UNIDO Board Room **ROUND TABLE DISCUSSION**
 Training, Education and Staffing:
 Focus on LMI Countries

Chair: **R.K. Chhem, IAEA**

Co-Chair: **E. Salminen, IAEA**

Rapporteur: **M. Joiner, ESTRO**

Panel Members: **A. Boyer, AAPM**
 M. Barton, Australia
 P.E. Novaes, Brazil
 S.K. Shrivastava, India
 M. Coffey, Ireland
 P.C. Engel-Hills, South Africa
 T.A. Ngoma, Tanzania, United Republic of

WEDNESDAY, 29 APRIL 2009

08:30–09:30 **SESSION 11: Plenary**
UNIDO Board Room **ROUND TABLE DISCUSSION**
 Co-60 — No Time for Retirement?

Chair: **B. Mijnheer, ESTRO**
Co-Chair: **E. Salminen, IAEA**
Rapporteur: **G.S. Ibbott, USA**
 K. Kiel, USA

Panel Members: **P.E. Novaes, Brazil**
 P. Aletti, France
 S.K. Shrivastava, India
 D. Van der Merwe, South Africa
 N. Ndlovu, Zimbabwe

09:30–10:30 **SESSION 12: Plenary**
UNIDO Board Room **IMRT/IGRT/Adapted RT: Clinical Challenge and Evidence**

Chair: **J. Bourhis, ESTRO**
Co-Chair/Rappor. **E.H. Zubizarreta, IAEA**

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
033 (invited)	J. Bourhis	ESTRO	Overview of IMRT in head and neck cancer
034 (invited)	B. Vikram	USA	IMRT: Current state of the evidence
035 (invited)	P.M. DeLuca, Jr. T. Rockwell Mackie V. Grégoire	ICRU USA Belgium	Prescribing, recording, and reporting – ICRU considerations and recommendations for IMRT

10:30–11:00 *Coffee Break — MOE*

Wednesday, 29 April 2009

11:00–12:30 **SESSION 13: PARALLEL SESSIONS**
UNIDO Board Room **13a:**
 Radiotherapy in Paediatric Oncology

Chair: **S. Laskar, India**
Co-Chair: **E. Salminen, IAEA**
Rapporteur: **K. Kiel, USA**

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
036 (invited)	P.E. Novaes	Brazil	How to improve paediatric radiation oncology in Latin America
039	M.M. El-Gantry	Egypt	The view of the AFRA designated centre on how to respond to the challenges in paediatric radiation oncology in the region
037 (invited)	S.L. Wolden	ASTRO	Will the advances in radiotherapy with IMRT and protons change the state of the art in radiotherapy for paediatric cancer patients?
038 (invited)	S. Laskar	India	Radiotherapy related sequelae in childhood cancers: The current status

Wednesday, 29 April 2009

**IAEA Board Room 13b:
Reducing Late Radiation Toxicities**

Chair: J. Overgaard, ESTRO
Co-Chair: J. Wondergem, IAEA
Rapporteur: M. Joiner, ESTRO

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
040 (invited)	J. Overgaard	ESTRO	Biological approach to reduce late radiation toxicities
041 (invited)	A. Wambersie P. Andreo P.M. DeLuca, Jr. R. Gahbauer J.H. Hendry et al.	ICRU IAEA ICRU IAEA	Biological weighing of absorbed doses in particle-beam therapy: ICRU-IAEA recommendations on the isoeffect-dose concept
042 (invited)	L.B. Marks J.O. Deasy E.D. Yorke R.K. Ten Haken A. Jackson et al.	ASTRO USA	Relating three dimensional dose/volume data to clinical outcomes: An overview of the QUANTEC effort
043	L. Gocheva K. Sergieva B. Avramova I. Koleeva V. Vasileva B. Sultanov	Bulgaria	Acute and late toxicity after fractionated total body irradiation as conditioning for bone marrow transplantation
12:30–14:00	<i>Lunch Break</i>		

Wednesday, 29 April 2009

12:30–14:00 **LUNCH FORUM II**
IAEA Board Room **Altered Fractionation in Cure and Palliation**

Chair: **M. Joiner, ESTRO**
Co-Chair/Rappor.: **J. Wondergem, IAEA**

<i>No. of Paper IAEA-CN-170/</i>	<i>Name</i>	<i>Designating Member State/Organization</i>	<i>Title of Paper</i>
044 (invited)	M. Joiner	ESTRO	The rationale and radiobiology of altered fractionation in cure and palliation
045 (invited)	J. Bourhis	ESTRO	Altered fractionated RT: What is the magnitude of the benefit in head and neck carcinoma?
046 (invited)	K. Kiel	USA	Applications of hypofractionation in the curative treatment of cancer

14:00–15:30 **SESSION 14: Plenary**
UNIDO Board Room **POSTER HIGHLIGHTS**

**14a. Radiation Oncology,
Radiobiology**

Chair: **M. Gospodarowicz, UICC**
Co-Chair: **E. Salminen, IAEA**
Rapporteur: **K. Kiel, USA**

Speakers: **P. Scalliet, ESTRO**
 M. Gospodarowicz, UICC

14b. Medical Physics

Chair: **K.-A. Johansson, ESTRO**
Co-Chair: **A. Meghzi, IAEA**
Rapporteur: **G.S. Ibbott, USA**

Speakers: **K.-A. Johansson, ESTRO**
 B. Mijnheer, ESTRO

15:30–15:45 *Coffee Break — MOE*

Wednesday, 29 April 2009

15:45–16:45 **SESSION 15: Plenary**
IAEA Board Room **DEBATE**
Do we need Proton Therapy?

Chair: **M. Brada, UK**
Co-Chair: **S. Vatnitskiy, IAEA**
Rapporteur: **K.-A. Johansson, ESTRO**

Panel Members: **K. Inamura, AFOMP**
 A. Wambersie, ICRU
 P. Andreo, Sweden
 G.S. Ibbott, USA
 B. Vikram, USA

16:45–17:15 **SESSION 16: Plenary**
IAEA Board Room **CLOSING SESSION**

Chair: **R.K. Chhem, IAEA**
Co-Chair: **E. Salminen, IAEA**
 A. Meghzifene, IAEA

Rapporteurs: **M. Joiner, ESTRO**
 G.S. Ibbott, USA
 K. Kiel, USA

17:15 **Closing of the Conference**

PARTICIPATION IN IAEA SCIENTIFIC MEETINGS

Governments of Member States and those organizations whose activities are relevant to the meeting subject matter are invited to designate participants in IAEA scientific conferences and symposia. In addition, the IAEA itself may invite a limited number of scientists as invited speakers. Only participants designated or invited in this way are entitled to present papers and take part in the discussions.

Representatives of the press, radio, television or other information media and members of the public, the latter as "observers", may also be authorized to attend, but without the right to take part in the proceedings.

Scientists interested in participating in any of the IAEA meetings listed in this programme should request information from the governmental authorities of their own countries, in most cases the Ministry of Foreign Affairs, national atomic energy authority or Ministry of Agriculture.

PUBLICATIONS

Proceedings

Selected presentations will be placed on the ICARO website after the conference. A summary report will be published as a journal article and a CD containing all the extended synopses and selected presentations will be published by the IAEA after the conference.

Conference website: <http://www-pub.iaea.org/MTCD/Meetings/Announcements.asp?ConfID=167>

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AGENCY PUBLICATIONS RELATED TO THE SUBJECT OF THE CONFERENCE

STI/DOC/010/461	Relative Biological Effectiveness in Ion Beam Therapy	2008
STI/PUB/1296	Setting Up a Radiotherapy Programme: Clinical, Medical Physics, Radiation Protection and Safety Aspects	2008
IAEA-TECDOC-1588	Transition from 2-D Radiotherapy to 3-D Conformal and Intensity Modulated Radiotherapy	2008
IAEA-TECDOC-1585	Measurement Uncertainty A Practical Guide for Secondary Standards Dosimetry Laboratories	2008
IAEA-TECDOC-1583	Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques	2008
IAEA-TCS-25	A Syllabus for the Education and Training of RTTs (Radiation-Therapists/Therapy Radiographers)	2007
STI/PUB/1307	Radiation Sterilization of Tissue Allografts: Requirements for Validation and Routine Control A Code of Practice	2007
STI/DOC/010/457	Dosimetry in Diagnostic Radiology: An International Code of Practice	2007
IAEA-TECDOC-1560	Dose Reporting in Ion Beam Therapy Proceedings of a meeting organized jointly by the IAEA and ICRU, Ohio, USA, held in Ohio, USA, 18-20 March 2006	2007

**AGENCY PUBLICATIONS RELATED TO THE SUBJECT OF
THE CONFERENCE (continued)**

IAEA-TECDOC-1543	On-site Visits to Radiotherapy Centres: Medical Physics Procedures Quality Assurance Team for Radiation Oncology (QUATRO)	2007	IAEA-TECDOC-1447	Optimization of the Radiological Protection of Patients: Image Quality and Dose in Mammography (Coordinated Research in Europe)	2005
IAEA-TECDOC-1540	Specification and Acceptance Testing of Radiotherapy Treatment Planning Systems	2007	IAEA TRS-430	Commissioning and Quality Assurance of Computerized Planning Systems for Radiation Treatment of Cancer	2004
STI/PUB/1198	Nuclear Medicine Resources Manual	2006	IAEA-TECDOC-1423	Optimization of the Radiological Protection of Patients Undergoing Radiography, Fluoroscopy and Computed Tomography	2004
IAEA-TECDOC-1517	Control de Calidad en Mamografía, in Spanish	2006			
IAEA TRS-454	Quality Assurance for Radioactivity Measurement in Nuclear Medicine	2006			
Safety Reports Series No. 47	Radiation Protection in the Design of Radiotherapy Facilities	2006			
Safety Reports Series No. 38	Applying Radiation Safety Standards in Radiotherapy	2006			
IAEA-TECDOC-1488	Radiological Protection Issues in Endovascular Use of Radiation Sources	2006			
STI/PUB/1196	Radiation Oncology Physics: A Handbook for Teachers and Students	2005			
IAEA-TECDOC-1455	Implementation of the International Code of Practice on Dosimetry in Radiotherapy (TRS-398): Review of Testing Results	2005			
Safety Reports Series No. 40	Applying Radiation Safety Standards in Nuclear Medicine	2005			
Training Course Series No. 25	A Syllabus for the Education and Training of RTTs (Radiation-Therapists/Therapy Radiographers)	2005			

**FORTHCOMING SCIENTIFIC MEETINGS SCHEDULED BY
THE IAEA**

2009

9th International Topical Meeting on Nuclear Applications and
Utilization of Accelerators (AccApp09)
4–8 May, Vienna, Austria

International Conference on Remediation of Land Contaminated
by Radioactive Material/Residues
18–22 May, Astana, Kazakhstan

FAO/IAEA Symposium on Sustainable Improvement of Animal
Production and Health
8–12 June, Vienna, Austria

International Symposium on Uranium Raw Material for Nuclear
Fuel Cycle: Exploration, Mining, Production, Supply and Demand,
Economics and Environmental Issues (URAM-2009)
22–26 June, Vienna, Austria

International Conference on Opportunities and Challenges for
Water Cooled NPPs in the 21st Century
27–30 October, Vienna, Austria

International Conference on Fast Reactors and Related Fuel
Cycles - Challenges and Opportunities
7–11 December, Kyoto, Japan

International Conference on Effective Nuclear Regulatory
Systems
14–18 December, Cape Town, South Africa

For information on forthcoming scientific meetings,
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