

#### **International Atomic Energy Agency**

### Department of Technical Cooperation and Nuclear Medicine and Diagnostic Imaging Section Division of Human Health

in cooperation with the

**Government of Japan** 

through the



National Cancer Center Japan

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# Regional Workshop on PET/CT and PET/MRI for Radiotherapy Treatment Planning

9 - 13 December 2019

National Cancer Center Chiba and Tokyo, Japan

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### **PROGRAMME**

Monday, 9 December 2019		
	Introduction	
	The 78 hall, NEXT building, Kashiwa	Campus (Chiba)
CHAIR: Dr.	Hirofumi Fujii	
9:00-9:30	Registration Guidance	
9:30-9:40	Opening Remarks	Dr. Hitoshi Nakagama (President, NCC)
9:40-9:50	Welcome Greetings from Hospital East	Dr. Atsushi Ohtsu (Director, NCC Hospital East)
9:50-10:00	Welcome Greetings from EPOC	Dr. Atsushi Ochiai (Director-EPOC)
10:00-10:20	Consortium of Universities and Institutions in Japan for IAEA Technical Cooperation	Dr. Jun Hatazawa (Osaka University)
10:20-10:40	Coffee break	
10:40-11:00	NCC facilities overview Workshop Introduction	Dr. Hirofumi Fujii (NCC EPOC)
11:00-11:40	Pre-course evaluation	
End of Introduction		
12:00-13:00	Lunch Break	

Session 1		
The 78 hall, NEXT building, Kashiwa Campus (Chiba)		
CHAIR: Dr.	. Mitsuyoshi Yoshimoto	
13:00-13:30	Radiopharmaceuticals useful for radiotherapy treatment planning  ILO: Recognize the characteristics of radiopharmaceuticals used in radiotherapy treatment planning	Professor Tomoya Uehara (Chiba University)
13:40-14:10	Development of next generation PET systems and their use for range verification in particle therapy  ILO: Understand fundamentals of PET imaging and state-of-the-art PET system developments for range verification in particle therapy	Dr. Taiga Yamaya (National Institute of Radiological Sciences)
End of Session 1		
14:10-14:30	Coffee break	
	Session 2	
	The 78 hall, NEXT building, Kashiwa	Campus (Chiba)
CHAIR: Dr.	. Hirofumi Fujii	
14:30-15:30	Impact of modern diagnostic imaging on radiotherapy.  ILO: Understand the influence of improving sensitivity and specificity of imaging on radiotherapy field and dose definitions.	Professor Wouter Vogel
15:30-16:30	Normal tissue response to radiotherapy  ILO: analyze and understand the potential of imaging in predicting acute and late radiation induced toxicity.	Professor Berardino De Bari
End of Session 2		
16:30-16:45	Move to Proton Beam Therapy Building	

On-site discussion 1 and 2 at Proton Beam Therapy Building		
16:45-17:30	On-site discussion 1 Proton beam therapy facilities On-site discussion 2 PET probe laboratory with GMP standard  ILO: Discuss about the proton beam therapy and PET Dr.ug synthesis facilities under GMP standards	Dr. Tetsuo Akimoto (NCC Hospital East and EPOC) Dr. Daisuke Kano (NCC Hospital East)
End of on-site discussion 1 and 2		
17:30-17:45	Move to EPOC building	
17:45 -19:00	Welcome reception	Venue: Auditorium



Tuesday, 10 December 2019		
	Session 3	
	The 78 hall, NEXT building, Kashiwa	Campus (Chiba)
CHAIR: Prof	fessor Berardino de Bari and Professor Woute	r Vogel
9:10-9:40	Visualization of tumor microenvironment for radiotherapy treatment planning including case discussion  ILO: Recognize the significance of tumor hypoxia imaging tests for radiotherapy treatment planning, especially lung cancer	Dr. Hirofumi Fujii (NCC EPOC)
9:40-10:10	MRI imaging to predict the effects of radiotherapy  ILO: Explain the difference in the mechanisms of action among various MR contrast agents	Dr. Masayuki Yamaguchi (NCC EPOC)
10:10-10:40	Quantification in PET/CT and PET/MRI tests for radiotherapy treatment planning  ILO: Recognize how the trace uptake can be accurately measured for radiotherapy treatment planning, focusing on attenuation correction on PET/MR system	Dr. Tetsuro Sekine (Nippon Medical University)
10:40-11:00	Coffee break	
11:00-12:00	Clinical case discussions	Professor Berardino De Bari and Professor Wouter Vogel
End of Session 3		
12:00-13:00	Lunch Break	

	Session 4	
The 78 hall, NEXT building, Kashiwa Campus (Chiba)		
CHAIR: Dr.	Hirofumi Fujjii	rucci
	Micro-dosimetry for radionuclide therapy	
13:00-13:30	ILO: Concept of microscopic and macroscopic dosimetry relative biological effectiveness of radiotherapy	Professor Tatsuhiko Sato ( Osaka University and JAEA)
	Multimodality imaging for radiotherapy treatment planning of head and neck cancer including case discussion	
13:30-14:00	ILO: Understand the role of multimodality imaging in radiotherapy treatment planning of head and neck cancer	Dr. Hirofumi Kuno (NCC Hospital East)
14:00-15:00	Radiomics anDr.adiotherapy: the past, the present and the future  ILO: Understand the tips and tricks of radiomics applied to radiation oncology and show the current and future applications of radiomics to predict the efficacy of radiation therapy	Professor Berardino De Bari
15:00-15:20	Coffee break	
15:20-15:50	PET/CT imaging to evaluate the effects of radiotherapy for head and neck cancer including case discussion  ILO: Recognize the best time for PET/CT after radiotherapy and difference between recurrence and mucositis	Dr. Yuri Ueda (NCC Hospital East)
15:50-16:50	Clinical case discussions	Professor Berardino De Bari and Professor Wouter Vogel
End of Session 4		

# Wednesday, 11 December 2019

## Session 5

Meeting Room 6D, 6F Research Building, Tsukiji Campus (Tokyo)

### CHAIR: Dr. Jun Itami

10:00-10:15	Opening remarks at Tsukiji Campus	Dr. Toshirou Nishida (Director, NCCH)
10:15-11:00	Overview of RT  ILO:  1. Review the concept and overview of radiation oncology.  2. Understand the basic application and safety of radiotherapy.	Dr. Jun Itami (Chief - radiation oncology, NCCH)
11:00-12:00	Image-guided adaptive radiotherapy  ILO: Understand the influence of imaging realized during radiotherapy treatments in order to adapt the treatment depending on tumor morphology and biology changes.	Professor Berardino De Bari
End of Session 5		
12:00-13:00	Lunch	

Session 6		
Meeting Room 6D, 6F Research Building, Tsukiji Campus (Tokyo)		
CHAIR Prof	fessor Berardino de Bari and Professor Woute	or Vogal
CHAIR, 110	PSMA PET for evaluation of salivary glands	v ogei
13:00-14:00	ILO: To understand the clinical implications of newly detected organs at risk and new strategies to define dose-effect relations.	Professor Wouter Vogel
	lecture including case presentation 1 Nucleic acid PET and esophagus	
14:00-14:45	<ul><li>ILO:</li><li>1. Review the diagnostic PET/CT imaging for esophagus</li><li>2. Understand the Nucleic acid PET/CT</li></ul>	Professor Ryogo Minamimoto (Nuclear medicine, NCGM)
14:45-15:15	Coffee break	
15:15-16:00	lecture including case discussion 2 Head and Neck  ILO:  1. Review the radiotherapy for head and neck  2. Understand the planning of radiotherapy using PET images	Dr. Naoya Murakami (Radiation oncology, NCCH)
End of Session 6		
On-site discussion 3		
16:00-17:00	On-site discussion  ILO: Discuss about the radiotherapy and PET future.	Drs. Kimiteru Ito /Takahiro Morita (Nuclear medicine NCCH) Dr. Hiroshi Igaki (Radiation Oncology, NCCH)
End of on-site discussion 3		

# Thursday, 12 December 2019

## Session 7

Meeting Room 6D, 6F Research Building, Tsukiji Campus (Tokyo)

CHAIR: Dr. Hiroshi Igaki		
9:15-10:15	lecture with practical reading 3 amino acid PET and CNS, colon ILO:  1. Review the diagnostic PET/CT imaging for brain tumors and colon 2. Understand the amino acid PET/CT	Dr. Kazuo Kubota (Nuclear medicine, Southern Tohoku General Hospital)
10:15-10:45	Coffee break	
10:45-11:30	lecture including case presentation 4 BNCT and MERIdian  ILO: Understand the mechanism of new machines for radiotherapy	Dr. Hiroshi Igaki (Radiation Oncology, NCCH)
11:30-12:15	New opportunities and challenges: PET-MR-Linac twinning and PSMA-directed NCT.  ILO: To create awareness of new opportunities and strategies to improve RT dose delivery.	Professor Wouter Vogel
End of Session 7		
12:15-13:15	Lunch Break	

#### **Session 8** Meeting Room 6D, 6F Research Building, Tsukiji Campus (Tokyo) **CHAIR: Dr. Kimiteru Ito** lecture with practical reading 5 PET imaging of hypoxia and estrogen receptor in breast cancer Dr. Tomohiko Yamane (Nuclear medicine, Saitama 13:15-14:00 ILO: Review the diagnostic PET/CT Medical University International Medical Center) imaging using hypoxia and estrogen receptor lecture including case discussion 6 breast cancer Dr. Kenshiro Shiraishi (Radiation oncology, Teikyo University 14:00-14:45 ILO: Understand the radiotherapy for Hospital) breast cancer 14:45-15:00 Coffee break Professor Berardino De Bari clinical case discussions 15:00-16:00 Professor Wouter Vogel Overview of PET and radionuclide therapy ILO: 1. Review the concept and overview of Dr. Kimiteru Ito 16:00-17:00 PET tracers. (Nuclear medicine, NCCH) 2. Understand the nuclide therapies in Japan. **End of Session 8**

# Friday, 13 December 2019

## Session 9

Meeting Room 6D, 6F Research Building, Tsukiji Campus (Tokyo)

#### CHAIR: Dr. Kimiteru Ito

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9:15-10:00	lecture with practical reading 7 lung PET, breast  ILO: Understand the practical PET reading skill about lung and breast malignancies	Dr. Yoko Satoh (Diagnostic Radiology, Yamanashi PET imaging clinic)
10:00-10:30	Coffee break	
10:30-11:15	lecture including case presentation 8 lymphoma  ILO: Understand the radiotherapy for lymphoma	Dr. Masahiko Oguchi (Radiation oncology, Cancer Institute Hospital of JFCR)
End of Session 9		
11:15-11:45	Post-course evaluation	
11:45-12:00	Closing remarks	Dr. Masahiko Kusumoto (Chief - Diagnostic Radiology, NCCH)

This workshop is accredited by the UEMS- EACCME (European Union of Medical Specialists - European Accreditation Council for Continuing Medical Education) with 22 European CME credits.

