

THE ASEAN COLLEGE OF MEDICAL PHYSICS (ACOMP) – THE FIRST TWO YEARS

K. H. Ng¹, A.P. Peralta², A. Krisananchinda³, S. Suriyapee³, D.S. Soejoko⁴, J.C.L. Lee⁵, N. T. Tran⁶,
N.T. Chau⁷, F. Haryanto⁸, S.A.Pawiro⁴, C.H. Yeong¹, N. Jamal⁹, M.R.Z. Tecson¹⁰, S. Chhom¹¹

¹Department of Biomedical Imaging, University of Malaya, Kuala Lumpur, Malaysia

²Office for Health Regulation, Department of Health, Manila, Philippines

³Department of Radiology, Chulalongkorn University, Bangkok, Thailand

⁴Physics Department, University of Indonesia, Jakarta, Indonesia

⁵Division of Radiation Oncology, National Cancer Centre, Singapore

⁶Department of International Cooperation, VINATOM, Hanoi, Vietnam

⁷Unit of PET-CT & Cyclotron, Cho Ray Hospital, Ho Chi Minh City, Vietnam

⁸Physics Department, Bandung Institute of Technology, Bandung, Indonesia

⁹Planning and International Relation Division, Malaysia Nuclear Agency, Bangi, Malaysia

¹⁰Medical Physics and Health Physics Services, Inc, Manila, Philippines

¹¹National Cancer Centre, Calmette Hospital, Phnom Penh, Cambodia

Abstract— The Association of Southeast Asian Nations (ASEAN) formed on August 8, 1967, is a geo-political and economic organization of 10 countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. The idea of forming the South East Asian Federation of Organizations for Medical Physics (SEAFOMP) was first conceived in 1996 and she was officially accepted as a regional chapter of the International Organization of Medical Physics (IOMP) during the Chicago World Congress in 2000. Another regional organization, the ASEAN College of Medical Physics (ACOMP), was born in October 2014 at the 12th Southeast Asian Congress of Medical Physics held in Ho Chi Minh City, Vietnam. The founding chairman of the College is Professor Kwan Hoong Ng. The secretariat is located in Jakarta, Indonesia. The vision is to make the ACOMP the premier education and training centre for medical physics in ASEAN and beyond. To achieve this vision, members will galvanise their talents to develop sustainable activities. For the first two years, four activities have been successfully organized including topics such as imaging physics, digital radiography, and interventional radiology. Some future activities planned include schools on Monte Carlo simulation, advanced radiation dosimetry, radiation emergency and disaster management, non-ionizing radiation protection, and a project on radiation dosimetric inter-comparison.

Keywords— Education and training, medical physics organization, professional development

I. INTRODUCTION

Medical physics is rapidly advancing in the world and the situation is the same in South East Asia. Medical physicists have played a pivotal role in the development of new technologies that have revolutionized the way medicine is practiced today. They have been transforming scientific advances in the research laboratories to improving the quality of life for patients [1-2].

II. ABOUT ASEAN

The Association of Southeast Asian Nations commonly known as ASEAN is a geo-political and economic organization of 10 countries located in Southeast Asia, which was formed on August 8, 1967. The member countries are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. The motto of ASEAN is “One Vision, One Identity, One Community”. Its aims include the acceleration of economic growth, social progress, cultural development among its members, and the promotion of regional peace [3].



Figure 1: Map of South East Asia.

It is interesting to compare some aspects of ASEAN and European Union (EU) [4,5] The total land area of ASEAN is 4,479,210 km² while that of EU is 4,381,376 km². The estimated population of ASEAN is 608 million (2012) while that of EU is 507 million (2014). However, EU has 24 ‘official and working’ languages while ASEAN has adopted one ‘official’ language, namely English.

The SEA-EU-NET has been formed to foster cooperation in science, technology and innovation (STI) between Europe and Southeast Asia. Strategic opportunities for S&T cooperation have been identified, and there is opportunity to participate in the European Union’s Horizon 2020 Framework Programme for Research and Innovation. [6]

III. SOUTH EAST ASIAN FEDERATION OF ORGANIZATIONS FOR MEDICAL PHYSICS (SEAFOMP)

The idea of setting up an organization for Southeast Asian medical physics societies was first conceived in 1996. During the International Organization of Medical Physics (IOMP) World Congress in Nice, the formation of the South East Asian Federation of Organizations for Medical Physics (SEAFOMP) was endorsed by member countries and it was officially accepted as a regional chapter of the IOMP at the Chicago World Congress in 2000 [7]. SEAFOMP congresses have been held regularly since its inception and these congresses have stimulated much growth and progress in medical physics in the region. The history of SEAFOMP and her role in ASEAN has been well documented [8,9]. SEAFOMP members have been actively collaborating with international organizations such as the American Association of Physicists in Medicine (AAPM), Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM), Institute of Physics and Engineering in Medicine (IPEM), Asia Oceania Federation of Organizations for Medical Physics (AFOMP), IOMP, International Atomic Energy Agency (IAEA), World Health Organization (WHO), International Commission on Non-Ionizing Radiation Protection (ICNIRP), and Abdus Salam International Centre for Theoretical Physics (ICTP) in hosting and organising conferences, workshops and courses.

IV. BIRTH OF THE ASEAN COLLEGE OF MEDICAL PHYSICS (ACOMP)

After a long gestation period, another regional organization, the ASEAN College of Medical Physics (ACOMP) was born on October 23rd- 25th, 2014 at the 12th Southeast Asian Congress of Medical Physics in conjunction with the 14th Asia-Oceania Congress of Medical Physics held in Ho Chi Minh City, Vietnam. SEAFOMP EXCOM unanimously elected Professor Kwan Hoong Ng, president-emeritus of the SEAFOMP as the founding chairman of the College.



Figure 2. Some of the authors who were present during the SEAFOMP council meeting held in HCM City, Vietnam on Oct 25, 2014.

The secretariat is located in Jakarta, Indonesia. We hope to emulate the successful models of the AAPM and EFOMP summer schools.

The vision is to make the ACOMP the premier education and training centre for medical physics in the ASEAN region and beyond. Both physical and virtual campuses are being established. Emphasis will be placed on supporting the lesser developed countries.

The objectives of the ACOMP are to:

- enhance the standard and quality of education and training of medical physicists,
- provide continuing professional development (CPD) programmes, and
- promote the continuing competence of practitioners of medical physics.

V. THE FIRST TWO YEARS

First workshop organized by ACOMP - "AAPM/IOMP/ISEP Imaging Physics Workshop", 11-14 Nov 2015 at Kuala Lumpur, Malaysia

A four-day international imaging physics workshop entitled "AAPM/IOMP/ISEP Imaging Physics Workshop 2015" was held at the Armada Hotel, Petaling Jaya, Malaysia, from 11 - 14 November 2015. The workshop was jointly organized by the Medical Physics Subgroup of Institute of Physics, Malaysia and University of Malaya, Kuala Lumpur, in collaboration with International Scientific Exchange Program (ISEP) of the American Association of Physicists in Medicine (AAPM). The workshop was endorsed by the International Organization of Medical Physics (IOMP) and supported by multiple local and international professional bodies, including Southeast Asian Federation of Organizations for Medical Physics (SEAFOMP), ASEAN College of Medical Physics (ACOMP), Malaysian Association of Medical Physics (MAMP), Malaysian College of Radiology (MCOR), Malaysian Oncological Society (MOS) and Malaysian Society of Radiographers (MSR).

For the first time being held in Malaysia, the workshop hosted six world-leading medical physicists from the AAPM including Professor Cheng B Saw (the Chair of ISEP), Professor John M Boone (President of the AAPM), Professor Geoffrey D Clarke (UT Health Sciences Centre, Texas, USA), Professor Michael O'Connor (Mayo Clinic, Minnesota, USA), Associate Professor Dr. Jihong Wang (MD Anderson Cancer Centre, Texas, USA) and Associate Professor Dr. Aaron Kyle Jones (MD Anderson Cancer Centre, Texas, USA). The members of the faculty also include three distinguished speakers from the Ministry of Health, Malaysia. They are Mr. Zunaide B. Kayun @Farni (Deputy Director, Radiation Health and Safety Section), Mr. Nik Mohamed Hazmi Bin Hj Nik Hussain (Deputy Director, Allied Health Science Division) and Mr. Ahmad Shariff Bin Hambali (Deputy Director, Medical Device Authority).



Figure 3. A group photo taken during the opening ceremony of the AAPM/IOMP/ISEP Imaging Physics Workshop at the Armada Hotel, Petaling Jaya, Malaysia on 11-14 Nov 2015.

The workshop was accredited for Continuing Medical Education (CME, approved by the Ministry of Health, Malaysia), Continuing Professional Development (CPD Category A3: 15 credits), Medical Dosimetrist Certification Board (MDCB: 23 credits) and Commission on Accreditation of Medical Physics Education Programs (CAMPEP: 24.5 credits).

The focus of this workshop is towards the needs of the medical imaging professionals, including radiologists, oncologists, medical physicists, medical dosimetrists, radiographers, technologists as well as researchers who are involved in the practice of diagnostic, nuclear and oncologic imaging. A comprehensive program which covered most of the recent medical imaging modalities such as digital radiography, mammography, computed tomography, magnetic resonance imaging (MRI), functional MRI, hybrid nuclear imaging and image-based radiotherapy and treatment planning was conducted. The theme of the workshop was “*Building Foundations for Sound Clinical Practice*”. It was hoped that through an enhanced understanding of the fundamental physics in this rapidly growing specialty, the level of expertise in medical imaging can be elevated to improve the healthcare and wellness of the people in our region, said the organizers.

Officiated the opening ceremony was Professor Dr. Awang Bulgiba Awang Mahmud, Deputy Vice Chancellor (Academic & International), University of Malaya. A total of 214 local and international participants attended this workshop, of which, 202 participants were from Malaysia and 12 were from other countries including Australia, Brunei, Indonesia, Philippines, Qatar and Singapore. Among the 214 participants, 32% were medical physicists, 27% radiographers, 20% students, 5% researchers, and 16% of other specialties.

The workshop was also an event to celebrate the 3rd International Day of Medical Physics, which falls on 7th November annually, to commemorate the birthday of Madam Marie Curie, the pioneer in radioactivity discovery. **Second workshop organized by ACOMP - "Workshop on Digital Radiography", 10 Dec 2015 during 13th SEACOMP, Yogyakarta, Indonesia**

The second workshop organized by ACOMP was held during the 13th SEACOMP at Yogyakarta, Indonesia on 10 Dec 2015. The theme of the workshop was on digital radiography. The workshop aimed to review the basic principles, image quality and artifacts, as well as some routine quality control (QC) tests in digital radiography. The speakers included Prof Dr Kwan Hoong Ng (Director of ACOMP), Dr. Napapong Pongnapang (University of Mahidol, Thailand) and Dr. Chai Hong Yeong (University of Malaya, Malaysia). Approximately 40 – 50 participants have attended the workshop.



Figure 4. The first ACOMP Workshop on Digital Radiography, Yogyakarta, Indonesia, 10 Dec 2015.

Third workshop organized by ACOMP - "Interventional Radiology Workshop", 5-6 Aug 2016 at Kuala Lumpur, Malaysia

The two-day workshop on Interventional Radiology: Safety, Optimization, Dosimetry and Quality Control” was held on 5th and 6th August 2016 in Kuala Lumpur. The workshop was jointly organized by the Medical Physics Subgroup of Malaysian Institute of Physics and University of Malaya (UM) in collaboration with ACOMP.

The workshop was endorsed by the Malaysian Ministry of Health (MOH), Malaysian Society of Interventional Radiology (MYSIR) and Malaysian Society of

Radiographers (MSR). Several local organizations, including Malaysian Nuclear Agency (MNA), Continuing Biomedical Imaging Education (CBIE) of University of Malaya, Medical Physics Unit of University of Malaya Medical Centre and University of Malaya Research Imaging Centre (UMRIC) supported the organization of the workshop.

This ACOMP Workshop featured several speakers including Professor Dr. Kwan Hoong Ng (ACOMP Director), Professor Dr. Basri Johan Jeet Abdullah (Consultant Interventional Radiologist, UMMC), Associate Professor Dr. Khairul Azmi Abdul Kadir (Head of the Department of Biomedical Imaging, UM), Assistant Professor Dr. Napapong Pongnapang (Mahidol University), Dr. Jeyaledchumy Mahadevan (President of MYSIR), Dr. Noriah Jamal (Director, Planning and International Relations, MNA), Mr. Zunaide B. Kayun (Deputy Director, Radiation Health and Safety Section, MOH), Dr. Jeannie Hsiu-Ding Wong (UM) and Dr. Chai-Hong Yeong (UM). The members of the faculty also include two speakers from UMMC, Mr. Mohammad Mudzakir Zainal Alam (Senior radiographer) and Ms. Noorhaniza Abu Hassan (Staff nurse).

A total of 64 local and international participants from six countries (Malaysia, Brunei, Indonesia, Qatar, Philippines and Australia) attended this workshop.

This workshop aimed to provide the latest updates on radiological safety, optimization, dosimetry and quality assurance related aspects in the field of interventional radiology. The program was designed such that the first day of the workshop was focusing on the physical principles and theory of multiple aspects in interventional radiology. Various expertises included interventional radiologists, radiographers, nurses, medical physicists and regulators have been invited to share their perspectives. The second day of the workshop was dedicated to practical / hands-on sessions, which was held at the Department of Biomedical Imaging, UMMC. Three modalities including two C-arm angiography systems (one biplane, one single plane) and a radiography/fluoroscopy system were used for the practical sessions. The topics for hands-on sessions included (1) patient dosimetry and measurement, (2) occupational dose assessment and radiation protection, and (3) quality control tests of the fluoroscopy systems.

Forth workshop organized by ACOMP - "Workshop on Digital Radiography", 11 Dec 2016 during ICMP2016, Bangkok, Thailand

The forth ACOMP workshop was held during the International Conference of Medical Physics (ICMP) at Bangkok, Thailand on 11 Dec 2016. The theme of the workshop focuses on the physical principles, image quality and quality control (QC) tests in digital radiography (DR).



Figure 5. Local organizing committee members and invited speakers.



Figure 6. Some of the workshop invited speakers, facilitators and participants in a relaxing moment.



Figure 7. Hands-on sessions on interventional radiology quality control and radiation safety.

DR is rapidly been developed in the last decade and has been gradually replacing computer radiography (CR) in many countries. It offers the potential for improved image quality and provides opportunities for advances in medical image management, computer-aided detection and teleradiology. This workshop aimed to provide comprehensive information on the physical principles and

instrumentation of DR. The main optimization techniques such as the use of automatic exposure control (AEC) and exposure index (EI) were discussed. The workshop also emphasized the physical QC tests in DR where image quality and artifacts were highlighted.

The workshop has attracted some 20 participants from ASEAN and other countries. The members of faculty included Prof. Dr. Kwan-Hoong Ng (Director of ACOMP) and Dr. Chai-Hong Yeong (University of Malaya, Malaysia).



Figure 8. ACOMP Workshop on Digital Radiography, held during the International Conference of Medical Physics at Bangkok, Thailand, 11 Dec 2016.

VI. THE FUTURE

ACOMP has planned several future activities:

- School on Monte Carlo simulation
- School on advanced radiation dosimetry
- School on radiation emergency and disaster management
- School on non-ionizing radiation protection
- Regional inter-comparison in radiation dosimetry

To achieve this vision, members will need to galvanise their talents to develop sustainable activities, and will take advantage of information and communications technologies to achieve our goals. .

ACOMP has been complementing the role of SEAFOMP by giving it an added impetus. We are witnessing rapid growth of medical physics in Southeast Asia [10]. In order to utilize diagnostic, interventional and therapeutic modalities optimally and safely we need to keep abreast and be well-educated and be innovative.

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Corresponding author:

Author : K.H.Ng
 Institute : Department of Biomedical Imaging , Faculty of Medicine
 Street : University of Malaya, 50603
 City : Kuala Lumpur
 Country : Malaysia
 Email : ngkh@ummc.edu.my