

MEDICAL PHYSICS DEVELOPMENT IN SOUTH-EAST ASIAN FEDERATION OF ORGANIZATIONS FOR MEDICAL PHYSICS (SEAFOMP): 2000 - 2020

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I. INTRODUCTION AND TWENTY YEARS OF SEAFOMP

The South-East Asian Federation of Organizations for Medical Physics (SEAFOMP) started in the year 2000. This year, we celebrate the 20th anniversary of the federation. This article intends to review the development, progress and achievement of the medical physics profession of the Southeast Asian region, to commemorate this important milestone.

SEAFOMP was formed in an informal discussion in 1996 during the International Organization of Medical Physics (IOMP) World Congress at Nice, France. The founding members were Anchali Krisanachinda, Kwan-Hoong Ng, Agnette de Perio Peralta, Ratana Pirabul, Djarwani S. Soejoko, and Toh-Jui Wong. It was only in 2000, four years later, that the federation was officially accepted as a regional chapter of the International Organization of Medical Physics (IOMP) at the Chicago World Congress [1, 2]. SEAFOMP started with five (out of 10) member countries of the Association of Southeast Asian Nations (ASEAN), namely Indonesia, Malaysia, Philippines, Singapore, and Thailand. Brunei and Vietnam joined in 2002 and 2005, respectively [1-3].

The objectives of SEAFOMP are to promote:

- Co-operation and communication between medical physics organizations in South East Asian region.
- Medical physics and related activities in the region.
- The advancement in status and standard of practice of the medical physics profession.
- To organise and/or sponsor international and regional conferences, meetings or courses.
- To collaborate or affiliate with other scientific organizations.

One of the most important events that the federation organised is the South East Asian Congress of Medical Physics (SEACOMP). The event was initially started as a biennial event. However, it has proven to be an important activity that is crucial in promoting every aspect of the federation objectives that it has since been organized almost every year, rotating amongst the member countries. Table 2 shows the list of SEACOMPs organised over the last 20 years. In the last few years, SEAFOMP has also been co-organising the SEACOMP and Asia-Oceania Congress of Medical Physics (AOCMP) with the Asia-Oceania Federation of Organizations for Medical Physics (AFOMP) – both neighbouring Regional Organizations of IOMP. In 2016 IOMP held its International Conference on Medical Physics ICMP2016 in Bangkok, together with SEACOMP and AOCMP, while in 2021 Singapore will host the IUPESM World Congress on Medical Physics and Biomedical Engineering. This synergistic combination is extremely useful towards enhancing interactions, facilitating knowledge and cultural exchange in the medical physics

community within the larger region of Asia and beyond. The number of delegates has grown from just over 100 to more than 600. In 2020, the 18th SEACOMP & 20th AOCMP is expected to be held in Phuket, Thailand on October 8-10, 2020 with the theme “Medical Physics-Achievements, Challenges and Horizons”.

II. POPULATION AND GDP OF SEAFOMP COUNTRIES

Southeast Asia (SEA) countries have a broad diversity in terms of their land size, population, and gross domestic product (GDP). **Table 1** shows the demography of the SEAFOMP countries including some MPs in each country. Brunei Darussalam (subsequent as Brunei) has the smallest land area and population among all the SEAFOMP countries, however, it has the highest number of MPs per million population (18.2). This is followed by Malaysia (10.7), Singapore (8.6), Thailand (2.9), Indonesia (1.7), Philippines (1.7), Vietnam (1.6), Myanmar (0.6), Cambodia (0.3) and Laos (0.3). Compared to the statistics reported in 2017 [3], the total number of MPs in the region has increased from 1,027 to 1,423 (28% growth in 3 years). This is a positive trend indicating that the MP profession has received more recognition in this region corresponding to the increased demand. Among all, Indonesia has the highest increment in the number of MPs (+148), followed by Malaysia (+83), Philippines (+80), Thailand (+51), Vietnam (+20), Singapore (+13), Laos (+2). There was no incremental increase of MPs in Brunei and Cambodia from 2017 to 2020, whereas in Myanmar the number of MPs was reduced from 34 to 33.

Table 1. GDP per capita, number of MPs, population and MPs per million population in the Southeast Asia Countries

Country	Land Area (km ²)	GDP Nominal per Capita (USD), 2019 Estimates [4]	Number of MPs, 2017 [3]	Number of MPs, 2020	Population (million), 2020	MPs per million population, 2020
Brunei	5,765	27,871	8	3	0.44	6,8
Cambodia	181,035	1,620	4	4	15.28	0.3
Indonesia	1,904,569	4,163	290	438	261.1	1.7
Lao PDR	236,800	2,670	0	2	7.1	0.3
Malaysia	329,847	11,136	266	349	32.7	10.7
Myanmar	676,578	1,244	34	33	53.5	0.6
Philippines	300,000	3,294	110	190	109.18	1.7
Singapore	719,2	63,987	35	48	5.6	8.6
Thailand	513,120	7,791	150	450	69.4	6.5
Vietnam	331,210	2,739	130	150	95.5	1.6
Total	4,486,116		1027	1667	649.8	2.6

III. Radiation Medicine Equipment in SEAFOMP

Radiation medicine equipment has become indispensable in modern medicine. Their presence in a health care facility will often determine the category or classification level of a hospital. Table 2a shows the radiotherapy equipment in SEAFOMP Countries. The total number of external radiotherapy and brachytherapy machines are 396 and 130 machines respectively to give service for around 649,8 million people in ASEAN countries. In South-East Asia (SEA), Thailand, Indonesia, and Malaysia have the most number of external beam radiotherapy equipment.

On the other hand, for the number of brachytherapy equipment, the top three countries are Thailand, the Philippines, and Indonesia as described in Table 2.b. For CT scanners, the biggest numbers are found in Indonesia, Thailand and the Philippines. However, for the number of general radiography, fluoroscopy/interventional radiology, mammography, and dental x-ray machines, the top three countries are Thailand, Indonesia and Malaysia.

In nuclear medicine, only Malaysia and Cambodia still have conventional gamma cameras. Vietnam, Thailand, and Singapore have the largest number of SPECT units as indicated in Table 2.c. For hybrid imaging modalities, Thailand and Malaysia have the biggest number of SPECT/CT units, with the Philippines, Singapore and Vietnam coming in third; while Malaysia, Singapore,

and Thailand have the biggest number of PET/CT scanners. Vietnam, Thailand and the Philippines are the top three countries having cyclotrons.

Brunei, Malaysia, Singapore and Thailand each has more than one EBRT per 1 million population. However, each South East Asian country has at least one ROMP per EBRT. It must be emphasized that the number of medical physicists in a country must be appropriate to the number of sophisticated radiation medicine equipment it acquires. Unfortunately, this is not the case in diagnostic radiology and nuclear medicine in South East Asia. It is imperative that education and training of medical physicists be ramped up to keep up with the demand.

Table 2.a. Radiotherapy Equipment in SEAFOMP countries

Country	EBRT*	Brachytherapy	Simulator: X/CT/MR
Brunei	2	1	1
Cambodia	2	1	NA
Indonesia	74	20	46
Lao PDR	1	NA	1
Malaysia	67	19	2
Myanmar	20	7	10
Philippines	66	31	48
Singapore	20	4	12
Thailand	94	31	66
Vietnam	50	16	36
Total	396	130	222
Machine/Mio	0,61	0,20	

* EBRT: External beam radiotherapy

Tabel 2.b. Diagnostic Radiology Equipment in SEAFOMP Countries

Country	CT	Fluoro/IR	Mammo	Dental	General Radiography	Magnetic Resonance Imaging
Brunei	8	7	3	14	13	3
Cambodia	25	14	10	15	122	12
Indonesia	4933	1221	956	230	1456	400
Lao PDR	76	3	10	2	7	3
Malaysia	3427	711	279	257	3629	104
Myanmar	1603	53	137	31	125	NA
Philippines	2593	309	354	137	217	118
Singapore	245	83	100	150	380	NA
Thailand	9725	2085	903	456	8226	208
Vietnam	NDA	NDA	NDA	NDA	NDA	NDA
Total	22635	4486	2752	1292	14175	
Equip./Mio	34,83	6,90	4,24	1,99	21,81	

• NDA - no data available

Tabel 2.c. Nuclear Medicine equipment in SEAFOMP countries

Country	SPECT	SPECT /CT	PET/CT	Gamma Camera	Cyclotron
Brunei	NA	1	1	NA	1
Cambodia	NA	NA	NA	1	NA
Indonesia	7	8	3	NA	3
Lao PDR	0	0	0	0	NA
Malaysia	11	13	21	12	3
Myanmar	2	7	2	0	1
Philippines	10	10	12	0	4
Singapore	12	10	16	9	3
Thailand	22	29	15	0	5
Vietnam	24	10	12	NA	6
Total	88	88	82	22	26

IV MEDICAL PHYSICISTS IN SEAFOMP

Among the population of 649.8 million, the number of medical physicists in SEAFOMP is 1667 (Table 1). The average ratio of one medical physicist covering one million of the population is 2.6 per million. Four countries that are above the average ratio are Brunei, Malaysia, Singapore and Thailand. The employment in SEA of medical physicists started 1950 in radiotherapy and nuclear medicine. The percentage distribution of the total number of medical physicists now is as follows: in radiotherapy - 50%, in nuclear medicine - 10%, in diagnostic radiology - 30%, and in other fields - 10%.

Developments in technology in diagnostic radiology and nuclear medicine has also led to the employment of many medical physicists especially in radiation protection, radiation safety, radiation dosimetry, quality management and quality standards. Employment in hospitals of diagnostic radiology medical physicists started in the 1990's in Malaysia, Indonesia, the Philippines, and Thailand. The establishment of education and clinical training programmes led to an increase in medical physicists. However, because the number of diagnostic radiology centres is rapidly increasing in each country in comparison to nuclear medicine centres, there are more diagnostic radiology than nuclear medicine medical physicists. The development of hybrid systems such as SPECT/CT, PET/CT and PET/MR also require cooperation among DRMPs and NMMPs. More interaction among ROMPs, DRMPs and NMMPs, more clinical training programmes, and more education programs are needed.

Table 3. Number of Medical Physicists in Sub-Disciplines

Country	Radiation Oncology	Diagnostic Radiology	Nuclear Medicine	Other Sub-Discipline	Total
Brunei	2	NA	1	NA	3
Cambodia	4	0	0	NA	4
Indonesia	114	306	18	NA	438
Lao PDR	2	NA	NA	NA	2
Malaysia	126	53	28	135	342
Myanmar	24	2	7	NA	33
Philippines	106	36	15	33	190
Singapore	39	9	10	3	61
Thailand	295	100	55	NA	450
Vietnam	123	1	30	NA	154
Total	833	507	163	171	1682
Ratio	0.50	0.30	0.10	0.10	1.00

Table 4. Professional Society Establishments

Country	Year Established	First President	Membership	
			Per cent of Male	Per cent of Female
Brunei	Not yet	NA	NA	NA
Cambodia	Not yet	NA	NA	NA
Indonesia*	2015	Dr. Supriyanto Ardjo Pawiro	65	35
Lao PDR	Not yet	NA	NA	NA
Malaysia	1990	Prof Dr Ng Kwan Hoong	60	40
Myanmar	2016	Mr.Aung Thaung	24	76
Philippines	1986	Ms. Agnette de Perio Peralta	44	56
Singapore	1998	Mr Wong Toh Jui	56	44
Thailand	2001	Prof. Dr.Anchali Krisanachinda	41	59
Vietnam	2008	Dr Phan Sy An	77	23

* New name of professional society which is come from merging two organizations between HFMBI (1990) and IKAFMI (1988)

V. EDUCATIONAL DEVELOPMENT

The establishment of an academic programme in medical physics greatly contributes to its development in any country. The first MSc Medical Physics programme in the region was established in 1971 in Mahidol University, Bangkok. Thailand now has five universities offering an MSc Medical Physics degree, one of which, Chulalongkorn University, also offers a PhD Medical Physics degree. The second oldest MSc Medical Physics programme in the region was established in 1981 in the University of Santo Tomas (UST), Manila. UST established a second degree in 2004, the non-thesis Master in Medical Physics programme. To date, it is still the only university in the Philippines offering the programme although three universities have plans to establish their programmes in the future.

The third oldest MSc Medical Physics programme in the region was established in 1995 in Universiti Sains Malaysia. Currently, Malaysia has two universities, the University of Science Malaysia and the University of Malaya, offering both a master's and a doctoral degree in medical physics. The USM offers a BSc Applied Science (Medical Physics) degree. The Master of Medical Physics programme offered by the University of Malaya is accredited by the Institute of Physics and Engineering in Medicine (IPEM), UK.

Indonesia started a master of medical physics course at Universitas Indonesia in 2002. Currently, Indonesia has six universities offering an MSc Medical Physics degree, four of which also offer a PhD Medical Physics degree. Also, five universities initiated a minor programme in BSc degree; so in total 11 universities offer an elective programme of Medical Physics in their Bachelor Programme. Two universities in Singapore, Nanyang Technological University and National University Singapore, offer a BS Physics degree with a minor or concentration in Medical Physics. One of these two offers Medical Physics as a research degree in its PhD programme. This is similar to the situation in Brunei with Universiti Brunei Darussalam offering a BSc Applied Physics with a Medical Physics module and a PhD in Applied Physics, major in Medical Physics. On the other hand, Vietnam has thirteen (13) BSc Physics and Engineering degree programmes with limited medical physics-related subjects. In 2018, a BSc Medical Physics programme was established in Nguyen Tat Thanh University, this programme was evaluated and confirmed by an IAEA expert to have satisfied the requirement of an MS Medical Physics programme as stated in IAEA-TCS 56; the difference was purely semantic. The remaining South East Asian countries of Cambodia, Laos, and Myanmar currently do not have academic programmes in medical physics. However, IAEA fellowships have enabled young medical physicists from Cambodia, Laos, Myanmar and Vietnam to study for their master's degree in Thailand and Malaysia and to undergo clinical training after their academic studies.

Table 5. Established Academic Post-graduate Degree Programmes in MP (MS / Ph.D.)

Country	Name of University	Curriculum	Academic Programme	Year Established	Graduates per year
Brunei	NA	NA	NA	NA	NA
Cambodia	NA	NA	NA	NA	NA
Indonesia	Universitas Indonesia	Physics (Medical Physics)	BSc, MS, PhD	2002 and 2017	15 and 2
	Institut Teknologi Bandung	Physics (Medical Physics)	MS, PhD	2003	10 and 3
	Universitas Brawijaya	Physics (Medical Physics)	MS, PhD	2009, and 2016	7 and 1
	Universitas Diponegoro	Physics (Medical Physics)	MS	2011	10
	Universitas Hasanuddin	Physics (Medical Physics)	MS	2015	10
	Institut Teknologi Sepuluh Nopember	Physics (Medical Physics)	MS, PhD	2016	6 and 2
Malaysia	University of Malaya	Medical Physics	MMedPhys, PhD	1999	12
	University of Science Malaysia	Medical Physics	BSc Appl Sc. (Medical Physics), MSc, PhD	1995	20
Myanmar	NA	NA	NA	NA	NA
Philippines	University of Santo Tomas Graduate School	Medical Physics	MS Applied Physics	1981	3 (average)
	University of Santo Tomas Graduate School	Medical Physics	Master in Medical Physics	2005	1 (average)
Singapore	Nanyang Technological University	PhD	Applied Physics	2011	1
Thailand	1. Mahidol University:	Medical Physics	MS	1971	6
		Medical Physics	MS	1980	4
	2. Chiangmai University	Medical Physics	MS	2001	6
	3. Chulalongkorn University	Medical Physics	MS, PhD	200, 2015	6
	4. Naresuan University	Medical Physics	MS	2014	4
5. HRH Princess Chulabhorn College of Medical Science, Chulabhorn Royal Academy	Medical Physics	MS	2019	9	
Vietnam	Nguyen Tat Thanh University	Medical Physics	BSc*	2017	NA

*: Essentially an MS programme, national regulation only allows BSc at the moment

VI TRAINING COURSES AND WORKSHOPS

Structured clinical training of medical physicists was established in SEAFOMP in 2007 under the IAEA Regional Cooperative Agreement. The structured programme on clinical training in medical physics started with Radiation Oncology, followed by Diagnostic Radiology and then Nuclear Medicine Medical Physics in centres with facilities, supervisors and residents. The programme is two years in duration with trainees required to produce a small research project and make a presentation during a medical physics professional society meeting. The competency assessment involves written, practical and oral examinations with external assessors. Passing these examinations serve as proof that the individual can now work independently as a medical physicist. In 2016 IAEA introduced AMPLE – an advanced medical physics learning environment which is an on-line programme to support the remote supervisor. Usually, senior medical physicists are available in hospitals with facilities for clinical training. Residents who are working at a cancer centre but lack a supervisor can share a clinical supervisor from the university hospital under the AMPLE programme.

Even a resident from neighbouring countries such as Laos, Myanmar and Cambodia can share Thai supervisors for ROMP, DRMP and NMMP. SEAFOMP has been quite successful in the clinical training of medical physicists using the IAEA-developed clinical training modules as the programme has had 5 to 6 batches in Thailand, the Philippines, Malaysia, and Indonesia, and a couple of batches in Singapore. Medical physicists from ASEAN countries which have no medical physics education or clinical training programmes can also apply to IAEA to obtain a scholarship to study and/or to undergo clinical training in medical physics. Thailand and Malaysia have received some of these medical physicists. Meanwhile, in Vietnam, aspiring medical physics students undergo at least 9 to 12 months of clinical training in a specific government hospital and then work for at least 1 to 2 years under a medical physics supervisor.

Table 6. Clinical Training of Medical Physicists

Country	Centres	Curriculum	Year established	No. of Graduates	Resident
Brunei	NA	NA	NA	NA	NA
Cambodia	Cambodia	ROMP	2020		1
Indonesia	Cipto Mangunkusumo Hospital	ROMP	2017	5	7
	Dharmais Cancer Center	ROMP			
	MRCCC Siloam Hospital	ROMP			
	Pasar Minggu Hospital	ROMP			
	UI University Hospital	DRMP	2017	0	1
	Dharmais Cancer Center	DRMP			
	Dharmais Cancer Center	NMMP	2020	0	2
	Hasan Sadikin Hospital	NMMP			
	MRCCC Siloam Hospital	NMMP			
	Universitas Indonesia + all training centres	Assoc MP	2018	141	33
Malaysia	Kuala Lumpur Hospital	ROMP	2010-2012	3	3
	Sime Darby Medical Center	ROMP	2010-2012	3	3
	Serdang Hospital	DRMP	2012-2017	1	1
	Sultanah Rahimah Hospital, Klang	DRMP	2012-2017	0	1
	University Malaya Medical Center	DRMP	2012-2017	1	6
	Institut Kanser Negara	ROMP	2018- 2020	on going	2
	Kuala Lumpur Hospital	ROMP	2018- 2020	on going	5
	Penang Hospital	DRMP	2018- 2020	on going	1
	Sultanah Bahiyah Hospital	DRMP	2018- 2020	on going	1
	Sultanah Aminah Hospital	DRMP	2018- 2020	on going	1

	University Malaya Medical Center	DRMP	2018- 2020	on going	2
	Institut Kanser Negara Kuala Lumpur Hospital	NMMP	2018- 2020	on going	1
	University Malaya Medical Center	NMMP	2018- 2020	on going	2
	Makati Medical Center	ROMP	2009-2011	1	
	Saint Luke's Medical Center	ROMP	2009-2011	1	
	Univ of Perpetual Help Medical Center	ROMP	2009-2011	1	
	Makati Medical Center	ROMP	2012-2015	1	
	Saint Luke's Medical Center	ROMP	2012-2015	1	
	Univ of Perpetual Help Medical Center	ROMP	2012-2015	1	
	Makati Medical Center	ROMP	ongoing		
	Saint Luke's Medical Center	ROMP	ongoing		
	Univ of Perpetual Help Medical Center	ROMP	ongoing		
	Philippine General Hospital	ROMP	ongoing		
	University of Santo Tomas Hospital	ROMP	ongoing		
	JR Reyes Memorial Medical Center	ROMP	Ongoing		
	Lung Center of the Philippines	ROMP	ongoing		
	Chong Hua Medical Center	ROMP	ongoing		
	Southern Philippines Medical Center	ROMP	ongoing		
	Davao Regional Medical Center	ROMP	ongoing		
	Philippine Oncology Center	ROMP	ongoing		
Philippines	Asian Hospital and Medical Center	ROMP	ongoing		
	JR Reyes Memorial Medical Center	DRMP	2010 - 2013	1	
	East Avenue Medical Center	DRMP	2010 - 2013	1	
	Philippine Heart Center	DRMP	2010 - 2013	2	
	National Kidney & Transplant Institute	DRMP	2010 - 2013	2	
	University of Santo Tomas Hospital	DRMP	2010 - 2013	1	
	East Avenue Medical Center	DRMP	ongoing		
	Philippine Heart Center	DRMP	ongoing		
	Quirino Memorial Medical Center	DRMP	Ongoing		
	National Kidney & Transplant Institute	DRMP	Ongoing		
	University of Santo Tomas Hospital	DRMP	Ongoing		
	Philippine General Hospital	DRMP	Ongoing		
	Cardinal Santos Medical Center	NMMP	Ongoing		
	Makati Medical Center	NMMP	Ongoing		
	Saint Luke's Medical Center	NMMP	Ongoing		
	National Kidney & Transplant Institute	NMMP	Ongoing		
	Philippine Heart Center	NMMP	Ongoing		
Singapore	Singapore General Hospital	NMMP	2016-2020	2	

	National Cancer Centre Singapore	ROMP	2014-2020	6
	King Chulalongkorn Memorial Hospital	ROMP	2006-2008	10
	Siriraj Hospital	ROMP		
	Ramathibodi Hospital	ROMP		
	Chiang Mai Hospital	ROMP		
	King Chulalongkorn Memorial Hospital	DRMP	2008-2010	5
	Bumrungrad International Hospital	DRMP		
	King Chulalongkorn Memorial Hospital	NMMP	2011-2013	12
	Siriraj Hospital	NMMP		
	Ramathibodi Hospital	NMMP		
	Chiang Mai Hospital	NMMP		
Thailand	King Chulalongkorn Memorial Hospital	ROMP/DRMP	2016-2018	
	Siriraj Hospital	ROMP/NMMP		
	Ramathibodi Hospital	ROMP/DRMP		15 (ROMP)
	Chiang Mai Hospital	ROMP/NMMP		4 (DRMP)
	Prince of Songkla University	ROMP		3 (NMMP)
	Chulabhon Hospital	ROMP		
	Pinlon Hospital Myanmar	ROMP/NMMP		
	King Chulalongkorn Memorial Hospital	ROMP	2018-2020	
	Siriraj Hospital	ROMP/DRMP		
	Ramathibodi Hospital	ROMP		
	Chiang Mai Hospital	ROMP		
	Prince of Songkla University	ROMP/DRMP/NMMP		
	Chulabhon Hospital	ROMP		14(ROMP)
	Ratchaburi Cancer Center	ROMP		5(DRMP)
	Udonthani Cancer Center	ROMP		3(NMMP)
	Sawanpracharak Hospital	ROMP		
	Suratthani Cancer Center	ROMP		
	Pinlon Hospital Myanmar	ROMP		
	Mittaphap Hospital, Laos	ROMP		

VII COMMUNICATION, NEWSLETTERS, CONFERENCES

Since 2001, SEAFOMP has held a series of congresses to share the scientific and clinical knowledge and mutual support among its members. This annual congress is called the South East Asian Congress for Medical Physics (SEACOMP). SEACOMPs were held respectively in Malaysia (Kuala Lumpur, 2001, 2004 and 2018), Thailand (Bangkok, 2003 and 2016; Chiang Mai, 2009 and 2012), Indonesia (Jakarta, 2006; Bandung, 2010, Yogyakarta 2015, Bali 2019), the Philippines (Manila, 2007; Manila & Bohol, 2011, Iloilo 2017), Vietnam (Ho Chi Minh City, 2008 and 2014) and Singapore (2013).

The communication among the members in SEAFOMP is an important key for the organization. Through email, not only the information but also knowledge is shared among the members. The vote regarding many issues on SEAFOMP is done with this mode of communication. During the SEACOMP, the executive committee meeting is also held.

In the future, the SEAFOMP plans to publish a newsletter for the members. This newsletter intends to communicate messages and information to members. The clinical experience from the experts can also be shared in this newsletter.

Table 7. History of SEACOMP [1]

Date	SEACOMP	Venue	Congress Theme	No. Of delegates
23 - 24 April 2001	1st SEACOMP	Kuala Lumpur, Malaysia	Continuous Quality Improvement In Medical Imaging And Radiation Therapy	110
12-14 November 2003	2nd SEACOMP	Bangkok	Enhancing Quality In Imaging And Therapy In South-East Asia	150
27 - 29 September 2004	3rd SEACOMP & 4th AOCMP.	Kuala Lumpur	Progress And Innovations In Medical Physics	220
7 - 11 November 2006	4th SEACOMP	Jakarta	Physics Contribution To Human And Biosystem	126
21 -23 November 2007	5th SEACOMP	Manila, Philippines	Saving Lives Through Physics And Engineering	124
29 – 31 Oct 2008	6th SEACOMP and 8th AOCMP	Ho Chi Minh City, Vietnam	Nurturing Collaborations In Medical Physics	305
22 – 24 October 2009	7th SEACOMP And 9th AOCMP	Chiang Mai, Thailand	Update In Medical Physics	303
10 -13 December 2010	8th SEACOMP	Bandung, Indonesia	Improvement In Medical Science And Technology For Better Life	131
16 – 19 November 2011	9th SEACOMP	Manila and Bohol	Celebrating Gains And Meeting New Challenges In Medical Physics	115
11 – 14 December 2012	10th SEACOMP	Chiang Mai	The Convergence Of Imaging And Therapy	202
12–14 December 2013	11th SEACOMP & 13th AOCMP	Singapore	Advancing Imaging And Radiotherapy With Medical Physics	271
23-25 October 2014	12th SEACOMP & 14th AOCMP	Ho Chi Minh City, Vietnam	Medical Physics For Advanced Medicine	239
10-12 December 2015	13th SEACOMP	Yogyakarta, Indonesia	Improving The Quality Of Human Health Through Physics	196
9-12 December 2016	14th SEACOMP 16th AOCMP 22nd ICMP	Bangkok, Thailand	Medical Physics Propelling Global Health	645
December 1 - 3, 2017	15th SEACOMP	Iloilo, Philippines	Medical Physics Towards Health For ALL	177
11 – 14 November 2018	16th SEACOMP & 18th AOCMP	Kuala Lumpur, Malaysia	A Sustainable Future For Medical Physics	529
8 to 10 August 2019	17th SEACOMP & 3rd PIT-FMB	Bali, Indonesia	Improvement On Patient Care And Safety Through The Innovation In Medical Physics	320

VIII. IAEA REGIONAL PROJECTS

The regional Project of Medical Physics in Asia Pacific Region RAS6038 as indicated in Table 8 started in 2003 with the title “Strengthening medical physics through education and training.” The goal of the first project is to develop clinical training programmes for medical physicists in the disciplines of radiation oncology medical physics (ROMP), diagnostic radiology medical physics (DRMP) and nuclear medicine medical physics (NMMP). The goal of extension of the project (2007 – 2011) is to facilitate the clinical training trial in the region based on IAEA training course series numbers 37, 47 and 50 for ROMP, DRMP, and NMMP. In SEAFOMP members, Malaysia, the Philippines, Thailand and Singapore participated in the clinical training trials [3].

The next phase of the regional project of Medical Physics RAS6077 (2014 – 2017) was proposed to initiate the Advanced Medical Physics Learning (AMPLE) platform. This platform transformed the clinical training guide to an electronic system and also included the e-learning material in the Moodle platform. This project also initiated trials in Indonesia, Malaysia, the Philippines, and Thailand to test the platform. There is some remote supervision from Thailand for clinical training in Myanmar and Vietnam [1]. This project is continued with regional project RAS6087 (2018 – 2021) which facilitate the clinical training trial with AMPLE platform.

Besides regional projects under the Regional Coordinated Agreement (RCA), the non-agreement project which was proposed by Malaysia, Indonesia and Pakistan is also funded for 2018-2021 to provide support for the project “Strengthening Education and Clinical Training Programmes for Medical Physicists in the Asia Pacific region and East Asia region”. This project has a budget to provide support for capacity building training for medical physicists in the region. With this project, 12 workshops in the fields of radiotherapy, diagnostic radiology and nuclear medicine physics have been planned.

Table 8. Regional Projects on Medical Physics in the Asia Pacific Region

Project Number	Title	Duration	Lead Country Coordinator
RAS6038	RCA Project – strengthening medical physics through education and training	2003 – 2007	Mr. John Drew (Australia)
RAS6038 (extension)	RCA Project - strengthening medical physics through education and training	2007 – 2011	Mr. John Drew (Australia)
RAS6077	RCA Project - Strengthening the effectiveness and extent of medical physics education and training	2014 – 2017	Dr. Ian Donald McLean (Australia)
RAS6087	RCA Project - Enhancing Medical Physics Services in Developing Standards, Education and Training through Regional Cooperation	2018 – 2021	Dr. Ian Donald McLean (Australia)
RAS6088	Non-Agreement Project - Strengthening Education and Clinical Training Programmes for Medical Physicists	2018 -2021	Dr. Noriah Jamal (Malaysia)

IX. CONCLUSION AND THE FUTURE

The spirit of ASEAN resounds in SEAFOMP. The idea of setting up an organization for South-east Asian medical physics societies was first mooted in 1996. The South-East Asian Federation of Organizations for Medical Physics (SEAFOMP) was officially accepted as a regional chapter (now IOMP Regional Organization) of the IOMP at the Chicago World Congress in 2000 with five member countries, viz. Indonesia, Malaysia, the Philippines, Singapore and Thailand. Today SEAFOMP has ten members.

Looking forward to the future, all members of the SEAFOMP will continue to strive for continual promotion of the medical physics profession by working with international bodies such as IAEA, WHO, and IOMP. We would need to continuously enhance our education and professional development. To sustain this growth, we need to develop a new generation of younger leaders, who are passionate and progressive.

X. ACKNOWLEDGEMENT

We would like to express our deep appreciation to Ms. Sophea Ly, President of ACRT, Cambodia and Dr. Dang Thanh Luong, Head of Biomedical Physics Department, Faculty of Medicine, Nguyen Tat Thanh University, Vietnam for the essential contribution.

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