

AOCMP 2010, TAIPEI, TAIWAN

**THE REQUIREMENTS FOR
QUALIFICATION AND
CERTIFICATION OF MEDICAL
PHYSICISTS
IN VIETNAM**



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NGUYEN XUAN KU
PHAN SY AN



**THE REQUIREMENTS FOR QUALIFICATION AND
CERTIFICATION OF MEDICAL PHYSICIST IN VIETNAM**

1. LEGAL FRAMEWORK
2. QUALIFICATION REQUIREMENT
3. CERTIFICATION REQUIREMENT
4. EXPECTED SOLUTION

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**THE REQUIREMENTS FOR QUALIFICATION AND
CERTIFICATION OF MEDICAL PHYSICIST IN VIETNAM**

➔ 1. LEGAL FRAMEWORK

2. QUALIFICATION REQUIREMENT
3. CERTIFICATION REQUIREMENT
4. EXPECTED SOLUTION

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1. LEGAL FRAMEWORK

VIETNAM HOSPITAL REGULATION (1996)
The role of medical physicist in radiation oncology and nuclear medicine

21. QUY CHẾ CÔNG TÁC KHOA Y HỌC HẠT NHÂN


4. KT sư vật lý y học hạt nhân có trách nhiệm:

- a. Nắm vững nguyên lý và vận hành thành thạo các thiết bị hạt nhân chuyên dùng trong y học.
- b. Trực tiếp tiến hành các phép đo đếm phóng xạ và ghi hình phóng xạ trên cơ thể người bệnh (in vivo) và các mẫu bệnh phẩm có phóng xạ (in vivo).
- c. Đo hoạt tính phóng xạ các liều thuốc phóng xạ dùng chẩn đoán hay điều trị.
- d. Đo định kì và đột xuất theo yêu cầu liều chiếu, mức ô nhiễm phóng xạ buồng thiết bị bức xạ, môi trường xung quanh, kiểm soát chất thải phóng xạ bảo đảm mức bức xạ không vượt quá giới hạn quy định.
- e. Thực hiện chế độ bảo dưỡng thiết bị, sửa chữa thiết bị chuyên dùng và thông thường theo quy chế quản lí và sử dụng vật tư, thiết bị y tế.

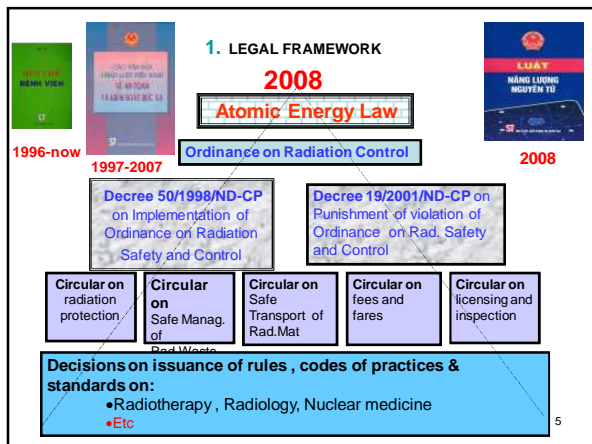
22. QUY CHẾ CÔNG TÁC KHOA UNG BƯỚU (ĐIỀU TRỊ TIA XẠ)

4. KT sư vật lý y học có trách nhiệm:

- a. Nắm vững nguyên lí và vận hành thông thạo các thiết bị điều trị tia xạ chuyên dùng.
- b. Về kĩ thuật vật lí tia xạ đo hoạt tính tia xạ, xác định các liều tia xạ dùng trong chẩn đoán hay trong điều trị người bệnh.
- c. Kiểm tra định kì, đột xuất và chuẩn hoá lại liều lượng điều trị tia xạ cho người bệnh. Mức nhiễm xạ ở các trường thiết bị và môi trường xung quanh, bảo đảm mức tia xạ không vượt quá giới hạn quy định.



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1. LEGAL FRAMEWORK

Key Strategies and Plans

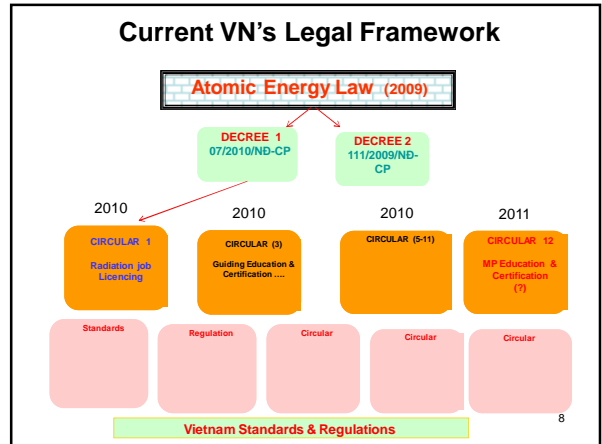
1. 90/CP(1997) : The Resolution on the direction and policy of socialization of educational, medical and cultural activities
2. 01/2006/QĐ-TTg : "Strategy for Peaceful Utilization of Atomic Energy in Viet Nam up to 2020"
3. 7/23/2007 : "Master Plan to Implement the Strategy for Peaceful Utilization of Atomic Energy in Viet Nam up to 2020"
5. 153/2006/QĐ-TTg : Master Plan to develop healthcare system of Vietnam up to 2010 with the vision up to 2020
6. MOH (2009) : Long term project "Development and application of radiation in healthcare up to 2020"

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1. LEGAL FRAMEWORK

Legal system renovation (Key Laws) :

- 1.21/2000/QH10: The Law on Science and Technology (effected on Jan 1, 2001)
- 2.59/2005/QH11: The Law on Investment (effected on July 1, 2006)
3. 68/2006/QH11 : The Law on standards and technical regulations
4. 84/2007/QH11 : The Law on Labour
5. 25/2008/QH12 : The Law on Health Insurance (effected on July 1,2009)
6. 21/2008/QH12: The Law on high technology (effected on July 1, 2009)
7. 18/2008/QH12: The Law on Atomic Energy (Jan 1, 2009)
8. 05/06/2009 : The Law on Examination and Treatment (effected on July 1,2010)
9. Etc.....

THE REQUIREMENTS FOR QUALIFICATION AND CERTIFICATION OF MEDICAL PHYSICIST IN VIETNAM

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- ⇒ 2. QUALIFICATION REQUIREMENT
3. CERTIFICATION REQUIREMENT
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2. QUALIFICATION REQUIREMENT

PET/CT & CYCLOTRON UNIT



QUI TRÌNH HOẠT ĐỘNG ĐƠN VỊ PET-CT VÀ CYCLOTRON, BỆNH VIỆN CHỢ RẪY

Bản xuất thuốc phóng xạ
 $^{18}F, ^{11}C, ^{15}O$
 Máy gia tốc Cyclotron Extrapro HP

Tổng hợp thuốc phóng xạ
 Các đồng vị phóng xạ sẽ được kết hợp với các chất mang để tạo thành thuốc phóng xạ $^{18}F\text{-FDG}$, $^{11}C\text{-Thal}$, $^{15}O\text{-Carotid}$, $^{11}C\text{-Met}$.

Kiểm tra chất lượng thuốc phóng xạ
 Kiểm tra độ tinh khiết phóng xạ, hàm lượng vi trùng, độ chênh lệch, pH.

Tiêm thuốc phóng xạ
 Điều chỉnh liều 300-400 μ Ci/giọt, kiểm tra đường truyền, liều số là ứng dụng số và tự động.

Chẩn hình PET-CT
 Tỷ lệ xạ thuốc phóng xạ, giả bệnh sau tiêm thuốc phóng xạ, 30-60 phút. Thời gian ghi hình 10-15 phút.

Định lượng PET-CT
 Sử dụng phần mềm chuyên biệt để định lượng PET-CT, kết hợp phần mềm xử lý ảnh để phân tích.

Hình ảnh PET-CT

Sản xuất thuốc phóng xạ theo qui trình chuẩn, đảm bảo chất lượng theo được điều và đảm bảo an toàn 100%.

2. QUALIFICATION REQUIREMENT

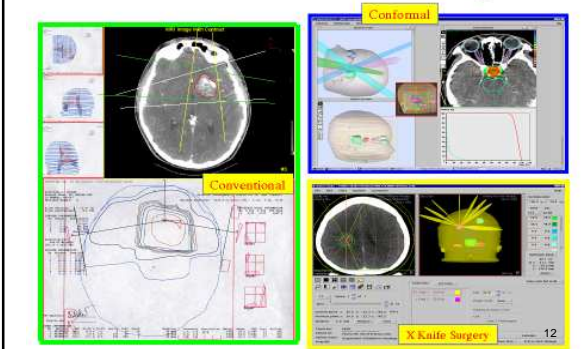
NUCLEAR MEDICINE DEPARTMENT



2. QUALIFICATION REQUIREMENT

ONCOLOGY DEPARTMENT

CRH LINAC RADIOTHERAPY TECHNIQUES



2. QUALIFICATION REQUIREMENT
ONCOLOGY DEPARTMENT

LINAC PHOTON BEAM THERAPY
Xuất máy gia tốc với chùm Photon

LINAC ELECTRON BEAM THERAPY
Xuất máy gia tốc với chùm Electron

LINAC - X KNIFE SURGERY

LINAC CONFORMAL RADIOTHERAPY

2. QUALIFICATION REQUIREMENT
GAMMA KNIFE UNIT

2. QUALIFICATION REQUIREMENT

Re-188-Lipiodol for Treatment of HCC

IAEA Nuclear Medicine Program
ENM 5003 © IAEA, 2009/2010/2011

THE REQUIREMENTS FOR QUALIFICATION AND CERTIFICATION OF MEDICAL PHYSICIST IN VIETNAM

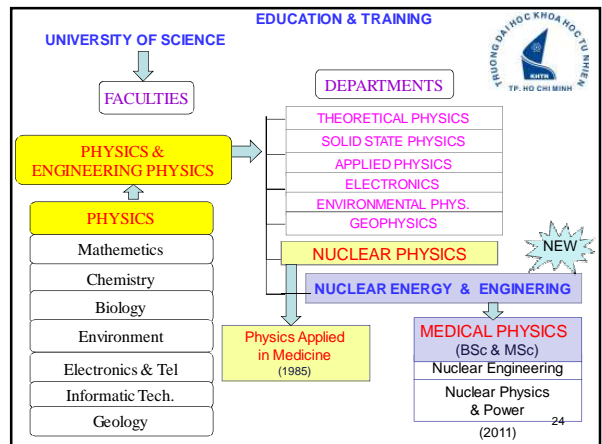
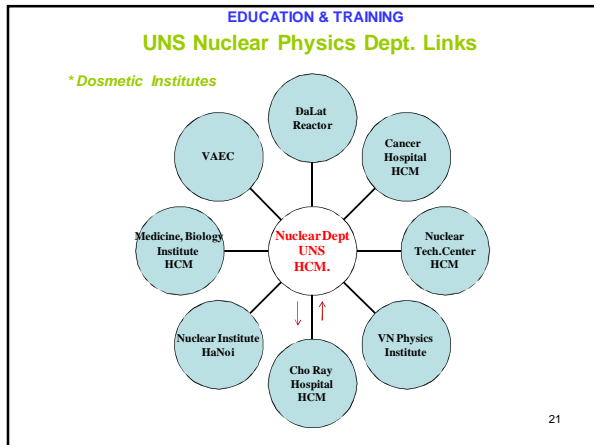
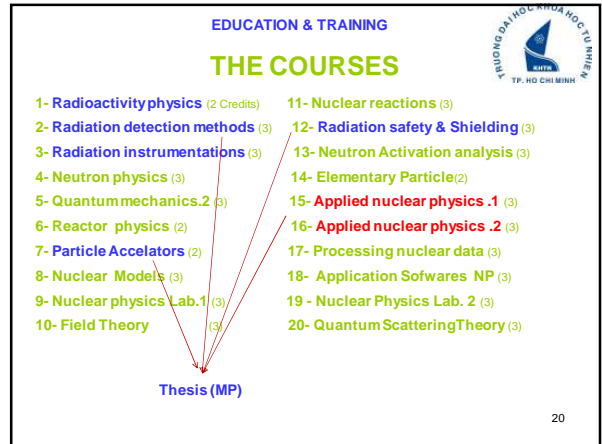
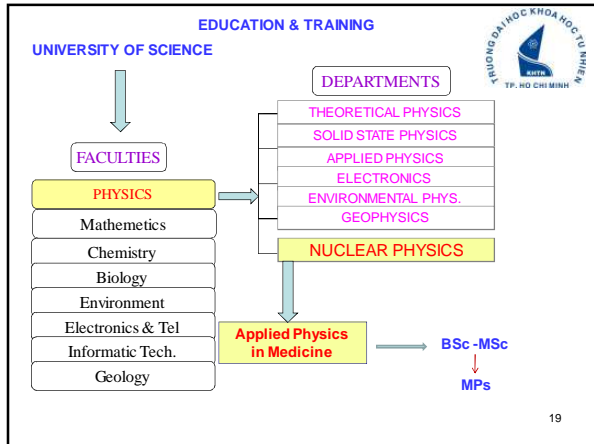
- 1. LEGAL FRAMEWORK
- 2. QUALIFICATION REQUIREMENT

➔ EDUCATION & TRAINING

EDUCATION & TRAINING
Main Building of UNS-HCM
227 Nguyen Van Cu Street, Dist. 5 - Ho Chi Minh City, Vietnam

TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN

EDUCATION & TRAINING
Linh Trung Campus UNS-HCM



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LOCAL TRAINING

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RADIATION WORKERS LEGAL CERTIFICATION

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EDUCATION & TRAINING

VIETNAM ASSOCIATION FOR MEDICAL PHYSICS (VAMP)

The establishment of Viet Nam Association For Medical Physics (VAMP)

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EDUCATION & TRAINING

INTERNATIONAL COOPERATION

INTERNATIONAL WORKSHOP ON "MODERN RADIATION ONCOLOGY"

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EDUCATION & TRAINING

Modern Radiation Oncology

Title: Modern Radiation Oncology
Location: Cho Ray Hospital, Ho Chi Minh City, Vietnam
Date: May 6-8, 2010

Time	May 6, 2010 Wednesday	May 7, 2010 Thursday	May 8, 2010 Friday
07:30 - 10:00	Registration		
08:00 - 09:30	Faculty Visit Cho Ray Hospital Ho Chi Minh City	Education (07) Medical Physics (V. Nguyen) Prof. Phan By An	Advanced Technology (14) IMRT and Image Guided C. Ma, PhD
09:30 - 09:50	Advanced Technology (11) IMRT Techniques C. Ma, PhD	Treatment Planning (08) C. Ma, PhD	Practical Workshop I Head and Neck Cancer H. Wang, MD
09:50 - 10:40	Remote Acquisition System (03) C. Ma, PhD	Treatment Planning (08) C. Ma, PhD	Practical Workshop II Lung Cancer H. Wang, MD
10:40 - 10:55	Beam Delivery (05) IMRT & Image Guidance C. Ma, PhD	Treatment Planning (11) Target & Structure Definition R. Zouker, PhD	Technology Update (1) J. Zouker SBRT/IGRT, LDR SBRT/IGRT, LDR SBRT/IGRT, LDR
10:55 - 11:40	Head Hospital Director Viet Nam Radiation Oncology	QA - Simulation (04) Daily, Weekly, Quarterly C. Ma, PhD	QA - Brachytherapy (17) Calibration Storage Compliance C. Zouker, PhD
11:00 - 11:30	Quality Assurance (05) Commissioning Modern Linear C. Ma, PhD	Treatment Planning (12) Commissioning & QA C. Ma, PhD	Brachytherapy (16) LDR, HDR R. Zouker, PhD
11:30 - 12:10	Physicians Perspective (06) Single Fraction (FOT, IMRT, IGRT) H. Wang, MD	Physicians Perspective (13) Gamma Knife, Stereotactic H. Wang, MD	Technology Update (1) IMRT C. Ma, PhD
12:10 - 12:40	QA Demo	Technological Update (1) SBRT/IGRT, LDR SBRT/IGRT, LDR SBRT/IGRT, LDR	Brachytherapy (16) HDR, IMRT R. Zouker, PhD

Vietnam Workshop Page 1 of 2 May 6, 2010 29

EDUCATION & TRAINING

Time	May 6, 2010 Wednesday	May 7, 2010 Thursday	May 8, 2010 Friday	May 9, 2010 Saturday
12:45 - 14:20		LUNCH	LUNCH	LUNCH
14:20 - 15:40	QA Demo Continue	Practical Workshop I Individualized Treatment Planning CRT and IMRT	Practical Workshop II Individualized Treatment Planning CRT and IMRT	Practical Workshop III Individualized Treatment Planning CRT and IMRT
15:40 - 18:20				
18:20 - 17:40				

Sponsors: Transmedic Pte Ltd, Varian Medical Systems, Cho Ray Hospital
Organizers: Cheng B Saw, PhD (International), Dr. Nguyen Tuong Son (Local)
Committee: Dr. Nguyen Tuong Son, MD, PhD (Chair), Director - Cho Ray Hospital
Dr. Hoang Hoa Hai, MD, Head - Training Department - Cho Ray Hospital
Dr. Lu Tuan Anh, MD, Head - Oncology, Cho Ray Hospital
Dr. Nguyen Van Hai, General Secretary - Vietnamese Association of Medical Physicists (VAMP)

International Cheng B Saw, PhD (Chair), Director - Medical Physics, Radiation Oncology, Penn State Hershey Cancer Institute, Hershey, PA
Committee & Robert Zouker, PhD, Emerita Chair - Medical Physics, Radiation Oncology, University of Kentucky, KY
Faculty: Charlie Ma, PhD, Chief - Medical Physics, Fox Chase Cancer Center, Philadelphia, PA
Henry Wagner, Jr., MD, Director - Radiation Oncology, Penn State Hershey Cancer Institute, Hershey, PA
Bahram Wazid, MD, Medical Director - Wilms International Medical Centre, Petaling Jaya, Malaysia
Shanglan Bai, PhD, Director - Research Center For Tumor Diagnosis and Therapeutic Physics, Peking University, China


Vendors: Elekta, Nucletron, Philips, Provoost, Siemens, Tomotherapy, Varian
Brainlab, CIVAC, CTVO, IBA

Regarding registration and hotel, please contact:
Hoang Hoa Hai, MD
Cho Ray Hospital
Ho Chi Minh City, VIETNAM
ohhai@pcmail.com
Tel: 84-8-35833118 (Office)
Tel: 84-908-103-274 (Cell)

Postal Address:
Hoang Hoa Hai, MD
CHORAY HOSPITAL
201B Nguyen Chi Thanh St,
Quận 5
Ho Chi Minh City, VIETNAM

Vietnam Workshop Page 2 of 2 May 6, 2010 30

EDUCATION & TRAINING



Print Date: February 5, 2010

Dear Cheng Saw, PhD,

Thank you for submitting your continuing education activity to the MDCB for evaluation. The educational activity has been approved for credits as listed below.

To earn credit(s) with the MDCB, a CME must submit a certificate of attendance, transcript, or some other proof of attendance with the reference number(s) listed provided by the activity sponsor. If there are any questions, please contact the MDCB.


The course(s) listed below have also been approved for ARRT Category A credit. The ARRT requires that the certificate or proof of completion contain the following: name of the participant, date of attendance, title of the activity, number of contact hours assigned by the MDCB, name of the sponsor, signature of the instructor or authorized representative of the sponsor, and the MDCB approval number.

Reference #	Activity Title	Activity Date	Expires	Credits
MDCB-100-129	Modern Radiation Oncology	5/5/2010	5/8/2010	28.0
Total approved credits: 28.0				

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AAMP Newsletter



AAMP Virtual Library 32

EDUCATION & TRAINING

MP ACEDAMIC EDUCATION

WORLD CONGRESS 2009

Medical Physics Education and Training in South East Asia
 N.V.Hou¹, A.Krisnachindia², J.C.L.Lee³, K.H.Ng⁴, A.P. Peralta⁵, D.Soejoko⁶, T.J.Wong⁶

¹Cho Ray Hospital, HCM City, Vietnam
²Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
³National Cancer Centre, Singapore
⁴University of Malaya, Kuala Lumpur, Malaysia
⁵The Bureau of Health Devices and Technology, Department of Health, Manila, Philippines
⁶Physics Department, Faculty of Mathematics and Sciences, University of Indonesia Jakarta, Indonesia

V. CONCLUSION

Within ASEAN having a total of 403 medical physicists, there are eleven education programs in Medical Physics and relevant. Five Master of Science program in Medical Physics, (Indonesia- 1, Malaysia -1, Thailand -3), two in Applied Physics (Philippines - 1, Vietnam -1), two Master in Medical Physics (Malaysia - 1, Philippines - 1), two Master of Science in Medical Imaging and Radiological Sciences (Thailand -2). The period of education program varies from one to two years. **The clinical training in Vietnam is equivalent to On -the -Job -Training for medical physicists**

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EDUCATION & TRAINING

MP ACEDAMIC EDUCATION

ASEAN Members	MPEducation University/ Level/ Year of Establishment	No. of MP
INDONESIA	University of Indonesia (2002)	M.Sc. 40
MALAYSIA	University Science Malaysia (1994) University of Malaya (1998)	M.Sc. M.MedPhys 100
PHILIPPINES	University of Santo Tomas (1981) (2004)	M.S. (Applied Physics) M.Medical Physics 62
SINGAPORE	None at Postgraduate Level	20
THAILAND	Ramathubodi Hospital, Mahidol University (1972) Siriraj Hospital Mahidol University (1990) Chiang Mai University (2001) Chulalongkorn University (2003) Khon Kaen University (2006)	M.Sc. Med.Phys M.Sc. Radiol. Sc. M.Sc. Med Phys M.Sc. Med Imaging M.Sc. Med Phys 110
VIETNAM	University of Natural Sciences at HCMC (1985)	M.Sc. Physics Physics applied in Medicine 71

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EDUCATION & TRAINING


MP CLINICAL EDUCATION & TRAINING

Table 2. Structured clinical training program for radiation oncology at 2 SEAFOMP members.

ASEAN Members	Centers	Year of Establishment
PHILIPPINES	1.Cardinal Santos Medical Center, San Juan City 2.Makati Medical Center, Makati City 3.Porponal Help Medical Center, Parañaque City 4.St. Luke's Medical Center, Quezon City 5.University of Santo Tomas Hospital, Manila 6.The Medical City, Pasig City	2008
THAILAND	1.Ramathubodi Hospital, 2.Siriraj Hospital 3.Chulalongkorn University 4.Chiang Mai University	2007

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EDUCATION & TRAINING



JOB DESCRIPTION
IAEA TECHNICAL CO-OPERATION EXPERT MISSION
 (Prof Brian Thomas)

PROJECT AND TASK NUMBER: RAS6038 16
PROJECT TITLE: Strengthening Medical Physics through Education and Training (RCA)
TASK TITLE: Promoting Postgraduate Education for medical physics in Asia Pacific - Thailand & Vietnam

MISSION DETAILS:
 To assist Vietnam in determining its needs in education in medical physics and suggest a plan of action for this and have a high-level talks at the university in Thailand to have the clinical training programme recognised within an academic framework.

DUTY STATION(S):
 Chulalongkorn University; Faculty of Medicine; Department of Radiology, Bangkok, Thailand
Duty period: 28 February – 3 March 2009
 Chonay Hospital, Ho Chi Minh City, Vietnam
Duty period: 4-7 March 2009
 Hanoi Medical University; Nuclear Medical Department, Hanoi, Vietnam
Duty period: 7-12 March 2009

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EDUCATION & TRAINING

BRIAN THOMAS MISSION REPORT

The radiation oncology infrastructure in Vietnam is increasing reasonably rapidly. New Linacs are being installed either to replace aging Cobalt units or as additional treatment units. The number of persons employed as medical physicists is also increasing. However there is currently no opportunity for these persons to obtain a postgraduate education in medical physics. Most of the recent medical physics appointees have a bachelor's degree in physics with a major in nuclear physics. Some of these bachelor degrees have a limited amount of medical physics content in the curriculum.

In Vietnam, medical physicists are responsible for planning, quality assurance and safety aspects of radiotherapy treatment. They generally have high workloads and the physical infrastructure for which each medical physicist is responsible is considerable.

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EDUCATION & TRAINING

BRIAN THOMAS MISSION REPORT

Addressing the **educational needs of medical physicists in Vietnam** must take into consideration the needs of **existing medical physics staff as well as future appointees**. A two step approach is therefore considered appropriate:

- The **first stage**, and **immediate requirement**, is to provide a **structured program of medical physics** education for recently appointed medical physicists. The content of this program would need to be developed by the experienced (Vietnamese) medical physicists. However, it should include basic radiation physics, anatomy and physiology, radiation therapy, medical imaging and radiation safety and biology. The small number of experienced, medical physicists in Vietnam requires that at least some of the program would need to be delivered by visiting staff during short (approximately 1 week) intensive periods of instruction. About **30 hours of teaching**, delivered in a period of one week, would be appropriate for each of the above areas. Thus a total of five teaching periods would be required to cover the areas mentioned above. The course(s) would need to be offered in both Ho Chi Minh City and Hanoi. (Note that the directors of the radiation oncology departments in the major regional centres of Can Tho and Hai Phong indicated that it would be possible for their junior medical physicists to attend Ho Chi Minh City or Hanoi for these one week periods of instruction)

Table 1. Proposed schedule of lectures for recently appointed medical physicists:

Time from commencement of program	0 months	3 months	6 months	9 months	12 months
	Basic radiation physics	Anatomy & Physiology	Radiation Therapy	Radiation Safety and Biology	Medical Imaging

EDUCATION & TRAINING

BRIAN THOMAS MISSION REPORT

Note

- 1.some of the lectures could be provided by local hospital and/or university based staff.
- 2.the area of anatomy and physiology might be taught entirely by local staff and hence not included in the schedule.
- 3.each lecture series should be structured around a suitable text which would need to be made available to participants.
- 4.instruction should be in English although it would be beneficial if lecture notes were translated into Vietnamese and if the visiting instructors were fluent in Vietnamese.
- 5.each period of instruction should include some revision of material presented at the previous periods of instruction.
- 6.examination of the material presented is recommended. This examination might be conducted by the Vietnamese Association For Medical Physicists which could potentially award a certificate to those successfully completing the exams.

- The **second stage** is the longer term arrangement to introduce postgraduate education in medical physics in Vietnam. There is at least one university in each of the two major cities which could potentially offer a masters in medical physics. These universities currently offer a limited amount of medical physics content within their bachelors degree courses in physics (or nuclear physics). However lecturers are sourced from local hospitals to provide the medical physics components and in order to offer a sustainable postgraduate degree in medical physics these universities would need to appoint new staff with expertise in relevant areas. In the short term they may need assistance from the Agency to support short term visits from external persons to present lectures.

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EDUCATION & TRAINING

BRIAN THOMAS MISSION REPORT

Recommendations to the Counterpart Institution and National Counterpart

It is recommended that:

- The Vietnamese Association for Medical Physicists (VAMP) be requested to facilitate the structured program of education for current medical physicists as outlined in Table 1 and the notes to that table. Development of the program should include an indication of those aspects of the program which could be taught by local persons taking into consideration the expertise and workloads of the local persons.
- The University of Natural Sciences (HCMC), The University of Technology (Hanoi) and possibly other universities in Vietnam should plan the introduction of postgraduate (masters) programs in medical physics.
- These masters programs should be broad based i.e. not concentrated on radiation oncology medical physics (ROMP) but include diagnostic radiology medical physics (DRMP and nuclear medicine physics (NMP). Note that it is not anticipated that a graduate from these programs would be an expert in ROMP (nor DRMP or NMP) but rather they would have a level of knowledge expected of a person commencing a career in medical physics. The detail skills and knowledge expected of a practitioner in these areas would be acquired in a period of structured clinical experience of at least 2 years duration and subsequent clinical practice.
- The Universities should seek to establish "partner" relationships with overseas departments which offer Masters programs in medical physics in order to facilitate staff exchange and to learn from the experiences of those departments..

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EDUCATION & TRAINING

BRIAN THOMAS MISSION REPORT

Recommendations to the Government:

It is recommended that:

- The University of Natural Sciences (HCMC), The University of Technology (Hanoi) and possibly other universities in Vietnam should be supported to introduce postgraduate (masters) programs in medical physics. Support required will include appointment of staff with a medical physics background and assistance to purchase necessary library texts and equipment. On-line access (by students and staff) to relevant journals should also be provided.
- The government should assist the introduction of the masters programs by facilitating any applications necessary for introduction of new courses.
- The Government should assist the Universities to establish "partner" relationships with overseas departments which offer Masters programs in medical physics. Short term exchange of staff with these partner departments should be encouraged.

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EDUCATION & TRAINING

BRIAN THOMAS MISSION REPORT

Recommendations to the Agency:

It is recommended that the Agency assist the two step approach mentioned in the body of this report by:

- Supporting short visits of suitably qualified persons to provide courses (in HCMC and Hanoi) on the topics indicated in Table 1.
- Supporting staff of participating Vietnamese universities to spend periods in overseas institutions to update their knowledge in the discipline.
- Supporting staff of the universities to enrol in PhD (or MSc) programs in medical physics in overseas universities. Such enrolment should be by external studies i.e. requiring only short periods of attendance in the overseas university with most work being conducted in Vietnam.
- Assisting the Universities to establish "partner" relationships with overseas departments which offers Masters programs in medical physics.
- Providing some assistance to the universities to purchase relevant medical physics texts and subscriptions to on-line journals.

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- ⇒ 4. EXPECTED SOLUTION

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4. EXPECTED SOLUTION

How to achieve a high standard of safety & quality for radiation jobs in a hospital?

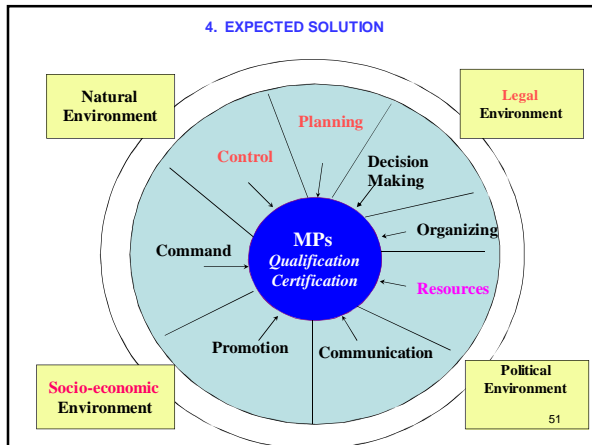
NEW LAW:

1. Licenced : radiation jobs (using radiation sources / equipments...)
2. Certified : accelerator operators, safety officer....
3. Licenced : QC (acceptance, regularly, after repair,)
4. Authorized : services
5. Documented : local rules and procedures
6. Inspected : building, shielding, monitoring, assesment...

Professionals (MPs) :

- Well educated / Qualified
- Continuing education and training
- Recognized ----> Legalized ----> Certified

NEW CIRCULAR expected: Guiding education & Certification for Medical Physicists in Vietnam



THANKS for LISTENING

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