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AFOMP Newsletter

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Prof. Dr.Arun Chougule

From the desk of editor

Let me wish you all “**VERY HAPPY, HEALTHY, FRUITFUL AND PROSPEROUS NEW YEAR 2015**”

I am happy to bring out the second issue of the AFOMP newsletter, the mouth piece of the organization, of the year. This issue of the news letter contains very good articles namely

History of Medical Physics

Herbal products: New insights in chemoprevention of Cancer IMPCB Since 2008

in addition to the report of 14 th AOCMP and 12 th SEACOMP conference successfully conducted at Ho Chi Min City, Vietnam by Vietnam Medical Physicist Association and Choray Hospital during 23 – 25 Oct. 2014. The International Day of Medical Physics [IDMP] was celebrated by many AFOMP country Medical Physics organizations on 7 th Nov., the report speaks of the activities being conducted to enhance the public perception on role of medical physicists in health care. I appeal through this newsletter to continue celebrating the IDMP at more and more places with better media coverage.

The 15 th AOCMP conference will be hosted at Xia, China during 22- 24 Oct. 2015 and hope large number of delegates will participate in this annual event of AFOMP.

To sustain and enrich the newsletter I request and appeal to all AFOMP member countries and the medical physicists to contribute article, literature, reports and information about activities which will be of great help to our members. Your active support, valid criticism will help us to improve the contents of the newsletter.

We say good bye to 2014 and look forward for the 2015 with much more expectations and fulfillments.

Prof. Dr. Arun Chougule

W E L C O M E

INTERNATIONAL CONFERENCE ON MEDICAL PHYSICS, RADIATION PROTECTION & RADIOBIOLOGY-2015

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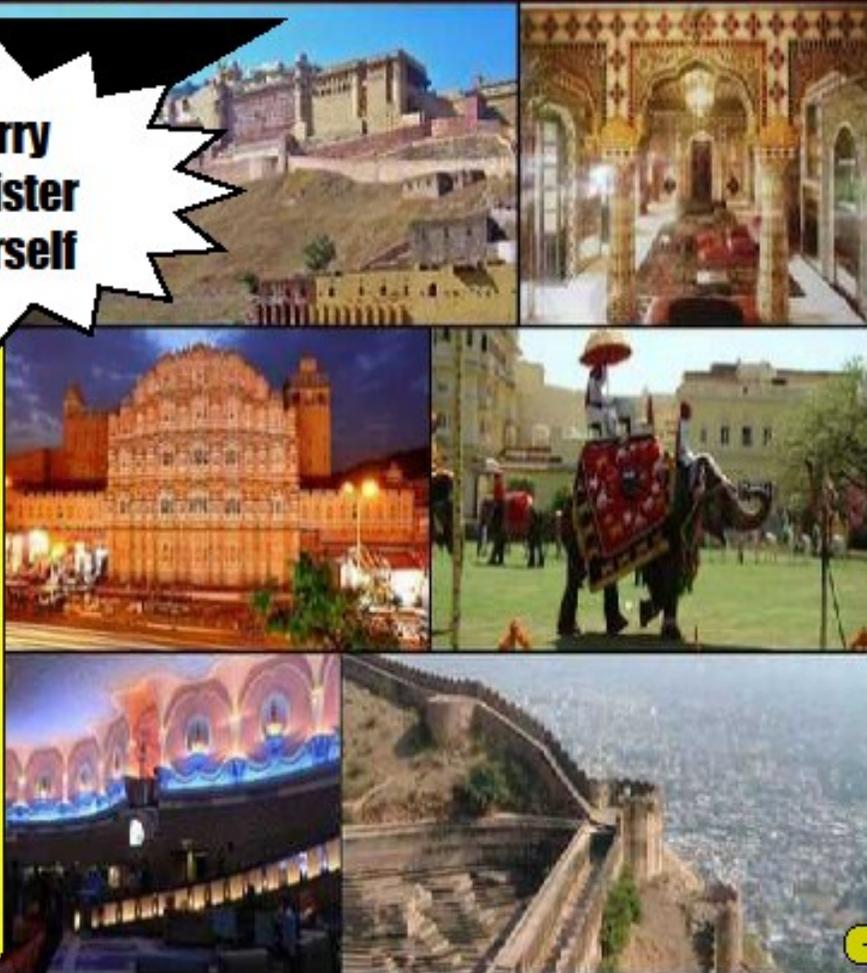
ANNUAL CONFERENCE OF ASSOCIATION OF MEDICAL PHYSICISTS OF INDIA (NORTHERN CHAPTER)
20th, 21st, 22nd February 2015

Venue:- SMS Medical College Auditorium, Jaipur (Rajasthan) India



Registration is in full swing

**Hurry
Register
yourself**



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AMPI(NC)CON

-2K15

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The literary definition of Medical Physics could be “use of Physics and Physical Principle in Medicine”. However, now-a-days the term “Medical Physics” is synonymous with the “ use of ionising radiation in diagnosis and treatment of disease”. Relation between Physics and Medicine is quite old and understandably so since the doctors have to use techniques and gadgets for diagnosis and management of diseases. Therefore, Medical Physics has a history much older than that of x-ray and radioactivity which are the face of Medical Physics today. For example, the oldest known medical document “Surgical Papyrus” written by Edwin Smith (3000-2500BC), an Egyptian describes cauterization of breast abscesses by fire drill. Greek physician Hippocrates (460-377 BC) enumerates the first method for measurement of body temperature by some sort of thermography (Figure 1).



Figure 1. *Reproduction of Hippocratic thermography. This image was taken 8 min after a cloth soaked in potter's earth was applied to the volunteer's back. The rate at which the cloth dries is related to the temperature of the skin underneath. The region on the right-hand side had previously been heated with a compress.*

Iraqi Mathematician al - Haytham (965-1039) described physics of vision and demonstrated that sight is caused by light entering the eye rather emanating from eye. Leonardo da Vinci (1452-1519) explained the mechanics of human body and worked on optics. The scientific revolution in Europe in 17th Century led to mechanistic philosophy in medicine as well. Andreas Vesalius (1514-64) discovered that our heart works as pump. William Harvey (1578-1657) discovered the circulation of blood and Microscope was invented by Anton Van Leeuwenhoek (1632-1723). That time the term “Iatro Physics” was in vogue (Iatro = Physician or surgeon in Greek). However, Iatro Physics was more with function of body and nature of life rather for diagnosis and treatment of ailments.

The term “Medical Physics” are first used by Society Royale De Medicine at Paris in its Publication in 1779. The credit goes to its secretary Felix Vicq D' Azir (1748-1794) (Figure 2).



Figure 2. *The only known portrait of Felix Vicq D'Azir (1748-1794) (Wikipedia).*

Felix's father was a doctor and he himself studied medicine but never practiced it. His research of anatomy of brain was stupendous and earned him a seat at Royal Academy of Sciences at the age of 26. Thus he came in touch with Physicist, Scientists, Mathematicians etc. He had good rapport with the then King and Queen of France and he was able to establish a new “Societe Royale De Medicine” with members from scientists and even ministers in addition to the doctors despite the stiff resistance of the then existing medical establishment. Benjamin Franklin and Chemist Joseph Priestly were among the members of Societe Royale De Medicine. The Society started publishing “less Memories de Medicine & De Physique Medicale”. Medical Physics was largely confined to Physical Therapy, Physiology and Public health.

Figure 3. *The Medical Physics section in less Memories de Medicine & De Physique Medicale*

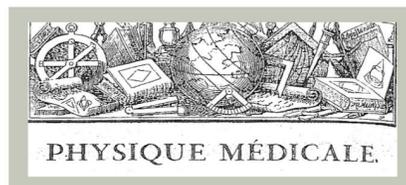


FIGURE 2. The heading from the medical physics section of *L'Histoire de la Société Royale de Médecine 1776* (published 1779).

Pierre Pelletan (1782-1845) at France was another genius who was trained in medicine but had interest in chemistry, physics and technology. In 1813 he wrote Ph.D. Thesis "On the influence of the laws of physics and chemistry on the phenomena of life". In 1822 Pelletan was nominated as Professor of Medical Physics. He wrote a book on properties of matter, heat, optics, acoustics, electricity etc. for medical students. Though he could not make Medical Physics independent from parent discipline his foundation led to establishment of Medical Physics discipline in Europe and Germany. Pelletan had technical and industrial prowess as well. He designed steam propulsion boats and locomotives with compressed air or steam. He devised machines for sugar- beet industry and gas lighting.

In early 19th century the pace of the investigations in thermal, acoustic, electrical, optical, mechanical processes of bodies became faster. Thomas Young (1773-1829) became famous for his work on capillary action. His work on the interference and wave theory of light contributed to Physiology of Vision. Hermann von Helmholtz (1821-84) invented Ophthalmoscope and Rene laennec (1781-1826) invented iconic stethoscope in 1816.

Role of Physicist in Medical Education began to develop this time. In 1835 Michel Faraday (1791-1867) started giving lectures at St. Georges Hospital, London. In 1856, Adolph Fick (1829-1901) published "die Medizinische Physik" which gave accounts of physics of lung and thermodynamics of the heat economy of the body. From late 19th century basic physics was a compulsory element in UG medical education in UK. Academic Medical Physics departments were set-up and Professors of Medical Physics were appointed in Paris in first half of 19th Century. However, they were not involved in delivery of clinical services until discovery of x-rays on early evening of Nov 8, 1895 by Wilhelm Roentgen (1845-1923).

Following closely the discovery of x-rays on 8 Nov. 1895 Henry Becquerel (1852-1908) discovered radioactivity on 26 Feb. 1896. Pierre Curie (1859-1906) and Marie Curie (1867-1934) discovered radium on December 26, 1898. In March 1896 radiography was used in battle field for the first time.

April 1896, Archives of Clinical Skiagraphy (Ski in Greek means shadow) was launched. In 1897, the first radiological society Roentgen Society (now British Institute of Radiology) was formed in London admitting medical practitioners and physicists as members.

First therapeutic use of radiation is uncertain. In June 1896 (after 6 months of x-rays discovery) Leopold Freund (1868-1943) of university of Vienna produced first cure of skin cancer in a 5 year old patient using Hittrof tube. He also wrote first text book. However, he was exiled by Nazis later.

In July 1896 Victor Despeignes (1866-1937) treated stomach cancer though unsuccessfully due to low energy of x-ray of that time.

In 1898 Roentgen Society established a committee on x-ray injuries initiating discipline of radiation protection. In 1901 Becquerel reported his radiation burn from a piece of radiation paving the way for Brachytherapy. Clarence Dally (1865-1904) who was an assistant to Thomas Edison became first x-ray casualty of mediastinal cancer. Thomas Alva Edison (1847-1931) who was pioneer of development of x-ray tube and intensifying screen stopped working with x-rays. Standardization of radiation measurement was carried out by Rolf Maximilian Sievert (1896-1966) from Sweden. The unit for Equivalent Dose and Effective Dose has been assigned as "Sievert".

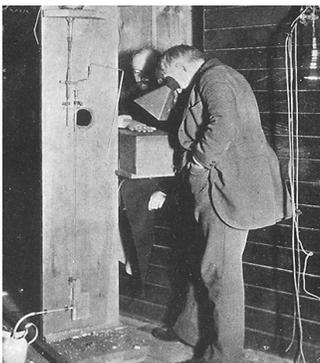


Figure 4. Thomas Edison examines his assistant Clarence Dally's hand through a fluoroscope of his own design. Picture of Clarence Dally is juxtaposed.

Physicists still didn't participate directly in clinical work. A notable exception was Charles Phillips (1871-1945). Charles Phillips worked as honorary Physicist to Royal cancer Hospital (later Royal Marsden) from 1892 to 1927 but had no formal qualification.

In 1913, Sydney Russ (1879- 1963) became first physicist formally appointed by a British hospital, Middlesex Hospital, London. Russ developed collimated radium teletherapy equipment and contributed significantly in dosimetry. Since then, Medical Physics developed to become an integral part of medicine wherever ionizing radiation is used for diagnosis and treatment.

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Wikipedia All material and figures and their captions has been taken from various sources at internet. The author claims no originality.

A Report on The 7th Korea-Japan Joint Meeting on Medical Physics, Busan, Korea

A Report on The 7th Korea-Japan Joint Meeting on Medical Physics, Busan, Korea

Bo-Young Choe, Ph.D. Organizing Committee Chair,

President, Korean Society of Medical Physics

Jae-Sung Lee, Ph.D Scientific Program Committee Chair

Jeong-Woo Lee, Ph.D. General Secretary

Jin-Beom Chung, Ph.D. Treasurer

The 7th Korea-Japan Joint Meeting on Medical Physics (The 7th KJMP) was held during September 25-27, 2014 in BEXCO, Busan, Korea. It was held in conjunction with the 48th Meeting of Korean Society of Medical Physics (KSMP) and the 108th Meeting of Japan Society of Medical Physics (JSMP). This Joint Meeting has been already held 6 times (i.e., three in Korea, three in Japan). The past six Joint Meetings were quite successful and have made an important role to promote research activities in medical physics, while offering a great opportunity of cultural exchange between two societies. The theme of 7th KJMP was "Leading the Future Medical Physics based on the Solid and Eternal Partnership". The meeting extended our visions on the medical physics by introducing new paradigm of future trend of medical physics which utilize interdisciplinary approaches such as image-guided therapy, and state of art imaging technique. This is truly reflected by the plenary session, and other symposiums.

Professor Dong-Ik Kim who is President, Korean Academy of Medical Science gave an outstanding keynote lecture on "Where Are We Standing in the Stream of Medicine?". Plenary speaker, Professor Kikuo Umegaki from Hokkaido University, Japan gave an excellent presentation on "Development of Gated Spot Scanning Proton Beam Therapy System with Real-Time Tumor-Tracking". Another plenary speaker, Professor Byong-Yong Yi from University of Maryland, USA gave an excellent presentation on "Detection of the Motion during Treatment and Its Management in Radiation Therapy".

Contd:-

There were total six wonderful symposiums: “Particle Therapy I”, “Molecular Imaging”, “Advances in Radiotherapy”, “Particle Therapy II”, “Joint Imaging and Therapy”, and “Nanoparticles in Medical Physics”. For the special symposium of molecular imaging, three distinguished leading scientists were invited from MIPS, Stanford University, USA. Dr. Craig Levin gave a nice talk about “RF Transmissive PET Insert for Collecting Simultaneous PET and MRI Data”. Dr. Edward Graves gave a fantastic talk about “Effects of Radiation on Tumor Cell Migration and Metastasis”. And, Dr. Lei Xing gave an excellent talk about “Physical and Molecular Image Guided Station Parameter Optimized Radiation Therapy”.

The conference was attended by 421 participants. Abstracts considered within the scientific program were 90 oral presentations and 158 posters. There were total 28 invited oral presentations in plenary or symposium. The young investigator’s awards were provided to four young scientists from Korea and Japan through the competition in “Young Investigator’s Presentation Session”

As a series of social activities in addition to the Presidential Dinner, the Welcome Banquet was arranged with the Korean traditional music team “Sorididym” in Grand Ballroom in BEXCO (<http://www.bexco.co.kr>). Some tours were arranged to allow attendees to see the beautiful scenery and beach in Busan.

7th KJMP provided a great opportunity for the attendees to update themselves on the current trends in various fields of medical physics by exchanging scientific and technological information as well as strengthening friendship between Korean and Japanese medical physicists. In addition to the academic aspects of the Congress, Busan offers unique experiences for all the members with its dynamic harbor and beautiful Haeundae Beach.



Report

14th Asia-Oceania Congress of Medical Physics (AOCMP) and 12th South East Asian Congress Of Medical Physics (SEACOMP)
23-25 October 2014, At Novotel Saigon Centre, Ho Chi Minh City, Vietnam

Introduction

Vietnam was applied to be the host for the 14th Asia-Oceania Congress of Medical Physics (AOCMP) and 12th South East Asian Congress Of Medical Physics (SEACOMP) in Chiangmai, Thailand in 2012 and approved to be the host for the congress at the 13th AOCMP/11th SEACOMP Congress 2013 in Singapore. The congress is organized by Choray Hospital (CRH) and Vietnam Association for Medical Physics (VAMP), the congress is the second great honored for Vietnam to be the host after the first time in 2008.

Coming to the congress, there were 239 participants coming from over 20 countries, including 31 lectures and 163 scientific papers. By the way, the AFOMP Award and Honor Committee had announced the “Travel Award” for the young medical physicists from developing countries prior the Congress. Totally, nine awards were given to young medical physicist

The Congress

The congress was planned in three days, from Oct 23-25, 2014, including one day pre-congress and two days congress. At the pre-congress there were seven very useful lectures for young medical physicist as well participants presented by well-known professors in field of Radiotherapy and Nuclear Medicine while two refresher courses on Diagnostic imaging also giving for the young medical physicist hold by Prof. Kwan Hoong Ng and Prof. Katsumi Tsujioka and colleagues.

Under the theme of “Medical Physics for Advanced East Medicine”, the Congress was started on Oct 24 after the welcome speech from President of Congress, Assoc. Prof. Nguyen Truong Son, Director of Choray hospital and two speeches from President of AFOMP, Prof. Yimin Hu and President of SEAFOMP, Prof. Agnette de Perio Peralta.



Chairman of Congress, President of AFOMP and President of SEAFOMP given speech for the opening ceremony

The plenary section followed by “John Cameron Memorial Lecture” by Prof. Djarwani Suharso on the topic “The Growth in Medical Physics Research: The Indonesia Case” then followed by thirty Invited speakers coming from over 15 countries. The scientific program was separated by major fields cover in 8 sections with more than 63 Oral presentations including: Radiotherapy, Nuclear Medicine, Education and General Physics. Paralleling with Oral presentation was four sections for Poster presentations with around 100 Poster paper.

During the congress, there were four important meeting hold by Prof. Arun Chougule for the Scientific Committee on Oct 23, followed by Education and Training committee hold by Prof. Shigekazu Fukuda, the AFOMP executive committee meeting hold by Prof. Howell Round on Oct. 24 and the last SEAFOMP executive committee hold by Prof. Agnette de Perio Peralta.



The Scientific committee on the left and AFOMP executive committee on the right.

For this congress, a scientific committee including six Professors who didn't own any students in presenting their paper had been chosen to be the examiner as the most fairness for the student award of the best oral and poster presentation with 100 USD per person. Finally, six best oral presentations was given for the winner and six best poster presentations also given for the winner.

The Participant

239 participants coming from 20 countries and around of 50 Vietnam young medical physicist students from University of Science, Ho Chi Minh City had attended the congress.

Beside the Congress (the Gala dinner)

The welcome party, Gala dinner, had been organized on the night Oct, 24. That was the real gala dinner for all participant having a best opportunity to enjoy food, culture of the host country, the participants also had a great chance to seeing many wonderful show during the cultural exchange program from Japan, Korea, Thailand, Philippines, Indonesia and the host country as well.



The cultural exchange at the welcome party, the Gala Dinner.

The sponsors:

The organizing committee highly appreciated well supported by the sponsors on lectures, presentations and technical exhibition. Those are TD Medical Company (Vietnam), Siemens Vietnam, Varian medical system, Unfors Raysafe - Fluke Biomedical, Elekta/ Med-Aid company, IBA Dosimetry, Scandidos AB, PTW, Med-Event (Vietnam), VN Medical (Vietnam), Transmedic (Vietnam), RTI Electronics, Toshiba – Gold Lite PTE.

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Conclusion: The three day Congress from Oct 23-25, 2014 with a lot of memorial events was the great opportunity for all 239 medical physicists among 20 countries in making friend, collaboration and strengthening enhance knowledge and experiments for the better health care in each country as exactly as the theme of congress “Medical Physics for Advanced Medicine”. The congress was completely finished by the introduction from the host country of ¹⁵th ACOMP 2015 in China and the host country of ¹³th SEACOMP 2015 in Indonesia.



Glimses



Surveys, questionnaires, polls ... bin?

Tomas Kron, Australia and Kwan Hoong Ng, Malaysia,

Tomas.Kron@petermac.org

There is hardly a week in which we do not receive a survey of some sorts. What we buy, where, how and why, if we are satisfied with work, service or environment, what we think about this, that and the other and a lot of other things are regularly probed. On one hand it is good to see that our opinion matters – on the other hand one can justifiably get tired about all the questions, in particular if the answers are never properly published.

This could be a start of a philosophical treatise about public opinion, market research, quality improvement of services and governance. What fun this could have been.

Alas, this article is much more prosaic as we would just like to introduce the readers to the results of two surveys which indeed got published.^{1,2} The surveys were conducted in 2008 and 2011 and pertain to the status of radiation oncology medical physics. The surveys were conducted in a somewhat unusual fashion by directly approaching colleagues in countries within the AFOMP region. We selected colleagues who had been active in professional organisations, both national and international, and had been in their country for many years. The process of leaving the summary of radiation oncology medical physics in a country up to one (or few) person(s) is obviously introducing some bias. However, we felt this risk was outweighed by the advantage of being able to ‘lean’ on the colleagues involved to elicit responses. As such we had excellent response rates exceeding 90% which make the results at least regionally representative.

These type of surveys need to be repeated to maintain relevance. It is also particularly the longitudinal data which is informative and can overcome some of the bias in the absolute data. As such we have sent out a new questionnaire mid of 2014. Completed questionnaires are still coming in and if you have been sent a questionnaire and not yet returned it, please do so. The new survey has the same structure as the previous ones providing queries on: 1. Education, Training and Professional Certification, 2. Staffing, 3. Tasks and time spent, 4. Professional organisations, 5. Resources available, 6. Research and teaching and of course, 7. Satisfaction.

The detailed results are published in the Biomedical Imaging and Intervention Journal (<http://www.bijj.org/>) and we expect to report on the results of the latest survey in 2015. BIJJ is open access and a journal worth looking at even before another survey is published. As such it is easy to have a look at the previous surveys. If you find any data that does not look right or if you would like to comment on any of the figures, we would be delighted to hear from you.

Professional surveys are important for decision makers. They help organisations such as the International Atomic Energy Agency (IAEA) or the International Organisation for Medical Physics (IOMP) to understand the situation, needs and capabilities of colleagues. It can also inform people about what happens in their neighbourhood and possibly where to obtain advice and support. Most importantly, they are a snapshot of professional practice which we can use to improve our work and hopefully also the experience of patients.

Surveys, questionnaires, polls ... bin? We hope readers will find the survey results interesting. While not all surveys are necessary, some are useful (apologies to George Box). As such we hope that not all of them end in the bin...

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Herbal products: New insights in chemoprevention of Cancer

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Cancer is a threatening global health problem and ranks the second largest cause of death around the world. If the cancer incidences continue to grow with such pace, the day is not far when the disease will seed the top position. In present status, cancer accounts for one out of every eight deaths annually in the world. There are striking variations in the risk of different cancers by geographic area. Most of the international variation is due to exposure to known or suspected risk factors related to life style or environment, and provides a clear challenge to its prevention.

Hard works of researches have yielded a tremendous knowledge on cancer and its development. Cancer is a complex genetic disease that is caused, mediated or modifies by exogenous/ endogenous environmental factors. The cancer-causing agents or carcinogens can be present in food and water, in the air, and in chemicals and sunlight that people are exposed to. Cancer is basically disease developed due to oxidative stress. Over production of free radicals (ROS) result in oxidative stress that deregulates the cellular and metabolic functions. Exposure to pathogens, inappropriate lifestyle, excessive exercise, byproducts of normal metabolism, tobacco abuse and widespread exposure to carcinogens are also among the major contributing factors for causing oxidative stress. Several chemical carcinogens seem to induce oxidative stress either directly or indirectly through modification of cellular antioxidant defense mechanisms. It is well known that cancer is associated with the changes that occur in a series of steps, which usually take a long time to appear. Many genetic lesions and other cellular constituents have been implicated in the initiation and progression of cancer.

Currently surgery, radiotherapy, and chemotherapy are the most prevalent clinical treatment options for cancer. The rationally designed drugs that target a single gene product are unlikely to be of use in treating cancer. Also, these targeted drugs can cause serious and even life-threatening side effects or therapy resistance. Despite, decade of basis and clinical research and advances in treatment options, overall cancer survival has only improved marginally. There is continuous increase in the incidences of number of cancer cases and its associated morbidity and mortality. It is now widely accepted concept that cancer is mostly a preventable disease. The spiraling healthcare costs of treatment also pepped up the increasing interest in strategies for its prevention. No doubt, that prevention seems to be the most proficient and appealing strategy to drop down these escalating cancer cases rather than its treatment and cure as in complex system starts to dysfunction, it is generally best to fix it early.

One approach with enormous potential is chemoprevention, which involves the use of natural, synthetic, or biologic chemical agents to reverse, suppress, or prevent carcinogenic progression to invasive cancer by interfering with the expression and/or activity of these ROS molecules and their possible molecular targets. Cancer chemoprevention is a desirable and important facet of biomedical research which in addition to provide a practical approach to identify potential useful inhibitors of cancer development, also offers an opportunity to study the mechanism of carcinogenesis. Chemoprevention may involve perturbation of a variety of steps in tumour initiation, promotion and progression. Often, cancers have a long latency period –often 20 years or more, so the scope of chemoprevention encompasses cohorts at all phases of this process—from healthy subjects at normal risk, to populations at intermediate risk resulting from environmental and lifestyle factors, genetic predisposition, and precancerous lesions, and then to previous cancer patients at high

risk for second primaries.

According to WHO reports, it has been estimated that more than two-thirds of human cancers could be prevented through appropriate lifestyle modification. Studies have revealed that 3 to 4 million cancer cases worldwide are caused by nutritional deficiencies. Nutritional substances function as antimutagens, chemical inactivators, enzymatic inducers, antioxidants and tumor growth suppressors. Many of these substances might influence carcinogenesis through more than one mechanism. A large number of traditional medicinal plants and their active principles were reported to have chemopreventive properties. In recent years, many studies have shown that phytochemicals have great potential in combating these cancer processes as these are multi-targeted and mediate their effects throughout the carcinogenic process. Therefore, potential herbal products can be screened with *in vitro* and *in vivo* chemopreventive activities.

There has been a major change in philosophy underlying the selection of promising chemopreventive agents in the last decade. The damaging effects of free radicals which induce cancer can be reduced by the natural or synthetic antioxidants. Antioxidants can terminate the free radicals chain reaction by donating hydrogen ions or electrons to free radicals and converting them to more stable products. Thus, antioxidants may either delay or inhibit the initiation step of carcinogenesis or can reverse the promotional stage by acting as anti promoter or growth inhibitors or by the induction of apoptosis. Since, natural products are rich sources of such antioxidants which impose their beneficial effects on human health by offering great protection against metabolic dysfunction generated due to ROS. The growing burden along with potential side effects of synthetic drugs, justifies the application of plants based compounds in chemoprevention. Approximately one-half of all licensed drugs that were registered worldwide were natural products or their synthetic derivatives.

Usually these natural products are biologically-active plant secondary metabolites that increases their overall ability to survive and overcome local challenges (e.g. as antioxidant, free radical-scavenging, UV light-absorbing, and antiproliferative agents) and defend the plant against microorganisms such as bacteria, fungi, and viruses. The same biological action might be carried out in human body also against the development of many diseases and infections.

Plants have been utilized since time immemorial for curing various diseases. Herbal medicine is still the mainstay of about 75-80% of the world population, mainly in the developing countries for primary health care due to better cultural acceptability, better efficacy, better compatibility with the human body and lesser side effects. Fortunately, many plant derived antioxidant nutrients and phytochemicals have the advantage of low toxicity, therapeutic potential and are protective when administered at pharmacological doses. Therefore, screening of natural products and phytochemicals presents a major avenue for the discovery of new chemopreventive drugs.

The interest in these phytochemicals in cancer chemoprevention was first stimulated by Wattenberg. Natural products appear to continue to be the favorite and the focus of cancer prevention studies thereafter. Many epidemiological studies showed that diets rich in fruits and vegetables mediate a protective effect against cancer. Such emerging evidences for a variety of potentially important anti-carcinogenic mechanisms like detoxification and enhanced excretion of carcinogens, the suppression of inflammatory processes such as cyclooxygenase-2 expression, inhibition of mitosis and the induction of apoptosis at various stages in the progression and promotion of cancer by phytochemicals has stirred up the interest in the concept of chemoprevention. Phytochemicals like polyphenols appears to be potent anti-mutagens and antioxidants. The flavonoids such as apigenin and quercetin have been shown to inhibit melanoma growth and metastatic potential. Although the exact percentage is uncertain, there are several lines of compelling evidence from epidemiological, clinical and laboratory studies that link cancer risk to the nutritional factors.

Moreover, herbal products in cancer chemoprevention are considered as the cheapest option in the cancer treatment, also there is currently no evidence of any risks associated with over consumption of phytochemicals from plant food sources. Phytochemicals are non-nutritive components in the plant-based diet that possess substantial anticarcinogenic and antimutagenic properties. More than 250 population-based studies, indicate that people who eat about five servings of fruit and vegetables a day have approximately half the risk of developing cancer — particularly cancers of the digestive and respiratory tracts — of those who eat fewer than two servings. The most exciting findings have been achieved with antioxidant vitamins and their precursors, which are found in dark, leafy green vegetables and yellow/orange fruit and vegetables. In this context, the implementation of chemoprevention by dietary phytochemicals represents a readily applicable approach to control and reduce the cancer incidences.

With healthcare costs being a key issue today, it would be cost-effective to promote the awareness and consumption of phytochemicals as a cancer-preventive strategy for the general public. Therefore, the use of plant products in the treatment and management of cancer has been gaining interest due to their low cost, easy administration, cultural acceptability and accessible approach. Apart from the development of natural products as medicines, it is also a way to rescue valuable aspects of our traditional culture. Thus, using pharmacological doses of isolated phytochemicals, or the development of 'customised' vegetables, may prove a valuable alternative and present a safe and affordable chemopreventive strategy.

For government investing in prevention of cancer is cheaper than dealing with the consequences. Whilst the economic cost of cancer is estimated to reach US \$ 458 billion per year by 2030, population based measures to reduce risk factors for non-communicable diseases including cancer are estimated at just US \$ 2 billion per year for all low and middle income countries. Effective cancer prevention at the national level begins with a national control plan that responds to the country's cancer burden and risk factors. Individuals, families, health professionals, policy makers and politicians are aware that with the right strategies, around one third of cancers can be prevented through diet, physical activity and being a healthy weight.

The National Cancer Institute has identified about 35 plant-based foods that possess cancer-preventive properties. These include garlic, soybeans, ginger, onion, turmeric, tomatoes and cruciferous vegetables (for example, broccoli, cabbage, cauliflower and Brussels sprouts). Fruits and vegetables contain hundred of chemicals. Some of the chemicals are believed to provide significant protection from many cancers. A diet rich in fruits and vegetables is expected to estimate are third of the cancer death in the world.

Garlic and onions are known to contain chemicals that help to neutralize cancer causing substances. Tumors develop their own blood vessels for their nourishment at the expenses of the body. Genistein, an anti – cancer compound, blocks the formation of tumor blood vessels. This compound is found in high concentration in soybeans which is significant component of Japanese diet. This may be the reason for the lowest incidence of breast cancer in Japanese women.

The nutrient beta-carotene is contained in green and yellow coloured vegetables, such as spinach, carrots, sweet potatoes, mangoes, tomatoes etc., which protects against cancer. Vitamins such as, A, C, D, E are also known to protect against certain cancers. A balance diet containing fruits, vegetables and grains in large quantities will have adequate amounts of vitamins and beta-carotene, and they are found to give better protection against cancer than vitamin supplements.

Numerous animal studies have been conducted in our laboratory to evaluate the ability of specific medicinal plants viz. Amla (*Emblca officinalis*), Rosmary (*Rosemary officinalis*), Methi (*Trigonella foenum graecum*), Sapthaparna (*Alstonia scholaris*), Bael (*Aegle marmelos*), Bhumi amla (*Phyllanthus niruri*), Jamun (*Syzgium cumini*), Gloe (*Tinospora cordifolia*), Kamrak (*Averrhoa carambola*), Linseed (*Linum usitatssimum*) for prophylactic and therapeutic management of cancer. Extracts of various parts of these plants have been found to exert anti-carcinogenic effects by reducing the oxidative stress and stimulating antioxidant defense mechanisms in the different animal models i.e. skin, liver and stomach cancer.

There is no doubt that the diets rich in fruits and vegetables do exert a range of fascinating and potentially- important biological effects on the human body and also provide major contribution in cancer prevention. More recently, evidences are emerging that specific combinations of phytochemicals maybe far more effective in protecting against cancer than the isolated compounds. Hence, a potent mixture of several phytochemicals from plant and fruit sources that could have an additive and synergistic effect to inhibit several molecular pathways required by cancer cells to survive. Therefore, supplementation with multiple phytochemicals and relying on a such cocktail may provide better results to achieve promising clinical effects.

Despite significant results of phytochemicals as chemo preventative or chemotherapeutic agents, little is known about their mechanism of action. We need more basic research on chemoprevention from the viewpoint of biological mechanisms. The efficacy of different phytochemicals, to favorably influence the molecular mechanisms known to be implicated in the etiology of cancer, should be a critical determinant of their selection for clinical studies. This knowledge will allow us to set the framework for diet and cancer prevention research that includes biomarkers of the consumption of key dietary compounds, and development of the new paradigm for diet and cancer prevention research. Thus, chemoprevention with herbal products can take an important role in reducing the risk of cancer in society. Cancer is hoped to be completely eliminated in the future so that every effort to prevent can-cer will be worthwhile and valuable.



The International Day of Medical Physics [IDMP] was celebrated on 7 th Nov 2014 at Jaipur this year also. In the morning of 7 th Nov. 14, a seminar was organized to emphasize the contribution of Medical Physics in Health care. Hon'ble Vice Chancellor of Rajasthan University of Health Sciences [RUHS] inaugurated the seminar and talked on contribution of basic sciences including Physics to the health care. The key note address on "History of Medical Physics and its impact on health care " was delivered by Dr. Arun Chougule, Senior Professor & Head, Radiological Physics and Dean Faculty of paramedical Sciences. The seminar was attended by about 400 delegates including Medical Physicists, radiologists, radiation Oncologists, health professionals, medical and paramedical students. In the afternoon a rally with banners and posters depicting the contribution of scientists in medical physics was taken through main streets of Jaipur. The pamphlets in English & local language mentioning role of medical physicists in health care were distributed. The event was very well covered by the print and electronic media.





I thank Dr Arun for inviting me to write an article regarding the International Medical Physics Certification Board (IMPCB) and its accreditation programme for the benefit of AFOMP member countries and readers of this newsletter. I am happy to oblige. Since this may be the first article about IMPCB, I have included some historical milestones, and an excerpt from the Certification Task Group's Final Report to IOMP, in addition to the latest updates.

IBMP Constituting Panel

The American College of Medical Physics (ACMP) and the International Affairs Committee of the AAPM co-sponsored an International Medical Physicists Symposium on May 6, 2008 during the ACMP Annual Meeting in Seattle, Washington. The goal of the Symposium was to explore means of improving the quality of medical physics practice. After the Symposium, some participants requested the ACMP to explore the possibility of assisting with the formation of an International Certification Board since ACMP was the original sponsor of the American Board of Medical Physics. In December 2008, the IBMP Constituting Panel was created by the ACMP Board of Chancellors. The 15 member committee, chaired by Dr. Edward Sternick tasked itself to draft the guidelines for a medical physicist certification program. Some of the members of the Panel are from AFOMP countries. They are K Y Cheung, PhD, of Hong Kong, Prof. Yimin Hu of China, Anchali Krisanachinda, PhD, of Thailand, Dr. Arun Chougule, PhD, of India and Tae Suk Suh, PhD, of Korea.

IOMP Task Group

In early 2009, IOMP EXCOM endorsed its Professional Relations Committee (PRC) to take up the certification issue. PRC later created the Task Group (TG) which consists of Raymond Wu, PhD, Edward Sternick, PhD, and KY Cheung, PhD. The task for the TG was "to explore the following certification issues and come up with a recommendation: (i) Produce general guidance, (ii) Introduce a scheme which accredits the existing national or regional certification boards/bodies. (iii) Implement an International Certification Scheme"

IOMP EXCOM support

During the World Congress 2009 in Munich, the Task Group made a report to the IOMP EXCOM and inquired if IOMP would consider creating a subgroup to work on the certification initiative. There was not enough support to move the idea forward. However, the new Chair of PRC made a short report at the IOMP Council meeting, and invited interested parties to attend a TG meeting on international certification the following day. The TG meeting was well attended, with participants from 15 countries¹. Subsequently, the certification initiative was discussed in the IOMP EXCOM in Virtual Meetings through May 2010. The IOMP leadership supported the initiative in principle because of the potential of improving the quality of clinical medical physicists and the profession. However, the leadership was concerned about the legal liabilities for work performed by the certified individuals.

Registry, Board Certification, and Licensure

The EXCOM devoted some time in Virtual Meetings to highlight the three existing methods to identify qualified medical physicists. In some countries there are directives in force defining precisely the kind of professional work which is restricted to medical physicists qualified to be listed in registries of government authorities. In other countries the certification systems are created by professional organizations and recog-

nized voluntarily by professional organizations and hospitals only. In between is the third method which is to encourage government authorities to consider all medical physicists when certified are qualified to perform certain categories of professional work. Same three methods are found in AFOMP countries.

Formation of IMPCB

Sensing that IOMP EXCOM would not be moving soon enough on certification, eleven organizations resolved to form a group on May 23rd, 2010, and adopted the name International Medical Physics Certification Board. Six are from this region: Australasian College of Physical Scientists and Engineers in Medicine, Chinese Society of Medical Physics, Chinese Society of Medical Physics – Taipei, Hong Kong Association of Medical Physics, Korean society of Medical Physics, and Nepalese Association of Medical Physicists. The TG conveyed the findings of the EXCOM mentioned above to the newly formed group. Here is the logo of IMPCB.



On October 17, 2010 during the AFOMP annual meeting in Taipei, Dr. Howell Round of the Professional Development Committee of AFOMP organized a Symposium on Certification and Licensing of Medical Physicists to assess the status of existing programs.

Model Certification Program

Later in 2011, the IBMP Constituting Panel completed the task of drafting the Model Certification Guidelines². In the Model Program the same requirements shown in the IOMP Policy Statements 1 and 2 published later have been included. The IAEA publication of 2013 “Roles and Responsibilities, and Education and Training Requirements for Clinically Qualified Medical Physicists”³ also lists similar requirements. In essence, national certification programs should require candidates sitting for Board Certification Examinations to have prepared themselves academically at a level of M.S. degree or higher, with two years of clinical experience obtained before the final stage of the examination. Countries are expected to set up a “grandfather” procedure to grant some practicing experienced medical physicists the status of being certified, but they are required to fulfill the CPD requirements. The guidelines were discussed in detail at the ICMP 2011 in Brazil in the Plenary Session, and in the Round Table Discussion session.

Current Officers and Committee Members

In July 2012, the Bylaws Committee led by Dr. Sean Geoghegan completed the governing document for IMPCB, based on which the officers were nominated and elected. The current President is Colin Orton,

PhD. Other officers and committee members are listed in the IMPCB.org website. Those from AFOMP countries include Ti-Chuang Chiang, Tae Suk Suh, Tomas Kron, Xiance Jin, Paul Ravindran, K.Y. Cheung, Shuichi Ozawa, Sean Geoghegan, Sarene Saifuddin, and Kanchan Adhikari. The guidelines and checklists for Parts I, II, and III examinations are being written by the three subcommittees AC1, AC2, and AC3. Several subcommittee members are from AFOMP countries. They are Yimin Hu, Arun Chougule, Howell Round, Xiance Jin, Ho-Ling Anthony Liu, K.J. Maria Das, Kanchan Adhikari, and Xiaodong He. Please feel free to ask any committee members for a draft of the guidelines and checklists, and provide feedback to them before the draft is finalized.

Immediate Tasks

At this time, IMPCB has eleven Regular Members, (all are Charter Members which founded the organization) and an Observing Member. The Board of Directors of IMPCB has resolved in October to accept national medical physics organizations applications to become regular members. Please contact the Secretary General Ti-Chuang Chiang (tcc@ntu.edu.tw) if interested. The current priorities are accreditation of existing national certification programs, helping national medical physics organizations to establish new certification programs, and developing the IMPCB certification program. More details of the October Board meeting may be found in the report of Dr Orton published in the December issue of eMPW⁴. At press time, IMPCB has received the communication of the President of the Korean Board of Radiology expressing the interest to have the Medical Physicist Certification Program evaluated for accreditation. Three IMPCB officers had been invited to serve in a new IOMP task group to propose ways for collaboration, including agreement on the roles of the two organizations in regard to accreditation and certification.

To follow the latest development, please visit the website of the organization at IMPCB.org. You are welcomed to email me if you have any questions, at RayKWu@gmail.com.

Note:

Please visit the IMPCB website, click the WC2009 link, and the “September 9 Meeting Minutes” link at the bottom, or copy and paste the following URL to your browser, <http://www.impcb.org/TGMinutes2ndMeeting090909.htm>

The file is located in the IOMP website in the Policies pages. The link is <http://www.impcb.org/guidelines120112.htm>.

IAEA Human Health Series, No. 25, Roles and Responsibilities, and Education and Training Requirements for Clinically Qualified Medical Physicists, IAEA, Austria, August 2013

<http://www.iomp.org/?q=content/e-medical-physics-world-issues-issn-2313-4712>

INTERNATIONAL CONFERENCE ON MEDICAL PHYSICS, RADIATION PROTECTION & RADIOBIOLOGY-2015 "ICMPR2K15"
&
ANNUAL CONFERENCE OF ASSOCIATION OF MEDICAL PHYSICISTS OF INDIA (NORTHERN CHAPTER) "AMPI-NC-CON 2015"
20th, 21st, 22nd February 2015 :: Venue - SMS Medical College Auditorium, Jaipur, Rajasthan, India

Welcome to Pink city

Registration in Progress

Dr. Arun Chougule, Org. Chairman, Mail us at icmprr2k15@gmail.com, arunchougule11@gmail.com, Visit us at :- <http://www.ampi-nc.org>,



“Kiyonari Inamura”

1. Name and year of Birth: Kiyonari Inamura Ph.D., 1939
2. Career in AFOMP: The 3rd President of AFOMP, 2006-2009, The 1st Chairman of ETC. The 2nd Chairman of FC. Member of PDC, etc.
3. Position: Professor Emeritus Osaka University, Secretary General of Japan Institute of Computer Assisted Radiology and Surgery.
4. Final Education: Graduated School of Engineering, Osaka University
5. Degree and Title: Ph.D. (Osaka University), Medical Physicist (JRS)
6. Main Employment:

2004-2005: Dean of Faculty of Business Management, Kansai University of International Studies

1993- 2003: Professor and Chair of Medical Engineering, Graduated School of Allied Health Sciences, Osaka Univ.

1967-1988: Senior Chief of Engineers, NEC Corporation

7. Membership in Academic Societies: Japan Association of Medical Imaging and Technology. JSMP Japan Society of Medical Physics. Japan Radiological Society. Institute of Electronics, Information and Communication Engineers,

Japanese Society of Therapeutic Radiation Oncology

8. Awards:

1996. Awards in Appreciation from President of Medical Information System Development Center.

1993. Scientific Exhibit Award from Radiology Society of North America.

1981. Award of New Technology Development on Digital Conformation Radiotherapy from Japan ME Society

1976. Award of Paper on Medical Informatics from Ministry of International Trade and Industry, Japanese Government

1951. Takamine Prize in Scientific Study on Chemical balance from Ishikawa Prefecture, Japan

9. Publications and Reviewer:

(1) Over 150 papers in peer-review journals. (2) Over 430 scientific papers.

(3) Over 125 oral presentations international academic conferences

(4) Over 9 text books on medical physics and medical imaging

(5) Reviewer of over 3 international journals, including International Journal of Computer Assisted Radiology and Surgery

Calendar of Events

January 2015	<p>January 23 - 25, 2015 Computed Tomography Hands-On Workshop MD Anderson Cancer Center, Dept. of Imaging Physics - Unit 1472 ,1400 Pressler Street Houston, Texas 77030,E-mail: eckindre@mdanderson.org</p> <p>09 Jan 2015 → 10 Jan 2015 The 12th National Conference And Technology Exhibition On Indian Medical Devices & Plastics Disposables / Implants Industry 2015 ,Ahmedabad, India,http://www.imdiconferences.com</p>
February 2015	<p>AAPM Meeting February 1 - 5, 2015 6th Annual Canadian Winter School on Quality and Safety in Radiation Oncology</p> <p>AAPM Meeting February 12 - 13, 2015 Incident Learning Workshop</p> <p>20-23rd February 2015 International conference on Medical Physics, Radiation Protection and Radiobiology “ICMPRPR 2K15” ,SMS Medical College, (Jaipur) India http://www.ampi-nc.org</p> <p>21 Feb 2015 → 26 Feb 2015 SPIE Medical Imaging 2015 ,Orlando, United States http://spie.org/medical-imaging.xml?WT.mc_id=RMICAW</p>
March 2015	<p>AAPM Meeting March 7 - 10, 2015 Spring Clinical Meeting</p>
April 2015	<p>13 Apr 2015 → 24 Apr 2015 School on Medical Physics for Radiation Therapy: Dosimetry and Treatment Planning for Basic and Advanced Applications ICTP Trieste, Italy http://www.ictp.it/scientific-calendar.aspx?start_date=01/01/2015&end_date=31/12/2015</p> <p>13 Apr 2015 → 18 Apr 2015 10th Latin American Congress on Radiological Protection and Security Buenos Aires, Argentina http://www.radioproteccionsar.org.ar/</p>
May 2015	<p>04 May 2015 → 07 May 2015 Global Conference on Radiation Topics (ConRad) 2015 Munich, Germany http://events.bsbb.de/event/conrad/Home.html</p> <p>25 May 2015 → 29 May 2015 ICRR 2015 — 15th International Congress of Radiation Research Kyoto, Japan http://www.congre.co.jp/icrr2015/</p> <p>28-30 May 2015 Optimisation in X-Ray & Molecular Imaging 2015 Gothenburg, Sweden</p>
June 2015	<p>1-Jun-2015 To 04-Jun-2015 International Conference ICRESH-ARMS 2015</p> <p>June 7-12 2015 World Congress On Medical Physics & Biomedical Engineering Toronto Ontario Canada</p>

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