



Elekta Travel Award Report

ADELAIDE, SOUTH AUSTRALIA

28 OCT – 3 NOV 2018

Syarifatul Ulya | Medical Physicist of Dharmais National Cancer Hospital | Indonesia
The Winner of Elekta Travel Award 2018

Every year, Elekta provides a grant to a candidate in the form of an Elekta Travel Award. This person is selected by members of the Asia-Pacific Special Interest Group (APSIG) of the ACPSEM, enabling a medical physicist from the country in the Asia Pacific region to travel to the EPSM conference. I'm Syarifatul Ulya from Indonesia and have won this award. I joined many programs in Adelaide during my time as the Elekta Travel Award winner for 2018, such as:

- Welcoming
- Conference Engineering and Physical Science in Medicine (EPSM) 2018
- Member meeting of ACPSEM
- Social Event
- Particle Therapy Workshop
- Hospital Visitation

WELCOMING EPSM CONFERENCE 2018

The first item on the schedule of the Elekta Travel Award was a welcoming to the EPSM conference in the afternoon. The welcoming event was conducted by the committee chairman, Eva Bezak. In addition, the participants' welcoming commenced with attendance registration and printing the 2018 EPSM ID card. There were also many company stands which were creative.

EPSM CONFERENCE 2018

EPSM conference consisted of a set of programs: the opening of the conference, plenary session, parallel regional forums, future education and work session, and the closing of the conference. The conference began with a series of opening addresses from the host organization, Hon Stephen Wade MLC as The South Australia Health Ministry. The opening session was also opened by Eva Bezak giving knowledge about future medical physics.

The plenary session of the EPSM conference showed some prominent speakers which are expert in their own field. I was interested in the presentation of Prof. H. Peganetti, Ph. D from Department of Radiation Oncology, Massachusetts General Hospital and Harvard Medical School on "The Relative Biological Effectiveness of Clinical Proton Therapy Beams". The second presenter was Prof George Sgouros from Professor of Radiology and Radiological Science about Radiopharmaceutical theory with the title "The role of Dosimetry in the Treatment Optimization". I also attended the parallel session with awesome keynote speakers and oral presenters on small field dosimetry, brachytherapy, electron treatment, and in vivo dosimetry.

During the conference, I was given a chance to deliver a presentation on the results of my research on electron radiotherapy. My study was entitled “Dosimetric Evaluation of Small Field Electrons using EBT₃ Film in Head and Neck Case”. The study analyzed dosimeters for electrons in the case of small electron fields in different target inhomogeneities. It was an honor for me that the results of my research received great responses from the experts, critics, and some suggestions. I was very impressed with the paperless system used during the conference. This policy is very good to be adopted in the event in Indonesia.



Figure 1. (a) Opening addresses from Hon Stephen Wade MLC as The South Australia Health Ministry (b) I got opportunity to present my paper



Figure 2. I received a certificate from Elekta and better healthcare technology foundation

The EPSM conference 2018 gave me knowledge about the future education and work in medical physics and the opportunity to get more information about the scholarship. In this session, I was very interested in the presentation of Michael Dingfelder. He presented about the future education of medical physics in the clinical setting in the US.

MEMBER MEETING OF ACPSEM

I attended the Annual General Meeting and observed the announcement of certificates to the outstanding medical physics in Australia receiving grants and funding for research. The agenda was very compact and harmonious for each member.

SOCIAL EVENT

One of the social events in the EPSM conference was the Gala Dinner. This program was supported by the Better Healthcare Foundation. The gala dinner program was very impressive with super-blending events and delicious food with great musical entertainment. The music was cool. The event was very intimate for participants and the committee as like a family.

PARTICLE THERAPY WORKSHOP

I participated in the Particle Treatment workshop. In this workshop, I got knowledge of particle treatment for proton and carbon ion. Also from the workshop, I got information about current challenges in proton therapy (Prof. Harald Paganetti), particle therapy accelerator and commissioning (Dr. Urszula Jelen), Radiobiology of Proton therapy (Prof. Eva Bezak), reference dosimetry and future direction in particle therapy (Dr. Scott Penfold), and Concept treatment planning and motion management (Dr. Stephen Dowdell) also Proton therapy planning in practice by Mr. Raymond Daltsen. It is very important for me and generally for Indonesia which highly regards the issue about installation of proton therapy for treatment for patients.

I was very interested in one of the topics of Prof. Harald Paganetti's presentation concerning adaptive planning for proton therapy. This adaptive planning makes the latest count of CBCT image results then performs image registration with initial Image CT planning. After that, do the plan reoptimizes or re-planning. One of the uses of adaptive planning is Tune set, weights to fill the remaining dose and spare OARs.

Another presenter was Dr. Urszula Jelen explained two themes, namely particle therapy accelerator and Commissioning and Quality assumption. On this occasion, she explained about the basic principles of differences in cyclotrons and synchrotrons in accelerators for protons and ion beams, and scanning and scattering on beam delivery systems.

System commissioning in particle therapy of Dr. Urszula Jelen presentation were: agreement with technical standards, equipment commissioning, safety systems, mechanical

alignments, treatment delivery system, treatment planning system, other systems (imager, CT), clinical workflow, training, documentation, and development of standard procedures.

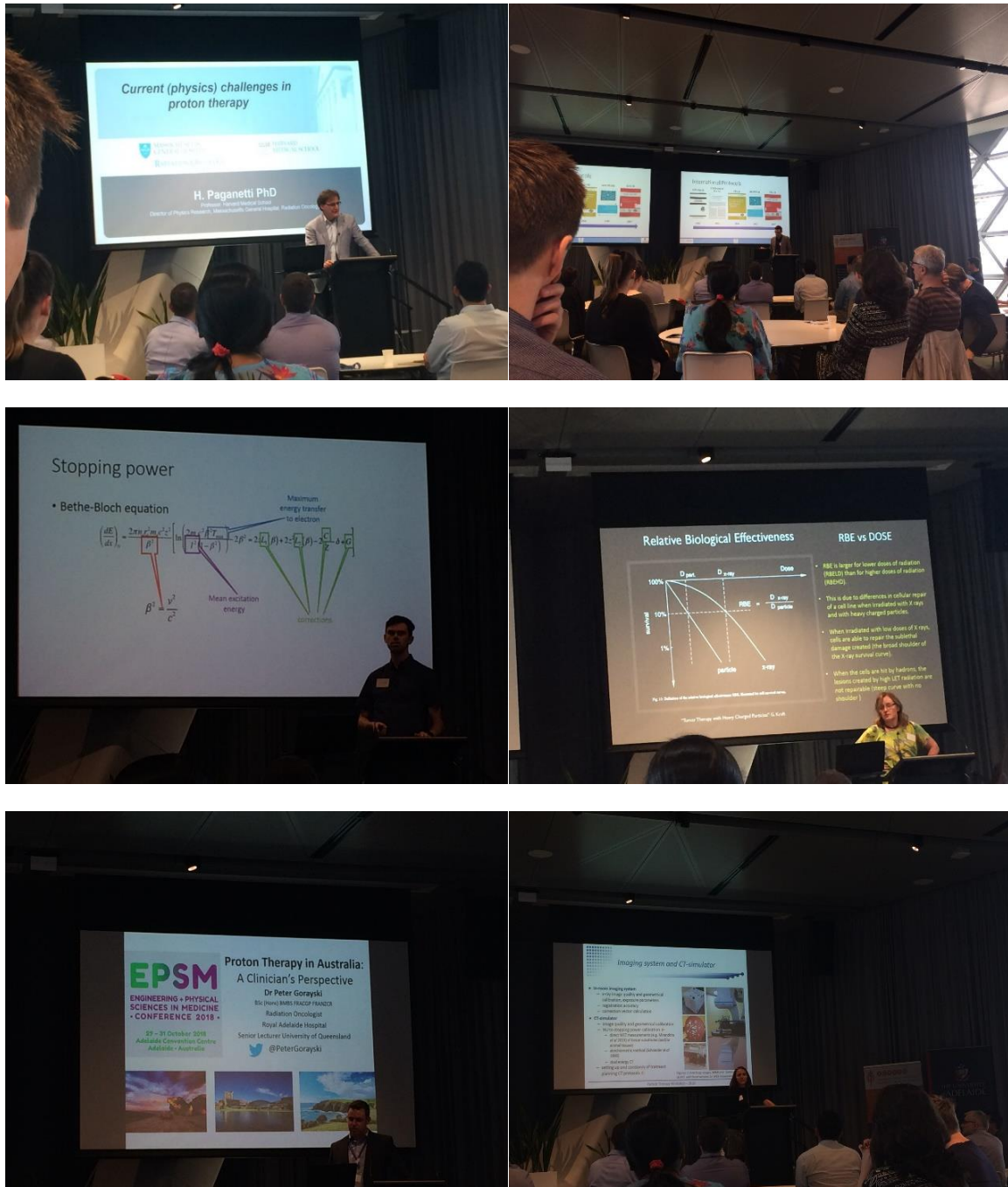


Figure 3. Speaker of the particle therapy workshop in South Australian Health & Medical Research Institute (SAHMRI)

Besides that, I was also interested in the concept in the treatment planning for proton by Stephen Dowdell, Ph.D. RBE depending on dose, LET, tissue-specific parameters, biological endpoint. My knowledge is more perfect with the presentation of a more specific material in treatment planning regarding the steps in making a proton treatment plan presented by Raymond Dalfsen. The topics presented were beam selection, planning volumes, accounting for uncertainty, plan optimization, plan evaluation. By participating in this workshop, it gave me insight into particle therapy, starting from basic theory, QA, to implementation in treatment planning for patients. This knowledge is a provision for me to take a doctoral program.

HOSPITAL VISITATION

At 8:30 in the morning, I was greeted by Mr. Michael Douglass, then introduced to the Royal Adelaide Hospital (RAH) medical physics staff. Then, we performed QA brachytherapy with the ability of 4D brachytherapy. It was amazing. Some QA were done, namely radiation leakage in the plane area, source position, source strength activity.

I got the opportunity to prepare a worksheet on QC Brachytherapy in RAH. In this opportunity had given me an idea to adopt this regulation especially in brachytherapy.

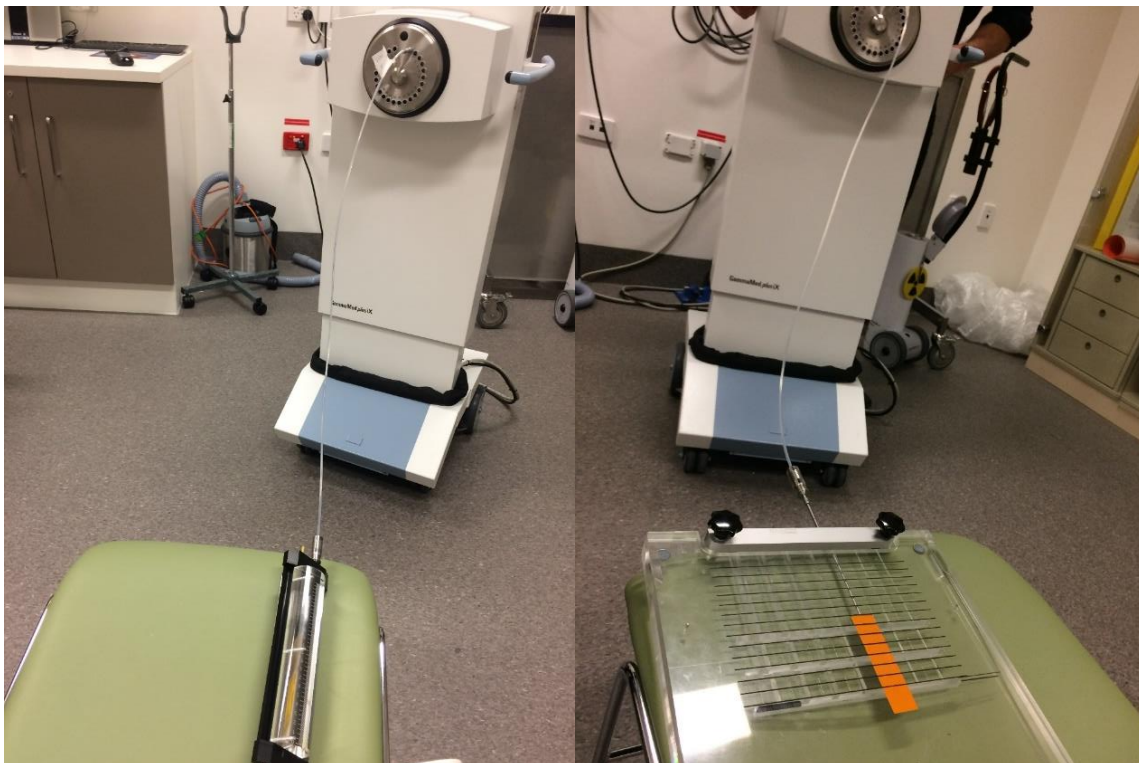


Figure 4. Quality assurance of the brachytherapy



Figure 5. Leakage measurement and area monitoring instrumentation devices in RAH



Figure 6. Kilovoltage machine for superficial treatment

I would like to express sincere thanks to Dr Sean Geoghegan for the opportunity for visit in Royal Adelaide Hospital. As well all staff medical physicist had guided me to increase my knowledge and insight. By joining this program, it will increase my knowledge and experience for medical physics aspect QA Brachytherapy and principle of the Truebeam and Trilogy. Moreover, big thanks for the opportunity for me for joining the medical physics meeting at Royal Adelaide Hospital.



Figure 7. Dosimeter device (ionization chamber and TLD)



Figure 8. TBI and TSEI device (spoiler)



Figure 9. Patient specific QA and Neutron monitoring area in RAH



Figure 10. Hot lab for radioactive source

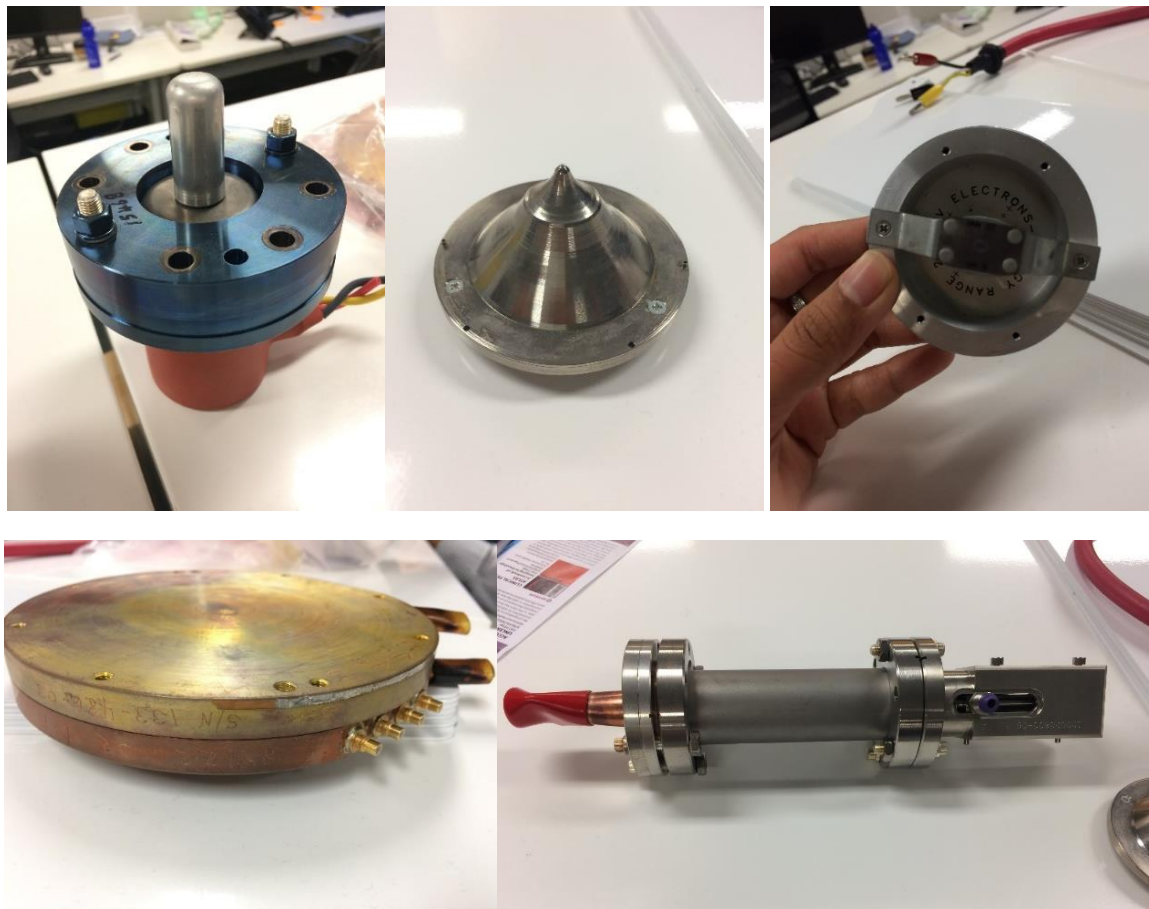


Figure 11. Spare part of True beam and Trilogy Varian Linac



Figure 12. Quality control devices in RAH



Figure 13. Teleconference meeting in the Radiotherapy department of RAH



Figure 14. CT Simulator and Linear Accelerator in RAH



Figure 15. Lunch with medical physics staff of RAH

CONCLUSION

Elekta Travel Award is one of the awards from ACPSEM and concerns the exchange of knowledge and ideas in engineering and medical physics between Australia and neighboring countries. Being the winner of the Elekta Travel Award, I got an awesome and unforgettable experience. I'm so impressed with the programs, the speakers, participants, and committee.

I would like to express my gratitude to Elekta for providing the funding for this award. Thank you!

SUGGESTION

1. Australia is one of the established countries in the profession, technology, and regulation of the radiation oncology. Therefore, it is very useful for us as Indonesian as a developing country especially Asia Pacific region to adopt this regulation.
2. Elekta Travel Award program gives much knowledge and useful and detail information comprehensively and specifically about the basic physics of radiation therapy.
3. I do hope the program will be continued annually because the benefit of the program is very highly significant for the participants, the winner of the program and of course the country of all participants to increase the insight about radiation oncology.