

Dosimetry Discussions

The newsletter of the Australian Clinical Dosimetry Service Oversight Committee

Welcome to the 1st newsletter for 2018 from the Australian clinical dosimetry service Oversight Committee or AOC. We hope you enjoy reading the latest about all things dosimetry auditing related. This issue features the latest updates on the ACDS.

Who you gonna call? The dosebusters get new phantoms

Dosimetry Developments

- ACDS gets their hands on some new phantoms
- It is a bird? Is it a plane? No, it's Superanne!

All those on the ACDS Christmas card list will be familiar with their annual card creation. So a couple of Decembers ago when a black envelope arrived and inside was a thick card the front of which comprised a dark, shadowy image with the bold red text "Who you gonna call?", I immediately knew who it was from.

Of course the rest of the card identified the creative senders as the 'dose busting' ACDS – but the irony was, and is not lost... Here is a team of people who spend more time with phantoms than anyone else in the radiotherapy space and understand the pivotal role phantoms actually play in helping 'bust' dosimetry errors!

It was therefore with great



excitement that the ACDS recently took delivery of some new phantoms. No, these weren't the ghostly type of gremlins that are supposed to lurk in the shadows but the costly dosimetry type that enable dose measurements in different density mediums which represent various tissue types.

The appropriately named new 'Superanne' phantoms are designed to allow testing of the dosimetry and precision of SABR radiotherapy delivery. The new phantoms were custom made by CIRS for the ACDS to include auditing capability for 3DCRT, IMRT, VMAT and SABR modalities. The features of the new phantoms will allow

the ACDS to audit SABR lung, spine and soft tissue sites with measurements being made using a PTW 60019 microDiamond and EBT3 Gafchromic Film.

As the number of radiation therapy facilities in Australia is increasing the ACDS has purchased two of these super special phantoms to increase their capacity for performing the more complex Level III audits.

Facilities undergoing Level III audits will have the option to include as many SABR sites and delivery techniques as applicable to their clinical practice so this is a big quality blast from the ACDS dosebusters!

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The two new Superanne phantoms recently acquired by the ACDS

ACDS innovation comes in all shapes and sizes



Atousa reading doses at the ACDS

January not only marked the beginning of a new year but also of a new innovation at the ACDS.

While soaring summer temperatures were inciting many in the radiation oncology sector to take time off and head to the beach, in a first for Australia one individual was turning up the innovation heat instead & heading off to commence a secondment to the ACDS.

The change of work location to the ARPANSA facility at Yallambie - the home of the ACDS - for one fortunate radiation oncology medical physicist (ROMP) registrar un-

dertaking the medical physics Training and Education Accreditation Program (TEAP) is the result of an innovative pilot funded by the Victorian government.

Atousa, the first ROMP registrar to undertake the pilot, is broadening her radiation oncology medical physics experience through receiving dosimetry audit training while simultaneously progressing her TEAP competencies at the ACDS. Similarly the skills and experience Atousa acquires during her auditor training will not only enable her to support ACDS

audits in busy “peak” periods in the future, but also strengthens her clinical dosimetry measurement expertise.

On secondment to the ACDS for six months from the host registrar training hospital, the Peter MacCallum Cancer Centre, Atousa’s petite build shows that innovation at the ACDS can, and does, come in many shapes & sizes!



It is the essence of genius to make use of the simplest ideas - Charles Peguy

“Although the helical delivery makes the Tomo system very different from normal Linac based VMAT, the ACDS Level III VMAT audit was directly translatable to the Tomotherapy unit.”

What’s going around with Tomotherapy audit trials?

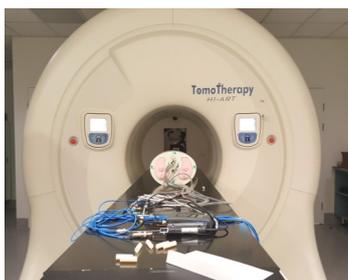
In mid 2017 Dosimetry Discussions, reported that the ACDS had been developing a level III audit for Tomotherapy. It is therefore very exciting to be able to report that in March the first Level III audit field trial on a Tomotherapy unit was performed.

The Tomotherapy unit involved in the trial is primarily used with helical VMAT for patient treatments however static beam delivery is also possible with the

‘TomoDirect’ planning modality, for both 3DCRT and IMRT type fields.

Although the helical delivery makes the Tomo system very different from normal Linac based VMAT, the ACDS Level III VMAT audit was directly translatable to the Tomotherapy unit. Some adaptations to the ACDS audit were necessary in the 3DCRT mode due to differences between the static beam capability of a Linac and the Tomo system. The Tomothera-

py planning system requires all PTVs to be covered by at least two unblocked fields, and optimises each field automatically. The facility staff were able to create a parallel opposed pair using TomoDirect, to mimic the reference cases in the 3DCRT audit modality. Overall the field trial was a great success, and the ACDS plans to continue the audit trial on all Tomotherapy units in Australia.



The count is in: Independent Dosimetry Audits by the ACDS

2017 was the first year of transition of the ACDS from a fully Commonwealth funded entity to a user-pays one.

Having recently completed the first full 12 months of the user-pays scheme the AOC believe it is helpful to take a moment to consider what this new ACDS operating model looks like specifically from an activity perspective.

As many (most?) of our readers would be aware the standard audit cycle involves three levels of audits representing three different independent audit types which are conducted over a rolling 4 year cycle. The level I, Level II, and level III audits are each designed to address different facets of radiation dosimetry and the associated error risks.

The simplest of those audit types is a level I audit which uses Optically Stimulated Luminescent Dosimeter (OSLDs) to measure the linac output dose. In 2017, 28 of these “OSLD” based audits were undertaken [remotely] by the ACDS

at 28 different locations around the nation.

The different types of errors in linac radiation output (compared to the intended dose) that are meant to be detected by level II and level III audits requires that they be conducted on-site by ACDS staff. This involves the ACDS personnel bringing their own phantoms and measuring equipment to each audit location and physically conducting the measurements themselves.

So in addition to the 28 level I audits, 21 level II audits and 16 level III audits were also undertaken by the ACDS in 2017, making an aggregate of 37 on-site audits that were conducted at various radiation therapy departments across Australia. That was quite a bit of travelling for the audit staff!

The 65 level I, II & III dosimetry audits undertaken in 2017 by the ACDS all form part of the routine four year audit cycle that has been designed to ensure the safe

delivery of treatments from the radiotherapy equipment used in each radiation therapy department that participates.

Over and above the routine 4 year audit cycle for commissioned linear accelerators in clinical use, all newly installed linacs ie. a new linac or relocated linac (a previously used linac installed at a new location) should undergo a [so-named] “level Ib” audit prior to ever treating a patient.

While the Ib audit name may allude to the remote involvement of ACDS staff, level Ib audits are actually also conducted on-site by the ACDS, as they are designed to provide the highest accuracy, gold standard measurement of linac output.

There were 9 level Ib (new install) audits conducted on-site by the ACDS in addition to the routine audit cycle audits during 2017.

A total of 74 audits is a great achievement by the ACDS who are now also grappling with managing fee based contracts on top of keeping up a busy audit schedule.

.....“ A total of 74 audits is a great achievement by the ACDS who are now also grappling with managing fee based contracts while keeping up a busy audit schedule.”



An ACDS on-site audit in action



Our Organization

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“Best practice radiation therapy is built on the solid foundation of independently audited radiation dosimetry”

The Australian Clinical Dosimetry Service—known locally across Australia as ‘The ACDS’ - was initiated in 2010 by the Commonwealth Government to enhance the safety of Radiation Oncology nationally. The ACDS commenced operation in 2011 and since then has been providing independent dosimetry auditing of radiation therapy linear accelerators at three different levels. The auditing services provided by the ACDS are NATA accredited, meet or exceed the Radiation Oncology Practice Standards as developed by the Tripartite committee (RANZCR, ASMIRT, ACPSEM) and are recognized internationally by European and American dosimetry auditing agencies.



The AOC was created in 2016 via AHMAC as an oversight body (similar to a ‘Board’) to ensure the ACDS effectively transitions from a Commonwealth funded organization meeting the radiation oncology sector dosimetry audit requirements at no charge, to a sustainable not-for-profit business, where every user is required to pay for the service.

ACDS is on the Web: www.arpansa.gov.au/services/ACDS/index.cfm

5 Minutes with an AOC member

Dosimetry Discussions is talking to the people that make up the AOC. Who are the hardworking AOC members? Where do they come from? And, what makes them tick? DD is on the sofa (Pamono) with Martin Naef.

DD: Martin, please give us an idea of your professional background.

MN: I am originally Swiss so did most of my schooling in a small city (by an Aussie comparison) called Lausanne (the Olympics capital) on Lake Geneva. I graduated as a pharmacist from the University of Lausanne and joined Sandoz, which was one of the main Swiss pharmaceutical companies before it merged with Ciba-Geigy to create Novartis. Although a French native, I've also had to work in German and Italian as everything in Switzerland is in 3 languages!

DD: Molto buono! And what role are you in now?

MN: I am currently the Country

Head for specialty pharmaceutical company SciGen (Australia). SciGen has products in many therapeutic areas such as endocrinology, gastroenterology, rheumatology and neurology. We are also about to launch a product to help manage some of the side effects suffered by patients undergoing radiotherapy.

DD: Big pharma! So what prompted you to join the AOC?

MN: Although I have no prior experience in radiotherapy, I felt aligned with the vision of the ACDS as I believe that anything we can do to ensure the best efficacy & safety of treatments provided to patients is a good thing! It is clear to me that audited clinical dosimetry fits this belief. Also, I felt that with my experience in health and business management I could contribute to a successful and sustainable user-pays ACDS. I hope that my inputs will contribute towards achieving this.

DD: Ok, as a well travelled Sydney sider give us your tips for the best coffee or dining out.

MN: During a recent trip to Spain, I became addicted to "cafe con hielo" (coffee with ice cubes) a sort of "iced espresso". As I haven't discovered a [Sydney] coffee shop making this type of coffee, let's go straight to dining! I really like the Cottage Point Inn in the Ku-Ring-Gai National Park. You can access it by road, boat or sea-plane. The food is excellent and the scenery is so extraordinary that you could well & truly be in the best place in the world!

DD: What is the best thing you've experienced within the health sector over the years?

MN: One thing Australians are really doing well, is the constant search for quality. To me this is the best way to become better at what we do and one of the best ways to improve health outcomes. It also gives a lot of



Mr. Martin Naef

confidence in the system.

DD: How do you think the ACDS supports radiation oncology?

MN: I see the ACDS as an important link in the radiation oncology field. Via its work, it protects both the patients (it helps ensure the right dose is administered) and the provider (it reduces the risk of error). To have this peace of mind is extremely reassuring.

DD: Finally, what is your favourite Aussie holiday destination?

MN: Anywhere on the NSW Sth Coast where there is plenty of surf for my boys, beaches for my wife & water so that I can go boating!