Technical Innovations, Research and Clinical Trials Conference

Post conference report

Held on 20th June 2023, Ramside Hall, Durham

NORTHERN RADIOTHERAPY NETWORK

Summary

The inaugural network conference took place on 20th June 2023 at Ramside Hall, Durham.

The conference was attended by over 100 delegates from the network, in person and remotely.

The programme covered radiographer, physics and clinical oncologists' highlights from ESTRO 2023, technical and therapeutic innovations in radiotherapy and molecular radiotherapy, network SABR/SRS service developments and research and clinical trial activity across the network.

There were over 20 presentations during the mini-oral and oral presentations by radiotherapy professionals across the network, showcasing a huge amount of research and service development projects.

And we heard about the future potential of artificial intelligence, clinical coding and big data analysis and how this can improve outcomes for our patients.

The event feedback was extremely positive, with 95% of respondents in support of an annual conference/event.

The recommendation from the report is to invite nominations from network colleagues to form an organising committee to plan future events.

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Programme and delegates

The conference programme covered a broad range of topics from the exciting and innovative research and developments presented at ESTRO 2023, to technical innovations already implemented, those in discussion across the network and new software applications for big data analysis and quality improvement.

It was attended in person by 77 delegates from the Northern Radiotherapy Network with a further 24 delegates joining remotely. The event was supported by 10 industry partners whose representatives also attended in person to showcase their latest products, equipment, services and technology.

The format of the event involved a mixture of presentations from key speakers about a range of topical issues, mini oral presentations and oral presentations of research and development projects in the network with prizes for the best projects.

This report provides an overview of the conference aims and learning objectives for delegates, a summary of sessions and presentations, event feedback from delegates and sponsors, and provides recommendations for future network conferences and events.

Aims and learning objectives

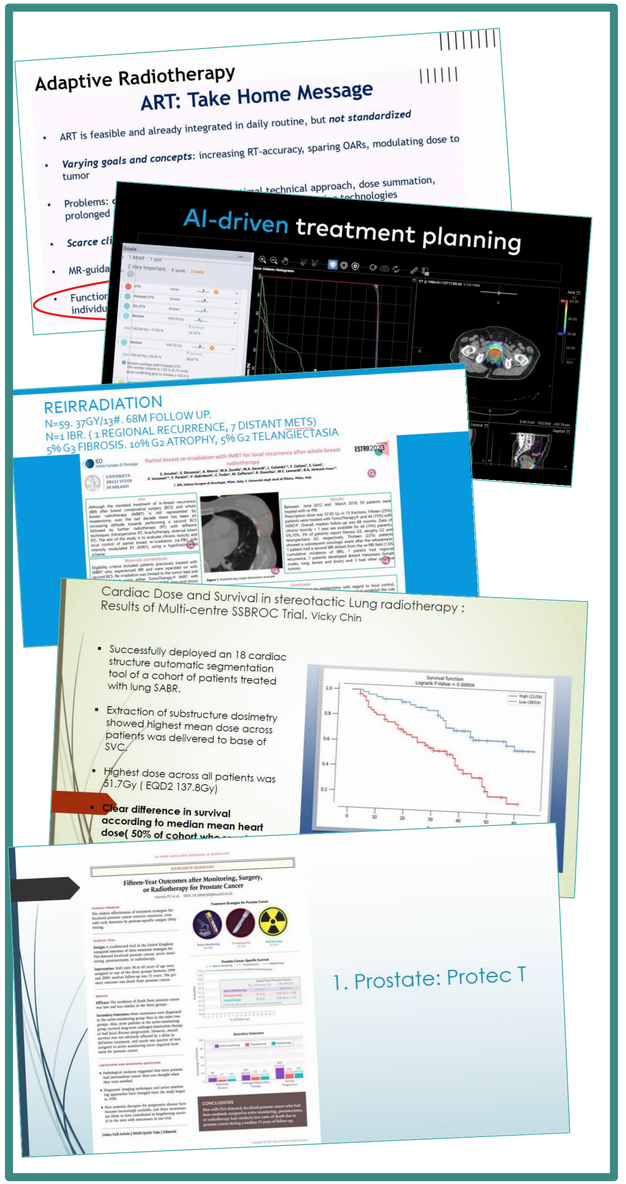
The programme provided 4 CPD points in accordance with the CPD Scheme of the Royal College of Radiologists and all attendees received a certificate of attendance to submit as part of the CPD portfolio, including recognition of contribution to the conference programme and speaker presentations.

The aims of the conference were:

- To share knowledge and information with network colleagues about global developments in radiotherapy
- To share knowledge, learning and expertise from service development projects network-wide
- To discuss the future vision for technical and therapeutic innovations in radiotherapy
- To raise awareness of research activity and radiotherapy clinical trials in the network

The learning objectives were:

- To understand the technical and therapeutic advancements in radiotherapy globally
- To understand the benefits of moving to surface guided radiotherapy
- To learn about network models in place for the delivery of stereotactic radiotherapy for newly commissioned indications
- To understand the potential opportunities to improve treatments and outcomes for patients through artificial intelligence, clinical coding and data analysis.



1. ESTRO Highlights

Exciting developments were shared by radiographers, physicists and consultant clinical oncologists who had attended, and presented, at ESTRO, Vienna in May 2023. This was a great opportunity for delegates to hear about global advancements in radiotherapy imaging, planning, treatment and research.

- **Rachel Brooks-Pearson** and **Alex Beardmore**, **Therapeutic Radiographers at NuTH**, presented about advancements in imaging technology and adaptive radiotherapy.

- **JJ Wyatt, Lead Clinical Scientist at NuTH**, presented about developments in adaptive radiotherapy and some of the technical challenges and uncertainties in dose calculations on verification imaging and a lack of evidence currently regarding the clinical benefits of adaptive radiotherapy.

- **Dr Helen Turnbull** presented about cardiac dose and lymphopenia during radiotherapy for lung cancer, **Dr Jayshree Veeratterapillay** about automated adaptive brachytherapy planning for cervical cancer, **Dr Xue Yan Jiang** about radiotherapy trials for prostate and bladder and SBRT with/without SACT for kidney cancer, **Dr Ahmed Hashmi** from a colorectal perspective, **Dr Mohammed AlHilali** about developments with SABR and ultra high dose radiotherapy and **Dr Kathryn Wright** covered breast re-irradiation and the IMN debate.

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2. Technical and therapeutic innovations

The second session was an opportunity to share learning and experiences of implementing new technical and therapeutic innovations, as well as exploring network aspirations for acquiring new technology and equipment.

- **Catherine Wilson, Clinical Lead Specialist Radiographer at JCUH**, shared case studies demonstrating quality improvement in plan quality following implementation of surface-guided radiotherapy (SGRT) using Catalyst HD (CT-Rad) and plans to move to tattooless delivery and using SGRT for set up of all patients.

- Heads of Department from JCUH, **Dr Clive Peedell, Consultant Clinical Oncologist, Claire Huntley, Radiotherapy Service Manager, and Kevin Burke, Head of Radiotherapy Physics,** made a compelling case for having an MR Linac in the network, enabling better image quality, increased treatment accuracy, improved outcomes and fewer side effects for patients.

- **Dr Darren Leaning, Consultant Clinical Oncologist,** and **Orla Hayman, Head of Medical Physics,** both from JCUH, presented the developments with molecular radiotherapy treatments for metastatic castration-resistant prostate cancer and the work progressing in the network to ensure the treatment is available to patients following NICE approval.

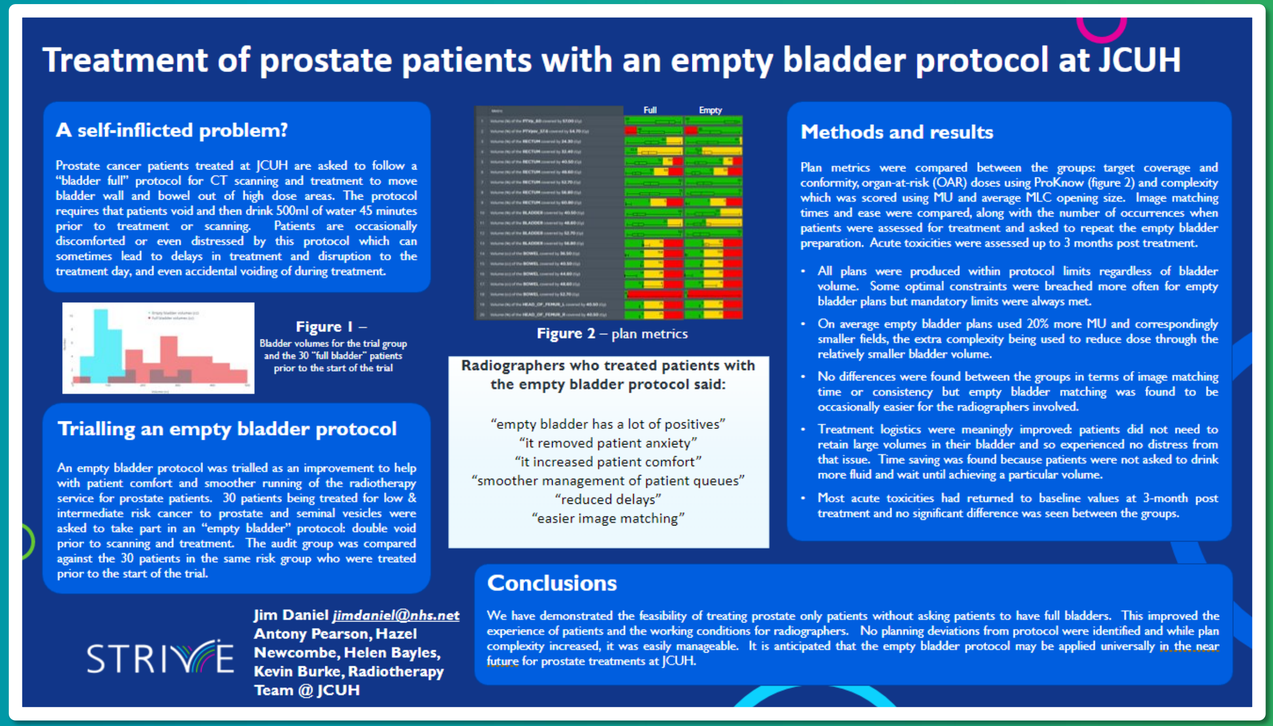
3. Mini Oral Presentations

This was a great opportunity to hear about so many fantastic projects in the network. Strict time-keeping was observed to hear from all 20 network colleagues who were selected to present their research posters during their 2-minute slot.

A poll took place over lunch to award prizes for the best projects, with the runners up prize going to **Dr Matt Anderson, Specialty Clinical Oncology Trainee at NuTH,** for his project considering the feasibility of implementing VMAT planning for MSCC.

The prize for best mini oral presentation went to **Jim Daniel, Lead Clinical Scientist at JCUH**, for his project, “Treatment of prostate patients with an empty bladder protocol at JCUH”.

Well done everyone for all your hard work!



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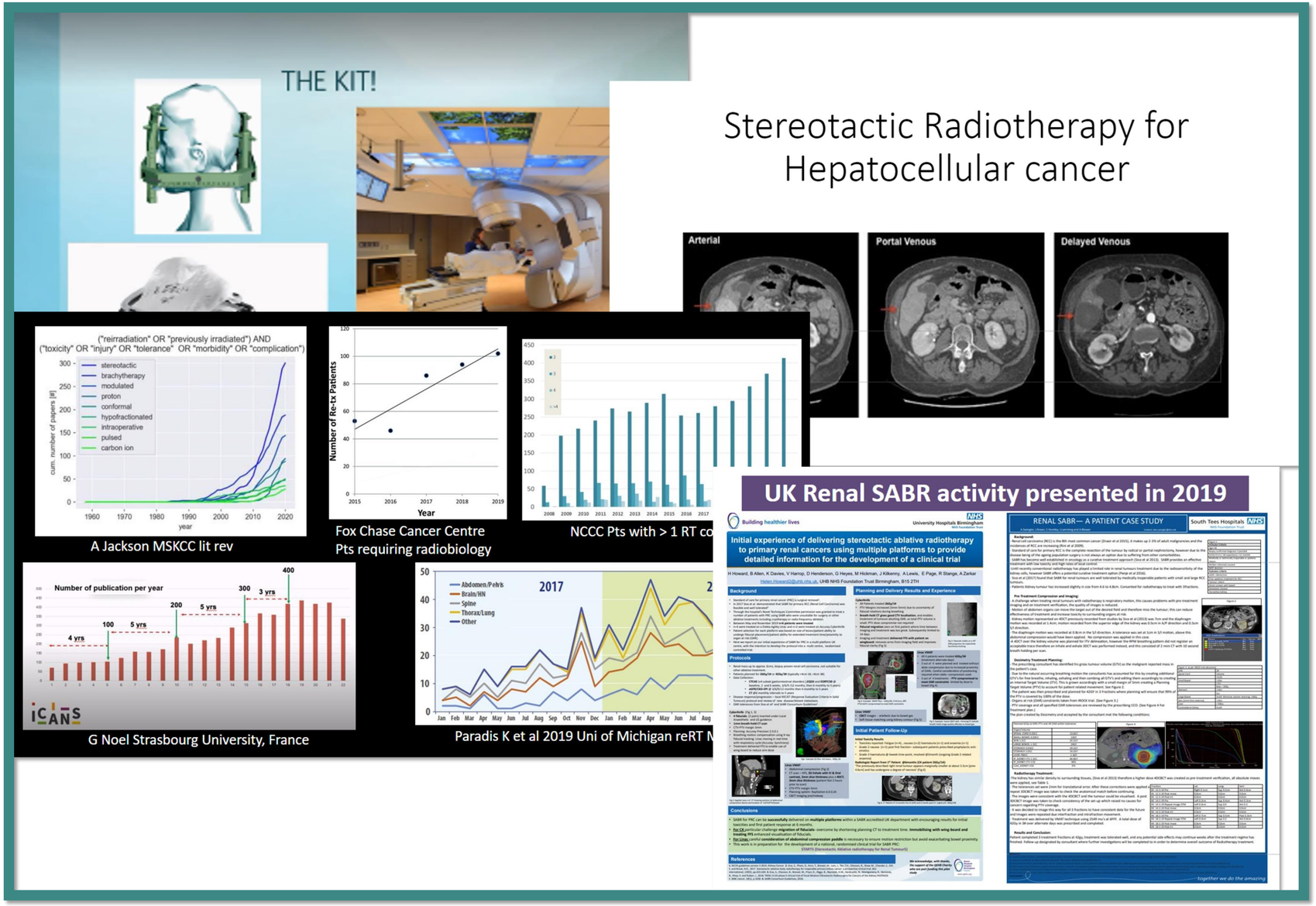
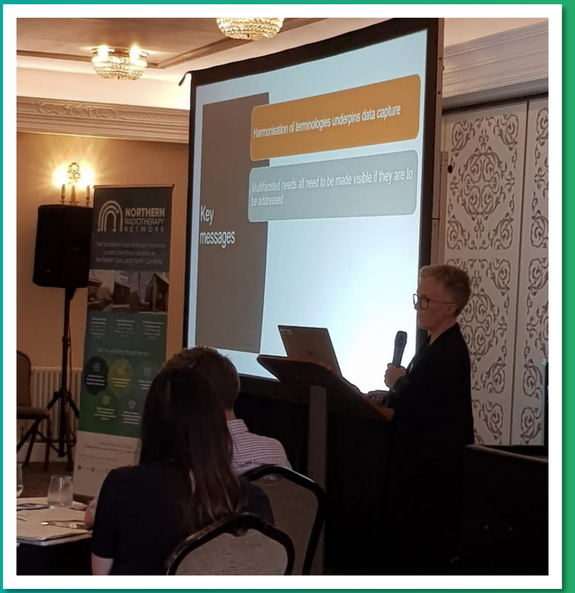
4. Network treatment delivery models for SABR/SRS

This was a very exciting 4th session, where we heard updates about well-established regional SABR/SRS services as well as local progress with network plans to deliver newly commissioned SABR indications and ensure patients receive the best standard of care and can access treatments closer to home.

- **Dr Joanne Lewis, Consultant Clinical Oncologist at NuTH,** presented remotely about progress and developments with the network SRS service (delivered at NCCC since 2015) and ensuring all patients across the network have equal access to SRS services.
- **Dr David Wilson, Consultant Clinical Oncologist at South Tees,** presented an overview of the research and evidence for SABR as a treatment option for hepatocellular carcinoma which has recently been commissioned by NHS England. The current position nationally with the rollout of SABR for locally advanced non-metastatic pancreatic carcinoma and local progress was also presented.
- **Dr Ahmed Hashmi and Nick West, Consultant Clinical Oncologist and Clinical Scientist respectively at NuTH,** highlighted the limitations of dosimetric and quality of life data to support the development of reirradiation services and the need for a more uniform, scientific approach with more consistent, better quality data to produce meaningful OARs and constraints.
- **Dr Rachel Pearson, Consultant Clinical Oncologist at NuTH**, presented work she has been involved in to develop SABR treatments for primary renal cell carcinoma patients, many of whom are asymptomatic and diagnosed incidentally.



5. Artificial intelligence and big data



Dr Karen Horridge, Visiting Professor of Childhood Disability and Health from **The University of Sunderland,** was invited to speak about her work using SNOMED-CT clinical coding to improve outcomes for patients.

Dr Horridge gave an excellent and inspiring talk about her work to understand, and accurately record, the multifaceted needs of disabled children and their families, using SNOMED-CT to ensure consistent use of the same terms across all care settings and empowering patients and their families in care planning. The take-home messages about the benefits of using SNOMED-CT were highlighted and the need to harmonise terminologies to allow for comparisons across settings, over time and across conditions with all needs carefully identified and documented as the first step in the care plan to address them.

There is huge potential for improving equity of access and equality of outcomes within radiotherapy services by capturing accurate population health data in this way.

Dr Sam Warren, Consultant Clinical Scientist at NuTH, followed with another inspiring presentation about her work to use MVision and ProKnow to add value to real world data and how this can help us to improve outcomes for patients.

Sam presented evidence to support the use of AI auto-segmenting software and MVision which is being used by all centres in the network and is the most highly rated software package available. The implementation of MVision has already supported changes to breast planning techniques at Newcastle.

Recent advancements in technology and automation at Newcastle were summarised, moving from CT-MR fusion and manual contouring, to the implementation of an MR-only pathway and very recently, implementing an automated planning technique. Sam demonstrated how easy it is to compare data from different techniques and cohorts within ProKnow and invited colleagues to explore the software to find the answers for themselves.

Hopefully, colleagues will take on the challenge!

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6. Research and Clinical Trials

The final session of the day commenced with **Dr Rachel Pearson, Consultant Clinical Oncologist at NuTH** and **Research Lead for the Network**, providing an overview of the vision for the network to become one of the next cohort of emerging centres of excellence in radiotherapy research and clinical trials.

Rachel highlighted the importance of investment in the radiotherapy research workforce to enable support changes in practice through a portfolio of innovative and collaborative clinical trials.

Four exciting research projects were selected for oral presentations and speakers were allocated 8 minutes and time for one question during the session.

Helen Curtis, Clinical Scientist at South Tees

Helen presented her research study entitled “Partial breast radiotherapy at JCUH: implementation and audit”.

Data from reviews of patients treated clinically for whole breast radiotherapy were subsequently reviewed as part of the partial breast radiotherapy study. Data showed a significantly reduced ipsilateral lung dose for patients.

A subsequent audit was undertaken which showed decreases in OAR doses, partial PTV coverage was maintained and a significant reduction in the amount of breast tissue irradiated.

Rachel Brooks-Pearson, Research Radiographer at NuTH

Rachel presented her research study entitled “Prostate MR-only radiotherapy: are fiducial markers necessary?” Rachel found that CT IGRT imaging skills were transferrable to MRI, which meant NuTH were able to achieve a world-first to implement MR-only prostate soft tissue matching into clinical practice.

Through a collaboration between NCCC in Newcastle and the Calvery Mater Newcastle in Australia, Rachel was able to compare MR only pathways with and without fiducial markers.

The research has provided absolute confidence in an MR-only soft tissue matching for prostate patients with radiographer skills transferrable to match to MRI planning dataset and, without the need to rely on fiducial markers, MR-only planning can extend to other tumour sites.

Nick West, Clinical Scientist at NuTH

Nick presented his work looking at variation in cumulative dose assessment in reirradiation and the challenges in attempting to answer questions about feasibility, safety and risks in delivering a second course of radiotherapy.

Nick provided a summary of some of the approaches to evaluate cumulative dose escalations and presented findings from a study to determine the best possible approaches, showing substantial variation in reported cumulative OAR doses between centres, considerable improvement in consistency when best approach utilised and limitation in most TPSs.

Recommendations from the study included the need for standardised approaches and for consistent methodology to be included for retrospective data.

JJ Wyatt, Lead Clinical Scientist, NuTH

JJ presented his research study entitled “PET-MR only radiotherapy for pelvic cancers”.

JJ highlighted the challenges with imaging the pelvis and the barriers to using PET-MR-only radiotherapy.

The aim of JJ’s PhD thesis was to develop and evaluate technical solutions to enable PET-MR-only radiotherapy for pelvic cancers.

In conclusion, the study found a model of radiotherapy hardware to reduce PET activity loss to <3% with statistically significant differences in GTV SUV measurements. The study also found a sCT solution with negligible dose differences ≤ 0.4% and that sCTAC is clinically equivalent to CTAC with GTV SUV differences ≤ 1%.

The results from the study open the way to developing and validating methods of using quantitative PET-MR for radiotherapy delineation and dose painting within clinical trials to determine whether the potential benefits of this approach translate into clinical benefit for patients.

Network strategy to increase recruitment to clinical trials

Dr Rachel Pearson, Network Research Lead, and Penny Williams, Research Delivery Manager from the North East and North Cumbria Local Clinical Research Network, presented the final session of the day to look at the network strategy to increase recruitment to clinical trials.

Rachel highlighted the importance of offering clinical trials for patients and increasing trial recruitment. Some of the challenges and opportunities were discussed, including promoting engagement in clinical research, improved efficiency in opening trials and considerations for trial selection. Trial recruitment data for the network shows high numbers of practice changing interventional trials and many home-grown research studies to build on in future.

Penny talked about some of the funding available to support staff interested in research to develop necessary skills and experience, including the Green Shoots award, Investigator Initiated Training (IIT) award, Associate Principal Investigator (PI) scheme and support available from the research delivery team for trials included on the CRN portfolio.

Penny signposted to the Routes to Research website that has been developed in NENC by the Clinical Research Network to support staff involved in research and funding programmes.

Keith Harland, Radiotherapy Research Team Lead at South Tees, and **Nick Willis, Practice Lead Specialist Dosimetrist at NuTH** provided an overview of the some of the trial highlights from each centre to bring the final session to a close.

Following huge success as the first centre in the country to open and recruit to the PACE-Nodes study, Keith gave an insightful presentation about experiences from the JCUH team going through the expression of interest process, completing the RTTQA, to opening the trial and recruiting the first patient.

Nick summarised the significant progress made at NuTH with planning and treatment techniques in radiotherapy, specifically in relation to colorectal cancer, developed and implemented through research and clinical trials.

Rachel concluded by capturing some of the progress in the network recently and network aspirations for MORE!!

- MORE trials across the ODN and in Carlisle
- MORE SABR trials
- MORE homegrown research
- MORE visibility of research and audit activity
- MORE resources

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Who was there?

The conference was aimed at radiotherapy professionals working at the three centres in the Northern Radiotherapy Network;

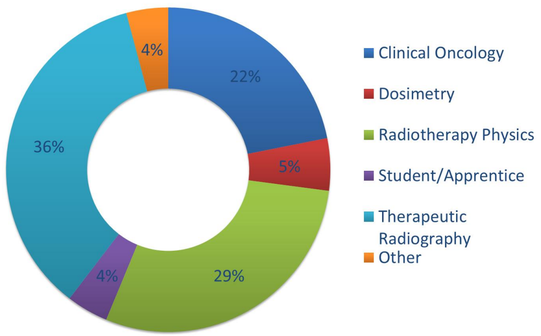
- The Northern Centre for Cancer Care, Carlisle
- The Northern Centre for Cancer Care, Newcastle
- The James Cook University Hospital, Middlesbrough

Key partners and stakeholders from the Northern Cancer Alliance, NHS England and the Local Clinical Research Network were also invited.

A total of 120 people attended:

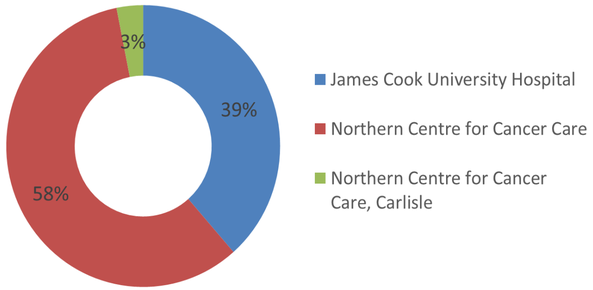
- 101 conference delegates
- 77 delegates attended in person
- 24 delegates attended remotely
- 16 industry sponsors
- 3 Northern Radiotherapy Network colleagues

The 101 delegates were made up as follows;



A total of 96 delegates who attended were from radiotherapy centres in the network;

These were made up as follows;



Thank you to our event sponsors whose representatives attended in person to showcase their latest products, equipment, services and technology.

Post event evaluation

Delegates were asked to complete conference evaluation forms to determine support for future network events and ensure improvements can be made.

Printed evaluation forms were available on all of the tables and a link to the online form was circulated after the conference to delegates who attended remotely.

Of the 77 delegates attending in person, 61 people (79%) completed evaluation forms.

There were 6 responses from delegates who attended remotely.

Overall, 91% of respondents rated the conference as excellent (54%) or good (37%).

There was an even spread of interest in all the sessions and 96% of respondents were either very satisfied (73%) or satisfied (27%) with the quality of speakers and range of topics covered.

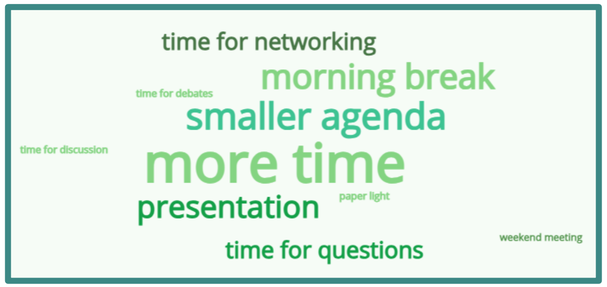
95% of respondents would like an annual conference!

There were a few additional suggestions for a slightly different structure/format on alternate years.

95% of respondents were very satisfied (65%) or satisfied (30%) that the conference was of value in terms of their continuous professional development.

Respondents took the time to provide lots of additional comments and constructive feedback that will be taken into account for future conferences.

Themes to this feedback were as follows;



Sponsors were also asked for feedback which they gave verbally on the day and via on electronic evaluation form that was emailed to them after the event.

Verbal feedback on the day was excellent and sponsors felt that delegates had interacted well and visited the stands.

Of the 10 suppliers who attend, there were only 3 responses using the evaluation form.

However, all respondents rated the conference as very good, all were either very satisfied or satisfied that the conference met their aims and expectations, and all would like to attend future network conferences.

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Recommendations

Following the success of the inaugural conference and resounding feedback from delegates to hold an annual network conference/event, the following recommendations are proposed;

- Invite nominations from colleagues in all radiotherapy disciplines from each of the radiotherapy centres in the network to form an organising committee
- Plan for an annual network event/conference to be held in June each year

Acknowledgements

Huge thanks on behalf of the Northern Radiotherapy Network team to network Heads of Departments for their support to host this event and to enable their staff to attend; without it, the conference would not have happened.

Special thanks for Dr John Frew and Dr Rachel Pearson for their ideas and enthusiasm to develop an exciting agenda and encourage their colleagues to attend.

Thank you to everyone who agreed to present and share their knowledge and expertise across the network.

And finally, thank you to everyone who attended and contributed to what was a fantastic day.

We hope to build on this in the future and look forward to more exciting network events.