The employment of advanced image guidance techniques in clinical radiotherapy practice has ensured that geometrical uncertainties during treatment have been reduced. Hence, new techniques such as IMRT, and VMAT performed in a stereotactic setting can be applied safely with smaller margins.

In our institute, the development of new radiotherapy (RT) techniques generally starts with retrospective studies on existing patient data. For example, to determine the required safety margin for a certain protocol, historic data will be analysed to determine organ motion, setup errors, and delineation variability in relation to the new protocol. To facilitate this, all patient imaging data are saved in databases and archived after patients have finished their treatment. Radiotherapy technicians (RTTs) often play an important role in collecting and managing these patient data, not only during treatment but also in its retrospective analysis. The collected data are analyzed by a research RTT, in close cooperation with a physicist and/or physician. This is followed by a proposal for introduction into the clinic, accompanied with a clinical implementation protocol. An IGRT implementation group, consisting of physicists, radiation oncologists and RTTs will guide and define the complete process from research to clinical implementation. After clinical implementation the newly developed technique is supervised by dedicated imaging RTTs until the technique is sufficiently implemented in daily clinical practice. Once all other RTTs are sufficiently trained, the technique is fully implemented. During the whole process the technique will be evaluated and improvements can be made.

To illustrate this procedure: We investigated the use of an optical imaging system (AlignRT) for monitoring the breath hold state of the patients during deep inspiration breath-hold RT. Data of 20 patients were collected and retrospectively analyzed to investigate geometric uncertainties such as inter-fractiction, intra-fractiction- and intra-beam variability. The results will be used to evaluate the current KV-guided breath-hold protocol and a number of adaptations were made as a result.

The professional role of radiation therapy technologists (RTTs) has changed tremendously over the last two decades. This presentation will give a brief overview of these changes in the Netherlands, and discuss the training requirements to become an Advanced RT Practitioner (AP) as well as some of the roles open to the AP in this country. A personal perspective is presented on studying for a Master’s degree that focused on image guidance for stereotactic spine radiotherapy alongside clinical work, and subsequently on combining research and clinical work in an academic medical centre.

In order to become an AP, an RTT in the Netherlands is expected to undertake a Master’s degree in a relevant aspect of radiotherapy in addition to possessing the necessary clinical experience and personal attributes. Working with senior management to define their role, advanced RTTs are increasingly active in professional training and education, research and development, and improving and delivering high-quality patient cancer care. They may take on extended clinical responsibilities in areas like image guidance and advanced treatment planning for example, perform some of the tasks

**SYMPOSIUM: ADVANCE PRACTICE FOR RTT RESEARCH: THE GEOMETRIC UNCERTAINTIES CASE**

**SP-0112**
The national radiotherapy strategy in England: supporting implementation of national recommendations  
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Each country in the UK England, Scotland, Wales and Northern Ireland has its own health policy related to the development of services within the National Health Service (NHS). This presentation focuses on work undertaken within England in relation to NHS Radiotherapy service provision.

In England there are 50 NHS Radiotherapy providers, with radiotherapy services provided on 58 clinical sites. The presentation will describe how a nationwide approach is helping support implementation of equitable high standards for patients across England.

To enable this approach government established a National Radiotherapy Advisory Group to advise government ministers. This group comprised professional representatives from each discipline, health care commissioners, patients and lay representatives and policy advisors from the Department of Health. The group made recommendations in the Report to Ministers in 2007 “Developing a world class Radiotherapy service for England” 1. The report made wide ranging recommendations about all aspects of service delivery including importantly standards of care related to technical service delivery. A National Radiotherapy Implementation Group (NRIG) was established to oversee and support implementation of the recommendations2. In 2011 the government set an ambitious goal to improve cancer patient’s outcomes, a national strategy Improving Outcomes: A Strategy for Cancer. The national radiotherapy advisory group proposed a vision for future radiotherapy; that all new linear accelerators would be capable of 4D Adaptive Radiotherapy and this would become the standard of care in the future.

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