Clinical Oncology 31 (2019) 728–730

Contents lists available at ScienceDirect

Clinical Oncology

journal homepage: www.clinicaloncologyonline.net

Editorial

Building a Learning Healthcare System for Radiotherapy in England

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Received 29 July 2019; accepted 1 August 2019

There is a real opportunity for radiotherapy services to deliver greater value for patients and the National Health Service (NHS) over the next 10 years and to play a major part in improving outcomes for patients with cancer. In the Health and Social Care Act of 2013, all radiotherapy services became 'prescribed' by the Secretary of State; that means that NHS England is the direct commissioner of services. In turn, NHS England sets the service specification and quality standards nationally through the clinical leadership of its Clinical Reference Group (CRG) and its Cancer Programme within Specialised Commissioning.

The impact of NHS England direct commissioning has been a leap forward in equity of access for many services. It also means that service developments that require additional funding have to compete with other national priorities and must be delivered for the whole of England. Apart from pilot opportunities, national direct commissioning cannot commission a service change for a single service or a collection of services unless it can ensure clinical access for patients from anywhere in the UK on the same basis.

NHS England has also had a major impact on chemotherapy, a directly commissioned service, with ideas, projects and programmes initiated from its Chemotherapy CRG. Combined with the strong relationship with the National Institute for Health and Care Excellence (NICE), the landscape for cancer drugs is changing every week. All cancer drugs are now appraised by NICE, with their appraisal outcomes published very close to the date the drug is launched. The Early Access to Medicines Scheme, a joint programme between the Medicines and Healthcare products Regulatory Agency (MHRA), NICE and NHS England, has introduced a number of novel cancer treatments. The Cancer Drug Fund has been reinvented to evaluate drugs to support evidence gathering for treatments on the margins of a positive NICE appraisal.

Vision for Radiotherapy

Five years ago, NHS England Specialised Commissioning, jointly with Cancer Research UK, published a 10-year Vision for Radiotherapy built upon input from colleges, stakeholders and the industry [1]. The outcome was synthesised into the following nine areas:

1. Strong leadership at national and local levels.
2. Nationally agreed standardised treatment protocols.
3. Evaluating and quickly adopting innovation through the formation of national policies for affordable new technologies where evaluation has shown clinical effectiveness and cost-effectiveness.
4. Realising the full potential of advances in treatment imaging.
5. Optimising the highly skilled workforce with new models of working crucial to deliver advanced treatments and supportive care across radiotherapy pathways.
6. Harnessing the power of data linking the Radiotherapy Dataset with outcome data.
7. Embedding research activity into the radiotherapy service.
8. A continued drive for cost efficiency releasing resources for further investment.
9. Better public awareness of radiotherapy, enabling more patients to choose radiotherapy as a preferred treatment option.

Five years in, clinicians in England will recognise substantial change but will also know there is still more to deliver to get closer to the ambitions of the 'Vision' consensus.

Radiotherapy Service Specification (2019)

The Radiotherapy CRG has built, consulted on and published a new NHS England service specification for

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https://doi.org/10.1016/j.clon.2019.08.002

radiotherapy. The complexity of modern radiotherapy cannot be delivered by single site services. The envisioned future is networks working together on service delivery, sharing skills, staff and service change. These operational delivery networks (ODNs) will review and agree the subspecialty arrangements across the network. In due course some provider organisations may only be commissioned to treat certain subspecialties and build partnering arrangements between services [2].

The national view is that ODN 'horizontal integration' is critical to the success of dealing with the technical and workforce challenges of future radiotherapy. Equally, the ODNs are charged to build their new system of care collectively. The specification details the expectations of all providers, which will be assured through the service contract mechanisms.

There is expected to be some change in the consultant workforce, with the requirement in the specification that there is a minimum of two subspecialist consultant clinical oncologists to manage each tumour site and that each should concentrate on no more than two broad clinical areas. Each provider must deliver a minimum of 50–100 radical radiotherapy treatments per tumour site per year. Partnership working arrangements will be needed in the more geographically remote areas to deliver these standards.

National Policy

None of England's routinely commissioned radiotherapy treatments has been appraised by NICE. One appraisal has been undertaken for intrabeam radiotherapy for adjuvant treatment of early breast cancer and a 'not recommended for routine commissioning' outcome was published. NICE may extend its portfolio in the future to carry out more appraisals.

The route for new service development is mostly therefore via NHS England decision-making [3]. Recent national clinical commissioning policies built after an independent evidence review have included: the change to 15 fractions for breast cancer; single fraction treatment for symptomatic bone metastases; stereotactic ablative radiotherapy for non-small cell lung cancer; and a range of stereotactic radiosurgery indications.

In July 2019, in preparation of the opening of proton beam facilities, NHS England published a policy for all children and young adults to be able to access proton beam therapy regardless of tumour type where there is a reasonable disease-specific 5-year survival expectation [4]. A shared decision-making tool has been developed to aid the discussion on whether to choose proton over photon radiotherapy. Although there are some situations where there is no benefit of proton beam therapy, such as total body irradiation, it is clear that this new policy will have a major effect on the configuration of paediatric radiotherapy services.

Learning Healthcare System

The progressive agenda around radiotherapy has enabled a number of key organisations to come together to agree to build a 'learning healthcare system' specifically for radiotherapy. The fundamental aim will be to align all 'lenses' that influence the focus of future service delivery over a significant timeframe – at least 10 years – forming a stable architecture for strategic change. It has been clear when trying to build evidence-based policy for proton beam therapy, stereotactic ablative radiotherapy and thinking ahead to magnetic resonance linear accelerators, that comparative research informing the incremental benefit over other treatments is limited. When additional resources are needed to deliver these innovations, the description of this incremental benefit and understanding the additional financial resource to deliver the benefit are essential parts of prioritising service development.

Clinicians, stakeholders, patients and even rugby stars [5] get frustrated with NHS commissioners that they cannot access technological innovations that provide such a seemingly obvious advance in care. Drug treatments have a highly structured path to licence, to market authorisation, to technology appraisal by NICE and then to commissioned service development. The pharma industry knows the need to progress to a phase III clinical trial and within that trial measure key outcomes, such as the EQ5D, in order for an incremental cost-effectiveness ratio to be calculated.

Progress has been made by the IDEAL Collaboration defining the stages through which an interventional therapy passes and the study design of each stage [6]. Serendipitously, in 2017 a multinational group published a modification of the IDEAL framework for technical innovations in radiation oncology [7]. For common cancers, commissioning decisions would follow stage 3 of the R-IDEAL framework.

The ambition of the learning healthcare system is to ensure that the research strategy prioritises technological change alongside reappraisal of established clinical practice using the R-IDEAL framework, with studies designed at pace and scale and that support answering not only the scientific question but also the incremental benefit to enable commissioning decisions.

By changing the focus to research in this way, commissioners then hold the system to account to deliver the research output in order to change health policy rather than the researchers trying to persuade the commissioners that their output means health policy has to change. A classical change to a 'pull-system' from a 'push-system'.

Delivering service change is currently quite passive. NHS England publishes a national policy or NICE publishes a technology appraisal and a change in service delivery across the country follows the classical pattern of early adoption and later spread, so it may be years before equitable access for patients is achieved. Alongside an aligned research strategy, the pull-system for policy development, the

learning healthcare system also aims to build a collaborative approach to quality improvement.

Attention and effort into implementation science [8] is at the heart of a learning healthcare system. Included is understanding the readiness to change for a stretched workforce, building a culture of change that is a positive experience, building the implementation questions into research enquiry on a specific technology and giving an equal intellectual value to exemplars of plan-do-study-act (PDSA) cycles of service change to the randomised trials published in an international journal.

The ambition is simple and attainable. All services and stakeholders are part of the prioritisation of research, a national translational research portfolio is articulated, as many services as possible are involved in research activity, information systems are ubiquitous and research data collection is part of normal workflow, high-quality studies are delivered at pace and scale, each evaluation includes comparative outcomes to identify the incremental benefit, as the research is analysed national clinical policy is formed and launched synchronously with the publication of the research, services are prepared for equitable national implementation, the payment systems do not get in the way of service development, patients have rapid access to effective treatments, patients report outcomes, the system learns.

Conflict of Interest

The author declares no conflict of interest.

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