

Starting priority radiotherapy treatments more quickly

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Background to the Audit

Modern radiotherapy planning is a complex multistep process involving many professionals working across several different teams including oncologists, radiographers, dosimetry & medical physics and patients cannot start treatment immediately. Delays to starting radiotherapy may be detrimental to survival outcomes hence streamlined treatment planning pathways could improve cure rates.

Standard, Indicator & Target

The radiotherapy department at Cambridge University Hospitals NHS Foundation Trust achieves local (28 days) and national (Department of Health, 31 days) targets regarding the time taken for patients to start a course of treatment but wanted high-priority patients to be able to start treatment more quickly. These patients are those with rapidly-progressing tumours being treated curatively and for whom radiotherapy is the first and critical intervention. Our target was to start treatment for these patients within 14 days.

Methodology

The time taken for each step in the planning process was retrospectively analysed for a cohort of these patients who received curative radiotherapy as their first treatment for newly diagnosed head & neck cancer, comprising 36 of the 890 patients starting treatment at Cambridge University Hospitals NHS Foundation Trust in that quarter.

Results of First Audit Round

Mean time to starting treatment was 26 days & no patients breached the Department of Health target of 31 days. There was not evidence of a solitary rate-limiting step in the planning pathway that needed to be addressed and improvements would have to be made at each stage to achieve a significant overall impact. There was, however, evidence of inefficiency (the time taken for certain processes to complete varied significantly) suggesting that improvements would be possible without the need for additional resources.

First Action plan

Working arrangements, communication methods and team interactions were examined collaboratively with representatives of each team and a new planning schedule was designed based on the minimum calculated time needed by each team to complete their portion of the work. A pilot study was then run for ten weeks to test feasibility of the new pathway.

Results of Second Round

The patients treated in the pilot were able to start their radiotherapy more quickly than had been typical for the previously observed cohort (see table). All steps of the process were completed more quickly except for contouring of target volumes by clinicians.

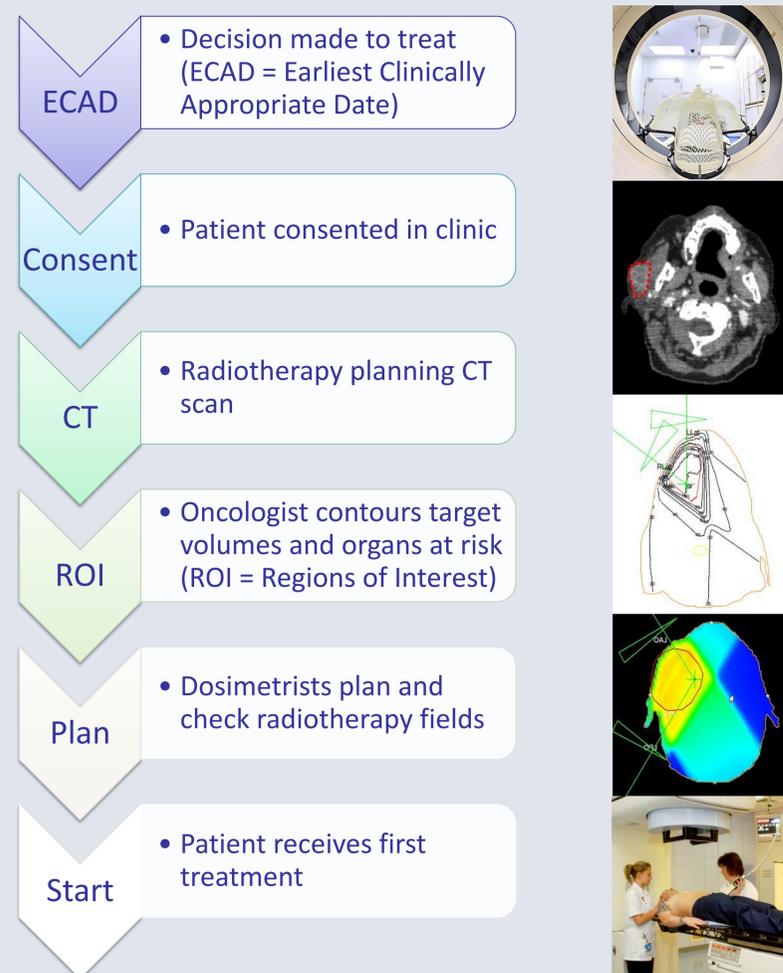
Complicating factors such as patients being dependent on hospital transport prevented many patients from participating in the streamlined pathway. Advance blocking of planning CT was effective but led to slots going unfilled when patients required dental surgery or other delays.

References:

Burnet N & Ahmad S. Prompt radiotherapy saves lives. *BMJ* 2011;343:4286; Bütöf R & Baumann M. Time in radiation oncology – Keep it short! *Rad & Onc.* 2003;106:271-275
 Huang J, Barbera L, Brouwers M, Browman G, Mackillop WJ. Does delay in starting treatment affect the outcomes of radiotherapy? A systematic review. *J Clin Oncol.* 2004;21:555-63.
 Mackillop WJ, Bates JH, O'Sullivan B, Withers HR. The effect of delay in treatment on local control by radiotherapy. *Int J Radiat Oncol Biol Phys.* 1996;34:243-50.

(No of days taken for each step)	Observed Cohort			Pilot Cohort			Change (mean)
	Min	Max	Mean	Min	Max	Mean	
Total planning time	19	29	25	12	19	15	-10
ECAD to planning CT completed	5	19	10	1	6	3	-7
From CT to ROI completed	0	6	2	3	8	5	+3
From ROI to Preplan completed	0	12	4	0	1	0.7	-3.3
From Preplan to Plan completed	0	9	2	0	1	0.3	-1.7
From Plan to Check completed	0	7	2	1	1	1	-1
From Check to first treatment	3	12	5	3	5	4	-1

Table - Timing data for observed cohort and pilot study



Second Action Plan

Pre-blocked planning CT slots were discontinued but other principles of the work have been maintained and performance will be reassessed after a suitable interval. Physicians must be prepared to work as flexibly with their multi-professional colleagues to support change in departmental practice.

Conclusions

Where possible accelerated planning pathways should be made available for priority patient cohorts to reduce the time taken to start radiotherapy treatment as this could improve rates of cure without the need for expenditure on additional resources. The streamlined schedule worked effectively but some interventions came at a high opportunity cost.