Audit of 30-day mortality following palliative radiotherapy at Southend University Hospital

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Background
• Palliative radiotherapy (RT) is used for alleviation of symptoms. Patients approaching the end of life may experience side effects of treatment for little benefit.
• The RCR’s 2015 consensus document for 30-day mortality following palliative radiotherapy sets targets of <20% total mortality, and <10% for fractionated regimes (greater time burden for patients)
• We completed a departmental audit of current practice of palliative RT and to assess compliance with RCR recommendations.
• Treatment of metastatic spinal cord compression (MSCC) frequently occurs in patients with short prognoses. Increasing evidence supports single fraction above fractionated regimes. We therefore also collected fractionation data for this indication.

$\text{Standard: RCR document '30-day mortality following adult palliative radiotherapy' (May 2015)}$

Indicator: 30-day mortality following palliative radiotherapy

Target: A consensus-agreed target of 30-day mortality less than 20%, further stratified against fractionation

Methodology
Retrospective data collection was carried out for all patients receiving palliative RT at Southend University Hospital between 1.8.18 – 31.12.18 comprising:
- primary tumour site, area treated, date treatment was completed, date of death/days of overall survival

For a randomly generated subset of patients additional data collected included:
- performance status, dose/fractionation, steroid use

Results
214 patients received palliative RT during the time period. 58% of patients were alive at the time of analysis (4 months following the end of the data collection period)
• Median overall survival was 53 days following completion of treatment
• Total 30-day mortality was 13% (all regimes)
• 30-day mortality for fractionated regimes in the random sample (n=68) was 13%
• The most common indications for treatment within the last 30 days of life were spinal RT (38%), and whole brain RT (14%)
• Lung cancer was the most common primary site within this group (48%) followed by breast cancer (14%)
• A wide range of dose/fractionation regimes were prescribed across all treatment sites (8 Gy in 1 fraction, 20 Gy in 5 fractions, 25 Gy in 5 fractions, 30 Gy in 10 fractions, 36 Gy in 6 fractions, 36 Gy in 12 fractions, 39 Gy in 13 fractions)
• 63 patients had RT to the spine. 13/63 died within 30 days (20%), 26/63 (42%) died by time of analysis (range 4-189 days)
• 80% of spinal RT to the spine was a single fraction within the last 30 days of life, 57% of overall spinal treatments were delivered as a single fraction treatment.
• 42/20% (20%) of whole brain RT patients died within 30 days, 12/20% (60%) died by the time of analysis (range 7 – 160 days)
• 32% of all patients sampled were prescribed steroids (across all RT treatment sites/indications)

Action Plan
• Local outcomes met RCR recommendations of total 30-day mortality rate < 20%
• The mortality rate for fractionated regimes was higher than the recommended target of 10%
• Some groups had particularly poor outcomes e.g. whole brain radiotherapy, prompting local review of policies for this indication, particularly as it is a fractionated regime with notable side-effects.
• These results support the use of single fraction treatments for metastatic spinal cord compression
• Further work is needed to standardise recommendations for fractionated treatment regimes in frail patients nearing the end of life

Figure 1: Distribution of overall survival in patients dying within 30 days of receiving palliative RT (n=214)

Figure 2: Distribution of overall survival in all patients receiving palliative RT within audit period (n=214)

Figure 3: Distribution of ECOG Performance Status scores for patients dying within 30 days of receiving palliative RT

Table 1: Target treatment sites for patients dying within 30 days of receiving palliative RT

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References:
Spencer, E et al. 30-day mortality following adult palliative radiotherapy [ROR, 2015]
Spencer, E et al. 2016 mortality rate for adult palliative radiotherapy: A retrospective population based study of 14,972 treatment episodes.
Radiation oncology: Journal of the European Society for Therapeutic Radiology and Oncology 2015;11(S2): (2): 264-71

Distribution of ECOG Performance Status Scores

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<th>ECOG PS 1</th>
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<th>ECOG PS 3</th>
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<td>0-7 days</td>
<td>8-14 days</td>
<td>15-21 days</td>
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<td></td>
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<td>21-29 days</td>
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<table>
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<tr>
<th>Treatment site</th>
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<th>% of patients dying within 30 days</th>
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<tbody>
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<td>38</td>
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<tr>
<td>Whole Brain</td>
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<tr>
<td>Lung</td>
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<tr>
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Distribution of ECOG Performance Status scores for patients dying within 30 days of receiving palliative RT

160 days)

198 days)

31.12.18 total mortality, and <10% for fractionated regimes (greater time burden for patients)

30-59 days | 50-119 days | 60-89 days

For a randomly generated subset of patients additional data collected included:
- performance status, dose/fractionation, steroid use

Results
214 patients received palliative RT during the time period. 58% of patients were alive at the time of analysis (4 months following the end of the data collection period)