

Comparison of modelling approaches for network meta-analysis of time-to-event outcomes to aid decision making

Suzanne Freeman^{1,2}, Nicola Cooper^{1,2}, Alex Sutton^{1,2}, Neil Hawkins^{2,3}

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suzanne.freeman@leicester.ac.uk

¹ Biostatistics Research Group, Department of Health Sciences, University of Leicester, UK, ² NIHR Complex Reviews Support Unit ³ Health Economics & Health Technology Assessment, University of Glasgow

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Conflicts of Interest

I have no actual or potential conflicts of interest in relation to this presentation.

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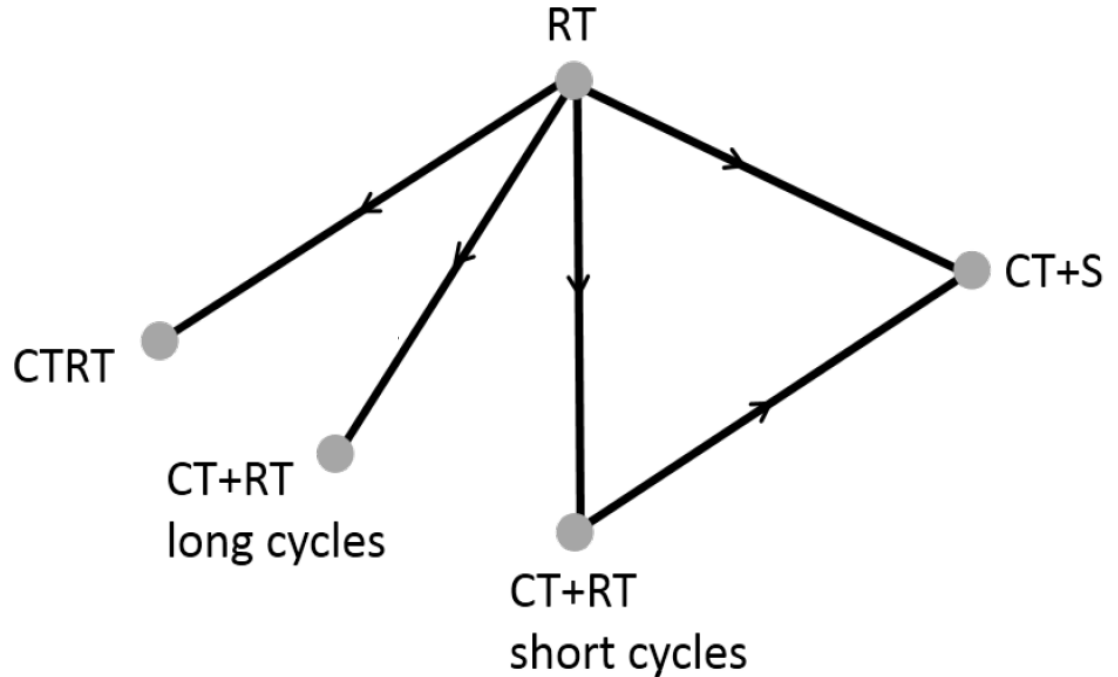
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Background

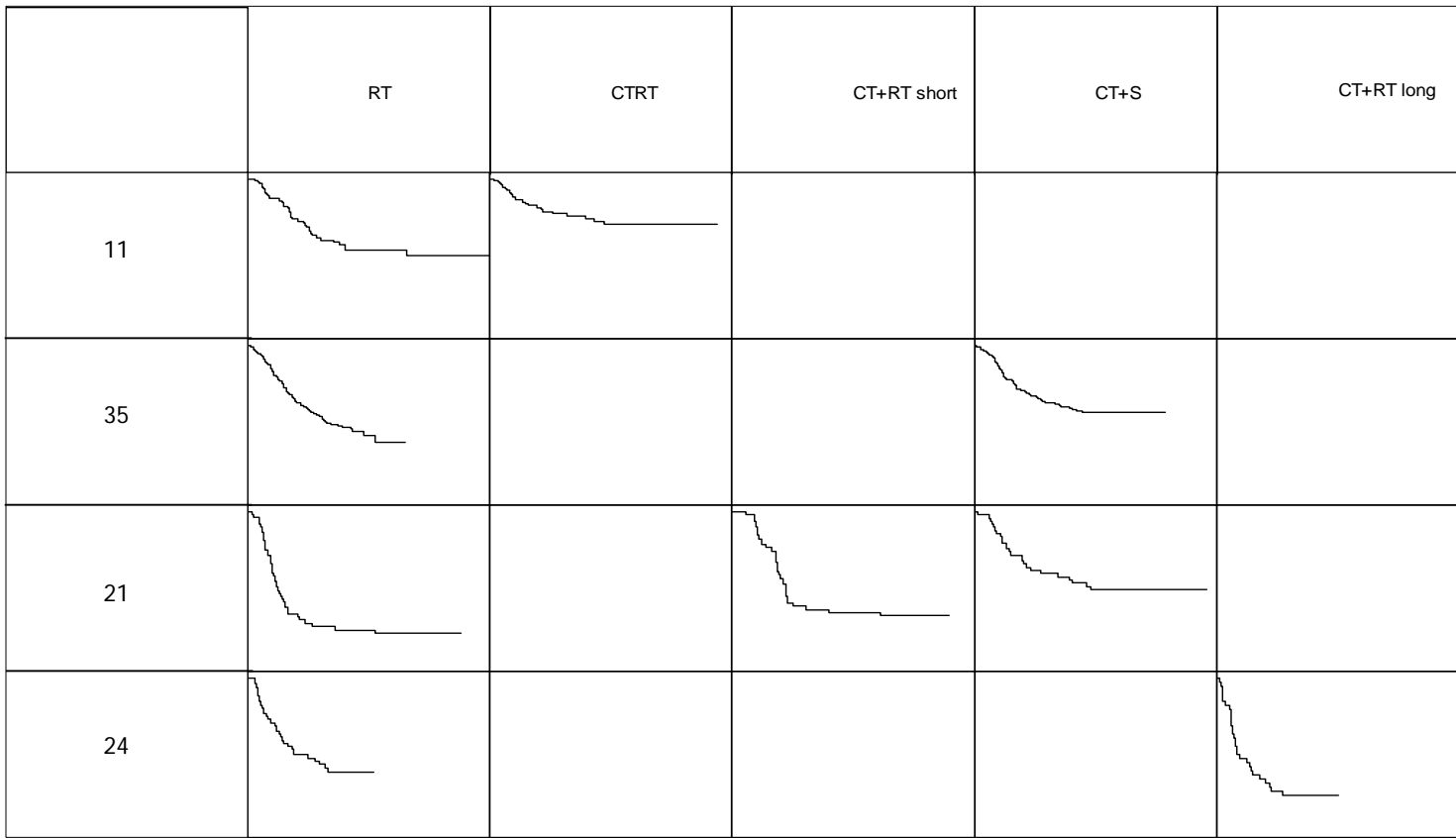
- Time-to-event data is often summarised as a single hazard ratio (HR)
- HRs are then synthesised in pairwise or NMA
- Estimated HRs represent an ‘average’ of the HR over the study duration
- A constant HR may not be appropriate if the treatment effect varies over time
 - May be confounded by differences in study duration

Cervical Cancer Network

- Overall survival data from 5922 patients from 37 RCTs



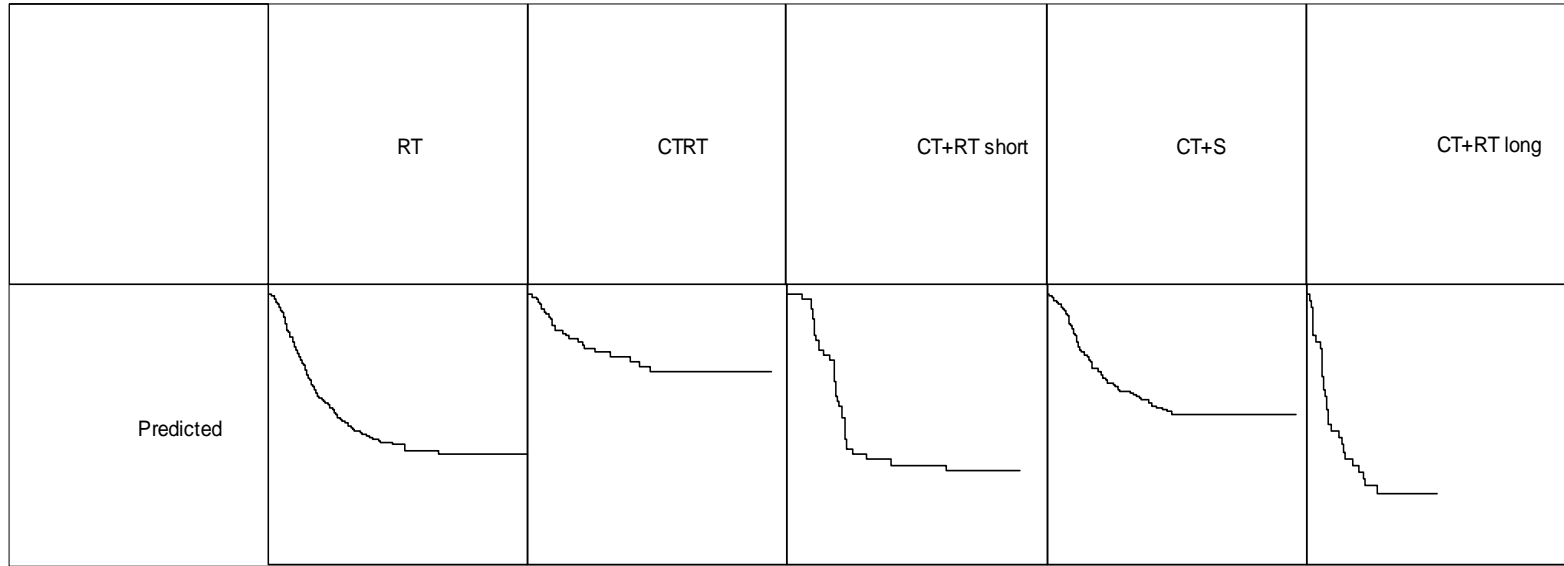
RT = radiotherapy, CTRT = chemoradiation, CT+RT = chemotherapy and radiotherapy, CT+S = chemotherapy and surgery



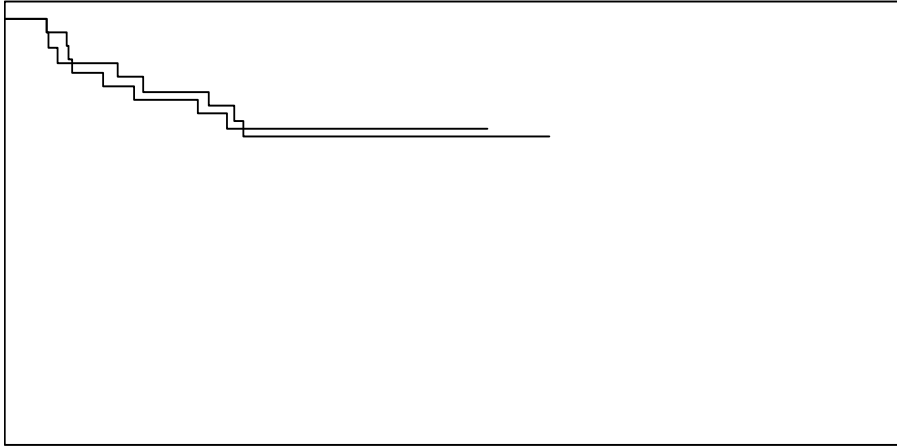
Naïve comparison averages down the column



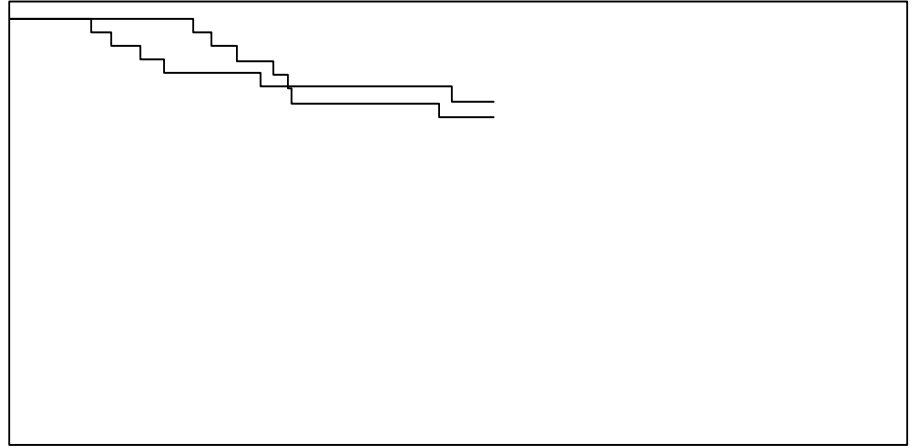
Indirect comparison estimates and synthesises relative treatment effects across the rows



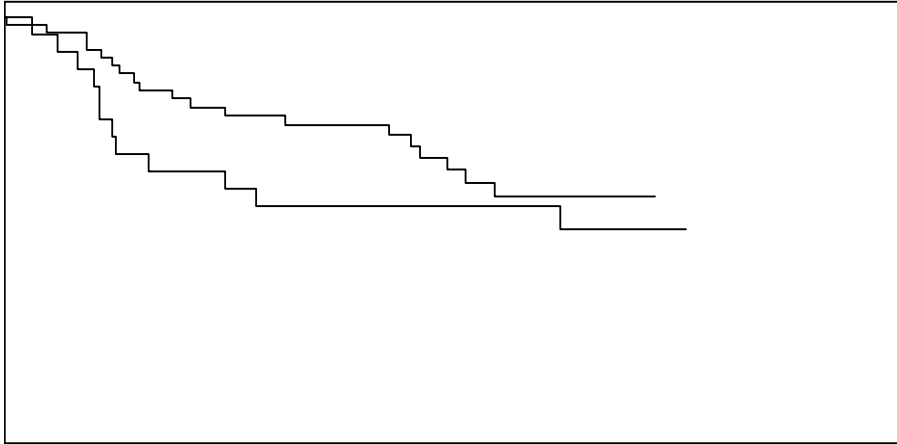
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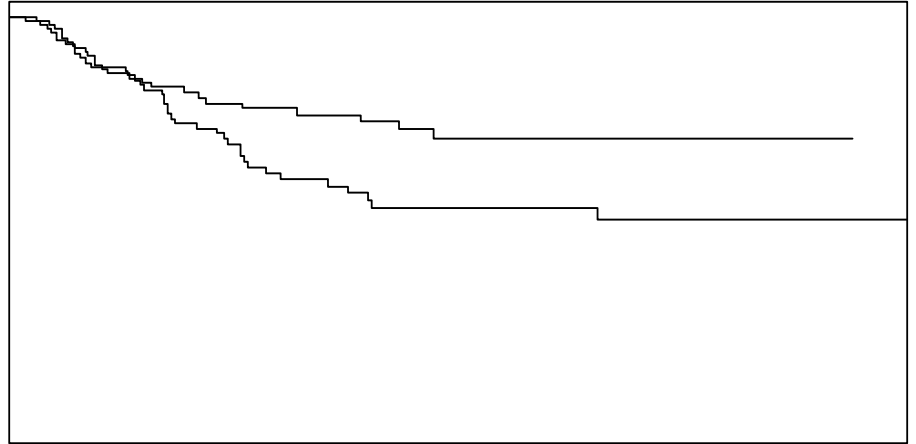
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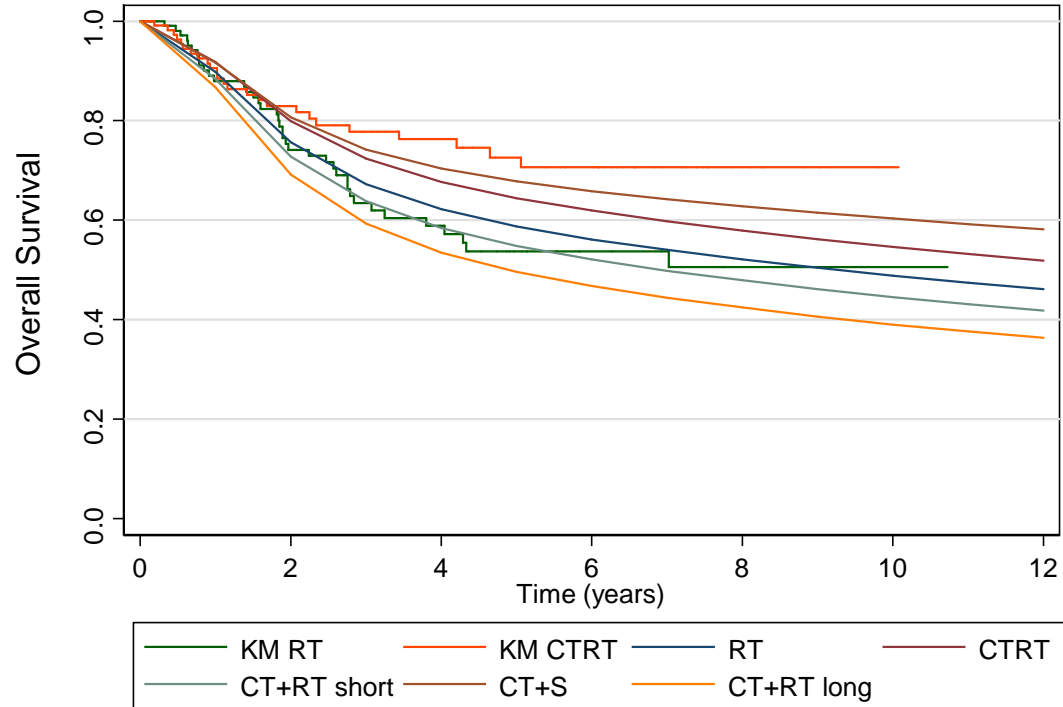
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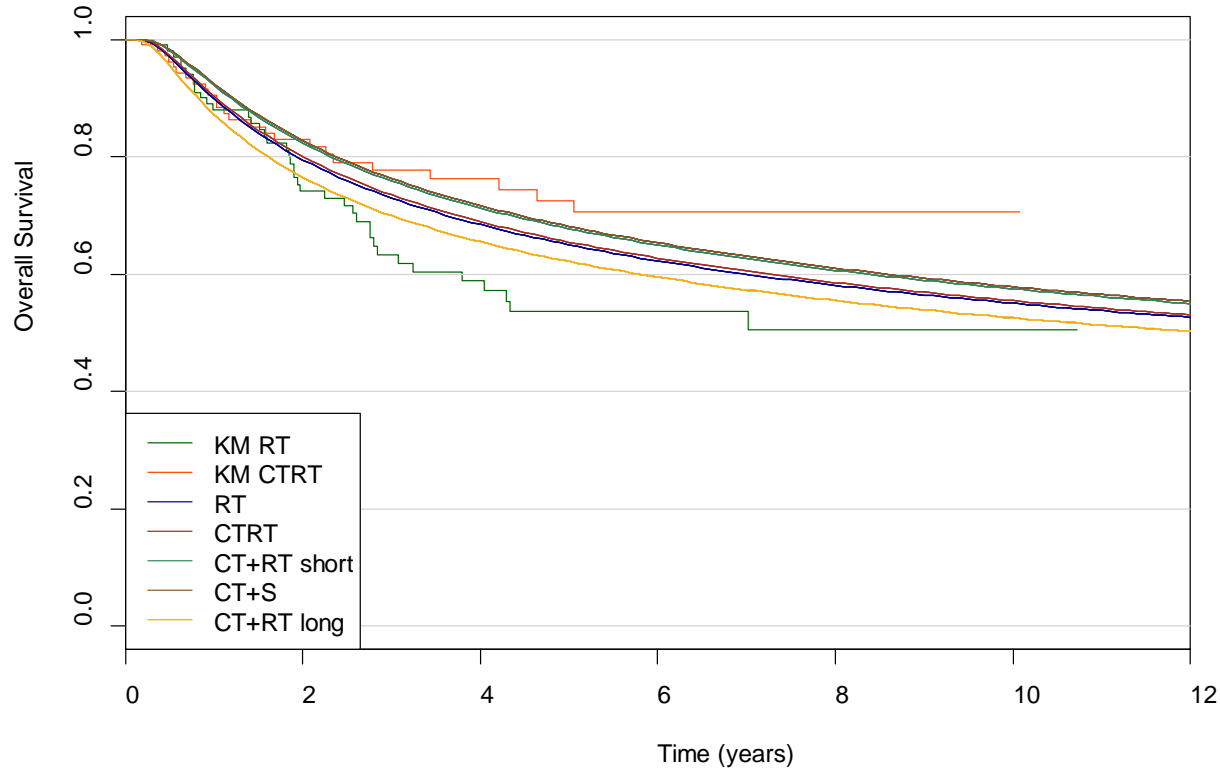


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RT = radiotherapy, CTRT = chemoradiation, CT+RT = chemotherapy and radiotherapy, CT+S = chemotherapy and surgery, KM = Kaplan-Meier

Generalised Gamma



RT = radiotherapy, CTRT = chemoradiation, CT+RT = chemotherapy and radiotherapy, CT+S = chemotherapy and surgery, KM = Kaplan-Meier

Other approaches

- Piecewise Exponential
- Fractional Polynomial
- Other parametric approaches:
 - Log-logistic
 - Weibull

Considerations for choosing between models

- Risk of over fitting (e.g. is the model highly parameterised?)
- Are user-defined parameters required? (e.g. time intervals, number of knots)
- Reliability of estimation (e.g. is model sensitive to starting values?)
- Reliability of extrapolation (e.g. what happens when number of events is small?)
- Interpretability of parameters
- Ease of comparison back to individual trials

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