



**Implications in Economic Analyses**

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## Assessing the Implication of Parametric Form on Projected Cost Effectiveness

**Objective**


- To demonstrate what happens when different parametric survival curves are used to predict cost effectiveness of chemotherapy
- Application uses data from Dooms et al. who evaluated single agent gemcitabine to cisplatin based doublet chemotherapy

1. Eur Respir J 2006; 27:895-901.



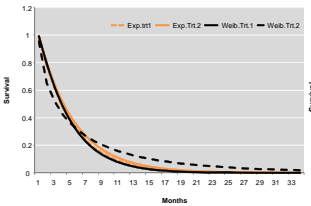
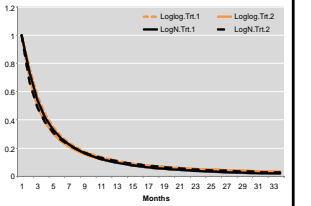
## Methods


- Individual survival model were fitted to standard and test treatment arm using:
  - Exponential
  - Log-logistic
  - Log normal
  - Weibull
- Total per-patient costs
  - Cisplatin-vindesine €4,502
  - Gemcitabine €6,024
- Baseline utility 0.39



## Parametric Survival Models

- Survival curves modelled:



## Results: Full Data Set

Cost utility paper by Dooms et al. reported baseline cost effectiveness of €13,836 with sensitivity ranging from €6,900 to €57,075

Base Case Cost Utility (Dooms et al.)	
Incremental Cost	€1,522.00
Incremental QALYs	0.110
Cost per QALY	€13,836.36

The table below reports the incremental costs, quality adjusted life years (QALYs) and cost effectiveness for the four survival models:

Results				
	Exponential	Weibull	Log-logistic	Log Normal
Incremental Cost	€1,522.00	€1,522.00	€1,522.00	€1,522.00
Incremental QALYs	0.033	0.090	-0.038	0.441
Cost per QALY	€45,702.24	€16,842.05	-€39,873.40	€3,447.78

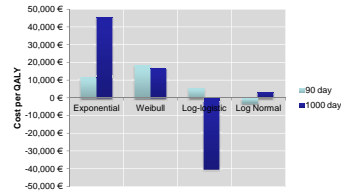
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## Results: 90 day censoring

Incremental costs, quality adjusted life years (QALYs) and cost effectiveness for the four survival models fitted to 90 day censored data:

Results				
	Exponential	Weibull	Log-logistic	Log Normal
Incremental Cost	€1,522.00	€1,522.00	€1,522.00	€1,522.00
Incremental QALYs	0.129	0.083	0.267	-0.472
Cost per QALY	€11,794.07	€18,370.96	€5,694.00	-€3,222.88



Graph contrasts cost per QALY using full and 90 day censored data for the four survival models

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## Parametric Survival Modeling and Cost Effectiveness

- The choice of model clearly has the potential to influence the results dramatically
- Sensitivity analysis conducted in the Dooms lung cancer study demonstrated the ICER varied between €3,2750 and €49,780
- Our analysis demonstrates greater variability is achieved via changing the parametric form only
- Analysis of goodness of fit does not help support and/or justify extrapolations
- Sensitivity analysis has to include the parametric form also

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