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Background

- ❖ Optimal radiotherapy utilisation (O-RTU) models estimate evidence-based radiotherapy use in patients
- ❖ Radiotherapy (RT) under-used for wide range of cancers
- ❖ Factors that influence the actual use of radiotherapy (A-RTU) are not well identified

Aims/Objectives

- ❖ Calculate the A-RTU rate for rectal cancer
- ❖ Identify the influencing factors
- ❖ Compare the A-RTU and O-RTU¹
- ❖ Quantify the shortfall effects on local control (LC) and overall survival (OS)²

Methods

- ❖ Data source: NSW cancer registry and RT database
- ❖ A-RTU rate for rectal cancer in 2009-2011
- ❖ RTU Shortfalls assessed
- ❖ LC and OS shortfalls in person numbers estimated
- ❖ Factors affecting A-RTU identified through logistic regression analyses

Study highlights

- ❖ Radiotherapy under-utilised in rectal cancer
 - *Esp. in older age and lower SES*
- ❖ Increased risk of recurrence and death
- ❖ Further exploration of factors influencing RTU
- ❖ Equitable services across population needed

Results

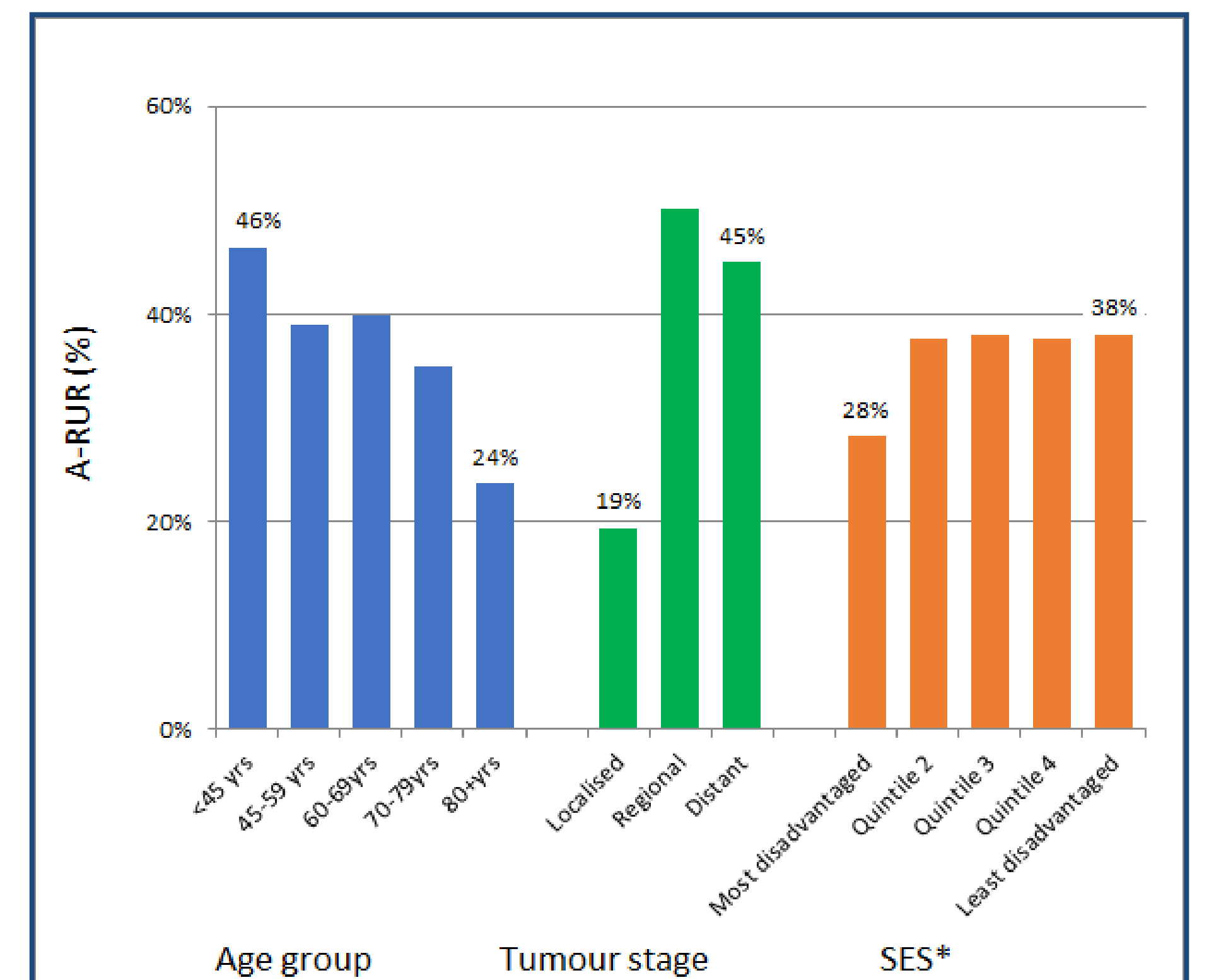
- ❖ A-RTU rate below model estimated O-RTU (Figure 1) rate (36% vs 55%)
In 3 years the shortfall lead to (Table 1)
- ❖ 165 LC failures
- ❖ 51 early deaths

Results

- ❖ Factors that significantly (p<0.05) predicted **lower** A-RTU (Figure 2)
 - Older age
 - Localised tumour spread (stage)
 - Socio-economic disadvantage

Attribute	RTU (%)	5-yr overall survival		5-yr Local control	
		Shortfall (%)	Benefit (%)	Loss (N)	Benefit (%)
T1-2 N0 M0, Local Excision	76%	0%	0	12%	39
T1-2 N0 M0, Radical surgery		RT not recommended			
T3-4 Any N M0, or Any T N2-3 M0	37%	7%	32	18%	81
Any T Any N M1	0%	0%		0%	
Unknown	36%	4%	19	13%	62
All rectal cancer	35%	4%	51	13%	165
Benefit shortfall per year			17		55

Table 1. RTU for rectal cancer and patient outcomes



*SES- Index of relative socio-economic disadvantage (IRSD) ranking of residents in an area

Figure 2. Influencing factors

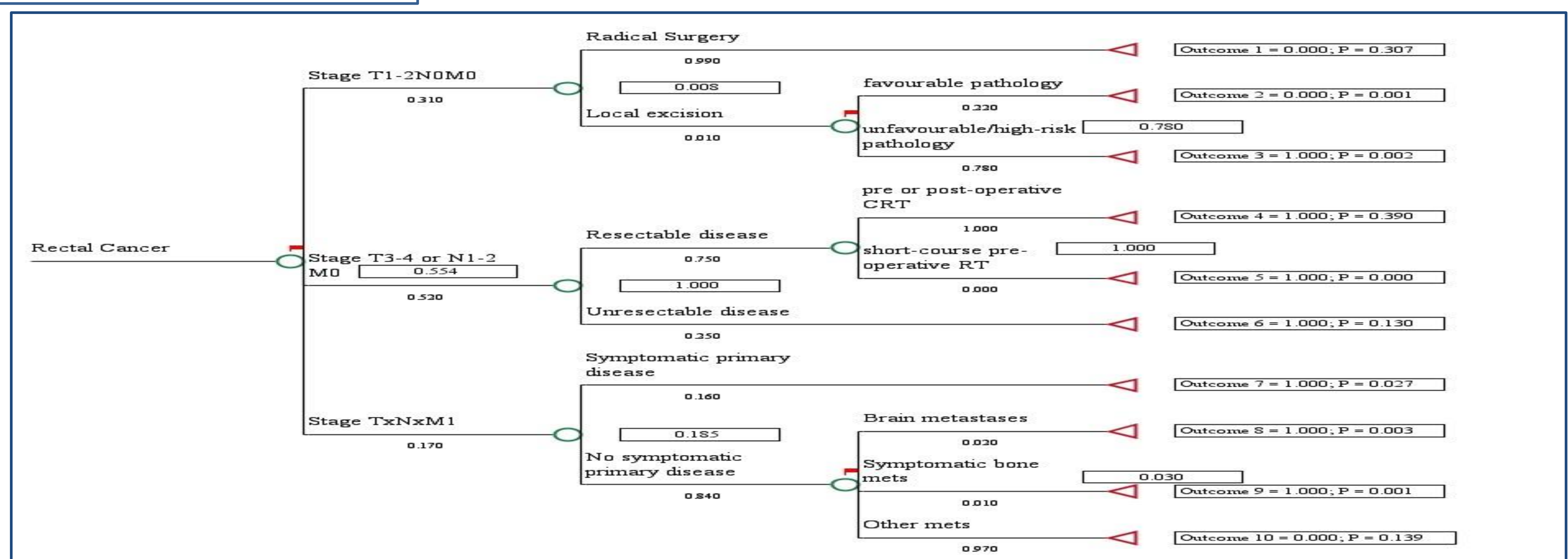


Figure 1. Rectal cancer O-RTU model

Acknowledgement

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References

1. Barton MB, Jacob S, Shafiq J, Wong K, Thompson SR, Hanna TP, et al. Estimating the demand for radiotherapy from the evidence: a review of changes from 2003 to 2012. *Radiotherapy and oncology*. 2014;112(1):140-4.
2. Hanna TP, Shafiq J, Delaney GP, Vinod SK, Thompson SR, Barton MB. The population benefit of evidence-based radiotherapy: 5-Year local control and overall survival benefits. *Radiotherapy and oncology* 2018;126(2):191-7.