

Surgical sutures

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Introduction

Leaper *et al* [1] presented a model that compared antimicrobial surgical sutures (absorbable sutures impregnated with triclosan, TCS) with standard care, absorbable sutures with no antimicrobial impregnation (NCS). The model was evaluated in three scenarios:

- clean wounds;
- clean-contaminated wounds;
- contaminated and dirty wounds

Scenario 1: clean wounds

The model

The decision tree defined by Leaper *et al* [1] is shown in figure 1. The model had six input variables: the probability of an SSI with NCS, the risk ratio of an SSI with TCS compared with NCS, cost of TCS, cost of NCS, number of sutures per surgical procedure and cost of an admission with diagnosis of infection. The uncertainties in the estimates of the variables were described by distributions with hyperparameters (Table 1).

Table 1: Model inputs

Description	Units	Distribution	Mean	Q2.5	Q97.5
Excess cost SSI	GBP	Ga(6,500)	3000	1101	5834
P(SSi NCS)	P	Be(653,6465)	0.09174	0.08514	0.09855
RR(SSi TCS)	RR	LN(-0.407,0.118)	0.67	0.5284	0.8379
VICRYL plus, pack	GBP	Ga(100,0.036)	3.63	2.954	4.375
Sutures per procedure	n	Ga(200,0.01)	2	1.732	2.287
VICRYL, pack	GBP	Ga(100,0.029)	2.88	2.343	3.471

Results

Suture	Run	Probability	Cost	Benefit	Utility
Antimicrobial	1	1	191.7	0	1
Non-antimicrobial	1	1	281	0	1

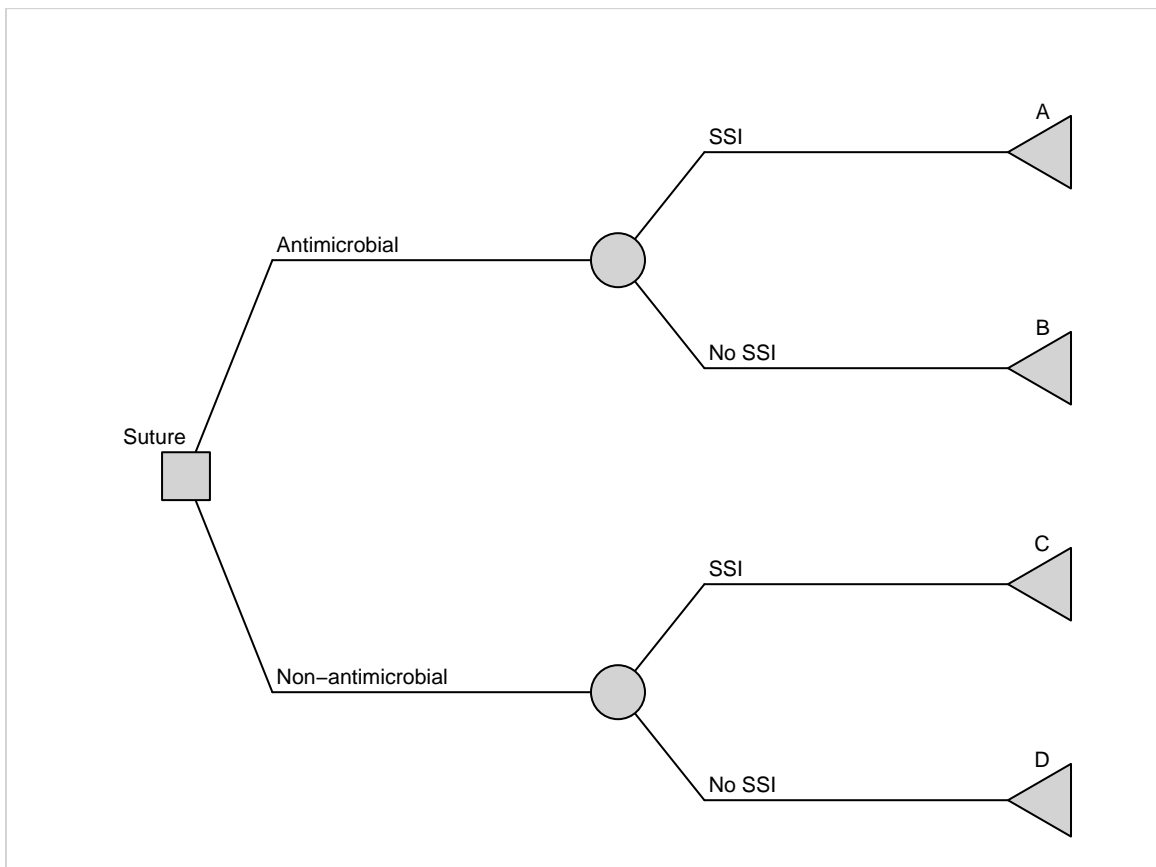


Figure 1: Decision tree for all scenarios.

Tornado diagram

Table 3: Table continues below

	Description	Units	Q2.5	Q97.5	outcome.min
1	Excess cost SSI	GBP	1101	5834	31.83
3	RR(SSl TCS)	RR	0.5284	0.8379	128.3
2	P(SSl NCS)	P	0.08514	0.09855	82.79
4	VICRYL plus, pack	GBP	2.954	4.375	90.67
6	VICRYL, pack	GBP	2.343	3.471	88.25
5	Sutures per procedure	n	1.732	2.287	89.52

	outcome.max
1	175.1
3	43.11
2	96.07
4	87.83
6	90.5
5	89.11

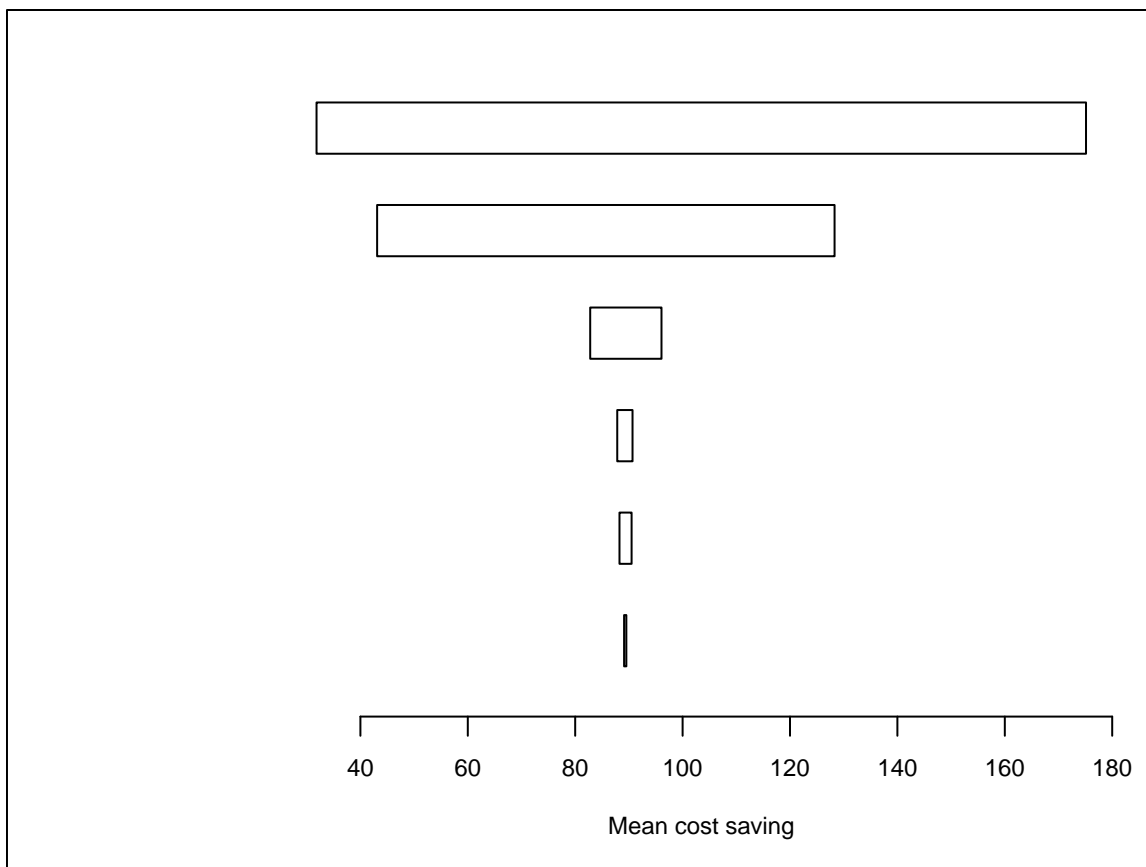


Figure 2: Tornado chart showing mean cost savings per procedure.

References

- 1 Leaper DJ, Edmiston Jr CE, Holy CE. Meta-analysis of the potential economic impact following introduction of absorbable antimicrobial sutures. *BJS (British Journal of Surgery)* 2017;**104**:e134–44. doi:10.1002/bjs.10443