

Appendix C - Sensitivity analysis

Table S1. Parameter values sensitivity analysis: surveillance cultures + clinical cultures

		Pooled*	LTACH A	LTACH B	LTACH C	LTACH D
Background transmission rate (per day), median (95% CrI)	α	0.0026 (0.0015-0.0046) †	0.0019 (0.00024-0.0043)	0.0030 (0.00033-0.0059)	0.0042 (0.0021-0.0065)	0.0015 (0.00047-0.0030)
Patient-dependent transmission rate (per colonized patient per day), median (95% CrI)	β	0.020 (0.011-0.036) †	0.026 (0.012-0.040)	0.0084 (0.00046-0.021)	0.013 (0.0037-0.023)	0.038 (0.015-0.067)
Probability to be positive on admission, median (95% CrI)	f	0.17 (0.14-0.21)	0.13 (0.11-0.17)	0.16 (0.13-0.20)	0.22 (0.19-0.24)	0.18 (0.15-0.22)
Sensitivity of the screening process, median (95% CrI)	φ	0.90 (0.87-0.92)	0.92 (0.85-0.97)	0.88 (0.83-0.93)	0.88 (0.84-0.92)	0.93 (0.87-0.97)

95% CrI: 95% credible interval

* mean and 95% confidence interval instead of median and 95% credible interval

† values after transformation back to the original scale

The parameter estimates found after adding positive clinical cultures to the data (Table S1) are comparable to the estimates of the original model. Slight differences can be seen in the estimates for the patient-dependent transmission rate and the sensitivity, although these are not significant.

Table S2. Parameter values sensitivity analysis 2: surveillance cultures + artificial positive cultures

		Pooled*	LTACH A	LTACH B	LTACH C	LTACH D
Background transmission rate (per day), median (95% CrI)	α	0.0015 (0.00082-0.0029) †	0.00091 (0-0.0031)	0.0015 (0-0.0036)	0.0029 (0.00062-0.0050)	0.0013 (0.00024-0.0028)
Patient-dependent transmission rate (per colonized patient per day), median (95% CrI)	β	0.0069 (0.0032-0.015) †	0.0087 (0.0010-0.018)	0.0047 (0.00028-0.012)	0.0064 (0.00052-0.015)	0.015 (0.0016-0.037)
Probability to be positive on admission, median (95% CrI)	f	0.28 (0.25-0.31)	0.29 (0.25-0.35)	0.26 (0.22-0.31)	0.31 (0.28-0.35)	0.26 (0.22-0.30)
Sensitivity of the screening process, median (95% CrI)	φ	0.73 (0.63-0.82)	0.63 (0.53-0.72)	0.70 (0.61-0.78)	0.71 (0.64-0.77)	0.86 (0.78-0.92)

95% CrI: 95% credible interval

* mean and 95% confidence interval instead of median and 95% credible interval

† values after transformation back to the original scale

The parameter estimates from Table S2, after adding artificial positive cultures on the day of admission for patients with a positive culture in a previous admission, are mostly comparable to the original analysis. The estimates for the transmission parameters seem to be slightly lower when adding artificial positive cultures. In line with this, the probability to be positive on admission is (significantly) higher than in the original model. The most obvious explanation for this observation is the fact that extra positive cultures on admission were added. Probably, in the original model, these patients were not labeled as positive on admission, but some were thought to have acquired KPC later in the admission (via transmission from another positive patient). This scenario, however, represents the extreme case where loss of KPC colonization never occurs. These results can be interpreted as a lower boundary on the transmission rate β .