Table 1 – supplementary material: Base case parameter estimates, ranges used for deterministic sensitivity analyses and distributions for probabilistic sensitivity analyses

Parameter	Base case	Range	Distribution	Reference
Effectiveness inputs – Open surgery				
Proportion of patients with hypothermia post-surgery: warmed humidified CO_2	0%	0-18%	Beta (0.05^{1},40)	[8]
Proportion of patients with hypothermia post-surgery: usual care	18%	0-30%	Beta (7,32)	[8]
Probability of myocardial infarction: normothermia	1.1%	0-5%	Beta (8, 690)	[4]
Probability of myocardial infarction: hypothermia	3.3%	0-10%	Beta (23,684)	[4]
Probability of stoke: normothermia	1.0%	0-5%	Beta (7, 691)	[4]
Probability of stroke: hypothermia	6.5%	0-15%	Beta (46, 661)	[4]
Probability of sepsis: normothermia	2.6%	0-5%	Beta (18, 680)	[4]
Probability of sepsis: hypothermia	7.5%	0-15%	Beta (53, 654)	[4]
Probability of wound infection: normothermia	3.3%	0-10%	Beta (23,675)	[4]

Parameter	Base case	Range	Distribution	Reference
Probability of wound infection: hypothermia	5.0%	0-10%	Beta (35,672)	[4]
Probability of pneumonia: normothermia	1.3%	0-5%	Beta (9, 689)	[4]
Probability of pneumonia: hypothermia	5.1%	0-10%	Beta (36, 671)	[4]
Probability of mortality: normothermia	4.0%	0-10%	Beta (28, 670)	[4]
Probability of mortality: hypothermia	17.0%	0-30%	Beta (120, 587)	[4]
Effectiveness inputs – Open surgery *(Data for scenario analysis)*				
Kurz *et al*. (1996): Probability of wound infection: normothermia	6%	N/A	Beta (6,98)	[6]
Kurz *et al*. (1996): Probability of wound infection: hypothermia	19%	N/A	Beta (18,78)	[6]
Flores Maldonado *et al*. (2001): Probability of wound infection: normothermia	1.9%	N/A	Beta (2,103)	[12]
Flores Maldonado *et al*. (2001): Probability of wound infection: hypothermia	11.5%	N/A	Beta (18,138)	[12]

Parameter	Base case	Range	Distribution	Reference
Anannamcharoen *et al*. (2012): Probability of wound infection: normothermia	17.6%	N/A	Beta (22,103)	[13]
Anannamcharoen *et al*. (2012): Probability of wound infection: hypothermia	30.8%	N/A	Beta (32,72)	[13]
Effectiveness inputs – Laparoscopic surgery				
Probability of wound infection: warmed humidified CO_2	5.1%	0-10%	Beta (7,116)	[9]
Probability of wound infection: standard care	13.0%	4-20%	Beta (16,107)	[9]
Probability of pneumonia: warmed humidified CO_2	0.8%	0-2.5%	Beta (1,125)	[14]
Probability of pneumonia: standard care	3.2%	0-10%	Beta (4, 122)	[14]
Proportion of patients with hypothermia post-surgery: warmed humidified CO_2 at 36°C (35°C)	14.3% (0%)	N/A	Beta (5,30) (Beta (0,35))	[15] – personal communication with author

Parameter	Base case	Range	Distribution	Reference
Proportion of patients with hypothermia post-surgery: usual care at 36°C (35°C)	23.1% (7.7%)	N/A	Beta (9,30) (Beta (3,36))	[15] – personal communication with author
Quality of life – disutility				
Myocardial infarction	0.04 per year	0-0.2	Gamma (41820,0)	[19]
Stroke	0.05 per year	0-0.2	Gamma (274576,0)	[19]
Sepsis[2,3]	0.08 in first year; 0.0 thereafter	0-0.2	Gamma (25, 0.003)	[20]
Surgical site infection[2,4]	0.006 in first year; 0.0 thereafter	0-0.1	Gamma (25, 0.0002)	[21]
Pneumonia[2]	0.008 in first year, 0.0 thereafter	0-0.1	Gamma (25, 0.0003)	[22]
Mortality	0.5 per year	0-1	Gamma (25, 0.02)	Assumption
Complication costs				

Parameter	Base case	Range	Distribution	Reference
Myocardial infarction	£2,254[4]	£1,000 - £5,000	Gamma (£25, £90)	[23,24]
Stroke	£6,537[5]	£3,000 - £10,000	Gamma (£25, £261)	[24,25]
Sepsis	£2,182[6]	£1,000 - £5,000	Gamma (£25, £87)	[24]
Surgical site infection	£5,239	£4,622 - £6,719	Gamma (£96, £55)	[17]
Pneumonia	£1,825[7]	£1,000 - £5,000	Gamma (£25, £73)	[24]
Mortality	£0	£0-£4,000	Fixed	Assumption
Intervention costs				
Cost of humidifier	£1,600	Fixed	Fixed	Fisher and Paykel
Consumables – laparoscopic surgery	£75 per patient	Fixed	Fixed	Fisher and Paykel
Consumables – open surgery	£99 per patient	Fixed	Fixed	Fisher and Paykel

Parameter	Base case	Range	Distribution	Reference
Comparator – laparoscopic surgery	£5	Fixed	Fixed	Fisher and Paykel
Hours of nurse training (at a cost of £51 per hour – PSSRU, nurse team manager unit cost [13]	25 hours	10 – 60 hours	Fixed	Fisher and Paykel
Number of patients using each humidifier	200	10-200	Fixed	Fisher and Paykel
Discount rate (costs and benefits)	3.5%	Fixed	Fixed	[27]

[1] Alpha has not been set to 0, since there is likely some uncertainty in this result. In order to capture this uncertainty an estimation has been made. Based on a sample size of 40 and an underlying probability of hypothermia in the HumiGard™ system patients of 0.00128, there is a 95% chance of the trial showing no patients had hypothermia (alpha = 0). With an underlying probability of 0.00128, alpha is equal to 0.051 and beta is equal to 39.949.

[2] For each of these complications, an initial disutility was applied. No further disutility was applied; hence any quality of life decrement occurred immediately with no lasting quality of life decrement.

[3]Utility decrement of 0.11 was applied for 8.5 months. 8.5 months was estimated based on the average utility decrement duration for severe sepsis of 17 months and the average duration for non-severe sepsis of 0 months.

[3] The disutility of a surgical site infection was 0.07 QALYs per year. This was applied for a duration of 1 month.

[5] Cost comprises, first, initial hospital stay and treatment (£1,608) based on the total HRG weighted average cost of long-stay and short-stay for actual or suspected myocardial infarction from NHS reference costs (2013-14) [21] and second, longer terms annual costs from NICE clinical guideline 127 inflated to 2013/14 costs (£645 per year) [19].

[6] Cost comprises, first, initial hospital stay and treatment (£2,788) based on the total HRG weighted average cost of stoke and TIA from NHS reference costs (2013-14) [20] and second, longer terms annual costs calculated from NICE costing template TA 249 and inflated to 2013/14 costs (£3,749 per year) [21].

[6] Cost is the total HRG weighted average of septicaemia costs [20].

[7] Cost is the total HRG weighted average of lobar, atypical or viral pneumonia, bronchopneumonia and unspecified acute lower respiratory infection [20]