

Supplementary Table 1 – Summary of the retrieved utility values for the different health states

Study	no UTI	UTI	Severe UTI	Bacteraemia
Craven 2012 [30]		0.28 (SD=0.28)	0.15 (SD=0.18)	
Lee 2008 [31]	0.68-0.70 (SD=0.01)	0.58-0.60 (SD=0.01)		
Birmingham 2013 [3]	0.831 (95%CI 0.809-0.852)	0.782 (95%CI 0.764-0.799)	First-line-resistant UTI 0.760 (95%CI 0.685-0.834) Multidrug-resistant UTI 0.738 (95%CI 0.688-0.787)	0.716 (95%CI 0.645-0.786)
Clark 2015 [4]	0.468	disutility 0.060	disutility 0.104 (antibiotic resistant) disutility 0.160 (UTI not responding to initial treatment)	

CI=confidence interval, SD=standard deviation

Supplementary Table 2 – Healthcare resource consumption for the considered health states/events

Health state	Category	Type	mean number per patient	dosage (mg) per patient	% patients
Alive (1 year)	Visits	Specialist visit	1.99		
		Exams/procedures	Abdomen ultrasound	0.11	
	Bladder ultrasound		0.81		
	Creatinine		0.20		
	Magnetic resonance imaging		0.02		
	Pelvic floor examination		0.03		
	Cystography		0.06		
	Renal scintigraphy		0.01		
	Urine culture		3.60		
	Urine exam		2.39		
	Urodynamics		0.46		
	Video-urodynamics		0.17		
	Hospitalisation (DRG)		313 - Urethral Procedures, Age Greater than 17 without CC	0.01	
		309 - Minor Bladder Procedures without CC	0.01		
		323 - Urinary Stones with CC and/or ESW Lithotripsy	0.03		
		324 - Urinary Stones without CC	0.02		
		325 - Kidney and Urinary Tract Signs and Symptoms, Age Greater than 17 with CC	0.03		
		326 - Kidney and Urinary Tract Signs and Symptoms, Age Greater than 17 without CC	0.14		
		329 - Urethral Stricture, Age Greater than 17	0.01		

		without CC			
	Drugs	Antimuscarins		5,576	73%
		Botulinum toxin injection	2		25%
		Antibiotics (prophylaxis): sulfamethoxazole+trimethoprim, amoxicillin, levofloxacin, ciprofloxacin		69,127	16%
Symptomatic UTI	Visits	Specialist visit	0.93		
	Exams/procedures	Creatinine	0.11		
		Bladder ultrasound	0.41		
		Blood culture	0.02		
		Complete blood count	0.11		
		Urine exam	0.78		
		Kidney functionality	0.11		
		Urine culture	1.22		
	Hospitalisation (DRG)	321 - Kidney and Urinary Tract Infections, Age Greater than 17 without CC	0.52		
	Drugs	Antibiotics: amikacin, amoxicillin, ampicillin, cefixime, cefpodoxim, ceftriaxone, ciprofloxacin, imipenem, levofloxacin, meropenem, prulifloxacin, sulfamethoxazole+trimethoprim		22,411	127%*
First-line-resistant UTI (resources in addition to symptomatic UTI)	Visits	Specialist visit	1.17		
	Exams/procedures	Stool culture	0.01		
		Creatinine/glycaemia	0.44		
		Abdomen ultrasound	0.11		
		Bladder ultrasound	0.37		
		Blood culture	0.33		
		Urine exam	1.44		
Video-urodynamics	0.11				

		Lactate	0.11		
		Polymerase Chain Reaction	0.11		
		Urine culture	1.78		
		Erythrocyte sedimentation rate	0.11		
	Hospitalisation (DRG)	320 - Kidney and Urinary Tract Infections, Age Greater than 17 with CC	0.07		
	Drugs	Antibiotics: amikacin, ceftazidime, ceftriaxone, gentamicin, imipenem, meropenem, minocycline, piperacillin, thienamycin		16,278	89%
Multidrug-resistant UTI (resources in addition to first-line-resistant UTI)	Visits	Specialist visit	1.2		
	Day-hospital	320 - Kidney and Urinary Tract Infections, Age Greater than 17 with CC	0.02		
	Exams/procedures	Cystoscopy	0.07		
		Colonoscopy	0.11		
		Bladder ultrasound	0.44		
		Bact smear-lower gastro-intestinal	0.11		
		Bowel diagnostic procedure NEC	0.13		
		Computerised tomography scan	0.13		
		Urine exam	1.33		
		Urine culture	1.56		
		Video-urodynamics	0.11		
		Blood culture	0.11		
	Intestinal x-ray NEC	0.11			
	Hospitalisation (DRG)	320 - Kidney and Urinary Tract Infections, Age Greater than 17 with CC	0.03		
Drugs	Antibiotics: amikacin, imipenem, meropenem, piperacillin		7,556	34%	

Bacteraemia	Hospitalisation (DRG)	576 - Septicaemia without mechanical ventilation	0.59		
		320 - Kidney and Urinary Tract Infections, Age Greater than 17 with CC	0.03		
	Day-hospital	576 - Septicaemia without mechanical ventilation	0.22		
	Drugs	Antibiotics: cefepime, ceftazidime, imipenem, levofloxacin, meropenem, teicoplanin		12,311	56%
Infection leading to patient death	Hospitalisation (DRG)	575 - Septicaemia with mechanical ventilation >=96 h	0.45		
	Drugs	Antibiotics: amikacin, imipenem, meropenem, vancomycin		12,222	34%
Haematuria	Visits	Specialist visit	0.71		
	Exams/procedures	Cystoscopy	0.02		
		Bladder ultrasound	0.24		
		Urine exam	0.56		
		Percutaneous cystostomy	0.06		
		Urethroscopy	0.21		
		Urine culture	0.22		
	Hospitalisation (DRG)	309 - Minor Bladder Procedures without CC	0.002		
		332 - Other Kidney and Urinary Diagnoses, Age Greater than 17 without CC	0.04		
		326 - Kidney and Urinary Tract Signs and Symptoms, Age Greater than 17 without CC	0.01		
	Drugs	Antibiotics: cefepime, ciprofloxacin, levofloxacin		2,556	30%

* More than one treatment is administered, DRG=Diagnosis Related Group, CC=complications, NEC=not elsewhere classifiable

Supplementary Table 3 – Costs references related to the healthcare resource consumption

Visits/exams	Official tariff/cost
Specialist visit	€20.66
Abdomen ultrasound	€32.02
Bact smear-lower gastro-intestinal	€2.53
Bladder ultrasound	€32.02
Blood culture	€26.44
Bowel diagnostic procedure NEC	€51.65
Colonoscopy	€86.80
Complete blood count	€3.17
Computerised tomography scan	€126.90
Creatinine	€1.13
Creatinine/glycaemia	€1.17
Cystography	€48.29
Cystoscopy	€79.52
Erythrocyte sedimentation rate	€1.95
Intestinal x-ray NEC	€51.65
Kidney functionality	€18.84
Lactate	€4.84
Magnetic resonance imaging	€120.08
Pelvic floor examination	€90.00
Percutaneous cystostomy	€32.76

Polymerase Chain Reaction	€3.87
Renal scintigraphy	€56.81
Stool culture	€12.01
Urethroscopy	€38.22
Urine culture	€8.31
Urine exam	€2.17
Urodynamics	€56.81
Video-urodynamics	€104.07
DRGs	
309 - Minor Bladder Procedures without CC	€3,397.00
313 - Urethral Procedures, Age Greater than 17 without CC	€3,059.00
320 - Kidney and Urinary Tract Infections, Age Greater than 17 with CC	€2,701.00
321 - Kidney and Urinary Tract Infections, Age Greater than 17 without CC	€1,883.00
323 - Urinary Stones with CC and/or ESW Lithotripsy	€1,372.00
324 - Urinary Stones without CC	€935.00
325 - Kidney and Urinary Tract Signs and Symptoms, Age Greater than 17 with CC	€1,878.00
326 - Kidney and Urinary Tract Signs and Symptoms, Age Greater than 17 without CC	€1,075.00
329 - Urethral Stricture, Age Greater than 17 without CC	€781.00
332 - Other Kidney and Urinary Diagnoses, Age Greater than 17 without CC	€1,008.00
575 - Septicaemia with mechanical ventilation >=96 h	€21,349.00
576 - Septicaemia without mechanical ventilation	€5,493.00
Day-hospitals	

320 - Kidney and Urinary Tract Infections, Age Greater than 17 with CC	€216.00
576 - Septicaemia without mechanical ventilation	€247.00
Drugs	
Botulinum toxin injection	€658.00
Antimuscarins (mean cost per mg)	€0.032
Antibiotics (prophylaxis): sulfamethoxazole+trimethoprim, amoxicillin, levofloxacin, ciprofloxacin (mean cost per mg)	€0.003
Antibiotics mix - Symptomatic UTI: amikacin, amoxicillin, ampicillin, cefixime, cefpodoxim, ceftriaxone, ciprofloxacin, imipenem, levofloxacin, meropenem, prulifloxacin, sulfamethoxazole+trimethoprim (mean cost per mg)	€0.002
Antibiotics mix - First-line-resistant UTI: amikacin, ceftazidime, ceftriaxone, gentamicin, imipenem, meropenem, minocycline, piperacillin, thienamycin (mean cost per mg)	€0.008
Antibiotics mix - Multidrug-resistant UTI: amikacin, imipenem, meropenem, piperacillin (mean cost per mg)	€0.05
Antibiotics mix - Bacteraemia: cefepime, ceftazidime, imipenem, levofloxacin, meropenem, teicoplanin (mean cost per mg)	€0.04
Antibiotics mix - Infection leading to patient death: amikacin, imipenem, meropenem, vancomycin (mean cost per mg)	€0.04
Antibiotics mix - Haematuria: cefepime, ciprofloxacin, levofloxacin (mean cost per mg)	€0.01

DRG=Diagnosis Related Group, CC=complications, NEC=not elsewhere classifiable

Supplementary Table 4 – Model parameters and distributions used in PSA (unless otherwise specified, variation ranges refer to +/- 50% of the baseline value)

Parameter	Base case value	Variation range	Distribution type	Alpha	Beta
Utility coefficients for the health states/events					
Alive	0.831	0.809 - 0.852 §	beta	969.1	197.1
Symptomatic UTI (4 days)	0.782	0.764 - 0.799 §	beta	1671.49	465.96
First-line-resistant UTI (8 days)	0.76	0.685 - 0.834 §	beta	95.2	30.1
Multidrug-resistant UTI (8 days)	0.738	0.688 - 0.787 §	beta	222.99	79.16
Bacteraemia (37 days or 65 if leading to death)	0.716	0.645 - 0.786 §	beta	111.82	44.35
Haematuria (2 days)	0.738	0.688 - 0.787 §	beta	223.0	79.2
Annual transition probabilities					
Symptomatic UTI → First-line-resistant UTI	0.083	0.0 - 23.2 §	beta	1.75	19.36
Symptomatic UTI → Multidrug-resistant UTI	0.07	5.1 - 9.2 §	beta	41.6	552.5
Symptomatic UTI → Bacteraemia	0.036	3.4 - 3.8 §	beta	1200	32129
Multidrug-resistant UTI → Death	0.026	1.3 - 5.1 §	beta	3.1	37.0
Bacteraemia → Death	0.077	2.9 - 19.2 §	beta	7.09	263.42
Mean number of events per patient per year					
Symptomatic UTI	1.68	0.84 - 2.52	gamma	100.0	0.077
Haematuria	0.29	0.14 – 0.49	gamma	38	0.009
Rate ratios					
Symptomatic UTI (uncoated vs. hydrophilic)	0.47	0.47 – 0.92	lognormal	0.024*	
Haematuria (uncoated vs. hydrophilic)	1.35	0.68 – 2.03	lognormal	0.261*	
Costs					
Alive (annual cost)	954.48€	477€ - 1432€	gamma	100.0	9.5
Symptomatic UTI	1,091.86€	546€ – 1,638€	gamma	100.0	10.9
First-line-resistant UTI	401.20€	201€ - 602€	gamma	100.0	4.0
Multidrug-resistant UTI	775.36€	388€ – 1,163€	gamma	100.0	7.8
Bacteraemia	3,664.16€	1,832€ – 5,496€	gamma	100.0	36.6
Haematuria	106.10€	53€ - 159€	gamma	100.0	1.1

Death for bacteraemia	6,057.70€	3,029€ – 9,087€	gamma	100.0	60.6
Death for Multidrug-resistant UTI	9,721.86€	4,861€ – 14,583€	gamma	100.0	97.2

* standard error, § values reported are 95%CI

Supplementary Table 5 – One-way sensitivity analyses

Variable	Value			ICUR (€/QALY)		
	Low	Base case	High	Low	Base case	High
Start age	20	40	60	19,942	24,405	35,525
Proportion men	40%	80%	100%	25,014	24,405	23,789
Mean number per patient per year, Symptomatic UTI	0.84	1.68	2.52	67,340	24,405	10,411
Mean number per patient per year, Haematuria	0.15	0.29	0.44	24,254	24,405	24,557
Annual probability, First line resistant UTI	0.042	0.084	0.126	24,727	24,405	24,084
Annual probability, Multidrug-resistant UTI	0.035	0.070	0.105	29,797	24,405	20,797
Annual probability, Bacteraemia	0.018	0.036	0.054	34,298	24,405	19,073
Annual probability, Bacteraemia to Death	0.039	0.077	0.116	32,395	24,405	20,049
Annual probability, Multidrug-resistant UTI to Death	0.013	0.026	0.039	29,122	24,405	21,228
Rate ratio, Symptomatic UTI (uncoated vs. hydrophilic)	0.47	0.47	0.92	24,405	24,405	282,622
Rate ratio, Haematuria (uncoated vs. hydrophilic)	0.68	1.35	2.03	23,900	24,405	24,912
Standardised mortality ratio, men	0.90	1.80	2.70	23,355	24,405	25,294
Standardised mortality ratio, women	2.45	4.90	7.35	23,714	24,405	25,023
Annual cost, "Alive" health state	€ 477	€ 954	€ 1,432	23,844	24,405	24,966

Cost per Symptomatic UTI	€ 546	€ 1,092	€ 1,638	33,929	24,405	14,881
Cost per First-line-resistant UTI	€ 201	€ 401	€ 602	24,699	24,405	24,111
Cost per Multidrug-resistant UTI	€ 388	€ 775	€ 1,163	24,879	24,405	23,932
Cost per Bacteraemia	€ 1,832	€ 3,664	€ 5,496	25,556	24,405	23,255
Cost per Haematuria	€ 53	€ 106	€ 159	24,270	24,405	24,541
Cost per Death for bacteraemia	€ 3,029	€ 6,058	€ 9,087	24,554	24,405	24,257
Cost per Death for multidrug-resistant UTI	€ 4,861	€ 9,722	€ 14,583	24,563	24,405	24,248
Unit cost, hydrophilic catheter	€ 0.85	€ 1.70	€ 2.55	dominance	24,405	51,402
Unit cost, standard catheter	€ 0.13	€ 0.25	€ 0.38	28,147	24,405	20,663
Number of catheters per day	2	4	6	1,151	24,405	47,660
Duration of bacteraemia hospitalisation (days)	19	37	56	24,456	24,405	24,355
Duration of bacteraemia hospitalisation (days), leading to death	33	65	98	24,413	24,405	24,398
Duration of multidrug-resistant UTI-death hospitalisation (days)	33	65	98	24,410	24,405	24,400
Utility, Alive	0.416	0.831	1	65,598	24,405	19,440
Utility, Symptomatic UTI	0.391	0.782	1	22,709	24,405	25,466
Utility, First-line-resistant UTI	0.380	0.760	1	23,871	24,405	24,755
Utility, Multidrug-resistant UTI	0.375	0.749	1	23,926	24,405	24,737
Utility, Bacteraemia	0.358	0.716	1	23,782	24,405	24,923
Utility, Haematuria	0.369	0.738	1	24,532	24,405	24,316
Duration, Symptomatic UTI (days)	2	4	6	24,520	24,405	24,292

Duration, First-line-resistant UTI (days)	4	8	12	24,433	24,405	24,377
Duration, Multidrug-resistant UTI (days)	8	16	24	24,459	24,405	24,352
Duration, Bacteraemia (days)	19	37	56	24,488	24,405	24,323
Duration, Haematuria (days)	1	2	3	24,389	24,405	24,421
Duration, Bacteraemia, if leading to death (days)	33	65	98	24,417	24,405	24,393
Duration, pre-death multidrug-resistant UTI hospitalisation (days)	33	65	98	24,413	24,405	24,397
Discount rate, Costs	0	3.5%	5%	43,046	24,405	20,081
Discount rate, QALYs	0	3.5%	5%	11,255	24,405	32,433

* Catheters cost not included