Supplementary Material 10: Additional material for the discrete choice experiment

Table 1. Demographic characteristics by group

Variable	All groups combined (N=202)		Doctors (N=173)		Patients (N=20)		Managers (N=9)	
	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)
Gender – Female	100	49.5	78	45.1	17	85.0	5	55.6
Age	(47.4)	(11.0)	(46.8)	(10.2)	(51.9)	(16.2)	(48.8)	(10.4)
Race – White	158	78.2	131	75.7	19	95.0	8	88.9
Employment status								
Full-time employed	155	79.9	138	80.7	9	60.0	8	88.9
Part-time employment	29	15.0	29	17.0				
Retired	1	0.5	1	0.6				
Unemployed – and seeking work	2	1.0	2	1.2				
Unemployed – unable to work for health	6	3.1	1	0.6	5	33.0		
Other	1	0.5						

Variable	All groups combined (N=202)		Doctors (N=173)		Patients (N=20)		Managers (N=9)	
	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)
Urban/Rural								
Urban	77	38.1	68	39.3	7	35.0	2	22.2
Suburban	54	26.7	46	26.6	5	25.0	3	33.3
Rural	67	33.2	55	31.8	8	45.0	4	44.4
Other	3	1.5	3	1.7				
Region								
East Midlands	16	8.0	11	6.4	4	20.0	1	11.1
East of England	32	16.0	24	14.0	8	40.0		
London	6	3.0	3	1.8	2	10.0	1	11.1
North East	12	6.0	10	5.9	2	10.0		
North West	28	14.0	26	15.2	1	5.0	1	11.1
South East	13	6.5	8	4.7	3	15.0	2	22.2
South West	14	7.0	12	7.0			2	22.2
West Midlands	23	11.5	22	12.9			1	11.1
Yorkshire and the Humber	30	15.0	29	17.0			1	11.1
Other	15	7.5	15	8.8				

Variable	All groups combined (N=202)		Doctors (N=173)		Patients (N=20)		Managers (N=9)	
	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)
Prefer not to say	11	5.5	11	6.4				
Admitted to hospital in last 12 months	9	4.5	7	4.1	2	10.0	0	0
Generalist/Specialist doctor								
Generalist with some specialism			68	39.5				
Pure generalist			13	7.6				
Pure specialist			15	8.7				
Specialist with some generalism			67	39.0				
Other			8	4.7				
Prefer not to say			1	0.6				
Doctors' main specialty								
Cardiology			4	2.3				
Acute internal medicine			15	8.7				
Emergency medicine			1	0.6				
Renal medicine			3	1.7				
Palliative medicine			2	1.2				

Variable	All groups combined (N=202)		Doctors (N=173)		Patients (N=20)		Managers (N=9)	
	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)
Stroke medicine			5	2.9				
Infectious diseases and tropical medicine			4	2.3				
Geriatric medicine			84	48.6				
General internal medicine			9	5.2				
Clinical pharmacology and therapeutics			2	1.2				
Immunology			1	0.6				
Gastroenterology and hepatology			10	5.8				
Other – please specify			8	4.6				
Prefer not say			3	1.7				
Respiratory medicine			5	2.9				
Haematology			1	0.6				
Endocrinology and diabetes mellitus			7	4.1				
Neurology			1	0.6				
Rheumatology			1	0.6				

Variable	All groups combined (N=202)		Doctors (N=173)		Patients (N=20)		Managers (N=9)	
	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)	N (Mean)	% (SD)
Dermatology			7	4.1				
Education								
A-level ('Higher' in Scotland) or equivalent					1	5.0		
Higher education qualification below degree level or equivalent					2	10.0		
Degree or higher degree or equivalent					17	85.0		
Managerial role								
Finance							1	11.1
Human resources (HR)							2	22.2
Clinical management							1	11.1
Operational management							4	44.4
Other							1	11.1

SD, standard deviation.

Table 2. Cross-tabulation between generalist/specialist doctor and doctors' main specialty

Specialty	Generalist[1] (N=78)		Specialist (N=79)		Other/Prefer not to say (N=9)	
	N	%	N	%	N	%
Cardiology	0	0.0	4	100.0	0	0.0
Acute internal medicine	12	80.0	2	13.3	1	6.7
Emergency medicine	1	100.0	0	0.0	0	0.0
Renal medicine	0	0.0	3	100.0	0	0.0
Palliative medicine	0	0.0	2	100.0	0	0.0
Stroke medicine	1	20.0	4	80.0	0	0.0
Infectious diseases and tropical medicine	1	25.0	3	75.0	0	0.0
Geriatric medicine	45	53.6	36	42.9	3	3.6
General internal medicine	8	88.9	0	0.0	1	11.1
Clinical pharmacology and therapeutics	2	100.0	0	0.0	0	0.0
Immunology	0	0.0	1	100.0	0	0.0
Gastroenterology and hepatology	1	10.0	9	90.0	0	0.0

	Generalist[1] (N=78)		Specialist (N=79)		Other/Prefer not to say (N=9)	
Respiratory medicine	1	20.0	4	80.0	0	0.0
Haematology	0	0.0	1	100.0	0	0.0
Endocrinology and diabetes mellitus	3	42.9	4	57.1	0	0.0
Neurology	0	0.0	1	100.0	0	0.0
Rheumatology	0	0.0	0	0.0	1	100.0
Other	2	25.0	5	62.5	1	12.5
Prefer not say	1	33.3	0	0.0	2	66.7

[1] 'Generalist with some specialism' or 'Pure generalist'. [2] 'Pure specialist' or 'Specialist with some generalism'.

Table 3. Conditional logit analysis regression results for total sample and subgroups

Attribute	Level	(1) All groups Coefficient (95% CI)	(2) Doctors Coefficient (95% CI)	(3) Patients Coefficient (95% CI)	(4) Managers Coefficient (95% CI)	P-value (2) and (3)	Willingness to pay (pounds) MRS Doctors	Willingness to pay (pounds) MRS Patients
Role of doctors in ED	Emergency doctors diagnose and treat patients in ED	-	-	-	-	-	-	-
	Doctors refer patients to specialists	-0.507 (-0.655 to -0.359)	-0.544 (-0.704 to -0.383)	-0.660 (-1.160 to -0.159)	0.329 (-0.327 to 0.985)	0.77	-2469	-1123
Type of doctors in AMU	Acute/general medicine doctors	-	-	-	-	-	-	-
	Doctors with expert knowledge in specific clinical areas	1.035 (0.885 to 1.184)	1.015 (0.853 to 1.177)	1.660 (1.139 to 2.181)	0.329 (-0.328 to 0.985)	0.22	4609	2827
Organisation of hospital wards	Mixed-condition hospital wards	-	-	-	-	-	-	-
	Condition-specific hospital wards	1.416 (1.265 to 1.568)	1.439 (1.275 to 1.603)	1.643 (1.109 to 2.176)	0.819 (0.156 to 1.482)	0.70	6535	2797
Total cost of patient stay in the hospital	(Pounds)	-0.0003 (-0.0004 to -0.0001)	-0.0002 (-0.0004 to -0.0001)	-0.0006 (-0.0010 to -0.0001)	-0.0005 (-0.0011 to 0.0001)	0.14	-	-

AMU, acute medical unit; CI, confidence interval; ED, emergency department; MRS, marginal rates of substitution.

Table 4. Conditional logit analysis regression results for doctor subgroups

Attribute	Level	(1) Generalist Coefficient (95% CI)	(2) Specialist Coefficient (95% CI)	(3) Rural Coefficient (95% CI)	(4) Urban Coefficient (95% CI)	(5) Geriatric medicine Coefficient (95% CI)	(6) Acute internal medicine Coefficient (95% CI)	(7) Age less than 50 Coefficient (95% CI)	(8) Age 50 or more Coefficient (95% CI)	P-value (1) and (2)	P-value (3) and (4)	P-value (5) and (6)	P-value (7) and (8)
Role of doctors in ED	Emergency doctors diagnose and treat patients in ED	-	-	-	-	-	-	-	-	-	-	-	-
	Doctors refer patients to specialists	-0.465 (-0.689 to -0.242)	-0.536 (-0.779 to -0.293)	-0.638 (-0.917 to -0.358)	-0.503 (-0.704 to -0.302)	-0.640 (-0.874 to -0.407)	-0.606 (-1.149 to -0.063)	-0.636 (-0.854 to -0.418)	-0.488 (-0.748 to -0.228)	0.79	0.63	0.95	0.60
Type of doctors in AMU	Acute/general medicine doctors	-	-	-	-	-	-	-	-	-	-	-	-
	Doctors with expert knowledge in specific clinical areas	0.612 (0.389 to 0.836)	1.387 (1.134 to 1.640)	0.750 (0.471 to 1.030)	1.183 (0.977 to 1.388)	1.108 (0.871 to 1.345)	0.002 (-0.537 to 0.541)	0.954 (0.733 to 1.175)	1.189 (0.928 to 1.449)	0.02	0.23	0.03	0.49
Organisation of hospital wards	Mixed-condition hospital wards	-	-	-	-	-	-	-	-	-	-	-	-
	Condition-specific hospital wards	1.045 (0.819 to 1.270)	1.782 (1.526 to 2.037)	1.302 (1.019 to 1.585)	1.578 (1.371 to 1.786)	1.519 (1.280 to 1.759)	1.574 (1.021 to 2.126)	1.872 (1.648 to 2.097)	0.838 (0.574 to 1.101)	0.03	0.40	0.93	0.00
Total cost of patient stay in the hospital	(Pounds)	-0.0003 (-0.0005 to -0.0001)	-0.0002 (-0.0004 to -0.0000)	-0.0002 (-0.0005 to -0.000)	-0.0002 (-0.0004 to -0.0001)	-0.0002 (-0.0004 to 0.000)	-0.0005 (-0.001 to 0.000)	-0.0003 (-0.0005 to -0.0001)	-0.0001 (-0.0004 to -0.0001)	0.76	0.80	0.13	0.13

AMU, acute medical unit; CI, confidence interval; ED, emergency department.

Role of doctors in emergency department (ED)
The emergency department (previously called the A&E department) provides ready access to emergency medical care and clinical services to treat a range of problems, from life-threatening conditions to minor injury and illness, in all age groups. The work done by ED doctors with patients may vary. In some hospitals, the ED doctors try and work out what is wrong with patients, carry out tests and give them appropriate treatment. Once they have done all they can, the patient is admitted to the hospital for ongoing care. In other hospitals, ED doctors only assess whether patients require hospital admission and then refer them to the acute medical team or the relevant specialty. This team then try and work out what is wrong with the patient and decide on a treatment plan.
<u>Possible values:</u> (1) Emergency doctors diagnose and treat patients in ED; (2) Doctors refer patients to specialists
Type of doctors in the acute medical unit (AMU)
The primary role of the acute medical unit (AMU) is to provide rapid and definitive assessment, investigation and treatment for patients who are admitted urgently to hospital, or as an emergency from the emergency department, and/or who are referred by their GP. Patients are expected to stay on the AMU for up to 48 hours and will have investigations to help identify exactly what is wrong with them. The AMU could be run by specialists in acute/general medicine with broad knowledge in most clinical areas, or by specialists with expert knowledge in specific clinical areas.
<u>Possible values:</u> (1) Acute/general medicine doctors; (2) Doctors with expert knowledge in specific clinical areas
Organisation of hospital wards
Following treatment on the ED and AMU, patients could require further inpatient care on a hospital ward. There are two main ways of organising hospital wards. The first is where patients with specific conditions are treated on specialist wards. For example, patients with pneumonia will be treated on a ward with other patients with respiratory problems. The second is mixed wards where patients with a variety of conditions are treated on the same ward. For example, patients with pneumonia will be treated on a ward with patients with heart failure.
<u>Possible values:</u> (1) Condition-specific hospital wards; (2) Mixed-condition hospital wards
Total cost of patient stay in the hospital
We want to know how much you value the different options. For each of the two hospitals you will be told the total cost to the hospital of a patient stay. This includes staff and non-staff costs of both 'front door' services such as the ED and AMU, and the cost of follow-up care on hospital wards. What we want you to think about is how much the service is worth to the hospital, so how much the hospital should charge for the hospital stay. PLEASE NOTE THIS DOES NOT MEAN THAT THE NHS IS ABOUT TO INTRODUCE CHARGES FOR HOSPITAL STAYS TO PATIENTS. You might find it helpful to imagine that this is a service that is not provided by the NHS.
<u>Possible values:</u> (1) £2500; (2) £3000; (3) £3500; (4) £4000

Figure 1. Discrete choice experiment attributes and levels

Factors	Hospital A	Hospital B
Role of doctors in ED	Emergency doctors diagnose and treat patients in ED	Doctors refer patients to specialists
Type of doctors in the AMU	Acute/general medicine doctors	Doctors with expert knowledge in specific clinical areas
Organisation of hospital ward	Mixed-condition hospital wards	Condition-specific hospital wards
Total cost of patient stay in the hospital	£3500	£4000

Which hospital would you choose for your care? (Tick one box only)

Hospital A ☐   Hospital B ☐

Figure 2. Example choice set
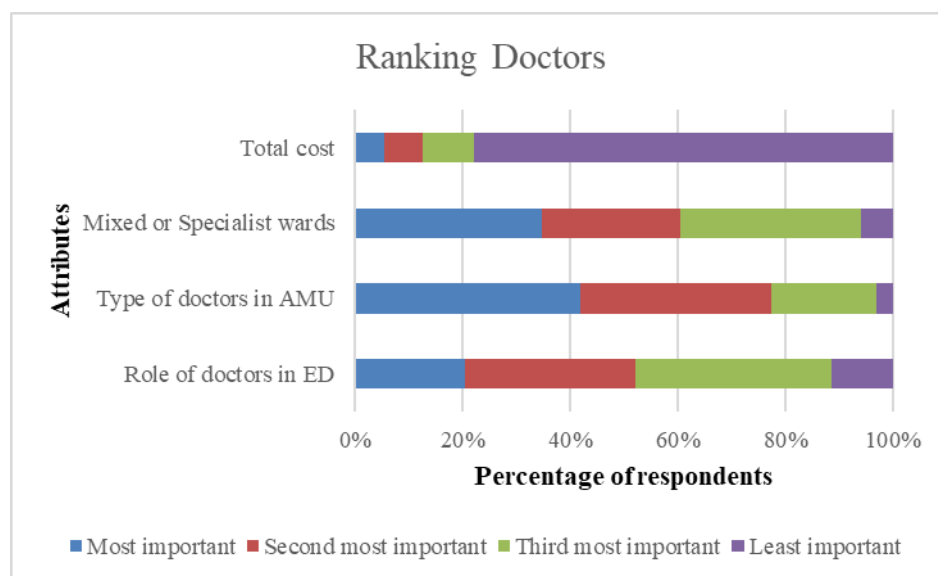
Figure 3. Ranking of attributes by doctors
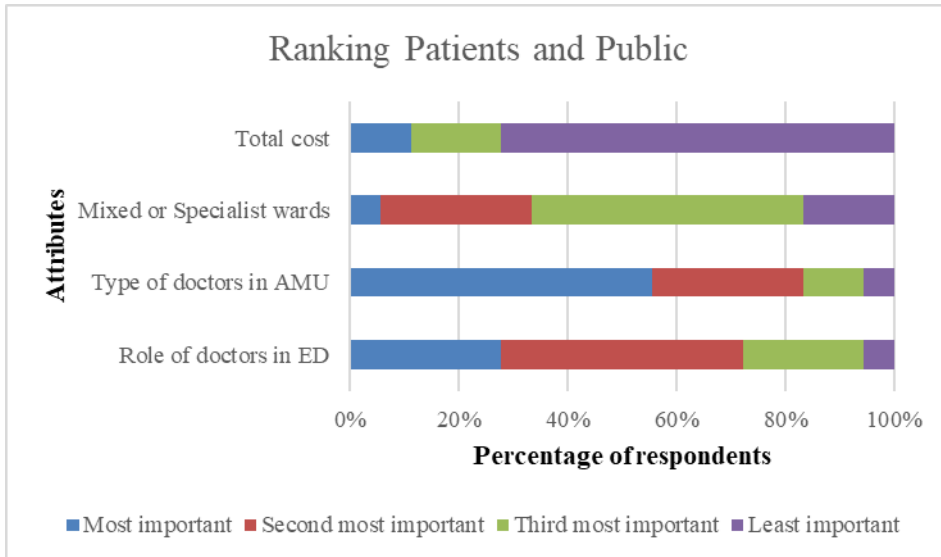
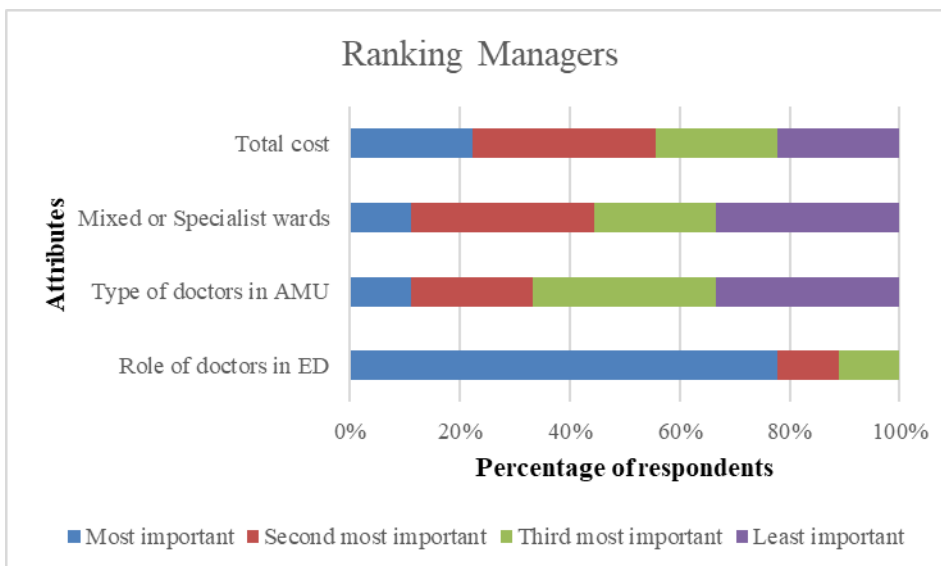**Figure 4. Ranking of attributes by patients and public**

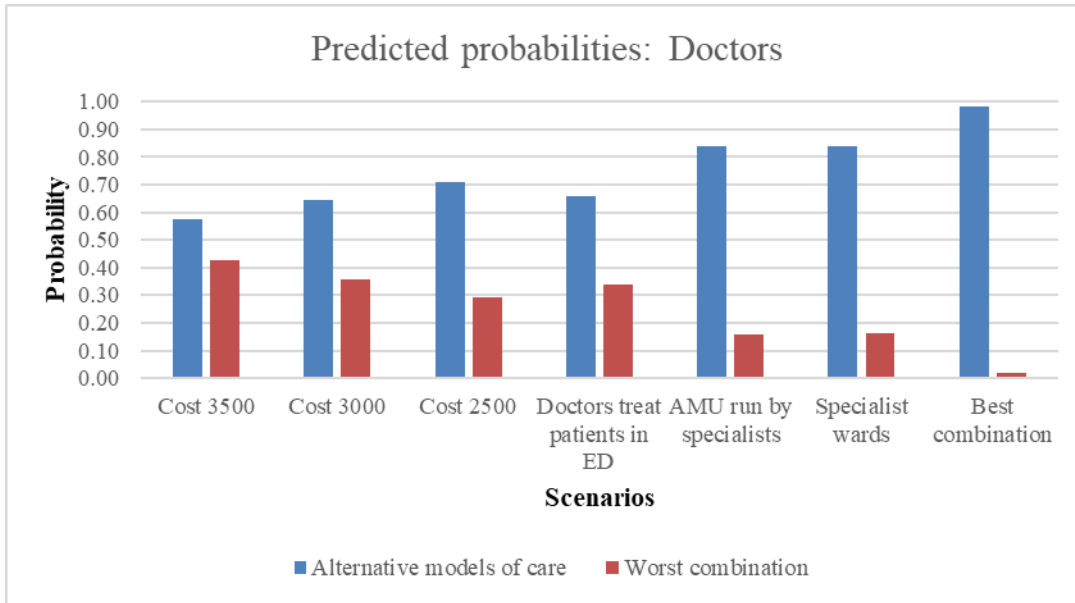**Figure 5. Ranking of attributes by managers**

Figure 6. Probabilities of respondents (doctors) choosing a hospital with particular attribute level
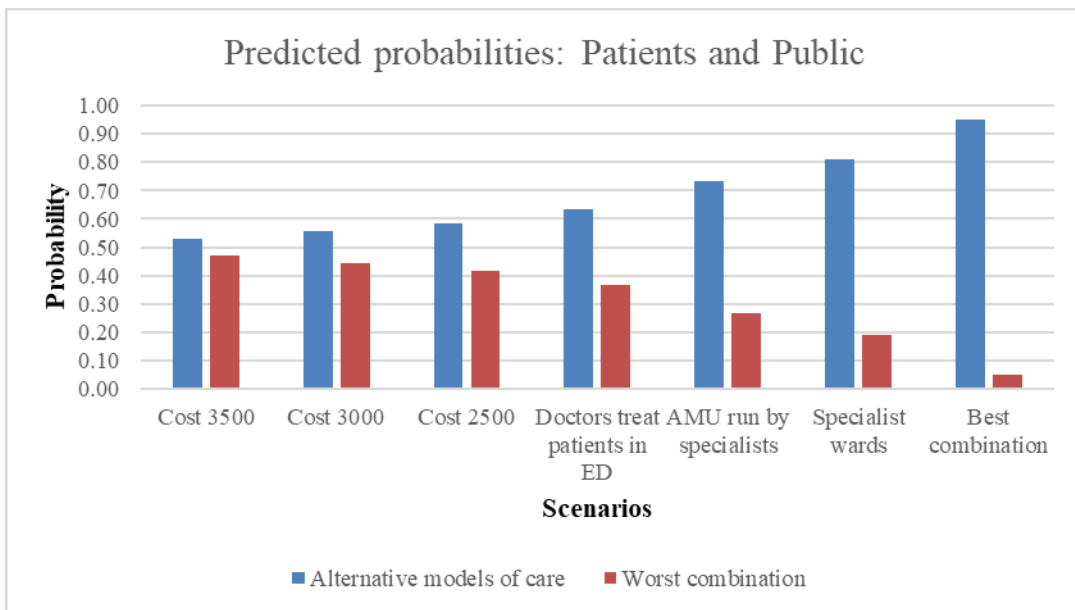

Figure 7. Probabilities of respondents (patients and public) choosing a hospital with particular attribute level