Table DS1 Service User Characteristics over the different phases of recruitment

	Phase				Total
	Baseline	**Phase 1**	**Phase 2**	**Phase 3**	
Routine Care System (n)	**58**	**73**	**56**	**40**	**227**
Age (mean years [SD])	39·2 (12·6)	40·5 (13·8)	39·1 (14·1)	38·1 (14·3)	39·4 (13·6)
Gender: Female (n [%])	23 (40%)	30 (41%)	32 (57%)	14 (35%)	99 (44%)
MHA: Section vs voluntary (n [%])	36 (62%)	49 (67%)	36 (64%)	31 (78%)	152 (67%)
Length of stay (mean days [SD])	143·9 (143·8)	137·8 (174·1)	89·4 (96·2)	110·4 (145·5)	122·5 (145·7)
Length of stay (median days [IQR])	102 (47 - 190)	74 (37 - 153)	67 (34 - 103)	84 (35 - 133)	79 (38 - 146)
VOICE (mean [SD])	51·9 (15·9)	57·2 (22·0)	58·4 (21·7)	59·4 (21·1)	56·5 (20·4)
SSS-RES (mean [SD])	90·7 (25·9)	93·3 (29·5)	90·9 (34·0)	91·4 (27·3)	91·7 (29·0)
NOSIE (mean [SD])	14·3 (7·8)	19·1 (9·4)	13·9 (7·2)	15·8 (7·1)	15·9 (8·3)
GAF Symptoms (mean [SD])	35·9 (15·1)	41·2 (11·5)	44·7 (14·4)	42·9 (13·0)	41·0 (13·9)
GAF Functioning (mean [SD])	36·7 (9·8)	38·6 (9·0)	50·2 (13·1)	46·3 (11·6)	42·4 (12·1)
Triage System (n)	**51**	**56**	**65**	**55**	**227**
Age (mean years [SD])	39·6 (13·3)	41·5 (12·7)	43·0 (14·5)	38·1 (9·6)	40·7 (12·8)
Gender: Female (n [%])	21 (41%)	22 (39%)	35 (54%)	21 (38%)	99 (44%)
MHA: Section vs voluntary (n [%])	34 (67%)	34 (62%)	46 (72%)	32 (58%)	146 (65%)
Length of stay (mean days [SD])	109·8 (93·0)	138·6 (243·8)	102·8 (87·7)	64·5 (65·2)	104·3 (143·0)
Length of stay (median days [IQR])	88 (35 - 171)	67 (32 - 158)	83 (29 - 165)	44 (17 - 88)	64 (29 - 151)

VOICE (mean [SD])	52·2 (18·4)	53·2 (18·7)	59·1 (17·5)	59·9 (19·0)	56·4 (18·5)
SSS-RES (mean [SD])	84·5 (26·0)	85·1 (26·8)	95·3 (25·3)	95·6 (26·8)	90·6 (26·5)
NOSIE (mean [SD])	17·0 (6·8)	16·4 (8·2)	16·0 (8·3)	14·7 (6·3)	16·0 (7·5)
GAF Symptoms (mean [SD])	35·2 (12·7)	45·0 (12·1)	44·5 (14·9)	48·0 (14·5)	43·4 (14·4)
GAF Functioning (mean [SD])	32·4 (6·8)	39·4 (6·8)	51·5 (13·6)	51·6 (12·1)	44·3 (13·3)
Note: Missing data not included in the calculation of percentages					

Table DS2 Characteristics of staff across the recruitment phases

	Phase				Total*
	Baseline	**Phase 1**	**Phase 2**	**Phase 3**	
Routine Care System (n)	**67**	**74**	**50**	**38**	**229**
Age (mean years [SD])	37·1 (10·3)	36·5 (10·6)	36·0 (10·0)	33·4 (9·6)	36·0 (10·2)
Gender: Female (n [%])	33 (50%)	40 (55%)	27 (55%)	22 (58%)	122 (54%)
Ethnicity: Non-white (n [%])	46 (71%)	44 (62%)	29 (59%)	13 (34%)	132 (59%)
Education level (n [%])					
Vocational	24 (44%)	27 (47%)	15 (41%)	11 (37%)	77 (43%)
University degree (Undergraduate)	21 (39%)	24 (41%)	15 (41%)	15 (50%)	75 (42%)
University degree (Postgraduate)	9 (17%)	7 (12%)	7 (19%)	4 (13%)	27 (15%)
Length of employment on ward (mean months [SD])	40·1 (44·7)	51·9 (60·7)	37·2 (50·0)	28·9 (41·2)	41·4 (51·4)
Length of employment on ward (median months [IQR])	30 (5 - 51)	40 (9 - 70)	18 (5 - 49)	10 (5 - 49)	24 (6 - 60)
Band (n [%])					
2	5 (8%)	4 (6%)	3 (6%)	2 (2%)	14 (7%)
3	16 (25%)	18 (28%)	14 (29%)	5 (16%)	53 (25%)
4	1 (2%)	0 (0·0%)	0 (0·0%)	0 (0·0%)	1 (0·5%)
5	22 (34%)	21 (33%)	19 (39%)	15 (47%)	77 (37%)
6	17 (26%)	17 (27%)	11 (22%)	8 (25%)	53 (25%)
7	4 (6%)	4 (6%)	2 (4%)	2 (6%)	12 (6%)
VOTE (mean [SD])	62·2 (11·8)	68·3 (10·5)	62·6 (10·6)	66·0 (11·1)	64·9 (11·3)
MBI (mean [SD])	60·3 (12·1)	65·2 (13·0)	63·2 (13·5)	69·7 (13·5)	64·1 (13·3)
IWS (mean [SD])	146·9 (31·6)	157·0 (30·6)	148·5 (27·0)	153·8 (31·3)	151·7 (30·4)
Triage System (n)	**52**	**64**	**72**	**67**	**255**
Age (mean years [SD])	39·5 (8·9)	36·8 (8·5)	36·6 (9·0)	35·4 (9·0)	36·8 (8·9)

Gender: Female (n [%])	29 (58%)	43 (67%)	47 (65%)	47 (70%)	166 (66%)
Ethnicity: Non-white (n [%])	31 (66%)	41 (64%)	51 (71%)	43 (64%)	166 (66%)
Education level (n [%])					
Vocational	18 (45%)	27 (53%)	26 (42%)	17 (33%)	88 (43%)
University degree (Undergraduate)	17 (43%)	22 (43%)	27 (44%)	28 (54%)	94 (46%)
University degree (Postgraduate)	5 (13%)	2 (4%)	9 (15%)	7 (14%)	23 (11%)
Length of employment on ward (mean months [SD])	59·6 (57·0)	50·8 (48·6)	50·5 (49·2)	47·5 (47·9)	51·3 (50·0)
Length of employment on ward (median months [IQR])	47 (7 - 84)	42 (7 - 82)	39 (7 - 84)	31 (6 - 75)	38 (7 - 84)
Band (n [%])					
2	2 (4%)	1 (2%)	5 (7%)	1 (2%)	9 (%)
3	7 (15%)	4 (8%)	15 (21%)	8 (14%)	34 (15%)
4	0 (0·0%)	0 (0·0%)	0 (0·0%)	0 (0·0%)	0 (0·0%)
5	22 (46%)	30 (60%)	33 (47%)	28 (50%)	113 (50%)
6	13 (27%)	11 (22%)	13 (19%)	15 (27%)	52 (23%)
7	4 (8%)	4 (8%)	4 (6%)	4 (7%)	16 (7%)
VOTE (mean [SD])	66·3 (12·8)	68·3 (12·0)	64·1 (13·5)	69·6 (13·5)	67·0 (13·1)
MBI (mean [SD])	63·2 (15·5)	61·5 (15·9)	63·0 (14·9)	64·5 (14·6)	63·1 (15·2)
IWS (mean [SD])	163·8 (31·5)	168·6 (29·4)	163·4 (32·8)	170·6 (30·6)	166·7 (31·1)

* This is the total number of observations in the dataset not the total number of staff as some staff have been measured multiple times.
Note: Missing data not included in the calculation of percentages

Table DS3
VOICE sensitivity analysis adjusting for potential confounders

	VOICE	p value	95% CI	Global significance of variable to the model (LR test)
System (Triage vs Routine)	-1·59	0·379	-5·13 to 1·96	$\chi^2(1)$=0·80, p=0·372
Phase	2·27	0·007*	0·63 to 3·92	$\chi^2(1)$=7·52, p=0·006
Gender (Female vs Male)	-3·79	0·036*	-7·33 to -0·25	$\chi^2(1)$=4·55, p=0·033
Socio-economic status				
Lower Professionals vs Higher Professionals	-1·52	0·523	-6·18 to 3·15	$\chi^2(3)$=8·32, p=0·040
Semi- and non-skilled workers vs Higher Professionals	-6·76	0·021*	-12·52 to -1·01	
Never worked and long-term unemployed vs Higher Professionals	-6·08	0·054	-12·28 to 0·12	
Compulsory Treatment orders**				
One month vs Informal	2·84	0·280	-2·32 to 7·99	$\chi^2(2)$=14·54, p=0·001
6 months or more vs Informal	7·63	<0·001*	3·62 to 11·64	
Severity of symptoms (NOSIE)	0·28	0·021*	0·04 to 0·52	$\chi^2(1)$=5·54, p=0·019
Number of meaningful contacts with service staff (in last 7 days from CITRINE)				
Simple effect	-2·35	<0·001*	-3·23 to -1·47	$\chi^2(1)$=27·29, p<0·000

Quadratic effect	0·07	0·001*	0·03 to 0·11	$\chi^2(1)$=11·80, p=0·001

* p<0·05 after performing a sensitivity analysis of the same model with robust standard errors adjusted for clustering at ward level. Intraclass correlation coefficient (ward) = 0·017. Significance of all other results did not change.

Linear regression of VOTE on socio-demographic and clinical variables. Candidate variables that were tested in the model but removed due to low ability to predict outcome were: Ethnicity, Age, Diagnosis, functioning (GAF level) number of previous admissions, number of days on ward, and number of recorded activities (in part 7 from CITRINE).

**Involuntary psychiatric treatment falls into two broad categories of compulsory detention in hospital a) one focussed predominantly on crisis management and assessment with a maximum period of detention of 1 month and b) treatment orders that can have a maximum detention of 6 months in the first instance but renewable thereafter.

Table DS4 VOTE sensitivity analysis adjusting for potential confounders

	Coefficient	p value	95% CI	Global significance of variable to the model (LR test)
System				
Routine Care System	reference			$\chi^2(3)=17\cdot62$, p=0·001
Triage System	0·85	0·679	-3·19 to 4·90	
Interaction: System (Routine) X Phase				
Baseline (routine)	reference			
Phase 1	10·42	<0·001*	6·74 to 14·11	
Phase 2	0·16	0·921	-2·96 to 3·27	
Phase 3	6·15	0·001*	2·36 to 9·95	
Interaction: System (triage) X Phase				
Baseline (triage)	reference			
Phase 1	1·76	0·251	-1·24 to 4·76	
Phase 2	0·59	0·702	-2·41 to 3·58	
Phase 3	6·43	0·001*	2·61 to 10·26	
Ethnicity				
White	reference			
Non-white	-4·10	0·008*	-7·14 to -1·05	$\chi^2(1)=7\cdot05$, p=0·008
Band				
Health Care Assistants	Reference			$\chi^2(2)=17\cdot32$, p<0·000
Entry Level Qualified Staff	7·31	<0·001*	3·83 to 10·79	
Qualified Staff	4·09	0·043*	0·13 to 8·06	

Length of employment	0·03	0·010*	0·01 to 0·06	$\chi^2(1)=12\cdot05$, p=0·001
Number of violent incidents on ward during phase	0·66	0·030*	0·06 to 1·25	$\chi^2(1)=4\cdot80$, p=0·029
Any Drug or Alcohol incidents on ward during phase (Yes vs No)	-5·55	0·001*	-8·72 to -2·39	$\chi^2(1)=6\cdot82$, p=0·009
Intraclass correlation coefficient (id) = 0·70 * p<0·05 after performing a sensitivity analysis of the same model with an additional level of clustering at the ward level. Intraclass correlation coefficient (id) = 0·70; Intraclass correlation coefficient (ward) = 0·005. Significance of all other results did not change. Mixed model linear regression including a random effect for individuals and covarying for phase (categorical, coefficients use the baseline as a comparison). Candidate variables that were tested in the stepwise model selection procedure but removed due to low ability to predict outcome were: Gender, Age and Country of birth (UK or other), and record of any incidents involving self-harm on the ward during the phase.				

Table DS5 Service use and costs

| | Type of meaningful contact | Routine Care system | | | Triage system | | | | | |
| | | | | | Non-triage wards | | | Triage ward | | |
		% accessing service	Mean (s.d.) number of meaningful contacts per week §	Mean (s.d.) costs (£s)	% accessing service	Mean (s.d.) number of meaningful contacts per week§	Mean (s.d.) costs (£s)	% accessing service	Mean (s.d.) number of meaningful contacts per week§	Mean (s.d.) costs (£s)
Baseline	Any Nurse	70	4 (4)	45 (80)	59	3 (2)	15 (30)	62	3 (2)	14 (19)
	Any Doctor	88	2 (2)	165 (167)	92	2 (2)	130 (92)	100	3 (2)	206 (225)
	Care-coordinator	21	2 (3)	15 (48)	32	1 (0)	12 (20)	15	1 (0)	7 (25)
	Occupational Therapist	39	2 (2)	13 (30)	3	1 (n/a)	1 (7)	0	n/a	0 (0)
	Other Care Professional	32	2 (2)	21 (51)	32	1 (1)	12 (27)	0	n/a	0 (0)
	Activities	89	6 (4)	41 (34)	70	3 (3)	16 (27)	38	2 (2)	8 (16)
	Total			300 (219)			187 (125)			236 (260)
Phase 1	Any Nurse	61	10 (29)	37 (87)	57	4 (5)	17 (25)	63	3 (2)	14 (15)
	Any Doctor	79	2 (1)	134 (142)	81	2 (1)	109 (116)	68	2 (1)	118 (131)
	Care-coordinator	27	2 (1)	9 (19)	35	1 (1)	23 (43)	21	1 (1)	15 (42)
	Occupational Therapist	16	4 (3)	5 (19)	3	2 (n/a)	0 (3)	0	n/a	0 (0)
	Other Care Professional	31	2 (3)	23 (55)	32	1 (1)	9 (25)	11	1 (0)	2 (7)
	Activities	77	4 (4)	27 (42)	78	3 (2)	12 (15)	58	1 (1)	3 (4)
	Total			235 (219)			171 (161)			153 (151)
Phase 2	Any Nurse	59	4 (4)	19 (30)	64	3 (2)	18 (32)	57	3 (2)	15 (18)
	Any Doctor	71	1 (0)	79 (85)	79	2 (1)	92 (105)	78	2 (1)	132 (120)
	Care-coordinator	14	1 (1)	5 (17)	31	1 (1)	12 (26)	43	2 (1)	21 (40)
	Occupational Therapist	32	2 (1)	7 (20)	0	n/a	0 (0)	4	1 (n/a)	0 (1)
	Other Care Professional	18	1 (1)	12 (36)	45	2 (1)	34 (62)	17	1 (1)	12 (33)
	Activities	59	3 (2)	16 (20)	62	2 (1)	9 (11)	39	2 (1)	3 (5)
	Total			139 (124)			166 (161)			182 (178)
Phase 3	Any Nurse	65	4 (3)	16 (21)	58	2 (2)	12 (16)	75	3 (3)	27 (30)
	Any Doctor	70	1 (1)	106 (111)	94	2 (1)	123 (88)	88	2 (1)	89 (91)

	Care-coordinator	10	2 (2)	5 (20)	39	2 (1)	12 (20)	13	1 (0)	4 (12)
	Occupational Therapist	18	2 (2)	2 (8)	3	1 (n/a)	1 (8)	0	n/a	0 (0)
	Other Care Professional	15	1 (0)	10 (24)	48	1 (1)	32 (81)	4	1 (n/a)	0 (1)
	Activities	53	3 (2)	11 (14)	77	2 (2)	17 (27)	17	2 (1)	2 (7)
	Total			149 (157)			197 (145)			106 (99)

§ Among users of the service