

## Supplementary materials

**Table S1. Descriptors of categorical variables in entire cohort**

		n	%	Note
<b>Total cohort</b>		29	10	
		96	0.	
<b>Sex</b>	Male	17	58	
		53	.5	
	Female	12	41	
		43	.5	
<b>Ethnicity</b>	Asian	20	6.	Includes asian Indian, asian Pakistani, Chinese, other asian background, asian Bangladeshi
		0	7	
	Black		3.	Includes other black background, black Carribean, black African
		91	0	
	Mixed		1.	Includes other mixed background, mixed white and black Carribean/African, mixed white and asian
		34	1	
Other		1.	Includes other ethnic background, refused/not stated	
	53	8		
White		26	87	Includes white british, other white background, white irish
	13	.2		
Missing		5	0.	
			2	
<b>Recruitment region</b>	East Midlands	11	38	
		60	.7	
	London	37	12	
		8	.6	
North East		20	6.	
		0	7	
North West		37	12	
		4	.5	

	Scotland	96	3. 2	
	South East	17	0. 6	
	Wales	15 1	5. 0	
	West Midlands	26 3	8. 8	
	Yorkshire and Humber	35 7	11 .9	
<b>Renal diagnosis major heading</b>	CKD of uncertain aetiology	96 4	32 .2	
	Diabetes Mellitus	34 6	11 .5	
	Familial / hereditary nephropathies	32 7	10 .9	
	Glomerular disease	69 8	23 .3	
	Hypertension / Renal vascular disease	26 8	8. 9	
	Other systemic diseases affecting the kidney	64	2. 1	
	Tubulointerstitial disease	32 6	10 .9	
	Missing	3	0. 1	
<b>Had renal biopsy</b>	No	19 93	66 .5	
	Yes	92 3	30 .8	
	Missing	80	2. 7	
<b>Had previous KRT</b>	No	28 56	95 .3	
	Yes	14	4.	

CKD stage		0	7	
	G1A1	5	0.2	
	G1A2	10	0.3	
	G1A3	37	1.2	
	G2A1	74	2.5	
	G2A2	75	2.5	
	G2A3	91	3.0	
	G3aA1	174	5.8	
	G3aA2	146	4.9	
	G3aA3	166	5.5	
	G3bA1	231	7.7	
	G3bA2	314	10.5	
	G3bA3	371	12.4	
	G4A1	148	4.9	
	G4A2	336	11.2	
	G4A3	486	16.2	
	G5A1	7	0.2	
	G5A2	13	0.4	

	G5A3	42	1.4	
	Missing	270	9.0	
<b>Diabetes</b>	No	2015	67.3	
	Yes	922	30.8	
	Missing	59	2.0	
<b>Hypertension</b>	No	434	14.5	
	Yes	2503	83.5	
	Missing	59	2.0	
<b>CABG</b>	No	2833	94.6	
	Yes	104	3.5	
	Missing	59	2.0	
<b>Myocardial Infarction</b>	No	2658	88.7	
	Yes	279	9.3	
	Missing	59	2.0	
<b>Stroke</b>	No	2823	94.2	
	Yes	114	3.8	
	Missing	59	2.0	
<b>Peripheral Vascular disease</b>	No	28	93	

		12	.9	
	Yes	12	4.	
		5	2	
	Missing		2.	
		59	0	
<b>Abdominal Aortic Aneurysm</b>	No	29	97	
		28	.7	
	Yes		0.	
		9	3	
	Missing		2.	
		59	0	
<b>Amputation</b>	No	29	97	
		32	.9	
	Yes		0.	
		5	2	
	Missing		2.	
		59	0	
<b>Atrial Fibrillation</b>	No	26	88	
		44	.3	
	Yes	29	9.	
		3	8	
	Missing		2.	
		59	0	
<b>COPD</b>	No	28	93	
		03	.6	
	Yes	19	6.	Positive if history of COPD, emphysema, or
		3	4	bronchiectasis
<b>HIV</b>	No	29	99	
		88	.7	
	Yes		0.	
		8	3	
<b>Heart failure</b>	No	28	94	
		41	.8	
	Yes	15	5.	
		5	2	

<b>TIA</b>	No	28 36	94 .7	
	Yes	16 0	5. 3	
<b>Cerebrovascular disease</b>	No	27 38	91 .4	
	Yes	25 8	8. 6	
				Positive if history of stroke or TIA
<b>Dementia</b>	No	29 88	99 .7	
	Yes	8	0. 3	
<b>Asthma</b>	No	26 46	88 .3	
	Yes	35 0	11 .7	
<b>Diabetic nephropathy</b>	No	26 50	88 .5	
	Yes	34 6	11 .5	
<b>Diabetic retinopathy</b>	No	25 99	86 .7	
	Yes	39 7	13 .3	
<b>Peripheral neuropathy</b>	No	27 38	91 .4	
	Yes	25 8	8. 6	
<b>Foot ulcers</b>	No	28 57	95 .4	
	Yes	13 9	4. 6	
<b>Diabetes end organ damage</b>	No	24 17	80 .7	
	Yes	57	19	

		9	.3	neuropathy or nephropathy
<b>Liver disease mild</b>	No	28 50	95 .1	
	Yes	14 6	4. 9	Positive if 'liver disease' or 'hepatic disease' in history
<b>Liver disease moderate to severe</b>	No	29 95	10 0. 0	
	Yes	1	0. 0	Positive if history of liver disease and portal hypertension
<b>Cancer history</b>	No	25 52	85 .2	
	Yes	44 4	14 .8	Positive if any cancer in history
<b>Gastric ulcer</b>	No	28 99	96 .8	
	Yes	97	3. 2	Positive if gastric, peptic or duodenal ulcer listed in history
<b>Connective tissue disease</b>	No	26 74	89 .3	
	Yes	32 2	10 .7	Positive if history of lupus, vasculitis, Sjogren's, connective tissue disease, rheumatoid, polymyalgia or sarcoid
<b>Smoking status</b>	Current smoker	26 3	8. 8	
	Ex-smoker	12 09	40 .4	
	Non-smoker	14 83	49 .5	
	Missing	41	1. 4	
<b>Number of daily cigarettes</b>	0	27 45	91 .6	
	1 = Less than 20 per day	19 6	6. 5	

	2 = Between 20 and 40 per day	49	1.6	
	3 = 40 or more per day	6	0.2	
<b>Alcohol use</b>	No	1370	45.7	
	Yes	1567	52.3	
	Missing	59	2.0	
<b>Alcohol excess</b>	No	2660	88.8	
	Yes	336	11.2	Consumes more than 14 units per week
<b>Alcohol increasing risk drinking</b>	No	2685	89.6	
	Yes	311	10.4	Defined as between 14 and 35 units per week for women and between 14 and 50 units per week for men
<b>Alcohol higher risk drinking</b>	No	2975	99.3	
	Yes	21	0.7	Defined as over 35 units per week for women and over 50 units per week for men
<b>Number of medications 5 or above</b>	No	771	25.7	
	Yes	2225	74.3	
<b>Number of medications 10 or above</b>	No	2038	68.0	
	Yes	958	32.0	
<b>Angiotensin Converting Enzyme inhibitor (ACE-I)</b>	No	1754	58.5	
	Yes	1198	40.0	
	Missing	44	1.5	



			5	
<b>Angiotensin-II receptor blocker (ARB)</b>	No	20 50	68 .4	
	Yes	90 2	30 .1	
	Missing	44	1. 5	
<b>Renin-angiotensin system inhibitor (RASi)</b>	No	10 14	33 .8	
	Yes	19 82	66 .2	Defined as taking either ACE-I or ARB
<b>Statins</b>	No	12 12	40 .5	
	Yes	17 40	58 .1	
	Missing	44	1. 5	
<b>SGLT2 inhibitor</b>	No	29 73	99 .2	
	Yes	23	0. 8	Defined as taking either canagliflozin, dapagliflozin or empagliflozin
<b>Erythropoetin Stimulating Agent</b>	No	28 03	93 .6	
	Yes	19 3	6. 4	Defined as taking any form of epoetin alpha, epoetin beta or darbopoetin
<b>Phosphate binder</b>	No	28 29	94 .4	
	Yes	16 7	5. 6	Defined as taking any calcium or non-calcium based phosphate binder
<b>Bicarbonate therapy</b>	No	26 45	88 .3	
	Yes	35 1	11 .7	Defined as taking either sodium or potassium bicarbonate
<b>Immunosuppression</b>	No	26 83	89 .6	

	Yes	31 3	10 .4	Defined as taking monoclonal antibodies, calcineurin inhibitors, cyclophosphamide or anti-metabolites
<b>Prednisolone</b>	No	26 36	88 .0	
	Yes	36 0	12 .0	
<b>Immunosuppression including prednisolone</b>	No	24 96	83 .3	
	Yes	50 0	16 .7	
<b>Vitamin D</b>	No	24 17	80 .7	
	Yes	57 9	19 .3	
<b>Family history of end-stage kidney disease</b>	No	26 28	87 .7	
	Yes	31 6	10 .5	
	Missing		1. 7	
<b>Number of relatives with end-stage kidney disease</b>	0	26 57	88 .7	
	1	28 2	9. 4	
	2	40	1. 3	
	3	17	0. 6	
<b>Education status</b>	GCSE/NVQ/A-level	13 51	45 .1	
	Higher education	78 3	26 .1	
	None	86 2	28 .8	
<b>Employment status</b>	Not in work	34	11	

		9	.6	
	Retired	15 86	52 .9	
	Working	10 22	34 .1	
	Missing	39	1. 3	
<b>First language not English</b>	No	27 41	91 .5	
	Yes	25 5	8. 5	
<b>Marital status</b>	Divorced / Dissolved Civil Partnership	26 3	8. 8	
	Married / Civil Partner	18 53	61 .8	
	Not Disclosed	24	0. 8	
	Separated	44	1. 5	
	Single	46 4	15 .5	
	Widowed / Surviving Civil Partner	31 4	10 .5	
	Missing	34	1. 1	
<b>English literacy</b>	Good fluency	28 25	94 .3	Self-rated item
	Moderate fluency	75	2. 5	
	Unable to speak or read	9	0. 3	
	Very weak fluency	19	0. 6	
	Missing	68	2. 3	

<b>English fluency less than good</b>	No	28 93	96 .6	
	Yes	10 3	3. 4	
<b>Single item literacy screener (SILS)</b>	1	27 38	91 .4	
	2	49	1. 6	
	3	75	2. 5	
	4	24	0. 8	
	5	31	1. 0	
	Missing	79	2. 6	
<b>SILS above 2</b>	No	28 66	95 .7	
	Yes	13 0	4. 3	
<b>Index of Multiple Deprivation (IMD) quintile</b>	1	64 6	21 .6	IMD quintile for Scotland and Wales participants adjusted via Abel 2016 method to allow comparison
	2	61 7	20 .6	
	3	55 7	18 .6	
	4	55 0	18 .4	
	5	62 0	20 .7	
	Missing	6	0. 2	
<b>Dietary status</b>	Low Protein	32	1. 1	
	Meat free	14	4.	

		2	7	
	Normal mixed	26 19	87 .4	
	Other	16 1	5. 4	
	Missing	42	1. 4	
<b>Low potassium diet</b>	No	29 64	98 .9	
	Yes	32	1. 1	
<b>Low phosphate diet</b>	No	29 94	99 .9	
	Yes	2	0. 1	
<b>BMI categories</b>	Healthy weight	16 80	56 .1	
	Obese	12 03	40 .2	
	Underweight	32	1. 1	
	Missing	81	2. 7	
<b>Obese (BMI &gt;30 kg/m<sup>2</sup>)</b>	No	17 95	59 .9	
	Yes	12 01	40 .1	
<b>Underweight (BMI &lt;18.5 kg/m<sup>2</sup>)</b>	No	29 64	98 .9	
	Yes	32	1. 1	
<b>Karnofsky score ≤70</b>	No	24 14	80 .6	
	Yes	58 2	19 .4	

<b>Waist hip ratio high</b>	No	15 53	51 .8	High defined as waist hip ratio > 0.85 if female or >1.0 if male
	Yes	14 43	48 .2	
<b>Waist height ratio high</b>	No	14 70	49 .1	High defined as over 0.59
	Yes	15 26	50 .9	
<b>Waist height ratio low</b>	No	29 75	99 .3	Low defined as under 0.35
	Yes	21	0. 7	
<b>Timed up and go longer than 20 seconds</b>	No	28 07	93 .7	
	Yes	18 9	6. 3	
<b>Hand grip strength low</b>	No	21 65	72 .3	Low defined as best hand grip strength <16kg if female or <27kg if male
	Yes	83 1	27 .7	
<b>Sarcopenia present</b>	No	20 90	69 .8	Sarcopenia defined as either hand grip strength low or timed up and go delayed
	Yes	90 6	30 .2	
<b>Admitted to hospital in the last year</b>	No	20 94	69 .9	
	Yes	90 2	30 .1	
<b>Number of emergency admissions to hospital in the last year</b>	0	23 72	79 .2	
	1	50 7	16 .9	
	2	66	2. 2	
	3	27	0.	

			9	
	4	14	0.5	
	5	2	0.1	
	6	2	0.1	
	7	5	0.2	
	9	1	0.0	
<b>Number of elective admissions to hospital in the last year</b>	0	266	89.0	
	1	279	9.3	
	2	34	1.1	
	3	10	0.3	
	4	4	0.1	
	5	1	0.0	
	6	1	0.0	
	7	1	0.0	
<b>Regularly takes over the counter paracetamol</b>	No	228	76.3	
	Yes	710	23.7	
<b>Regularly takes over the counter co-codamol</b>	No	275	92.0	
	Yes	240	8.0	

<b>Regularly takes over the counter ibuprofen</b>	No	29 38	98 .1	
	Yes	58	1. 9	
<b>Regularly takes over the counter analgesia (paracetamol, co-codamol or ibuprofen)</b>	No	21 00	70 .1	
	Yes	89 6	29 .9	
<b>Urine dip blood present</b>	No	15 63	52 .2	
	Yes	11 80	39 .4	
	Missing	25 3	8. 4	
<b>Urine dip protein present</b>	No	12 56	41 .9	
	Yes	15 20	50 .7	
	Missing	22 0	7. 3	
<b>Urine dip leucocytes present</b>	No	22 48	75 .0	
	Yes	51 3	17 .1	
	Missing	23 5	7. 8	
<b>Urine dip nitrites present</b>	No	26 23	87 .6	
	Yes	13 5	4. 5	
	Missing	23 8	7. 9	
<b>Urine dip glucose present</b>	No	24 20	80 .8	
	Yes	34	11	



		2	.4	
	Missing	23	7.	
		4	8	
<b>Bicarbonate less than 20 mmol/L</b>	No	28	94	
		21	.2	
	Yes	17	5.	
		5	8	
<b>Haemoglobin less than 100 g/dL</b>	No	28	94	
		44	.9	
	Yes	15	5.	
		2	1	
<b>Haemoglobin less than 120 g/dL</b>	No	19	66	
		84	.2	
	Yes	10	33	
		12	.8	
<b>Phosphate above 1.5 mmol/L</b>	No	28	95	
		72	.9	
	Yes	12	4.	
		4	1	Conversion factors for units: mmol/L to mg/dL , 0.3229
<b>PTH categories</b>	Low to normal (0-7.1pmol/L)	62	21	
		9		
	Raised (7.2-15.7pmol/L)	62	20	
		0	.7	
	High (15.8-56.0pmol/L)	63	21	
		0		
	Very high (>56.0pmol/L)	61	20	
		5	.5	
	Missing	50	16	
		2	.8	
<b>Nephrotic range proteinuria</b>	No	27	90	
		17	.7	
	Yes	27	9.	Defined as central laboratory urine albumin creatinine ratio over 2200 mg/g
		9	3	
<b>Integrated Palliative care Outcome Scale (IPOS) pain rating</b>		10	35	
	0 = not at all, no effect	48	.0	

	1 = slightly, but not bothered to be rid of it	64 7	21 .6	
	2 = moderately, limits some activity or concentration	78 8	26 .3	
	3 = severely, activities or concentration markedly affected	35 4	11 .8	
	4 = overwhelmingly, unable to think of anything else	62	2. 1	
	Missing	97	3. 2	
<b>IPOS shortness of breath rating</b>	0 = not at all, no effect	12 66	42 .3	
	1 = slightly, but not bothered to be rid of it	68 3	22 .8	
	2 = moderately, limits some activity or concentration	66 2	22 .1	
	3 = severely, activities or concentration markedly affected	24 4	8. 1	
	4 = overwhelmingly, unable to think of anything else	37	1. 2	
	Missing	10 4	3. 5	
<b>IPOS weakness or lack of energy rating</b>	0 = not at all, no effect	80 7	26 .9	
	1 = slightly, but not bothered to be rid of it	77 5	25 .9	
	2 = moderately, limits some activity or concentration	89 6	29 .9	
	3 = severely, activities or concentration markedly affected	37 6	12 .6	
	4 = overwhelmingly, unable to think of anything else	83	2. 8	

	Missing	59	2. 0	
<b>IPOS nausea rating</b>	0 = not at all, no effect	22 09	73 .7	
	1 = slightly, but not bothered to be rid of it	41 4	13 .8	
	2 = moderately, limits some activity or concentration	19 9	6. 6	
	3 = severely, activities or concentration markedly affected	76	2. 5	
	4 = overwhelmingly, unable to think of anything else	24	0. 8	
	Missing	74	2. 5	
	<b>IPOS vomiting rating</b>	0 = not at all, no effect	26 45	88 .3
1 = slightly, but not bothered to be rid of it		16 6	5. 5	
2 = moderately, limits some activity or concentration		72	2. 4	
3 = severely, activities or concentration markedly affected		32	1. 1	
4 = overwhelmingly, unable to think of anything else		15	0. 5	
Missing		66	2. 2	
<b>IPOS poor appetite rating</b>		0 = not at all, no effect	21 15	70 .6
	1 = slightly, but not bothered to be rid of it	43 9	14 .7	
	2 = moderately, limits some activity or concentration	25 2	8. 4	
	3 = severely, activities or	94	3.	

	concentration markedly affected		1	
	4 = overwhelmingly, unable to think of anything else	30	1.0	
	Missing	66	2.2	
<b>IPOS constipation rating</b>		21	70	
	0 = not at all, no effect	14	.6	
	1 = slightly, but not bothered to be rid of it	46 5	15 .5	
	2 = moderately, limits some activity or concentration	22 1	7. 4	
	3 = severely, activities or concentration markedly affected	97	3. 2	
	4 = overwhelmingly, unable to think of anything else	30	1. 0	
	Missing	69	2. 3	
<b>IPOS mouth problems rating</b>		23	78	
	0 = not at all, no effect	56	.6	
	1 = slightly, but not bothered to be rid of it	31 3	10 .4	
	2 = moderately, limits some activity or concentration	15 2	5. 1	
	3 = severely, activities or concentration markedly affected	75	2. 5	
	4 = overwhelmingly, unable to think of anything else	24	0. 8	
	Missing	76	2. 5	
<b>IPOS drowsiness rating</b>		15	51	
	0 = not at all, no effect	45	.6	
	1 = slightly, but not bothered	68	23	

	to be rid of it	9	.0	
	2 = moderately, limits some activity or concentration	47 0	15 .7	
	3 = severely, activities or concentration markedly affected	16 8	5. 6	
	4 = overwhelmingly, unable to think of anything else	46	1. 5	
	Missing	78	2. 6	
<b>IPOS poor mobility rating</b>	0 = not at all, no effect	15 30	51 .1	
	1 = slightly, but not bothered to be rid of it	46 5	15 .5	
	2 = moderately, limits some activity or concentration	47 4	15 .8	
	3 = severely, activities or concentration markedly affected	35 3	11 .8	
	4 = overwhelmingly, unable to think of anything else	10 5	3. 5	
	Missing	69	2. 3	
<b>IPOS itching rating</b>	0 = not at all, no effect	17 26	57 .6	
	1 = slightly, but not bothered to be rid of it	65 2	21 .8	
	2 = moderately, limits some activity or concentration	33 9	11 .3	
	3 = severely, activities or concentration markedly affected	13 2	4. 4	
	4 = overwhelmingly, unable to think of anything else	67	2. 2	
	Missing	80	2.	

			7	
<b>IPOS difficulty sleeping rating</b>	0 = not at all, no effect	13 96	46 .6	
	1 = slightly, but not bothered to be rid of it	66 0	22 .0	
	2 = moderately, limits some activity or concentration	48 4	16 .2	
	3 = severely, activities or concentration markedly affected	27 9	9. 3	
	4 = overwhelmingly, unable to think of anything else	11 5	3. 8	
	Missing	62	2. 1	
	<b>IPOS restless legs rating</b>	0 = not at all, no effect	18 17	60 .6
1 = slightly, but not bothered to be rid of it		51 9	17 .3	
2 = moderately, limits some activity or concentration		35 8	11 .9	
3 = severely, activities or concentration markedly affected		17 3	5. 8	
4 = overwhelmingly, unable to think of anything else		62	2. 1	
Missing		67	2. 2	
<b>IPOS feeling anxious rating</b>		0 = not at all, no effect	17 42	58 .1
	1 = slightly, but not bothered to be rid of it	67 7	22 .6	
	2 = moderately, limits some activity or concentration	33 9	11 .3	
	3 = severely, activities or concentration markedly	11 6	3. 9	

	affected			
	4 = overwhelmingly, unable to think of anything else	56	1.	9
	Missing	66	2.	2
<b>IPOS feeling depressed rating</b>		20	67	
	0 = not at all, no effect	14	.2	
	1 = slightly, but not bothered to be rid of it	46	15	.6
	2 = moderately, limits some activity or concentration	28	9.	4
	3 = severely, activities or concentration markedly affected	11	3.	7
	4 = overwhelmingly, unable to think of anything else	54	1.	8
	Missing	66	2.	2
<b>IPOS changes in skin rating</b>		20	67	
	0 = not at all, no effect	31	.8	
	1 = slightly, but not bothered to be rid of it	51	17	.2
	2 = moderately, limits some activity or concentration	24	8.	2
	3 = severely, activities or concentration markedly affected	88	2.	9
	4 = overwhelmingly, unable to think of anything else	32	1.	1
	Missing	84	2.	8
<b>IPOS diarrhoea rating</b>		23	79	
	0 = not at all, no effect	71	.1	
	1 = slightly, but not bothered to be rid of it	32	10	.8

	2 = moderately, limits some activity or concentration	14 1	4. 7	
	3 = severely, activities or concentration markedly affected	54	1. 8	
	4 = overwhelmingly, unable to think of anything else	26	0. 9	
	Missing	79	2. 6	
<b>Hospital Anxiety and Depression Scale (HADS) anxiety significant</b>	No	22 83	76 .2	
	Yes	71 3	23 .8	Significance defined as a score of 8 or above
<b>Hospital Anxiety and Depression Scale (HADS) depression significant</b>	No	24 31	81 .1	
	Yes	56 5	18 .9	Significance defined as a score of 8 or above
<b>Six Item Cognitive Impairment Test (6CIT) significant</b>	No	27 56	92 .0	
	Yes	24 0	8. 0	Significance defined as a score of 8 or above
<b>Six Item Cognitive Impairment Test (6CIT) levels</b>	No issues	27 33	91 .2	
	Score 8-9	11 0	3. 7	
	Score 10 or above	13 0	4. 3	
	Missing	23	0. 8	
<b>EQ-5D-5L mobility dimension</b>	1 = I have no problems in walking about	14 93	49 .8	
	2 = I have slight problems in walking about	56 4	18 .8	
	3 = I have moderate problems in walking about	54 1	18 .1	



	4 = I have severe problems in walking about	34 1	11 .4	
	5 = I am unable to walk about	19	0. 6	
	Missing	38	1. 3	
<b>EQ-5D-5L mobility dimension - score of 2 or above</b>	No	15 31	51 .1	
	Yes	14 65	48 .9	
<b>EQ-5D-5L self-care dimension</b>	1 = I have no problems washing or dressing myself	24 10	80 .4	
	2 = I have slight problems washing or dressing myself	27 7	9. 2	
	3 = I have moderate problems washing or dressing myself	20 2	6. 7	
	4 = I have severe problems washing or dressing myself	62	2. 1	
	5 = I am unable to wash or dress myself	7	0. 2	
	Missing	38	1. 3	
<b>EQ-5D-5L self-care - score of 2 or above</b>	No	24 48	81 .7	
	Yes	54 8	18 .3	
<b>EQ-5D-5L usual activities dimension</b>	1 = I have no problems doing my usual activities	16 34	54 .5	
	2 = I have slight problems doing my usual activities	59 2	19 .8	
	3 = I have moderate problems doing my usual activities	44 8	15 .0	
	4 = I have severe problems	22	7.	

	doing my usual activities	1	4	
	5 = I am unable to do my usual activities	63	2.1	
	Missing	38	1.3	
<b>EQ-5D-5L usual activities - score of 2 or above</b>	No	16 72	55 .8	
	Yes	13 24	44 .2	
<b>EQ-5D-5L pain or discomfort dimension</b>	1 = I have no pain or discomfort	11 85	39 .6	
	2 = I have slight pain or discomfort	80 4	26 .8	
	3 = I have moderate pain or discomfort	65 4	21 .8	
	4 = I have severe pain or discomfort	27 7	9. 2	
	5 = I have extreme pain or discomfort	38	1. 3	
	Missing	38	1. 3	
<b>EQ-5D-5L pain or discomfort - score of 2 or above</b>	No	12 23	40 .8	
	Yes	17 73	59 .2	
<b>EQ-5D-5L anxiety and depression dimension</b>	1 = I am not anxious or depressed	19 44	64 .9	
	2 = I am slightly anxious or depressed	62 8	21 .0	
	3 = I am moderately anxious or depressed	30 3	10 .1	
	4 = I am severely anxious or depressed	54	1. 8	
	5 = I am extremely anxious or depressed	29	1. 0	

	Missing	38	1.3	
<b>EQ-5D-5L anxiety and depression - score of 2 or above</b>	No	19 82	66 .2	
	Yes	10 14	33 .8	
<b>Number of dimensions with problems</b>	<b>0</b>	75 7	25 .3	
	<b>1</b>	54 0	18	
	<b>2</b>	45 7	15 .3	
	<b>3</b>	46 8	15 .6	
	<b>4</b>	41 4	13 .8	
	<b>5</b>	32 2	10 .7	
	<b>Missing</b>		1.3	
			38	
<b>EQ-5D-3L index value less than 0.0</b>	No	29 42	98 .2	
	Yes	54	1.8	
<b>EQ-5D-5L index value less than 0.0</b>	No	29 79	99 .4	
	Yes	17	0.6	
<b>EQ-5D-5L problems in any dimension</b>	No	79 5	26 .5	
	Yes	22 01	73 .5	Positive if index value is less than 1 (a health state other than 11111)
<i>Minor discrepancies in fields such as diagnosis/ethnicity may be seen between this table and the Taal et al 2020 baseline paper - this is due to minor differences in classification</i>				

**Table S2. Descriptors of continuous variables in entire cohort**

	Mean	SD	Minimum	Lower quartile	Median	Upper quartile	Maximum	Interquartile range	n missing	percent missing	Notes
Age at baseline	62.6	14.8	18.0	53.0	66.0	74.0	95.0	21.0	0.0	0.0	
Number of comorbidities	3.5	2.2	1.0	2.0	3.0	5.0	19.0	3.0	0.0	0.0	
Charlson Comorbidity Index score	3.4	2.2	0.0	2.0	3.0	5.0	11.0	3.0	0.0	0.0	
Number of cigarettes per day	1.0	4.1	0.0	0.0	0.0	0.0	58.0	0.0	0.0	0.0	
Units of alcohol per week	5.5	10.2	0.0	0.0	1.0	8.0	184.0	8.0	98.0	3.3	
Number of regular medications	7.8	4.5	1.0	4.0	7.0	11.0	33.0	7.0	0.0	0.0	
Body Mass Index (kg/m <sup>2</sup> )	29.6	6.3	14.1	25.3	28.7	33.0	76.9	7.7	81.0	2.7	
Karnofsky performance status	86.5	15.6	0.0	80.0	90.0	100.0	100.0	20.0	19.0	0.6	
Hip circumference (cm)	107.6	13.6	36.0	100.0	106.0	114.5	171.0	14.5	46.0	1.5	
Waist circumference (cm)	101.7	16.6	30.5	91.5	101.2	112.0	179.2	20.5	41.0	1.4	
Waist hip ratio	0.9	0.1	0.3	0.9	1.0	1.0	2.5	0.1	53.0	1.8	
Waist height ratio	0.6	0.1	0.2	0.5	0.6	0.7	1.0	0.1	78.0	2.6	
Mean systolic BP (mmHg)	139.3	20.4	70.0	125.0	137.0	151.3	228.0	26.3	4.0	0.1	
Mean diastolic BP (mmHg)	79.9	12.4	22.0	72.0	79.0	88.0	153.0	16.0	4.0	0.1	
Mean MAP (mmHg)	99.7	12.9	50.7	91.3	99.0	107.3	173.0	16.0	4.0	0.1	

<b>Timed up and go result (seconds)</b>	11.2	6.4	1.0	7.8	9.5	12.2	100.0	4.3	190.0	6.3	
<b>Best hand grip strength (kg)</b>	27.6	11.0	5.3	19.4	26.6	34.9	73.2	15.5	72.0	2.4	
<b>Number of admissions in the last year</b>	0.4	0.9	0.0	0.0	0.0	1.0	11.0	1.0	0.0	0.0	
<b>Number of days admitted in the last year</b>	3.2	10.6	0.0	0.0	0.0	1.0	190.0	1.0	0.0	0.0	
<b>Urine albumin creatinine ratio (uACR) local laboratory (mg/mmol)</b>	82.3	155.1	0.1	4.3	22.7	95.1	3000.0	90.8	653.0	21.8	
<b>Albumin serum local laboratory (g/L)</b>	40.5	5.3	10.0	37.0	41.0	44.0	59.0	7.0	191.0	6.4	
<b>Total cholesterol local laboratory (mmol/L)</b>	4.7	1.3	1.3	3.8	4.6	5.5	12.2	1.7	452.0	15.1	
<b>Triglycerides local laboratory (mmol/L)</b>	2.0	1.4	0.2	1.2	1.6	2.4	26.0	1.2	444.0	14.8	
<b>HDL local laboratory (mmol/L)</b>	1.4	0.5	0.4	1.1	1.3	1.7	5.2	0.6	446.0	14.9	
<b>LDL local laboratory (mmol/L)</b>	2.5	1.1	0.1	1.7	2.4	3.1	8.0	1.4	173.0	57.8	
<b>Sodium local laboratory (mmol/L)</b>	139.7	3.1	125.0	138.0	140.0	142.0	151.0	4.0	183.0	6.1	
<b>Potassium local laboratory (mmol/L)</b>	4.6	0.5	2.4	4.3	4.6	5.0	6.7	0.7	198.0	6.6	
<b>Bicarbonate local laboratory (mmol/L)</b>	24.6	3.4	9.0	22.2	24.7	27.0	38.0	4.8	357.0	11.9	
<b>Urea local laboratory (mmol/L)</b>	12.9	6.0	2.7	8.6	11.6	15.9	67.0	7.3	193.0	6.4	
<b>Creatinine serum local laboratory</b>	177.0	70.3	42.0	124.8	164.0	214.0	581.0	89.3	172.0	5.7	

(umol/L)											
eGFR local laboratory (ml/min/1.73m <sup>2</sup> )	35.6	14.6	7.0	24.0	33.0	45.0	129.0	21.0	281.0	9.4	
C-reactive protein (CRP) local laboratory (mg/L)	8.2	15.6	0.0	2.0	5.0	8.0	205.0	6.0	102.9	34.3	
HbA1c local laboratory (mmol/mol)	50.5	18.6	4.1	39.0	47.0	60.8	137.2	21.8	201.6	67.3	
Haemoglobin local laboratory (g/dL)	12.6	18.1	36.0	114.0	126.0	139.0	189.0	25.0	198.0	6.6	
Total white blood cell count local laboratory (10 <sup>9</sup> /L)	7.6	9.9	0.3	5.8	7.1	8.7	514.0	2.9	200.0	6.7	
Platelets local laboratory (10 <sup>9</sup> /L)	240.2	70.0	19.0	193.0	232.0	282.0	615.0	89.0	205.0	6.8	
Phosphate local laboratory (mmol/L)	1.1	0.2	0.5	1.0	1.1	1.3	2.3	0.3	232.0	7.7	
Parathyroid hormone (PTH) local laboratory (pmol/L)	45.9	76.4	0.9	7.1	15.7	56.0	1479.0	48.9	502.0	16.8	
Haematocrit local laboratory (L/L)	7.1	46.8	0.1	0.4	0.4	0.4	718.0	0.1	181.0	6.0	
Urate local laboratory (umol/L)	420.4	115.3	0.5	348.0	420.0	491.5	1162.0	143.5	154.1	51.4	
Calcium adjusted local laboratory (mmol/L)	2.4	0.1	1.7	2.3	2.4	2.4	2.9	0.1	272.0	9.1	
Calcium unadjusted local laboratory (mmol/L)	2.3	0.1	1.4	2.3	2.4	2.4	2.8	0.2	973.0	32.5	
Urine protein creatinine ratio (uPCR) local laboratory	13.4	25.9	0.0	16.0	48.2	150.0	5354.0	134.0	998.0	33.3	

<b>(mg/mmol)</b>											
<b>N-terminal pro-B-type natriuretic peptide (BNP) central laboratory (ng/L)</b>	94 0.6	27 75. 1	5.0	101.0	249 .5	708.0	6337 1.0	607.0	58.0	1.9	
<b>Creatinine serum central laboratory (umol/L)</b>	17 6.7	70. 5	43.0	125.0	163 .0	215.0	607. 0	90.0	57.0	1.9	
<b>C-reactive protein (CRP) central laboratory (mg/L)</b>	5.3	10. 2	0.3	1.1	2.6	5.7	172. 7	4.6	67.0	2.2	
<b>Growth/differentiation factor 15 (GDF15) central laboratory (pg/ml)</b>	32 49. 4	38 42. 3	400. 0	1605.0	250 3.0	3851.0	1000 00.0	2246.0	67.0	2.2	
<b>Troponin central laboratory (ng/L)</b>	26. 3	36. 8	3.0	9.4	17. 2	31.5	1043 .0	22.1	58.0	1.9	
<b>uACR central laboratory (mg/g)</b>	79 8.3	22 54. 4	1.0	33.0	208 .5	925.8	9726 2.0	892.8	270. 0	9.0	
<b>eGFR (CKD EPI formula) central laboratory (ml/min/1.73m<sup>2</sup>)</b>	37. 3	17. 9	6.0	24.0	34. 0	47.0	134. 0	23.0	0.0	0.0	
<b>Integrated Palliative care outcome scale (IPOS) total score</b>	11. 6	9.8	0.0	4.0	9.0	16.0	62.0	12.0	33.0	1.1	
<b>Hospital Anxiety and Depression Scale (HADS) overall anxiety score</b>	5.0	4.1	0.0	2.0	4.0	7.0	20.0	5.0	33.0	1.1	
<b>Hospital Anxiety and Depression Scale (HADS) overall depression score</b>	4.4	3.6	0.0	1.0	4.0	6.0	20.0	5.0	33.0	1.1	

<b>Hospital Anxiety and Depression Scale (HADS) total score</b>	9.4	6.8	0.0	4.0	8.0	13.0	39.0	9.0	33.0	1.1	
<b>Six Item Cognitive Impairment Test (6CIT) overall score</b>	2.4	3.1	0.0	0.0	2.0	4.0	28.0	4.0	23.0	0.8	
<b>EQ-5D-5L health rating (visual analogue scale)</b>	71.24	20.21	0.00	60.00	75.00	88.00	100.00	28.00	38.00	1.27	
<b>EQ-5D-5L index value</b>	0.80	0.23	-0.16	0.72	0.86	1.00	1.00	0.28	38.00	1.27	Indexed using Devlin et al. UK dataset
<b>EQ-5D-3L mapped index value</b>	0.73	0.26	-0.29	0.63	0.79	0.99	0.99	0.36	38.00	1.27	Mapped from 5L questionnaire values using Hernandez-Alvara et al. method



**Table S3. Multivariable mixed effects regression models of health-related quality of life outcome measures**

Risk factors	EQ-5D-3L mapped index value linear regression			EQ-5D-5L health rating (visual analogue scale) linear regression			EQ-5D-5L problems in any dimension logistic regression			Number of dimensions in EQ-5D-5L scored 2 or above - linear regression			n (%) in cohort with complete EQ-5D-5L data
	Coefficient B	95% Confidence intervals	p-values	Coefficient B	95% Confidence intervals	p-values	Odds Ratios	95% Confidence intervals	p-values	Coefficient B	95% Confidence intervals	p-values	
(Intercept)	0.955	0.780 to 1.130	<0.001	73.438	57.852 to 89.025	<0.001	13.107	0.624 to 275.371	0.098	1.085	-0.038 to 2.209	0.058	-
Age	0.000	-0.001 to 0.000	0.372	0.093	0.032 to 0.153	0.003	1.007	0.997 to 1.018	0.181	0.005	0.001 to 0.009	0.023	-
Sex (female)	-0.031	-0.047 to -0.015	<0.001	-0.355	-1.837 to 1.127	0.638	1.245	0.948 to 1.634	0.115	0.163	0.059 to 0.268	0.002	1229 (41.5%)
Ethnicity [Asian]	-0.014	-0.045 to 0.018	0.398	0.055	-2.801 to 2.910	0.970	0.649	0.391 to 1.078	0.095	-0.023	-0.226 to 0.180	0.825	197 (6.7%)
Ethnicity [Black]	0.000	-0.048 to 0.047	0.995	0.377	-3.907 to 4.662	0.863	1.071	0.482 to 2.379	0.867	-0.048	-0.352 to 0.256	0.757	89 (3.0%)
Ethnicity [Mixed]	0.008	-0.065 to 0.082	0.826	2.369	-4.313 to 9.051	0.487	2.171	0.612 to 7.703	0.230	0.224	-0.247 to 0.696	0.351	31 (1.0%)
Ethnicity [Other]	0.061	-0.003 to	0.064	2.450	-3.397 to 8.	0.411	0.846	0.333 to 2.148	0.724	-0.443	-0.860 to	0.037	53 (1.8%)

		0.126			297						-0.026		)
Index of Multiple Deprivation (IMD) quintile 2	0.012	-0.012 to 0.035	0.329	0.624	-1.515 to 2.763	0.567	0.777	0.539 to 1.120	0.176	-0.037	-0.188 to 0.113	0.628	612 (20.7%)
IMD quintile 3	-0.010	-0.034 to 0.014	0.405	1.305	-0.894 to 3.503	0.245	1.185	0.796 to 1.764	0.402	0.034	-0.121 to 0.189	0.665	549 (18.6%)
IMD quintile 4	-0.009	-0.034 to 0.016	0.481	-1.109	-3.389 to 1.171	0.340	0.972	0.644 to 1.468	0.894	0.061	-0.100 to 0.222	0.456	543 (18.4%)
IMD quintile 5	-0.035	-0.060 to -0.010	<b>0.006</b>	-1.237	-3.523 to 1.048	0.289	1.016	0.662 to 1.561	0.941	0.131	-0.031 to 0.293	0.113	607 (20.6%)
Education [GCSE/NVQ/A-level]	0.020	-0.000 to 0.040	<b>0.050</b>	1.488	-0.313 to 3.288	0.105	0.911	0.638 to 1.301	0.609	-0.090	-0.218 to 0.037	0.163	1347 (45.5%)
Education [Higher education]	0.016	-0.007 to 0.039	0.175	0.980	-1.125 to 3.086	0.361	0.789	0.534 to 1.165	0.234	-0.098	-0.247 to 0.051	0.199	782 (26.4%)
eGFR (ml/min/1.73m <sup>2</sup> )	0.000	-0.000 to 0.001	0.835	0.071	0.027 to 0.116	<b>0.002</b>	0.995	0.987 to 1.003	0.212	-0.002	-0.006 to 0.001	0.130	-
Number of comorbidities	-0.015	-0.019 to -0.011	<b>&lt;0.001</b>	-1.113	-1.485 to -0.742	<b>&lt;0.001</b>	1.107	1.023 to 1.199	<b>0.012</b>	0.066	0.040 to 0.093	<b>&lt;0.001</b>	-
6-item Cognitive Impairment Test (6CIT)	-0.062	-0.090 to -0.034	<b>&lt;0.001</b>	-1.895	-4.413 to 0.622	0.140	2.812	1.592 to 4.964	<b>&lt;0.001</b>	0.393	0.215 to 0.571	<b>&lt;0.001</b>	237 (8.1%)

score 8 or above													
BMI [Underweight]	0.023	- 0.057 to 0.103	0.570	-4.301	- 11.595 to 2.993	0.248	1.171	0.290 to 4.723	0.825	-0.165	- 0.678 to 0.349	0.529	32 (1.1%)
BMI [Overweight]	-0.001	- 0.022 to 0.020	0.916	-0.259	- 2.150 to 1.632	0.788	0.976	0.703 to 1.357	0.887	-0.035	- 0.168 to 0.099	0.609	1016 (35.3%)
Body Mass Index (BMI, kg/m <sup>2</sup> ) [Obese]	-0.037	- 0.058 to -0.016	<b>0.001</b>	-2.747	-4.635 to -0.858	<b>0.004</b>	1.202	0.856 to 1.687	0.288	0.202	0.069 to 0.335	<b>0.003</b>	1190 (41.3%)
Smoking status [Ex-smoker]	-0.017	- 0.033 to -0.001	<b>0.043</b>	-0.181	- 1.680 to 1.318	0.813	1.124	0.857 to 1.475	0.397	0.122	0.016 to 0.228	<b>0.024</b>	1205 (40.9%)
Smoking status [Current smoker]	-0.004	- 0.033 to 0.025	0.786	0.832	- 1.803 to 3.466	0.536	1.135	0.666 to 1.934	0.641	0.075	- 0.111 to 0.260	0.430	263 (8.9%)
Sarcopenia present	-0.062	- 0.080 to -0.043	<b>&lt;0.001</b>	-4.083	-5.774 to -2.392	<b>&lt;0.001</b>	1.859	1.322 to 2.615	<b>&lt;0.001</b>	0.361	0.242 to 0.481	<b>&lt;0.001</b>	889 (30.1%)
Prednisolone	0.011	- 0.014 to 0.036	0.404	-1.466	- 3.736 to 0.804	0.205	0.830	0.540 to 1.275	0.395	0.113	- 0.047 to 0.273	0.167	354 (12.0%)
Renin-angiotensin system inhibitors	0.011	- 0.006 to 0.028	0.200	0.038	- 1.486 to 1.563	0.961	0.863	0.650 to 1.144	0.305	-0.104	- 0.212 to 0.003	<b>0.057</b>	1954 (66.1%)
On 10 or more	-0.065	- 0.085 to	<b>&lt;0.001</b>	-1.717	- 3.484 to 0.	0.057	1.382	0.970 to 1.969	0.073	0.356	0.231 to 0.481	<b>&lt;0.001</b>	948 (32.0%)

regular medications		-0.046			049								(%)
Hospital Anxiety and Depression Scale (HADS) depression score 8 or above	-0.159	- 0.182 to -0.137	<0.001	- 13.231	- 15.296 to -11.165	<0.001	3.506	1.899 to 6.474	<0.001	0.934	0.788 to 1.080	<0.001	563 (19.0%)
HADS anxiety score 8 or above	-0.090	- 0.110 to -0.069	<0.001	-4.965	-6.842 to -3.087	<0.001	3.022	1.981 to 4.611	<0.001	0.594	0.462 to 0.727	<0.001	709 (24.0%)
Integrated Palliative care Outcome Scale (IPOS) pain symptoms present	-0.134	- 0.152 to -0.117	<0.001	-4.004	-5.602 to -2.406	<0.001	7.001	5.380 to 9.112	<0.001	1.037	0.925 to 1.150	<0.001	1848 (63.8%)
IPOS shortness of breath symptoms present	-0.026	- 0.043 to -0.008	0.005	-2.953	-4.576 to -1.330	<0.001	1.639	1.236 to 2.173	0.001	0.328	0.213 to 0.442	<0.001	1622 (56.2%)
IPOS weakness or lack of	-0.034	- 0.054 to -0.014	0.001	-7.477	-9.282 to -5.672	<0.001	2.516	1.904 to 3.325	<0.001	0.421	0.293 to 0.548	<0.001	2125 (72.5%)

energy symptoms present													
Haemoglobin less than 100 g/dL	-0.047	- 0.085 to -0.010	<b>0.012</b>	-3.592	-6.968 to -0.217	<b>0.037</b>	1.239	0.586 to 2.622	0.575	0.243	0.005 to 0.482	0.045	147 (5.0%)
Phosphate greater than 1.5 mmol/L	-0.007	- 0.047 to 0.032	0.716	2.542	- 1.041 to 6.125	0.164	0.944	0.458 to 1.943	0.875	0.039	- 0.213 to 0.292	0.760	121 (4.1%)
Parathyroid hormone (PTH) Raised (7.2-15.7 pmol/L)	0.005	- 0.018 to 0.028	0.668	1.590	- 0.455 to 3.634	0.127	0.867	0.600 to 1.254	0.448	-0.052	- 0.198 to 0.093	0.482	618 (25.1%)
PTH High (15.8-56.0 pmol/L)	0.017	- 0.008 to 0.042	0.190	3.127	1.113 to 5.141	<b>0.002</b>	0.746	0.495 to 1.123	0.160	-0.250	- 0.411 to -0.088	<b>0.003</b>	626 (25.4%)
PTH Very high (>56.0 pmol/L)	0.003	- 0.028 to 0.034	0.841	-0.661	- 2.801 to 1.480	0.545	0.900	0.547 to 1.482	0.678	-0.093	- 0.293 to 0.107	0.364	590 (24.0%)
Calcium (adjusted, mmol/L)	0.039	- 0.030 to 0.108	0.270	3.326	- 2.868 to 9.519	0.293	0.166	0.049 to 0.560	<b>0.004</b>	-0.525	- 0.970 to -0.081	<b>0.021</b>	-
<b>Random Effects</b>													
$\sigma^2$	0.03			265.22			3.29			1.33			
$\tau_{00}$	0.00 recruited_group			0.00 recruited_group			0.08 recruited_group			0.02 recruited_group			
ICC	0.01						0.02			0.01			
N	9 recruited_group			9 recruited_group			9 recruited_group			9 recruited_group			

<b>Observations</b>	2266	2266	2266	2266	
<b>Marginal R<sup>2</sup> / Conditional R<sup>2</sup></b>	0.507 / 0.513	0.358 / NA	0.560 / 0.570	0.539 / 0.544	
<b>AIC</b>	-1058.718	19066.717	1749.233	7267.92	

p-values in bold denote statistical significance of <0.05

Sex reference category = Male, Ethnicity reference category = White, IMD reference category = quintile 1 (most deprived),

Education reference category = None (below GCSE level), BMI reference category = Normal weight (BMI 18.5 to 24.9 kg/m<sup>2</sup>)

Smoking status reference category = non-smoker, PTH reference category = PTH low to normal (0 to 7.1 pmol/L)

Models adjusted for recruitment region as a random effect

**Table S4. Multivariable mixed effects regression models of problems in each EQ-5D-5L dimension**

<i>Risk factors</i>	Problems reported in EQ-5D-5L Mobility dimension logistic regression			Problems reported in EQ-5D-5L Self-care dimension logistic regression			Problems reported in EQ-5D-5L Usual activities dimension logistic regression			Problems reported in EQ-5D-5L pain/discomfort dimension logistic regression			Problems reported in EQ-5D-5L anxiety/depression dimension logistic regression		
	<i>Od ds Rat ios</i>	<i>95% Confide nce intervals</i>	<i>P- val ues</i>	<i>Od ds Rat ios</i>	<i>95% Confide nce intervals</i>	<i>P- val ues</i>	<i>Od ds Rat ios</i>	<i>95% Confide nce intervals</i>	<i>P- val ues</i>	<i>Od ds Rat ios</i>	<i>95% Confiden ce intervals</i>	<i>P- val ues</i>	<i>Od ds Rat ios</i>	<i>95% Confide nce intervals</i>	<i>P- val ues</i>
(Intercept )	0.070	0.006 to 0.860	<b>0.038</b>	0.005	0.000 to 0.120	<b>0.001</b>	0.264	0.023 to 3.023	0.285	0.459	0.028 to 0.472	0.585	0.703	0.056 to 8.864	0.785
Age	1.035	1.025 to 1.046	<b>&lt;0.001</b>	1.005	0.992 to 1.018	0.456	1.010	1.000 to 1.020	<b>0.045</b>	1.000	0.989 to 1.010	0.961	0.991	0.981 to 1.000	0.059
Sex (female)	1.193	0.943 to 1.508	0.140	1.287	0.958 to 1.728	0.093	1.388	1.106 to 1.743	<b>0.005</b>	1.448	1.121 to 1.870	<b>0.005</b>	1.251	0.992 to 1.577	0.059
Ethnicity [Asian]	1.039	0.657 to 1.643	0.869	1.514	0.850 to 2.697	0.159	0.838	0.531 to 1.323	0.448	0.889	0.541 to 1.461	0.642	0.967	0.610 to 1.533	0.886
Ethnicity [Black]	0.662	0.329 to 1.328	0.245	0.881	0.365 to 2.128	0.778	0.869	0.440 to 1.716	0.686	1.931	0.889 to 4.195	0.096	0.740	0.361 to 1.518	0.412
Ethnicity [Mixed]	1.471	0.544 to 3.977	0.447	1.563	0.435 to 5.614	0.494	1.499	0.543 to 4.137	0.434	1.656	0.511 to 5.372	0.400	1.294	0.437 to 3.832	0.642
Ethnicity [Other]	0.162	0.045 to 0.591	<b>0.006</b>	0.199	0.019 to 2.043	0.174	0.253	0.070 to 0.913	<b>0.036</b>	0.739	0.275 to 1.988	0.550	1.276	0.505 to 3.222	0.606
Number of comorbidities	1.130	1.065 to 1.200	<b>&lt;0.001</b>	1.151	1.080 to 1.228	<b>&lt;0.001</b>	1.112	1.050 to 1.176	<b>&lt;0.001</b>	1.101	1.028 to 1.179	<b>0.006</b>	1.006	0.949 to 1.066	0.840
6-item Cognitive Impairme	2.123	1.396 to 3.228	<b>&lt;0.001</b>	1.973	1.275 to 3.053	<b>0.002</b>	1.718	1.164 to 2.535	<b>0.006</b>	1.389	0.889 to 2.170	0.149	1.795	1.225 to 2.631	<b>0.003</b>

nt Test (6CIT) score 8 or above															
Index of Multiple Deprivati on (IMD) quintile 2	0.8 84	0.634 to 1.233	0.46 6	1.1 01	0.688 to 1.761	0.6 88	0.9 53	0.688 to 1.322	0.7 75	0.7 66	0.533 to 1 .101	0.1 49	1.1 78	0.835 to 1.661	0.3 50
IMD quintile 3	0.9 93	0.700 to 1.409	0.97 0	1.1 42	0.719 to 1.813	0.5 74	0.8 98	0.640 to 1.260	0.5 34	0.9 34	0.640 to 1 .362	0.7 22	1.2 02	0.848 to 1.705	0.3 02
IMD quintile 4	1.0 63	0.743 to 1.521	0.74 0	1.3 47	0.843 to 2.152	0.2 12	0.9 40	0.663 to 1.333	0.7 28	1.0 79	0.729 to 1 .596	0.7 04	1.1 93	0.829 to 1.717	0.3 43
IMD quintile 5	1.3 51	0.940 to 1.940	0.10 4	1.7 00	1.079 to 2.680	<b>0.0</b> <b>22</b>	1.0 38	0.731 to 1.474	0.8 34	1.0 68	0.714 to 1 .599	0.7 48	1.2 69	0.882 to 1.825	0.1 99
eGFR (ml/min/1 .73m <sup>2</sup> )	0.9 96	0.988 to 1.003	0.23 5	0.9 98	0.988 to 1.007	0.6 19	0.9 92	0.984 to 0.999	<b>0.0</b> <b>22</b>	0.9 92	0.984 to 1 .000	<b>0.0</b> <b>47</b>	1.0 04	0.997 to 1.011	0.2 76
Education [GCSE/N VQ/A- level]	0.9 00	0.680 to 1.190	0.46 0	0.7 49	0.538 to 1.041	0.0 85	0.8 38	0.639 to 1.098	0.2 00	1.2 79	0.934 to 1 .751	0.1 25	0.9 48	0.714 to 1.260	0.7 15
Education [Higher education ]	0.9 61	0.692 to 1.334	0.81 1	0.6 72	0.439 to 1.031	0.0 69	0.7 73	0.560 to 1.065	0.1 15	1.0 94	0.762 to 1 .570	0.6 25	0.9 35	0.668 to 1.309	0.6 96
BMI [Underwe ight]	1.1 70	0.363 to 3.769	0.79 2	0.3 70	0.065 to 2.107	0.2 63	1.0 19	0.327 to 3.177	0.9 74	0.1 88	0.048 to 0 .732	<b>0.0</b> <b>16</b>	1.2 24	0.387 to 3.864	0.7 31
BMI [Overwei ght]	1.1 05	0.818 to 1.494	0.51 6	0.8 73	0.578 to 1.319	0.5 18	0.9 66	0.719 to 1.297	0.8 17	0.9 73	0.704 to 1 .345	0.8 70	0.7 76	0.574 to 1.049	0.0 99
Body	2.1	1.613 to	<b>&lt;0.</b>	1.6	1.140 to	<b>0.0</b>	1.3	1.039 to	<b>0.0</b>	0.9	0.695 to 1	0.7	0.9	0.702 to	0.6



Mass Index (BMI, kg/m <sup>2</sup> ) [Obese]	72	2.925	<b>001</b>	73	2.454	<b>09</b>	87	1.851	<b>26</b>	59	.323	98	43	1.266	95
Hospital Anxiety and Depression Scale (HADS) depression score 8 or above	2.673	1.902 to 3.757	<b>&lt;0.001</b>	4.531	3.298 to 6.224	<b>&lt;0.001</b>	3.471	2.518 to 4.784	<b>&lt;0.001</b>	2.279	1.537 to 3.380	<b>&lt;0.001</b>	2.754	2.038 to 3.722	<b>&lt;0.001</b>
HADS anxiety score 8 or above	1.039	0.772 to 1.398	<b>0.800</b>	1.610	1.154 to 2.246	<b>0.005</b>	1.407	1.063 to 1.863	<b>0.017</b>	1.477	1.058 to 2.062	<b>0.022</b>	7.635	5.834 to 9.992	<b>&lt;0.001</b>
On 10 or more regular medications	1.466	1.123 to 1.914	<b>0.005</b>	1.791	1.307 to 2.455	<b>&lt;0.001</b>	1.521	1.175 to 1.968	<b>0.001</b>	1.260	0.927 to 1.712	0.140	1.891	1.442 to 2.480	<b>&lt;0.001</b>
Sarcopenia present	2.323	1.791 to 3.012	<b>&lt;0.001</b>	2.474	1.832 to 3.343	<b>&lt;0.001</b>	1.425	1.111 to 1.828	<b>0.005</b>	1.307	0.973 to 1.755	0.075	0.929	0.713 to 1.209	0.582
Integrated Palliative care Outcome Scale (IPOS) pain symptoms	3.059	2.398 to 3.902	<b>&lt;0.001</b>	2.639	1.775 to 3.924	<b>&lt;0.001</b>	2.428	1.908 to 3.091	<b>&lt;0.001</b>	19.843	15.262 to 25.801	<b>&lt;0.001</b>	1.381	1.072 to 1.779	<b>0.013</b>

present															
IPOS shortness of breath symptoms present	1.8 62	1.466 to 2.365	< <b>0.001</b>	1.5 44	1.098 to 2.172	<b>0.012</b>	1.9 33	1.532 to 2.441	< <b>0.001</b>	1.1 81	0.904 to 1 .543	0.2 23	1.2 37	0.962 to 1.593	0.0 98
IPOS weakness or lack of energy symptoms present	1.8 13	1.370 to 2.399	< <b>0.001</b>	1.8 47	1.131 to 3.015	<b>0.014</b>	2.8 28	2.116 to 3.779	< <b>0.001</b>	1.5 45	1.154 to 2 .069	<b>0.004</b>	1.9 26	1.422 to 2.608	< <b>0.001</b>
Prednisolone	1.0 88	0.767 to 1.544	0.63 5	1.8 02	1.208 to 2.689	<b>0.004</b>	1.3 49	0.962 to 1.892	0.0 83	1.0 91	0.731 to 1 .628	0.6 71	0.9 43	0.662 to 1.343	0.7 45
Renin- angiotensi n system inhibitors	0.7 62	0.599 to 0.970	<b>0.027</b>	0.7 95	0.589 to 1.074	0.1 35	0.6 80	0.538 to 0.858	<b>0.001</b>	1.0 02	0.769 to 1 .304	0.9 90	1.1 33	0.890 to 1.443	0.3 11
Smoking status [Ex- smoker]	1.2 59	0.995 to 1.592	0.05 5	1.3 12	0.969 to 1.777	0.0 79	1.1 52	0.916 to 1.450	0.2 26	1.2 65	0.976 to 1 .640	0.0 76	1.0 52	0.830 to 1.334	0.6 72
Smoking status [Current smoker]	1.7 49	1.168 to 2.619	<b>0.007</b>	1.5 01	0.937 to 2.406	0.0 91	0.8 63	0.583 to 1.278	0.4 63	0.9 36	0.600 to 1 .463	0.7 73	1.0 51	0.700 to 1.578	0.8 11
Haemogl obin less than 100 g/dL	1.5 68	0.883 to 2.785	0.12 5	1.6 02	0.927 to 2.767	0.0 91	1.4 25	0.849 to 2.393	0.1 81	1.1 74	0.634 to 2 .174	0.6 10	1.1 42	0.692 to 1.884	0.6 04
Phosphate greater than 1.5	1.1 07	0.613 to 2.000	0.73 5	1.0 35	0.550 to 1.946	0.9 15	1.1 29	0.643 to 1.983	0.6 73	1.0 42	0.543 to 2 .001	0.9 01	0.9 81	0.566 to 1.701	0.9 45

mmol/L															
Parathyroid hormone (PTH) Raised (7.2-15.7 pmol/L)	1.349	0.976 to 1.865	0.070	1.016	0.657 to 1.573	0.943	0.863	0.630 to 1.182	0.358	0.760	0.533 to 1.085	0.131	0.874	0.632 to 1.209	0.416
PTH High (15.8-56.0 pmol/L)	0.861	0.612 to 1.212	0.392	1.037	0.677 to 1.589	0.866	0.604	0.432 to 0.843	<b>0.003</b>	0.715	0.476 to 1.075	0.107	0.618	0.428 to 0.892	<b>0.010</b>
PTH Very high (>56.0 pmol/L)	1.121	0.760 to 1.653	0.563	1.539	1.000 to 2.366	<b>0.050</b>	0.759	0.516 to 1.118	0.163	0.652	0.395 to 1.078	0.095	0.774	0.492 to 1.218	0.268
Calcium (adjusted, mmol/L)	0.362	0.133 to 0.980	<b>0.046</b>	0.801	0.242 to 2.655	0.717	0.501	0.192 to 1.306	0.157	0.510	0.168 to 1.544	0.233	0.457	0.169 to 1.237	0.123
<b>Random Effects</b>															
$\sigma^2$	3.29			3.29			3.29			3.29			3.29		
$\tau_{00}$	0.01 recruited_group			0.00 recruited_group			0.01 recruited_group			0.18 recruited_group			0.10 recruited_group		
ICC	0						0			0.05			0.03		
N	9 recruited_group			9 recruited_group			9 recruited_group			9 recruited_group			9 recruited_group		
Observations	2167			2167			2167			2167			2167		
Marginal R <sup>2</sup> / Conditional R <sup>2</sup>	0.517 / 0.519			0.533 / NA			0.464 / 0.466			0.520 / 0.544			0.390 / 0.409		
AIC	2088.814			1405.886			2184.493			1860.788			2121.778		

p-values in bold denote statistical significance of  $<0.05$

Sex reference category = Male, Ethnicity reference category = White, IMD reference category = quintile 1 (most deprived), Education reference category = None (below GCSE level), BMI reference category = Normal weight (BMI 18.5 to 24.9 kg/m<sup>2</sup>)

Smoking status reference category = non-smoker, PTH reference category = PTH low to normal (0 to 7.1 pmol/L). Models adjusted for recruitment region as a random effect