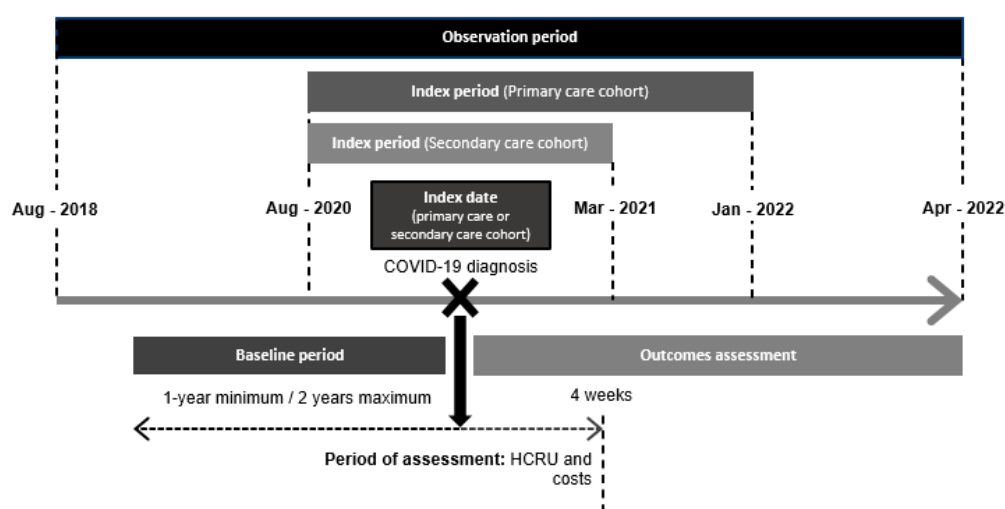


## COVID-19 HCRU Adults manuscript – Supplementary materials

SUPPLEMENTARY MATERIALS: “Healthcare resource utilisation and costs of hospitalisation and primary care among adults in England: a population-based cohort study” (Yang, Andersen, Rai et al 2023)

## Supplementary eFigure 1 Study design schematic



Note: When assessing disease severity, the highest level of severity experienced during the hospitalisation was reported.

## Supplementary eTable 1: COVID-19-related medications

Generic name
Nirmatrelvir/ritonavir
Sotrovimab
Molnupiravir
Casirivimab/imdevimab
Remdesivir
Dexamethasone
Tocilizumab
Sarilumab
Baricitinib

## COVID-19 HCRU Adults manuscript – Supplementary materials

**Supplementary eTable 2:** HCRU in the four weeks after index stratified by age, risk of severe COVID-19 and immunocompromised status at baseline among the hospitalised cohort

HCRU	All (n=13,105)	Age stratifications					Risk criteria			Immunocompromised status at baseline	
		18-49 (n=3,127)	50-64 (n=4,844)	65-74 (n=2,386)	75-84 (n=1,690)	≥85 (n=1,058)	McInnes Ad- visory Group (n=4,323)	PANORAMIC (n=11,011)	Green Book (n= 5,341)	IC (n=181)	Non-IC (n=12,924)
<b>Length of hospital stay (in days)</b>											
Mean (SD)	9.2 (10.0)	6.4 (8.1)	9.0 (10.1)	10.8 (10.9)	11.2 (10.2)	11.4 (9.7)	9.9 (10.0)	9.8 (10.2)	10.0 (9.8)	9.0 (6.7)	9.2 (10.0)
Median (Q1, Q3)	6.0 (4.0, 11.0)	5.0 (2.0, 7.0)	6.0 (4.0, 10.0)	8.0 (5.0, 13.0)	8.0 (5.0, 14.0)	8.0 (5.0, 15.0)	7.0 (4.0, 12.0)	7.0 (4.0, 12.0)	7.0 (4.0, 12.0)	7.0 (4.5, 12.0)	6.0 (4.0, 11.0)
<b>Critical care admission</b>											
n (%)	1,934 (14.8%)	399 (12.8%)	896 (18.5%)	456 (19.1%)	165 (9.8%)	18 (1.7%)	608 (14.1%)	1,687 (15.3%)	695 (13.0%)	10 (5.5%)	1,924 (14.9%)
<b>Length of stay in critical care</b>											
Mean (SD)	11.5 (11.2)	9.7 (10.9)	12.3 (11.8)	12.3 (11.1)	10.0 (8.9)	5.3 (5.6)	11.4 (10.9)	11.7 (11.1)	11.2 (10.6)	9.0 (5.8)	11.5 (11.3)
Median (Q1, Q3)	8.0 (4.0, 15.0)	6.0 (4.0, 11.0)	8.5 (5.0, 16.0)	9.0 (5.0, 15.0)	8.0 (4.0, 14.0)	4.0 (1.0, 7.0)	8.0 (5.0, 15.0)	8.0 (5.0, 15.0)	8.0 (5.0, 14.0)	8.5 (4.0, 13.0)	8.0 (4.2, 15.0)
<b>Mechanical ventilation</b>											
n (%)	792 (6.0%)	135 (4.3%)	398 (8.2%)	204 (8.6%)	55 (3.3%)	0	250 (5.8%)	713 (6.5%)	278 (5.2%)	<5	790 (6.1%)
<b>Mechanical ventilation days</b>											
Mean (SD)	1.2 (0.5)	1.2 (0.4)	1.2 (0.4)	1.2 (0.5)	1.1 (0.4)	0	1.2 (0.4)	1.2 (0.5)	1.2 (0.4)	N/A*	1.2 (0.5)
Median (Q1, Q3)	1.0 (1.0, 1.0)	1.0 (1.0, 1.0)	1.0 (1.0, 1.0)	1.0 (1.0, 1.0)	1.0 (1.0, 1.0)	0	1.0 (1.0, 1.0)	1.0 (1.0, 1.0)	1.0 (1.0, 1.0)	N/A*	1.0 (1.0, 1.0)

In the event of multiple hospitalisations (or critical care stays) during the acute COVID-19 phase, the average per person, rather than the cumulative total, was used.

\*Suppressed to comply with the reporting rules.

**IC: immunocompromised; Non-IC: non-immunocompromised also known as immunocompetent.**

## COVID-19 HCRU Adults manuscript – Supplementary materials

**Supplementary eTable 3:** Costs in the four weeks after index stratified by age, risk of severe COVID-19 and immunocompromised status at baseline among the hospitalised cohort

Costs	Age stratifications						Risk criteria			Immunocompromised status at baseline	
	All (n= 13,105)	18-49 (n= 3,127)	50-64 (n= 4,844)	65-74 (n= 2,386)	75-84 (n= 1,690)	≥85 (n=1,058)	McInnes Advisory Group (n= 4,323)	PANORAMIC (n= 11,011)	Green Book (n= 5,341)	IC (n=181)	Non-IC (n=12,924)
<b>Healthcare cost per hospitalisation (£)</b>											
Mean (SD)	13,059 (18,659)	10,215 (16,242)	14,396 (21,874)	15,655 (20,965)	12,500 (12,409)	10,365 (6,773)	13,436 (17,582)	13,693 (19,028)	13,009 (16,509)	10,814 (8,525)	13,090 (18,761)
Median (Q1, Q3)	8,727 (4,364, 13,091)	7,703 (2,994, 11,600)	8,727 (4,364, 14,317)	8,727 (4,471, 17,399)	8,942 (5,800, 13,413)	8,835 (5,800, 13,091)	8,727 (4,471, 14,450)	8,727 (4,364, 13,759)	8,727 (4,471, 13,413)	8,727 (5,800, 13,063)	8,727 (4,364, 13,091)
<b>Healthcare cost of non-critical care admission (£)</b>											
Mean (SD)	9,360 (7,275)	7,516 (6,294)	9,199 (7,028)	10,366 (7,990)	10,898 (7,787)	10,876 (7,308)	10,059 (7,634)	9,761 (7,412)	10,041 (7,536)	10,283 (6,511)	9,347 (7,284)
Median (Q1, Q3)	8,727 (4,364, 12,799)	5,800 (2,259, 8,942)	8,727 (4,364, 12,561)	8,727 (4,364, 13,091)	8,942 (5,800, 13,091)	8,942 (5,800, 13,413)	8,727 (4,364, 13,091)	8,727 (4,364, 13,091)	8,727 (4,364, 13,091)	8,727 (5,800, 13,091)	8,727 (4,364, 12,764)
<b>Healthcare cost of critical care admission (£)</b>											
Mean (SD)	30,352 (35,116)	26,321 (34,702)	32,617 (37,578)	32,784 (33,219)	23,463 (25,529)	8,501 (8,689)	29,441 (32,155)	30,988 (34,876)	29,150 (31,633)	19,345 (15,827)	30,409 (35,181)
Median (Q1, Q3)	17,439 (9,285, 39,663)	11,332 (7,555, 30,039)	19,569 (9,444, 42,351)	22,421 (9,444, 41,808)	16,999 (7,474, 31,356)	5,617 (1,482, 9,444)	18,887 (9,285, 38,768)	18,887 (9,444, 39,860)	18,887 (9,444, 38,468)	14,551 (7,555, 27,096)	17,439 (9,285, 39,663)
<b>Healthcare cost of critical care requiring mechanical ventilation (£)</b>											
Mean (SD)	51,103 (42,055)	52,000 (43,415)	52,071 (44,628)	51,106 (37,077)	41,379 (36,238)	-	46,364 (38,594)	50,686 (41,554)	48,677 (38,050)	39,029 (23,487)	51,135 (42,098)
Median (Q1, Q3)	40,148 (23,517, 64,772)	39,860 (19,930, 77,057)	41,768 (24,912, 61,556)	39,860 (23,517, 67,263)	34,877 (18,291, 55,637)	-	37,369 (20,904, 57,486)	39,860 (23,855, 62,712)	38,981 (22,421, 61,200)	39,029 (22,421, 55,637)	40,148 (23,517, 64,813)

Blank cells (i.e. “-”) are due those aged ≥85 years not receiving mechanical ventilation.

**IC: immunocompromised; Non-IC: non-immunocompromised also known as immunocompetent.**

## COVID-19 HCRU Adults manuscript – Supplementary materials

**Supplementary eTable 4:** Primary care HCRU stratified by age, risk of severe COVID and immunocompromised status at baseline among the hospitalised cohort

HCRU	All (n=13,105)	Age stratifications					Risk criteria			Immunocompromised status at baseline	
		18-49 (n=3,127)	50-64 (n=4,844)	65-74 (n=2,386)	75-84 (n=1,690)	≥85 (n=1,058)	McInnes Ad- visory Group (n=4,323)	PANORAMIC (n=11,011)	Green Book (n= 5,341)	IC (n=181)	Non-IC (n=12,924)
Any COVID-19 medication use: n, (%)	29 (0.2%)	6 (0.2%)	9 (0.2%)	5 (0.2%)	5 (0.3%)	<5	14 (0.3%)	27 (0.3%)	15 (0.3%)	<5	28 (0.2%)
Primary care consultations- F2F: number with ≥ 1 visit (%)	2,489 (19.0%)	559 (17.9%)	921 (19.0%)	425 (17.8%)	354 (21.0%)	230 (21.7%)	900 (20.8%)	2,124 (19.3%)	1,093 (20.5%)	31 (17.1%)	2,458 (19.0%)
Primary care consultations- Telephone: number with ≥ 1 call (%)	5,077 (38.7%)	1,178 (37.7%)	1,840 (38.0%)	949 (39.8%)	701 (41.5%)	409 (38.7%)	1,815 (42.0%)	4,341 (39.4%)	2,306 (43.2%)	87 (48.1%)	4,990 (38.6%)

IC: immunocompromised; Non-IC: non-immunocompromised also known as immunocompetent.

## COVID-19 HCRU Adults manuscript – Supplementary materials

**Supplementary eTable 5:** Primary care costs stratified by age, risk of severe COVID and immunocompromised status at baseline among the hospitalised cohort

	All (n= 13,105)	Age stratifications					Risk criteria			Immunocompromised status at baseline	
		18-49 (n= 3,127)	50-64 (n= 4,844)	65-74 (n= 2,386)	75-84 (n= 1,690)	≥85 (n=1,058)	McInnes Advi- sory Group (n= 4,323)	PANORAMIC (n= 11,011)	Green Book (n= 5,341)	IC (n=181)	Non-IC (n=12,924)
<b>Medication cost (£)</b>											
Mean (SD)	4.8 (15.4)	1.8 (1.1)	1.9 (1.5)	2.6 (1.4)	2.2 (1.3)	22.2 (41.6)	8.2 (22.0)	5.1 (15.9)	7.7 (21.3)	0.6 (-)	5.0 (15.7)
Median (Q1, Q3)	1.8 (1.2, 2.5)	1.5 (0.9, 2.5)	1.3 (1.2, 1.8)	1.8 (1.8, 2.5)	2.5 (1.3, 2.8)	1.9 (0.9, 43.6)	2.5 (1.3, 3.6)	1.8 (1.2, 2.5)	2.5 (1.3, 3.6)	0.6 (0.6, 0.6)	1.8 (1.2, 2.5)
<b>Primary care consulta- tions- F2F (£)</b>											
Mean (SD)	30.5 (26.5)	31.4 (30.3)	31.9 (24.7)	30.5 (26.3)	28.7 (28.1)	25.5 (20.1)	30.0 (24.6)	30.4 (25.8)	30.0 (25.6)	35.6 (27.1)	30.4 (26.5)
Median (Q1, Q3)	39.2 (6.8, 39.2)	39.2 (6.8, 39.2)	39.2 (6.8, 39.2)	39.2 (6.8, 39.2)	39.2 (6.8, 39.2)	13.5 (6.8, 39.2)	39.2 (6.8, 39.2)	39.2 (6.8, 39.2)	39.2 (6.8, 39.2)	39.2 (13.5, 39.2)	39.2 (6.8, 39.2)
<b>Primary care consulta- tions- Telephone (£)</b>											
Mean (SD)	22.5 (13.8)	23.2 (14.7)	22.7 (13.6)	22.2 (14.0)	21.6 (13.1)	21.4 (12.5)	23.0 (14.2)	22.4 (13.6)	22.8 (13.9)	23.0 (15.5)	22.5 (13.8)
Median (Q1, Q3)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)	15.5 (15.5, 31.0)

**IC: immunocompromised; Non-IC: non-immunocompromised also known as immunocompetent.**

## COVID-19 HCRU Adults manuscript – Supplementary materials

**Supplementary eTable 6:** HCRU in the four weeks after index stratified by age, risk of severe COVID-19 and immunocompromised status at baseline among the primary care cohort

HCRU	Age stratifications						Risk criteria			Immunocompromised status at baseline	
	All (n=1,693,263)	18-49 (n=1,161,843)	50-64 (n=379,528)	65-74 (n=92,573)	75-84 (n=40,481)	≥85 (n=18,838)	McInnes Advisory Group (n=250,329)	PANORAMIC (n=691,593)	Green Book (n=212,556)	IC (n=63,547)	Non-IC (n=1,629,716)
<b>Any COVID-19 medication use:</b> n (%)	253 (<1.0%)	69 (<1.0%)	63 (<1.0%)	33 (<1.0%)	39 (0.1%)	49 (0.3%)	158 (0.1%)	214 (<1.0%)	116 (0.1%)	51 (0.1%)	202 (<1.0%)
<b>Primary care consultations-F2F:</b> number with ≥ 1 visit (%)	71,039 (4.2%)	39,108 (3.4%)	19,330 (5.1%)	6,491 (7.0%)	3,726 (9.2%)	2,384 (12.7%)	16,989 (6.8%)	40,991 (5.9%)	17,237 (8.1%)	4,587 (7.2%)	66,452 (4.1%)
<b>Primary care consultations-Telephone:</b> number with ≥ 1 call (%)	137,148 (8.1%)	70,675 (6.1%)	40,311 (10.6%)	13,434 (14.5%)	7,860 (19.4%)	4,868 (25.8%)	35,935 (14.4%)	86,002 (12.4%)	36,852 (17.3%)	9,375 (14.8%)	127,773 (7.8%)

Among COVID cases managed in the community, none had record of receipt of nirmatrelvir/ritonavir, remdesivir, casirivimab/imdevimab or bari-citinib.

**IC: immunocompromised; Non-IC: non-immunocompromised also known as immunocompetent.**

## COVID-19 HCRU Adults manuscript – Supplementary materials

**Supplementary eTable 7:** Costs in the four weeks after index stratified by age, risk of severe COVID-19 and immunocompromised status at baseline among the primary care cohort

Costs	Age stratifications						Risk criteria			Immunocompromised status at baseline	
	All (n= 1,693,263)	18-49 (n= 1,161,843)	50-64 (n= 379,528)	65-74 (n= 92,573)	75-84 (n= 40,481)	≥85 (n=18,838)	McInnes Ad- visory Group (n= 250,329)	PANORAMIC (n= 691,593)	Green Book (n= 212,556)	IC (n= 63,547)	Non-IC (n=1,629,716)
<b>Medication cost (£)</b>											
Mean (SD)	165 (465)	242 (538)	204 (505)	134 (447)	187 (530)	8 (36)	206 (518)	159 (457)	161 (448)	486 (759)	83 (307)
Median (Q1, Q3)	2 (2, 4)	3 (2, 256)	2 (2, 24)	2 (2, 3)	3 (1, 10)	3 (1, 3)	3 (2, 21)	2 (2, 4)	3 (2, 9)	21 (3, 566)	2 (2, 3)
<b>Primary care consultations- F2F (£)</b>											
Mean (SD)	27 (22)	26 (21)	28 (22)	27 (24)	27 (25)	27 (24)	28 (24)	28 (23)	28 (25)	28 (25)	27 (22)
Median (Q1, Q3)	39 (7, 39)	39 (7, 39)	39 (7, 39)	39 (7, 39)	39 (7, 39)	39 (7, 39)	39 (7, 39)	39 (7, 39)	39 (7, 39)	39 (7, 39)	39 (7, 397)
<b>Primary care consultations- Telephone (£)</b>											
Mean (SD)	18 (10)	17 (9)	18 (10)	18 (10)	19 (11)	20 (13)	18 (11)	18 (10)	19 (11)	18 (10)	18 (9)
Median (Q1, Q3)	16 (16, 16)	16 (16, 16)	16 (16, 16)	16 (16, 16)	16 (16, 16)	16 (16, 16)	16 (16, 16)	16 (16, 16)	16 (16, 16)	16 (16, 16)	16 (16, 16)

**IC: immunocompromised; Non-IC: non-immunocompromised also known as immunocompetent.**