

## SEROPREVALANCE OF COVID-19 IN HEALTH CARE WORKERS (HCWS) AT UHL

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Trust Board paper F2

### Purpose of report:

This paper is for:	Description	Select (X)
Decision	To formally receive a report and approve its recommendations OR a particular course of action	
Discussion	To discuss, in depth, a report noting its implications without formally approving a recommendation or action	X
Assurance	To assure the Board that systems and processes are in place, or to advise a gap along with treatment plan	
Noting	For noting without the need for discussion	

### Previous consideration:

Meeting	Date	Please clarify the purpose of the paper to that meeting using the categories above
CMG Board (specify which CMG)		
Executive Board		
Trust Board Committee		
Trust Board		

## Executive Summary

### Context

The Government advised all Trusts to roll-out antibody testing for HCWs across the UK; this paper describes the results in detail of the seroprevalance data for UHL staff.

### Questions

To understand the patterns of the seroprevalance for COVID 19 within UHL staff

### Conclusion

1. The seroprevalance for UHL staff was 10.8%. This was much lower to other acute trusts in East Midlands
2. There is a strong association for seropositivity with ethnicity, speciality, job roles, seniority and deprivation indexes.

### Input Sought

We would welcome the Trust Board's input regarding

The relatively lower seroprevalance when compared to other Trusts with very low infection rate amongst UHL staff (most recent swab test data) and other measures such as PPE makes UHL a

safer place for the patients (and staff). Does the board suggest that this could be communicated to staff, patients and at higher levels?

As in the community, there is a variation in seroprevalance according to certain demographic details and how does the Board suggest this data be used for future planning and decision making?

**For Reference:**

**This report relates to the following UHL quality and supporting priorities:**

**1. Quality priorities**

Safe, surgery and procedures	[Not applicable]
Safely and timely discharge	[Not applicable]
Improved Cancer pathways	[Not applicable]
Streamlined emergency care	[Not applicable]
Better care pathways	[Not applicable]
Ward accreditation	[Not applicable]

**2. Supporting priorities:**

People strategy implementation	[Yes]
Estate investment and reconfiguration	[Not applicable]
e-Hospital	Not applicable]
More embedded research	[Yes]
Better corporate services	[Not applicable]
Quality strategy development	[Not applicable]

**3. Equality Impact Assessment and Patient and Public Involvement considerations:**

- What was the outcome of your Equality Impact Assessment (EIA)?
- Briefly describe the Patient and Public Involvement (PPI) activities undertaken in relation to this report, or confirm that none were required
- How did the outcome of the EIA influence your Patient and Public Involvement ?
- If an EIA was not carried out, what was the rationale for this decision?

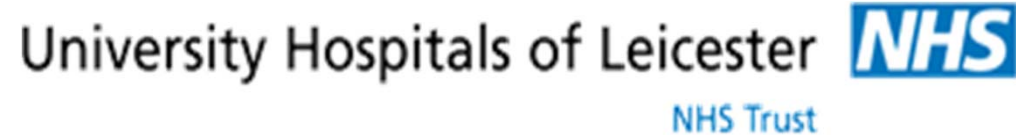
**4. Risk and Assurance**

**Risk Reference:**

Does this paper reference a risk event?	Select (X)	Risk Description:
<b>Strategic:</b> Does this link to a <i>Principal Risk</i> on the BAF?		
<b>Organisational:</b> Does this link to an <i>Operational/Corporate Risk</i> on Datix Register		
<b>New Risk</b> identified in paper: What <i>type</i> and <i>description</i> ?		
<b>None</b>	X	

5. Scheduled date for the **next paper** on this topic: [TBC]

6. Executive Summaries should not exceed **5 sides** [My paper does comply]



# Seroprevalance for COVID-19 in Health Care Workers (HCW) at UHL

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# Background/Methodology

There is little data to understand the risk of HCW for acquiring the Severe Acute Respiratory Syndrome Coronavirus 2 (Covid -19 virus) infection compared to general population

There is an urgent need to understand whether seroprevalence differs according to ethnicity, job roles (doctors, nurses etc), speciality, seniority, socio-economics and other demographic factors in hospital staff.

Prospective study examining the seroprevalence amongst hospital staff employed at UHL NHS Trust

Voluntary testing was offered between 29<sup>th</sup> May 2020 and 29<sup>th</sup> June 2020

Exclusions: staffs who were symptomatic or had a confirmed positive infection within the previous three weeks were advised not to attend for testing

**Table 1. Description of the cohort stratified by ethnicity – part 1**

	Ethnicity			
	Total	White	South Asian	Black
Total n, (%)	<b>10662 (100.0%)</b>	<b>6960 (65.3%)</b>	<b>2494 (23.4%)</b>	<b>553 (5.2%)</b>
Age (years), median (IQR)	44 (33 – 53)	46 (34 – 55)	41 (31 – 50)	42 (32 – 49)
Sex, n(%)				
Female	8503 (79.8%)	5796 (83.3%)	1817 (72.9%)	447 (80.8%)
Male	2159 (20.3%)	1164 (16.7%)	677 (27.2%)	106 (19.2%)
Occupation, n(%)				
Doctors	1243 (11.7%)	545 (7.8%)	479 (19.2%)	54 (9.8%)
Nurses/Midwives/HCAs	4631 (43.4%)	3175 (45.6%)	793 (31.8%)	339 (61.3%)
AHPs	550 (5.2%)	435 (6.3%)	75 (3.0%)	15 (2.7%)
Pharmacy	116 (1.1%)	38 (0.6%)	66 (2.7%)	*
Administrative/executive	2078 (19.5%)	1483 (21.3%)	478 (19.2%)	45 (8.1%)
Radiographers	241 (2.3%)	165 (2.4%)	47 (1.9%)	23 (4.2%)
Healthcare scientists	528 (5.0%)	346 (5.0%)	145 (5.8%)	17 (3.1%)
Estates	1154 (10.8%)	675 (9.7%)	396 (15.9%)	57 (10.3%)

**Table 1. Description of the cohort stratified by ethnicity – part 2**

	Total	White	South Asian	Black
Speciality, n(%)				
ED & Acute medicine	831 (7.8%)	466 (6.7%)	205 (8.2%)	89 (16.1%)
Medicine (other than acute)	1498 (14.1%)	935 (13.4%)	362 (14.6%)	86 (15.6%)
Surgery	1718 (16.1%)	1010 (14.5%)	442 (17.7%)	120 (21.7%)
Paediatrics	519 (4.9%)	393 (5.7%)	89 (3.6%)	15 (2.7%)
Haematology / Oncology	327 (3.1%)	228 (3.3%)	69 (2.8%)	12 (2.2%)
Radiology / Imaging	512 (4.8%)	344 (4.9%)	115 (4.6%)	28 (5.1%)
Obs & Gynae / Maternity	652 (6.1%)	530 (7.6%)	90 (3.6%)	17 (3.1%)
Anaesthetics & ICU	524 (4.9%)	300 (4.3%)	139 (5.6%)	31 (5.6%)
Laboratory based	677 (6.4%)	432 (6.2%)	190 (7.6%)	22 (4.0%)
Pharmacy	251 (2.4%)	111 (1.6%)	118 (4.7%)	*
Community / Outpatients	277 (2.6%)	240 (3.5%)	28 (1.1%)	*
Estates / Facilities	884 (8.3%)	520 (7.5%)	290 (11.6%)	52 (9.4%)
Administrative / Corporate	605 (5.7%)	435 (6.3%)	132 (5.3%)	16 (2.9%)
Other clinical services	566 (5.3%)	453 (6.5%)	81 (3.3%)	11 (2.0%)
Other	821 (7.7%)	563 (8.1%)	144 (5.8%)	47 (8.5%)

**Table 1. Description of the cohort stratified by ethnicity – part 3**

	Total	White	South Asian	Black
IMD quintile, n(%)				
1 (most deprived)	1556 (14.6%)	841 (12.1%)	355 (14.2%)	213 (38.5%)
2	2155 (20.2%)	1067 (15.3%)	797 (32.0%)	141 (25.5%)
3	1879 (17.6%)	1161 (16.7%)	504 (20.2%)	83 (15.0%)
4	2340 (22.0%)	1770 (25.4%)	401 (16.1%)	63 (11.4%)
5 (least deprived)	2732 (25.6%)	2121 (30.5%)	437 (17.5%)	53 (9.6%)

**Table 2. Anti-SARS-CoV-2 IgG seroprevalence stratified by ethnicity – part 1**

	Ethnicity			
	Total	White	South Asian	Black
	IgG Positive	IgG Positive	IgG Positive	IgG Positive
Total	1148 (10.8%)	632 (9.1%)	307 (12.3%)	117 (21.2%)
Age (years), median (IQR)	42 (31 – 53)	46 (31 – 55)	39 (28 – 47)	41 (32 – 49)
Sex, n(%)				
Female	935 (11.0%)	531 (9.2%)	240 (13.2%)	97 (21.7%)
Male	213 (9.9%)	101 (8.7%)	67 (9.9%)	20 (18.9%)
Occupation, n(%)				
Doctors	128 (10.3%)	48 (8.8%)	58 (12.1%)	9 (16.7%)
Nurses/Midwives/HCAs	632 (13.7%)	349 (11.0%)	140 (17.7%)	81 (23.9%)
AHPs	57 (10.4%)	39 (9.0%)	13 (17.3%)	*
Administrative/executive	141 (6.8%)	91 (6.1%)	40 (8.4%)	*
Radiographers	24 (10.0%)	11 (6.7%)	*	7 (30.4%)
Healthcare scientists	43 (8.1%)	26 (7.5%)	9 (6.2%)	*
Estates	112 (9.7%)	63 (9.3%)	37 (9.3%)	10 (17.5%)



**Table 2. Anti-SARS-CoV-2 IgG seroprevalence stratified by ethnicity – part 2**

	Total	White	South Asian	Black
	IgG Positive	IgG Positive	IgG Positive	IgG Positive
Speciality, n(%)				
ED & Acute medicine	145 (17.5%)	60 (12.9%)	48 (23.4%)	23 (25.8%)
Medicine (other than acute)	241 (16.1%)	122 (13.1%)	70 (19.3%)	32 (37.2%)
Surgery	207 (12.1%)	103 (10.2%)	60 (13.6%)	20 (16.7%)
Paediatrics	30 (5.8%)	22 (5.6%)	6 (6.7%)	*
Haematology & Oncology	30 (9.2%)	22 (9.7%)	*	*
Radiology & Imaging	36 (7.0%)	17 (4.9%)	10 (8.7%)	7 (25.0%)
Obs & Gynae & Maternity	52 (8.0%)	39 (7.4%)	7 (7.8%)	*
Anaesthetics & ICU	35 (6.7%)	21 (7.0%)	*	6 (19.4%)
Laboratory based	43 (6.4%)	21 (4.9%)	17 (9.0%)	*
Pharmacy	11 (4.4%)	6 (5.4%)	*	*
Community & Outpatients	20 (7.2%)	17 (7.1%)	*	*
Estates / Facilities	82 (9.3%)	53 (10.2%)	18 (6.2%)	9 (17.3%)
Administrative / Corporate	38 (6.3%)	23 (5.3%)	12 (9.1%)	*
Other clinical services	70 (12.4%)	51 (11.3%)	11 (13.6%)	*
Other	108 (13.2%)	55 (9.8%)	32 (22.2%)	6 (12.8%)

**Table 2. Anti-SARS-CoV-2 IgG seroprevalence stratified by ethnicity – part 3**

	Total	White	South Asian	Black
	IgG Positive	IgG Positive	IgG Positive	IgG Positive
IMD quintile, n(%)				
1 (most deprived)	<b>205 (13.2%)</b>	88 (10.5%)	51 (14.4%)	<b>43 (20.2%)</b>
2	<b>282 (13.1%)</b>	116 (10.9%)	104 (13.1%)	38 (27.0%)
3	<b>198 (10.5%)</b>	108 (9.3%)	60 (11.9%)	16 (19.3%)
4	<b>226 (9.7%)</b>	157 (8.9%)	42 (10.5%)	14 (22.2%)
5 (least deprived)	<b>237 (8.7%)</b>	163 (7.7%)	50 (11.4%)	6 (11.3%)

**Table 3. Anti-SARS-CoV2 IgG seroprevalence by grade of medical and nursing staff and ethnicity**

Grade	Doctors		
	Ethnicity		Total
	White	Ethnic minority	IgG positive
FY1	36 (33.6%)	77 (66.4%)	30 (25.9%)
FY2	22 (40.0%)	33 (60.0%)	7 (12.7%)
SHO	47 (39.5%)	72 (60.5%)	13 (10.9%)
Registrar	144 (35.0%)	267 (65.0%)	38 (9.3%)
Consultant	263 (52.2%)	241 (47.8%)	39 (7.7%)
Grade	Nurses		
	Ethnicity		Total
	White	Ethnic minority	IgG positive
HCA	976 (69.3%)	433 (30.7%)	221 (15.5%)
Staff nurse	1298 (59.6%)	881 (40.4%)	311 (14.3%)
Sister/Charge nurse	161 (91.0%)	16 (9.0%)	20 (11.2%)
Practitioner	307 (83.7%)	60 (16.4%)	41 (11.0%)
Matron/Consultant	50 (86.2%)	8 (13.8%)	6 (10.3%)
Midwife	289 (91.5%)	27 (8.5%)	23 (7.2%)

**Table 4. Analysis of factors associated with anti-SARS-CoV-2 - part 1**

Variable	n seropositive / n total 1148 / 10662 (10.8%)	OR (95% CI)	p value
Age (years)			
<30	252 / 1852 (13.6%)	-	-
30 – 39	256 / 2430 (10.5%)	0.75 (0.62 – 0.90)	0.002
40 – 49	256 / 2625 (9.8%)	0.69 (0.57 – 0.83)	<0.001
50 – 59	296 / 2760 (10.7%)	0.76 (0.64 – 0.91)	0.003
≥60	88 / 995 (8.8%)	0.62 (0.48 – 0.80)	<0.001
Sex			
Female	935 / 8503 (11.0%)	-	-
Male	213 / 2159 (9.9%)	0.89 (0.76 – 1.04)	0.13
Ethnicity			
White	632 / 6960 (9.1%)	-	-
South Asian	307 / 2494 (12.3%)	<b>1.41 (1.22 – 1.62)</b>	<0.001
Black	117 / 553 (21.2%)	<b>2.69 (2.16 – 3.35)</b>	<0.001
Other	92 / 655 (14.1%)	<b>1.64 (1.29 – 2.07)</b>	<0.001
Occupation			
Doctors	128 / 1243 (10.3%)	-	-
Nurses/Midwives/HcAs	632 / 4631 (13.7%)	<b>1.38 (1.13 – 1.68)</b>	0.002
AHPs	57 / 550 (10.3%)	1.01 (0.72 – 1.40)	0.97
Administrative	141 / 2078 (6.8%)	0.63 (0.49 – 0.81)	<0.001
Radiographers	24 / 241 (10.0%)	0.96 (0.61 – 1.53)	0.87
Healthcare scientists	43 / 528 (8.1%)	0.77 (0.54 – 1.11)	0.16
Estates	112 / 1154 (9.7%)	0.94 (0.72 – 1.22)	0.63
Other	8 / 121 (6.6%)	0.62 (0.29 – 1.29)	0.20

**Table 4. Adjusted analysis of factors associated with anti-SARS-CoV-2 - part 2**

Variable	n seropositive / n total 1148 / 10662 (10.8%)	OR (95% CI)	p value
Speciality			
ED & Acute Medicine	145 / 831 (17.5%)	-	-
Medicine (other than acute)	241 / 1498 (16.1%)	0.91 (0.72 – 1.14)	0.40
Surgery	207 / 1718 (12.1%)	0.65 (0.51 – 0.82)	<0.001
Paediatrics	30 / 519 (5.8%)	0.29 (0.19 – 0.44)	<0.001
Haematology & Oncology	30 / 327 (9.2%)	0.48 (0.32 – 0.72)	0.001
Radiology & Imaging	36 / 512 (7.0%)	0.36 (0.24 – 0.52)	<0.001
Obstetrics & Gynaecology / Maternity	52 / 652 (8.0%) 35 / 524 (6.7%)	0.41 (0.29 – 0.57) 0.34 (0.23 – 0.50)	<0.001 <0.001
Anaesthetics & ICU	43 / 677 (6.4%)	0.32 (0.22 – 0.46)	<0.001
Laboratory based	11 / 251 (4.4%)	0.22 (0.12 – 0.41)	<0.001
Pharmacy	20 / 277 (7.2%)	0.37 (0.23 – 0.60)	<0.001
Community / Outpatients	82 / 884 (9.3%)	0.48 (0.36 – 0.65)	<0.001
Estates / Facilities	38 / 605 (6.3%)	0.32 (0.22 – 0.46)	<0.001
Administrative / Corporate	70 / 566 (12.4%)	0.67 (0.49 – 0.91)	0.01
Other clinical services	108 / 821 (13.2%)	0.72 (0.55 – 0.94)	0.02

# Summary/key messages

- HCW have more seropositivity compared to general population but much better at UHL when compared to other major acute Trusts
- There was a strong association for seropositivity in certain demographic such as ethnicity, speciality, job roles, seniority and deprivation index

# Thanks and questions

Demographic and occupational determinants of anti-SARS-CoV-2 IgG antibody positivity amongst hospital healthcare staff: an observational cohort study

Christopher A. Martin<sup>1,2\*</sup>, Prashanth Patel<sup>3,4\*</sup>, Charles Goss<sup>5</sup>, David R. Jenkins<sup>6</sup>, Arthur Price<sup>7</sup>, Linda Barton<sup>8</sup>, Pankaj Gupta<sup>3,4</sup>, Francesco Zaccardi<sup>9,10</sup>, Helen Jerina<sup>3</sup>, Sai Duraisingham<sup>7</sup>, Nigel J. Brunskill<sup>4,11</sup>, Kamlesh Khunti<sup>9,12,13<sup>Ψ</sup></sup> and Manish Pareek<sup>1,2,12,13<sup>Ψ</sup></sup>

\*Joint first authors/contributed equally

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