THE LANCET
Child & Adolescent Health

Supplementary appendix

SUPPLEMENTARY MATERIAL

SARS-CoV-2 infection and transmission in primary schools

in England in June–December, 2020 (sKIDs): an active,

prospective surveillance study

Ladhani et al.

Supplementary Figure S1: sKIDs participating sites in England. The red dots indicate schools taking part in the blood sampling arm and the green dots indicate in the weekly swabbing arm
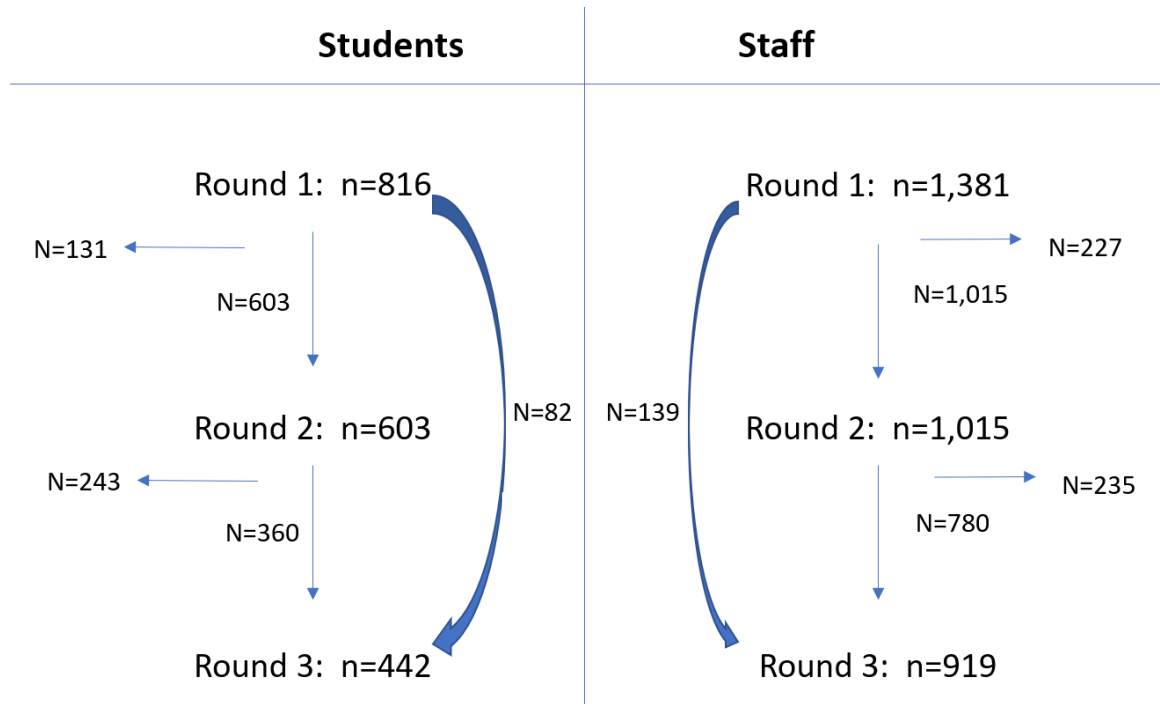
Supplementary Table S2: Summary of participants with detectable SARS-CoV-2 RNA on nasal/throat swab RT-PCR.

	Region	Participant	Symptomatic?	Infection Source	RT-PCR testing*	Retested RT-PCR	Antibody 4-6 weeks later	Household contacts	Outcome	School action
A	London	Teacher	Symptomatic a few weeks previously	Not identified	Throat swab (Ct 35.27)	Positive	Positive (2.96)	All negative	Likely recovering from past infection	Bubble isolated
B	London	Teaching assistant	Symptomatic a few weeks previously	Not identified	Throat swab (Ct 39.97)	Negative	Negative (0.02)	All negative	SARS-CoV-2 infection unlikely	Bubble isolated
C	London	Primary school student	Asymptomatic	Healthcare worker parent	Throat swab (Ct 31.74)	Positive	Positive (6.2)	All negative	Asymptomatic infection	Bubble isolated
D	South East	Teacher	Asymptomatic	Not identified	Nose swab (Ct 40.05)	Negative	Negative (0.01)	Lived alone	SARS-CoV-2 infection unlikely	Bubble isolated
E	Midlands	Teacher	Symptomatic	Household member	Nose swab (Ct 40.03)	Negative	Negative (0.01)	Lived alone	SARS-CoV-2 infection unlikely; School bubble tested – all negative	Bubble isolated
F	Midlands	Teacher	Symptomatic	Not identified	Nose swab (Ct 37.53)	Positive	Declined testing	Declined testing	Another staff member also tested positive; whole school tested – all negative	School closed

RT-PCR Cycle threshold (Ct)

Supplementary Figure S3: Flow of participation in testing Rounds 1 (recruitment, June 2020), 2 (mid-July 2020) and 3 (December 2020) in primary schools involved in blood sampling for SARS-CoV-2 antibodies in addition to nasal and throat swabs for SARS-CoV-2 RT-PCR.

Students	Staff

Round 1: n=816

N=131

N=603

Round 2: n=603

N=243

N=360

Round 3: n=442

N=82   N=139

Round 1: n=1,381

N=227

N=1,015

Round 2: n=1,015

N=235

N=780

Round 3: n=919

Supplementary Table S4: Predictors of student participation in Rounds 2 and 3 using univariate and multivariable logistic regression in primary schools involved with blood sampling for SARS-CoV-2 antibodies

OR = odds ratio; CI = confidence interval

	Total	Drop out: round 1 vs 2						Drop out: round 1 vs 3					
		Number	Percent	OR (95% CI)	p-value	adjusted OR (95% CI)	p-value	Number	Percent	OR (95% CI)	p-value	adjusted OR (95% CI)	p-value
Sex													
Male	401	110	27.4	1		1	0.73	195	48.6	1	0.12	1	0.40
Female	415	103	24.8	0.87 (0.64-1.19)	0.40	0.94 (0.68-1.31)		179	43.1	0.80 (0.61-1.06)		0.88 (0.64-1.19)	
Age cat													
4-6 years	322	85	26.4	1		1		111	34.5	1	<0.001	1	<0.001
7-9 years	220	57	25.9	0.98 (0.66-1.44)		0.98 (0.65-1.49)	1.00	72	32.7	0.92 (0.64-1.33)		0.81 (0.55-1.20)	
10-12 years	274	71	25.9	0.98 (0.68-1.41)	0.99	0.99 (0.67-1.45)		191	69.7	4.37 (3.10-6.18)		4.38 (3.03-6.32)	
Ethnicity													
White	497	109	21.9	1		1		224	45.1	1		1	
Black	51	19	37.3	2.11 (1.15-3.87)		2.06 (1.09-3.91)		17	33.3	0.61 (0.33-1.12)		0.56 (0.28-1.10)	
Asian	101	27	26.7	1.30 (0.80-2.12)	0.002	1.26 (0.74-2.13)	0.01	51	50.5	1.24 (0.81-1.91)	0.23	0.86 (0.53-1.42)	0.47
Mixed	81	25	30.9	1.59 (0.95-2.67)		2.24 (0.72-2.13)		42	51.9	1.31 (0.82-2.10)		1.09 (0.64-1.84)	
Other	75	31	41.3	2.51 (1.51-4.16)		2.52 (1.45-4.37)		32	42.7	0.91 (0.56-1.48)		1.09 (0.62-1.91)	
Missing	11	2	18.2					8	72.7				
Region													
Derby	154	23	14.9	0.30 (0.18-0.50)		0.28 (0.17-0.48)		52	33.8	0.69 (0.46-1.05)		0.88 (0.56-1.39)	
East London	105	34	32.4	0.81 (0.50-1.32)		0.74 (0.45-1.24)		69	65.7	2.61 (1.63-4.18)		3.44 (2.03-5.84)	
Manchester	192	34	17.7	0.37 (0.23-0.57)	<0.001	0.39 (0.24-0.62)	<0.001	114	59.4	1.99 (1.36-2.90)	<0.001	2.37 (1.56-3.61)	<0.001
North London	262	97	37.0	1		1		111	42.4	1		1	
Oxford	103	25	24.3	0.55 (0.33-0.91)		0.70 (0.40-1.23)		28	27.2	0.51 (0.31-0.84)		0.54 (0.31-0.96)	
Round 1 antibody result													
Negative	725	182	25.1	1	0.07	1	0.58	332	45.8	1	0.95	1	0.74
Positive	91	31	34.1	1.54 (0.97-2.45)		1.15 (0.70-1.90)		42	46.2	1.01 (0.66-1.57)		0.92 (0.55-1.52)	
Total	816	213	26.1					374	45.8				

Supplementary Table S5: Predictors of staff participation in Rounds 2 and 3 using univariate and multivariable logistic regression in primary schools involved with blood sampling for SARS-CoV-2 antibodies

OR = odds ratio; CI = confidence interval

	Total	Drop out: round 1 vs 2						Drop out: round 1 vs 3					
		Number	Percent	OR (95% CI)	p-value	adjusted OR (95% CI)	p-value	Number	Percent	OR (95% CI)	p-value	adjusted OR (95% CI)	p-value
Sex													
Male	272	72	26.5	1	0.98	1	0.67	100	36.8	1	0.18	1	0.28
Female	1107	292	26.4	1.00 (0.74-1.34)		1.07 (0.78-1.47)		360	32.5	0.83 (0.63-1.09)		0.85 (0.64-1.14)	
Missing	2	2	100.0					2	100.0				
Age cat													
20-29 years	66	6	9.1	1				14	21.2	1			
30-39 years	139	25	18.0	2.19 (0.85-5.64)				23	16.5	0.74 (0.35-1.54)			
40-49 years	118	21	17.8	2.16 (0.83-5.67)	0.54	N/A		20	16.9	0.76 (0.35-1.62)	0.76	N/A	
50-59 years	125	21	16.8	2.02 (0.77-5.28)				24	19.2	0.88 (0.42-1.85)			
60+ years	36	5	13.9	1.61 (0.46-5.71)				9	25.0	1.24 (0.48-3.23)			
Missing	897	288	32.1					372	41.5				
Ethnicity													
White	1048	247	23.6	1		1		333	31.8	1		1	
Black	71	31	43.7	2.51 (1.54-4.10)		1.70 (1.02-2.84)		34	47.9	1.97 (1.22-3.20)		1.64 (0.99-2.71)	
Asian	163	58	35.6	1.79 (1.26-2.54)	<0.001	1.18 (0.81-1.73)	0.34	63	38.7	1.35 (0.96-1.90)	0.02	1.08 (0.75-1.56)	0.27
Mixed	49	16	32.7	1.57 (0.85-2.90)		1.17 (0.62-2.20)		15	30.6	0.95 (0.51-1.76)		0.82 (0.43-1.54)	
Other	31	7	22.6	0.95 (0.40-2.22)		1.17 (0.49-2.83)		7	22.6	0.63 (0.27-1.47)		0.69 (0.30-1.64)	
Missing	19	7	36.8					10	52.6				
Region													
Derby	133	18	13.5	0.55 (0.32-0.96)		0.57 (0.32-1.00)		29	21.8	0.61 (0.39-0.97)		0.64 (0.40-1.02)	
East London	489	190	38.9	2.25 (1.68-3.01)		2.21 (1.62-3.01)		203	41.5	1.56 (1.19-2.04)		1.52 (1.14-2.03)	
Manchester	257	43	16.7	0.71 (0.48-1.06)	<0.001	0.77 (0.51-1.15)	<0.001	67	26.1	0.77 (0.55-1.09)	<0.001	0.78 (0.55-1.10)	<0.001
North London	431	95	22.0	1		1		135	31.3	1		1	
Oxford	71	20	28.2	1.39 (0.79-2.44)		1.58 (0.87-2.88)		28	39.4	1.43 (0.85-2.40)		1.28 (0.73-2.24)	
Round 1 antibody result													
Negative	1172	303	25.9	1	0.20	1	0.41	402	34.3	1	0.12	1	0.06
Positive	209	63	30.1	1.24 (0.90-1.71)		1.15 (0.82-1.62)		60	28.7	0.77 (0.56-1.07)		0.72 (0.52-1.01)	
Total	1381	366	26.5					462	33.5				

Supplementary table S6: Predictors of seroconversion using multivariable Poisson regression among school staff and students participating in SARS-CoV-2 surveillance in primary schools

IRR: Incidence rate ratio; CI = confidence interval

	Total	Seroconverters		
		n	adjusted IRR (95% CI)	p-value
Sex				
Female	1,071	45	1	0.33
Male	440	11	0.68 (0.32-1.47)	
Ethnicity				
White	1,128	35	1	
Black	64	4	1.94 (0.79-4.74)	
Asian	162	11	3.00 (1.64-5.51)	<0.01
Mixed	76	3	1.54 (0.39-6.10)	
Other	63	2	0.97 (0.11-8.25)	
Missing	18	1		
Region				
Derby	236	13	2.48 (0.84-7.37)	
East London	338	9	0.63 (0.24-1.67)	
Manchester	340	19	2.38 (1.24-4.55)	0.01
North London	456	12	1	
Oxford	141	3	1.48 (0.74-2.98)	
Free school meals				
per 1% increase			1.02 (1.00-1.05)	0.09
Participant type				
Student	569	20	1	0.36
Staff	942	36	1.28 (0.75-2.16)	
Total	1,511	56		

Supplementary Table S7: Data from Figure 1

Figure 1: Seropositivity in staff and students attending preschool and primary school in five English regions compared to regional seroprevalence during the first two weeks of June 2020. Community seroprevalence from Ward et al. (2020) Antibody prevalence for SARS-CoV-2 following the peak of the pandemic in England: REACT2 study in 100,000 adults. DOI: 10.1101/2020.08.12.20173690
CI = confidence interval

		Antibody positivity	Lower 95% CI	Upper 95% CI
Derby	Students (n=154)	9.1	3.7	17.9
	Staff (n=133)	6.0	2.0	13.4
	Community	4.2	3.7	4.8
East London	Students (n=105)	21.9	13.7	32.1
	Staff (n=489)	17.2	11.5	24.2
	Community	13	12.3	13.6
Manchester	Students (n=192)	7.8	5.7	10.3
	Staff (n=257)	11.3	7.6	16.0
	Community	6.6	6.1	7.2
North London	Students (n=262)	14.1	9.9	19.2
	Staff (n=431)	19.3	14.0	25.5
	Community	13	12.3	13.6
Oxford	Students (n=103)	1.9	0.2	6.8
	Staff (n=71)	7.0	2.3	15.7
	Community	3.9	3.5	4.3