THE LANCET Infectious Diseases

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

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Appendix

Rapid implementation of SARS-CoV-2 sequencing to investigate healthcare-associated COVID-19 infections: a genomic epidemiology study

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Contents

Supplementary Methods

SARS-CoV-2 molecular testing

Nucleic acid extraction was undertaken using the NUCLISENS easyMAG platform (Biomerieux, Marcy L-Etoile), in accordance with manufacturers' instructions. Nucleic acids were extracted from 500µL of sample, with a dilution of MS2 bacteriophage added pre-extraction to act as an internal extraction and inhibition control. The presence of SARS-CoV-2 was assessed using an in-house generated and validated one-step RT q-PCR assay that detects a 222 base-pair region of the SARS-CoV-2 RdRp genes, along with an MS2 bacteriophage internal extraction control. The RdRp gene was detected using the RdRp For primer (ATGGGTTGGGATTATCCTAAATGTGA) and the RdRp Rev primer (AGCAGTTGTGGCATCTCCTGATGAG) with a FAM labelled MGB RdRp Probe 3 (ATGCTTAGAATTATGGCCTCAC). The internal extraction control was detected using the MS2 For primer (TGGCACTACCCCTCTCCGTATTCACG), the MS2 Rev primer (GTACGGGCGACCCCACGATGAC) and a ROX-BHQ2 labelled MS2 probe (CACATCGATAGATCAAGGTGCCTACAAGC). Amplification reactions and detection of PCR products were performed using the Rotorgene™ PCR instrument. A typical reaction contained 400nM of For and Rev primers for the RdRp genes and 200nM of the the MS2 internal control For and Rev primer pair, along with 120nM of the RdRpand MS2 probes. TaqPath™ 1-Step RT-qPCR Mastermix (Thermo) was used. Reactions typically contained 25% extracted nucleic acid and were cycled through the following conditions: RT (25°C for 2 mins, 50°C for 15 mins, 95°C for 2 mins) followed by 45 cycles of (95°C for 3 secs and 60°C for 30 secs) acquiring on FAM and ROX on the Rotor-Gene Q real-time PCR instrument. Samples that generated a Ct value ≤36 were considered positive. Samples and negative control (molecular grade water) were individually spiked with MS2 bacteriophage internal control (4600 pfu per extraction) prior to nucleic acid extraction to identify any inhibitors or extraction issues. Positive control material, BetaCoV/England/02/2020, was obtained from PHE Colindale and was essentially purified virus RNA diluted down to give a cycle threshold value of 26-28. Negative controls included extracted molecular grade water.

Sequencing details

Samples were sequenced using Nanopore technology following the ARTICnetwork V3 protocol (https://dx.doi.org/10.17504/protocols.io.bbmuik6w) and assembled using the ARTICnetwork assembly pipeline (https://artic.network/ncov-2019/ncov2019-bioinformatics-sop.html). Median genome depth of coverage was 6,612x across all 747 genomes. 14 samples in our dataset were also sequenced with Illumina technology at the Wellcome Sanger Institute as part of COG-UK. There was 100% concordance in called nucleotides between sample pairs. Four genomes differed because of base pairs called in the Illumina data that were missing in the Nanopore sequences. The accession numbers of the samples included in this study are available in Appendix pp 24-28.

Bioinformatic analysis

Consensus fasta sequence quality control cutoffs were: size >29Kb, N count <2990 (~10%). After QC filtering, de-duplication and matching with metadata, the first sample set analysed comprised 197 genomes collected up to 10th April 2020; set 2 had 444 genomes up to 15th April, and set 3 (presented here) had 747 genomes up to 24th April. 30 reference genomes were added to the sample sets downloaded from GISAID (https://www.gisaid.org/; Appendix pp 22-23). The reference genomes were chosen to represent the major branches of the global phylogenetic tree as visualised in Nextstrain (https://nextstrain.org/) to provide broader context, including a sample from December 2019 collected in Wuhan, China, used to root the tree. Multiple sequence alignment was performed using MAFFT (v 7.458) with default settings, command:

```
/PATH/mafft"  --retree 2 --inputorder "multi_fasta.fasta" > "aligned_multi_fasta
```

The alignment was manually inspected using AliView. Maximum likelihood trees were produced using IQ-TREE software[15] for all samples passing QC filters and the subset of samples from CUH (n=299 for this dataset). Initial tests with the ModelFinder Plus option[32], which selects the optimal nucleotide substitution model out of over 200 options (http://www.iqtree.org/doc/Substitution-Models), consistently identified GTR+F+I as the best model. Therefore from 24th April (including analysis presented here) we specified GTR+F+I.

Command using ModelFinder Plus:

```
/PATH/iqtree -s aligned_filtered_multi_fasta -m MFP
```

Command with GTR+F+I model specified:

```
/PATH/iqtree -s aligned_filtered_multi_fasta -m GTR+F+I
```

Trees were manually inspected in FigTree, rooted on the 2019 Wuhan sample (EPI ISL 402123), ordered by descending node and exported as Newick files. Trees were visualised in online software Microreact[16] in a private account to explore relationships between wards and clinico-epidemiological questions for our weekly reports. Further visualisations were produced in R using the packages *Ape*[33] (v 5.3) and *ggtree*[17] (v 2.0.4).

A SNP difference matrix was produced from the multiple sequence alignment using the *snp-dists* package (v 0.7.0; https://github.com/tseemann/snp-dists; installed into a conda environment), command:

```
snp-dists -c aligned_filtered_multi_fasta.aln > snp_dist_matrix.csv
```

The matrix was exported as .csv and manipulated in R using the *Matrix* and *tidyverse* packages for ward and pairwise SNP comparisons and plotted using the *ggplot2* (v 3.3.0) package. A heatmap was produced in python using the seaborn (v 0.10.0) clustermap function. To identify clusters with zero SNP differences we initially used the scipy.cluster.hierarchy functions *linkage* and *fcluster* (scipy v 1.4.1), with additional samples in complete linkage (zero SNP differences between all members of the cluster) identified using a custom R script that searched for zero SNP differences between pairwise sample comparisons and kept the largest groups containing each sample. Clusters were named in descending size order and linked with sample metadata and lineage data.

Investigation of genetic clusters with zero SNP differences

Patient records from each case within a putative genomic cluster were manually reviewed in detail by authors BW, WLH and MET and assigned a score of 1 (strong evidence supporting a recent linked transmission chain, e.g. patients co-located on the same ward becoming positive within the incubation period of the virus), 2 (a plausible transmission chain is present e.g. patients becoming positive while located in nearby wards within the hospital but who did not appear to be in direct contact), and 3 (no evidence of any connections between cases) – see Appendix pp 17 – 20 for further details.

Epidemiological analysis methods

Timeline plotting

Space time relationships between patients were plotted using patient specific time lines by exporting the bed and ward admission dates, dates of transfer, dates of discharge or date of death obtained from hospital information system (EPIC Systems Corporation, Verona, USA) and importing them into a cloud-based timeline plotter application (Cluster Track, Camart Ltd, Cambridge available at Clusterack.com). Earliest positive specimen date for COVID19 was obtained from the laboratory records and date of onset of symptoms from the clinical records and uploaded.

The application aided visualisation of ward and time relations by assigning unique colours to wards and then ward presence by date along the x axis shown in days, such that a solid timeline bar by colour and by date permitted the visualisation of the location of each patient over time. The positive specimen date for COVID 19, genomic cluster, death and discharge were each overlaid on the patient timeline using standard visual representation built into the application. Visualisation was aided by using the sort command within the application on admission date, earliest positive specimen date, or first ward to which admitted. Separate plots of subset of the total cases were created to provide clearer visualisation when needed

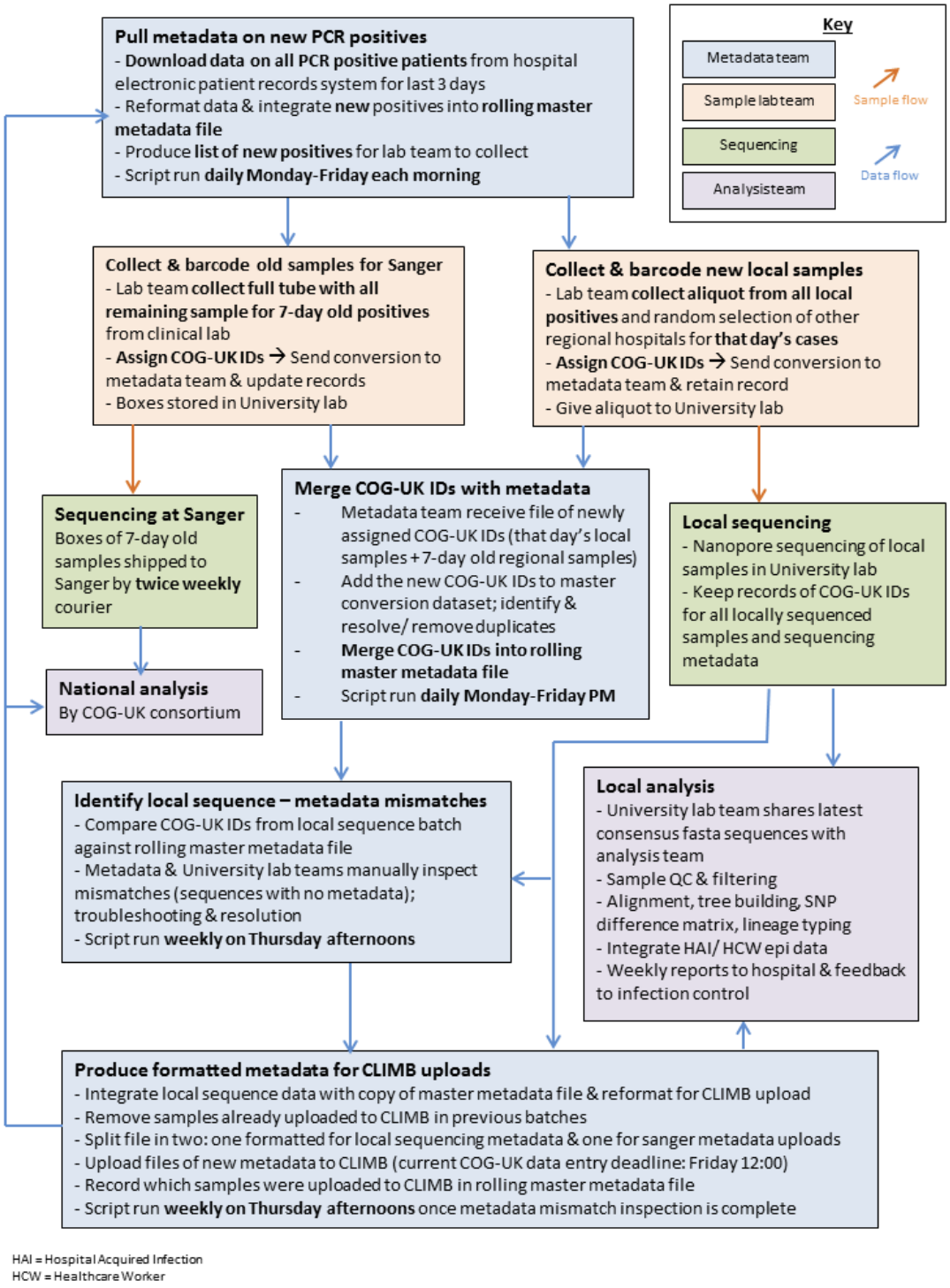
Ward time and genomic cluster plots

A clustering and network analysis function was used in the Cluster track application in which an algorithm links patients with admission days to the same ward on the same date and displays a network diagram to indicate these overlapping cases.

More advanced space time clustering was undertaken by exporting these timeline data sets into an SQL database running a more advanced clustering algorithm in which time parameters were set for the presumed susceptible, infectious and non-infectious/ recovered intervals counting from the earliest positive specimen date. The algorithm identified and linked cases in which two or more patients had an overlap on the same ward of the time interval of infectiousness of an earlier case with the interval of susceptibility in a later case or cases. Links continue to be made until no further overlaps of the infectious interval in an earlier case occurred with the interval of susceptibility in a later case on the same ward: this ended the space time cluster.

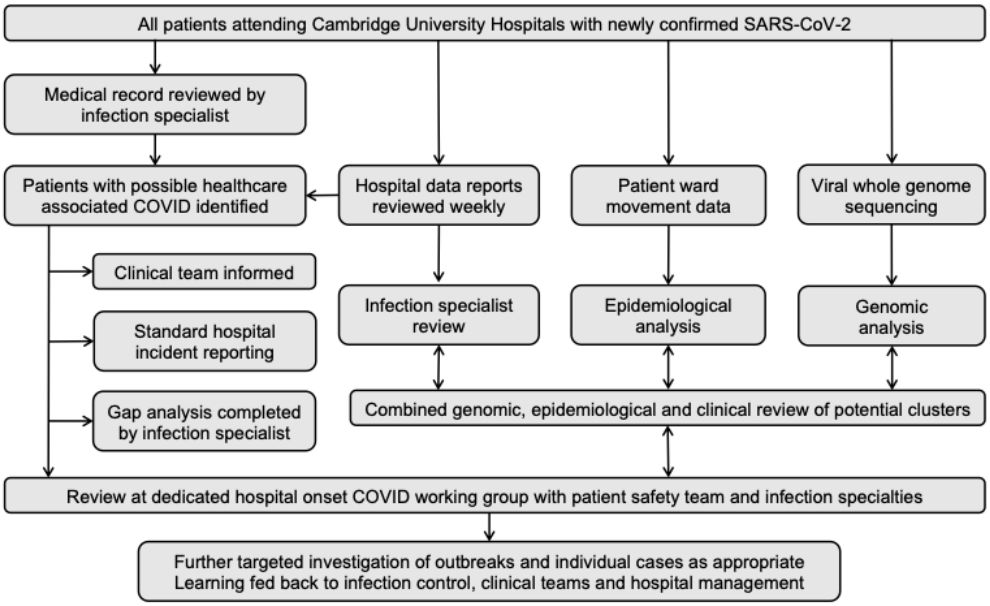
The cluster diagrams of the space time clustered cases were reviewed. Cases within the same space time cluster that belonged to the same genomic cluster were deemed to be supportive of a recent transmission event.

Data and Sample Processing at CUH



Flow diagram representing sample and metadata flow between clinical diagnostics and sequencing centres.

Process for investigating healthcare associated COVID-19 infections



Conceptual flow diagram shows investigation process for healthcare associated COVID-19 infections at Cambridge University Hospitals NHS Foundation Trust. Review meetings took place weekly.

Baseline characteristics of COVID-19 patients at CUH

Baseline characteristics	**Singletons**	**Clusters**	**No sequence**	**Total**
Number of patients	126	136	112	374
Age in years, mean (range) Age in years, median (IQR)	62 (0-97) 64 (48-77)	68 (10-98) 71 (57-83)	62 (0-93) 64 (51-77)	64 (0-98) 67 (51-79)
Male sex	78 (61.9%)	82 (60.3%)	73 (65.2%)	233 (62.3%)
Female sex	48 (38.1%)	54 (39.7%)	39 (34.8%)	141 (37.7%)
Ethnicity – White	86 (68.3%)	104 (76.5%)	79 (70.5%)	269 (71.9%)
Ethnicity – Black, Asian and minority ethnic	7 (5.6%)	8 (5.9%)	12 (10.7%)	27 (7.2%)
Ethnicity – not stated/missing	33 (26.2%)	24 (17.7%)	21 (18.8%)	78 (20.9%)
Co-morbidities				
Hypertension	35 (27.8%)	45 (33.1%)	37 (33.0%)	117 (31.3%)
Ischaemic heart disease	13 (10.3%)	26 (19.1%)	15 (13.4%)	54 (14.4%)
Cardiac failure	7 (5.6%)	10 (7.4%)	7 (6.3%)	24 (6.4%)
Asthma	12 (9.5%)	15 (11.0%)	20 (17.9%)	47 (12.6%)
Chronic obstructive pulmonary disease	11 (8.7%)	13 (9.6%)	7 (6.3%)	31 (8.3%)
Diabetes mellitus	18 (14.3%)	38 (27.9%)	22 (19.6%)	78 (20.9%)
Chronic kidney disease	14 (11.1%)	19 (14.0%)	4 (3.6%)	37 (9.9%)
Hepatic cirrhosis	7 (5.6%)	7 (5.2%)	2 (1.8%)	16 (4.3%)

Dementia	7 (5.6%)	20 (14.7%)	5 (4.5%)	32 (8.6%)
Obesity	20 (15.9%)	20 (14.7%)	14 (12.5%)	54 (14.4%)
Classification of infection				
Community onset, community associated	100 (79.4%)	76 (55.9%)	87 (77.7%)	263 (70.3%)
Community onset, suspected healthcare-associated	8 (6.4%)	12 (8.8%)	12 (10.7%)	32 (8.6%)
Hospital onset, indeterminate healthcare-associated	5 (4.0%)	4 (2.9%)	4 (3.6%)	13 (3.5%)
Hospital onset, suspected healthcare-associated	1 (0.8%)	10 (7.4%)	3 (2.7%)	14 (3.7%)
Hospital onset, healthcare-associated	11 (8.7%)	27 (19.9%)	5 (4.5%)	43 (11.5%)
Healthcare worker	1 (0.8%)	7 (5.2%)	1 (0.9%)	9 (2.4%)
Outcome				
Admission to hospital	115 (91.3%)	129 (94.9%)	102 (91.1%)	346 (92.5%)
Admission to critical care	37 (29.4%)	22 (16.2%)	15 (13.4%)	74 (19.8%)
Died as an inpatient	33 (26.2%)	32 (23.5%)	13 (11.6%)	75 (20.1%)

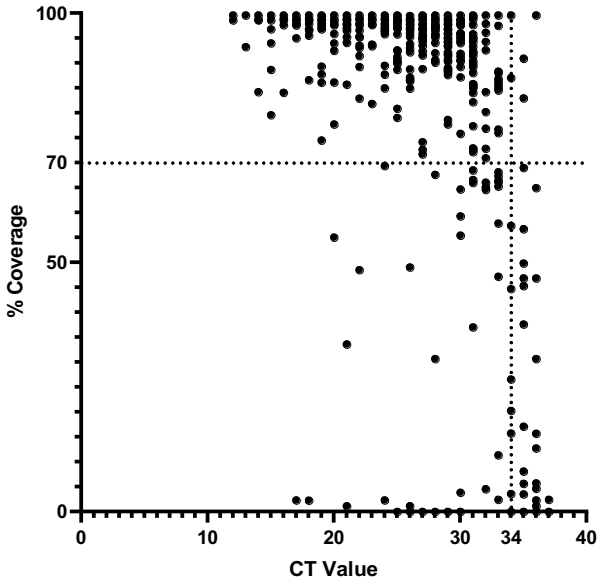
Baseline characteristics of confirmed COVID-19 patients at CUH (with confirmed results between 10th March to 24th April, excluding 37 healthcare workers diagnosed as part of staff screening. Genomic clusters were defined as 2 or more identical virus. Genomic singletons had unique genomes in the dataset.

CUH COVID-19 infections and sequence data availability

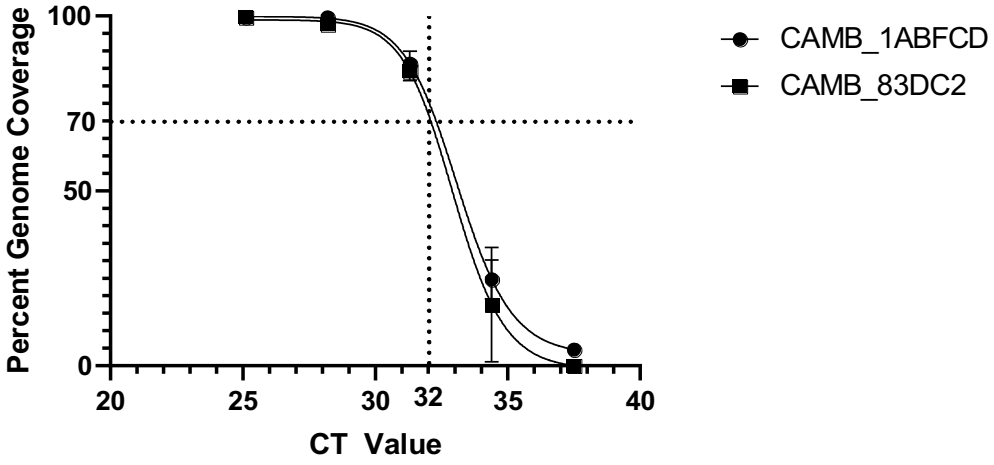
Classification of infection	**No.**	**No. with available sequence (%)**
Community onset, community associated	263	176 (66.9%)
Community onset, suspected healthcare-associated	32	20 (62.5%)
Hospital onset, indeterminate healthcare-associated	13	9 (69.2%)
Hospital onset, suspected healthcare-associated	14	11 (78.6%)
Hospital onset, healthcare-associated	43	38 (88.4%)
Healthcare worker	9	8 (88.9%)
Total	374	262 (70.1%)

Table shows breakdown of COVID-19 infection classification at CUH and availability of SARS-CoV-2 sequences for analysis.

Genome coverage plotted against Ct value

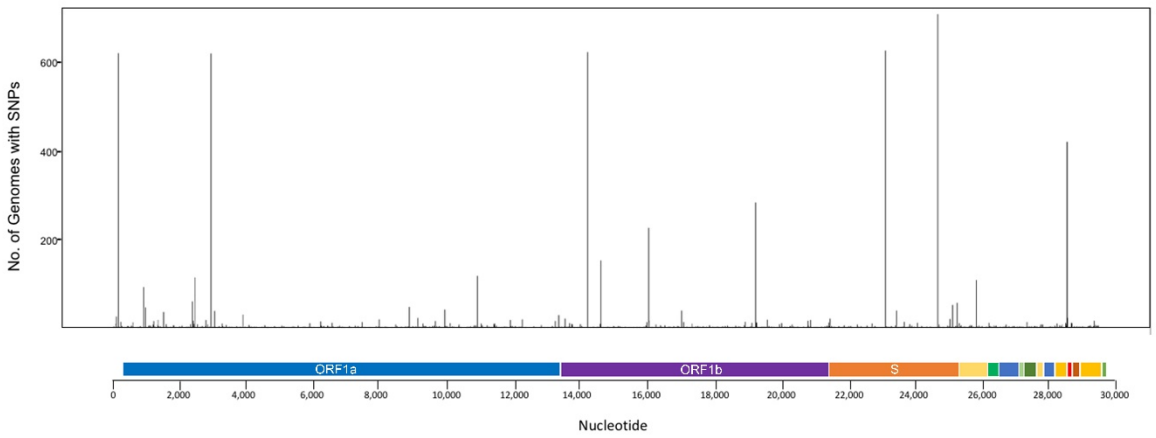


Ct value plotted against the percent of SARS-CoV-2 genome sequenced prior to internal screening and for which a Ct value is available (N=947). Median Ct value of samples failing 70% coverage threshold is 34 (N=85).



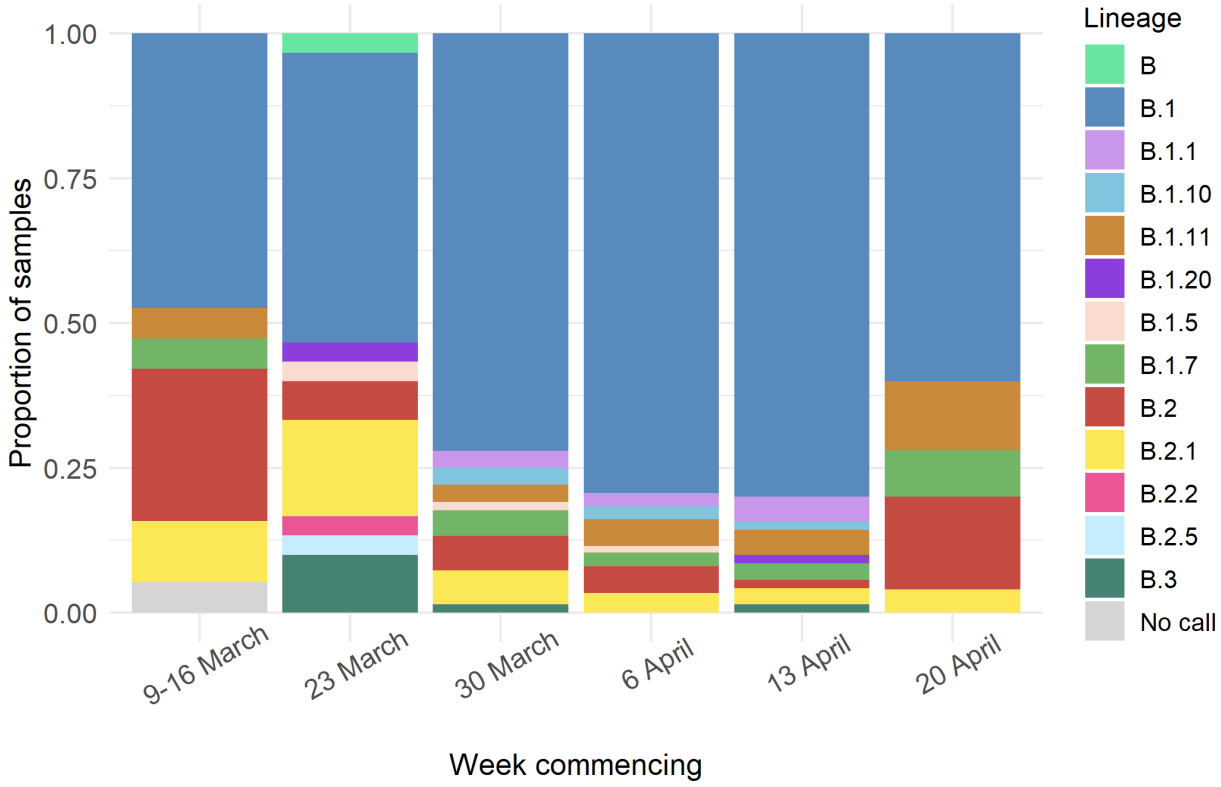
Correlation between Ct and Percent Genome Coverage for two biological samples diluted 1:9 from a Ct of 25 to 37. Samples were sequenced in duplicate. The effective Ct value yielding 70% genome coverage averaged 32.19 ± 0.14 (n=2, SD).

Location and frequency of SNPs across sequenced genomes



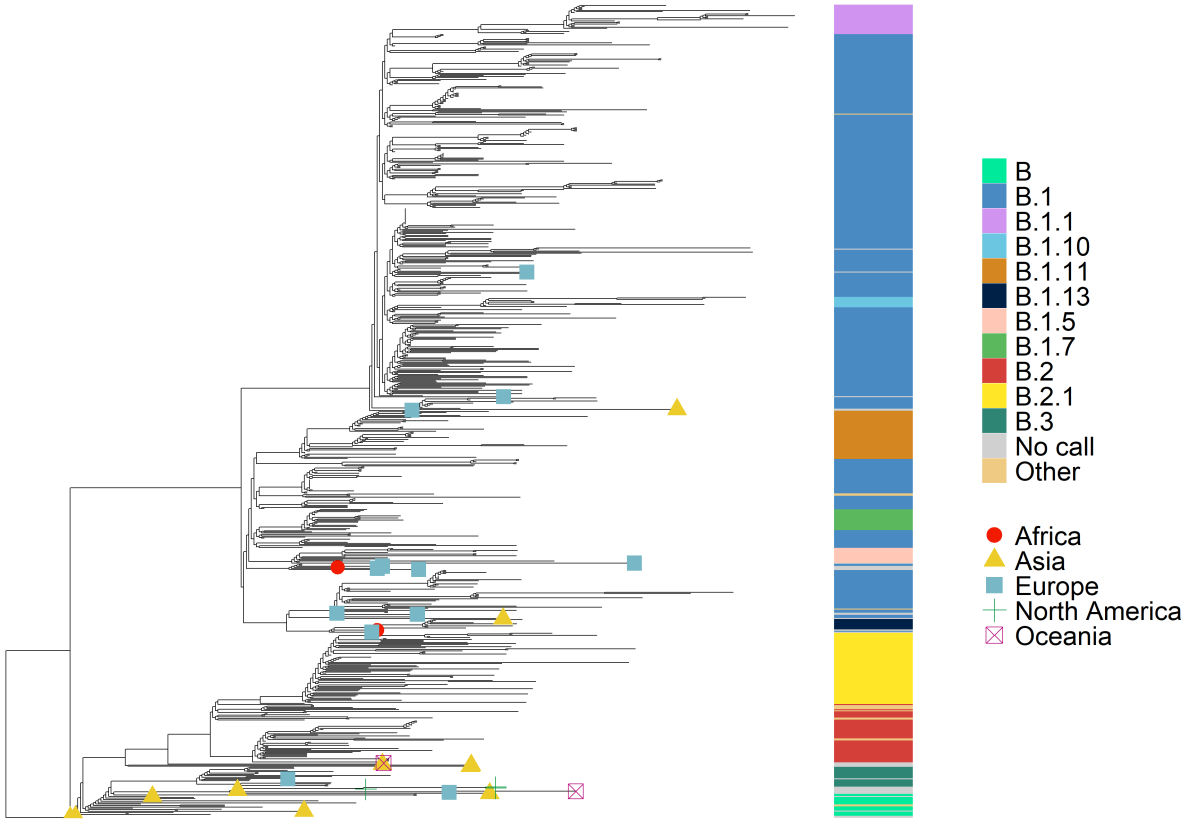
Cumulative number and location of SNPs compared to the original Wuhan strain (Accession No. MN908947) observed across 747 genomes sequenced in East of England. This shows the total occurrence of SNPs, 10,536nt across 22,337,541nt sequenced (0.005%) occurring at 1,196 positions. Of the 1,196 positions, 1,192 SNPs were found to be single SNPs, while 4 sites had 2 SNPs. 5 common SNPs were found in the majority of sequenced genomes (A23403G, C14408T, C241T, C3037T, T deletion at 24981) while G28881A, G28882A, G28883 were also found in ~50% of samples. These are not unique mutations and have been observed in other cases in the global NextStrain analysis.

SARS-CoV-2 lineages identified over time



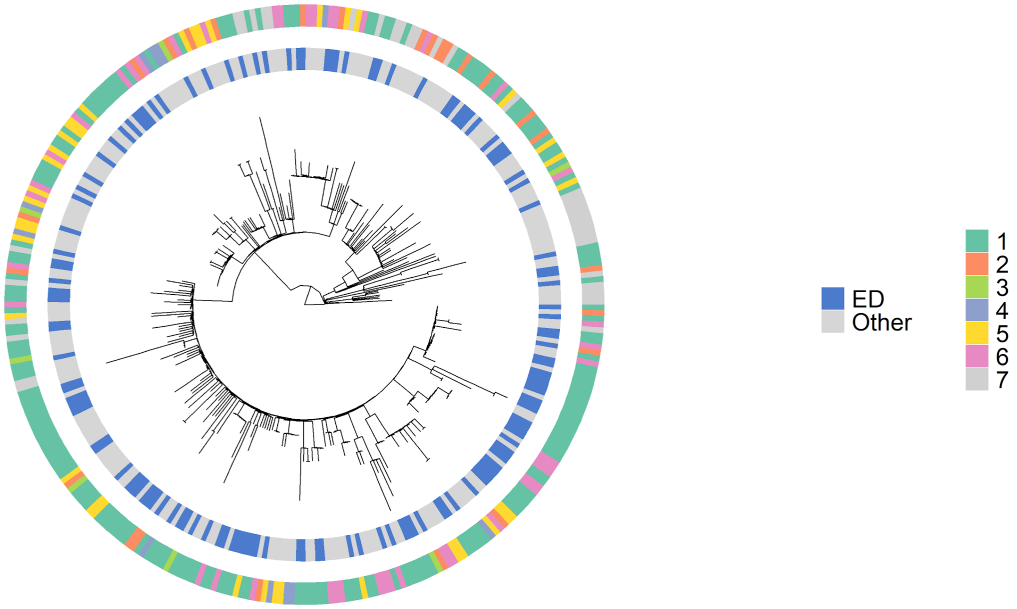
In the weeks commencing 9 and 13 March 2020 lineages (and descendent lineages) of B, B.1, B.2, B.3 and B.8 were present in the EoE (amalgamated here as there were only 2 samples for week commencing 9 March). Diversification of lineages already present from earlier weeks was seen over time, with the detection of descendants of lineages B.1 and B.2, but no new lineages emerged during this period, likely an impact of lockdown measures preventing new viruses being introduced from other regions. Changes in lineage frequency may be stochastic due to changes in the available sample size during each week of the sampling period. Lineage B.8 was only detected in the week commencing 16 March 2020. Lineage B.4 viruses (associated with export from Iran) were not seen in our sample set. Lineage A viruses (or A descendants), most commonly reported in China, USA, South Korea and Australia, were not detected in our EoE samples.

Phylogenetic tree and lineages of East of England genomes



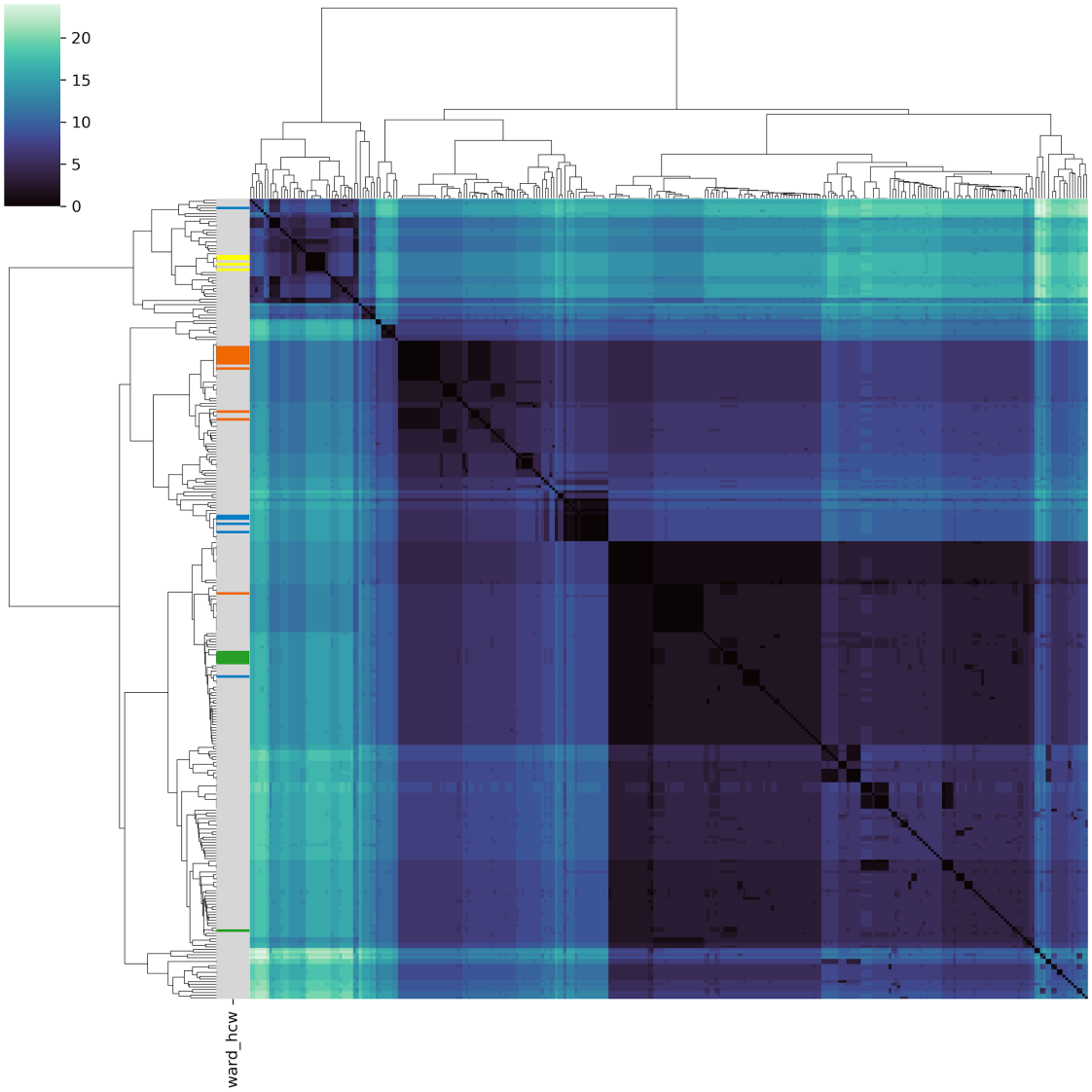
Phylogenetic tree of 747 East of England SARS-CoV-2 genomes and 30 reference genomes used to provide further genetic and geographic context. The reference genomes are highlighted with coloured tips and are the same used in Figure 4. As with Figure 4, the tree is rooted on a December 2019 sample from Wuhan, China, with older samples from Asia represented at the base of the tree as expected. The lineages are indicated by the colour bar.

Phylogenetic tree of CUH SARS-CoV-2 genomes highlighting samples taken in the Emergency Department



Phylogenetic tree of 299 CUH SARS-CoV-2 genomes and 30 reference genomes. The inner ring shows emergency department (ED) samples in blue and samples collected from all other sites in grey. The outer ring shows the different classifications of infection: 1. Community onset, community associated; 2. Community onset, suspected healthcare-associated; 3. Hospital onset, indeterminate healthcare-associated; 4. Hospital onset, suspected healthcare-associated; 5. Hospital onset, healthcare-associated; 6. Healthcare worker; 7. Unable to determine/ data missing.

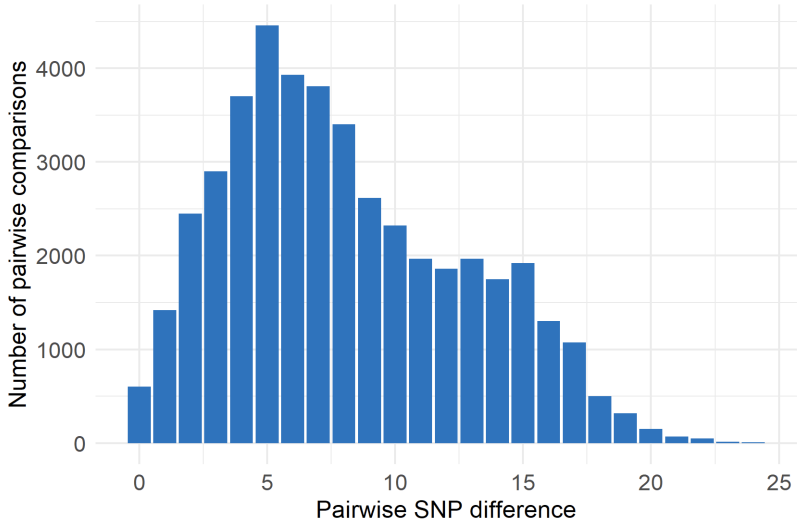
SNP difference matrix for CUH SARS-CoV-2 genomes



SNP difference matrix for 299 SARS-CoV-2 genomes from CUH. Darker colouring indicates more similar genomes. Several clusters of identical viruses are present in the dataset, as discussed in main text. The left-hand bar shows wards A, B, C and the dialysis unit highlighted in colour and other wards in grey

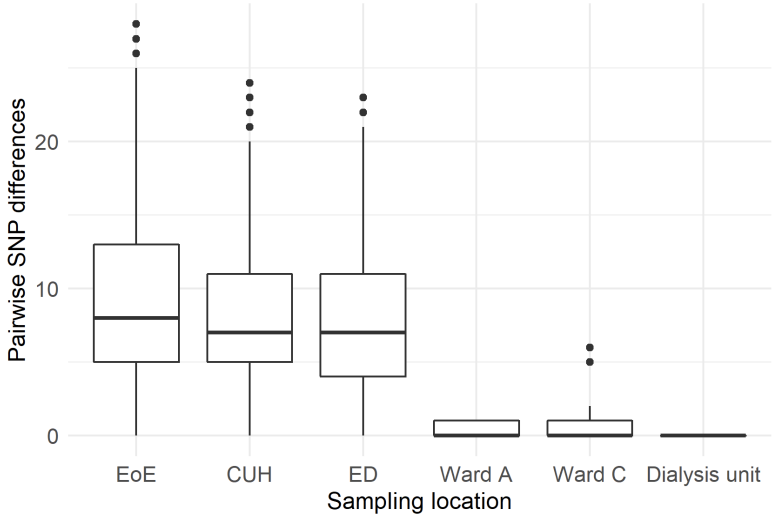
Distribution of SNP differences among CUH SARS-CoV-2 genomes

Frequency distribution of pairwise SNP differences between CUH SARS-CoV-2 genomes



Distribution of pairwise SNP differences for 299 CUH samples. The total number of pairwise comparisons is 44,551. The median difference was 8 SNPs (range 0 to 24 SNPs). 4.5% of genomes were identical or 1-SNP different.

Box plot of SNP differences between SARS-CoV-2 genomes from selected sampling locations



Box plot of SNP differences between SARS-CoV-2 genomes at CUH within different sampling locations. The number of SNP differences was very low on certain wards (0 to 1 SNPs) compared with the emergency department (ED), the Trust (CUH) and the East of England (EoE) as a whole, consistent with shared recent transmission events on these wards (discussed in main text).

Epidemiological analysis of clusters of identical SARS-CoV-2 genomes

No.	Size	CAIs	Possible HAIs*	HAIs	HCWs	First Case	Last Case	Cases with strong epi links	Cases with possible epi links	Cases with no epi links	Notes
1	18	12	1	0	5	5/4/20	21/4/20	10	6	2	Nine patients were resident in care home A. One patient works as a carer in the same home. Another patient also works as a carer in an unspecified home. Three of the HCWs were paramedics. The other two HCWs work in different clinical areas, but both live with paramedics. Two patients had no identifiable contact with the other cases in this cluster.
2	16	13	0	1	2	20/3/20	20/4/20	2	0	14	No identified epidemiological link between the 14 patients. One HCW had direct contact with two of these patients close to their admission. The second worked on the same ward as one patient at the time of their admission (ward E).
3	15	4	4	5	2	20/3/20	16/4/20	11	1	3	Eight patients swabbed during a suspected outbreak on ward C. The first patient to be swabbed was recently discharged from ward D and then re-admitted to ward E. The two HCWs worked on ward D; one had direct contact with the first patient to be swabbed in this cluster. Two patients, distinct from the larger ward outbreak, co-habit (spouses). The final patient has no identifiable association with any other case in this cluster.
4	12	1	3	3	5	1/4/20	20/4/20	9	2	1	Four patients swabbed during a suspected outbreak on ward B; a fifth patient was discharged from ward B and re-admitted with COVID within 2 weeks of discharge. Two HCWs work on ward F; one of these HCWs also work on ward B, alongside two of the other HCWs. One patient lives with a HCW (unknown clinical area). There are no

											identified associations with the remaining patient or the fifth HCW.
5	7	0	6	0	1	1/4/20	22/4/20	6	1	0	All six patients receive dialysis at the same unit. The HCW works on two wards on which three of these patients were admitted.
6	6	3	0	0	3	7/4/20	17/4/20	5	1	0	Three patients resident in care home B; one of these patients admitted to ward F. Two HCWs work on ward F, including one with direct contact with this patient. The third HCW works on ward E. The isolates from clusters 6 and 12 diverge by 1 SNP, but share epidemiological links of both patients and HCWs.
7	6	4	2	0	0	30/3/20	19/4/20	0	6	0	Two patients live in separate care homes. The third patient works in an unspecified care home. The fourth is a community carer. The fifth lives with a carer working in an unspecified care home. No patients have other identified associations. The final patient has no association with any of the patients, but was cared for on neighbouring wards with some shared staff.
8	5	0	3	2	0	27/3/20	11/4/20	5	0	0	Five patients all swabbed on ward A.
9	5	0	4	0	1	20/3/20	16/4/20	4	1	0	Three patients swabbed during a suspected outbreak on ward D. HCW works on ward D. The first patient in this cluster was recently discharged from ward E and readmitted to ward E. Wards D and E are in the same department and share some staff
10	5	1	0	2	2	31/3/20	17/4/20	4	1	0	Two patients were on ward I at the time of swabbing, with overlapping admissions. One patient is the husband of one of the HCWs. The HCWs have no known association with each other or the patients.
11	5	1	0	3	1	12/4/20	20/4/20	5	0	0	The two patients were co-located on ward J. One of these patients was co-located with the third patient on ward K. The two HCWs work on ward J, which has shared staff with ward K.
12	4	2	0	0	2	4/4/20	17/4/20	4	0	0	One patient resident in care home B, admitted to ward G. Second patient is a carer in care home B. One HCW works

											on wards G and E. The second HCW works on ward E. The isolates from clusters 6 and 9 diverge by 1 SNP, but share epidemiological links of both patients and HCWs.
13	4	2	1	1	0	15/3/20	15/4/20	0	0	4	No identified associations between the four patients
14	3	3	0	0	0	11/4/20	20/4/20	0	2	1	One patient is a resident in a specialist dementia care home. A second patient works in a specialist dementia care home, but it is unclear whether this is the same home as the first patient. The third patient has no other identified associations with the other patients.
15	3	0	1	0	2	2/4/20	14/4/20	3	0	0	The patient was recently discharged from ward I and readmitted to ward F with documented direct contact with both HCWs.
16	3	1	0	0	2	16/4/20	21/4/20	0	3	0	Two HCWs, working in separate wards in the same department. The partner of one of these HCWs works in an unspecified care home. The patient in this cluster was admitted from a care home.
17	3	1	0	0	2	15/4/20	18/4/20	2	1	0	The two HCWs live in the same home, with a care assistant in an unspecified care home. The patient was admitted from a care home.
18	3	0	0	2	1	27/3/20	12/4/20	2	0	1	Two patients were co-located on ward C. No direct contact documented between the HCW and the two patients.
19	3	2	0	1	0	8/4/20	8/4/20	2	1	0	Two patients live together (spouses) in their own home and have carers four times a day. The third patient lives in the same village and has carers twice a day.
20	3	3	0	0	0	13/3/20	21/4/20	2	0	1	Two patients live in the same hostel. No known association with the third patient.
21	2	1	1	0	0	4/4/20	5/4/20	2	0	0	Two patients co-located on ward H.
22	2	1	0	0	1	19/4/20	20/4/20	0	0	2	The patient works in a local community hospital. The HCW works in a rehabilitation unit. There are no other known epidemiological associations.
23	2	1	0	1	0	3/4/20	3/4/20	0	2	0	Two patients briefly co-located within 24 hrs of testing, likely insufficient duration for transmission. One patient was resident in a care home; the second patient was on a rehabilitation ward prior to swabbing

24	2	2	0	0	0	22/3/20	28/3/20	0	0	2	No identified associations between the two patients
25	2	0	0	2	0	29/3/20	7/4/20	2	0	0	Two patients co-located on ward J
26	2	2	0	0	0	1/4/20	2/4/20	2	0	0	Two patients co-habiting (siblings)
27	2	2	0	0	0	19/3/20	19/3/20	0	0	2	No identified associations between the two patients
28	2	2	0	0	0	1/4/20	3/4/20	2	0	0	Two patients are mother and son (not co-habiting)
29	2	2	0	0	0	2/4/20	5/4/20	0	2	0	Both patients live in the same village.
30	2	2	0	0	0	20/3/20	27/3/20	0	2	0	Both patients live in the same village.
31	2	0	0	2	0	30/3/20	8/4/20	2	0	0	Two patients co-located on ward L.
32	2	0	0	2	0	7/4/20	8/4/20	2	0	0	Two patients co-located on ward I.
33	2	2	0	0	0	7/4/20	9/4/20	2	0	0	Two patients co-habiting.
34	2	2	0	0	0	17/3/20	11/4/20	0	0	2	No identified associations between the two patients
35	2	2	0	0	0	4/4/20	16/4/20	2	0	0	Two patients resident in a care home.
Tot	**159**	**75**	**26**	**27**	**30**	**13/3/20**	**22/4/20**	**92**	**32**	**35**	

Descriptions of the 35 clusters of genomically identical viruses (zero SNP differences) in this study.

*Possible HAIs = patients swabbed 2-14 days from admission, or patients swabbed <2 days from admission who have had healthcare contact in the 2 weeks prior to admission (categories 2-4 in table 1, main paper).

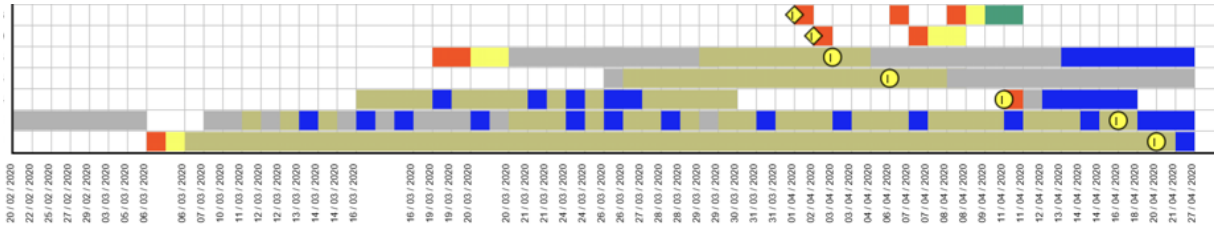
Strong epidemiological link defined as either: patient co-location in the same clinical area within the incubation period of the virus (for hospital-acquired cases); cases with the same residential address (community acquired cases); patients working in social care in the same named care home as a patient resident in this home; HCWs working in the same clinical area as other HCWs or patients.

Plausible epidemiological links defined as: patients working in social care in an unnamed care home in the same genomic cluster as a patient resident in a care home; HCWs working on different clinical areas within the same hospital department as other HCWs or patients; patients temporally co-located on neighbouring wards or clinical areas within the same department.

Epidemiological timelines of hospital clusters

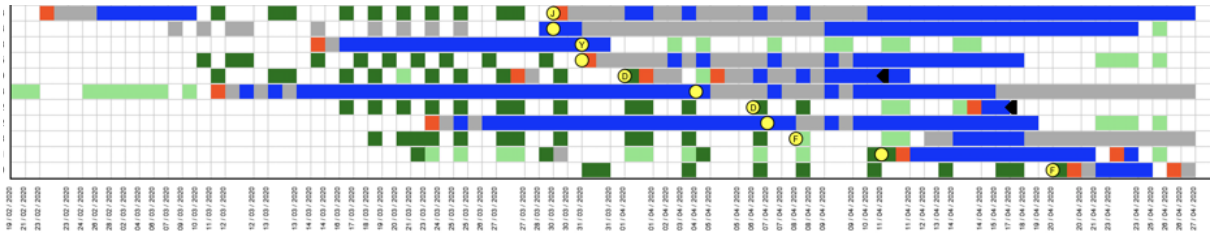
Timeline plots generated using Cluster Track (detailed in Appendix p 3).

Hospital cluster 2 (Ward B)



Four transplant patients on ward B (shown in khaki) were diagnosed with COVID-19 infection between 3 and 20 April 2020. A fifth patient, who had been recently discharged from the ward, presented to the ED with COVID-19 infection. The sample dates are shown in yellow circles (patients) and diamonds (HCW). Genomic analysis revealed that all 5 patients had identical genomes. Two HCW were found to have identical genomes in the same cluster as the ward B cases; one had worked on ward B and had professional contact with the other HCW. The renal ward is shown in blue, the emergency department in red and the admissions unit in yellow. Other wards are shown in grey.

Dialysis unit cluster



Six patients with end-stage renal failure were diagnosed with COVID-19 between 1 and 20 April 2020, testing positive in several locations including ED and an acute admissions ward. The sample dates are shown in yellow circles. Their viral genomes were identical, and epidemiological investigation revealed they dialysed at the same outpatient dialysis unit. This suggests linked recent transmission of community-onset healthcare-associated infections. Black triangles indicate patient deaths. The darker green blocks represent the dialysis unit with suspected transmission; the light green and grey blocks represent different dialysis units. The renal ward is shown in blue and the emergency department in red. Other wards are shown in grey.

GISAID genomes included in phylogenetic tree

GISAID ID	**Country of origin**
EPI_ISL_402123*	China
EPI_ISL_406716	China
EPI_ISL_406801	China
EPI_ISL_414598	Spain
EPI_ISL_416396	China
EPI_ISL_416757	France
EPI_ISL_417969	Spain
EPI_ISL_418034	USA
EPI_ISL_419228	China
EPI_ISL_419232	China
EPI_ISL_420064	France
EPI_ISL_421905	UK
EPI_ISL_422024	UK
EPI_ISL_423034	Netherlands
EPI_ISL_424657	Belgium
EPI_ISL_426019	UK
EPI_ISL_427119	Australia
EPI_ISL_427144	Australia
EPI_ISL_427322	Russia
EPI_ISL_427391	Turkey
EPI_ISL_427441	USA
EPI_ISL_428482	India
EPI_ISL_428848	Singapore
EPI_ISL_428857	The Gambia

EPI_ISL_429061	USA
EPI_ISL_429175	Thailand
EPI_ISL_429177	Thailand
EPI_ISL_429206	Switzerland
EPI_ISL_429259	DRC
EPI_ISL_429773	Luxembourg

*Sample from China used to root the tree

Table of sequences / accession numbers

GISAID Accession ID	Virus name	COG-UK	GISAID Accession ID	Virus name	COG-UK
EPI_ISL_425231	hCoV-19/England/CAMB-7374F/2020	CAMB-7374F	EPI_ISL_433840	hCoV-19/England/CAMB-7AB00/2020	CAMB-7AB00
EPI_ISL_425232	hCoV-19/England/CAMB-7375E/2020	CAMB-7375E	EPI_ISL_433841	hCoV-19/England/CAMB-7AB1F/2020	CAMB-7AB1F
EPI_ISL_425233	hCoV-19/England/CAMB-7376D/2020	CAMB-7376D	EPI_ISL_433842	hCoV-19/England/CAMB-7AB2E/2020	CAMB-7AB2E
EPI_ISL_425234	hCoV-19/England/CAMB-7377C/2020	CAMB-7377C	EPI_ISL_433843	hCoV-19/England/CAMB-7AB3D/2020	CAMB-7AB3D
EPI_ISL_425235	hCoV-19/England/CAMB-7378B/2020	CAMB-7378B	EPI_ISL_433844	hCoV-19/England/CAMB-7AB79/2020	CAMB-7AB79
EPI_ISL_425236	hCoV-19/England/CAMB-7379A/2020	CAMB-7379A	EPI_ISL_433845	hCoV-19/England/CAMB-7AB88/2020	CAMB-7AB88
EPI_ISL_425237	hCoV-19/England/CAMB-737A9/2020	CAMB-737A9	EPI_ISL_433846	hCoV-19/England/CAMB-7AB97/2020	CAMB-7AB97
EPI_ISL_425238	hCoV-19/England/CAMB-737B8/2020	CAMB-737B8	EPI_ISL_433847	hCoV-19/England/CAMB-7ABA6/2020	CAMB-7ABA6
EPI_ISL_425239	hCoV-19/England/CAMB-737C7/2020	CAMB-737C7	EPI_ISL_433848	hCoV-19/England/CAMB-7ABB5/2020	CAMB-7ABB5
EPI_ISL_425240	hCoV-19/England/CAMB-737D6/2020	CAMB-737D6	EPI_ISL_433849	hCoV-19/England/CAMB-7ABC4/2020	CAMB-7ABC4
EPI_ISL_425241	hCoV-19/England/CAMB-737E5/2020	CAMB-737E5	EPI_ISL_433850	hCoV-19/England/CAMB-7ABE2/2020	CAMB-7ABE2
EPI_ISL_425242	hCoV-19/England/CAMB-737F4/2020	CAMB-737F4	EPI_ISL_433851	hCoV-19/England/CAMB-7ABF1/2020	CAMB-7ABF1
EPI_ISL_425243	hCoV-19/England/CAMB-73800/2020	CAMB-73800	EPI_ISL_433852	hCoV-19/England/CAMB-7AC0D/2020	CAMB-7AC0D
EPI_ISL_425244	hCoV-19/England/CAMB-7381F/2020	CAMB-7381F	EPI_ISL_433853	hCoV-19/England/CAMB-7AC1C/2020	CAMB-7AC1C
EPI_ISL_425245	hCoV-19/England/CAMB-7382E/2020	CAMB-7382E	EPI_ISL_433854	hCoV-19/England/CAMB-7AC2B/2020	CAMB-7AC2B
EPI_ISL_425246	hCoV-19/England/CAMB-7386A/2020	CAMB-7386A	EPI_ISL_433855	hCoV-19/England/CAMB-7AC3A/2020	CAMB-7AC3A
EPI_ISL_425247	hCoV-19/England/CAMB-73879/2020	CAMB-73879	EPI_ISL_433856	hCoV-19/England/CAMB-7AC49/2020	CAMB-7AC49
EPI_ISL_425248	hCoV-19/England/CAMB-73888/2020	CAMB-73888	EPI_ISL_433857	hCoV-19/England/CAMB-7AC58/2020	CAMB-7AC58
EPI_ISL_425249	hCoV-19/England/CAMB-738A6/2020	CAMB-738A6	EPI_ISL_433858	hCoV-19/England/CAMB-7AC67/2020	CAMB-7AC67
EPI_ISL_425250	hCoV-19/England/CAMB-738B5/2020	CAMB-738B5	EPI_ISL_433859	hCoV-19/England/CAMB-7AC76/2020	CAMB-7AC76
EPI_ISL_425251	hCoV-19/England/CAMB-738C4/2020	CAMB-738C4	EPI_ISL_433860	hCoV-19/England/CAMB-7AC85/2020	CAMB-7AC85
EPI_ISL_425252	hCoV-19/England/CAMB-738D3/2020	CAMB-738D3	EPI_ISL_433861	hCoV-19/England/CAMB-7AC94/2020	CAMB-7AC94
EPI_ISL_425253	hCoV-19/England/CAMB-738E2/2020	CAMB-738E2	EPI_ISL_433862	hCoV-19/England/CAMB-7ACA3/2020	CAMB-7ACA3
EPI_ISL_425254	hCoV-19/England/CAMB-738F1/2020	CAMB-738F1	EPI_ISL_433863	hCoV-19/England/CAMB-7ACB2/2020	CAMB-7ACB2
EPI_ISL_425255	hCoV-19/England/CAMB-7391C/2020	CAMB-7391C	EPI_ISL_433864	hCoV-19/England/CAMB-7ACC1/2020	CAMB-7ACC1
EPI_ISL_425256	hCoV-19/England/CAMB-7393A/2020	CAMB-7393A	EPI_ISL_433865	hCoV-19/England/CAMB-7ACD0/2020	CAMB-7ACD0
EPI_ISL_425257	hCoV-19/England/CAMB-73949/2020	CAMB-73949	EPI_ISL_433866	hCoV-19/England/CAMB-7ACFE/2020	CAMB-7ACFE
EPI_ISL_425258	hCoV-19/England/CAMB-73976/2020	CAMB-73976	EPI_ISL_433867	hCoV-19/England/CAMB-7AD0A/2020	CAMB-7AD0A
EPI_ISL_425259	hCoV-19/England/CAMB-73985/2020	CAMB-73985	EPI_ISL_433868	hCoV-19/England/CAMB-7AD28/2020	CAMB-7AD28
EPI_ISL_425260	hCoV-19/England/CAMB-73994/2020	CAMB-73994	EPI_ISL_433869	hCoV-19/England/CAMB-7AD37/2020	CAMB-7AD37
EPI_ISL_425261	hCoV-19/England/CAMB-739A3/2020	CAMB-739A3	EPI_ISL_433870	hCoV-19/England/CAMB-7AD46/2020	CAMB-7AD46
EPI_ISL_425262	hCoV-19/England/CAMB-739B2/2020	CAMB-739B2	EPI_ISL_433871	hCoV-19/England/CAMB-7AD55/2020	CAMB-7AD55
EPI_ISL_425263	hCoV-19/England/CAMB-739D0/2020	CAMB-739D0	EPI_ISL_433872	hCoV-19/England/CAMB-7AD64/2020	CAMB-7AD64
EPI_ISL_425264	hCoV-19/England/CAMB-739EF/2020	CAMB-739EF	EPI_ISL_433873	hCoV-19/England/CAMB-7AD82/2020	CAMB-7AD82
EPI_ISL_425265	hCoV-19/England/CAMB-739FE/2020	CAMB-739FE	EPI_ISL_433874	hCoV-19/England/CAMB-7AD91/2020	CAMB-7AD91
EPI_ISL_425266	hCoV-19/England/CAMB-73A0A/2020	CAMB-73A0A	EPI_ISL_433875	hCoV-19/England/CAMB-7ADA0/2020	CAMB-7ADA0
EPI_ISL_425267	hCoV-19/England/CAMB-73A19/2020	CAMB-73A19	EPI_ISL_433876	hCoV-19/England/CAMB-7ADBF/2020	CAMB-7ADBF
EPI_ISL_425268	hCoV-19/England/CAMB-73A28/2020	CAMB-73A28	EPI_ISL_433877	hCoV-19/England/CAMB-7ADDD/2020	CAMB-7ADDD
EPI_ISL_425269	hCoV-19/England/CAMB-73A37/2020	CAMB-73A37	EPI_ISL_433878	hCoV-19/England/CAMB-7ADEC/2020	CAMB-7ADEC
EPI_ISL_425270	hCoV-19/England/CAMB-73A46/2020	CAMB-73A46	EPI_ISL_433879	hCoV-19/England/CAMB-7ADFB/2020	CAMB-7ADFB
EPI_ISL_425271	hCoV-19/England/CAMB-73A64/2020	CAMB-73A64	EPI_ISL_433880	hCoV-19/England/CAMB-7AE07/2020	CAMB-7AE07
EPI_ISL_425272	hCoV-19/England/CAMB-73A73/2020	CAMB-73A73	EPI_ISL_433881	hCoV-19/England/CAMB-7AE25/2020	CAMB-7AE25
EPI_ISL_425273	hCoV-19/England/CAMB-73A82/2020	CAMB-73A82	EPI_ISL_433882	hCoV-19/England/CAMB-7AE34/2020	CAMB-7AE34
EPI_ISL_425274	hCoV-19/England/CAMB-73AA0/2020	CAMB-73AA0	EPI_ISL_433883	hCoV-19/England/CAMB-7AE43/2020	CAMB-7AE43
EPI_ISL_425275	hCoV-19/England/CAMB-73ABF/2020	CAMB-73ABF	EPI_ISL_433884	hCoV-19/England/CAMB-7AE52/2020	CAMB-7AE52
EPI_ISL_425276	hCoV-19/England/CAMB-73ACE/2020	CAMB-73ACE	EPI_ISL_433885	hCoV-19/England/CAMB-7AE61/2020	CAMB-7AE61
EPI_ISL_425277	hCoV-19/England/CAMB-73ADD/2020	CAMB-73ADD	EPI_ISL_433886	hCoV-19/England/CAMB-7AE70/2020	CAMB-7AE70
EPI_ISL_425278	hCoV-19/England/CAMB-73AEC/2020	CAMB-73AEC	EPI_ISL_433887	hCoV-19/England/CAMB-7AE9E/2020	CAMB-7AE9E
EPI_ISL_425279	hCoV-19/England/CAMB-73AFB/2020	CAMB-73AFB	EPI_ISL_433888	hCoV-19/England/CAMB-7AEAD/2020	CAMB-7AEAD
EPI_ISL_433666	hCoV-19/England/CAMB-73B16/2020	CAMB-73B16	EPI_ISL_433889	hCoV-19/England/CAMB-7AECB/2020	CAMB-7AECB
EPI_ISL_433667	hCoV-19/England/CAMB-73B61/2020	CAMB-73B61	EPI_ISL_433890	hCoV-19/England/CAMB-7AEDA/2020	CAMB-7AEDA
EPI_ISL_433668	hCoV-19/England/CAMB-73B70/2020	CAMB-73B70	EPI_ISL_433891	hCoV-19/England/CAMB-7AEE9/2020	CAMB-7AEE9
EPI_ISL_433669	hCoV-19/England/CAMB-73B8F/2020	CAMB-73B8F	EPI_ISL_433892	hCoV-19/England/CAMB-7AEF8/2020	CAMB-7AEF8
EPI_ISL_433670	hCoV-19/England/CAMB-73B9E/2020	CAMB-73B9E	EPI_ISL_433893	hCoV-19/England/CAMB-7AF04/2020	CAMB-7AF04
EPI_ISL_433671	hCoV-19/England/CAMB-73BAD/2020	CAMB-73BAD	EPI_ISL_433894	hCoV-19/England/CAMB-7AF13/2020	CAMB-7AF13
EPI_ISL_433672	hCoV-19/England/CAMB-73BBC/2020	CAMB-73BBC	EPI_ISL_433895	hCoV-19/England/CAMB-7AF22/2020	CAMB-7AF22
EPI_ISL_433673	hCoV-19/England/CAMB-73BCB/2020	CAMB-73BCB	EPI_ISL_433896	hCoV-19/England/CAMB-7AF31/2020	CAMB-7AF31
EPI_ISL_433674	hCoV-19/England/CAMB-73BDA/2020	CAMB-73BDA	EPI_ISL_433897	hCoV-19/England/CAMB-7AF40/2020	CAMB-7AF40
EPI_ISL_433675	hCoV-19/England/CAMB-73BF8/2020	CAMB-73BF8	EPI_ISL_433898	hCoV-19/England/CAMB-7AF5F/2020	CAMB-7AF5F
EPI_ISL_433676	hCoV-19/England/CAMB-73C04/2020	CAMB-73C04	EPI_ISL_433899	hCoV-19/England/CAMB-7AF6E/2020	CAMB-7AF6E
EPI_ISL_433677	hCoV-19/England/CAMB-73C13/2020	CAMB-73C13	EPI_ISL_433900	hCoV-19/England/CAMB-7AF7D/2020	CAMB-7AF7D
EPI_ISL_433678	hCoV-19/England/CAMB-73C31/2020	CAMB-73C31	EPI_ISL_433901	hCoV-19/England/CAMB-7AF8C/2020	CAMB-7AF8C
EPI_ISL_433679	hCoV-19/England/CAMB-73C40/2020	CAMB-73C40	EPI_ISL_433902	hCoV-19/England/CAMB-7AFAA/2020	CAMB-7AFAA
EPI_ISL_433680	hCoV-19/England/CAMB-73C5F/2020	CAMB-73C5F	EPI_ISL_433903	hCoV-19/England/CAMB-7AFB9/2020	CAMB-7AFB9
EPI_ISL_433681	hCoV-19/England/CAMB-73C7D/2020	CAMB-73C7D	EPI_ISL_433904	hCoV-19/England/CAMB-7AFF5/2020	CAMB-7AFF5
EPI_ISL_433682	hCoV-19/England/CAMB-73C9B/2020	CAMB-73C9B	EPI_ISL_433905	hCoV-19/England/CAMB-7B000/2020	CAMB-7B000
EPI_ISL_433683	hCoV-19/England/CAMB-73CAA/2020	CAMB-73CAA	EPI_ISL_433906	hCoV-19/England/CAMB-7B01F/2020	CAMB-7B01F
EPI_ISL_433684	hCoV-19/England/CAMB-73CC8/2020	CAMB-73CC8	EPI_ISL_433907	hCoV-19/England/CAMB-7B02E/2020	CAMB-7B02E
EPI_ISL_433685	hCoV-19/England/CAMB-73CD7/2020	CAMB-73CD7	EPI_ISL_433908	hCoV-19/England/CAMB-7B05B/2020	CAMB-7B05B
EPI_ISL_433686	hCoV-19/England/CAMB-73D01/2020	CAMB-73D01	EPI_ISL_433909	hCoV-19/England/CAMB-7B06A/2020	CAMB-7B06A
EPI_ISL_433687	hCoV-19/England/CAMB-73D10/2020	CAMB-73D10	EPI_ISL_433910	hCoV-19/England/CAMB-7B079/2020	CAMB-7B079
EPI_ISL_433688	hCoV-19/England/CAMB-73D2F/2020	CAMB-73D2F	EPI_ISL_433911	hCoV-19/England/CAMB-7B088/2020	CAMB-7B088
EPI_ISL_433689	hCoV-19/England/CAMB-73D3E/2020	CAMB-73D3E	EPI_ISL_433912	hCoV-19/England/CAMB-7B097/2020	CAMB-7B097
EPI_ISL_433690	hCoV-19/England/CAMB-73D4D/2020	CAMB-73D4D	EPI_ISL_433913	hCoV-19/England/CAMB-7B0A6/2020	CAMB-7B0A6
EPI_ISL_433691	hCoV-19/England/CAMB-73D5C/2020	CAMB-73D5C	EPI_ISL_433914	hCoV-19/England/CAMB-7B0B5/2020	CAMB-7B0B5
EPI_ISL_433692	hCoV-19/England/CAMB-73D6B/2020	CAMB-73D6B	EPI_ISL_433915	hCoV-19/England/CAMB-7B0C4/2020	CAMB-7B0C4
EPI_ISL_433693	hCoV-19/England/CAMB-73D7A/2020	CAMB-73D7A	EPI_ISL_433916	hCoV-19/England/CAMB-7B0D3/2020	CAMB-7B0D3
EPI_ISL_433694	hCoV-19/England/CAMB-73D89/2020	CAMB-73D89	EPI_ISL_433917	hCoV-19/England/CAMB-7B0E2/2020	CAMB-7B0E2
EPI_ISL_433695	hCoV-19/England/CAMB-73D98/2020	CAMB-73D98	EPI_ISL_433918	hCoV-19/England/CAMB-7B0F1/2020	CAMB-7B0F1
EPI_ISL_433696	hCoV-19/England/CAMB-73DA7/2020	CAMB-73DA7	EPI_ISL_433919	hCoV-19/England/CAMB-7B10D/2020	CAMB-7B10D
EPI_ISL_433697	hCoV-19/England/CAMB-73DB6/2020	CAMB-73DB6	EPI_ISL_433920	hCoV-19/England/CAMB-7B11C/2020	CAMB-7B11C
EPI_ISL_433698	hCoV-19/England/CAMB-73DC5/2020	CAMB-73DC5	EPI_ISL_433921	hCoV-19/England/CAMB-7B12B/2020	CAMB-7B12B
EPI_ISL_433699	hCoV-19/England/CAMB-73DD4/2020	CAMB-73DD4	EPI_ISL_433922	hCoV-19/England/CAMB-7B13A/2020	CAMB-7B13A
EPI_ISL_425280	hCoV-19/England/CAMB-74359/2020	CAMB-74359	EPI_ISL_433923	hCoV-19/England/CAMB-7B149/2020	CAMB-7B149

GISAID Accession ID	Virus name	COG-UK	GISAID Accession ID	Virus name	COG-UK
EPI_ISL_425281	hCoV-19/England/CAMB-74368/2020	CAMB-74368	EPI_ISL_433924	hCoV-19/England/CAMB-7B158/2020	CAMB-7B158
EPI_ISL_425282	hCoV-19/England/CAMB-74377/2020	CAMB-74377	EPI_ISL_433925	hCoV-19/England/CAMB-7B167/2020	CAMB-7B167
EPI_ISL_425283	hCoV-19/England/CAMB-74386/2020	CAMB-74386	EPI_ISL_433926	hCoV-19/England/CAMB-7B194/2020	CAMB-7B194
EPI_ISL_425284	hCoV-19/England/CAMB-74395/2020	CAMB-74395	EPI_ISL_433927	hCoV-19/England/CAMB-7B1A3/2020	CAMB-7B1A3
EPI_ISL_425285	hCoV-19/England/CAMB-743D1/2020	CAMB-743D1	EPI_ISL_433928	hCoV-19/England/CAMB-7B1B2/2020	CAMB-7B1B2
EPI_ISL_425286	hCoV-19/England/CAMB-743E0/2020	CAMB-743E0	EPI_ISL_433929	hCoV-19/England/CAMB-7B1C1/2020	CAMB-7B1C1
EPI_ISL_425287	hCoV-19/England/CAMB-743FF/2020	CAMB-743FF	EPI_ISL_433930	hCoV-19/England/CAMB-7B1D0/2020	CAMB-7B1D0
EPI_ISL_425288	hCoV-19/England/CAMB-7440B/2020	CAMB-7440B	EPI_ISL_433931	hCoV-19/England/CAMB-7B1EF/2020	CAMB-7B1EF
EPI_ISL_425289	hCoV-19/England/CAMB-7441A/2020	CAMB-7441A	EPI_ISL_433932	hCoV-19/England/CAMB-7B20A/2020	CAMB-7B20A
EPI_ISL_425290	hCoV-19/England/CAMB-74438/2020	CAMB-74438	EPI_ISL_433933	hCoV-19/England/CAMB-7B237/2020	CAMB-7B237
EPI_ISL_425291	hCoV-19/England/CAMB-74456/2020	CAMB-74456	EPI_ISL_433934	hCoV-19/England/CAMB-7B273/2020	CAMB-7B273
EPI_ISL_425292	hCoV-19/England/CAMB-74465/2020	CAMB-74465	EPI_ISL_433935	hCoV-19/England/CAMB-7B291/2020	CAMB-7B291
EPI_ISL_425293	hCoV-19/England/CAMB-74474/2020	CAMB-74474	EPI_ISL_433936	hCoV-19/England/CAMB-7B2A0/2020	CAMB-7B2A0
EPI_ISL_425294	hCoV-19/England/CAMB-74483/2020	CAMB-74483	EPI_ISL_433937	hCoV-19/England/CAMB-7B2BF/2020	CAMB-7B2BF
EPI_ISL_425295	hCoV-19/England/CAMB-74492/2020	CAMB-74492	EPI_ISL_433938	hCoV-19/England/CAMB-7B2CE/2020	CAMB-7B2CE
EPI_ISL_425296	hCoV-19/England/CAMB-744A1/2020	CAMB-744A1	EPI_ISL_433939	hCoV-19/England/CAMB-7B2EC/2020	CAMB-7B2EC
EPI_ISL_425297	hCoV-19/England/CAMB-744B0/2020	CAMB-744B0	EPI_ISL_433940	hCoV-19/England/CAMB-7B307/2020	CAMB-7B307
EPI_ISL_425298	hCoV-19/England/CAMB-744CF/2020	CAMB-744CF	EPI_ISL_433941	hCoV-19/England/CAMB-7B316/2020	CAMB-7B316
EPI_ISL_425299	hCoV-19/England/CAMB-744DE/2020	CAMB-744DE	EPI_ISL_433942	hCoV-19/England/CAMB-7B325/2020	CAMB-7B325
EPI_ISL_425300	hCoV-19/England/CAMB-74508/2020	CAMB-74508	EPI_ISL_433943	hCoV-19/England/CAMB-7B334/2020	CAMB-7B334
EPI_ISL_425301	hCoV-19/England/CAMB-74517/2020	CAMB-74517	EPI_ISL_433944	hCoV-19/England/CAMB-7B343/2020	CAMB-7B343
EPI_ISL_425302	hCoV-19/England/CAMB-74526/2020	CAMB-74526	EPI_ISL_433945	hCoV-19/England/CAMB-7B361/2020	CAMB-7B361
EPI_ISL_425303	hCoV-19/England/CAMB-74535/2020	CAMB-74535	EPI_ISL_433946	hCoV-19/England/CAMB-7B370/2020	CAMB-7B370
EPI_ISL_425304	hCoV-19/England/CAMB-74544/2020	CAMB-74544	EPI_ISL_433947	hCoV-19/England/CAMB-7B38F/2020	CAMB-7B38F
EPI_ISL_425305	hCoV-19/England/CAMB-74553/2020	CAMB-74553	EPI_ISL_433948	hCoV-19/England/CAMB-7B39E/2020	CAMB-7B39E
EPI_ISL_425306	hCoV-19/England/CAMB-74562/2020	CAMB-74562	EPI_ISL_433949	hCoV-19/England/CAMB-7B3BC/2020	CAMB-7B3BC
EPI_ISL_425307	hCoV-19/England/CAMB-74571/2020	CAMB-74571	EPI_ISL_433950	hCoV-19/England/CAMB-7B3CB/2020	CAMB-7B3CB
EPI_ISL_425308	hCoV-19/England/CAMB-74580/2020	CAMB-74580	EPI_ISL_433951	hCoV-19/England/CAMB-7B3DA/2020	CAMB-7B3DA
EPI_ISL_425309	hCoV-19/England/CAMB-7459F/2020	CAMB-7459F	EPI_ISL_433952	hCoV-19/England/CAMB-7B3E9/2020	CAMB-7B3E9
EPI_ISL_425310	hCoV-19/England/CAMB-745AE/2020	CAMB-745AE	EPI_ISL_433953	hCoV-19/England/CAMB-7B3F8/2020	CAMB-7B3F8
EPI_ISL_425311	hCoV-19/England/CAMB-745BD/2020	CAMB-745BD	EPI_ISL_433954	hCoV-19/England/CAMB-7B404/2020	CAMB-7B404
EPI_ISL_425312	hCoV-19/England/CAMB-745CC/2020	CAMB-745CC	EPI_ISL_433955	hCoV-19/England/CAMB-7B413/2020	CAMB-7B413
EPI_ISL_425313	hCoV-19/England/CAMB-745DB/2020	CAMB-745DB	EPI_ISL_433956	hCoV-19/England/CAMB-7B422/2020	CAMB-7B422
EPI_ISL_425314	hCoV-19/England/CAMB-745EA/2020	CAMB-745EA	EPI_ISL_433957	hCoV-19/England/CAMB-7B431/2020	CAMB-7B431
EPI_ISL_425315	hCoV-19/England/CAMB-74605/2020	CAMB-74605	EPI_ISL_433958	hCoV-19/England/CAMB-7B440/2020	CAMB-7B440
EPI_ISL_425316	hCoV-19/England/CAMB-74614/2020	CAMB-74614	EPI_ISL_433959	hCoV-19/England/CAMB-7B45F/2020	CAMB-7B45F
EPI_ISL_425317	hCoV-19/England/CAMB-74623/2020	CAMB-74623	EPI_ISL_433960	hCoV-19/England/CAMB-7B47D/2020	CAMB-7B47D
EPI_ISL_425318	hCoV-19/England/CAMB-74641/2020	CAMB-74641	EPI_ISL_433961	hCoV-19/England/CAMB-7B48C/2020	CAMB-7B48C
EPI_ISL_425319	hCoV-19/England/CAMB-74650/2020	CAMB-74650	EPI_ISL_433962	hCoV-19/England/CAMB-7B49B/2020	CAMB-7B49B
EPI_ISL_425320	hCoV-19/England/CAMB-7467E/2020	CAMB-7467E	EPI_ISL_433963	hCoV-19/England/CAMB-7B4AA/2020	CAMB-7B4AA
EPI_ISL_425321	hCoV-19/England/CAMB-7468D/2020	CAMB-7468D	EPI_ISL_433964	hCoV-19/England/CAMB-7B4B9/2020	CAMB-7B4B9
EPI_ISL_425322	hCoV-19/England/CAMB-7469C/2020	CAMB-7469C	EPI_ISL_433965	hCoV-19/England/CAMB-7B4C8/2020	CAMB-7B4C8
EPI_ISL_425323	hCoV-19/England/CAMB-746AB/2020	CAMB-746AB	EPI_ISL_433966	hCoV-19/England/CAMB-7B4D7/2020	CAMB-7B4D7
EPI_ISL_425324	hCoV-19/England/CAMB-746BA/2020	CAMB-746BA	EPI_ISL_433967	hCoV-19/England/CAMB-7B4E6/2020	CAMB-7B4E6
EPI_ISL_425325	hCoV-19/England/CAMB-746D8/2020	CAMB-746D8	EPI_ISL_433968	hCoV-19/England/CAMB-7B4F5/2020	CAMB-7B4F5
EPI_ISL_425326	hCoV-19/England/CAMB-74702/2020	CAMB-74702	EPI_ISL_433969	hCoV-19/England/CAMB-7B501/2020	CAMB-7B501
EPI_ISL_425327	hCoV-19/England/CAMB-74711/2020	CAMB-74711	EPI_ISL_433970	hCoV-19/England/CAMB-7B510/2020	CAMB-7B510
EPI_ISL_425328	hCoV-19/England/CAMB-74720/2020	CAMB-74720	EPI_ISL_433971	hCoV-19/England/CAMB-7B52F/2020	CAMB-7B52F
EPI_ISL_425329	hCoV-19/England/CAMB-7473F/2020	CAMB-7473F	EPI_ISL_433972	hCoV-19/England/CAMB-7B53E/2020	CAMB-7B53E
EPI_ISL_425330	hCoV-19/England/CAMB-7474E/2020	CAMB-7474E	EPI_ISL_433973	hCoV-19/England/CAMB-7B54D/2020	CAMB-7B54D
EPI_ISL_425331	hCoV-19/England/CAMB-7475D/2020	CAMB-7475D	EPI_ISL_433974	hCoV-19/England/CAMB-7B55C/2020	CAMB-7B55C
EPI_ISL_425332	hCoV-19/England/CAMB-7476C/2020	CAMB-7476C	EPI_ISL_433975	hCoV-19/England/CAMB-7B56B/2020	CAMB-7B56B
EPI_ISL_425333	hCoV-19/England/CAMB-7477B/2020	CAMB-7477B	EPI_ISL_433976	hCoV-19/England/CAMB-7BFD6/2020	CAMB-7BFD6
EPI_ISL_425334	hCoV-19/England/CAMB-748D2/2020	CAMB-748D2	EPI_ISL_433977	hCoV-19/England/CAMB-7BFE5/2020	CAMB-7BFE5
EPI_ISL_425335	hCoV-19/England/CAMB-748E1/2020	CAMB-748E1	EPI_ISL_433978	hCoV-19/England/CAMB-7BFF4/2020	CAMB-7BFF4
EPI_ISL_425336	hCoV-19/England/CAMB-748F0/2020	CAMB-748F0	EPI_ISL_433979	hCoV-19/England/CAMB-7C00F/2020	CAMB-7C00F
EPI_ISL_425337	hCoV-19/England/CAMB-7490C/2020	CAMB-7490C	EPI_ISL_433980	hCoV-19/England/CAMB-7C01E/2020	CAMB-7C01E
EPI_ISL_425338	hCoV-19/England/CAMB-7491B/2020	CAMB-7491B	EPI_ISL_433981	hCoV-19/England/CAMB-7C02D/2020	CAMB-7C02D
EPI_ISL_425339	hCoV-19/England/CAMB-7492A/2020	CAMB-7492A	EPI_ISL_433982	hCoV-19/England/CAMB-7C03C/2020	CAMB-7C03C
EPI_ISL_425340	hCoV-19/England/CAMB-74984/2020	CAMB-74984	EPI_ISL_433983	hCoV-19/England/CAMB-7C04B/2020	CAMB-7C04B
EPI_ISL_425341	hCoV-19/England/CAMB-749A2/2020	CAMB-749A2	EPI_ISL_433984	hCoV-19/England/CAMB-7C05A/2020	CAMB-7C05A
EPI_ISL_425342	hCoV-19/England/CAMB-74A09/2020	CAMB-74A09	EPI_ISL_433985	hCoV-19/England/CAMB-7C069/2020	CAMB-7C069
EPI_ISL_425343	hCoV-19/England/CAMB-74A18/2020	CAMB-74A18	EPI_ISL_433986	hCoV-19/England/CAMB-7C078/2020	CAMB-7C078
EPI_ISL_425344	hCoV-19/England/CAMB-74A72/2020	CAMB-74A72	EPI_ISL_433987	hCoV-19/England/CAMB-7C087/2020	CAMB-7C087
EPI_ISL_425345	hCoV-19/England/CAMB-74ABE/2020	CAMB-74ABE	EPI_ISL_433988	hCoV-19/England/CAMB-7C096/2020	CAMB-7C096
EPI_ISL_425346	hCoV-19/England/CAMB-74B24/2020	CAMB-74B24	EPI_ISL_433989	hCoV-19/England/CAMB-7C0A5/2020	CAMB-7C0A5
EPI_ISL_425347	hCoV-19/England/CAMB-74B33/2020	CAMB-74B33	EPI_ISL_433990	hCoV-19/England/CAMB-7C0B4/2020	CAMB-7C0B4
EPI_ISL_425348	hCoV-19/England/CAMB-74B42/2020	CAMB-74B42	EPI_ISL_433991	hCoV-19/England/CAMB-7C0C3/2020	CAMB-7C0C3
EPI_ISL_425349	hCoV-19/England/CAMB-74B51/2020	CAMB-74B51	EPI_ISL_433992	hCoV-19/England/CAMB-7C0D2/2020	CAMB-7C0D2
EPI_ISL_425350	hCoV-19/England/CAMB-74B60/2020	CAMB-74B60	EPI_ISL_433993	hCoV-19/England/CAMB-7C0E1/2020	CAMB-7C0E1
EPI_ISL_425351	hCoV-19/England/CAMB-74B9D/2020	CAMB-74B9D	EPI_ISL_433994	hCoV-19/England/CAMB-7C0F0/2020	CAMB-7C0F0
EPI_ISL_425352	hCoV-19/England/CAMB-74BAC/2020	CAMB-74BAC	EPI_ISL_433995	hCoV-19/England/CAMB-7C10C/2020	CAMB-7C10C
EPI_ISL_425353	hCoV-19/England/CAMB-74BBB/2020	CAMB-74BBB	EPI_ISL_433996	hCoV-19/England/CAMB-7C11B/2020	CAMB-7C11B
EPI_ISL_425354	hCoV-19/England/CAMB-74BCA/2020	CAMB-74BCA	EPI_ISL_433997	hCoV-19/England/CAMB-7C12A/2020	CAMB-7C12A
EPI_ISL_425355	hCoV-19/England/CAMB-74BF7/2020	CAMB-74BF7	EPI_ISL_433998	hCoV-19/England/CAMB-7C139/2020	CAMB-7C139
EPI_ISL_425356	hCoV-19/England/CAMB-74C03/2020	CAMB-74C03	EPI_ISL_433999	hCoV-19/England/CAMB-7C148/2020	CAMB-7C148
EPI_ISL_425357	hCoV-19/England/CAMB-74C12/2020	CAMB-74C12	EPI_ISL_434000	hCoV-19/England/CAMB-7C157/2020	CAMB-7C157
EPI_ISL_425358	hCoV-19/England/CAMB-74C21/2020	CAMB-74C21	EPI_ISL_434001	hCoV-19/England/CAMB-7C166/2020	CAMB-7C166
EPI_ISL_425359	hCoV-19/England/CAMB-74C30/2020	CAMB-74C30	EPI_ISL_434002	hCoV-19/England/CAMB-7C175/2020	CAMB-7C175
EPI_ISL_425360	hCoV-19/England/CAMB-74C4F/2020	CAMB-74C4F	EPI_ISL_434003	hCoV-19/England/CAMB-7C184/2020	CAMB-7C184
EPI_ISL_425361	hCoV-19/England/CAMB-74C5E/2020	CAMB-74C5E	EPI_ISL_434004	hCoV-19/England/CAMB-7C193/2020	CAMB-7C193
EPI_ISL_425362	hCoV-19/England/CAMB-74C8B/2020	CAMB-74C8B	EPI_ISL_434005	hCoV-19/England/CAMB-7C1A2/2020	CAMB-7C1A2
EPI_ISL_425363	hCoV-19/England/CAMB-74CA9/2020	CAMB-74CA9	EPI_ISL_434006	hCoV-19/England/CAMB-7C1B1/2020	CAMB-7C1B1
EPI_ISL_425364	hCoV-19/England/CAMB-74CC7/2020	CAMB-74CC7	EPI_ISL_434007	hCoV-19/England/CAMB-7C1C0/2020	CAMB-7C1C0

GISAID Accession ID	Virus name	COG-UK	GISAID Accession ID	Virus name	COG-UK
EPI_ISL_425365	hCoV-19/England/CAMB-74CD6/2020	CAMB-74CD6	EPI_ISL_434008	hCoV-19/England/CAMB-7C1DF/2020	CAMB-7C1DF
EPI_ISL_425366	hCoV-19/England/CAMB-74CF4/2020	CAMB-74CF4	EPI_ISL_434009	hCoV-19/England/CAMB-7C1EE/2020	CAMB-7C1EE
EPI_ISL_425367	hCoV-19/England/CAMB-74D00/2020	CAMB-74D00	EPI_ISL_434010	hCoV-19/England/CAMB-7C1FD/2020	CAMB-7C1FD
EPI_ISL_425368	hCoV-19/England/CAMB-74D1F/2020	CAMB-74D1F	EPI_ISL_434011	hCoV-19/England/CAMB-7C209/2020	CAMB-7C209
EPI_ISL_425369	hCoV-19/England/CAMB-74D2E/2020	CAMB-74D2E	EPI_ISL_434012	hCoV-19/England/CAMB-7C218/2020	CAMB-7C218
EPI_ISL_425370	hCoV-19/England/CAMB-74D3D/2020	CAMB-74D3D	EPI_ISL_434013	hCoV-19/England/CAMB-7C227/2020	CAMB-7C227
EPI_ISL_425371	hCoV-19/England/CAMB-74D4C/2020	CAMB-74D4C	EPI_ISL_434014	hCoV-19/England/CAMB-7C236/2020	CAMB-7C236
EPI_ISL_425373	hCoV-19/England/CAMB-74D5B/2020	CAMB-74D5B	EPI_ISL_434015	hCoV-19/England/CAMB-7C245/2020	CAMB-7C245
EPI_ISL_425374	hCoV-19/England/CAMB-74D6A/2020	CAMB-74D6A	EPI_ISL_434016	hCoV-19/England/CAMB-7C254/2020	CAMB-7C254
EPI_ISL_425375	hCoV-19/England/CAMB-74DE2/2020	CAMB-74DE2	EPI_ISL_434017	hCoV-19/England/CAMB-7C263/2020	CAMB-7C263
EPI_ISL_425376	hCoV-19/England/CAMB-74DF1/2020	CAMB-74DF1	EPI_ISL_434018	hCoV-19/England/CAMB-7C272/2020	CAMB-7C272
EPI_ISL_425377	hCoV-19/England/CAMB-74E0D/2020	CAMB-74E0D	EPI_ISL_434019	hCoV-19/England/CAMB-7C281/2020	CAMB-7C281
EPI_ISL_425378	hCoV-19/England/CAMB-74E49/2020	CAMB-74E49	EPI_ISL_434020	hCoV-19/England/CAMB-7C290/2020	CAMB-7C290
EPI_ISL_425379	hCoV-19/England/CAMB-74E58/2020	CAMB-74E58	EPI_ISL_434021	hCoV-19/England/CAMB-7C2AF/2020	CAMB-7C2AF
EPI_ISL_425380	hCoV-19/England/CAMB-74E67/2020	CAMB-74E67	EPI_ISL_434022	hCoV-19/England/CAMB-7C2BE/2020	CAMB-7C2BE
EPI_ISL_425381	hCoV-19/England/CAMB-74E76/2020	CAMB-74E76	EPI_ISL_434023	hCoV-19/England/CAMB-7C2CD/2020	CAMB-7C2CD
EPI_ISL_425382	hCoV-19/England/CAMB-74E85/2020	CAMB-74E85	EPI_ISL_434024	hCoV-19/England/CAMB-7C2DC/2020	CAMB-7C2DC
EPI_ISL_425383	hCoV-19/England/CAMB-74EA3/2020	CAMB-74EA3	EPI_ISL_434025	hCoV-19/England/CAMB-7C2FA/2020	CAMB-7C2FA
EPI_ISL_425384	hCoV-19/England/CAMB-74EB2/2020	CAMB-74EB2	EPI_ISL_434026	hCoV-19/England/CAMB-7C306/2020	CAMB-7C306
EPI_ISL_425385	hCoV-19/England/CAMB-74EC1/2020	CAMB-74EC1	EPI_ISL_434027	hCoV-19/England/CAMB-7C315/2020	CAMB-7C315
EPI_ISL_425386	hCoV-19/England/CAMB-7537E/2020	CAMB-7537E	EPI_ISL_434028	hCoV-19/England/CAMB-7C324/2020	CAMB-7C324
EPI_ISL_425387	hCoV-19/England/CAMB-75419/2020	CAMB-75419	EPI_ISL_434029	hCoV-19/England/CAMB-7C333/2020	CAMB-7C333
EPI_ISL_425388	hCoV-19/England/CAMB-75437/2020	CAMB-75437	EPI_ISL_434030	hCoV-19/England/CAMB-7C342/2020	CAMB-7C342
EPI_ISL_425389	hCoV-19/England/CAMB-75455/2020	CAMB-75455	EPI_ISL_434031	hCoV-19/England/CAMB-7C351/2020	CAMB-7C351
EPI_ISL_425390	hCoV-19/England/CAMB-75464/2020	CAMB-75464	EPI_ISL_434032	hCoV-19/England/CAMB-7C360/2020	CAMB-7C360
EPI_ISL_425391	hCoV-19/England/CAMB-75473/2020	CAMB-75473	EPI_ISL_434033	hCoV-19/England/CAMB-7C37F/2020	CAMB-7C37F
EPI_ISL_425392	hCoV-19/England/CAMB-75482/2020	CAMB-75482	EPI_ISL_434034	hCoV-19/England/CAMB-7C38E/2020	CAMB-7C38E
EPI_ISL_425393	hCoV-19/England/CAMB-75491/2020	CAMB-75491	EPI_ISL_434035	hCoV-19/England/CAMB-7C39D/2020	CAMB-7C39D
EPI_ISL_425394	hCoV-19/England/CAMB-754A0/2020	CAMB-754A0	EPI_ISL_434036	hCoV-19/England/CAMB-7C3AC/2020	CAMB-7C3AC
EPI_ISL_425395	hCoV-19/England/CAMB-754B7/2020	CAMB-754B7	EPI_ISL_434037	hCoV-19/England/CAMB-7C3BB/2020	CAMB-7C3BB
EPI_ISL_425396	hCoV-19/England/CAMB-754CE/2020	CAMB-754CE	EPI_ISL_434038	hCoV-19/England/CAMB-7C3CA/2020	CAMB-7C3CA
EPI_ISL_425397	hCoV-19/England/CAMB-754DD/2020	CAMB-754DD	EPI_ISL_434039	hCoV-19/England/CAMB-7C3E8/2020	CAMB-7C3E8
EPI_ISL_425398	hCoV-19/England/CAMB-754EC/2020	CAMB-754EC	EPI_ISL_434040	hCoV-19/England/CAMB-7E10A/2020	CAMB-7E10A
EPI_ISL_425399	hCoV-19/England/CAMB-754FB/2020	CAMB-754FB	EPI_ISL_434041	hCoV-19/England/CAMB-7E119/2020	CAMB-7E119
EPI_ISL_425400	hCoV-19/England/CAMB-75507/2020	CAMB-75507	EPI_ISL_434042	hCoV-19/England/CAMB-7E128/2020	CAMB-7E128
EPI_ISL_425401	hCoV-19/England/CAMB-75516/2020	CAMB-75516	EPI_ISL_434043	hCoV-19/England/CAMB-7E137/2020	CAMB-7E137
EPI_ISL_425402	hCoV-19/England/CAMB-75525/2020	CAMB-75525	EPI_ISL_434044	hCoV-19/England/CAMB-7E146/2020	CAMB-7E146
EPI_ISL_425403	hCoV-19/England/CAMB-75534/2020	CAMB-75534	EPI_ISL_434045	hCoV-19/England/CAMB-7E155/2020	CAMB-7E155
EPI_ISL_425404	hCoV-19/England/CAMB-75543/2020	CAMB-75543	EPI_ISL_434046	hCoV-19/England/CAMB-7E164/2020	CAMB-7E164
EPI_ISL_425405	hCoV-19/England/CAMB-75552/2020	CAMB-75552	EPI_ISL_434047	hCoV-19/England/CAMB-7E1BF/2020	CAMB-7E1BF
EPI_ISL_425406	hCoV-19/England/CAMB-75570/2020	CAMB-75570	EPI_ISL_434048	hCoV-19/England/CAMB-7E1CE/2020	CAMB-7E1CE
EPI_ISL_425407	hCoV-19/England/CAMB-7559E/2020	CAMB-7559E	EPI_ISL_434049	hCoV-19/England/CAMB-7E1DD/2020	CAMB-7E1DD
EPI_ISL_433700	hCoV-19/England/CAMB-755AD/2020	CAMB-755AD	EPI_ISL_434050	hCoV-19/England/CAMB-7E1EC/2020	CAMB-7E1EC
EPI_ISL_425408	hCoV-19/England/CAMB-755BC/2020	CAMB-755BC	EPI_ISL_434051	hCoV-19/England/CAMB-7E1FB/2020	CAMB-7E1FB
EPI_ISL_425409	hCoV-19/England/CAMB-755CB/2020	CAMB-755CB	EPI_ISL_434052	hCoV-19/England/CAMB-7E207/2020	CAMB-7E207
EPI_ISL_425410	hCoV-19/England/CAMB-755DA/2020	CAMB-755DA	EPI_ISL_434053	hCoV-19/England/CAMB-7E225/2020	CAMB-7E225
EPI_ISL_425411	hCoV-19/England/CAMB-755E9/2020	CAMB-755E9	EPI_ISL_434054	hCoV-19/England/CAMB-7E234/2020	CAMB-7E234
EPI_ISL_425412	hCoV-19/England/CAMB-755F8/2020	CAMB-755F8	EPI_ISL_434055	hCoV-19/England/CAMB-7E243/2020	CAMB-7E243
EPI_ISL_425413	hCoV-19/England/CAMB-75604/2020	CAMB-75604	EPI_ISL_434056	hCoV-19/England/CAMB-7E252/2020	CAMB-7E252
EPI_ISL_425414	hCoV-19/England/CAMB-75613/2020	CAMB-75613	EPI_ISL_434057	hCoV-19/England/CAMB-7E261/2020	CAMB-7E261
EPI_ISL_425415	hCoV-19/England/CAMB-75622/2020	CAMB-75622	EPI_ISL_434058	hCoV-19/England/CAMB-7E270/2020	CAMB-7E270
EPI_ISL_425416	hCoV-19/England/CAMB-75631/2020	CAMB-75631	EPI_ISL_434059	hCoV-19/England/CAMB-7E29E/2020	CAMB-7E29E
EPI_ISL_425417	hCoV-19/England/CAMB-75640/2020	CAMB-75640	EPI_ISL_434060	hCoV-19/England/CAMB-7E2AD/2020	CAMB-7E2AD
EPI_ISL_425418	hCoV-19/England/CAMB-7565F/2020	CAMB-7565F	EPI_ISL_434061	hCoV-19/England/CAMB-7E2BC/2020	CAMB-7E2BC
EPI_ISL_425419	hCoV-19/England/CAMB-7566E/2020	CAMB-7566E	EPI_ISL_434062	hCoV-19/England/CAMB-7E2CB/2020	CAMB-7E2CB
EPI_ISL_425420	hCoV-19/England/CAMB-7567D/2020	CAMB-7567D	EPI_ISL_433466	hCoV-19/England/CAMB-7E2DA/2020	CAMB-7E2DA
EPI_ISL_425421	hCoV-19/England/CAMB-7569B/2020	CAMB-7569B	EPI_ISL_433467	hCoV-19/England/CAMB-7E2E9/2020	CAMB-7E2E9
EPI_ISL_425422	hCoV-19/England/CAMB-756AA/2020	CAMB-756AA	EPI_ISL_433468	hCoV-19/England/CAMB-7E2F8/2020	CAMB-7E2F8
EPI_ISL_425423	hCoV-19/England/CAMB-76D1D/2020	CAMB-76D1D	EPI_ISL_433469	hCoV-19/England/CAMB-7E304/2020	CAMB-7E304
EPI_ISL_425424	hCoV-19/England/CAMB-76D3B/2020	CAMB-76D3B	EPI_ISL_433470	hCoV-19/England/CAMB-7E313/2020	CAMB-7E313
EPI_ISL_425425	hCoV-19/England/CAMB-76D59/2020	CAMB-76D59	EPI_ISL_433471	hCoV-19/England/CAMB-7E322/2020	CAMB-7E322
EPI_ISL_425426	hCoV-19/England/CAMB-76D77/2020	CAMB-76D77	EPI_ISL_433472	hCoV-19/England/CAMB-7E331/2020	CAMB-7E331
EPI_ISL_425427	hCoV-19/England/CAMB-76D95/2020	CAMB-76D95	EPI_ISL_433473	hCoV-19/England/CAMB-7E340/2020	CAMB-7E340
EPI_ISL_425428	hCoV-19/England/CAMB-76DB3/2020	CAMB-76DB3	EPI_ISL_433474	hCoV-19/England/CAMB-7F7E9/2020	CAMB-7F7E9
EPI_ISL_425429	hCoV-19/England/CAMB-76DD1/2020	CAMB-76DD1	EPI_ISL_433475	hCoV-19/England/CAMB-7F804/2020	CAMB-7F804
EPI_ISL_425430	hCoV-19/England/CAMB-76DFF/2020	CAMB-76DFF	EPI_ISL_433476	hCoV-19/England/CAMB-7F822/2020	CAMB-7F822
EPI_ISL_425431	hCoV-19/England/CAMB-76E1A/2020	CAMB-76E1A	EPI_ISL_433477	hCoV-19/England/CAMB-7F88C/2020	CAMB-7F88C
EPI_ISL_425432	hCoV-19/England/CAMB-76E38/2020	CAMB-76E38	EPI_ISL_433478	hCoV-19/England/CAMB-7F8E6/2020	CAMB-7F8E6
EPI_ISL_425433	hCoV-19/England/CAMB-76E56/2020	CAMB-76E56	EPI_ISL_433479	hCoV-19/England/CAMB-7FB29/2020	CAMB-7FB29
EPI_ISL_425434	hCoV-19/England/CAMB-76E74/2020	CAMB-76E74	EPI_ISL_433480	hCoV-19/England/CAMB-7FB47/2020	CAMB-7FB47
EPI_ISL_425435	hCoV-19/England/CAMB-76E92/2020	CAMB-76E92	EPI_ISL_433481	hCoV-19/England/CAMB-7FB56/2020	CAMB-7FB56
EPI_ISL_425436	hCoV-19/England/CAMB-76EB0/2020	CAMB-76EB0	EPI_ISL_433482	hCoV-19/England/CAMB-7FB65/2020	CAMB-7FB65
EPI_ISL_425437	hCoV-19/England/CAMB-76EDE/2020	CAMB-76EDE	EPI_ISL_433483	hCoV-19/England/CAMB-7FB74/2020	CAMB-7FB74
EPI_ISL_425438	hCoV-19/England/CAMB-76EFC/2020	CAMB-76EFC	EPI_ISL_433484	hCoV-19/England/CAMB-7FB83/2020	CAMB-7FB83
EPI_ISL_425439	hCoV-19/England/CAMB-76F17/2020	CAMB-76F17	EPI_ISL_433485	hCoV-19/England/CAMB-7FB92/2020	CAMB-7FB92
EPI_ISL_425440	hCoV-19/England/CAMB-76F35/2020	CAMB-76F35	EPI_ISL_433486	hCoV-19/England/CAMB-7FBA1/2020	CAMB-7FBA1
EPI_ISL_425441	hCoV-19/England/CAMB-76F62/2020	CAMB-76F62	EPI_ISL_433487	hCoV-19/England/CAMB-7FBB0/2020	CAMB-7FBB0
EPI_ISL_425442	hCoV-19/England/CAMB-76F71/2020	CAMB-76F71	EPI_ISL_433488	hCoV-19/England/CAMB-7FBCF/2020	CAMB-7FBCF
EPI_ISL_425443	hCoV-19/England/CAMB-76F9F/2020	CAMB-76F9F	EPI_ISL_433489	hCoV-19/England/CAMB-7FBDE/2020	CAMB-7FBDE
EPI_ISL_425444	hCoV-19/England/CAMB-76FAE/2020	CAMB-76FAE	EPI_ISL_433490	hCoV-19/England/CAMB-7FBFC/2020	CAMB-7FBFC
EPI_ISL_425445	hCoV-19/England/CAMB-76FBD/2020	CAMB-76FBD	EPI_ISL_433491	hCoV-19/England/CAMB-7FC08/2020	CAMB-7FC08
EPI_ISL_425446	hCoV-19/England/CAMB-76FCC/2020	CAMB-76FCC	EPI_ISL_433492	hCoV-19/England/CAMB-7FC17/2020	CAMB-7FC17
EPI_ISL_425447	hCoV-19/England/CAMB-76FDB/2020	CAMB-76FDB	EPI_ISL_433493	hCoV-19/England/CAMB-7FC26/2020	CAMB-7FC26
EPI_ISL_425448	hCoV-19/England/CAMB-76FEA/2020	CAMB-76FEA	EPI_ISL_433494	hCoV-19/England/CAMB-7FC35/2020	CAMB-7FC35

GISAID Accession ID	Virus name	COG-UK	GISAID Accession ID	Virus name	COG-UK
EPI_ISL_425449	hCoV-19/England/CAMB-76FF9/2020	CAMB-76FF9	EPI_ISL_433495	hCoV-19/England/CAMB-7FC44/2020	CAMB-7FC44
EPI_ISL_425450	hCoV-19/England/CAMB-77004/2020	CAMB-77004	EPI_ISL_433496	hCoV-19/England/CAMB-7FC53/2020	CAMB-7FC53
EPI_ISL_425451	hCoV-19/England/CAMB-77013/2020	CAMB-77013	EPI_ISL_433497	hCoV-19/England/CAMB-7FC62/2020	CAMB-7FC62
EPI_ISL_425452	hCoV-19/England/CAMB-77022/2020	CAMB-77022	EPI_ISL_433856	hCoV-19/England/CAMB-7AC49/2020	CAMB-7AC49
EPI_ISL_425453	hCoV-19/England/CAMB-77031/2020	CAMB-77031	EPI_ISL_433857	hCoV-19/England/CAMB-7AC58/2020	CAMB-7AC58
EPI_ISL_425454	hCoV-19/England/CAMB-77040/2020	CAMB-77040	EPI_ISL_433858	hCoV-19/England/CAMB-7AC67/2020	CAMB-7AC67
EPI_ISL_425455	hCoV-19/England/CAMB-7705F/2020	CAMB-7705F	EPI_ISL_433859	hCoV-19/England/CAMB-7AC76/2020	CAMB-7AC76
EPI_ISL_425456	hCoV-19/England/CAMB-7706E/2020	CAMB-7706E	EPI_ISL_433855	hCoV-19/England/CAMB-7AC3A/2020	CAMB-7AC3A
EPI_ISL_425457	hCoV-19/England/CAMB-7707D/2020	CAMB-7707D	**Pending**	hCoV-19/England/CAMB-7FC71/2020	CAMB-7FC71
EPI_ISL_425458	hCoV-19/England/CAMB-7708C/2020	CAMB-7708C	**Pending**	hCoV-19/England/CAMB-7FC80/2020	CAMB-7FC80
EPI_ISL_425459	hCoV-19/England/CAMB-7709B/2020	CAMB-7709B	**Pending**	hCoV-19/England/CAMB-7FC9F/2020	CAMB-7FC9F
EPI_ISL_425460	hCoV-19/England/CAMB-770B9/2020	CAMB-770B9	**Pending**	hCoV-19/England/CAMB-7FCBD/2020	CAMB-7FCBD
EPI_ISL_425461	hCoV-19/England/CAMB-770C8/2020	CAMB-770C8	**Pending**	hCoV-19/England/CAMB-7FCF9/2020	CAMB-7FCF9
EPI_ISL_433701	hCoV-19/England/CAMB-779FA/2020	CAMB-779FA	**Pending**	hCoV-19/England/CAMB-7FD05/2020	CAMB-7FD05
EPI_ISL_433702	hCoV-19/England/CAMB-78197/2020	CAMB-78197	**Pending**	hCoV-19/England/CAMB-7FD23/2020	CAMB-7FD23
EPI_ISL_433703	hCoV-19/England/CAMB-781A6/2020	CAMB-781A6	**Pending**	hCoV-19/England/CAMB-7FD32/2020	CAMB-7FD32
EPI_ISL_433704	hCoV-19/England/CAMB-781B5/2020	CAMB-781B5	**Pending**	hCoV-19/England/CAMB-7FD6F/2020	CAMB-7FD6F
EPI_ISL_433705	hCoV-19/England/CAMB-781E2/2020	CAMB-781E2	**Pending**	hCoV-19/England/CAMB-7FD7E/2020	CAMB-7FD7E
EPI_ISL_433706	hCoV-19/England/CAMB-7820D/2020	CAMB-7820D	**Pending**	hCoV-19/England/CAMB-7FD8D/2020	CAMB-7FD8D
EPI_ISL_433707	hCoV-19/England/CAMB-7822B/2020	CAMB-7822B	**Pending**	hCoV-19/England/CAMB-7FDBA/2020	CAMB-7FDBA
EPI_ISL_433708	hCoV-19/England/CAMB-78276/2020	CAMB-78276	**Pending**	hCoV-19/England/CAMB-7FDC9/2020	CAMB-7FDC9
EPI_ISL_433709	hCoV-19/England/CAMB-78285/2020	CAMB-78285	**Pending**	hCoV-19/England/CAMB-7FE20/2020	CAMB-7FE20
EPI_ISL_433710	hCoV-19/England/CAMB-78294/2020	CAMB-78294	**Pending**	hCoV-19/England/CAMB-7FE3F/2020	CAMB-7FE3F
EPI_ISL_433711	hCoV-19/England/CAMB-782A3/2020	CAMB-782A3	**Pending**	hCoV-19/England/CAMB-7FE4E/2020	CAMB-7FE4E
EPI_ISL_433712	hCoV-19/England/CAMB-782B2/2020	CAMB-782B2	**Pending**	hCoV-19/England/CAMB-7FE5D/2020	CAMB-7FE5D
EPI_ISL_433713	hCoV-19/England/CAMB-782D0/2020	CAMB-782D0	**Pending**	hCoV-19/England/CAMB-7FE7B/2020	CAMB-7FE7B
EPI_ISL_433714	hCoV-19/England/CAMB-782EF/2020	CAMB-782EF	**Pending**	hCoV-19/England/CAMB-7FEB7/2020	CAMB-7FEB7
EPI_ISL_433715	hCoV-19/England/CAMB-782FE/2020	CAMB-782FE	**Pending**	hCoV-19/England/CAMB-7FEC6/2020	CAMB-7FEC6
EPI_ISL_433716	hCoV-19/England/CAMB-7830A/2020	CAMB-7830A	**Pending**	hCoV-19/England/CAMB-7FEE4/2020	CAMB-7FEE4
EPI_ISL_433717	hCoV-19/England/CAMB-78319/2020	CAMB-78319	**Pending**	hCoV-19/England/CAMB-80AFB/2020	CAMB-80AFB
EPI_ISL_433718	hCoV-19/England/CAMB-78328/2020	CAMB-78328	**Pending**	hCoV-19/England/CAMB-80E3B/2020	CAMB-80E3B
EPI_ISL_433719	hCoV-19/England/CAMB-78337/2020	CAMB-78337	**Pending**	hCoV-19/England/CAMB-80E4A/2020	CAMB-80E4A
EPI_ISL_433720	hCoV-19/England/CAMB-78346/2020	CAMB-78346	**Pending**	hCoV-19/England/CAMB-80E59/2020	CAMB-80E59
EPI_ISL_433721	hCoV-19/England/CAMB-78355/2020	CAMB-78355	**Pending**	hCoV-19/England/CAMB-80E68/2020	CAMB-80E68
EPI_ISL_433722	hCoV-19/England/CAMB-78364/2020	CAMB-78364	**Pending**	hCoV-19/England/CAMB-80E77/2020	CAMB-80E77
EPI_ISL_433723	hCoV-19/England/CAMB-78373/2020	CAMB-78373	**Pending**	hCoV-19/England/CAMB-80E86/2020	CAMB-80E86
EPI_ISL_433724	hCoV-19/England/CAMB-78382/2020	CAMB-78382	**Pending**	hCoV-19/England/CAMB-80E95/2020	CAMB-80E95
EPI_ISL_433725	hCoV-19/England/CAMB-78391/2020	CAMB-78391	**Pending**	hCoV-19/England/CAMB-80EA4/2020	CAMB-80EA4
EPI_ISL_433726	hCoV-19/England/CAMB-783BF/2020	CAMB-783BF	**Pending**	hCoV-19/England/CAMB-80EB3/2020	CAMB-80EB3
EPI_ISL_433727	hCoV-19/England/CAMB-783CE/2020	CAMB-783CE	**Pending**	hCoV-19/England/CAMB-80EC2/2020	CAMB-80EC2
EPI_ISL_433728	hCoV-19/England/CAMB-783DD/2020	CAMB-783DD	**Pending**	hCoV-19/England/CAMB-80ED1/2020	CAMB-80ED1
EPI_ISL_433729	hCoV-19/England/CAMB-783EC/2020	CAMB-783EC	**Pending**	hCoV-19/England/CAMB-80EE0/2020	CAMB-80EE0
EPI_ISL_433730	hCoV-19/England/CAMB-783FB/2020	CAMB-783FB	**Pending**	hCoV-19/England/CAMB-80EFF/2020	CAMB-80EFF
EPI_ISL_433731	hCoV-19/England/CAMB-78407/2020	CAMB-78407	**Pending**	hCoV-19/England/CAMB-80F0B/2020	CAMB-80F0B
EPI_ISL_433732	hCoV-19/England/CAMB-78416/2020	CAMB-78416	**Pending**	hCoV-19/England/CAMB-80F1A/2020	CAMB-80F1A
EPI_ISL_433733	hCoV-19/England/CAMB-78425/2020	CAMB-78425	**Pending**	hCoV-19/England/CAMB-80F29/2020	CAMB-80F29
EPI_ISL_433734	hCoV-19/England/CAMB-78452/2020	CAMB-78452	**Pending**	hCoV-19/England/CAMB-80F38/2020	CAMB-80F38
EPI_ISL_433735	hCoV-19/England/CAMB-78461/2020	CAMB-78461	**Pending**	hCoV-19/England/CAMB-80F47/2020	CAMB-80F47
EPI_ISL_433736	hCoV-19/England/CAMB-78470/2020	CAMB-78470	**Pending**	hCoV-19/England/CAMB-80F56/2020	CAMB-80F56
EPI_ISL_433737	hCoV-19/England/CAMB-7848F/2020	CAMB-7848F	**Pending**	hCoV-19/England/CAMB-80F65/2020	CAMB-80F65
EPI_ISL_433738	hCoV-19/England/CAMB-7849E/2020	CAMB-7849E	**Pending**	hCoV-19/England/CAMB-80F74/2020	CAMB-80F74
EPI_ISL_433739	hCoV-19/England/CAMB-784AD/2020	CAMB-784AD	**Pending**	hCoV-19/England/CAMB-80F83/2020	CAMB-80F83
EPI_ISL_433740	hCoV-19/England/CAMB-784BC/2020	CAMB-784BC	**Pending**	hCoV-19/England/CAMB-80FB0/2020	CAMB-80FB0
EPI_ISL_433741	hCoV-19/England/CAMB-784CB/2020	CAMB-784CB	**Pending**	hCoV-19/England/CAMB-80FCF/2020	CAMB-80FCF
EPI_ISL_433742	hCoV-19/England/CAMB-784DA/2020	CAMB-784DA	**Pending**	hCoV-19/England/CAMB-80FDE/2020	CAMB-80FDE
EPI_ISL_433743	hCoV-19/England/CAMB-784E9/2020	CAMB-784E9	**Pending**	hCoV-19/England/CAMB-80FFC/2020	CAMB-80FFC
EPI_ISL_433744	hCoV-19/England/CAMB-78504/2020	CAMB-78504	**Pending**	hCoV-19/England/CAMB-81007/2020	CAMB-81007
EPI_ISL_433745	hCoV-19/England/CAMB-78531/2020	CAMB-78531	**Pending**	hCoV-19/England/CAMB-81016/2020	CAMB-81016
EPI_ISL_433746	hCoV-19/England/CAMB-78540/2020	CAMB-78540	**Pending**	hCoV-19/England/CAMB-81025/2020	CAMB-81025
EPI_ISL_433747	hCoV-19/England/CAMB-7855F/2020	CAMB-7855F	**Pending**	hCoV-19/England/CAMB-81034/2020	CAMB-81034
EPI_ISL_433748	hCoV-19/England/CAMB-7856E/2020	CAMB-7856E	**Pending**	hCoV-19/England/CAMB-81043/2020	CAMB-81043
EPI_ISL_433749	hCoV-19/England/CAMB-7857D/2020	CAMB-7857D	**Pending**	hCoV-19/England/CAMB-81061/2020	CAMB-81061
EPI_ISL_433750	hCoV-19/England/CAMB-7858C/2020	CAMB-7858C	**Pending**	hCoV-19/England/CAMB-81070/2020	CAMB-81070
EPI_ISL_433751	hCoV-19/England/CAMB-7859B/2020	CAMB-7859B	**Pending**	hCoV-19/England/CAMB-8108F/2020	CAMB-8108F
EPI_ISL_433752	hCoV-19/England/CAMB-785AA/2020	CAMB-785AA	**Pending**	hCoV-19/England/CAMB-8109E/2020	CAMB-8109E
EPI_ISL_433753	hCoV-19/England/CAMB-785C8/2020	CAMB-785C8	**Pending**	hCoV-19/England/CAMB-810AD/2020	CAMB-810AD
EPI_ISL_433754	hCoV-19/England/CAMB-785E6/2020	CAMB-785E6	**Pending**	hCoV-19/England/CAMB-810BC/2020	CAMB-810BC
EPI_ISL_433755	hCoV-19/England/CAMB-785F5/2020	CAMB-785F5	**Pending**	hCoV-19/England/CAMB-810CB/2020	CAMB-810CB
EPI_ISL_433756	hCoV-19/England/CAMB-78601/2020	CAMB-78601	**Pending**	hCoV-19/England/CAMB-810E9/2020	CAMB-810E9
EPI_ISL_433757	hCoV-19/England/CAMB-7862F/2020	CAMB-7862F	**Pending**	hCoV-19/England/CAMB-81104/2020	CAMB-81104
EPI_ISL_433758	hCoV-19/England/CAMB-7864D/2020	CAMB-7864D	**Pending**	hCoV-19/England/CAMB-81113/2020	CAMB-81113
EPI_ISL_433759	hCoV-19/England/CAMB-7866B/2020	CAMB-7866B	**Pending**	hCoV-19/England/CAMB-81122/2020	CAMB-81122
EPI_ISL_433760	hCoV-19/England/CAMB-7867A/2020	CAMB-7867A	**Pending**	hCoV-19/England/CAMB-81131/2020	CAMB-81131
EPI_ISL_433761	hCoV-19/England/CAMB-78689/2020	CAMB-78689	**Pending**	hCoV-19/England/CAMB-81140/2020	CAMB-81140
EPI_ISL_433762	hCoV-19/England/CAMB-786A7/2020	CAMB-786A7	**Pending**	hCoV-19/England/CAMB-8115F/2020	CAMB-8115F
EPI_ISL_433763	hCoV-19/England/CAMB-786C5/2020	CAMB-786C5	**Pending**	hCoV-19/England/CAMB-8117D/2020	CAMB-8117D
EPI_ISL_433764	hCoV-19/England/CAMB-786E3/2020	CAMB-786E3	**Pending**	hCoV-19/England/CAMB-8118C/2020	CAMB-8118C
EPI_ISL_433765	hCoV-19/England/CAMB-7870E/2020	CAMB-7870E	**Pending**	hCoV-19/England/CAMB-8119B/2020	CAMB-8119B
EPI_ISL_433766	hCoV-19/England/CAMB-7872C/2020	CAMB-7872C	**Pending**	hCoV-19/England/CAMB-811AA/2020	CAMB-811AA
EPI_ISL_433767	hCoV-19/England/CAMB-7873B/2020	CAMB-7873B	**Pending**	hCoV-19/England/CAMB-811C8/2020	CAMB-811C8
EPI_ISL_433768	hCoV-19/England/CAMB-7874A/2020	CAMB-7874A	**Pending**	hCoV-19/England/CAMB-81F91/2020	CAMB-81F91
EPI_ISL_433769	hCoV-19/England/CAMB-78777/2020	CAMB-78777	**Pending**	hCoV-19/England/CAMB-81FA0/2020	CAMB-81FA0
EPI_ISL_433770	hCoV-19/England/CAMB-78786/2020	CAMB-78786	**Pending**	hCoV-19/England/CAMB-81FBF/2020	CAMB-81FBF
EPI_ISL_433771	hCoV-19/England/CAMB-787A4/2020	CAMB-787A4	**Pending**	hCoV-19/England/CAMB-81FCE/2020	CAMB-81FCE

GISAID Accession ID	Virus name	COG-UK
EPI_ISL_433772	hCoV-19/England/CAMB-787B3/2020	CAMB-787B3
EPI_ISL_433773	hCoV-19/England/CAMB-787C2/2020	CAMB-787C2
EPI_ISL_433774	hCoV-19/England/CAMB-787D1/2020	CAMB-787D1
EPI_ISL_433775	hCoV-19/England/CAMB-787E0/2020	CAMB-787E0
EPI_ISL_433776	hCoV-19/England/CAMB-7880B/2020	CAMB-7880B
EPI_ISL_433777	hCoV-19/England/CAMB-7881A/2020	CAMB-7881A
EPI_ISL_433778	hCoV-19/England/CAMB-78829/2020	CAMB-78829
EPI_ISL_433779	hCoV-19/England/CAMB-78838/2020	CAMB-78838
EPI_ISL_433780	hCoV-19/England/CAMB-78847/2020	CAMB-78847
EPI_ISL_433781	hCoV-19/England/CAMB-78865/2020	CAMB-78865
EPI_ISL_433782	hCoV-19/England/CAMB-78874/2020	CAMB-78874
EPI_ISL_433783	hCoV-19/England/CAMB-78883/2020	CAMB-78883
EPI_ISL_433784	hCoV-19/England/CAMB-78892/2020	CAMB-78892
EPI_ISL_433785	hCoV-19/England/CAMB-788A1/2020	CAMB-788A1
EPI_ISL_433786	hCoV-19/England/CAMB-788B0/2020	CAMB-788B0
EPI_ISL_433787	hCoV-19/England/CAMB-788CF/2020	CAMB-788CF
EPI_ISL_433788	hCoV-19/England/CAMB-788DE/2020	CAMB-788DE
EPI_ISL_433789	hCoV-19/England/CAMB-788ED/2020	CAMB-788ED
EPI_ISL_433790	hCoV-19/England/CAMB-788FC/2020	CAMB-788FC
EPI_ISL_433791	hCoV-19/England/CAMB-78917/2020	CAMB-78917
EPI_ISL_433792	hCoV-19/England/CAMB-78926/2020	CAMB-78926
EPI_ISL_433793	hCoV-19/England/CAMB-78935/2020	CAMB-78935
EPI_ISL_433794	hCoV-19/England/CAMB-78944/2020	CAMB-78944
EPI_ISL_433795	hCoV-19/England/CAMB-78953/2020	CAMB-78953
EPI_ISL_433796	hCoV-19/England/CAMB-78962/2020	CAMB-78962
EPI_ISL_433797	hCoV-19/England/CAMB-78971/2020	CAMB-78971
EPI_ISL_433798	hCoV-19/England/CAMB-78980/2020	CAMB-78980
EPI_ISL_433799	hCoV-19/England/CAMB-7899F/2020	CAMB-7899F
EPI_ISL_433800	hCoV-19/England/CAMB-789AE/2020	CAMB-789AE
EPI_ISL_433801	hCoV-19/England/CAMB-789BD/2020	CAMB-789BD
EPI_ISL_433802	hCoV-19/England/CAMB-789CC/2020	CAMB-789CC
EPI_ISL_433803	hCoV-19/England/CAMB-789DB/2020	CAMB-789DB
EPI_ISL_433804	hCoV-19/England/CAMB-789EA/2020	CAMB-789EA
EPI_ISL_433805	hCoV-19/England/CAMB-789F9/2020	CAMB-789F9
EPI_ISL_433806	hCoV-19/England/CAMB-78A05/2020	CAMB-78A05
EPI_ISL_433807	hCoV-19/England/CAMB-78A14/2020	CAMB-78A14
EPI_ISL_433808	hCoV-19/England/CAMB-78A32/2020	CAMB-78A32
EPI_ISL_433809	hCoV-19/England/CAMB-78A50/2020	CAMB-78A50
EPI_ISL_433810	hCoV-19/England/CAMB-78A7E/2020	CAMB-78A7E
EPI_ISL_433811	hCoV-19/England/CAMB-78A9C/2020	CAMB-78A9C
EPI_ISL_433812	hCoV-19/England/CAMB-78ABA/2020	CAMB-78ABA
EPI_ISL_433813	hCoV-19/England/CAMB-79A04/2020	CAMB-79A04
EPI_ISL_433814	hCoV-19/England/CAMB-79A22/2020	CAMB-79A22
EPI_ISL_433815	hCoV-19/England/CAMB-79A40/2020	CAMB-79A40
EPI_ISL_433816	hCoV-19/England/CAMB-79A5F/2020	CAMB-79A5F
EPI_ISL_433817	hCoV-19/England/CAMB-79A8C/2020	CAMB-79A8C
EPI_ISL_433818	hCoV-19/England/CAMB-79A9B/2020	CAMB-79A9B
EPI_ISL_433819	hCoV-19/England/CAMB-79AB9/2020	CAMB-79AB9
EPI_ISL_433820	hCoV-19/England/CAMB-79AC8/2020	CAMB-79AC8
EPI_ISL_433821	hCoV-19/England/CAMB-79AD7/2020	CAMB-79AD7
EPI_ISL_433822	hCoV-19/England/CAMB-79AE6/2020	CAMB-79AE6
EPI_ISL_433823	hCoV-19/England/CAMB-79AF5/2020	CAMB-79AF5
EPI_ISL_433824	hCoV-19/England/CAMB-79B01/2020	CAMB-79B01
EPI_ISL_433825	hCoV-19/England/CAMB-79B10/2020	CAMB-79B10
EPI_ISL_433826	hCoV-19/England/CAMB-7A8BE/2020	CAMB-7A8BE
EPI_ISL_433827	hCoV-19/England/CAMB-7A8DC/2020	CAMB-7A8DC
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EPI_ISL_433829	hCoV-19/England/CAMB-7AA30/2020	CAMB-7AA30
EPI_ISL_433830	hCoV-19/England/CAMB-7AA4F/2020	CAMB-7AA4F
EPI_ISL_433831	hCoV-19/England/CAMB-7AA6D/2020	CAMB-7AA6D
EPI_ISL_433832	hCoV-19/England/CAMB-7AA7C/2020	CAMB-7AA7C
EPI_ISL_433833	hCoV-19/England/CAMB-7AA8B/2020	CAMB-7AA8B
EPI_ISL_433834	hCoV-19/England/CAMB-7AAA9/2020	CAMB-7AAA9
EPI_ISL_433835	hCoV-19/England/CAMB-7AAB8/2020	CAMB-7AAB8
EPI_ISL_433836	hCoV-19/England/CAMB-7AAC7/2020	CAMB-7AAC7
EPI_ISL_433837	hCoV-19/England/CAMB-7AAD6/2020	CAMB-7AAD6
EPI_ISL_433838	hCoV-19/England/CAMB-7AAE5/2020	CAMB-7AAE5
EPI_ISL_433839	hCoV-19/England/CAMB-7AAF4/2020	CAMB-7AAF4
EPI_ISL_433840	hCoV-19/England/CAMB-7AB00/2020	CAMB-7AB00
EPI_ISL_433841	hCoV-19/England/CAMB-7AB1F/2020	CAMB-7AB1F
EPI_ISL_433842	hCoV-19/England/CAMB-7AB2E/2020	CAMB-7AB2E
EPI_ISL_433843	hCoV-19/England/CAMB-7AB3D/2020	CAMB-7AB3D
EPI_ISL_433844	hCoV-19/England/CAMB-7AB79/2020	CAMB-7AB79
EPI_ISL_433845	hCoV-19/England/CAMB-7AB88/2020	CAMB-7AB88
EPI_ISL_433846	hCoV-19/England/CAMB-7AB97/2020	CAMB-7AB97
EPI_ISL_433847	hCoV-19/England/CAMB-7ABA6/2020	CAMB-7ABA6
EPI_ISL_433848	hCoV-19/England/CAMB-7ABB5/2020	CAMB-7ABB5
EPI_ISL_433849	hCoV-19/England/CAMB-7ABC4/2020	CAMB-7ABC4
EPI_ISL_433850	hCoV-19/England/CAMB-7ABE2/2020	CAMB-7ABE2
EPI_ISL_433851	hCoV-19/England/CAMB-7ABF1/2020	CAMB-7ABF1
EPI_ISL_433852	hCoV-19/England/CAMB-7AC0D/2020	CAMB-7AC0D
EPI_ISL_433853	hCoV-19/England/CAMB-7AC1C/2020	CAMB-7AC1C
EPI_ISL_433854	hCoV-19/England/CAMB-7AC2B/2020	CAMB-7AC2B

GISAID Accession ID	Virus name	COG-UK
Pending	hCoV-19/England/CAMB-81FDD/2020	CAMB-81FDD
Pending	hCoV-19/England/CAMB-81FEC/2020	CAMB-81FEC
Pending	hCoV-19/England/CAMB-81FFB/2020	CAMB-81FFB
Pending	hCoV-19/England/CAMB-82006/2020	CAMB-82006
Pending	hCoV-19/England/CAMB-82015/2020	CAMB-82015
Pending	hCoV-19/England/CAMB-82024/2020	CAMB-82024
Pending	hCoV-19/England/CAMB-82033/2020	CAMB-82033
Pending	hCoV-19/England/CAMB-82042/2020	CAMB-82042
Pending	hCoV-19/England/CAMB-82051/2020	CAMB-82051
Pending	hCoV-19/England/CAMB-82060/2020	CAMB-82060
Pending	hCoV-19/England/CAMB-8207F/2020	CAMB-8207F
Pending	hCoV-19/England/CAMB-8208E/2020	CAMB-8208E
Pending	hCoV-19/England/CAMB-8209D/2020	CAMB-8209D
Pending	hCoV-19/England/CAMB-820AC/2020	CAMB-820AC
Pending	hCoV-19/England/CAMB-820CA/2020	CAMB-820CA
Pending	hCoV-19/England/CAMB-82103/2020	CAMB-82103
Pending	hCoV-19/England/CAMB-82121/2020	CAMB-82121
Pending	hCoV-19/England/CAMB-82130/2020	CAMB-82130
Pending	hCoV-19/England/CAMB-8214F/2020	CAMB-8214F
Pending	hCoV-19/England/CAMB-8216D/2020	CAMB-8216D
Pending	hCoV-19/England/CAMB-8217C/2020	CAMB-8217C
Pending	hCoV-19/England/CAMB-8218B/2020	CAMB-8218B
Pending	hCoV-19/England/CAMB-821A9/2020	CAMB-821A9
Pending	hCoV-19/England/CAMB-821B8/2020	CAMB-821B8
Pending	hCoV-19/England/CAMB-821C7/2020	CAMB-821C7
Pending	hCoV-19/England/CAMB-82200/2020	CAMB-82200
Pending	hCoV-19/England/CAMB-8222E/2020	CAMB-8222E
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Pending	hCoV-19/England/CAMB-756F5/2020	CAMB-756F5
Pending	hCoV-19/England/CAMB-75701/2020	CAMB-75701
Pending	hCoV-19/England/CAMB-7572F/2020	CAMB-7572F
Pending	hCoV-19/England/CAMB-7576B/2020	CAMB-7576B
Pending	hCoV-19/England/CAMB-7577A/2020	CAMB-7577A
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Pending	hCoV-19/England/CAMB-757F2/2020	CAMB-757F2
Pending	hCoV-19/England/CAMB-7580E/2020	CAMB-7580E
Pending	hCoV-19/England/CAMB-7582C/2020	CAMB-7582C
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Pending	hCoV-19/England/CAMB-75859/2020	CAMB-75859
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Pending	hCoV-19/England/CAMB-75886/2020	CAMB-75886
Pending	hCoV-19/England/CAMB-75895/2020	CAMB-75895
Pending	hCoV-19/England/CAMB-758A4/2020	CAMB-758A4
Pending	hCoV-19/England/CAMB-758B3/2020	CAMB-758B3
Pending	hCoV-19/England/CAMB-758C2/2020	CAMB-758C2
Pending	hCoV-19/England/CAMB-758D1/2020	CAMB-758D1
Pending	hCoV-19/England/CAMB-758E0/2020	CAMB-758E0
Pending	hCoV-19/England/CAMB-758FF/2020	CAMB-758FF
Pending	hCoV-19/England/CAMB-78522/2020	CAMB-78522
Pending	hCoV-19/England/CAMB-78768/2020	CAMB-78768
Pending	hCoV-19/England/CAMB-78759/2020	CAMB-78759
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Pending	hCoV-19/England/CAMB-79943/2020	CAMB-79943
Pending	hCoV-19/England/CAMB-79961/2020	CAMB-79961
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