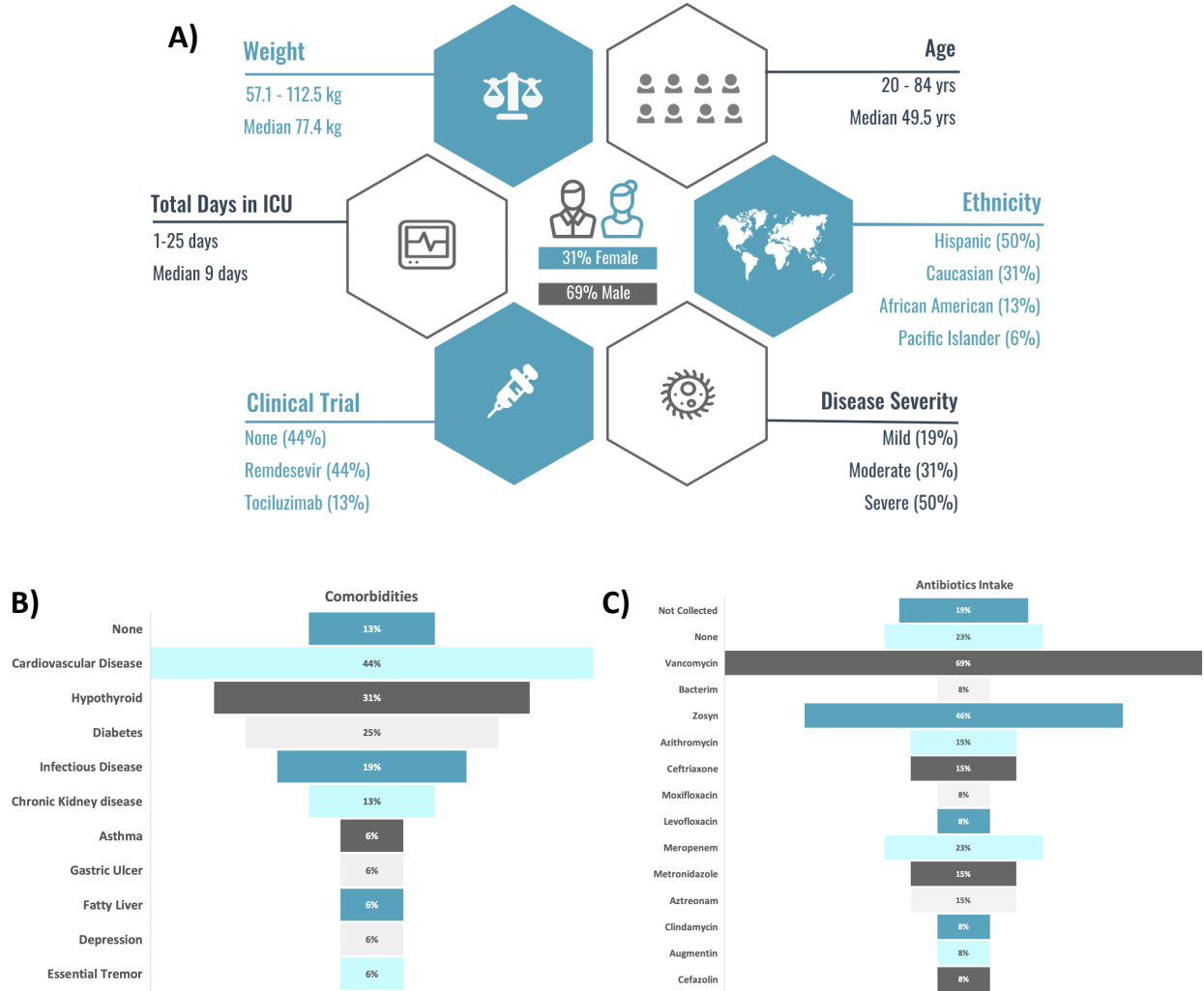


876

877 **Supplementary Materials**

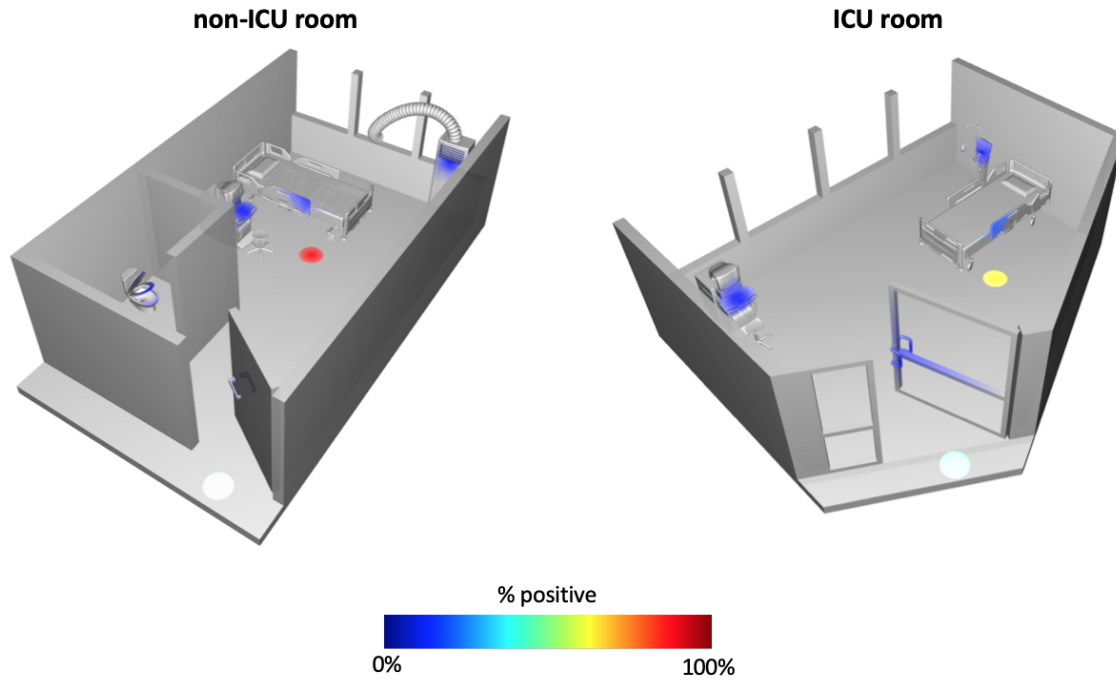
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878

879 **Figure S1.** Patient (n=16) demographics (A), antibiotics intake (B), comorbidities (C).

880



881

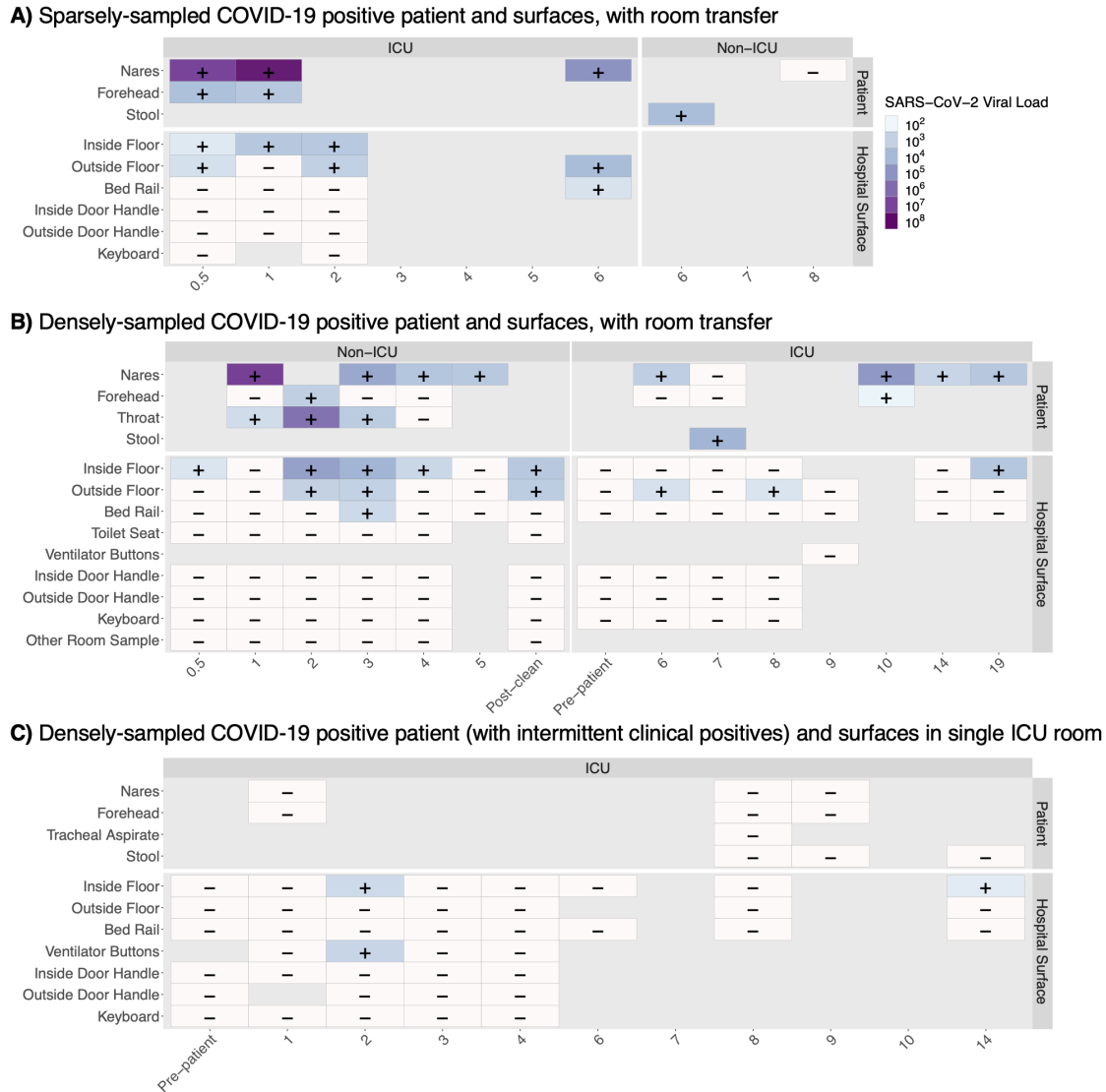
882 **Figure S2.** Ili' spatial mapping of standard hospital (non-ICU) room and intensive care unit (ICU)

883 room. Heatmap depicts the percent of samples collected at each site that were positive for SARS-

884 CoV-2.

885

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886

887 **Figure S3.** Snapshot of variability in longitudinal sample collection and SARS-CoV-2 viral load

888 per swab between patients and their hospital rooms, starting at patient admission time. For samples

889 where SARS-CoV-2 was detected (+), a darker color indicates a higher viral load. White boxes

890 represent samples with no detectable virus (-). Patient **A** was admitted 12 days after symptom onset

891 and was moved to a general surgery unit room after 6 days in the ICU. Patient **B** was admitted 8

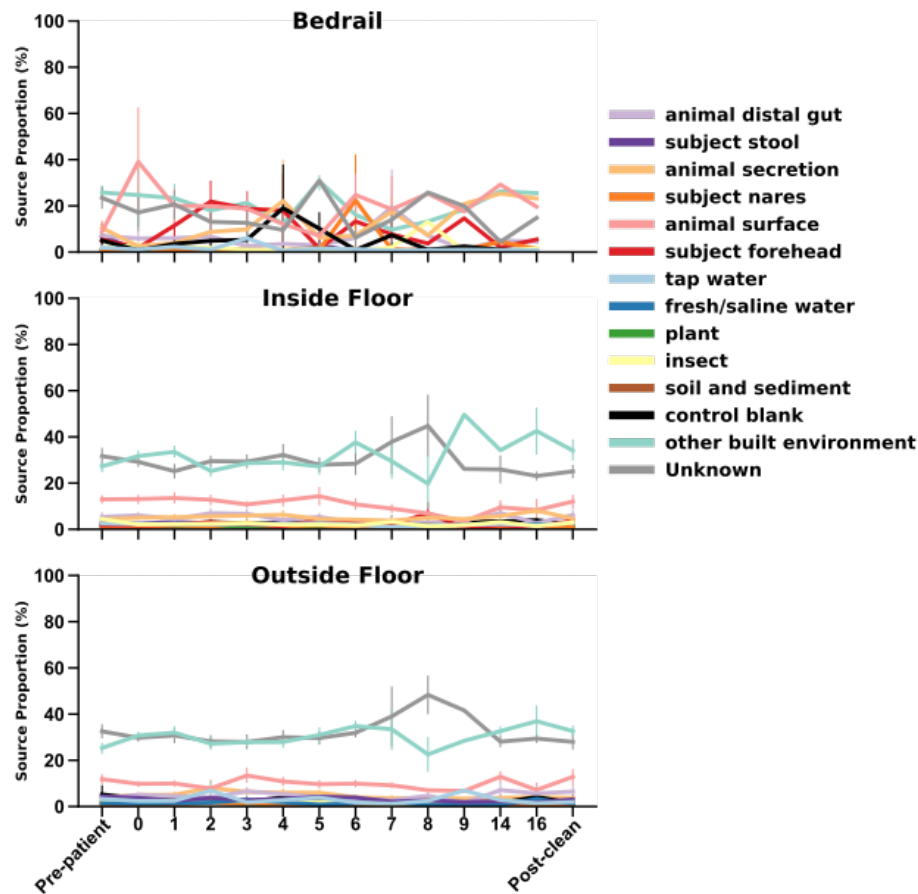
892 days after symptom onset and moved from general surgery to the ICU, where they were intubated.

893 Patient **C** was admitted to the ICU 9 days after symptom onset, and despite having symptoms

894 consistent with COVID-19 repeatedly tested negative by clinical nasopharyngeal swab; their only
895 clinical positive came from a tracheal aspirate sample mid-way through their stay in the ICU.

896

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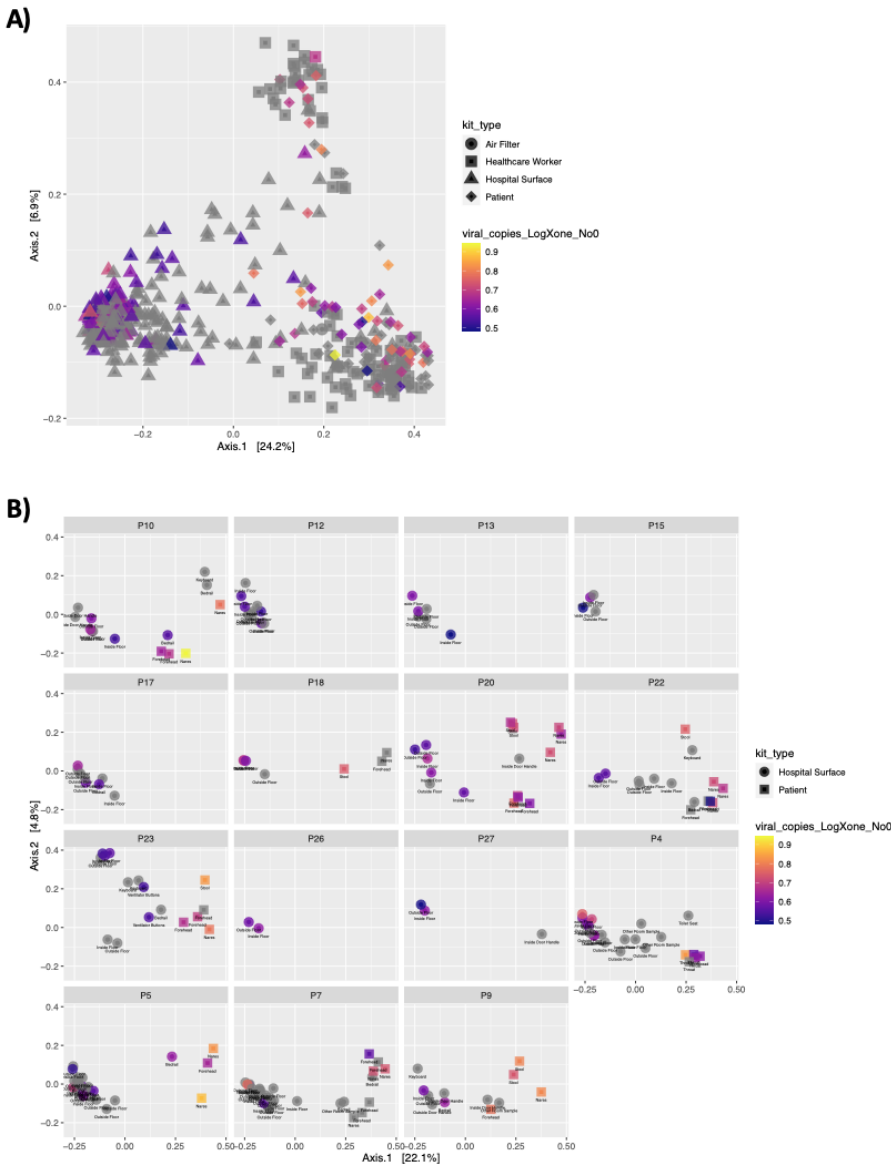


898

899 **Figure S4.** Source tracker on meta-analysis data. Floor samples formed a distinct cluster in this
900 dataset; source tracking (31) with floor samples (n=215) as the sink and meta-analysis samples
901 (n=1,990) as the source reveals that these floor samples match other built environment samples.
902 The other built environment samples included in this meta-analysis were mostly floor (27.7%),
903 faucet handles (19.6%), and gloves (15%).

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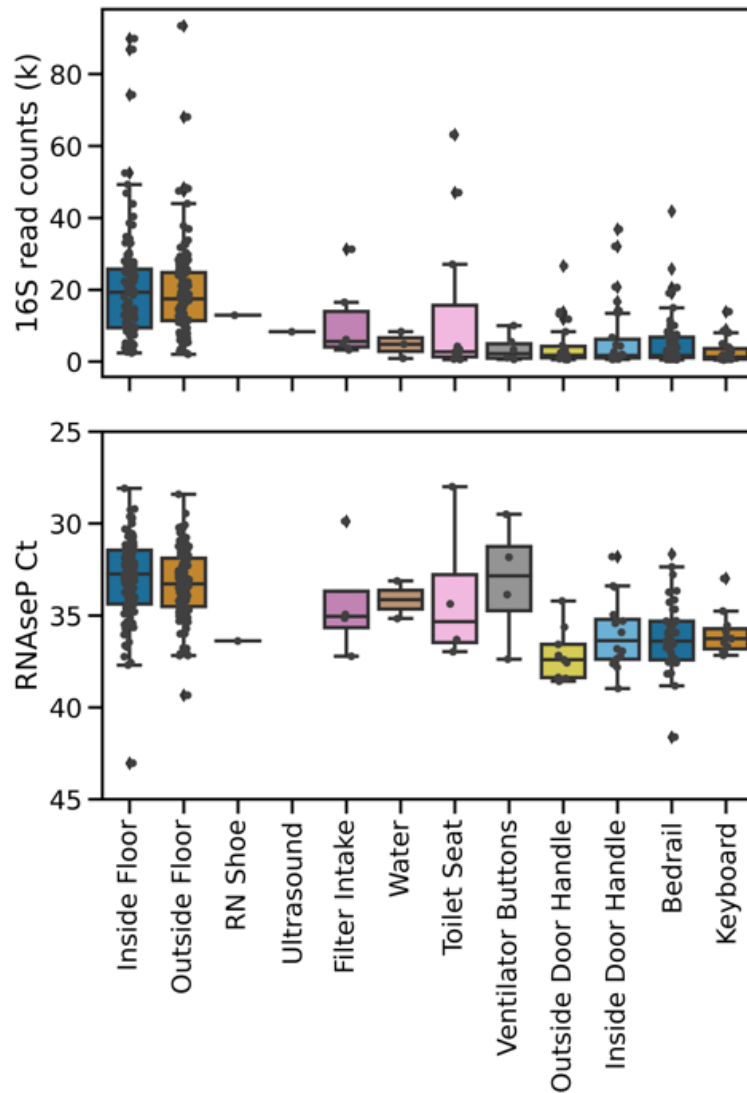


906

907 **Figure S5.** Beta-diversity has a statistically significant but weak correlation with viral load. PCoA
908 of unweighted UniFrac distances between samples, with SARS-CoV-2 positive samples colored
909 by viral load across the whole dataset (A) and subset by each patient with at least one surface
910 positive (B). Statistical analysis performed with Adonis (PERMANOVA) found a small ($R^2 <$
911 0.01) but significant (p -value = 0.043) association between beta-diversity and viral load across all
912 samples.

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914

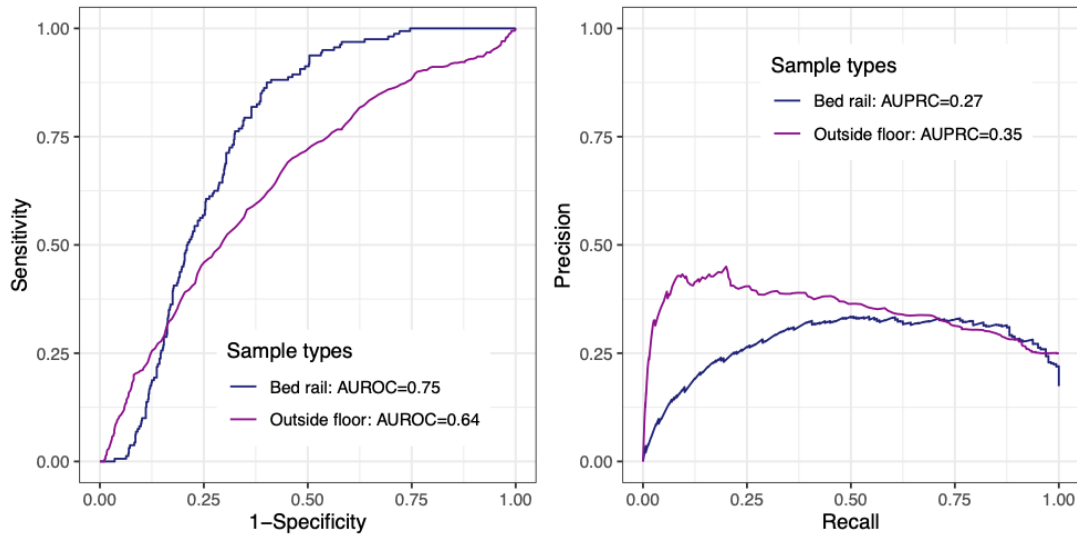


915

916 **Figure S6.** Bacterial (16S rRNA gene amplicon sequencing read count) and human biomass

917 (RNase P Ct) is higher in floor samples than other surface sample types.

918

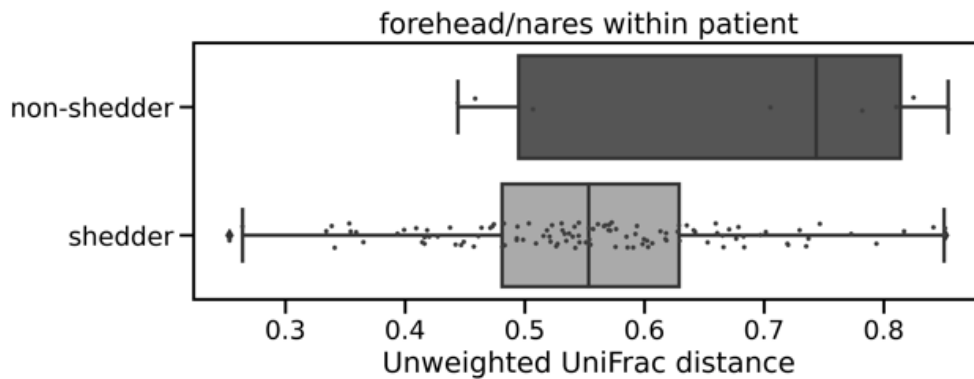


919

920 **Figure S7.** Random Forest classifier performance with 100-fold cross validation in the outside
921 floor (n=108; 81 not detected vs. 27 positives) and bed rail samples (n=46; 38 not detected vs. 8
922 positives).

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924



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927 **Figure S8.** Unweighted UniFrac distance between forehead and nares samples from the same host.
928 ‘Shedder’ (n=12) is a patient who had detectable virus on the surface in their room and ‘non-
929 shedder’ (n=4) did not. Bootstrapped Kruskal-Wallis p-value is 0.003.

930

931

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933

934 **Table S1.** Hospital surface materials and cleaning practices.

Surface	Material	Cleaning schedule	Cleaning material	Who touches
Inside floor	Vinyl tile	Variable, infrequent (~1/week)	Bleach	Universal – health care workers, visitors, patient if ambulatory
Outside floor	Vinyl tile	Variable, infrequent (~1/week)	Bleach	Universal – health care workers, visitors, patient if ambulatory
Inside door handle	Plastic in ICU; Steel outside ICU	Variable, infrequent (~1/week)	Hydrogen peroxide wipes	Universal – health care workers, visitors
Outside door handle	Plastic in ICU; Steel outside ICU	Variable, infrequent (~1/week)	Hydrogen peroxide wipes	Universal – health care workers, visitors
Bed Rail	Plastic	Variable, health care workers wipe down intermittently typically once at the start of shift (~2x daily)	Hydrogen peroxide wipes	health care workers, patient
Keyboard	Plastic	Variable, health care workers wipe down intermittently typically once at the start of shift (~2x daily)	Hydrogen peroxide wipes	health care workers
Air vent intake	Plastic	Variable, infrequent (~1/week)	Hydrogen peroxide wipes	health care workers
Ventilator buttons	Plastic	Variable, will be wiped down after no longer needed by patient (average 2-3 times a week)	Hydrogen peroxide wipes	health care workers (specifically respiratory therapists, MD)
Toilet seat	Ceramic	Variable, at least deep cleaned after patient discharged (average 2-3 times a week)	Bleach	Patient, visitors

935

936

937 **Data file S1.** Statistical analysis of pairwise differences in log-ratio across sample types from

938 figure 3D trajectory plot.

939

940 **Data file S2.** Top 100 random forest importance ranks and GreenGenes taxonomy from nares,

941 forehead, stool, and inside floor samples.