Extended data 2

1. Illnesses swabbed and tested for HCoV by season
2. Evaluation of evidence for immunity against homologous infection

1 Illnesses swabbed and tested for HCoV by season

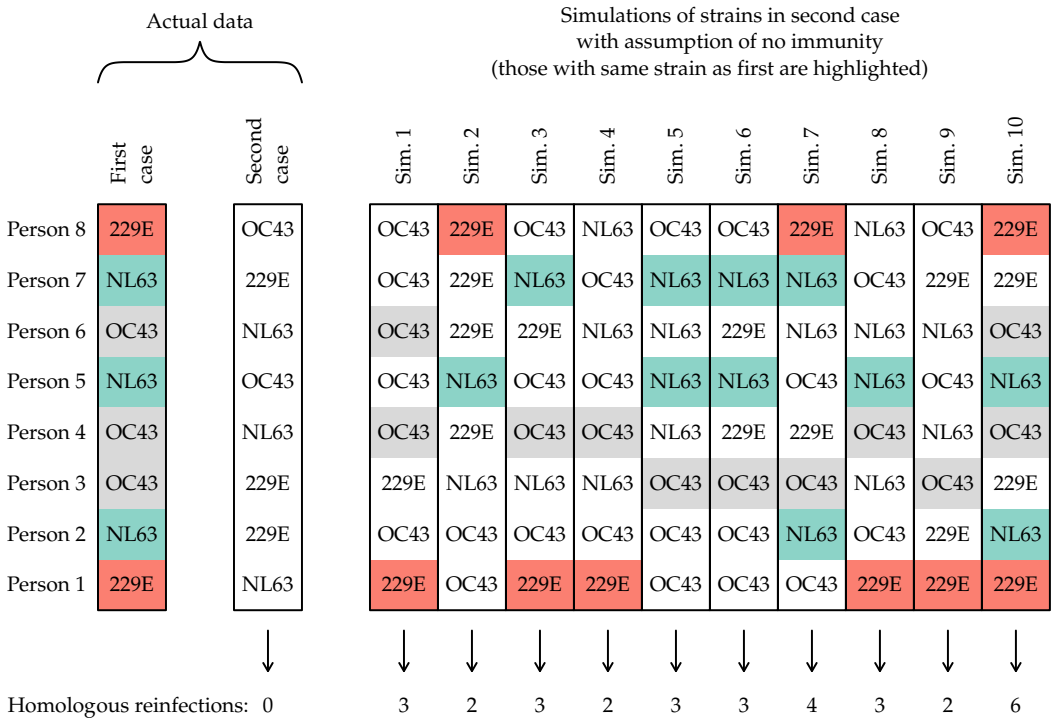
Table S1. Illnesses swabbed and tested for HCoV by season

Season	Illnesses n	Swabbed Illnesses n (%)	Swabbed for HCoV n (%)
Nov 2006 - Mar 2007	286	254 (88.8%)	254 (88.8%)
Nov 2007 - Mar 2008	587	361 (61.5%)	361 (61.5%)
Nov 2008 - Mar 2009	483	404 (83.6%)	404 (83.6%)
May 2009 - Sep 2009	149	85 (57.0%)	85 (57.0%)
Oct 2009 - Feb 2010	1716	1496 (87.2%)	240 (14.0%)
Nov 2010 - Mar 2011	526	510 (96.9%)	129 (24.5%)

2 Evaluation of evidence for immunity against homologous infection

The purpose of this analysis was to answer the question "among participants with two confirmed HCoV infections, how likely is the observed number of homologous reinfections if participants had no immunity?" We addressed this question by assuming that the distribution of strains among participants with a second infection would be the same as in the entire cohort (i.e. the first infection had no bearing on the second one), and then simulating 100,000 scenarios of the strains causing the second infection. The following figure shows the first ten simulations.

Fig. S1: First ten simulations to evaluate evidence of homologous immunity



We then looked at the number of homologous reinfections in each simulation, and the probabilities of 0-8 homologous reinfections occurring in the 8 participants. The actual number of homologous reinfections was zero. The probability of this assuming no immunity was 3.48%. This value can also be calculated as the product of the probabilities of each participant's second infection being a different strain to the first infection (i.e. 1 minus the probability of the first strain, derived from the whole cohort).

Fig. S2: Probability of number of homologous reinfections in 8 participants, with the assumption of no immunity