

How does the built environment affect the spread of COVID-19 in care homes?

WHY WE CARRIED OUT THE STUDY

Since the beginning of the COVID-19 pandemic, many care homes have experienced infections and outbreaks amongst their staff and residents. We know very little about how the care home building itself and its facilities (the built environment) contribute to the risk of infection. For instance, what is the effect of better ventilation, central heating, the layout of a care home and access to garden spaces on numbers of COVID-19 infections? This information could be used to improve the design of care home buildings to make it more difficult for infections to spread in this environment.

QUESTIONS THAT WE ASKED

Question 1: Which building factors increase the likelihood of COVID-19 coming/ getting into a care home?

Question 2: Which building factors increase the likelihood of COVID-19 spreading in a care home once it has been introduced?

WHAT WE DID

Our study ran between 1st September 2020 and 31st March 2022. Home managers and maintenance staff from 134 care homes across England filled out a survey on the building and facilities. This included questions on care home size and layout, ventilation, indoor temperatures, and indoor humidity. We also collected information on the numbers of COVID-19 infections and vaccination in staff and residents in these care homes and in the local area.

WHAT WE FOUND

The survey showed that there is a lot of variety in care home buildings. Most care homes that were included were for profit, although less than 1 in 10 were not-for-profit homes. Four out of 5 had been converted into care homes whereas 1 in 5 were purpose-built. The average number of bedrooms was 55, and more than half of care homes had at least two storeys. Although bathrooms were very rarely shared between residents, in almost a quarter staff and residents shared toilet facilities. Almost all of them had outdoor space and used central heating. Around 1 in 10 reported condensation and the most common type of ventilation was air conditioning.

Which factors increase the likelihood of COVID-19 coming/getting into a care home?

The only factor that was found to be relevant was the numbers of COVID-19 infections in the local area outside of the care home. The higher the number in the local area the greater the likelihood that infection would be introduced into the care home.

Which factors increase the likelihood of COVID-19 spreading in a care home?

COVID-19 infection was more likely to spread in larger care homes, those with warmer indoor temperature, and those with drier air. Having more storeys in their building made it less likely that the infections spread between residents. This was probably because homes found it easier to separate residents who were infected from those who were uninfected on separate floors of the building.

GLOSSARY

Care Home

A residential facility for people who need extra help with looking after themselves.

Care Home Resident

A person who lives in a care home.

COVID-19

Coronavirus disease (COVID-19) is a highly contagious respiratory infection caused by the SARS-CoV-2 virus.

Infection

The invasion of the body by an infectious agent like bacteria or a virus.

Older Adult

A person aged 65 years and over.

Vaccine

A product which stimulates a person's immune system to protect them from a specific disease.

WHAT ARE THE IMPLICATIONS?

These results suggest that the built environment does not have a significant effect on whether COVID-19 infection gets into a home. However, there are features of the care home design that could be changed and that may reduce how much the infection spreads once it is in. For example, care homes could ensure that they can isolate infected residents and improve air quality.

This is the largest survey in England that has focussed on how the built environment affects infection risk. More studies are needed to look at what changes to the care home building work best to reduce infection. To make these studies as applicable to real-life as possible, they should be designed with people who work in the care sector who have the best understanding of how care home buildings are being used.

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Which features increase the risk of COVID-19 infection COMING INTO the care home?

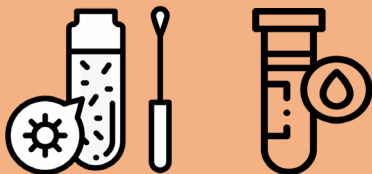
Which features increase the risk of COVID-19 infection SPREADING through the care home?



BUILDING SURVEYS



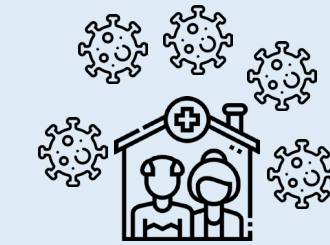
COVID-19 VACCINATIONS



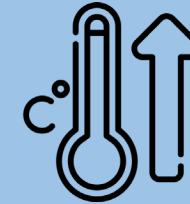
COVID-19 TEST RESULTS

We collected information from 134 care homes

We wanted to find out which care home features made COVID-19 infection more or less likely



COVID-19 RATES OUTSIDE

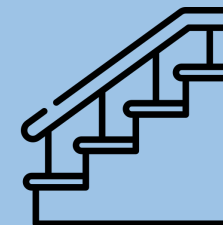
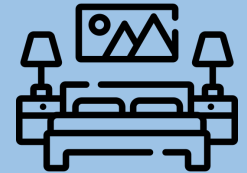


WARMER INDOOR TEMPERATURE



DRIER INDOOR AIR

MORE BEDROOMS



FEWER STOREYS

We analysed the information to find the most important features