Residential Long-Term Care and COVID-19: Role of the Built Environment in Balancing Infection Control and Quality of Life

Key Findings and Recommendations 2022

10.4.7 Assistive Technology, Therapeutic Technology & ICT

Excerpt from report - For the full report see **www.residentiallongtermcaredesign.ie/resources/**

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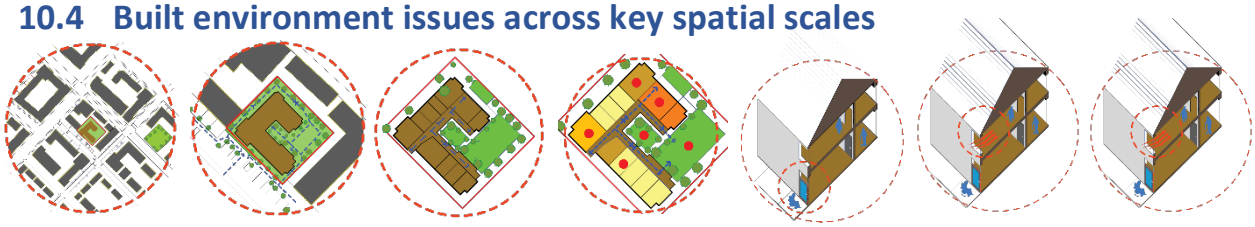
10.4 Built environment issues across key spatial scales



10.4.7 Assistive Technology, Therapeutic Technology, and ICT

35: Fish tank in Millbrook Manor providing a point of interest and a therapeutic atmosphere.

a) Hygiene technology

High priority infection control issues

Automated room disinfection systems may be effective as a COVID-19 related infection measure when used to decontaminate surfaces. Studies by Franke et al. (2021) have shown the effectiveness of automated room disinfection systems using ozone and an integrated nebulizer (for controlled increase of room humidity) against surrogates for SARS-CoV-2, therefore pointing to potential solutions for COVID-19 related disinfection.

However, there is growing evidence that contact transmission is generally lower risk, and therefore automated room surface disinfection systems, and automatic door handle sanitisers, may not be priority issues in the context of COVID-19.

High priority infection control issues

No research found in rapid review related to infection control in this area.

b) Assistive technology to support independence, health, comfort, and safety

Key design considerations for quality of life

Adjustable ambient lighting represents a therapeutic technology that can alleviate an austere and overtly clinical setting by changing the lighting colour temperature to create either a calming, restful, or stimulating lighting environment, as required (Grey et al., 2018).

Universal Design issues: Assistive technology is often used in terms of accessibility and safety in care settings. For instance, the main application of technology for people with dementia relates to safety, including assistive technology; ambient assisted living, and telecare or telehealth (Grey et al., 2015). The use of monitoring equipment (Andrews, 2013), and technology for the prevention and monitoring of falls (Cameron et al., 2012) is also important.

While the benefit of automatic sensor taps, automatic opening doors, and other 'no touch' features may be marginal in terms of COVID-19 infection control, these features have benefits in terms of accessibility for a wide range of setting users.

Stakeholder feedback: Interviewees believed that assistive technology should become more prevalent in RLTC settings.

High Priority infection control issues

No research found in literature review related to infection control in this area.

c) Healthcare related ICT for contact/appointments with external health and social care professionals

Key design considerations for quality of life

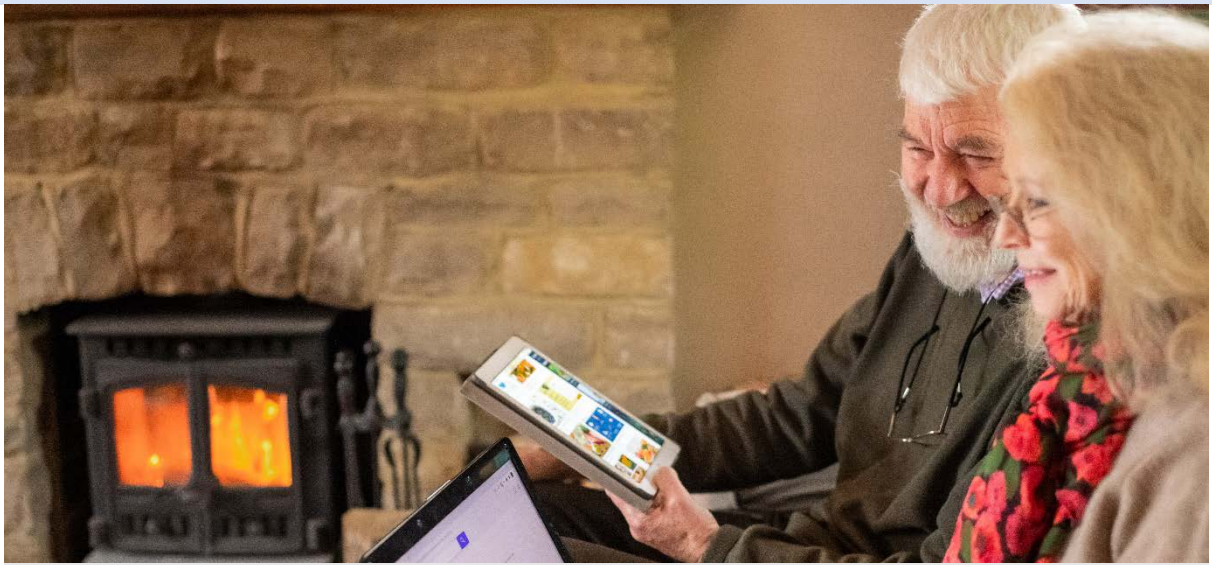
Healthcare technology is always evolving, and new innovations such as robotic telepresence (Becevic et al., 2015) where remote controlled mobile robotic devices allow doctors to interact with other staff or patients from a distance. While this may be beneficial and effective in terms of delivering medical care, it is worth considering how such technology will be perceived by a person with dementia (Grey et al., 2018).

Stakeholder feedback: Interviewees believed that telemedicine has been more prevalent due to COVID-19 but warned that it cannot replace person-to-person interaction.

High Priority infection control issues

Technology can help residents access healthcare that may not be otherwise available during isolation or quarantine. Davidson and Szanton (2020), welcome advances made in the context of COVID-19 around the expansion of telehealth and telemedicine services to nursing homes, which may provide opportunities to improve care in the longer term. Grindle (2021) points to the use of technology, in particular platforms supporting the audio and video assessment of patients that reduce the risk to the patient or the wider nursing community by reducing foot fall into the setting. Referring to her own experience, she describes a video consulting platform called 'Attend Anywhere' that has provided positive outcomes for patients, while also providing cost efficacy.

d) ICT to communicate with families and friends:



36: Tablets and other devices for communication with family and friends.

Key design considerations for quality of life

Technology can assist in social networking that enables residents to communicate with friends and family who are not able to visit on a regular basis (Department of Health (UK), 2015).

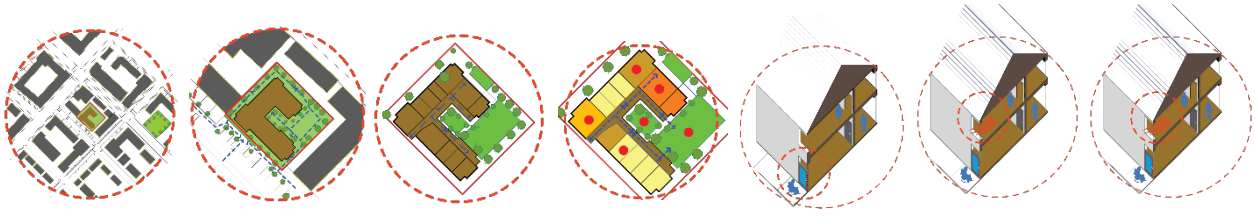
Stakeholder feedback: Some family members from the Irish case study sites note that phone coverage could be very poor in some settings, but that video calls during restrictions were very important. Many interviewees stated that Broadband/Wi-Fi throughout facilities is very important. They also noted the importance of tablets for video calls.

High Priority infection control issues

The secondary impacts of COVID-19 included isolation, loneliness, stress, and lack of engagement with family and friends. In this regard, information, and communications technology (ICT) has been promoted as a way to mitigate at least some of these impacts. There was no mention in literature reviewed about infection transmission from shared devices, further reviews on this issue may be required.

Due to the potential high levels of disability, frailty, or cognitive decline in many RLTC settings, technology must be designed so it can be accessed, understood, and used to the greatest extent possible by all RLTC residents. In this regard, Ickert et al. (2020) propose that technology should:

- Enable residents to independently make connections. For example, a wall-mounted tablet screen where residents could simply press an image of their family member to make a video call.
- Be appropriately modified for their unique needs. For example, large screens with easy-to-use visuals, loud-speakers or audio that connects directly to hearing aids.
- Provide robust technological infrastructure to support ongoing virtual connections. In older buildings, this may include things like wall-mounted Wi-Fi extenders.

Key recommendations – Technology and ICT

- Ensure building structure and materials facilitate Wi-Fi technologies, to allow for contact with family and friends via. ICT, and access to telehealth such as remote consultations with GP, etc.
- While Wi-Fi may be suitable for many technologies, the provision of CAT 6 ethernet cables will ensure a stronger and more reliable connection, which may be vital during important health assessments.
- For resident bedrooms consider the following technologies: infrared fall detection devices; pull-cord emergency call unit; movement sensors or bed pressure mats that turn lights on automatically at night if a person needs to use bathroom or move about.
- Consider how the use of automatic sensor taps, automatic opening doors, and other ‘no touch’ features can help with infection control and accessibility.
- Careful use of technology such as silent staff call systems to reduce noise within settings.
- Ensure technology is accessible and usable by all residents including those with physical, sensory, or cognitive disabilities.
- Where possible, encourage residents to use their own technologies (such as smart phones and tablets) that they are familiar with.