An exploratory study of visitation shelters for long-term care homes

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Research article

An exploratory study of visitation shelters for long-term care homes

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Abstract

The province of Manitoba provided 88 long-term care (LTC) homes with 105 external visitation shelters to facilitate resident visits during the pandemic. Shipping containers were fitted with finishes, furnishing and ventilation systems, and connected to LTC homes. This research was conducted using document analysis, government communications, surveys, and field measurements to learn about the visitation shelters related to their: design, implementation, performance, and user experiences. Media and government information provided many details on design/implementation considerations, utilization rates, and challenges. User surveys revealed that shelters made a difference but were institutional/sterile and not conducive to supporting meaningful connections. All data indicated that the shelters were under-utilized. Field measurements indicated substantial air exchange, but high ventilation-associated noise. The lighting colour was appropriate, but lighting levels were relatively low. This study describes the advantages and disadvantages of using external visitation shelters during a pandemic to facilitate LTC visits while attempting to prevent infection.

Keywords: COVID-19, Visitors, Family, Nursing homes, Infection Prevention

Introduction

When the pandemic began, it quickly became apparent that residents in long-term care (LTC) homes were at the highest risk of illness and death due to the coronavirus disease 19 (COVID-19) due to their inherent susceptibility to the virus, and their congregate living situations (Ouslander & Grabowski, 2020). For this reason, directives were given to implement temporary restrictions on visitors entering LTC homes to prevent the spread of the virus from the community into homes (Public Health Agency of Canada, 2020). Unfortunately, these restrictions, resulted in other negative consequences for residents, including: reduced nutrient intake, decreased activities of daily living, increased pain, depression, anxiety, reduced cognition, and responsive behaviours (Hugelius et al., 2021; Thirsk et al., 2022; Wister & Kadowaki, 2021). While alternative methods for visiting (virtual, window and outdoor visits; Abbasi, 2020; Shaw & Csikai, 2023; Chirico et al., 2023) were instituted in Manitoba, as was done around the world, some of these methods were not deemed to be a replacement for visiting in-person nor are outdoor visits appropriate or safe in all seasons or environmental conditions.

To partially alleviate the situation, the province of Manitoba in Canada, announced in June 2020 that it wanted to provide external visitation shelters for personal care homes (LTC homes with the highest level of care; Manitoba Government, 2020c). This was done to ensure that visits with residents could happen in all seasons, even through the harsh extremes of summer and winter conditions, without visitors entering the homes.

The purpose of this project was to determine:

1. What was the trajectory of the roll-out of these visitation shelters in the context of the pandemic?
2. How were the visitation shelters received by the various users?
3. Did they perform as planned?
4. Did they help residents and families/friends as intended?
5. What could be recommended to improve this type of strategy for providing alternative visiting options in the future?

We hypothesized that while this strategy might have provided some benefits for visitors and residents, challenges were likely experienced.

Methods

Context

Manitoba is a large province geographically (almost 650,000 km^2) with a low population density (2.5 people/km^2), and a total population of about 1.5 million people (Statistics Canada), with only one large population center in and around the capital city of Winnipeg. With its position in the middle of Canada, Manitoba has an extreme continental climate with a possible temperature range of hotter than 30 degrees C in the summer and colder than -30 degrees C in the winter (Wikipedia).

Early in the worldwide pandemic, Manitoba had few COVID-19 cases and deaths. However, in the fall of 2020, a devastating rise in community cases led to large numbers of deaths, particularly in the long-term care setting, which

continued into early 2021, resulting in Manitoba experiencing the greatest rate of COVID-19 deaths in Canada during the second wave (Kives, 2021). For more details on COVID-19 waves see Figure 1.

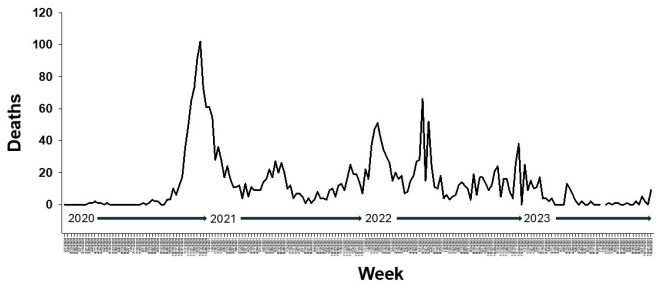

Figure 1: Deaths associated with COVID-19 in Manitoba during the pandemic.

Design

To explore the research questions this study used multiple methods: document analysis, closed- and open-ended survey questions with users of visitation shelters, and environmental conditions measured inside a visitation shelter.

Documents

The internet was searched for documents related to Manitoba visitation shelters. This included retrieving media stories. Government documents from websites were also important to learn about the initial design considerations and implementation. When information was not publicly available, requests were made to relevant government departments.

Surveys

Surveys were created to learn more about visitation shelters from the perspectives of: 1) family and friends who used the visitation shelters to visit residents, and 2) those working with them (management, staff, and volunteers). The survey aspect of the study was approved by the Research Ethics Board at the University of Manitoba (#HE2022-0069). Each survey was tailored to the specific respondent group. Recruitment occurred via email messages being sent to LTC homes by non-profit organizations working in the sector, as well as through Centre on Aging email newsletters, and social media.

All participants provided consent before completing the survey. Survey Monkey questionnaires were designed to take between 10 and 20 minutes. We received survey responses between April and August of 2022.

Indoor environmental quality

Measurements were made inside a visitation shelter for air quality (CO_2), temperature, humidity, lighting, and acoustics, during a simulated visit. CO_2, temperature, and relative humidity were measured by an Aranet4 device, positioned on a table in the middle of the room. Lighting quality was measured using a Konica Minolta CL-70F Illuminance Meter in various locations. Readings were taken for: brightness (lighting level), correlated colour temperature (colour hue) and the colour rendering index (ability of the lighting to show objects in their true colours). Ambient sound level measurements (in dBA) were collected using a NIOSH SLM application, with the microphone positioned on the table between the two occupants.

Results

Documents

Initial government announcements and public consultations. The goal of the Manitoba Government regarding visitation shelters was to develop a solution that would provide residents and visitors with an accessible and easily cleaned space that would protect everyone from the elements while providing the opportunity for quality connections (Manitoba Government, 2020c). The Government sought public input through online surveys. Based on government analyses, seven themes emerged from the 270 responses (90% family/friends, 10% workers in LTC; Table 1): atmosphere, accessibility, amenities, layout, infection prevention, safety, and sustainability (Engage MB, 2020).

Announcement with design details. In September 2020, the Manitoba Government announced they had awarded a construction tender (Manitoba Government, 2020b), with the following details shared about the shelters to be constructed:

- Single-use shipping containers (13 m long)
- Visiting space for one resident and up to 5 visitors
- Visitors enter from the outside
- Residents enter through an enclosed link attached to the home
- Electrical and mechanical systems designed so they are functional all year round via heat and air conditioning units
- Independent ventilation systems that:
    * Create positive pressure to prevent air from the home from entering the shelter
    * Ensure required air changes of fresh air
    * Direct airflow away from residents for added protection
- Interior finishes that allow for easy cleaning

To expedite the permitting process for the temporary visitation centers, the government sent an information bulletin to municipalities to work with those applying for permits to find ways to achieve by-law compliance while ensuring public safety (Manitoba Government, 2020a). Photos of

Table 1: Themes from input on what Manitobans wanted from visitations shelters, presented in order of importance to respondents, based on the number of times they mentioned key items. Data from a government survey (Engage MB, 2020).

Theme	Number of responses	Examples
Atmosphere	94	welcoming/cozy spaces, home-like, sound barriers for privacy, décor that is warm and cheerful, windows with good lighting, climate-controlled
Accessibility	70	getting to shelter in poor weather, need for ramps/handrails
Amenities	46	washrooms for visitors, technology (Wi-Fi, smart TV, computers), comfortable seating
Layout	28	space for: 1) multiple visitors per residents without feeling crowded, 2) large family visits for special occasions, 3) hospital beds or medical equipment
Infection prevention	27	technology for disinfection, visitor screening and air sanitation, easy to clean surfaces, plexiglass barriers so no masks needed, separate screening area for visitors, hand hygiene sinks

shelters at LTC homes are shown in Figures 2, 3 and 4 for urban and rural community homes.

Figure 2: A winter view of a small (30 bed) rural personal care home.

Figure 3: These visitation shelters were located outside an urban personal care home (150 beds).

Figure 4: These shelters were located outside a small-town personal care home (171 beds).

Policy and Procedure documents. Policies related to visitation shelters included: visits were by pre-arranged appointments only; visitors had to sign in and out; screening of visitors had to be done before entry; medical masks had to be worn by all visitors; residents were to wear masks (with several exceptions); hands were to be sanitized, and visitors had to maintain a 2-meter separation at all times (Manitoba Government (Shared Health), 2021).

Implementation phase reporting. The visitation shelters were supposed to open by November 2020, but there were several delays (Brock, 2020). Reasons for delays in the arrival and/or opening of visitation shelters included: construction sites being affected by COVID-19, delays in receiving supplies, and outbreaks at some homes (Sanders, 2020). Another challenge for homes in opening the visitation shelters included recruiting staff to facilitate the visits (Levasseur & Barghout, 2021).

In terms of usage information, one large health authority stated that the new "visitation rooms" were only used on average 2.7 times per day from December 2020 to February 2021 (Levasseur & Barghout, 2021). In this same article, a resident reported being exasperated by not even being offered to use a visitation shelter that had been added to her LTC home. Media reports cited various statistics on usage in 2021 (e.g., Slark, 2021).

According to government data (personal communication), 105 external visitation shelters were installed at 88 personal care homes in Manitoba (see Figure 5 for locations), with almost all of these having one, a few having two, and

Table 2: Numbers of visits in both indoor and external visiting spaces by health region across different time points in the pandemic.

Dates	IERHA*	PMH†	SH-SS‡	WRHA§	NHR‖	Total
October 2022 to March 2023	56	0	0	426	0	482
April to September 2022	128	296	88	**8,102	0	8,614
October 2021 to March 2022	654	1,932	2,786	15,727	1,025	22,124
April to September 2021	1,863	4,095	4,382	21,520	**	31,860

Note: *IERHA = Interlake-Eastern Regional Health Authority, †PMH = Prairie Mountain Health, ‡SH-SS = Southern Health/Santé Sud, §WRHA = Winnipeg Regional Health Authority, ‖NHR = Northern Health Region, **Incomplete data

one having three shelters. Some homes were far from the capital city (up to 850 km). In addition to the external visitation shelters that are the focus of this study, 57 internal visitation rooms were created at 45 homes. Government data on visits by health region (personal communication) indicated at least 63,080 visits in both internal and external visitation spaces in the two years that utilization data were collected by the province (see Table 2). Unfortunately, Government data were not separated by the type of visiting space (internal versus external), and some data were missing for some time points for all health regions, so this is an underestimate. However, the missing data occurred where few homes were located (Northern Health Region) or when visits had waned. Most visits (85.6%) occurred in the first year, with almost no visits happening in the last reporting period (fall of 2022 to winter of 2023).

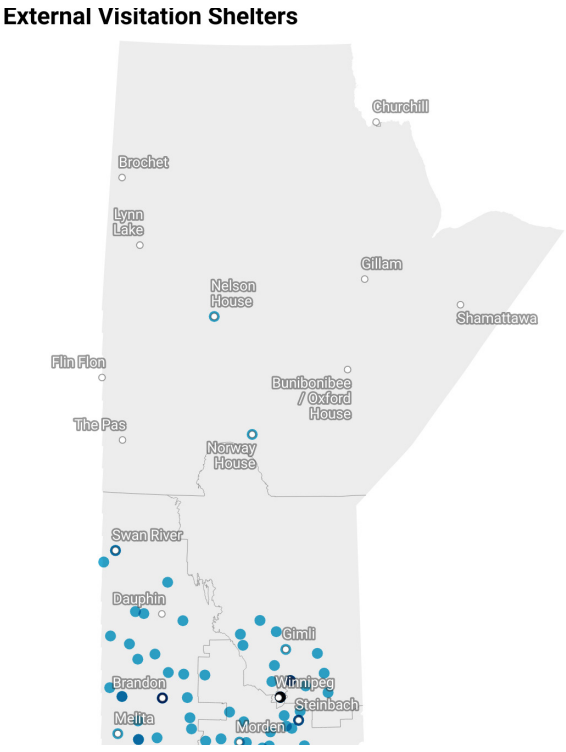

Figure 5: Locations of external visitation shelters (blue dots) across the province of Manitoba, with select place names (white dots).

Survey findings

Visitors. Twenty participants responded (15 women, one man, and the rest preferred not to say or skipped the question). The participants' ages ranged from 18 to 29 years to 80 to 89 years. The visitors reported their relationships to the resident being: child (45%), friend (10%), grandchild (10%), sibling (10%), volunteer (5%), niece/nephew (5%), spouse/partner (5%), and other (10%: mother and son-in-law).

Participants were asked about the average number of times they visited their loved one/friend before COVID-19 (March 2020) and when the visitation shelters were open for visits. There was a reduced frequency of visits after the visitation shelters were opened (Figure 6). Before COVID-19, many participants visited once a week (26%) and 21% visited 2 to 3 times per week. When the visitation shelters were opened, many visited less than once a month (47%), 16% visited once a week, and only 5% visited 2 to 3 times per week.

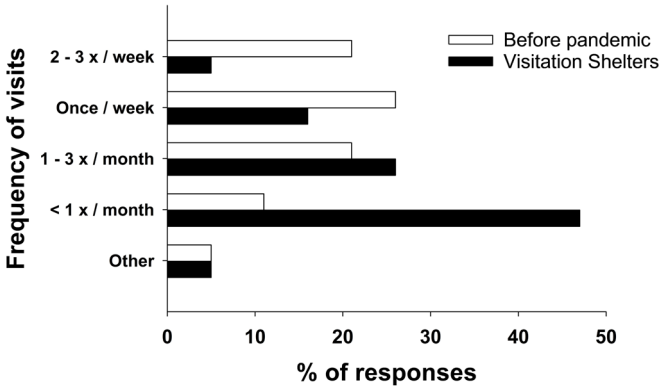

Figure 6: Frequency of visits before the pandemic and when there were visitation shelters, as reported by family/friends.

Participants were also asked about the number of visitors they felt could safely and comfortably visit their family member/friend at one time. Most reported two visitors (58%), while 16% said one, 16% said three, 5% said four, and 5% were unsure.

About 74% of visitors said they were 'very comfortable' with the safety measures in place for their visit, 22% were 'somewhat comfortable', and the remaining 6% were 'very uncomfortable'. Visitors primarily described the visitation shelter's décor and atmosphere as 'institutional/sterile' (84%), while 12% indicated 'inviting/welcoming', and 6% picked 'cheerful'. The majority (61%) reported it was 'very important' that the visitation shelter has a warm, welcoming, and cheerful space and décor, with 17% saying 'important', 17% 'moderately important', and 6% 'not important'.

In Table 3, participants' ratings of the noise/acoustics, temperature, and lighting are shown. In general, the respondents felt that the conditions were 'good', although this varied by the various environmental conditions examined, with lighting having the most positive feedback (83% 'good'). More than 30% felt that there were some issues with the acoustics.

Table 3: Participant ratings of noise/acoustics, temperature, and lighting in the visitation shelter

	Good	Fair	Poor		Unsure	It varied
Noise/ Acoustics	Heard loved one/friend and did not have to talk over any noise	Some background noise, but did not impact our visit	Could not hear my loved one/ friend and had almost to yell to be heard		Did not notice	
	59%	18%	12%		6%	12%
Temperature	Comfortable with temperature	Preferred different temperature but did not impact visit	Too hot	Too cold	Did not notice	
	53%	30%	6%	12%	0%	6%
Lighting	Could see well	Preferred better lighting but did not impact visit	Too bright	Too dark	Did not notice	
	83%	12%	0%	6%	0%	0%

When asked about the reception of their loved one/friend to the visits in the visitation shelter, 47% felt their loved one/friend was 'thankful' for the visit, 24% were 'happy', 24% 'engaged'; however, 35% were 'confused'. Those who selected 'other' (29%) indicated that the resident was upset, uncomfortable, or distracted by the outside environment.

A majority (65%) of visitors felt that having shelter visits made a 'major difference' for them as a visitor. Fewer respondents (42%) felt that shelter visits made a 'major difference' for the resident. Open-ended comments added that it was very negative for them to be so supervised for a visit and be chided for doing things wrong by someone "like a prison guard", making the experience "a fresh new hell". Others indicated that visiting in resident rooms was better. Regarding resident responses according to the visitors, one person suggested that the resident "hated it", and another that the resident was "much more disengaged in the visitation shelter versus their room". Another respondent indicated that the visitation shelter was sterile and not like "visiting him in his home at all".

Respondents listed the following activities during their visits: talking, singing, reading, eating a snack, playing card games, and showing photographs. It was also indicated that for some "nothing was permitted", and others indicated that activities that they would have liked to have engaged in (e.g., eating a meal, using Wi-Fi to connect to other family members) were not possible due to rules, or due to a lack of technology. The overall quality of their visit in the visitation shelter was quite variable: 24% 'very poor', 6% 'poor', 29% 'acceptable', 12% 'good' and 29% 'very good'. Visitors provided the following suggestions for making the shelter visits better: comfortable seating, warm and

homier décor, less noise, better heat, internet access, ability to touch and sit next to residents, more people at one time, being allowed to eat, a plexiglass divider so that lips could be read, and not sitting outside until allowed to enter. The sentiment that the visitation shelters were not worth the money was also expressed.

Those working or volunteering at a LTC home. Nine participants responded (age groups ranged from 18–29 to 50–59 years). Their primary roles were recreation (45%), administration/management (23%), and the rest were social work, healthcare aide, or visitor screener.

About 34% were 'very comfortable' about the safety for residents, 50% were 'somewhat comfortable', and 17% were 'unsure'. When asked to pick the best descriptor for the décor and atmosphere of the visitation shelter, 100% said 'institutional/sterile.' In terms of guest Wi-Fi, most (67%) replied that 'Wi-Fi does not reach the visitation shelter', 17% said 'Yes' to it being available, and 17% said the LTC home 'does not have guest Wi-Fi'.

Respondents provided common concerns expressed to them by residents regarding using the visitation shelters: gloomy, jail-like, cold, uncomfortable, loud, claustrophobic (particularly for residents with dementia), not used enough so not worth it, and not being able to drink/eat with PPE. Similarly, participants gave examples of common concerns that were expressed by visitors: institutional, claustrophobic, loud, gloomy, not homey, residents cannot hear, residents confused about the space, residents with dementia cannot sit long and therefore cannot remain apart, and the families want to be able to eat and drink with their loved ones.

Staff/volunteers responses to whether they felt that the visitation shelter supported quality visits and meaningful connections between visitors and residents were not positive: 50% 'strongly disagreed', 34% 'disagreed', and the remaining 17% were 'neutral'. Recommendations from staff/volunteers to improve the experience included: a space that is homey, visibly pleasing and roomy, "not a space that "feels like jail""; have a plexiglass partition with a speaker system; and allow more people to visit at a time. Final comments expressed by those working or volunteering at a LTC home included sentiments that funds could have been better spent, as visitation shelters were hardly used. When asked directly how busy it had been for the visitation shelter(s), 50% said 'not very busy' and the other 50% said 'hardly used'.

Indoor environmental quality

The environmental conditions in the visitation shelter were very similar to external conditions (22°C, relative humidity 34%), with the temperature being about 21°C and the relative humidity being about 34 to 35% throughout the time in the shelter. The CO_2 value never exceeded 526 ppm, indicating sufficient air exchange as the value was far below the recommended threshold of 800 ppm (Federation of European Heating, 2020).

Background noise in the shelter had an average value of 58.5 dBA. This value is above what is recommended for facilitating conversations (World Health Organization, 1999), particularly when many users might have hearing loss.

Figure 7: Pictures of the internal space of the visitation shelter that was used for the field measurements. Note that each home was responsible for furnishings so that aspect of the visitation shelters was not standardized. This particular shelter was positioned beside the main building such the entire south side of the shelter was in close proximity to the personal care home, which had a bank of windows on the north side of the building. A shows the view towards the internal door which leads to the interior walkway to the personal care home. This is the door that the resident used to enter and exit the shelter. B shows the view towards the external door, which exits directly outdoors. This is the doorway used by visitors.

Lighting levels varied from 93.2 to 520 lux, depending on the location, with the lowest value being at the table in the middle of the room, which separated the resident from the visitor, and higher values found near windows. Colour temperature (3016 to 3226 K) and colour rendering (94.3% to 94.8%) were appropriate and relatively consistent regardless of location. See Figure 7 for interior pictures of the shelter where measurements were taken.

Discussion

Through various methods, we have learned a great deal about visitation shelters that were meant to improve the situation for visits in the LTC setting during the pandemic. Despite many pandemic-related challenges, 105 shelters were added to 88 LTC homes, across vast distances, in a relatively brief time.

While visitors largely indicated that the visits in these shelters made a substantial difference for them, there were also many negative sentiments expressed by respondent groups. The interior design was deemed to be institutional. While the ventilation system, according to our measurements, functioned well from an air exchange perspective, it also created a lot of background noise, making communication difficult for some. Colour rendering and colour temperature were appropriate, but lighting levels were relatively low.

It was also apparent that utilization rates were not very high. The need to schedule visits might have contributed to low visitation rates. Also, because residents and visitors were not separated physically, outbreaks meant that even the visitation shelters could not be used. Therefore, it seems that the possible benefits of having these structures were limited in alleviating some of the consequences of restrictions.

We are unaware of any other region that took on a large-scale implementation of external visiting structures. Only limited mention has occurred related to small-scale initiatives in the research literature (Meershoek et al., 2022). From a physical design perspective, the "glass house" in Wassenaar, Netherlands, (n.a., 2020) had several differences to the Manitoba design. First, the structure was not connected to the care home, so residents had to first go outside to get to it. Clearly, this was not possible in Manitoba, where winter temperatures can be colder than -30 degrees C. The Wassenaar structure had ample natural lighting through many windows. It also had separate sides for the resident and visitor(s), seemingly with separate ventilation and air filtration systems, so residents and visitors were not masked. Speaker systems were needed to convey speaking between the physically separated sides. From a furnishing perspective, the pictures show a home-like environment was created. Based on our survey responses, many of these design features would have been welcomed in Manitoba.

Strengths and limitations

This study's primary strength is its use of multiple methods to explore the research questions related to this novel approach for visitation opportunities in the LTC setting during a time of a pandemic. By utilizing multiple methods, we were able to compare and contrast the initial design goals, with user perspectives, utilization rates, as well as shelter performance under simulated visiting conditions. This study also has limitations. The small and convenience sample, recruited through electronic means (emails and social media) and using an online survey may have resulted in a sample that is not generalizable to the overall user groups. Clearly challenges with conducting research during a pandemic limited our usual abilities to engage with personal care homes. For example, during the time of the survey, personal care home staff were still burdened with responding to the pandemic and all the additional work that was required. In addition, all research in the LTC setting is limited by a resident population which is largely affected by cognitive impairment and so ethical and other issues mean that staff and visitors are often used as proxies for their opinions, as was the case in this study.

Conclusions and future design considerations

While the emergency phase of the COVID-19 pandemic is over, the risks of many types of viral infections remain significant in the LTC setting, and the risks of new viruses or variants of viruses are omnipresent. Infection prevention and control procedures in the face of outbreaks in LTC settings, even before the COVID-19 pandemic, often led to visitor restrictions. Therefore, it is advisable that LTC homes find ways to facilitate in-person visits associated with their buildings. Although visiting in these external shelters made a difference for visitors and residents, many lessons can be taken from the experience in Manitoba. If spaces like these are going to be created to assist with infection control while still enabling visiting, several design recommendations can be made. A home-like environment with plenty of natural light is desirable. Physical separation of residents and visitors, as well as separate ventilation systems, could enable visits without masks and when outbreaks occur. Sound-proofing of ventilation

systems would go a long way in facilitating conversations. Finally, providing Wi-Fi access can help to facilitate visits through the use of other resources on the internet (e.g., entertainment, music). Having desirable and effective visiting spaces that can be leveraged when infectious outbreaks occur could help to maintain the quality of life for residents when visitor restrictions are enacted.

If LTC homes do not want to use the external shelters approach, it is advisable to consider proactively (re)designing spaces within current and future LTC buildings to facilitate visitation that limits the risk of viral infection. Careful consideration should be given to providing independent ventilation, humidification and air filtration, background noise control, adequate levels of artificial light, daylighting and view, accessibility, internet access, and easy-to-clean functional home-like furnishings and finishes. Consideration should also be given to allow for flexibility of diverse levels of interaction, from eating or playing cards together to chatting or sharing photos through a transparent barrier. Such spaces should be easy to access by visitors from a waiting area outside the building, without having to come through occupied spaces. Visitors could be provided with a mobile app or centralized phone number to book appointments and a keycard to unlock doors with a phone at their appointment time. A unisex, visitor-only washroom should be accessible from the space. Locating the visitation space close to nursing or reception stations would allow for efficient use of staff resources if residents require assistance getting to and from the visitation room. Lessons learned from the COVID-19 pandemic provide many design lessons and ideas for improving the situation for residents and their visitors for future pandemics or localized infection disease outbreaks.

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