



Dementia-Inclusive Recreation Guide for Personal Care Homes

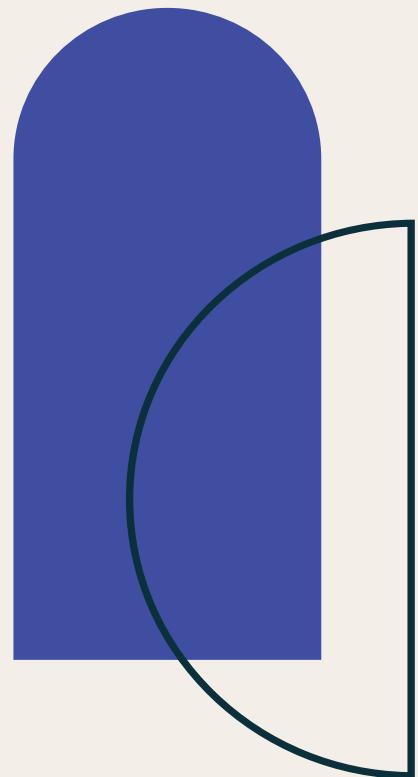
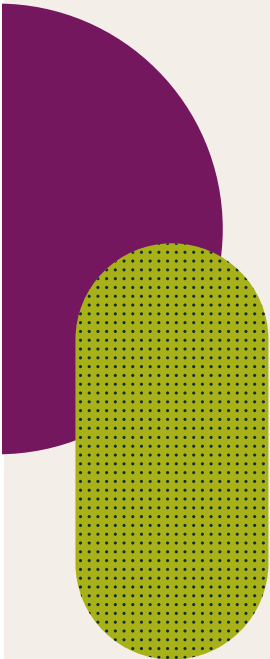
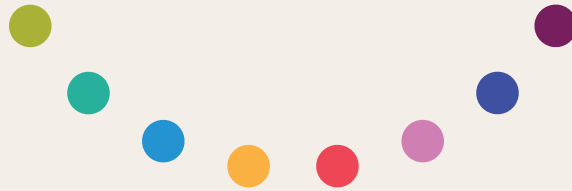




Table of Contents

Glossary of Terms 4

About this Document 5

What is Dementia? 6

The Importance of Physical Activity and Social Connection 7

Fundamental Principles of Dementia-Inclusive Recreation 8

Resident and Family-Centred Care 8

Right to Experience Normal Life Risks 8

Designing Dementia-Inclusive Activities 9

Actions for Personal Care Home Operators 9

Actions for Personal Care Home Staff 11

Types of Activities 16

Dementia-Inclusive Spaces 21

Dementia-Inclusive Design Fundamentals Checklist 21

Awareness and Training 25

Useful Resources 26



Glossary of Terms

Colour contrast – The difference in brightness between two or more colours. The difference in brightness can make images easier to see.

Dementia – Is a disorder of the brain resulting in a progressive loss of cognitive abilities affecting memory, language, orientation, judgment, problem-solving skills, and behaviour.

Dementia-inclusive design – Design principles based on the use of adapted patterns, contrasts and, colours to make spaces easier to navigate for people living with dementia.

Dignity of risk – The right to live life in a way someone chooses, even with risk. It recognizes that daily life is uncertain and that taking normal risks can lead to positive outcomes in quality of life, health and well-being.

Resident and family-centred care – An approach that respects each resident's dignity, values, and choices by involving them and their families as active partners in planning and delivering care that supports well-being and quality of life.

Physical environment – The surroundings and conditions we live in which influence a person's health.

Recreation – The experience that results from freely chosen participation in physical, social, intellectual, creative, and spiritual pursuits that enhance individual and community well-being.

Social connection – The feeling that you belong to a group and generally feel close to other people.

Social isolation – When a person does not have relationships or contact with others and has little to no social support.

Wayfinding – Information that guides people through a physical environment and to navigate from place to place.

Well-being – Includes physical, emotional, social, and mental health that lead to feeling safe, respected, and supported while maintaining independence, purpose, and meaningful connections.

About this Document

According to the Canadian Institute for Health Information (CIHI), approximately 60 per cent of people living with dementia remain in their communities and, with support, can maintain a good quality of life. Creating dementia-inclusive recreation opportunities is important to ensure people living with dementia can remain physically and socially active.

Personal care homes are key to supporting the home first philosophy, helping people to age in a place with dignity and respect. Recreation is essential to residents' quality of life; it fosters joy, engagement and connection. Inclusive recreation is person-centered, respects individuals' right to take risks, and creates welcoming spaces for all.

The Dementia-Inclusive Recreation Guide for Personal Care Homes can assist personal care home operators and staff take action to develop and deliver dementia-inclusive recreation activities. The document aims to:

- Build awareness of the importance of dementia-inclusive recreation.
- Promote resident and family-centred care and dignity of risk.
- Outline how to design dementia-inclusive activities in personal care homes.
- Create dementia-inclusive spaces that help people stay as independent as possible.



What is Dementia?

Dementia is not a single disease, but the term used to describe symptoms affecting memory, thinking, or social skills that interfere with daily living. There are several known types of dementia, with the most common being Alzheimer's disease. Although the risk of dementia increases with age, it can also affect younger people. In Newfoundland and Labrador, 10,000 people are living with dementia. This number is expected to increase 45 per cent by 2035.

Everyone experiences dementia differently. A person living with dementia may:

- Have difficulty with everyday memory.
- Have difficulty carrying out a sequence of tasks such as following instructions.
- Find it challenging to follow a conversation.
- Become confused about where they are.
- Experience changes in mood including becoming frustrated, anxious, or sad.
- Experience changes in the way their brain interprets sensory information, for example a black floor mat may look like a hole in the floor.
- Experience visual perception changes such as difficulty with spatial awareness and judging distances, seeing things that are not there (hallucinations), or believing things that are not true (delusions).
- Feel overwhelmed in noisy environments.





The Importance of Physical Activity and Social Connection

Physical and mental activity is a basic human need. Being physically and socially active can delay the progression of and help manage dementia symptoms. Benefits of physical and social activity may include:

- Improved sense of well-being from social interaction.
- Improved flexibility, strength, coordination, and balance leading to reduced risk of falls.
- Improved blood supply and nutrients to the brain which may help with thinking skills and memory.
- Improved confidence and self-esteem.
- Decreased risk of depression.
- Normal day-and-night routine and improved mood.
- Enhanced quality of life.

Strong social connection can help people live longer and healthier lives. Loneliness and social isolation have been linked to higher risk of illnesses, including heart disease, stroke, anxiety, depression, and dementia. Lack of dementia-inclusive recreation opportunities can cause boredom and isolation leading to many behavioural symptoms expressed by people living with dementia.

Fundamental Principles of Dementia-Inclusive Recreation

Resident- and Family-Centred Care

Resident- and family-centred care means recognizing that each resident is unique, with their own likes, life experiences, preferences, and abilities. By maintaining open communication, staying observant, and involving residents and families in care decisions, staff can provide respectful, personalized, and culturally sensitive care that enhances quality of life and supports independence.

Right to Experience Normal Life Risks

Taking risks is a natural and meaningful part of everyday life. Residents have the right to make choices and take reasonable risks. Helping people live well in personal care homes means supporting them to make their own choices about daily life, even if those choices come with some risks. Taking risks is a normal part of life, and focusing too much on safety can limit opportunities for people to enjoy life, grow, and do things that matter to them. Staff should have open, respectful conversations with residents, their families, and care partners about the possible risks involved in personal choices in daily activities.



Designing Dementia-Inclusive Activities

Actions for Personal Care Home Operators

1. Lead with commitment and engagement

Leaders play a vital role in shaping the values and priorities within a personal care home. When leadership is committed to dementia-inclusive care, it sets the tone for staff to value meaningful recreation and integrate it into daily routines. Supportive and engaged leaders foster a culture where staff feel confident to explore new ideas, adapt activities, and tailor recreational experiences to meet the evolving needs and preferences of each resident.

Essential to this commitment is a co-design approach that actively involving residents, families, and staff in the planning and development of recreation programs to ensure they reflect lived experiences and preferences. Programs can be evaluated for effectiveness through resident and family feedback, satisfaction surveys, and informal check-ins.

2. Provide staff training on dementia

Through training, staff again with a deeper understanding of dementia including how it affects the brain and influences memory, communication, behaviour, and daily functioning. This knowledge fosters greater empathy and patience. It also empowers staff to design and deliver activities that are meaningful, enjoyable, and appropriately tailored to the unique needs of individuals living with dementia.

3. Implement a team-based approach

Involving all staff in recreation activities leverages the diverse strengths and perspectives of the team to create more personalized, consistent, and engaging experiences for residents. A collaborative, team-based approach fosters regular communication and coordination, enabling staff to share insights on which activities are effective, what may need adjustment, and how residents are responding. This integrated model supports more comprehensive care planning and allows recreational opportunities to be extended into evenings and weekends, even when dedicated recreation staff are unavailable. Including recreation in the overall care strategy ensures it is better aligned with each resident's individual goals and needs.

Developing successful recreation activities for people living with dementia in personal care homes relies on:

- the cooperation and assistance of all team members,
- a basic knowledge of dementia, and
- understanding how to match activities to the interests and abilities of individual residents.

4. Ensure flexibility in routines

Flexibility in daily routines such as waking, sleeping, bathing, meals, and social activities is essential for delivering dementia-inclusive care. Rigid schedules can cause stress or be upsetting, especially for individuals with dementia. Flexibility helps staff respond to each resident's mood, energy, and comfort in the moment, leading to a calmer and more supportive environment. When staff can adjust schedules, they can offer activities and social opportunities when residents are most alert and interested, making recreation more meaningful and effective.

5. Engage with the community

Fostering community connections can enhance residents' sense of belonging and well-being. Partnerships with local organizations can introduce enriching experiences such as music, art, pet therapy, and intergenerational programs. These collaborations offer a broader range of stimulating and enjoyable activities. Visits from schools, volunteer groups, or community members can spark joy, encourage social interaction, and strengthen residents' ties to the world beyond the care home. Residents should also be supported to go outside the home to continue to participate in community life such as attending local events, visiting parks or libraries, or enjoying outings to familiar places.

When things do not go as planned:

- Stay calm and reassuring
- Be flexible – change the activity if needed
- Validate the residents' feelings
- Have backup activities ready
- Learn from each experience
- Seek support from colleagues when needed





Actions for Personal Care Home Staff

1. Discover the Person Behind the Profile

Connect with residents and families to learn about their backgrounds, interests, life stories, and abilities. Avoid making assumptions about the person's remaining abilities. This understanding helps personalize activities, making recreation more meaningful and aligned with individual strengths.

Example: A former teacher might enjoy helping with a reading circle or storytelling session.

2. Simplify Instructions

Break tasks into small steps.

Example: Instead of “Let’s paint a landscape”, say “Let’s start by choosing a colour.”

3. Use Visual Aids

Incorporate pictures, diagrams, or real objects.

Example: Show a photo of a finished craft to guide the activity.

4. Create a Calm Environment

Minimize noise and distractions

Example: Use soft lighting and quiet background music. Limit interruptions during recreation sessions.

5. Be Patient and Flexible

Allow extra time and adapt as needed.

Example: If a resident loses interest, gently switch to a different task.

6. Encourage Participation

Use praise and encouragement.

Example: “You’re doing a great job decorating that cake!”

7. Focus on Abilities

Highlight what residents can do.

Example: A resident with limited mobility might enjoy painting.

8. Provide Choices

Give a couple of options to avoid overwhelming people.

Example: “Would you like to listen to music or look at photo albums?”





9. Incorporate Reminiscence

Incorporate familiar activities from the person's past to gently encourage memory recall. Create a safe, comforting environment where they feel free to express themselves—without any pressure to respond, share stories, or 'get it right.'

Example: Play music from their youth, look through old photographs, or talk about past experiences. Always approach these moments with sensitivity, recognizing that each individual's memories and emotions are unique.

10. Promote Social Interaction

Plan group activities that foster connection.

Example: Group sing-alongs or collaborative art projects.

11. Honour Indigenous Ways

Honour Indigenous traditions through by creating space for cultural practices and voices.

Example: traditional crafts, drumming circles, storytelling, seasonal ceremonies.

12. Incorporate Cultural Traditions

Offer activities that reflect each resident's cultural background, traditions, and values.

Example: Traditional music, food, storytelling, and crafts. Recognize cultural holidays and support the religious and spiritual practices of residents.

13. Support 2SLGBTQQIA+ Inclusion

Make sure 2SLGBTQQIA+ residents feel safe, respected, and welcome.

Example: Celebrate Pride Month, show 2SLGBTQQIA+ movies or stories, and use the names and pronouns they choose. Let them share their life stories if they want to, but don't push. Keep their privacy and treat everyone with kindness.

14. Monitor and Adjust

Observe reactions and make changes.

Example: If a resident becomes agitated, offer a calming alternative.



15. Adapt Activities

Activities may become more challenging overtime as dementia progresses.

In early-stage dementia, people often retain many abilities and benefit from structured, meaningful activities that support cognitive function, emotional well-being, and social connection. Activities should be tailored to the person's interests, history, and strengths.



In mid-stage dementia, individuals benefit from structured, familiar, and meaningful activities that are adapted to their current abilities. The goal is to preserve dignity, reduce anxiety, and promote joy through resident- and family-centred care.

In late-stage dementia, individuals often experience significant changes in communication, mobility, and awareness. Activities should focus on comfort, sensory stimulation, and emotional connection. Even simple, quiet moments like listening to music, feeling familiar textures, or holding a comforting object can provide meaning and reassurance.

Example: A music activity can be adapted as dementia progresses:

- Early-Stage Dementia – The person learns new songs or plays (or learns to play) an instrument.
- Mid-Stage Dementia – Use familiar playlists and encourage clapping or simple percussion (e.g., tambourines). Sing-alongs with lyrics or visual cues.
- Late-Stage Dementia – Play calming or familiar music to evoke comfort. Use music during care routines to reduce anxiety.

(See Table 1 for additional examples)

16. Support and educate residents without dementia

When residents understand dementia, they're more likely to respond with empathy, reducing stigma and building a safer, more inclusive community. Shared activities and open conversations help create a warm, welcoming space where everyone feels valued.

Types of Activities

Provide a variety of recreation activities scheduled at different times throughout the day to accommodate individual preferences, energy levels, and routines. This approach supports resident- and family-centred care by respecting each person's unique rhythm and needs. Encourage residents to participate in ways that feel meaningful to them. Activities can include:

- Individual activities – can give staff the opportunity to connect more deeply with residents, building trust and understanding that improves overall care (e.g., one-on-one music therapy, sensory boxes, memory books).
- Small group activities – encourages interaction in an intimate setting (e.g., book clubs, craft sessions, chair yoga).
- Large group activities – foster a sense of community (e.g., musical performances, holiday parties).
- Spiritual activities – supports residents' spiritual well-being (e.g., prayer circles, meditation, religious services, spiritual storytelling).
- Intergenerational activities – bridge generations through shared experiences (e.g., school visits, collaborative art, technology lessons from youth).



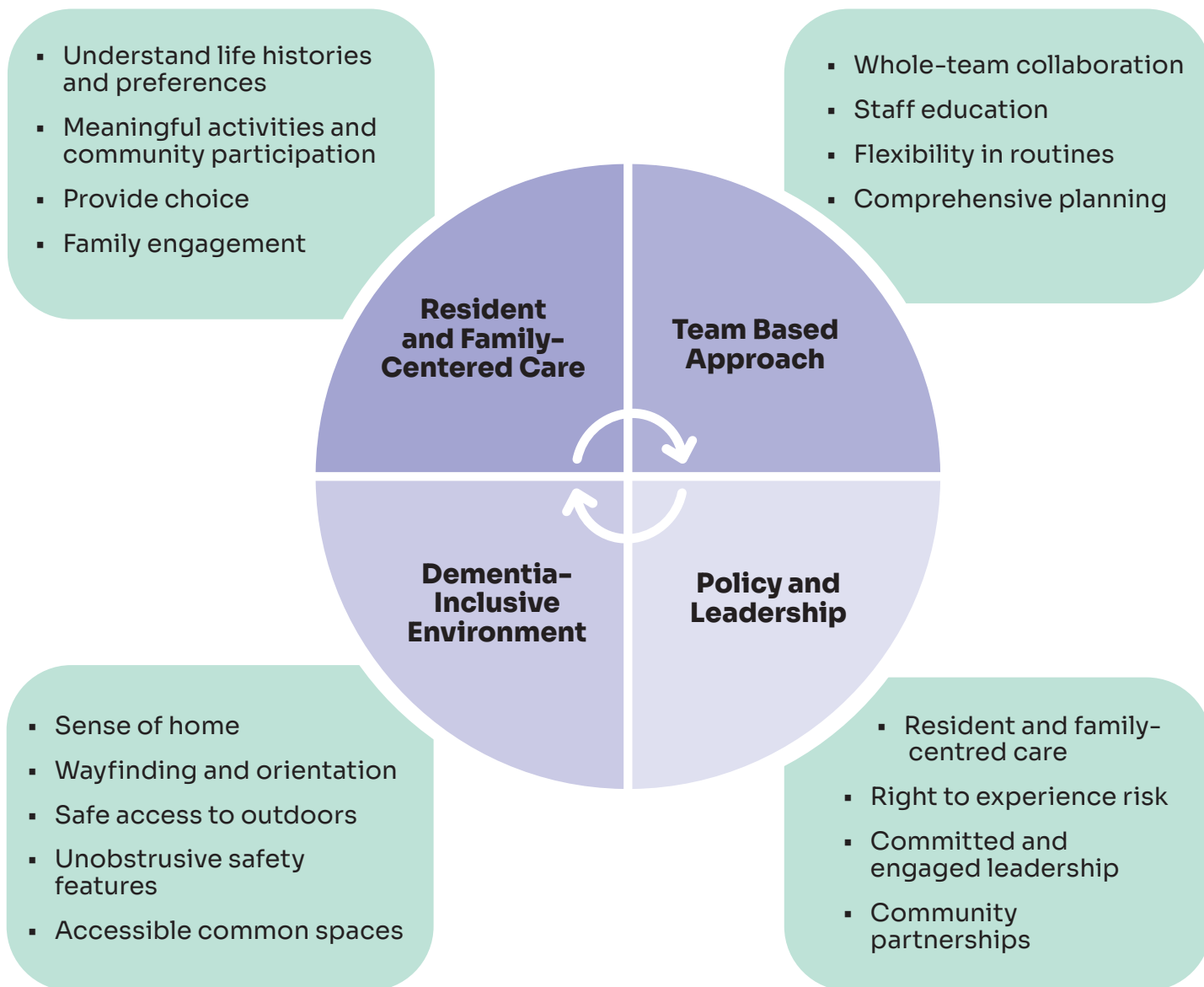


Figure 1. Framework for Dementia-Inclusive Recreation in Personal Care Homes

Activities for Early-Stage Dementia

Cognitive and Creative Engagement

- Word games and trivia: Crossword puzzles, word searches, or trivia based on personal interests.
- Journaling or storytelling: Encourage writing or recording memories and reflections.
- Art projects: Painting, drawing, or crafting with minimal guidance.
- Book clubs or reading aloud: Choose short stories or familiar books.

Music and Movement

- Learning new musical skills.
- Listening to favourite music: Create personalized playlists.
- Dancing or movement classes: Gentle exercise like tai chi or yoga.
- Playing instruments: If they previously played, reintroduce familiar instruments.

Daily Life and Purposeful Tasks

- Cooking or baking: Simple recipes with supervision, especially family favourites.
- Gardening: Planting, watering, or harvesting herbs and flowers.
- Organizing tasks: Sorting photos, arranging books, or tidying drawers.

Social and Emotional Well-Being

- Volunteering: Light tasks at community centres or churches.
- Support groups: Peer groups for people in early-stage dementia.
- Spiritual practices: Attending services, prayer, or meditation.

Resident and Family-Centred Care Tips

- Respect autonomy: Let the person choose and lead activities when possible.
- Encourage routine: Familiar schedules reduce anxiety and support memory.
- Adapt gradually: Modify tasks as needed while preserving dignity and independence.



Activities for Mid-Stage Dementia

Cognitive and Creative Engagement

- Arts and crafts: Simple painting, colouring, or collage using safe materials.
- Knitting or crocheting.
- Puzzles: Large-piece jigsaw puzzles or matching games tailored to their interests.
- Reminiscence activities: Use memory boxes, themed photo albums, or music from their youth to spark conversation and recognition
- Reading aloud: Short stories, poems, or spiritual texts they once enjoyed.

Music and Movement

- Sing-alongs: Familiar songs from their past can evoke strong emotional responses.
- Dancing or rhythmic movement: Gentle movement to music, even seated.
- Instrument play: Simple percussion instruments like tambourines or shakers.

Daily Life and Purposeful Tasks

- Folding laundry: A repetitive, calming task that provides a sense of fulfillment. A basket of children's clothing can offer activity, or residents can be supported to do their own laundry.
- Sorting objects: Grouping items by colour, shape, or category (e.g., buttons, cards).
- Setting the table: With supervision, this can reinforce routine and familiarity.

Outdoor and Sensory Activities

- Gardening: Watering plants, planting seeds, or touching soil and leaves.
- Nature walks: Short, supported walks in familiar outdoor spaces.
- Sensory bins: Fill with safe, themed items (e.g., seashells, fabric swatches, dried herbs).

Relaxation and Emotional Comfort

- Hand massage or aromatherapy: Use calming scents like lavender or citrus.
- Pet therapy: Interaction with real or robotic pets can reduce agitation.
- Spiritual practices: Prayer, meditation, or attending services if meaningful to the person.

Resident and Family-Centred Care Tips

- Adapt to their history: Choose activities based on their past hobbies, job, or culture.
- Simplify steps: Break tasks into small, manageable parts.
- Offer choices: Even simple decisions (e.g., "Would you like to draw or listen to music?") support autonomy.
- Be flexible: If an activity causes frustration, gently redirect or try again later.

Activities for Late-Stage Dementia

Sensory Stimulation

These activities help soothe and engage the senses:

- Listening to familiar music: Music can evoke memories and emotions even in advanced dementia.
- Touching soft or textured items: Sensory blankets, stuffed animals, or textured fabrics can provide comfort.

Emotional Comfort & Connection

- Holding a soft doll or pet: This can reduce anxiety and provide a sense of purpose.
- Hand massages: Gentle touch can be reassuring and improve mood.
- Looking at photo albums: Familiar faces and places can spark recognition and joy.

Food-Related Enjoyment

- Tasting favourite foods: small bites of familiar, flavourful foods can bring pleasure and stimulate appetite.
- Smelling herbs or spices: This can trigger memories and sensory engagement.

Gentle Movement

- Assisted walking: Even short walks with support can help maintain mobility and circulation.
- Chair exercises: Simple movements to music can be enjoyable and beneficial.

Simple, Repetitive Tasks

- Folding towels or sorting objects: These tasks can provide a sense of accomplishment and calm.
- Colouring: Creative expression without pressure.



Dementia-Inclusive Spaces

Personal care homes are more than just places to live, they are home for people who reside there. Most residents, especially those living with dementia, want to feel safe, comfortable, and surrounded by familiar things. Creating a home-like environment can help meet these emotional and psychological needs.

For someone with dementia, the way a space is designed can make a big difference. Dementia can affect how a person understands and responds to their surroundings. This means that even small changes, like using clear signs, good lighting, or familiar objects—can help them feel more confident and independent.

Dementia-inclusive design incorporates an understanding of the cognitive, sensory, and perceptual changes associated with the condition. Its principles aim to reduce confusion and anxiety, minimize risks, and help individuals remain as independent as possible. For health care providers, integrating these design strategies into care planning and facility management can significantly improve outcomes and enhance resident and family-centred care.

Dementia-Inclusive Design Fundamentals Checklist

Best practice evidence supports the addition of dementia-inclusive features, maintain remaining skills, promote independence and self-esteem, and provide an opportunity for recreation, enjoyment and social contact for people living with dementia.

Feature	Dementia-Inclusive Design	Rationale
Building Design	The environment is not patronizing or confusing. It should be comforting, calm and a safe place for residents to live their best possible life.	A respectful, calm, and safe environment supports dignity, reduces confusion and anxiety, and enhances the overall well-being and quality of life for residents with dementia.
	There is unimpeded access to a safe outdoor space.	Research indicates that if people can go outside when they want to, their mood is improved.
	Entrance mats do not present a trip or slip hazard and are not solid black in colour.	For some people a black mat will look like a hole in the floor and people may try to step over it.
	The layout incorporates furniture that will encourage residents to partake in activities of daily living and encourage staff and resident interaction.	Staff should be able to sit at the same level for best communication.
	There is adequate seating around the building to provide opportunity for rest.	Visible resting places can provide a destination point and place to rest.
	The entrance to resident's bedroom is personalized and distinctive from other doors.	This can provide wayfinding, reduce confusion and prevent residents from entering the wrong room.
	There is evidence of respect for residents' ethnic, cultural and religious backgrounds. This can include space for prayers.	What is familiar and comfortable for residents will vary.

Feature	Dementia-Inclusive Design	Rationale
Signage and Wayfinding	Signs have clear colour contrast between writing and the background.	Contrasting colours will be easier to see.
	Signs use low glare materials or coatings that reduce reflections to improve visibility.	Laminated paper signs can be hard to see due to the glare.
	Signs are legible, use simple descriptive language, with mixed case (i.e., not all upper-case letters). Signs have easy to understand pictures or graphics to enhance understanding.	Signs provide clues to enable people living with dementia to find their way.
	Signs should be at eye level, around 4 feet from the ground.	Signs posted at eye level are easier to see.
	Signs are fixed to the doors they refer to, not on nearby walls.	Signs are easier to see and understand when they are attached to the door they refer to.
	Directional signs are used to direct people to key areas including activity rooms, washrooms, exits.	There should be directional signs throughout the building at all decision points.
Lighting	Spaces have good levels of natural and/or artificial light which is bright and uniformly distributed across the space (does not produce shadows).	People living with dementia can misinterpret their surroundings due to poor lighting. Adequate lighting also supports people with low vision.
Use of Colour Contrast	- The colour of the flooring contrasts with the colour of the walls. - The colour of the doors contrasts with the colour of the walls. - The colour of furniture and fixtures contrast with their environment.	As people's eyes age, particularly if they have dementia, they lose ability to notice changes in colours. Contrasting colours provide a visual break between items to ensure greater visibility.

Feature	Dementia-Inclusive Design	Rationale
Acoustics	▪ Staff facilities are located where they do not cause noise for residents with dementia.	▪ Noises can be overwhelming for people living with dementia. They may have reduced ability to filter out background noise which may cause distress.
	▪ There are quieter spaces available for people living with dementia to use.	▪ A quiet space for people living with dementia can reduce stress and anxiety.
	▪ In large rooms there is a room divider to subdivide the space and reduce noise.	▪ This can reduce auditory and visual distractions.
Stairs	▪ There are easy to grip handrails located on both sides of all stairs and ramps in contrasting colour to the wall or surface it is fixed to.	▪ Handrails need to be highly visible (contrasting colour) and easy to grip for people with low vision.
	▪ Edges to steps are clearly contrasting in colour with treads and risers.	▪ Contrasting colours make it easier to see the steps.
Washrooms	▪ Accessible toilets are provided as needed that have grab supports, contrasting toilet seat colour, and space for a wheelchair.	▪ A contrasting toilet seat colour (for example, a black seat on a white base) can make it easier to see.
	▪ It is obvious how the door lock operates (it is traditional in appearance and understandable). Lock signs can be helpful.	▪ To maintain dignity, it should be obvious how to lock and unlock the door when inside.
	▪ Flush levers and faucets are traditional in appearance and simple to operate. Hot water taps have anti-scald valves. Handwash signs can be helpful.	▪ A person with dementia may not understand the danger of hot water. Anti-scald devices will prevent scalding.
	▪ Toilet roll holders are simple to operate, contrast with the wall behind and are preferably domestic style in their design.	▪ Familiar devices are easier to manage and can increase independence.

source: Environments for Ageing and Dementia Design Assessment Tool-v.2 © DSDC, University of Stirling)

Awareness and Training

The following resources offer essential information and training materials to support greater understanding and awareness of dementia.

- **Dementia-Inclusive Gardens and Outdoor Environments:** enablingenvironments.com.au/uploads/5/0/4/5/50459523/gardens_that_care.planning_outdoor_environments_for_people_with_dementia.pdf
- **Dementia-Inclusive Planning and Design Guidelines:** sfu.ca/demscape/knowledge-mobilization/dementia-inclusive-planning-and-design-guidelines.html
- **Dementia Passport:** Online an e-learning program developed by the Alzheimer Society of Newfoundland and Labrador to support health care providers in providing high-quality care to people living with dementia. alzheimer.ca/nl/en/help-support/im-healthcare-provider/dementia-passport?gad_source=1&gad_campaignid=20772557516&gclid=EAlaIQobChMlit-1n6G_jwMVLk7_AR2B_g01EAAAYASAAEglgo_D_BwE

Gentle Persuasive Approaches training: ageinc.ca/gpaelearning/

IGeriCare Lessons and resources that allow individuals to learn about dementia at their own pace, developed by McMaster University. igericare.healthhq.ca/en/lessons

Online learning McMaster Optimal Aging Portal:

- mcmasteroptimalaging.org/e-learning/dementia
- mcmasteroptimalaging.org/e-learning/dementia-risk
- **Online training:**
 - **Dementia Resources for Eating, Activity, and Meaningful Inclusion:** learn.the-ria.ca/groups/dream/
 - **Online training:**
Dementia-Inclusive Choices for Exercise: learn.the-ria.ca/groups/dice/

Useful Resources

Arts and Aging Network: artsandaging.com/

Dementia-Friendly Communities | Well-Being NL: dementiafriendlynl.ca/

Dementia-Friendly Design: alzheimer.ca/nb/sites/nb/files/documents/DIRC_General_v3.pdf

Dementia-Inclusive Design: brainxchange.ca/Public/Resource-Centre-Topics-A-to-Z/Design-and-dementia

Dementia Wellness – Physical Activity: dementiawellness.com/plwd/physical-activity/

Intergenerational Program Guide:
gov.nl.ca/sswb/files/Intergenerational-Program-Guide-Print-Friendly.pdf

Physical Activity and Alzheimer’s Disease Toolkit:
braininstitute.ca/resources/guidelines-and-toolkits/physical-activity-and-alzheimers-disease-toolkit#:~:text=Regular%20participation%20in%20physical%20activity,improve%20general%20cognition%20and%20balance.

