



A RESOURCE FOR CAREPARTNERS, FAMILY, COMMUNITY MEMBERS, AND PERSONS LIVING WITH DEMENTIA



TABLE OF CONTENTS

>>>	WHAT IS DEMENTIA?	1
>>>>	STAGES AND SYMPTOMS	2
>>>>	COMMON TYPES OF DEMENTIA	3
>>>>	TREATMENT	4
>>>>	COMMUNICATION	8
>>>>	SAFETY	12
>>>>	ACTIVITY AND LEISURE	23
>>>	BRAIN EXERCISES TO IMPROVE MEMORY, COGNITION AND CREATIVITY	25
>>>>	ENGAGING AND MEANINGFUL ACTIVITIES	29
>>>	LEGAL MATTERS	36
>>>	SUPPORT AND RESOURCES	38
>>>>	ABOUT BRELLA	40
>>>	BRELLA SERVICE/ PROGRAMS	42
>>>	CREDITS	

WHAT IS DEMENTIA

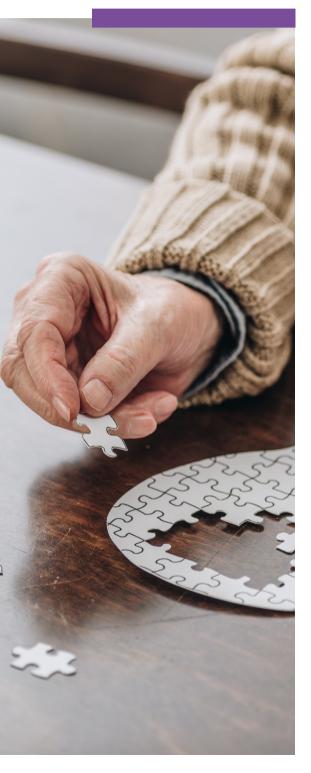
Dementia is a term used to describe a group of symptoms affecting memory, thinking, and social abilities. This condition is the seventh leading cause of death and first of the major causes of disability and dependency among older people globally.

Dementia continues to be poorly understood and lacks awareness in numerous nations. This contributes to the stigmatization of individuals with dementia, creates hurdles in the process of diagnosis and care, and places substantial physical, psychological, and economic strains on partners, families, and communities.

>>> CHRONIC OR PROGRESSIVE SYNDROME

Dementia, typically a chronic or progressive syndrome, emerges due to various brain illnesses that impair memory, cognition, behavior, and daily functioning. Presently, more than 50 million individuals globally are affected by dementia, and this number is projected to nearly triple by 2050. The impact of dementia extends beyond those diagnosed, affecting carepartners, families, and societies at large.

STAGES & Symptoms



>>>> STAGE 1

The first stage of dementia is often referred to as the preclinical stage. During this stage, people may not exhibit any noticeable symptoms, but there may be subtle changes in cognitive function that can be detected through various assessments.

Watch for forgetfulness and other signs that suggest memory loss or difficulty with tasks that were once easy to perform.

>>> STAGE 2

The next stage is called Mild Cognitive Impairment (MCI). During this stage, people may have more obvious memory loss and can have difficulty with activities that require planning and attention, such as cooking or managing finances. Distraction may appear frequently and the individual may have barriers to following conversations or remembering names.

Be aware of more subtle changes in behavior and personality, such as becoming more irritable or withdrawing from social activities.

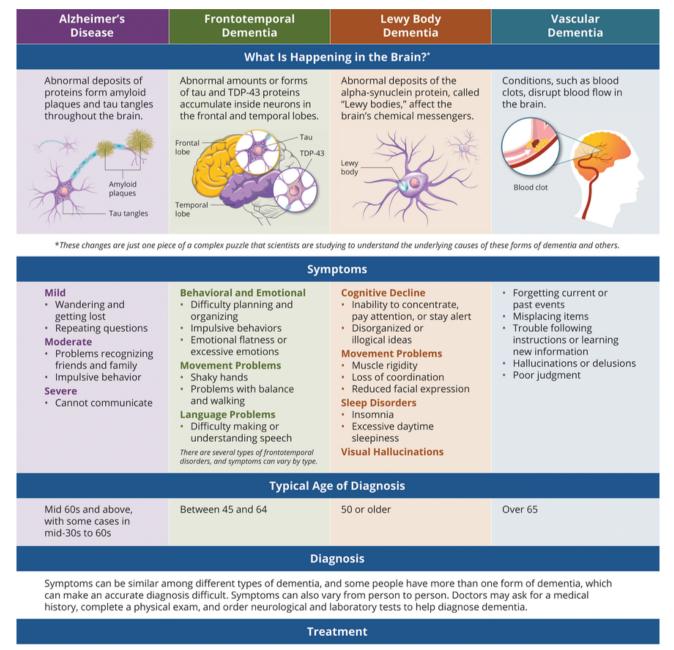
>>> STAGE 3

The third stage is characterized by severe memory loss, difficulty communicating and processing information, and a decline in reasoning skills. People living with dementia may often experience mood changes, such as becoming more anxious, depressed, or agitated.

Pay attention to changes in behavior that may indicate a decline in cognitive function.

COMMON TYPES OF DEMENTIA

As we age, it's normal to lose some neurons in the brain. People living with dementia, however, experience far greater loss. Many neurons stop working, lose connections with other brain cells, and eventually die. At first, symptoms can be mild, but they get worse over time. Read on to learn more about the four most common types of dementia.



There is currently no cure for these types of dementia, but some treatments are available. Speak with your doctor to find out what might work best for you.



TREATMENT:

AN OUTLINE OF THE VARIOUS FORMS OF MEDICATION AND PROCEDURES CURRENTLY AVAILABLE TO ADDRESS DEMENTIA SYMPTOMS, PREVENTIVE MEASURES, AND SELF-MANAGEMENT STRATEGIES.

As dementia progresses, it can greatly impact an individuals' daily life, affecting not only their cognition but also their behavior and social skills. Although there is no cure for dementia, various treatments can alleviate symptoms, delay progression, and improve the quality of life for individuals.

Always consult with your health professional if you have any questions.



>>> MEDICATION

Currently, there are several medications that can be used to treat dementia symptoms, each with different mechanisms of action and benefits. Some of the most common are outlined below.

1. CHOLINESTERASE INHIBITORS

These drugs increase the level of acetylcholine, a neurotransmitter that is important for learning and memory, in the brain. They can improve cognition, behavior, and mood in people living with mild to moderate Alzheimer's disease and vascular dementia.



2. GLUTAMATE ANTAGONIST

Namenda is a drug that binds to N-methyl-Daspartate (NMDA) receptors in the brain and blocks the excitotoxic effects of glutamate, a neurotransmitter that can damage brain cells in people living with dementia. It is approved for use in moderate to severe Alzheimer's disease.

3. ANTIDEPRESSANTS

These drugs can be used to treat depression, anxiety, agitation, and other behavioral symptoms that are common in people living with dementia. Selective serotonin reuptake inhibitors (SSRIs) and trazodone are among the commonly used antidepressants.

4. ANTIPSYCHOTICS

These drugs are used to treat severe behavioral symptoms such as aggression, delusions, and hallucinations. However, they are not recommended for long-term use due to their side effects and increased risk of death in people living with dementia.

>>> PREVENTATIVE MEASURES

Preventing or delaying the onset of dementia can greatly improve the individuals' quality of life and reduce the burden on carepartners and the healthcare system. Some of the preventive measures that have been shown to reduce the risk of dementia and slow down its progression include:

1. PHYSICAL EXERCISE:

Regular exercise can improve cardiovascular health, which is associated with better cognitive function.

2. HEALTHY DIET:

A diet rich in fruits, vegetables, whole grains, and lean proteins can reduce the risk of cognitive decline and improve brain function.

3. COGNITIVE AND SOCIAL STIMULATION:

Activities that challenge the brain, such as reading, playing games, and socializing, can reduce the risk of cognitive decline.

4. COGNITIVE RESERVE:

This is your brain's ability to improvise and think outside of the box. It reflects how agile your brain is in pulling in skills and capacities to solve problems and cope with challenges. Cognitive reserve is developed over a lifetime of education and curiosity.

5. AVOID SMOKING AND EXCESSIVE ALCHOL CONSUMPTION

There is evidence that current smoking and higher than average alcohol consumption can increase the risk of cognitive decline and dementia. Quitting smoking and lowering your intake of alcohol consumption may reduce a person's risk of dementia or other cognitive decline diagnosis.

>>> SELF-MANAGEMENT STRATEGIES

People living with dementia, along with their carepartners, can also engage in self-management strategies that can help alleviate symptoms and improve their overall quality of life. Some of these self-care strategies include:

1. CREATING A ROUTINE:

Establishing a regular routine can reduce confusion, frustration, and anxiety as well as helping people living with dementia adjust to change.

2. USING MEMORY AIDS:

Memory aids, such as calendars, notes, and alarms, can help individuals living with dementia remember important events and tasks.

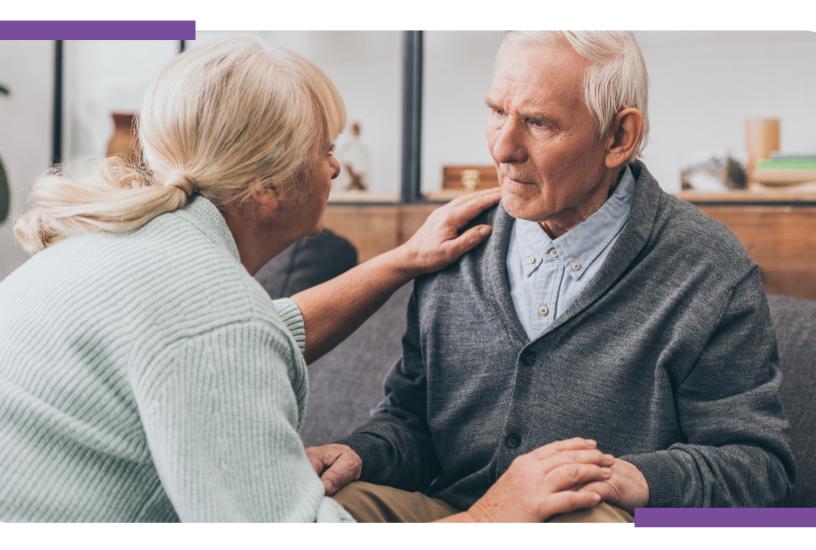
3. ENGAGING IN RELAXATION TECHNIQUES:

Techniques such as deep breathing, visualization, and yoga can reduce stress, anxiety, and depression all while promoting relaxation.

Stay socially engaged within your community. Explore the various leisure options available. Visit recreation and community centers to access resources.

Carepartners, healthcare professionals, and people living with dementia can all work together to identify the most effective treatment options and self-care strategies that fit their unique needs and circumstances.

Medication, preventive measures, and self-management strategies play a role in alleviating symptoms and improving quality of life.



COMMUNICATION

EFFECTIVE COMMUNICATION PLAYS A VITAL ROLE IN THE CARE OF PEOPLE LIVING WITH DEMENTIA WHO MAY FACE A BARRIER WITH THEIR COMMUNICATION ABILITIES. FOR THESE INDIVIDUALS, COMMUNICATION CAN BE COMPLEX AND REQUIRES A MULTIFACETED APPROACH. THE FOLLOWING SECTION AIMS TO: PROVIDE COMMUNICATION TIPS AND TECHNIQUES, HELP INITIATE COMMUNICATION PATTERNS, USE OF RESPECTFUL/EMPATHETIC LANGUAGE AND BEHAVIORS, AND NUMEROUS NON-VERBAL COMMUNICATION TECHNIQUES.

>>> COMMUNITIONS TIPS AND TECHNIQUES

Effective communication is key in helping individuals living with dementia. To communicate effectively, consider the following:

1. KEEP A CALM TONE AND APPROACH:

Try to keep a calm and warm tone while approaching people living with dementia. Use simple and short sentences to ensure the person maintains focus.

2. USE FACE-TO-FACE COMMUNICATION:

Leaning closer and making eye contact enables better comprehension and aids in establishing a connection.

3. AVOID DISTRACTIONS:

Limit or reduce distractions such as loud noises or multiple stimuli, which can cause confusion and impair understanding.

4. USE OPEN-ENDED QUESTIONS:

Individuals with dementia (Stages 2 or 3) may struggle with one-word answers that often result in complicated communication. Sometimes responses can lead to more conversations.

5. OFFER EXTRA TIME:

Allow adequate time for individuals to comprehend and reply to questions, directives, or comments. Minimize time constraints for better understanding.

6. AVOID ASSUMPTIONS:

Avoid the risks of jumping to conclusions based on initial behavior or lack of understanding alone.

>>> RESPECTFUL/EMPATHETIC LANGUAGE AND BEHAVIORS

Since Dementia can impact communication, using respectful and empathetic language can help individuals feel valued. The following are techniques to employ empathetic language and behaviors:

1. USE OPEN AND WARM BODY LANGUAGE

Listen to the person living with dementia, and use body language that shows empathy and active listening. Strong eye contact and a welcoming stance can make a significant difference.

2. USE PERSON-CENTERED LANGUAGE:

Person-centred language is a way of speaking that focuses on the individual's feelings, needs and preferences. It's a form of communication that is respectful and non-judgmental. Research shows that person-centred language can help to reduce stress, anxiety, improve communication, and increase feelings of self-worth.

3. REFRAMING CAN VALIDATE:

Rather than telling someone living with dementia "No, that is not correct" paraphrase to "I am not entirely sure what you meant, can you explain?"

Effective communication is a significant component of dementia care that has multifaceted considerations related to verbal, empathetic, and non-verbal techniques.



>>> NON-VERBAL COMMUNICATION TECHNIQUES

These techniques employ the use of body cues and can provide a form of communication in the absence of spoken dialogue. Examples of non-verbal communication can be found below:

1. USE OF FACIAL EXPRESSIONS:

The use of facial expressions such as smiling, relaxed face, or eye contact can help individuals feel valued, loved, and comfortable, leading to improved communication.

2. CONSIDER POSTURES:

Encourage good posture such as sitting upright or not crossing arms as this can also improve communication. A hug or gentle pat on the shoulder can communicate that someone is listening or paying attention.

3. VISUAL PROMPTS:

A visual cue is simply a reminder that someone can see, It's not a list of instructions, but a phrase or object meant to trigger their memory. A visual prompts may be:

- putting toothpaste on their toothbrush, leave it by the sink to encourage them to brush their teeth.
- use cue cards or a book of pictures that a person can point to, to help communicate their needs.

Carepartners, healthcare professionals, and individuals closest to people living with dementia can employ these tactics to increase communication. Good strategies will serve to enhance everyone's quality of life and improve their engagement, leading to better health outcomes.



SAFETY

SAFETY IS A CRITICAL ASPECT OF DEMENTIA CARE. THOSE LIVING WITH DEMENTIA ARE AT AN INCREASED RISK OF INJURY DUE TO THEIR COGNITIVE IMPAIRMENT AND BEHAVIOR CHANGES. IN THIS SECTION, WE WILL PROVIDE INFORMATION ABOUT SAFETY THAT DETAILS TIPS FOR MAINTAINING A SAFE AND SECURE ENVIRONMENT, PREVENTING HAZARDS AND PROMOTING HEALTH AND WELLNESS, EXPLAINING EMERGENCY PROCEDURES, AND BALANCE.

>>> TIPS FOR MAINTAINING A SAFE AND SECURE ENVIROMENT

Creating a safe environment for people living with dementia requires an assessment of their current condition and a thorough evaluation of their enviroment.

1. PROVIDE CLEAR & ADEQUATE LIGHTING:

Dimly lit areas can increase the risk of falls and cause confusion for people living with dementia. Ensure all areas have adequate lighting so visibility is clear.

2. LOCK & BLOCK DOORS:

As the diagnosis progresses, it may be necessary to take measures to ensure the safety of the people living with dementia. One possibility is to secure entrances and exits of the home, especially at night. Adding a deadbolt to doors can provide an extra layer of security in such situations.

3. INSTALL SAFETY DEVICES:

Installing devices such as smoke detectors, carbon monoxide detectors, alarms, door sensors, and grab bars can keep people living with dementia safe in their environment.

4. HAZARD-FREE AREAS:

Make sure there are clear pathways, remove clutter, secure loose rugs, and avoid items that can be tripping hazards. Removing sharp objects or weapons from living spaces adds to creating a safe environment.

5. MEDICATION MANAGEMENT:

Keep all medications locked away and out of reach from people living with dementia. Consider using pill dispensers to ensure the administration of regular doses of medications when carepartner intervention is not possible.

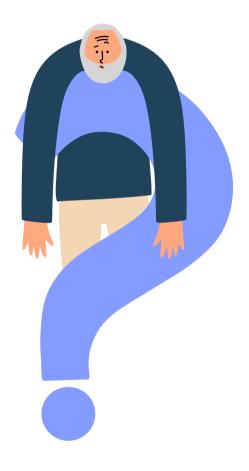


>>> PREVENTING HAZARDS & PROMOTING HEALTH AND WELLNESS

Preventing hazards in dementia care can transform into a catch-all approach to securing good health and wellness.

1. REGULAR CHECK-UPS

Ensure check-ups are conducted at regular times (eg. hearing tests, dental work, blood pressure, and blood work).



2. APPROPRIATE CLOTHING

Ensure individuals wear clothing appropriate to their surroundings to avoid hazards such as falls, overheating or being cold.

3. ADEOUATE NUTRITION & ACTIVITY

Provide meals that factor in the individual's nutritional needs. Regular exercises for physical strength and agility also lessen the chances of avoidable falls.

4. WANDERING EVENTS

Speak with people living with dementia and guide them to where they need to be, provide activities and healthy social engagements to ease triggers.

5. CLEAR PATHWAYS

This can decrease the possibility for dangers such as tripping and falling.

>>> EMERGENCY PROCEDURES

The adoption of set protocols to deal with emergencies is critical in maintaining a safe environment for people living with dementia. Emergency procedures include measures for dealing with specific circumstances or crises.

1. CREATING AN EMERGENCY PLAN

Emergency procedures should be consistent protocols that allow for quick thinking while responding in a crisis.





2. EMERGENCY CONTACT LIST

Individuals caring for people living with dementia should be equipped with current medical information and emergency contacts in case an emergency occurs.

3. GREEN SLEEVE

The Green Sleeve holds important Advance Care Planning documents and other forms that outline the individuals goals for health care.



The Green sleeve is used in-case of an acute visit and should be sent with the paramedics if an ambulance is called.





Memory problems and difficulty thinking are the side effects most commonly associated with Alzheimer's disease and similar dementias. But, the loss of balance is a symptom that carepartners should be prepared for, especially as the person progresses into the later stages of this condition.

In earlier stages, or even before other dementia symptoms develop, losing balance while standing or walking can indicate an increased potential to develop Alzheimer's. It may also signify that your loved one might have a kind of dementia other than Alzheimer's, like vascular dementia.

To understand why, you must look at where the condition has affected your loved one. The cerebellum is the part of the brain that controls body movement, it is located near the back base of the skull. Ailments that affect the cerebellum are likely to affect balance, and certain types of dementia fit the bill. Vascular dementia, for instance, is different from Alzheimer's disease because the illness is caused by a lack of blood flow carrying oxygen to the cerebellum. Vascular dementia is also known as "multi-infarct dementia." Some people with vascular dementia will experience feelings of vertigo (the sensation of movement while holding still) before they have trouble with thinking and memory. There is also a specific kind of Alzheimer's, called "posterior cortical atrophy," also known as "Benson's Syndrome" which targets the cerebellum and, as a result, affects balance. People with posterior cortical atrophy can lose their sense of knowing which direction is up, are more prone to dizziness, and may be frequently leaning to one side.

Loss of balance for people with Alzheimer's often comes in the late stages. As brain cells deteriorate and neural communication throughout the body worsens, someone with late-stage Alzheimer's will typically have more difficulty seeing, processing information about the physical environment, and walking; all of these affect balance. A typical adjustment people make is to change their "gait," or how they walk so that they're shuffling their feet instead of lifting them with each step. It is more difficult to walk this way, and a loss of balance and falls become more likely. This is why exercises like Tai chi, riding a stationary bike, or leg lifts are a good idea.

>>> MEDICATIONS THAT IMPACT BALANCE

Many common medications taken by older adults can cause dizziness or light-headedness and contribute to an increased risk of falling.

Medications that people living with dementia take to relieve symptoms can also make balancing more difficult. The medication, memantine which has been shown to improve memory and attention in people living with dementia, lists "dizziness" as a side effect.

It is also noteworthy that cochlear implants, small hearing aids surgically rooted inside the ear, have been shown to cause vertigo and dizziness. If your loved one has a cochlear implant, this might explain problems with balance.

> Check with a doctor about medications to see if loss of balance, or even vertigo, might be due to drug interactions rather than dementia itself.

>>> RECOGNIZING BALANCE PROBLEMS IN A LOVED ONE

Due to difficulty communicating, people living with dementia may not be able to tell you that balance is becoming a problem. Watch for these signs:

- Walking unsteadily
- Shuffling rather than lifting the foot while taking steps
- Shortened steps
- Bumping into things
- Stooped posture
- Turning via small steps, rather than pivoting on heels

Did You Know?

Loss of balance is one reason why people living with dementia are eight times more likely to fall than these without. As a result, incidents of broken hips are far more common, and recovering from a fractured hip is extremely complicated for someone living with dementia.

>>> BALANCE AND THE STAGES OF ALZHEIMER'S / DEMENTIA

Balance issues in the early stages of Alzheimer's disease are not normal. Someone with Alzheimer's typically doesn't experience difficulty staying upright until the later stages. That is when communication between brain cells has become so compromised that most basic physical actions, including things like swallowing, become harder.

If someone with Alzheimer's exhibits trouble with balance in the early stages, this could indicate a rarer form of the disease. Posterior cortical atrophy (PCA), also called Benson's Syndrome, is a variant of Alzheimer's disease that disrupts the back of the brain, responsible for vision and coordination. PCA can develop earlier in a person's life than typical Alzheimer's, usually in the mid-50s or early 60s. The first symptoms are vision changes, making tasks like reading a line of text more difficult. Spatial awareness, including the ability to judge distances, becomes compromised as well.

Someone with PCA may not be able to tell if objects are moving or not, and distinguishing multiple objects at once can also become difficult. These symptoms may combine to put a person off-balance.

Studies have shown a mild difference in gait, or the ability to walk, for people who are in the early stages of Alzheimer's. This is harder to spot, but someone with mild Alzheimer's is slightly slower than average. Early identification of Alzheimer's is useful for treatment because the earlier someone begins physical therapy to improve their gait, the more effective the treatment is to help maintain their balance.

>>> SOLUTIONS FOR BALANCE PROBLEMS ASSOCIATED WITH DEMENTIA

Balance could be considered a skill, something your loved one can improve with practice. Below are tips to make balance problems less dangerous, and improve agility.

1. MAKE THE HOME SAFER

To make balance less of an issue, your loved one's home should be as easy to navigate as possible. Try these steps:

- Continually pick up and put away any clutter on the floor, like shoes or clothes, that your loved one may trip over or need to steer around.
- Remove throw rugs, or secure them with double-sided tape.
- Keep useful items within reach, so your loved one doesn't need to reach or use a stepping stool.
- Install grab bars in the bathroom, by the toilet, and in the shower or tub.
- Keep the house well lit, even at night, so your loved one has an easier time seeing.
- Staircases should have a handrail.
- Avoid slippers or shoes that have deep treads. Footwear with thin non-slip soles is best in doors.

2. EXERCISE

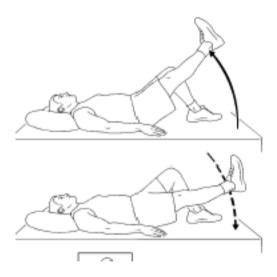
Exercise lowers anxiety and improves memory in people living with dementia. Almost any physical activity that gets a person moving is good for dementia, these low-impact workouts can particularly help improve balance; by strengthening leg muscles and maintaining bone density.

Calf Raises

1. Have your loved one stand holding the back of a chair.

2. Lift the heels, raising them onto tiptoes as high as possible.

- 3. Return heels to the floor.
- 4. Repeat 10 times.



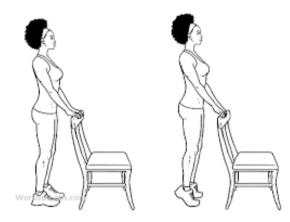
Single Leg Stand

1. Have your loved one stand next to a chair, but only touch the chair if needed.

2. Stand on one foot.

 Hold for 10 seconds and return the foot to the floor.

4. Repeat 10 times, and then do the same with the other leg.



Straight Leg Raises

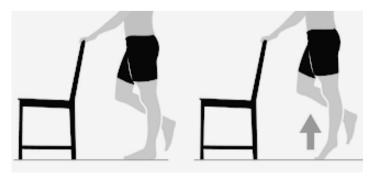
1. Have your loved one lie down on their back, with the lower back contacting the floor. A soft surface, like a yoga mat, is a good idea.

2. Bend one knee to about 90 degrees, keeping the other leg straight.

3. Lift the straight leg to about the level of the other bent knee.

4. Lower the straight leg.

5. Repeat 10 times, then switch legs and repeat.



21

3. MOBILITY AIDES

Canes and walkers may help maintain balance and get your loved one more comfortable standing and walking, but there are important issues to consider before purchasing a mobility aid:

- It is vital that you consult a doctor, physical therapist, or occupational therapy before purchasing a cane or walker, as there are many types. A person's gait, balancing ability, and grip strength must be considered when deciding which to choose.
- Canes and walkers may increase the likelihood of falls, as using one of these devices is more complex. Walking and using a mobility aid simultaneously can feel like one is multitasking.
- As your loved one's memory declines, you need to monitor their use of their mobility aide closely.

Remember, it can be difficult to get someone living with dementia to use a new tool continuously.

Once you find the right mobility aid, your loved one will need to use it consistently. Consider the following tips:

- Keep the cane or walker nearby. Place it at your loved one's bedside during sleeping hours.
- Choose a cane or walker that has an appealing color or design feature for your loved one.
- If your loved one is prone to misplacing a cane, choose one with a bright color that is easy to find.
- Be prepared to remind your loved one to use the cane or walker. You may need to offer frequent refreshers on how to use it.

>>> CANES:

- They are more useful when a person favors one side.
- Have your loved one use the cane on the opposite side from the weak or painful side.
- The cane's height should be at about hip level. A raised shoulder during usage means it's too high.
- Foam handles are better for people with weaker grips.
- A rubber tip provides traction. On ice, you need a special attachment that should be available to screw onto the cane's tip.
- Mount a hanging hook at home, so the cane is stored off the ground and can't trip anyone.





- Supports half a person's weight, distributed evenly through both arms.
- Walkers can come with seats if your loved one becomes tired easily.
- Walkers with wheels are easier to turn, but your loved one must be able to apply a brake to prevent accidents.
- Never push someone seated in a four wheel walker.



ACTIVITIES AND LEISURE

PARTICIPATING IN A VARIETY OF ACTIVITIES CAN HELP TO REDUCE STRESS, IMPROVE MOOD, AND BOOST SELF-ESTEEM. IT CAN ALSO PROVIDE A SENSE OF ACCOMPLISHMENT WHICH CAN HELP WITH ONES OVERALL WELL-BEING.

Recreation therapy can be incredibly beneficial for people living with dementia in many different ways.

1. IMPROVE PHYSICAL FUNCTIONING:

Recreation therapy including activities like stretching, yoga, and light exercise can help improve physical functioning.

2. COGNITIVE STIMULATION:

Recreation therapy can also help maintain existing abilities and preserve their cognitive skills. Engaging in puzzles, card games, and other mentally stimulating activities can help improve cognitive functioning and prevent cognitive decline.

3. EMOTIONAL WELLBEING:

Recreation therapy activities like music therapy and art therapy can be particularly beneficial by improving mood, reducing anxiety and depression, and providing a sense of accomplishment.

4. SOCIAL CONNECTIONS:

Recreation therapy can be a great way to maintain social connections and feel a sense of belonging. Activities like group exercise or game nights can help promote bonding while also encouraging physical and mental fitness.



5. MEMORY RECALL:

Recreation therapy can also help stimulate the brain and improve memory recall. Engaging in reminiscence therapy and recreational activities like trivia games can provide opportunities to recall and share memories with others.

>>> THE KEY IS, THE INTEREST TO THE INDIVIDUAL. OFFER OPTIONS, AS CHOICE IS IMPORTANT!

1. PUZZLE GAMES:

Puzzles can help with cognitive functioning and problem-solving, and they can be tailored for different ability levels.

2. PHYSICAL ACTIVITIES:

Exercise and physical activity can improve motor skills, physical health, and promote social connections.

3. SOCIAL ACTIVITIES:

Social activities such as group discussions, social events, and games can help improve social skills, connections, and overall wellbeing.

4. MUSIC THERAPY:

Music can trigger memories, emotions, and improve mood in individuals with dementia.

5. ART THERAPY:

Art can be soothing and therapeutic, and it can serve as a way to express emotions.

6. REMINISCENCE THERAPY:

This therapy can help people living with dementia to recall past memories and events, and provide an opportunity for meaningful conversations.

7. SENSORY THERAPY:

Sensory activities like aromatherapy, tactile stimulation, and taste testing can provide stimulation and improve mood.

BRAIN EXERCISES TO IMPROVE MEMORY, COGNITION, AND CREATIVITY

BRAIN EXERCISES MAY HELP BOOST AND MAINTAIN BRAIN FUNCTION. MEMORY GAMES, LEARNING NEW SKILLS, CROSSWORDS, AND EVEN VIDEOS GAMES MAY HELP.

The brain gets plenty of exercise every day, certain activities may help boost brain function and connectivity. This in turn may help protect the brain from age-related degeneration. The brain is always active, even during sleep. However, certain activities can engage the brain in new ways, potentially leading to improvements in memory, cognitive function, or creativity.

Meditation	Meditation generally involves focusing attention in a calm, controlled way. Meditating may have multiple benefits for both the brain and the body. According to the National Center for Complementary and Integrative Health, research suggests that meditation may benefit the brain by slowing brain aging and increasing the brain's ability to process information.
Visualization	Visualization involves forming a mental image to represent information. The mental image may be in the form of pictures or animated scenes. People can practice visualization in their day-to-day lives. For example, before going shopping, people can visualize how they will get to and from the grocery store, and imagine what they will buy when they get there. The key is to imagine the scenes vividly and in as much detail as possible.
Playing games	Playing card games or board games can be a fun way to socialize or pass the time. A 2017 study found a link between playing games and a decreased risk of cognitive impairment in older adults.

Memory card games	Memory card games test a person's short-term memory and ability to remember patterns. They are a simple and fun way to engage the brain and activate areas related to pattern recognition and recall.
Crossword puzzles	Crossword puzzles are a popular activity that may stimulate the brain. An older study from 2011 notes that crossword puzzles may delay the onset of memory decline in people with preclinical dementia.
Jigsaw puzzles	Jigsaw puzzle can be a good way to pass the time and may also benefit the brain. A 2018 study found that puzzles activate many cognitive functions, including: perception, mental rotation, working memory, and reasoning. The study concluded that doing jigsaw puzzles regularly and throughout life may protect against the effects of brain aging.
Sudoku	Number puzzles, such as sudoku, can be a fun way to challenge the brain. They may also improve cognitive function in some people. A 2019 study of adults aged between 50 and 93 years found that those who practiced number puzzles more frequently tended to have better cognitive function.
Chess/ Checkers	A 2016 meta-analysis notes that chess and other cognitive leisure activities such as checkers may lead to improvements in: memory, executive functioning, which is the ability to monitor and adapt behavior in order to meet set goals, and information processing speed.
Video games	A 2015 study notes that some types of video games — such as action, puzzle, and strategy games — may lead to improvements in the following: attention, problem solving, and cognitive flexibility

Socializing	Enjoying company of friends may be a mentally engaging leisure activity and may help preserve cognitive function. A 2019 study found that people with more frequent social contact were less likely to experience cognitive decline and dementia. Some social activities that may help stimulate the brain include: having discussions, playing games, and participating in social sports.
Learning new skills	Learning new skills engages the brain in different ways and may help improve brain function. A 2014 study of older adults found that learning a new and cognitively demanding skill, such as quilting or photography, enhanced memory function.
Increasing personal vocabulary	Increasing one's vocabulary range is a great way to broaden knowledge while exercising the brain. A simple way to increase vocabulary is to read a book or watch a TV program and note down any words that are unfamiliar. A person can then use a dictionary to look up the meaning of the word.
Learning a new language	"Bilingualism" refers to the ability to speak two languages. A 2019 review notes that bilingualism increases and strengthens connectivity between different areas of the brain. The researchers propose that this may play a role in delaying the onset of Alzheimer's disease and other forms of dementia.
Listening to music	Studies show that this may lead to improvements in cognitive function and overall well-being.
Learning a musical instrument	Learning an instrument, exercises parts of the brain that are responsible for coordination. According to a 2014 study, playing an instrument may benefit cognitive development in a young brain and help protect against cognitive impairment in an aging brain.

New Hobbies	Taking up a new hobby can be mentally stimulating and exercise the brain in new ways. Hobbies that require coordination or dexterity will activate a person's motor skills. Such hobbies may include: knitting, embroidery, drawing, painting, dancing, and learning a musical instrument.
Exercising	Regular physical exercise is beneficial for both the brain and the body. Authors of a 2019 review note that exercise improves the following aspects of brain health: memory, cognition, and motor coordination.
Dancing	According to the Centers for Disease Control and Prevention (CDC), exercise has beneficial effects on the following aspects of cognitive health: memory, planning, organization. Dance is a form of exercise that may also engage areas of the brain involved in rhythm and balance.
Engaging in sports	Certain sports are both physically and mentally demanding. Some require a range of cognitive skills, such as: sustained attention, planning, multitasking, and the ability to adapt rapidly to changing situations.
Tai Chi	Tai chi is a form of physical exercise that involves gentle body movements, rhythmic breathing, and meditation. A 2019 study compared brain function and connectivity among tai chi practitioners and those who did not practice it. The researchers found that the tai chi practitioners had enhanced connectivity between different regions of their brain. They proposed that this may improve cognition and decrease the rate of memory loss.
Sleeping	While not necessarily an active exercise, sleep is crucial for both the brain and the body. According to the National Institute of Neurological Disorders and Stroke, most adults need between 7 and 9 hours of sleep each night, although many people get less sleep than they need. A 2015 review notes that sleep has been proven to: boost memory recall, reduce mental fatigue, and regulate metabolism Making sure to get enough sleep each night is an important step toward maintaining a healthy brain.

ENGAGING AND MEANINGFUL ACTIVITIES

THE FOLLOWING EXPLORES A VARIETY OF ENGAGING ACTIVITIES THAT REIGNITE JOY, BOLSTER COGNITIVE HEALTH, AND NURTURE EMOTIONAL TRANQUILITY FOR PEOPLE LIVING WITH DEMENTIA.

>>> CREATIVE ACTIVITIES FOR PEOPLE LIVING WITH DEMENTIA

Navigating the complexities of dementia can seem overwhelming, but creating a comforting home environment filled with stimulating activities can illuminate the path forward. One way to keep those living with dementia engaged is to delve into their past interests or talents.

1. EXPERIMENT WITH SOUNDS:

Music has a profound effect on people living with dementia, it stimulates memories and encourages creativity. Introducing simple musical instruments or songs can be a positive experience.

2. ENCOURAGE VISUAL EXPRESSION:

Painting and drawing are ways to express feelings safely and creatively. Encourage the use of bold, bright colors on big surfaces. Rolls of butcher paper enable people living with dementia to create without encountering the stress of defined spaces. These types of visual activities not only are fun, but can also be therapeutic, as they promote emotional expression.

3. EXPLORE SENSORY CRAFT EXPERIENCES:

Recreation therapy activities like music and art therapy can be particularly beneficial for people living with dementia by improving mood, reducing anxiety and depression, and providing a sense of accomplishment.

4. CREATE COLLAGES:

Cut out images from magazines, or print old ads and articles. Choose subjects that fit your loved one's interests, like cooking, cars, or fashion. Another idea is to scan and print old family pictures. Let your family member arrange and rearrange the elements to create pictures or scrapbook pages.

>>> REMINISCING

Engaging in reminiscence therapy activities is a delightful way to help your loved ones recall cherished memories and exercise their cognitive abilities. These activities utilize sensory and visual cues to gently guide people through your past, making this activity meaningful and comforting.

1. RELIVE THE PAST WITH CLASSIC MOVIES AND TV SHOWS:

Keep those living with dementia engaged by arranging nostalgic movie nights. Watching old favorites can provide both entertainment and memory stimulation.

2. LOOK THROUGH PHOTO ALBUMS:

A photo album is a great way to take a stroll down memory lane. The time spent together remembering loved ones and sharing their stories is priceless time connecting with the people who truly matter to us.

3. JOURNEY BACK IN TIME:

Before the era of modern shopping, catalogs and magazines played a significant role in staying informed about trends. Finding copies or reprints of magazines they once enjoyed, such as Life or Cosmopolitan, or even the Sears, Roebuck and Co. catalog, can be one of the most engaging things.

4. LISTEN TO MUSIC AND SING:

Music can awaken the brain, and with it, the rich trove of memories that are associated with familiar songs. Stream classics or sing memorable songs like holiday carols. Sing-alongs and music classes were more common in midcentury schools, and you might be surprised at how many songs your loved one remembers from childhood.



>>> FULLFILING ACTIVITIES

Enriching activities for those living with dementia can significantly contribute to their quality of life and foster feelings of achievement and self-worth. These activities should be tailored to the person's cognitive level, helping them feel engaged and productive without being overwhelmed.

1. FOLD LAUNDRY:

This routine task is one of the most calming activities for people living with dementia. The familiar process of folding soft fabrics and the scent of classic detergents can evoke comforting memories. Start with uncomplicated items like hand towels and T-shirts for this simple yet fulfilling task.

2. ENGAGE IN HANDY ACTIVITIES FOR PEOPLE WHO ENJOY DO-IT-Yourself projects:

Suggest activities that yield visible results. Painting wooden boards or assembling PVC pipes are ideal activities, particularly for people with good motor function. For people living with advanced dementia, wooden or plastic play tools can offer a similar sense of achievement.

3. UNTIE KNOTS:

This is a tactile activity that can keep people living with dementia engaged. Tie loose knots along a durable, comfortable rope. The act of untying can provide both cognitive and physical stimulation without causing frustration or discomfort.

4. DO A PUZZLE:

Certain categories of puzzles are optimal, such as those featuring large pieces, distinct colors, or unique shapes, with tactile components. These puzzles offer both entertainment value and cognitive benefits.

>>> SENSORY ACTIVITIES

Invigorating the senses can be one of the most powerful activities for those living with dementia at home. The following activities can stimulate the senses and evoke fond memories, leading to a more fulfilled and engaged life for your loved ones.

1. STOP AND SMELL THE ROSES:

Surrounding your loved one with familiar smells, like fresh-cut grass or the aroma of warm bread, could evoke joyful memories and emotions. It's crucial to avoid smells that could cause distress.

2. TOUCH THE PAST:

Engaging in tactile activities can stimulate reminiscence. Even if they can't recall specific events, touching familiar objects like keys or hand-embroidered beads can trigger memories.

3. TASTE FOND MEMORIES:

Smells and tastes can elicit emotions and memories. Chocolate cake could bring back birthday memories, or a sip of instant coffee could recall quiet, early mornings at home.

4. FEEL DIVERSE TEXTURES:

Experiencing different textures can be a fulfilling activity that provides sensory stimulation and memory cues. Consider options that align with your loved ones interests, such as soft animal fur for pet lovers or damp soil and leaves for those who enjoyed gardening. Create an activity around this by making a bag of varied textures to be sorted by touch.

>>> TECHNOLOGY-BASED ACTIVITIES

Embracing technology can significantly enrich the range of home-based activities for those living with dementia, offering stimulating, engaging, and mentally nourishing experiences. These activities are meant to cultivate joy, stimulate memories, and nurture emotional tranquility within the familiar confines of home, making each moment meaningful. Here are some innovative ways technology can facilitate engaging and fun activities at home.

1. DISCOVER NATURE AND ART THROUGH LIVE CAMS:

A wealth of global attractions, from zoos and nature preserves to museums, offer live internet streams. Whether your loved one has a fondness for animals or an appreciation for art, they can experience ever-changing visual stimulation without leaving the comfort of home.

2. VENTURE GLOBALLY WITH GOOGLE EARTH:

Google Earth's user-uploaded photos offer a virtual exploration experience like no other. Whether your loved one cherishes memories of their childhood hometown or dreams of the Sahara Desert, Google Earth can offer them a gateway to explore these places.

3. CREATE A FAMILY VIDEO TABLET:

Video calls and chats can keep families connected, and technology can offer comfort even when a conversation isn't possible. Creating a collection of videos featuring family members, beloved pets, and memorable moments on a tablet can be an ideal activity. This personalized tablet can provide solace during restless times or assist with sleep. If a tablet is too complex, consider transferring these precious videos onto a classic videotape or DVD.

>>> ACTIVITIES FOR STAGES OF DEMENTIA

ACTIVITIES FOR MILD (EARLY-STAGED) DEMENTIA:

In the early stages, individuals retain much of their independence and their cognitive abilities, though they may have trouble remembering recent events or managing complex tasks.

Good activities for this stage might include:

- Reading books
- Solving a crossword or other puzzles
- Gardening
- Cooking or baking
- Attending social events

Activities can also include learning new, simple skills, as this stage of dementia is often marked by a desire to continue personal growth and development.

ACTIVITIES FOR MODERATE (MIDDLE-STAGE) DEMENTIA:

As dementia progresses into the middle stage, individuals may begin to have difficulty recognizing familiar people and places, and they may struggle with tasks that require multiple steps.

Activities should be simplified and broken down into single steps during this stage. Simple tasks, or arts and craft activities like these may be suitable:

- making meals together
- listening to music
- going for walks
- folding laundry
- washing dishes
- watching old home movies

When you're choosing activities for people living with dementia, it's important to consider their current cognitive abilities, their interests, and the progression of their condition. Activities should ideally be simple, enjoyable, and familiar to reduce frustration and anxiety.

ACTIVITIES FOR SEVERE (LATE-STAGE) DEMENTIA

In the late stages of dementia, individuals often have significant memory loss and may have difficulty communicating or recognizing loved ones. However, they can still benefit from sensory and emotional experiences.

Simple tactile activities like the following can be comforting and soothing for individuals with late-stage dementia:

- Handling a soft blanket
- Squishing clay
- Listening to familiar music
- Looking at family photos
- Receiving gentle massages with a favorite lotion
- Enjoying the outdoors in a safe and comfortable manner

Remember that everyone is unique, and the progression of dementia varies significantly among individuals. Always tailor activities to the person's individual abilities and interests.

The goal is not to challenge them with difficult tasks but to provide comfort, stimulate their senses, and create opportunities for meaningful engagement.



LEGAL MATTERS

BASIC INFORMATION REGARDING LEGAL AND FINANCIAL ASPECTS OF CAREGIVING RESPONSIBILITIES, INCLUDING PROPER AUTHORIZATION OF WITHDRAWAL SUPPORT, MANAGING AUTHORITIES OF FINANCE, AND DIRECTIVE SUCH AS LIVING WILLS.

When dealing with legal matters related to caregiving responsibilities, it is always recommended to seek guidance from a qualified Canadian lawyer who specializes in estate planning, healthcare law, or elder law. They can provide personalized advice based on your specific circumstances and the laws of your province or territory.

36



>>> AUTHORIZATION OF WITHDRAWAL SUPPORT

In Canada, the authorization of withdrawal support typically involves the use of advance care planning documents, such as a living will or advance directive. These documents allow individuals to express their wishes regarding medical treatment and end-of-life care. It is important to consult with a lawyer to ensure the document is properly prepared and valid in your province or territory.

>>> MANAGING AUTHORITIES OF FINANCE

To manage someone's financial affairs as a caregiver, you may need legal authority granted through a power of attorney (POA) for finances. This document allows you to make financial decisions on behalf of the person you are caring for. The requirements and regulations surrounding POAs may vary across provinces and territories, so it's advisable to consult with a lawyer to understand the specific rules in your jurisdiction.

>>> DIRECTIVE: LIVING WILLS

In Canada, a living will is commonly referred to as an advance healthcare directive or representation agreement. This document outlines an individual's preferences for medical treatment and appoints a representative to make healthcare decisions on their behalf. The rules regarding these directives vary across provinces and territories, so it's important to consult with a lawyer to ensure compliance with local laws.

SUPPORT & RESOURCES

CONTACT DETAILS AND LINKS TO NON-PROFIT ORGANIZATIONS, HELP HOTLINES, COUNCILS AND NETWORKS, CAREPARTNER SUPPORT, BUISNESS AND DEMENTIA, AND OTHER RESOURCES.

NON-PROFIT ORGANIZATIONS

Alzheimer Society of Canada: Provides support and resources for care partners of individuals with Alzheimer's disease or other dementias. They have regional chapters across Canada. Website: www.alzheimer.ca Brain Canada Foundation: www.braincanada.ca Dementia Society of Canada: www.dementiasociety.org

HELP HOTLINES:

Alzheimer Society of Canada Helpline: 1-800-616-8816 Dementia Helpline (Alberta): 1-844-357-3966 First Link® Dementia Helpline (British Columbia): 1-800-936-6033

COUNCILS AND NETWORKS:

Canadian Consortium on Neurodegeneration in Aging: www.ccna-ccnv.ca Dementia Friendly Communities: www.dfcan.ca

CAREPARTNER SUPPORT:

Caregiver Support and Education (Ontario): www.dementiacareeducation.ca Dementia, Caregiver and Family Services (BC): brellasociety.ca/caregiversupport



FLIPPINGSTIGMA.COM

The purpose of this toolkit is to recognize and respond to this stigma and discrimination. It has been designed by people with dementia to help others – including other people living with dementia, the people who support them, and those who do research – to address the challenges of stigma and discrimination.

BUSINESS AND DEMENTIA:

Alzheimer Society Canada: Dementia Friendly Communities Program:

www.alzheimer.ca/en/Home/About-dementia/Reduce-stigma/Dementia-Friendly-Canada

Dementia Friends Canada: www.dementiafriends.ca

Frontline Worker Support:

Alzheimer Society Canada - Training and Education: www.alzheimer.ca/en/Home/Living-with-dementia/Resources/Health-careprofessionals-and-research

OTHER RESOURCES

Canadian Virtual Hospice: Provides resources and support related to end-of-life care and grief.

Website: www.virtualhospice.ca

Canadian Hospice Palliative Care Association (CHPCA): Provides resources and support for individuals caring for someone with a life-limiting illness. Website: www.chpca.ca

Canadian Virtual Health and Wellness Centre (CVHWC): A website that offers mental health support for individuals and carepartners.

Website: www.cvhwc.ca

Caregiver Connect (Canadian Cancer Society): Offers support and information for those caring for someone with cancer.

Website: www.cancer.ca

Carers Canada: Offers information and resources for carepartners across Canada.

Website: www.carerscanada.ca

Elder Abuse Prevention Ontario (EAPO): Provides resources and support related to preventing elder abuse, including caregiver support.

Website: www.elderabuseontario.com

Family care partners of British Columbia: (FCBC): Offers support and resources for family care partners in British Columbia.

Website: www.familycarepartnersbc.ca

Mental Health Commission of Canada: Provides resources, information, and support for mental health carepartners.

Website: www.mentalhealthcommission.ca

The Caregiver Network: Offers resources and online support for care partners across Canada.

Website: www.caregivernetwork.ca

ABOUT BRELLA

Brella Community Services Society, formerly Seniors Come Share Society, was founded in 1977 for the purpose of providing an Adult Day Program in the South Surrey/White Rock area to people living with dementia. Over the decades, the Adult Day Program evolved from being provided two days a week to six days and expanded to include three locations: South Surrey, Newton, and Guildford. At present, Brella offers services under three banners: Adult Day Program; Community Services; and Dementia, Caregiver and Family Services.

>>> ADULT DAY PROGRAM

At the Adult Day Program, we utilize a holistic person-centered approach. By providing therapeutic recreation, personal care assistance, and medical monitoring, we empower our participants to successfully access resources within their community and safely age in place. While focusing on the strengths of each individual, we assist in building and maintaining their quality of life. We support the individuals' right of choice, while promoting and encouraging positive leisure experiences. We provide resources, support and the opportunity for caregivers to focus on their own personal well-being.



ABOUT BRELLA CONT.

>>> COMMUNITY SERVICES

We are continually expanding our services and piloting new programs to respond to the needs of individuals and families living in our community. Currently we offer Better at Home, Digital Inclusion, Volunteer Services, Community Meals, Social Prescribing and many recreational and social activities on a weekly basis.

>>> DEMENTIA, CAREGIVER AND FAMILY SERVICES

We offers the following supports to people living with dementia, their carepartners and family members:

- **Client-Centered Individual Support** Scheduled weekly or bi-weekly appointments with caregivers to provide one-to-one support. Meetings can be held remotely or in-office.
- Family & Caregiver Conferences Helps families understand and manage difficult situations in an atmosphere where they can ask questions and air concerns.
- **Caregiver Support Groups** The Caregiver Support Group is beneficial to caregivers in all stages of their caregiving journey. This group focuses on providing education, support, camaraderie and relaxation.
- In-Person Caregiver Support Group: Tuesdays and Thursdays from 12:30 PM 2 PM (contact the Care Coordinator @ 604-531-9400 ext. 219 to join)
- **Respite Care Services** Giving caregivers a well-deserved break while ensuring that their loved one is taken care of.

While our organization has progressed over the years, the foundational ideology is still relevant: to connect isolated adults, to develop social skills, to provide recreational activities, to delay institutionalized living, and to contribute to emotional and physical well-being.

BRELLA SERVICES/PROGRAMS

DEMENTIA CAREGIVER & FAMILY SERVICES

Ric Dilworth - Director of Dementia, Caregiver and Family Services richard.dilworth@brellasociety.ca (604) 531-9400 ext. 202

Nisa Moman - Care Coordinator nisa.moman@brellasociety.ca (604) 531-9400 ext. 219

DAY PROGRAM

Raj Sahota - Day Program Manager (604)-531-2502 ext. 210 or email raj.sahota@brellasociety.ca

Angela Nial- Day Program Manager (604)-599-0034 ext. 302 or email angela.nial@brellasociety.ca

BETTER AT HOME

Elizabeth Sundvall - Better at Home Coordinator elizabeth.sundvall@brellasociety.ca (604) 536-9348

EVENTS MANAGER

Jenn Deschenes - Events Manager jennifer.deschenes@brellasociety.ca 604-531-9400 ext. 216

VIRTUAL PROGRAMS

Isaiah Clemente - Digital Inclusion and Marketing Coordinator isaiah.clemente@brellasociety.ca (604) 531-9400 ext. 220

VOLUNTEER SERVICES

Reza Merzaie - Volunteer Programs Coordinator reza.merzaie@brellasociety.ca (604) 531-9400 ext. 203

SOCIAL PRESCRIBING

Janice Gunn - Social Prescribing Manager janice.gunn@brellasociety.ca (604) 531-9400 ext. 204 Edwin Chau - Wellness Coordinator edwin.chau@brellasociety.ca (604) 531-9400 ext. 205

CREDITS

Title: Balance Problems Associated with Alzheimer's and Dementia : Causes and Symptom <u>https://www.dementiacarecentral.com/caregiverinfo/balance-issues</u> Authors: Dementia Care Central Date: Jan 31, 2023

Source: Behavioral and Psychological Symptoms of Dementia: Implications for Diagnosis and Treatment Authors: Lyketsos, Constantine G.; Lopez, Oscar; Jones, Richard; Fitzpatrick, Annette L.; Breitner, John; DeKosky, Steven Journal: The Journal of Clinical Psychiatry Year: 2002 Volume: 63, Issue: Suppl 3 Pages: 5-12 Link to the article: https://www.psychiatrist.com/jcp/article/pages/2002/v63s03/v63s0301.aspx

Title: 22 Brain Exercises to Improve memory, cognition and creativity

https://www.medicalnewstoday.com/articles/brain-exercises Author: Medical News today- John Johnson Medically reviewed by Timothy J. Legg, PhD, Psy D Date: April 4, 2023

Title: Diagnosis and management of dementia with Lewy bodies: Fourth consensus report of the DLB Consortium. Authors: McKeith, Ian G.; Boeve, Bradley F.; Dickson, Dennis W.; et al. Journal: Neurology Year: 2017 Volume: 89, Issue: 1 Pages: 88-100 Link to the article: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5499487/

Title: 20 Engaging and Meaningful Activities for People with Dementia at Home

Author: Amanda Lundberg, RN Family Medicine Expert Date: March 20, 2024 <u>https://www.aplaceformom.com/caregiver-resources/articles/dementia-activities</u>

Source: Mild cognitive impairment and cognitive impairment, no dementia: Part A, concept and diagnosis. Authors: Petersen, Ronald C.; Roberts, Rosebud O.; Knopman, David S.; Boeve, Bradley F.; Geda, Yonas E.; Ivnik, Robert J.; et al. Journal: Annals of Internal Medicine Year: 2013 Volume: 138, Issue: 2 Pages: 75-83

Source: Preclinical Alzheimer Disease — The Challenges Ahead Authors: Sperling, Reisa A.; Karlawish, Jason; Johnson, Keith A. Journal: Nature Reviews Neurology Year: 2013 Volume: 9, Issue: 2 Pages: 54-58 Link to the article: https://www.nature.com/articles/nrneurol.2012.241

CREDITS CONT...

Title: Understanding Different Types of Dementia

Author: National Institute of Aging <u>https://www.nia.nih.gov/health/alzheimers-and-dementia/what-dementia-symptoms-types-and-diagnosis#signs</u>

Title: Vascular Contributions to Cognitive Impairment and Dementia: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association. Authors: Gorelick, Philip B.; Scuteri, Angelo; Black, Sandra E.; et al. Journal: Stroke Year: 2011 Volume: 42, Issue: 9 Pages: 2672-2713 Link to the article: https://www.ahajournals.org/doi/full/10.1161/STR.0b013e3182299496

