Oral Health Considerations for Patients with Neurodegenerative Conditions

CareQuest Institute Continuing Education Webinar

December 7, 2023

CareQuest Institute for Oral Health®

Special Care Dentistry Association

Housekeeping

- We will keep all lines muted to avoid background noise.
- We will send a copy of the slides and a link to the recording via email after the live program.
- We'll also make the slides and recording available on carequest.org.

To receive CE Credits:

- Look for the evaluation form, which we'll send via email within 24 hours.
- Complete the evaluation by **Friday, December 7.**
- Eligible participants will receive a certificate soon after via email.

We appreciate your feedback to help us improve future programs!

ADA C·E·R·P® | Continuing Education Recognition Program

The CareQuest Institute for Oral Health is an ADA CERP Recognized Provider. This presentation has been planned and implemented in accordance with the standards of the ADA CERP.

*Full disclosures available upon request

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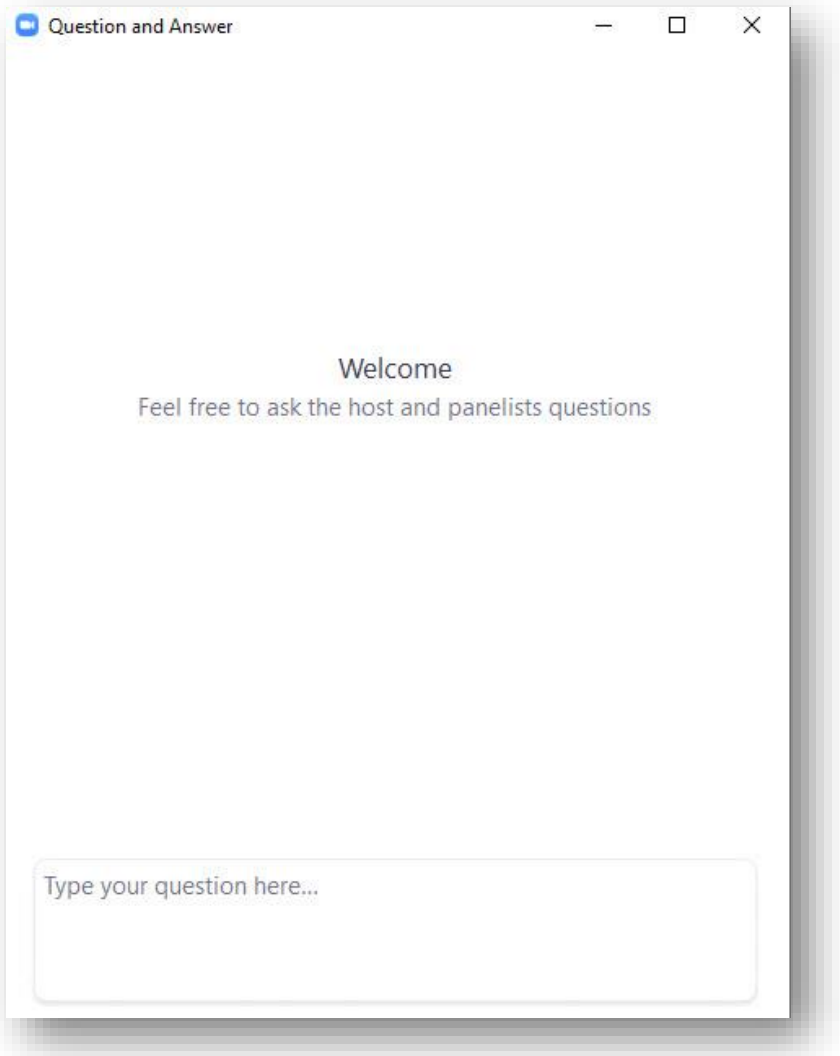
Question & Answer Logistics

- Feel free to enter your questions into the **Question & Answer box** throughout the presentations.
- We will turn to your questions and comments toward the end of the hour.



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Thank You!

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Learning Objectives

At the end of this webinar, you'll be able to:

- Identify and describe common signs and symptoms of neurodegenerative conditions, including dementia.
- Discuss systemic and oral health risks observed in individuals with neurodegenerative conditions, including dementia.
- Create treatment plans that are person-centered and appropriate for those diagnosed with neurodegenerative conditions, including dementia.

Oral Health Considerations for Patients with Neurodegenerative Conditions

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WEBINAR | Thursday, December 7, 2023 | 7–8 p.m. ET | ADA CERP Credits: 1

MODERATOR

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Professor and Assistant Dean for Research, Arizona School of Dentistry & Oral Health, A.T. Still University

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What Are Neurodegenerative Disorders?

- Neurodegenerative disorders = brain disorders
- Caused by slow, progressive loss of neurons, neuron structure and function
- Lead to irreversible dysfunction and loss of neurons and synapses in the CNS
  - Affected areas determine clinical presentation and course of the disease

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Lamptey RNL, Chaulagain B, Trivedi R, Gothwal A, Layek B, Singh J. A Review of the Common Neurodegenerative Disorders: Current Therapeutic Approaches and the Potential Role of Nanotherapeutics. Int J Mol Sci. 2022 Feb 6;23(3):1851; Jellinger KA. Basic mechanisms of neurodegeneration: a critical update. J Cell Mol Med. 2010 Mar;14(3):457-87.

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What Are Common Types of Neurodegenerative Disorders?

- Most common:
  - Alzheimer's disease
  - Parkinson's disease
- Risk factors:
  - Age (most contributory)
  - Genetics
  - Environmental factors

- Others:
  - Amyotrophic lateral sclerosis (ALS)
  - Motor neuron disease
  - Huntington's disease
  - Prion disease
  - Spinal muscular atrophy
  - Spinocerebellar ataxia

Multiple pathologies may underlie a single disorder

Jain N, Chen-Plotkin AS. Genetic modifiers in neurodegeneration. Curr. Genet. Med. Rep. 2018;6:11–19; Jain V, et al. Enriched environment prevents hypobaric hypoxia induced neurodegeneration and is independent of antioxidant signaling. Cell. Mol. Neurobiol. 2012;32:599–611; Esch T, et al. The role of stress in neurodegenerative diseases and mental disorders. Neuro Endocrinol. Lett. 2002;23:199–208; Allan SM, Rothwell NJ. Inflammation in central nervous system injury. Philos. Trans. R. Soc. B Biol. Sci. 2003;358:1669–1677; Liu Z, et al. Oxidative stress in neurodegenerative diseases: From molecular mechanisms to clinical applications. Oxid. Med. Cell. Longev. 2017;2017:2525967; Brouwer-DudokdeWit AC et al. A hereditary disorder in the family and the family life cycle: Huntington disease as a paradigm. Fam. Process. 2002;41:677–692; Bayer TA, Wirths O. Intracellular accumulation of amyloid-Beta-a predictor for synaptic dysfunction and neuron loss in Alzheimer's disease. Front. Aging Neurosci. 2010;2:8.

Consequences

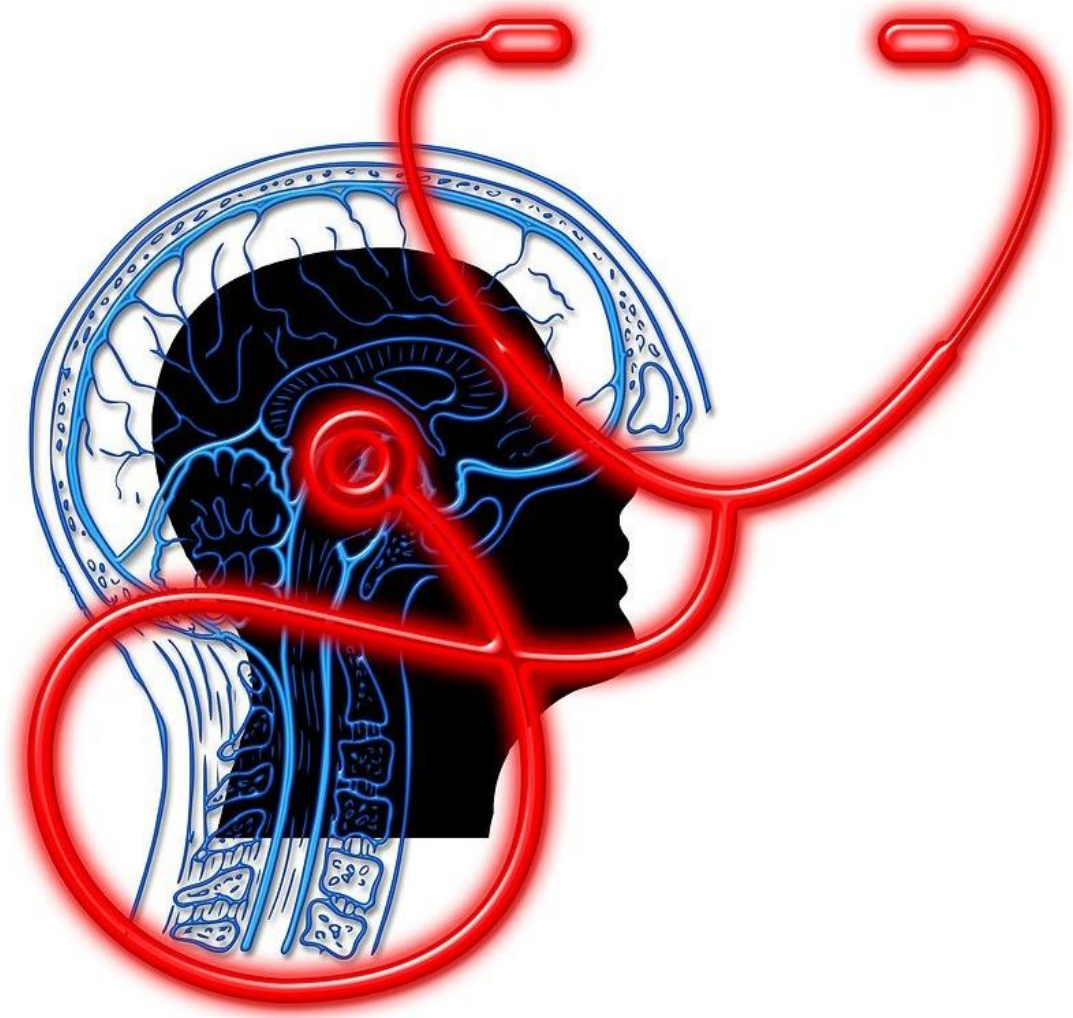
Functional Challenges

- Difficulty with:
  - Speech
  - Balance and stability
  - Movement
  - Bladder and bowel function
  - Cognition

Treatment Goals

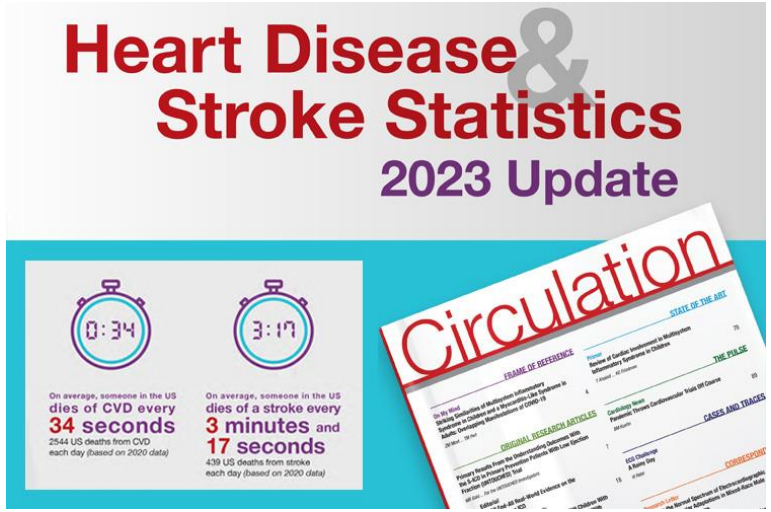
- Reduce symptoms
- Improve function
- Relieve pain (if present)
- Restore balance and mobility
- Most progress without remission

Stroke



Stroke Statistics

- Stroke = sudden interruption of blood supply to the brain
- Someone has a stroke every **40 seconds**
- One person dies from a stroke approximately **every 3 minutes**
- Of **700,000** annual strokes, **200,000** are recurrent
  - **1 in 4** people have recurrent strokes
  - Recurrent strokes occur within **5 years** after a first stroke
  - Risk is greatest right after a stroke and decreases over time



- Likelihood of severe disability and death increases with each recurrent stroke
- One third of strokes recur within **1 month** of initial event
  - About one-third have a second stroke within **2 years**

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Correction to: Heart Disease and Stroke Statistics-2023 Update: A Report From the American Heart Association. Circulation. 2023 Jul 25;148(4):e4. doi: 10.1161/CIR.0000000000001167. Epub 2023 Jul 24. Erratum for: Circulation. 2023 Feb 21;147(8):e93-e621. PMID: 37486999.

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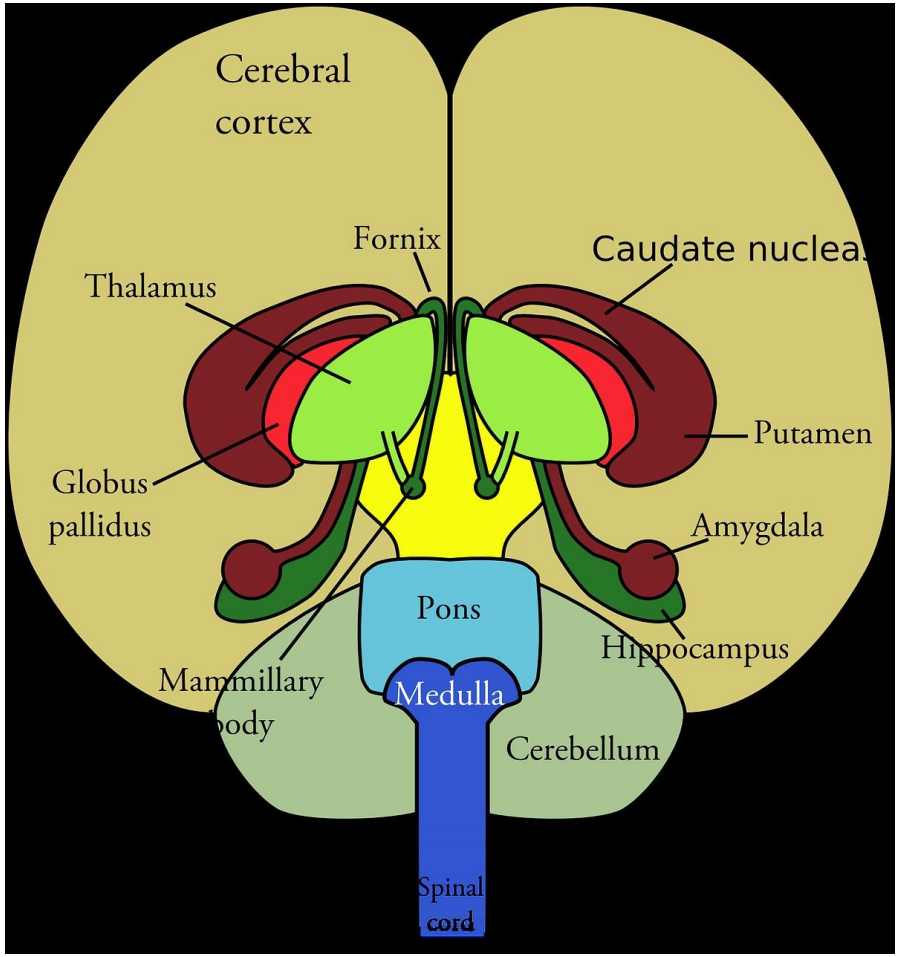
- **Most are caused by an abrupt blockage of an artery** (**ischemic stroke**)

- Other strokes are caused by bleeding into brain tissue when a blood vessel bursts (**hemorrhagic stroke**)
  - Higher death rate

- Deficits depend on the severity and which area of the brain is injured

- Usually, the area immediately surrounding the site is affected

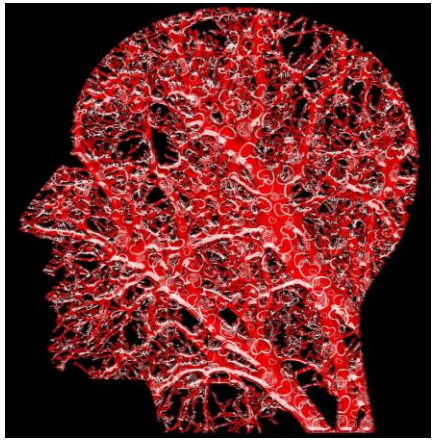
- Acute signs/symptoms:
  - sudden weakness
  - loss of sensation
  - difficulty with speaking, seeing, or walking



Common Forms of Stroke

Thrombotic Stroke

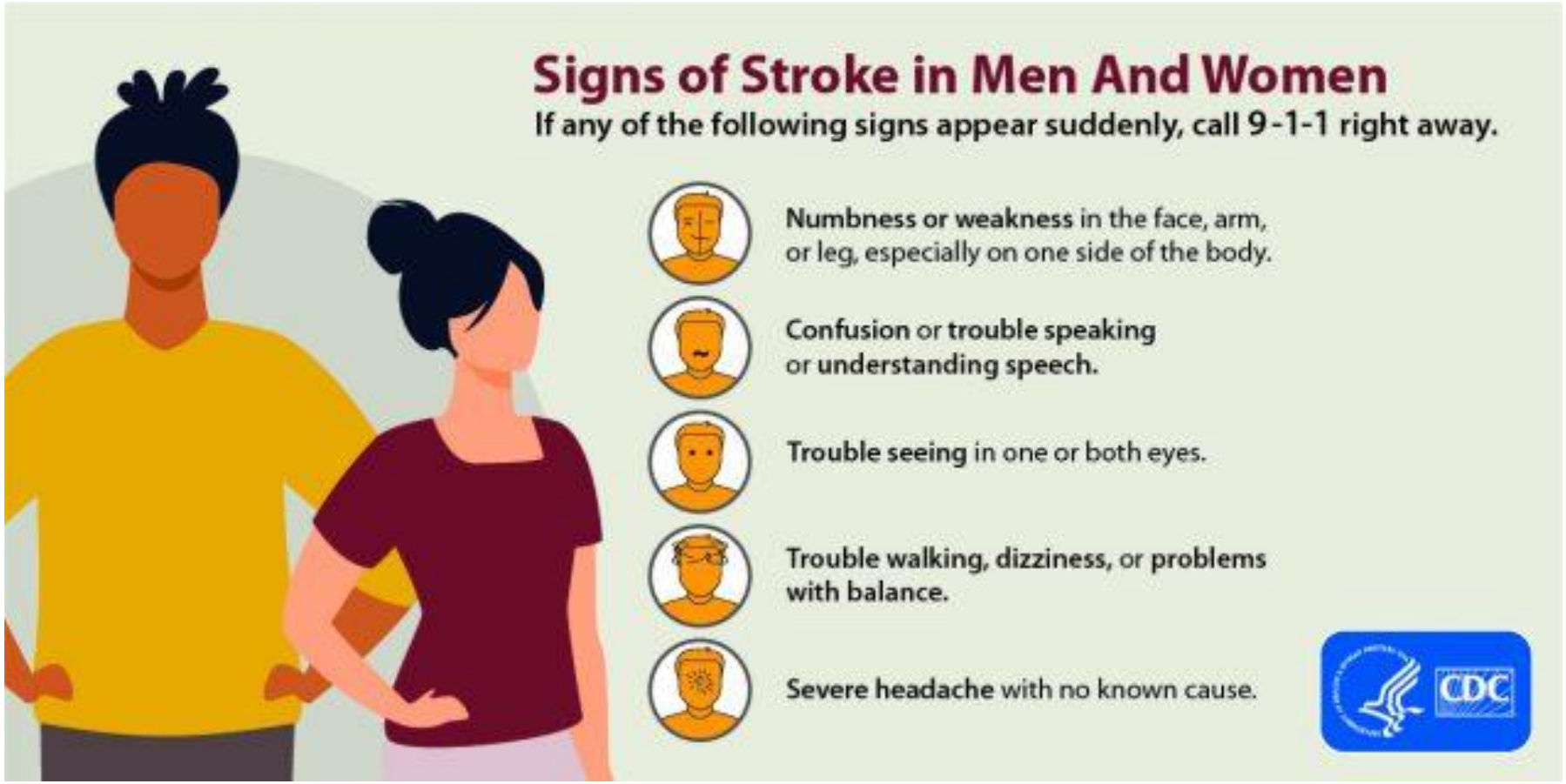
- Usually seen in older persons
- Symptoms can occur suddenly and often during sleep or in the early morning
  - May occur gradually over a period of hours/days
- May be preceded by one or more TIAs
  - TIAs may last for a few minutes or up to 24 hours
  - Often a warning sign that a stroke may occur
- Although usually mild and transient, symptoms caused by a TIA are similar to those caused by a stroke



Embolic Stroke

- Usually caused by a blood clot that forms elsewhere in the body (embolus) and travels through the bloodstream to the brain
- Often result from heart disease or heart surgery
- Occur rapidly and without any warning signs
- About 15% of embolic strokes occur in people with **atrial fibrillation**

Stroke Symptoms



Centers for Disease Control and Prevention. Stroke Signs and Symptoms. Available at: https://www.cdc.gov/stroke/signs_symptoms.htm

If You Notice Signs of a Stroke, Think **"FAST"**

Face. Ask the person to smile.

Does one side of the face droop?

Arms. Ask the person to raise both arms.

Does one arm drift downward? Or is one arm unable to raise up?

Speech. Ask the person to repeat a simple phrase.

Is his or her speech slurred or strange?

Time. If you observe any of these signs, call 911 immediately.

Note the time when symptoms first started.

Time is critical for successful onboarding of clot-busting drugs or clot retrieval.

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Centers for Disease Control and Prevention. Stroke Signs and Symptoms. Available at: https://www.cdc.gov/stroke/signs_symptoms.htm

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Complications and Recovery

Dangerous blood clots
Loss of bladder or bowel control
Loss of bone density or strength
Muscle weakness or inability to move
Problems with language, thinking, or memory; raises the risk of dementia
Seizures
Swelling in the brain
Loss of vision, hearing, or touch
Difficulty swallowing (dysphagia); raises risk for pneumonia
Difficulty speaking (aphasia) and communicating

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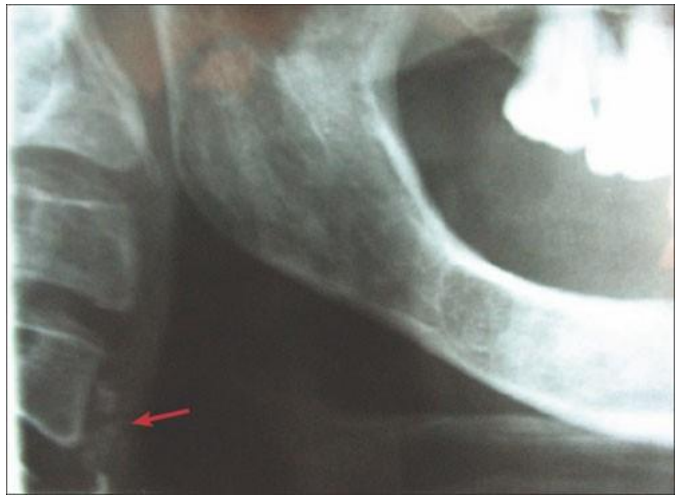
National Heart, Lung and Blood Institute. Stroke Symptoms and Complications. Available at: https://www.nhlbi.nih.gov/health/stroke/symptoms

Oral Manifestations and Complications



Khosropanah, S., Shahidi, S., Bronoosh, P. *et al.* Evaluation of carotid calcification detected using panoramic radiography and carotid Doppler sonography in patients with and without coronary artery disease. Br Dent J. 2009; 207: E8. https://doi.org/10.1038/sj.bdj.2009.762

- Unilateral paralysis of orofacial musculature
- Loss of sensory stimuli to oral tissues
- Flaccid tongue; may deviate upon extrusion
- Opposite side effected from damaged side of the brain
- Food packing in vestibules, around teeth, under tongue
- Oral hygiene assistance: power brushes, floss aids, interdental brushes
- May need to learn how to perform self-care with opposite hand
- Caries, periodontal disease, halitosis = common
- Calcified atherosclerotic plaques in carotid arteries evident on panoramic films (especially among older adults and those with diabetes)
  - Evidence of calcifications indicates risk for stroke

Treatment Modifications

Bleeding: taking antiplatelet/ anticoagulant drugs

Use atraumatic techniques and local hemostatic agents

Antibiotics: avoid metronidazole and tetracyclines in patients taking warfarin = inhibit the metabolism of warfarin and raises the INR

Analgesics: use acetaminophen; avoid aspirin and NSAIDS

Anesthetics: use good pain control

Limit vasoconstrictor dose to 2 cartridges
No epinephrine-containing gingival retraction cord

Vitals: monitor BP and O_2 saturation

Use a pulse oximeter

Emergency dental treatment only if < 6 months since stroke/TIA

Aspiration risk

Use effective evacuation and airway measures

Mobility issues: use assistive devices

Offer assistance to minimize risk for falling

Help with transfer to dental chair if able to transfer (two person assist)

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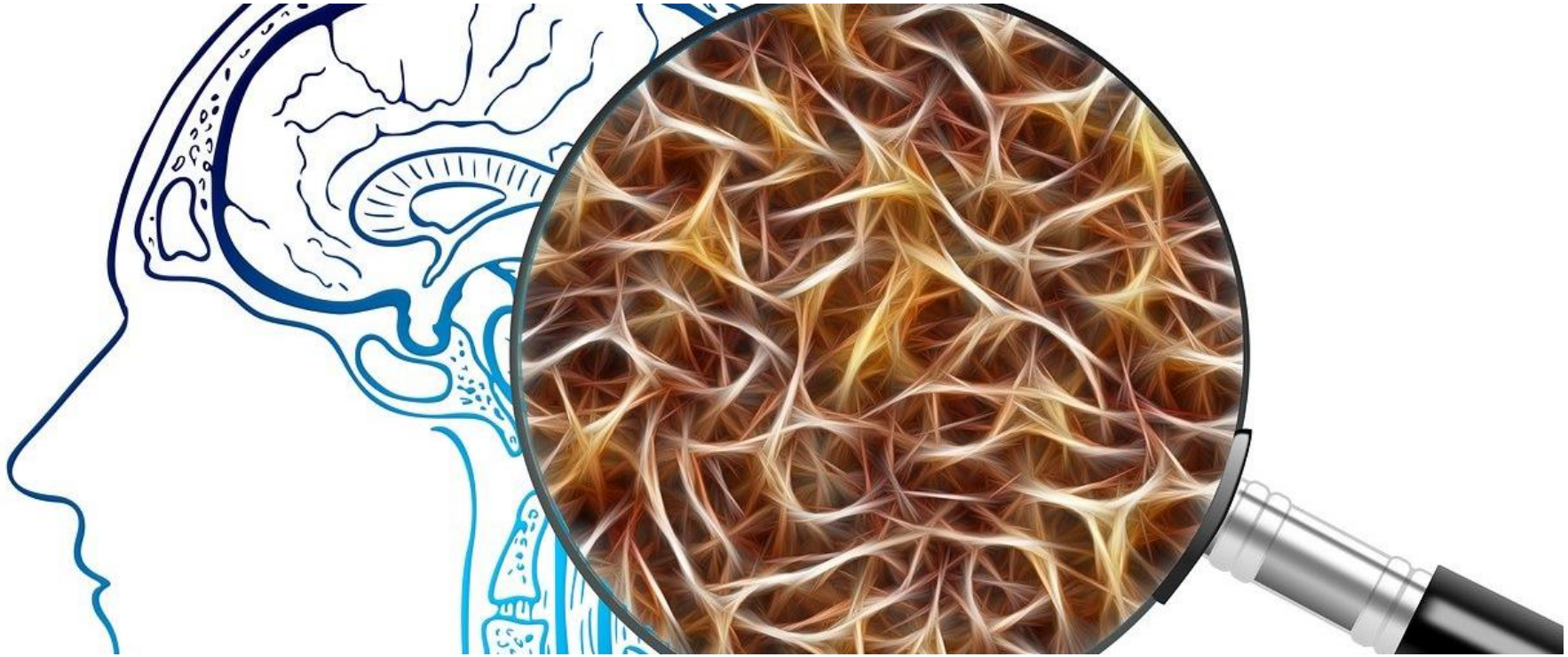
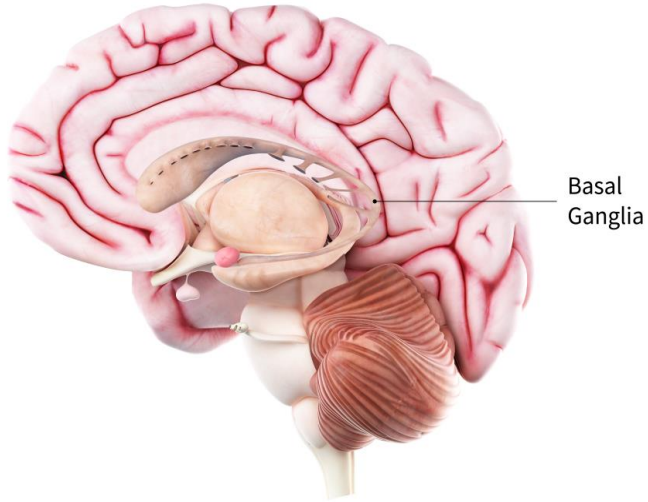
Parkinson’s Disease



What Causes Parkinson's Disease?

- Neurons in the basal ganglia (controls movement) become impaired and/or die
  - Substantia nigra = loss of dopaminergic neurons
  - Lack of dopamine = movement disorders
- Neurons in sympathetic nervous system also impaired
  - Loss of norepinephrine
  - Explains non-movement symptoms: fatigue, irregular BP, decreased movement of food along GI tract
- Why do neurons die? Unknown
- Some brain cells contain Lewy bodies (clumps of protein: alpha-synuclein)
  - Lewy body dementia
- Estimates: **12 million people affected by 2040**



National Institute on Aging. Parkinson's Disease: Causes, Symptoms, and Treatments.
Available at: https://www.nia.nih.gov/health/parkinsons-disease/parkinsons-disease-causes-symptoms-and-treatments

Risk Factors

Age

- Majority develop symptoms after **age 60**
- **Most common: over age 65**
- **5 to 10%** develop before age 50; some before age 40

Genetics

- **Early onset cases are often inherited** (not always)
- Most cases do **not** run in families
- Genetic variants with increased risk
- Abnormal alpha-synuclein

Exposure

- Disease develops due to combination of genetics **and possible environmental factors** (e.g., exposure to toxins/pesticides; high dairy consumption; head injury)

National Institute on Aging. Parkinson's Disease: Causes, Symptoms, and Treatments.
Available at: https://www.nia.nih.gov/health/parkinsons-disease/parkinsons-disease-causes-symptoms-and-treatments

Clinical Motor Features of PD: Recognize **TRAP**

Tremor

- Trembling, shaking of one hand
- **Pill-rolling:** first sign in 75% of untreated patients
- Other muscle groups of the neck, jaw, lips, tongue, eyelids, arm, and foot may be affected

Akinesia

- Impaired movement, altered gait
- Difficulty initiating movement
- Slow movements (bradykinesia)
- Small quick steps
- Illegible handwriting

Rigidity

- Cogwheel: rigid and jerky movements
- Stiffness
- Loss of arm swing
- Reduced facial expression

Postural instability

- Stooped posture, bent forward
- Balance problems (fall risk)

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National Institute on Aging. Parkinson's Disease: Causes, Symptoms, and Treatments. Available at: https://www.nia.nih.gov/health/parkinsons-disease/parkinsons-disease-causes-symptoms-and-treatments; Annenberg Center for Health Sciences at Eisenhower and Prime Medic Inc., Animated Patient™ series. You and Parkinson's. Available at: https://www.youandparkinsons.com/en-pk/view/m101-s01-understanding-parkinsons-disease-slide-show

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Non-Motor Symptoms of Parkinson's Disease

Loss of the sense of smell

Sleep problems, daytime sleepiness

Constipation

Depression, apathy

Sweating

Hallucinations

Drops in blood pressure

Psychosis (losing touch with reality temporarily)

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National Institute on Aging. Parkinson's Disease: Causes, Symptoms, and Treatments. Available at: https://www.nia.nih.gov/health/parkinsons-disease/parkinsons-disease-causes-symptoms-and-treatments; Annenberg Center for Health Sciences at Eisenhower and Prime Medic Inc., Animated Patient™ series. You and Parkinson's. Available at: https://www.youandparkinsons.com/en-pk/view/m101-s01-understanding-parkinsons-disease-slide-show

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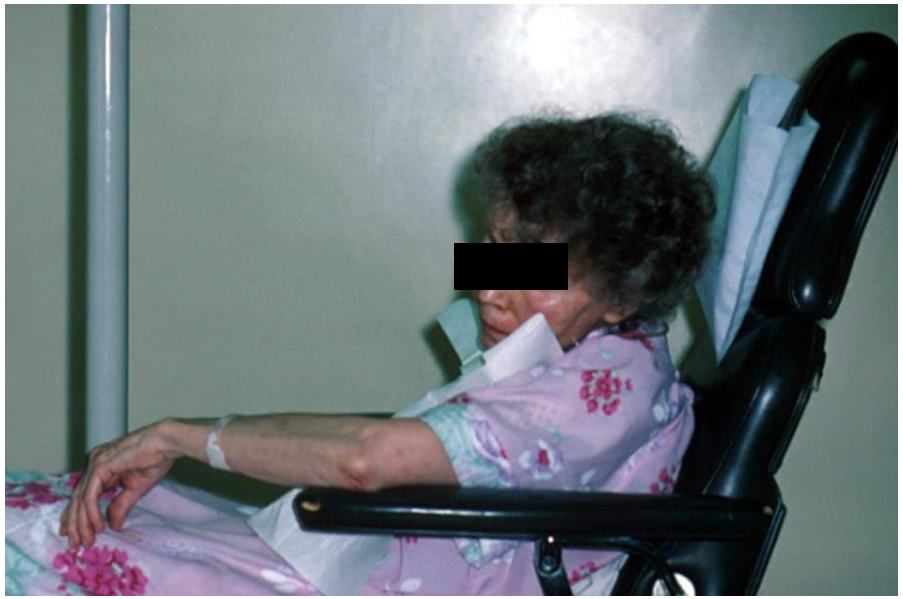
Signs and Symptoms of Head and Neck Area



- Seborrhea of the face and scalp
- Lack of facial expression
- Diminished blink
- Loss or decline in sense of smell
- Slowness and softness of speech
- Drooling, angular cheilitis
- Dropped head syndrome (neck extensor myopathy)
- Dementia
  30% prevalence; 75% cumulative prevalence (if 10 yr survival)

Askmark H, Eeg-Olofsson KE, Johansson A, Nilsson P, Olsson Y, Aquilonius S. Parkinsonism and Neck Extensor Myopathy: A New Syndrome or Coincidental Findings? *Arch Neurol.* 2001;58(2):232–237; Schrag A, Horsfall L, Walters K, Noyce A, Petersen I. Prediagnostic presentations of Parkinson's disease in primary care: a case-control study. Lancet Neurol. 2015 Jan;14(1):57-64; Aarsland D, Kurz MW. The epidemiology of dementia associated with Parkinson's disease. Brain Pathol. 2010 May;20(3):633-9; American Parkinson Association. Sweating and Other Skin Problems in People with Parkinson's Disease. Available at: https://www.apdaparkinson.org/article/sweating-and-skin-problems/

Treatment

Medications

- Raise dopamine, block sympathetic effects
- After **5 years, 50-70%** of patients will become partially unresponsive to medications
- As disease progresses, reduction in responsiveness to L-Dopa/narrowing of therapeutic window
  - Dyskinesias
  - Drug failure

Implantable Electrodes

- Deep brain stimulation
- Disrupts the normal functioning of the target area in the brain (thalamus)
- Blocks neural circuits
- Inhibits the overactivity of the thalamus which causes tremors

Stem Cell Transplant

- Stem cells could theoretically replace damaged neurons, allowing for production of dopamine
- Ongoing research

Müller, T. Drug therapy in patients with Parkinson's disease. Transl Neurodegener. 2012:1;10 Available at: https://doi.org/10.1186/2047-9158-1-10; Cha Y, Park TY, Leblanc P, Kim KS. Current Status and Future Perspectives on Stem Cell-Based Therapies for Parkinson's Disease. J Mov Disord. 2023 Jan;16(1):22-41.

Dental Management Considerations

- Plan for decline in patient's ability:
  - Care for self
  - Understand others caring for their oral needs

- Patient's ability to undergo dental care becomes more difficult
  - Can't get into the office/clinic
  - Restricted mouth opening/limited physical access
  - Mouth prop
  - Aspiration risk: protect airway
  - Inability to put head back

Parkinson's Foundation. Dental Health in Parkinson's. Available at: https://www.parkinson.org/sites/default/files/documents/dental-health-parkinsons.pdf

Dental Management Considerations

Motor Strength Challenges

- Chewing
- Drooling
- Swallowing
- Performing oral hygiene
- Schedule appt in morning **60 to 90 minutes** after levodopa is taken

Autonomic Challenges

- Blood pressure irregularities
- Orthostatic hypotension (fall risk)
- Raise chair slowly and allow to sit for 3 to 5 minutes

Oral Hygiene

- Frequent recalls
- Power brushes
- Portable suction
- Chemotherapeutic toothpaste/mouth rinse
- Caries prevention:
  - Fluorides
  - Xylitol
  - Non-fluoride remineralization
- Integrate caregiver

Parkinson's Foundation. Dental Health in Parkinson's. Available at: https://www.parkinson.org/sites/default/files/documents/dental-health-parkinsons.pdf

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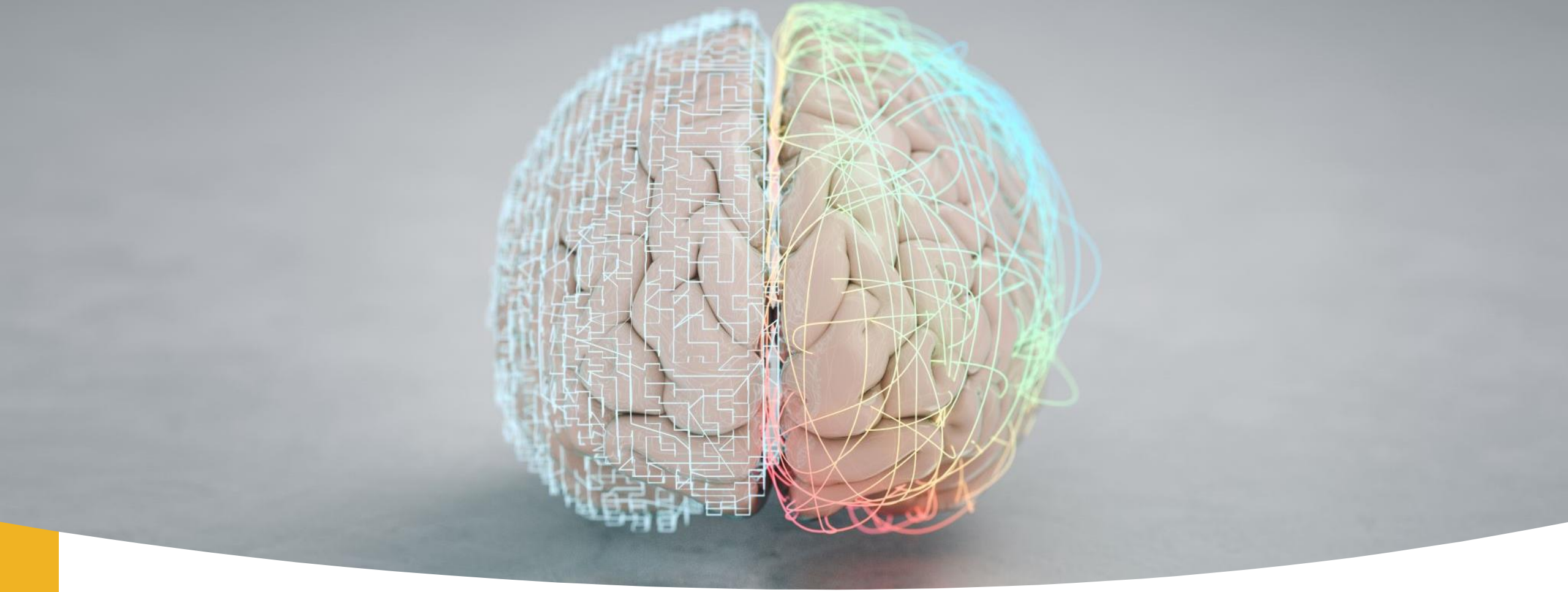

Dementia

Definition

Dementia is a syndrome due to disease of the brain, usually of a chronic or progressive nature, in which there is disturbance of multiple higher cortical functions, including memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgment.

5 Million in 2014
14 Million by 2060

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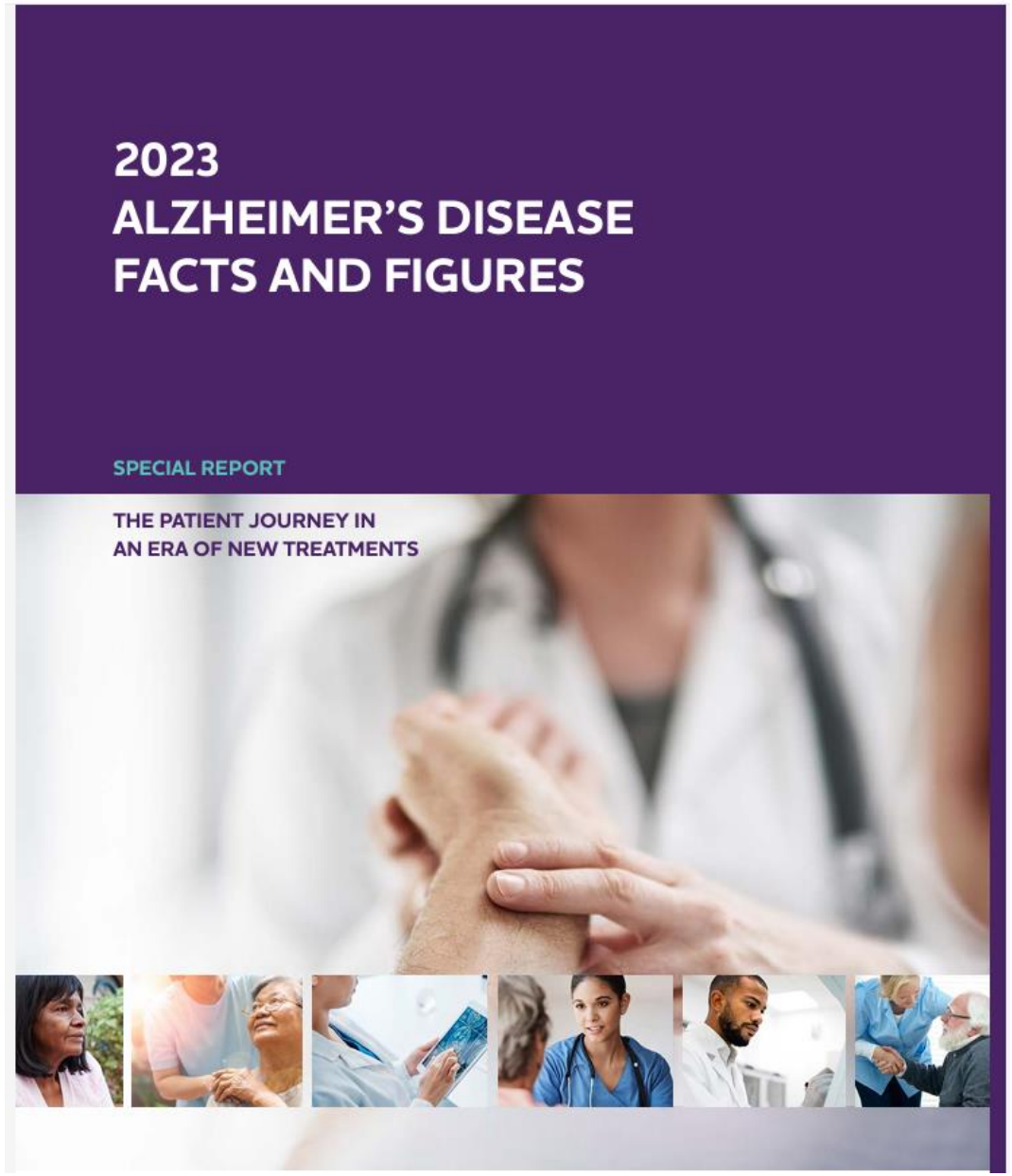
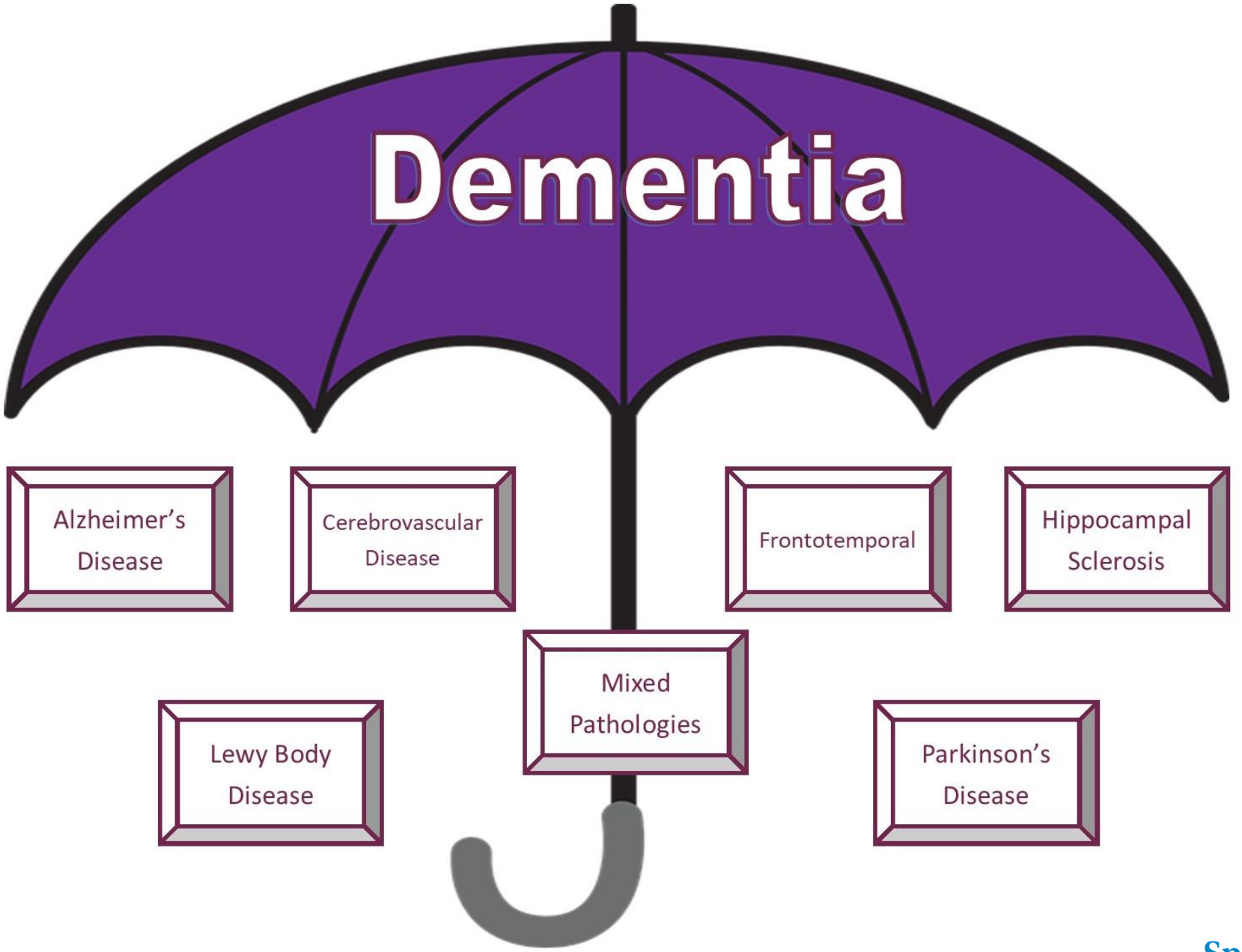
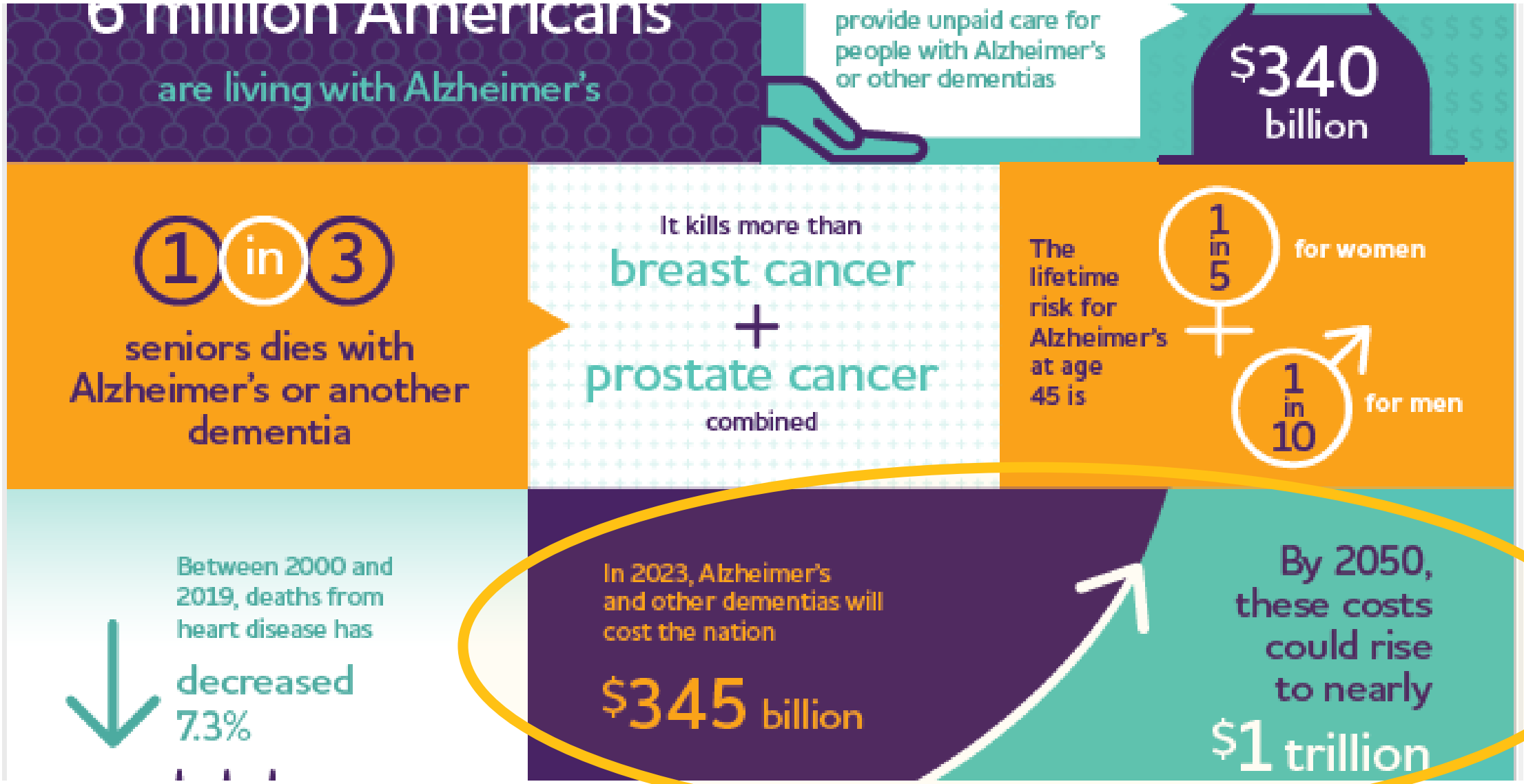
Source: Centers for Disease Control and Prevention



Alzheimer's Association


Dementia
Alzheimer's Disease
Cerebrovascular Disease
Frontotemporal
Hippocampal Sclerosis
Mixed Pathologies
Lewy Body Disease
Parkinson's Disease



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Alzheimer's Association. Facts and Figures. Available at: https://www.alz.org/alzheimers-dementia/facts-figures

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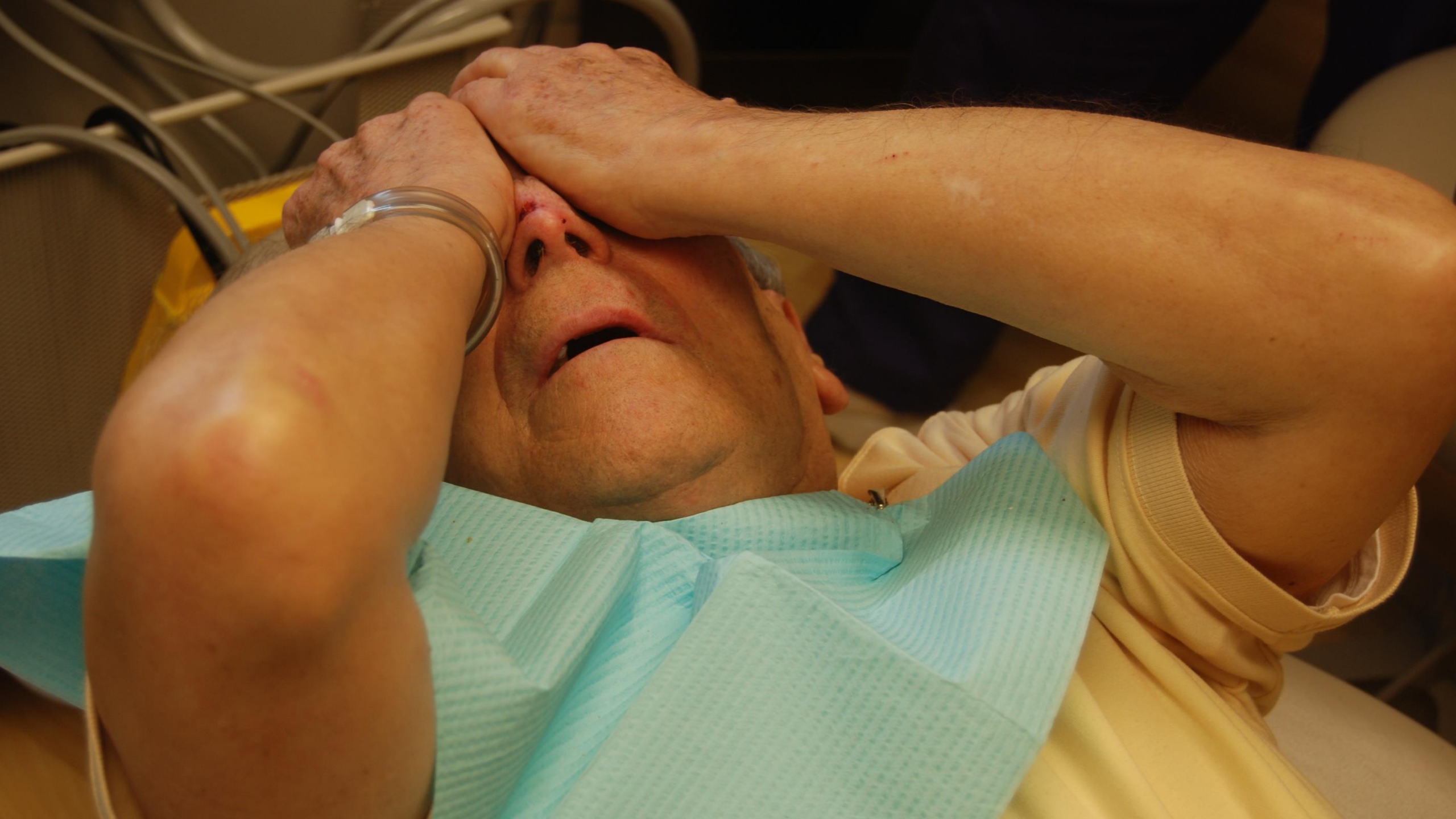

Dentistry’s Response to Dementia

Early Recognition

- Subtle Changes in Patient
  - Appearance
  - Behavior
  - Hygiene

Stock Photo

Dentistry’s Response to Dementia

Pound the Prevention

- Dentistry does this best
  - High-fluoride toothpaste
  - Fluoride varnish
  - Chlorhexidine – brush, not rinse
  - Power toothbrushes – maybe, maybe not
  - Xylitol
  - Calcium-/phosphate-containing agents

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Dentistry’s Response to Dementia

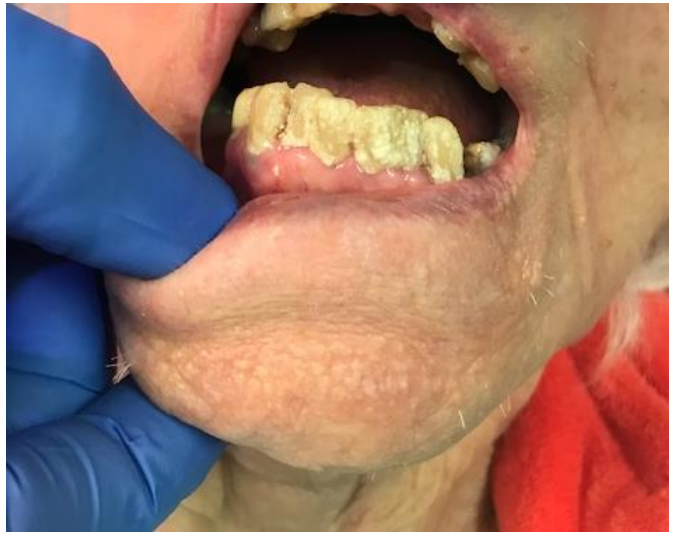


Photo Credit: Access Dental Care

Don’t Undertreat

- Who is the responsible party/Health care Power of Attorney?
- Life expectancy 4-20 years
- Remember oral hygiene ability will decrease
- Glass ionomer restorations
- Sodium diamine fluoride (SDF)

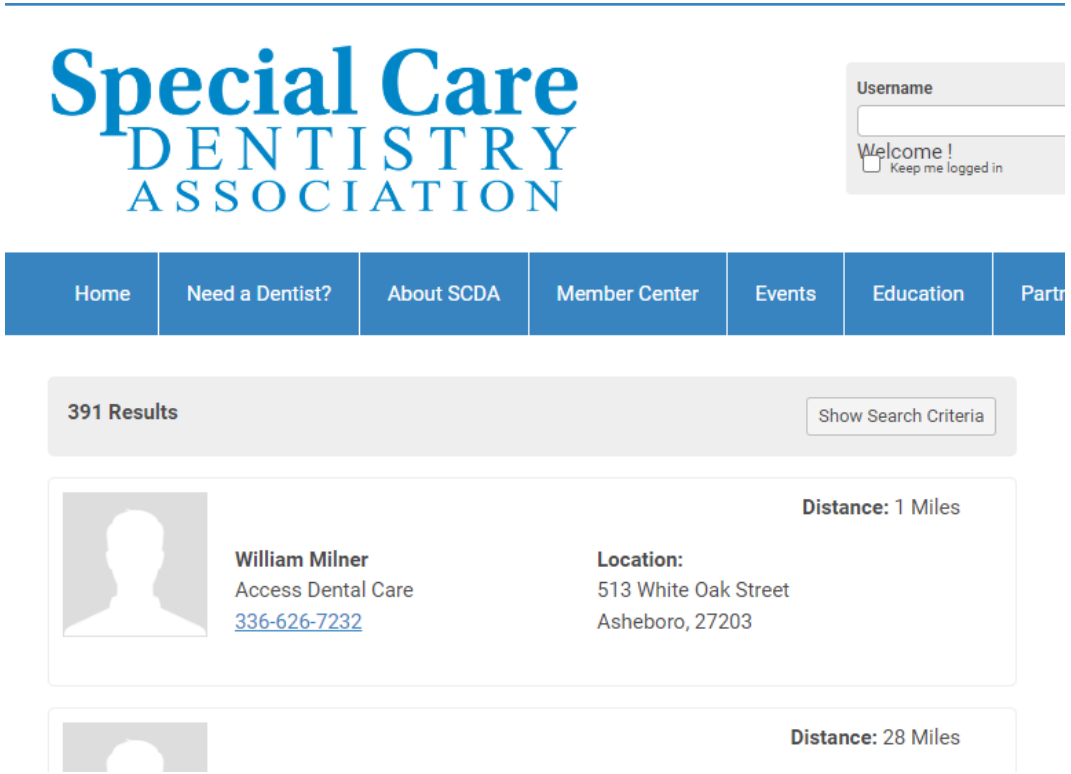
Alzheimer’s Association. Facts and Figures. Available at: https://www.alz.org/alzheimers-dementia/facts-figures

Dentistry's Response to Dementia

When and Where to Refer

- Are you able to provide the same quality of care that you provide to other patients?

- Know your special care partners



Special Care Dentistry Association. Need a Dentist. Available at: https://www.scdaonline.org/need-a-dentist-#/

Dentistry’s Response to Dementia

Office Appointments Confusing

- Moderate to severe dementia
- Non-routine
- External office stimulation
- Slow with one-step directions

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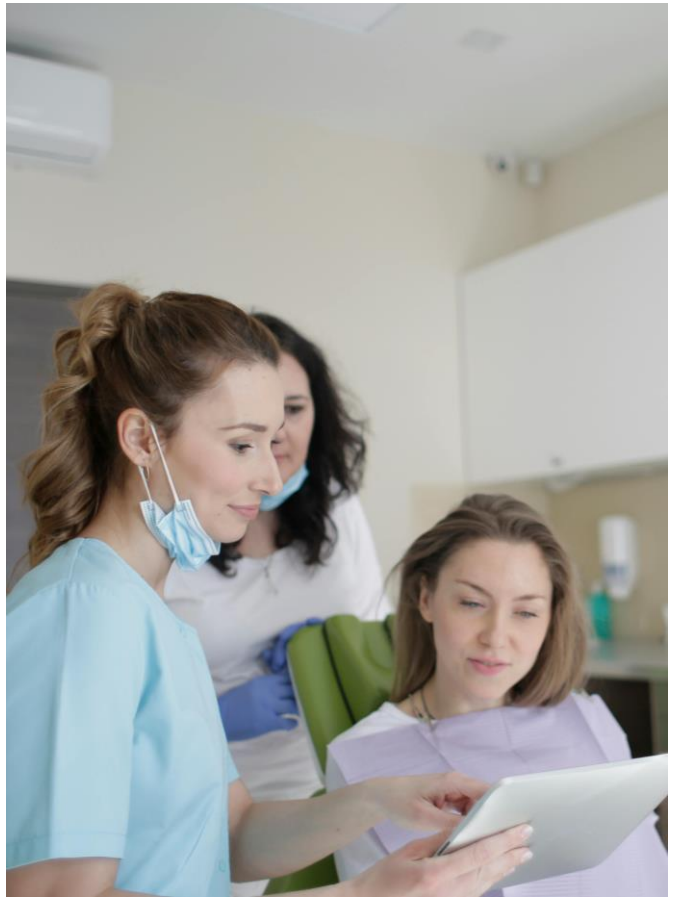
Dentistry’s Response to Dementia

Pre-medication can help

- Check your regulations on anxiolytic use guidelines
- Polypharmacy
- Short-acting benzodiazepines
- Fall risk
- Non-pharmacologic management

Other Treatment Planning Considerations (All Neurodegenerative Disorders)



- Ambulation and fall risk
- Communication challenges
- Difficulty with swallowing (dysphagia) and risks for choking, pneumonia
  - Use good suction, avoid excessive water during dental treatment, use rubber dam
- Challenges with communication: implications for patient education
- Altered cognition: implications for patient education
- Lack of coordination/grip strength: difficulty performing oral hygiene

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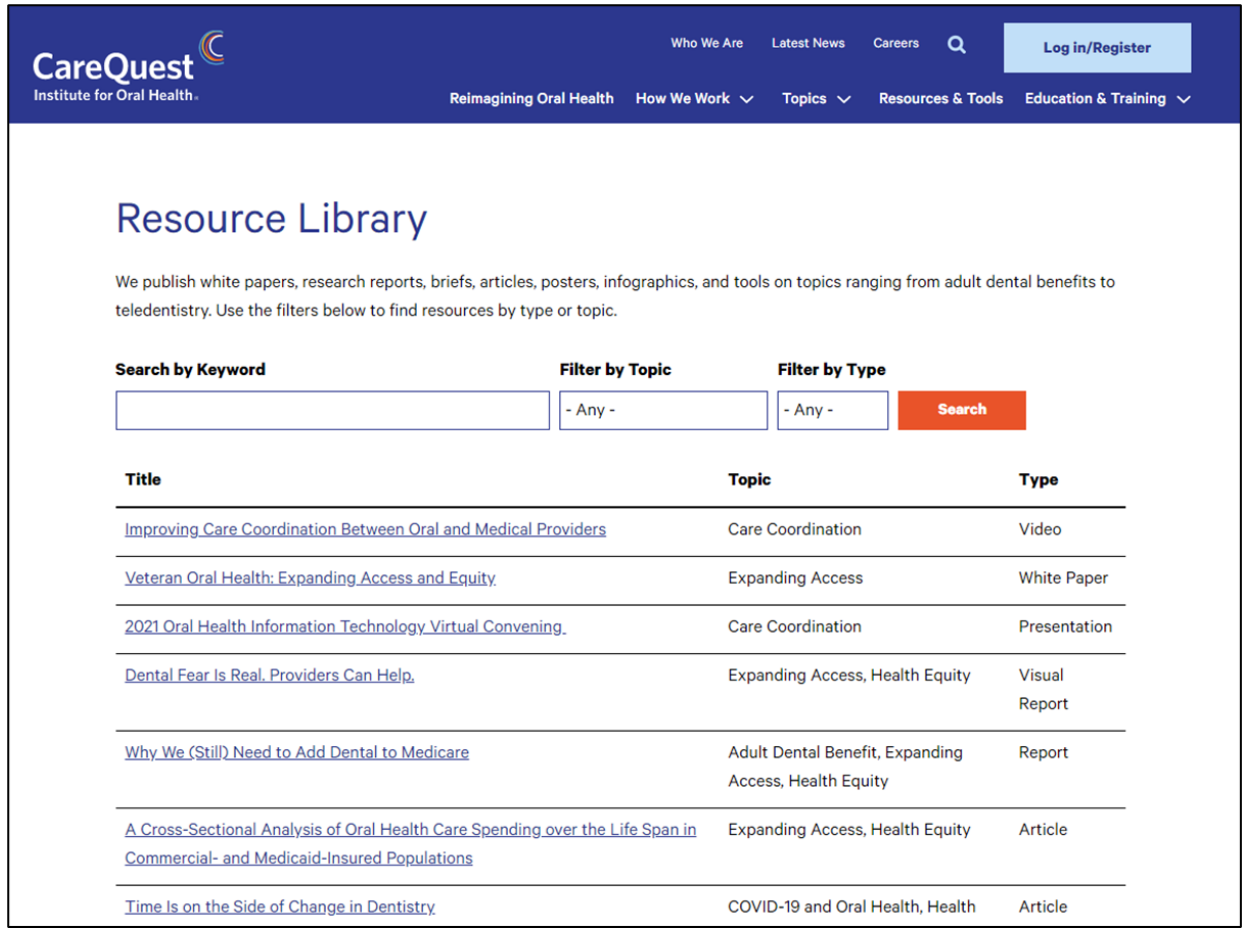
Questions & Answers

To Explore More Industry-Leading Research



www.carequest.org/resource-library

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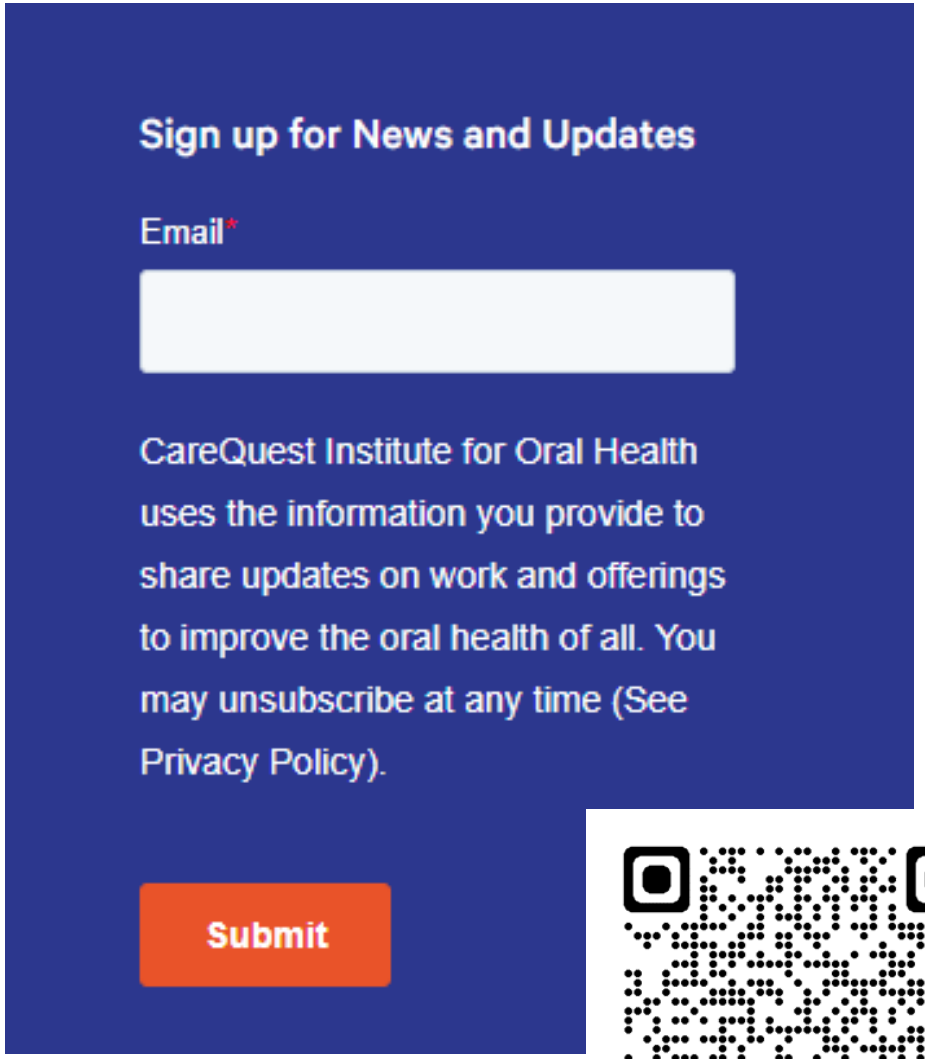
Webinar Evaluation

Complete the evaluation by **Friday, December 15** to receive CE credit. You will receive a link to the survey within 24 hours.

Next Webinar:

Managing Craniofacial Pain on **January 11 at 7 p.m. ET.**

And we invite you to take a minute to sign up for our newsletter to get more information on future webinars!



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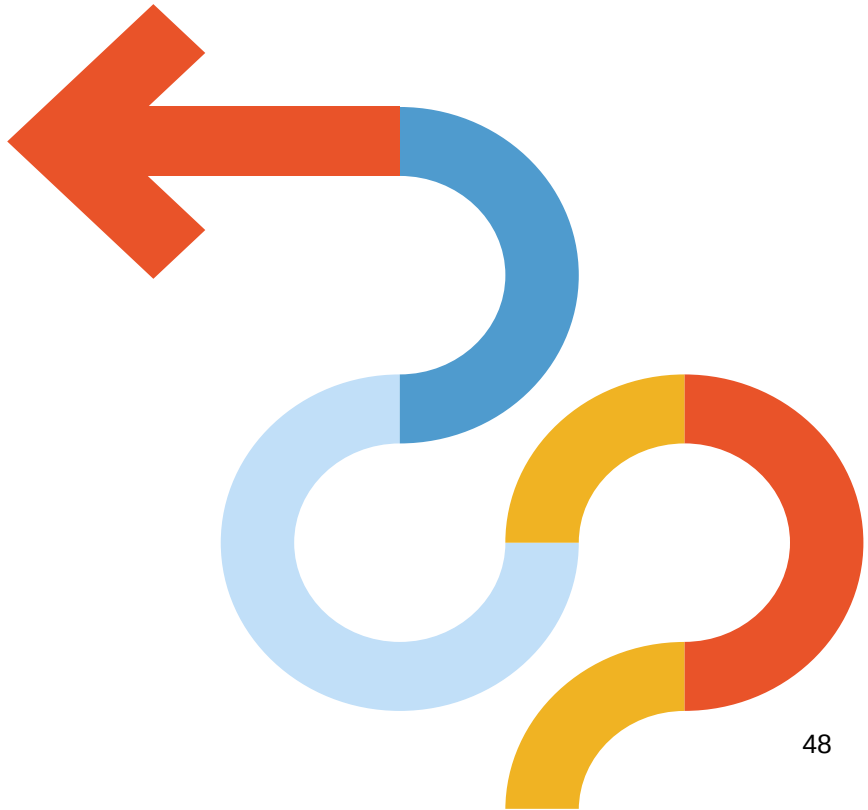

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