Screening, Evaluation & Diagnosis of Alzheimer's Disease and Related Dementias

Ian Neel, MD

Speaker: Ian Neel, MD, UC San Diego

- No conflicts to disclose

Impact of Alzheimer's Disease

- 100,000+ San Diegans living with dementia (2020)
- 4th leading cause of death in SD County (2021)
- 1 in 3 people 85+
- Number affected projected to increase to 115,000 by 2030 (15% increase over 10 years)

- US spends $214 Billion on care for patients
- $1 of every $5 Medicare spending

Gender, Racial, and Ethnic Disparities in AD Prevalence and Early Detection

- 60% underdiagnosis of AD in high-income countries vs 90% in low-income countries
- Almost two-thirds of Americans with AD are women
- Older Black and Hispanic Americans are more likely than older Whites to have AD or other dementias
- Despite higher prevalence of AD in racial and ethnic minority populations, there is poor detection overall and large disparities
  - Racial and ethnic minorities are at higher risk of underdiagnosis (Denmark, Norway, UK, US)
  - Racial and ethnic minorities in the US (California) are less likely to be diagnosed at a mild stage and receive a less comprehensive evaluation at an early stage

Who manages patients with dementia?

Lack of specialists to meet growing needs

Increasing role for diagnosis and treatment by Primary Care Providers

Family Practice/Internal Medicine	3,507
Geriatricians	121
Neurologists	153
Psychiatrists	621

Survey completed Jan. 2015

Screening for Memory loss

- When to screen
- What instruments to use
- Brief workup accompanying screening
- What to do if a screen is positive

Screening Can be Conducted By:

Primary care providers:

- Physicians
- Nurse Practitioners
- Physician Assistants
- Other clinicians, psychiatrists

Why is Early Screening Important?

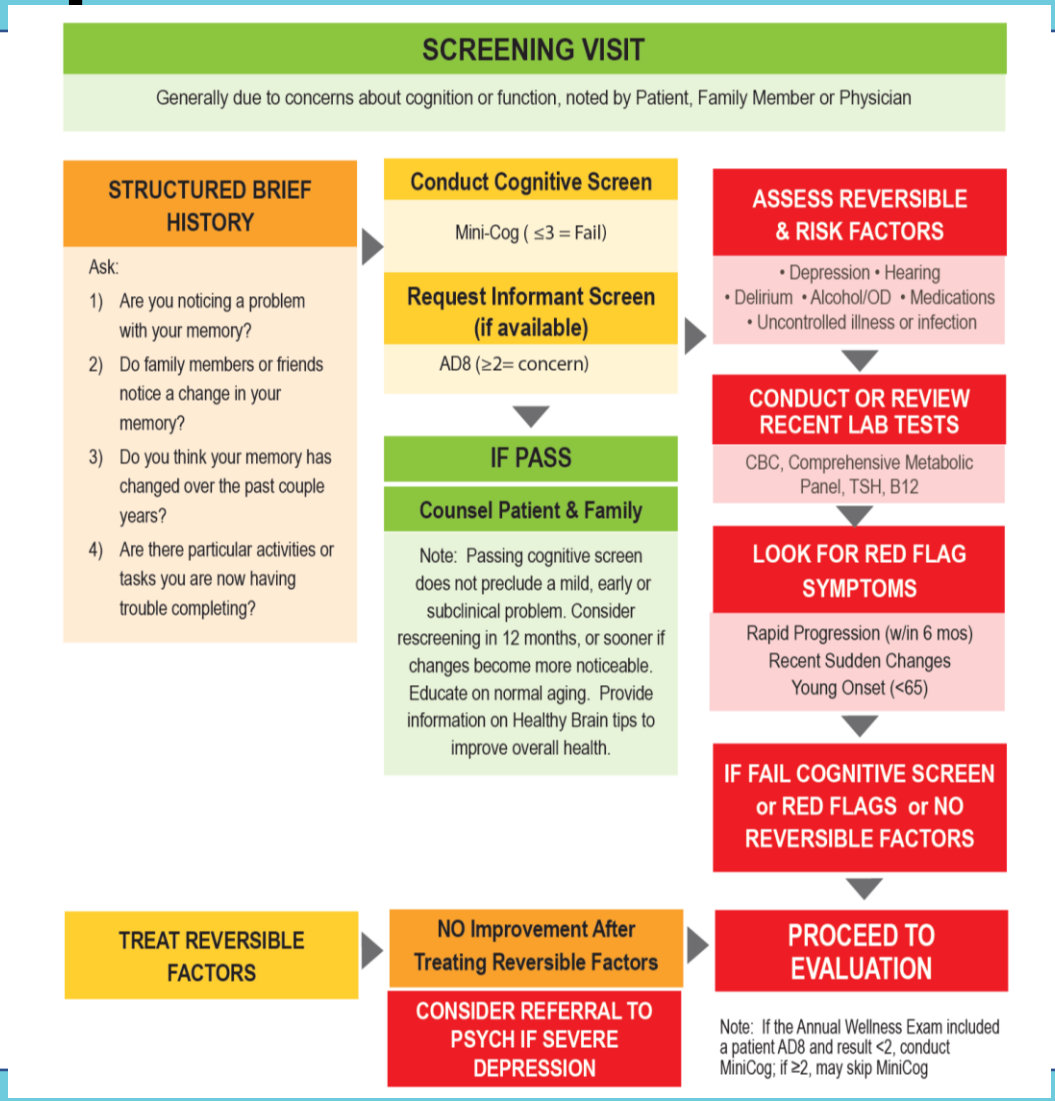
- Address other treatable health issues/reversible factors early
- Assist with planning for the future while individual fully able to participate
- Ability to adjust plans for work, travel, leisure time
- Opportunities for clinical trials or early-stage therapies
- Most medications focused on amyloid plaque will be effective only for earliest stages

When To Screen?

- People 65 years of age and older can be screened annually for cognitive impairment
- Medicare Annual Wellness Visit (AWV) – patients are eligible after the first 12 months of Medicare Part B coverage
- Medi-Cal patients are eligible for the Cognitive Health Assessment

- **AWV:** www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/preventive-services/medicare-wellness-visits.html
- **CHA:** www.dementiacareaware.org

Recommended Screening Algorithm For Adult Cognitive Impairment



Screening Instruments

- MiniCog < 3: 80% sensitivity, specificity ranges from 60 – 80% to detect dementia
- AD8 > 2: sensitivity >80%, specificity >80% when filled out by informant
- Results compare favorably to Mini-Mental State Examination

Screening for Reversible Factors

- Depression may contribute to decreased memory recall and decreased attention
- Poor hearing may masquerade as a mild memory problem
- Polypharmacy, especially sedative-hypnotics, pain medications
- Alcohol or substance abuse

Screening for Reversible Factors

Assess Sleep Quality

- Non-refreshing sleep/sleep habits
- Excessive daytime sleepiness
- History from bed partner

Consider delirium if recent change in memory/alertness

- Infections: urinary tract, pulmonary, meningitis

Screening for Reversible Factors

Recommended blood tests

- Complete Blood Count - CBC
- Complete Metabolic Panel
- TSH - Thyroid Stimulating Hormone
- B12
- Vitamin D 25-OH, syphilis, lipid panel, A1c often included but more controversial

Screening Algorithm next steps

Evaluation of Cognitive Decline & Dementia

Patient has:

- received screening,
- potential reversible factors were addressed but no improvement,
- no Red Flag symptoms (would have been referred to specialist)

Who should carry out an evaluation

- Physicians
- Physician Assistants
- Nurse Practitioners
- Clinical Team
- Should have strong knowledge base concerning cognition, aging, types of dementia
- Experience disclosing diagnosis

Carrying out an Evaluation

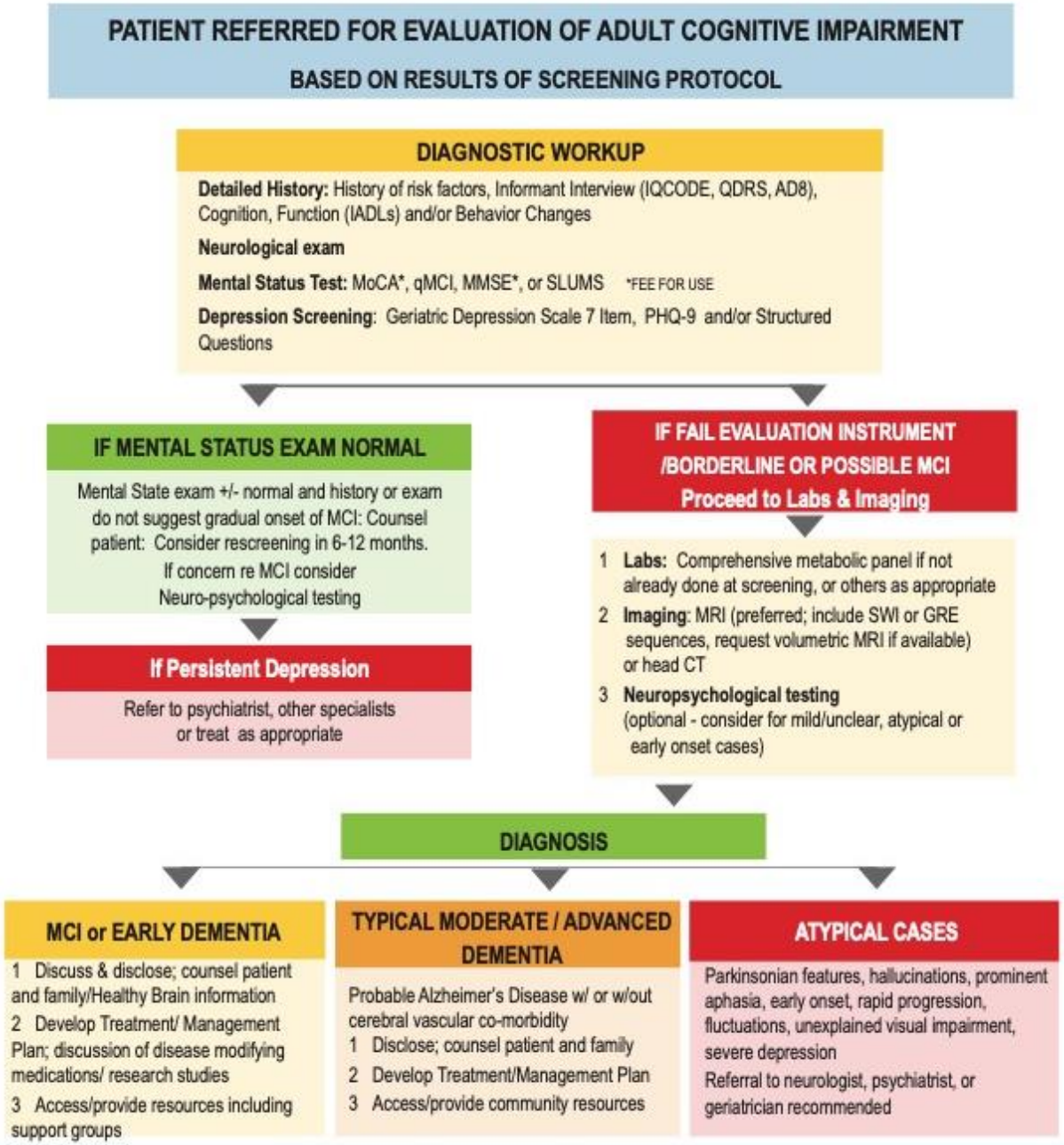
Practitioner conducting evaluation should:

- Understand most common dementias
- Be familiar with less common types
- Be comfortable disclosing diagnosis
- Able to formulate detailed disease management plan

Review Functional Capacities

Important functions of daily activity

- Remembering appointments & plans
- Taking medications on schedule
- Driving & finding directions
- Ability to read or listen to materials and remember


PATIENT REFERRED FOR EVALUATION OF ADULT COGNITIVE IMPAIRMENT
BASED ON RESULTS OF SCREENING PROTOCOL
DIAGNOSTIC WORKUP
Detailed History: History of risk factors, Informant Interview (IQCODE, QDRS, AD8), Cognition, Function (IADLs) and/or Behavior Changes
Neurological exam
Mental Status Test: MoCA*, qMCI, MMSE*, or SLUMS *FEE FOR USE
Depression Screening: Geriatric Depression Scale 7 Item, PHQ-9 and/or Structured Questions
IF MENTAL STATUS EXAM NORMAL
Mental State exam +/- normal and history or exam do not suggest gradual onset of MCI: Counsel patient: Consider rescreening in 6-12 months.
If concern re MCI consider Neuro-psychological testing
If Persistent Depression
Refer to psychiatrist, other specialists or treat as appropriate
IF FAIL EVALUATION INSTRUMENT /BORDERLINE OR POSSIBLE MCI
Proceed to Labs & Imaging
1 Labs: Comprehensive metabolic panel if not already done at screening, or others as appropriate
2 Imaging: MRI (preferred; include SWI or GRE sequences, request volumetric MRI if available) or head CT
3 Neuropsychological testing (optional - consider for mild/unclear, atypical or early onset cases)
DIAGNOSIS
MCI or EARLY DEMENTIA
1 Discuss & disclose; counsel patient and family/Healthy Brain information
2 Develop Treatment/ Management Plan; discussion of disease modifying medications/ research studies
3 Access/provide resources including support groups
TYPICAL MODERATE / ADVANCED DEMENTIA
Probable Alzheimer's Disease w/ or w/out cerebral vascular co-morbidity
1 Disclose; counsel patient and family
2 Develop Treatment/Management Plan
3 Access/provide community resources
ATYPICAL CASES
Parkinsonian features, hallucinations, prominent aphasia, early onset, rapid progression, fluctuations, unexplained visual impairment, severe depression
Referral to neurologist, psychiatrist, or geriatrician recommended

DIAGNOSTIC WORKUP

Detailed History: History of risk factors, Informant Interview (IQCODE, QDRS, AD8), Cognition, Function (IADLs) and/or Behavior Changes

Neurological exam

Mental Status Test: MoCA*, qMCI, MMSE*, or SLUMS *FEE FOR USE

Depression Screening: Geriatric Depression Scale 7 Item, PHQ-9 and/or Structured Questions

Recommended Evaluation Instruments

Select a Patient and an Informant Instrument of preference and use consistently

Patient Mental Status Exams

- Montreal Cognitive Assessment (MOCA) – training fee required
- St. Louis University Mental Status (SLUMS)
- Mini Mental Status Exam (MMSE) – usage fee required
- Quick Mild Cognitive Impairment Screen (qMCI)

Informant Instruments

- Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE)
- Quick Dementia Rating Survey (QDRS)
- AD8

Patient Functional Assessment

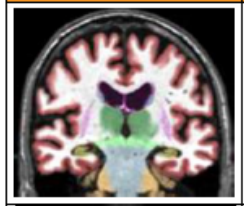
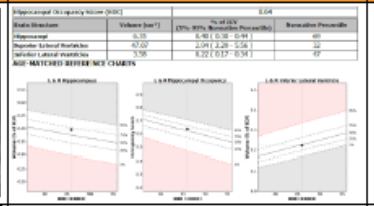
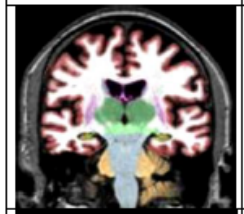
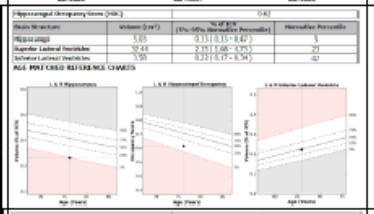
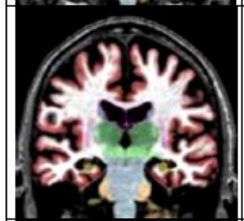
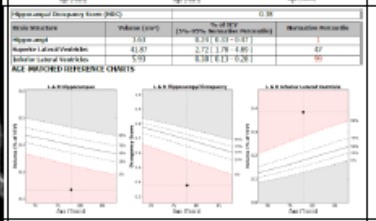
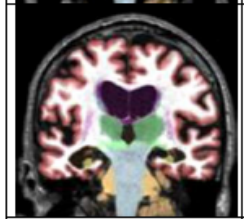
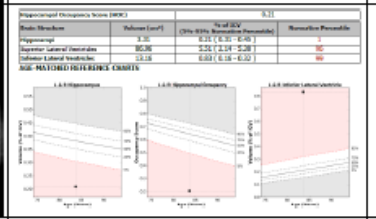
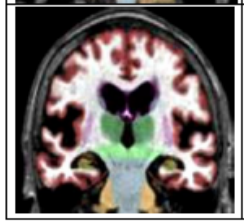
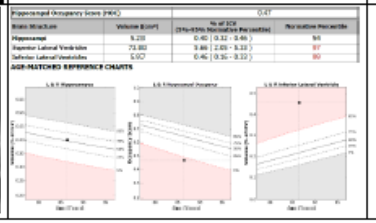
- Measure/Assess IADLs and ADLs

Imaging

- While not necessary nor sufficient for the diagnosis, imaging can be helpful in clarifying etiology
- If obtaining MRI brain, please ask for volumetric analysis (neuroquant)
  - Can find in Epic as “MRI brain wo contrast memory loss + neuroquant”

Understanding NeuroQuant®

Example Interpretations of NeuroQuant - Age Related Atrophy Report

Sample Segmented MRI	Example vMRI findings	Hippocampi	Hippocampal Occupancy	Lateral Ventricles	Interpretation
		Normal volume (Not atrophied)	Normal HOC	Superior and Inferior: Normal volume (Not enlarged)	Normal Scan: Does not support neurodegeneration
		Low volume	Normal HOC	Superior and Inferior: Normal	Low hippocampal volume without ex-vacuo dilatation: Possibly congenitally small hippocampi. Follow to establish presence and trajectory of volume change.
		Low volume	Low HOC	Superior: Normal Inferior: High volume	Low hippocampal volume and suggestive of LOCAL ex-vacuo dilatation: Supports MTL-focused neurodegenerative etiology
		Low Volume	Low HOC	Superior and Inferior: High Volume	Low hippocampal volume and suggestive of GLOBAL ex-vacuo dilatation: Supports neurodegenerative etiology, but may or may not be MTL-focused
		Normal	Low HOC	Superior and Inferior: High Volume	Normal hippocampal volume with enlarged ventricular system: Does not support hippocampal neurodegeneration. Possible expansion of overall ventricular system without MTL-focused ex-vacuo changes.

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What About Biomarkers?

- Blood biomarkers have limited clinical utility outside of helping determine eligibility for monoclonal antibody therapy
  - Blood biomarkers while easier to order have high associated cost ranging $255->$1000 not covered by insurance
  - Amyloid PET sometimes covered by insurance as alternative
  - CSF lumbar puncture for amyloid profile remains gold standard biomarker by which the blood biomarkers and PET imaging are compared

IF MENTAL STATUS EXAM NORMAL

Mental State exam +/- normal and history or exam do not suggest gradual onset of MCI: Counsel patient: Consider rescreening in 6-12 months.

If concern re MCI consider Neuro-psychological testing

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1. **Labs:** Comprehensive metabolic panel if not already done at screening, or others as appropriate
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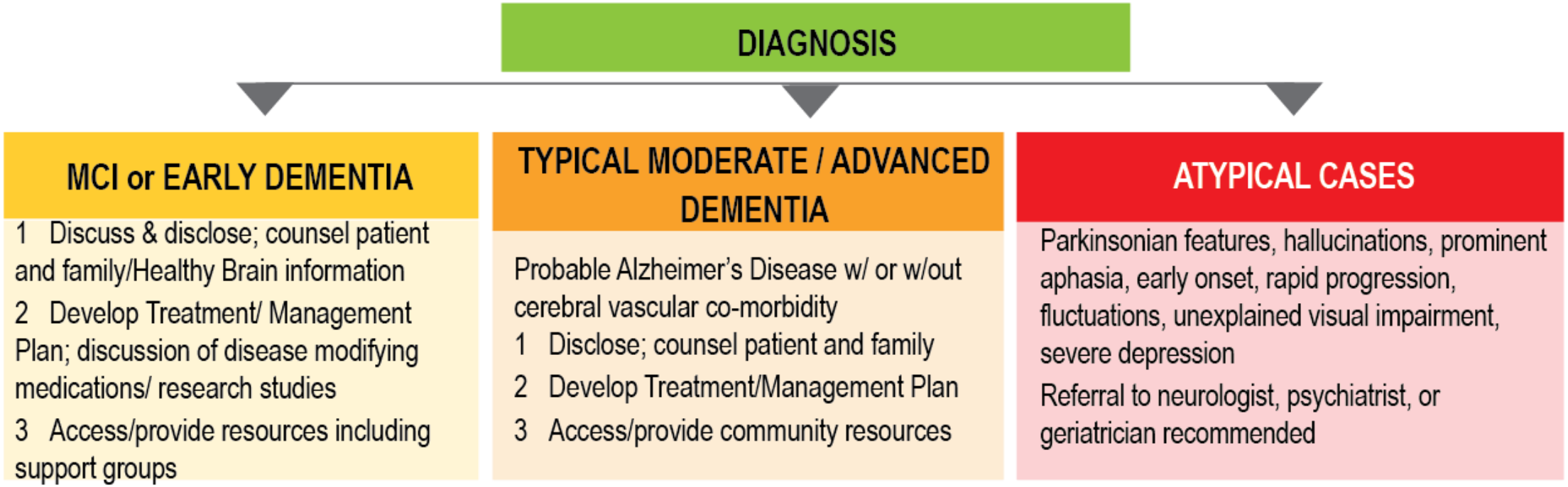
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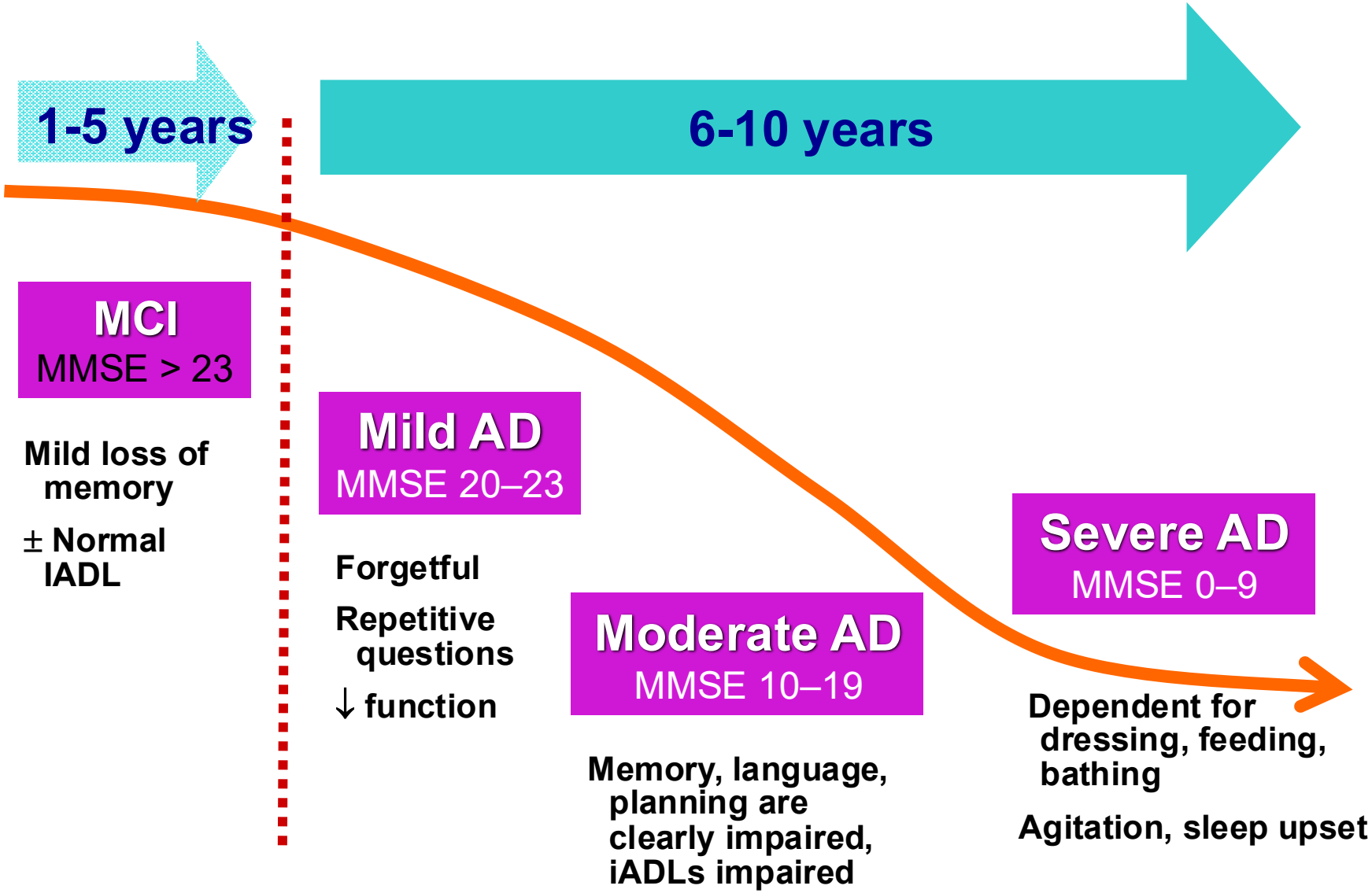
Clinical stages of Alzheimer's



Mild Cognitive Impairment

Mild impairment of memory or other cognitive areas; intact executive function, ADLs and IADLs

- Generally independent function; may make some compensation
- Increased risk of progression to dementia – about 5-10% per year, but may stabilize or improve depending on cause
- Need to re-evaluate annually

MCI Treatment

- No medication proven effective but may consider a cholinesterase inhibitor
- Remove anticholinergic and sedating Rx
- Screen for reversible factors
- Exercise - AHA guidelines
- Review diet, cardiovascular risk, sleep
- ETOH/substance abuse counseling if needed

Discuss at time of Diagnosis

5 Critical Issues to Discuss

1. Primary diagnosis – assess amount of detail requested by patient and family, and contributing factors
2. Medication options and adverse effects
3. Work, driving, managing finances, legal issues
4. Personal and home safety, including presence of firearms or other weapons
5. Need to have caregiver with individual while they absorb the diagnosis

Medication Options

- Acetylcholinesterase inhibitors: early stage

Donepezil, galantamine, rivastigmine (includes Exelon transdermal patch)

In clinical trials, all cholinesterase inhibitors were better than placebo, but did not reverse symptoms

- Memantine: moderate stage

Medications may provide positive support & hope for caregivers, but need to weigh risks and benefits

Acetylcholinesterase inhibitor AEs

- **Nausea,** vomiting
- **Diarrhea**
- **Abdominal pain**
- Constipation
- Fecal incontinence
- Dyspepsia
- Weight loss
- Peripheral edema
- Agitation

- **Bradycardia**
- Hypotension
- Heart failure
- Anemia
- Arthralgias
- Anxiety
- Tremor
- Vertigo
- Wandering

- Gait disturbance
- Falls
- Cough
- Rash
- Pruritis
- Conjunctivitis
- Blurred vision
- Urinary tract infections
- Flu-like syndrome

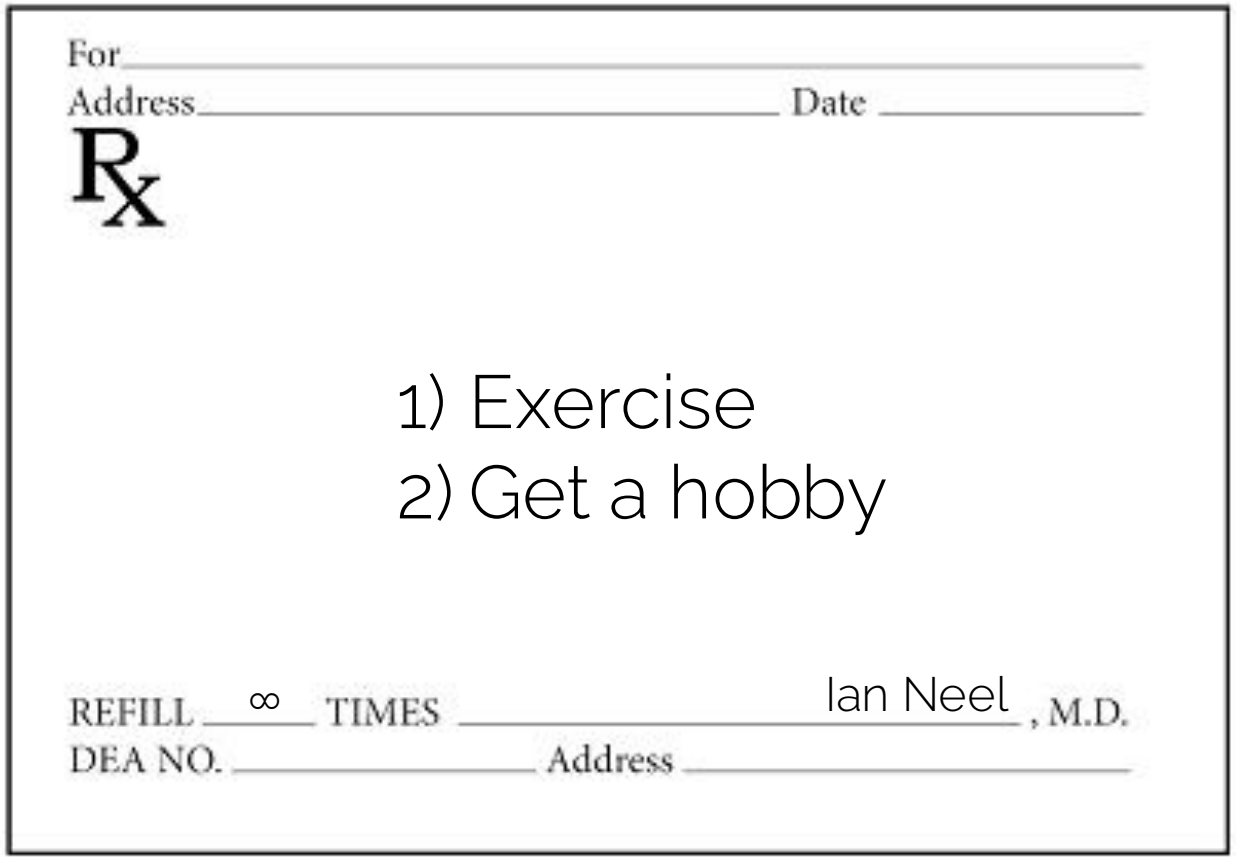
Memantine Adverse Effects

- **Fatigue**
- **Dizziness**
- Pain
- Hypertension
- Headache
- Constipation
- Vomiting
- Cough
- Dyspnea
- **Confusion**
- **Somnolence**
- Hallucinations
- Anxiety
- Depression
- Aggression

New Medications Addressing Amyloid Plaque

- Lecanemab (Eisai/Biogen) received FDA Full Approval July 2023
  - Better results than Aducanumab, fewer ARIA (12%)
- Aducanumab (Biogen) approved by FDA for MCI or early-stage Alzheimer's disease only; Biogen pulled drug Jan 2024
- Donanemab (Lilly) approved July 4, 2024
- Early screening and diagnosis will be critical to efficacy of any future approved medications
- On-line webinar available with detailed information at championsforhealth.org/alzheimers

Regarding Health Brain Tips, What To Practically Advise In Clinic?



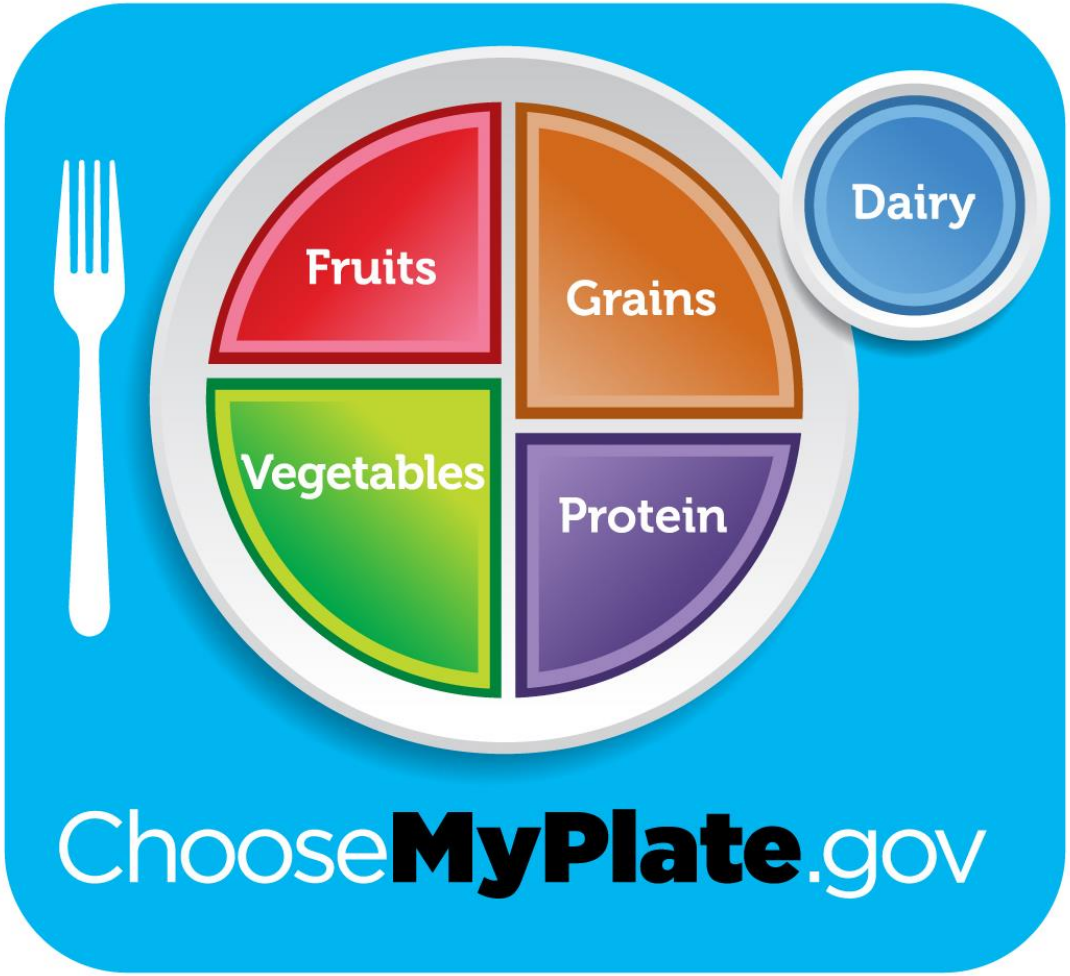
What Works: Physical Exercise

- Aerobic exercise is key to maintain brain and heart health.
- Aerobic exercise recommendations consist of 150 minutes per week of moderate-to-high intensity exercise such as brisk walking for thirty minutes five times a week.
- In addition to aerobic exercise, it also is recommended to add several other modes of exercise to one's regimen: muscle strengthening and balance training.

What Works: Physical Exercise

- Muscle strengthening is advised to be performed two or more days a week for 20-30 minutes a time. This can consist of weights (resistance training), exercises such as crunches or climbing stairs, or pool exercises against water resistance
- Balance training is recommended to be performed at least once a week, optimally greater than three times a week. The best studied balance training exercises are Tai Chi and yoga.
- As we age our sense of balance can degrade as a natural part of aging due to age changes in the nerves leading to our feet. Balance training helps correct for this and reduce our risk of falling
- Falls can lead to head injuries which can worsen cognitive health, and hence reducing risk of falling has been associated with better brain health

Healthy Eating



What Works: Mental Exercise

- Certain factors have been associated in the literature with later onset and slower progression of cognitive decline:
  - Higher formal education levels
  - Later time of retirement
  - Higher levels of cognitive activity

“Wait, so I can’t retire?”

- Unlikely retirement itself is leading to increased incidence of cognitive decline, but rather post-retirement lifestyle

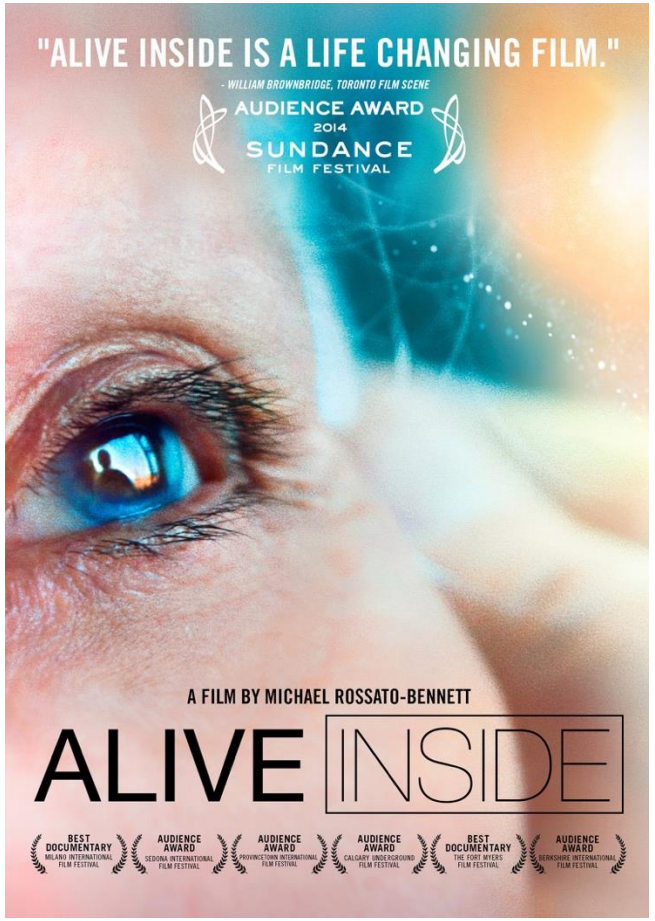
What Counts As Mental Exercise?

- The more complex, the better.
- Brain games unlikely to be of benefit. Frequently see news like this:

Evidence For And Against Memory Training

- Several dementia specific studies of memory training have been performed but have small sample sizes and confounders such as concurrent treatment with dementia pharmacotherapy that make results difficult to interpret.
- ACTIVE Study Group found cognitive training in those without cognitive impairment resulted in improved ability to perform the task that was being trained in the exercises when compared to control.
- Cochrane review 2007 of 32 trials showed no effects attributable to cognitive training
- Systematic review of ten studies of cognitive training in mild cognitive impairment was published in BMC geriatrics in 2011, which highlighted the sparse evidence in the literature, although showed some consistency in outcomes with regard to improved cognitive outcomes
  - Only five studies were randomized control trials
  - Lack of standardization of interventions tested
  - Small sample sizes in studies analyzed
  - Wide variability in outcomes

Music and Memory



Pandemic Impact: Socialization

- Many articles exist looking into COVID-19 effects on cognitive health
- Significant increase in behavioral disturbance as well as in onset of concerns about cognitive health as a result of pandemic
- Multi-factorial in causation but the social isolation resulting from the pandemic quarantine likely contributed

What Can Be Done For Socialization?

- Group activities
- Adult day care services
- Multigenerational households
- Many local resources exist to help with socialization, can look into local chapters of Alzheimer's Association, Southern Caregiver Resource Center, community centers, and more to help.

Caregiver Resources

- Download from https://ChampionsforHealth.org/alzheimers and
- https://championsforhealth.org/alzheimers/assisting-caregivers/

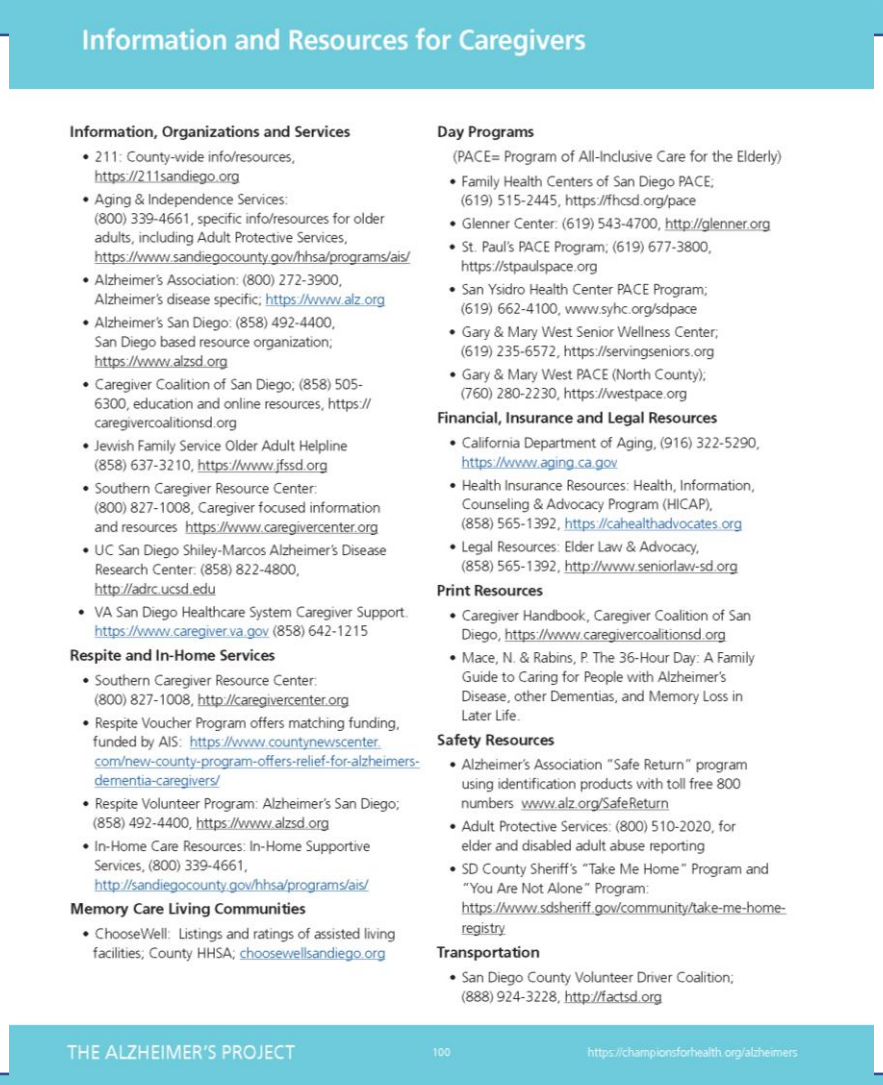
Resources For Caregivers

- ☐ Preparation for Doctor's Visit
- ☐ Information Resources For Caregivers
- ☐ See more handouts for After Visit Summary

The Alzheimer's Project

TOOLS AND RESOURCES TO ASSIST CAREGIVERS

Caregiver Resources



Information and Resources for Caregivers

Information, Organizations and Services

- 211: County-wide info/resources, https://211sandiego.org
- Aging & Independence Services: (800) 339-4661, specific info/resources for older adults, including Adult Protective Services, https://www.sandiegocounty.gov/hhsa/programs/ais/
- Alzheimer's Association: (800) 272-3900, Alzheimer's disease specific; https://www.alz.org
- Alzheimer's San Diego: (858) 492-4400, San Diego based resource organization; https://www.alzsd.org
- Caregiver Coalition of San Diego; (858) 505-6300, education and online resources, https://caregivercoalitionsd.org
- Jewish Family Service Older Adult Helpline (858) 637-3210, https://www.jfssd.org
- Southern Caregiver Resource Center: (800) 827-1008, Caregiver focused information and resources https://www.caregivercenter.org
- UC San Diego Shiley-Marcos Alzheimer's Disease Research Center: (858) 822-4800, http://adrc.ucsd.edu
- VA San Diego Healthcare System Caregiver Support. https://www.caregiver.va.gov (858) 642-1215

Respite and In-Home Services

- Southern Caregiver Resource Center: (800) 827-1008, http://caregivercenter.org
- Respite Voucher Program offers matching funding, funded by AIS: https://www.countynewscenter.com/new-county-program-offers-relief-for-alzheimers-dementia-caregivers/
- Respite Volunteer Program: Alzheimer's San Diego; (858) 492-4400, https://www.alzsd.org
- In-Home Care Resources: In-Home Supportive Services, (800) 339-4661, http://sandiegocounty.gov/hhsa/programs/ais/

Memory Care Living Communities

- ChooseWell: Listings and ratings of assisted living facilities; County HHSA; choosewellsandiego.org

Day Programs

(PACE= Program of All-Inclusive Care for the Elderly)

- Family Health Centers of San Diego PACE; (619) 515-2445, https://fhcsd.org/pace
- Glenner Center: (619) 543-4700, http://glenner.org
- St. Paul's PACE Program; (619) 677-3800, https://stpaulspace.org
- San Ysidro Health Center PACE Program; (619) 662-4100, www.syhc.org/sdpace
- Gary & Mary West Senior Wellness Center; (619) 235-6572, https://servingseniors.org
- Gary & Mary West PACE (North County); (760) 280-2230, https://westpace.org

Financial, Insurance and Legal Resources

- California Department of Aging, (916) 322-5290, https://www.aging.ca.gov
- Health Insurance Resources: Health, Information, Counseling & Advocacy Program (HICAP), (858) 565-1392, https://cahealthadvocates.org
- Legal Resources: Elder Law & Advocacy, (858) 565-1392, http://www.seniorlaw-sd.org

Print Resources

- Caregiver Handbook, Caregiver Coalition of San Diego, https://www.caregivercoalitionsd.org
- Mace, N. & Rabins, P. The 36-Hour Day: A Family Guide to Caring for People with Alzheimer's Disease, other Dementias, and Memory Loss in Later Life.

Safety Resources

- Alzheimer's Association "Safe Return" program using identification products with toll free 800 numbers www.alz.org/SafeReturn
- Adult Protective Services: (800) 510-2020, for elder and disabled adult abuse reporting
- SD County Sheriff's "Take Me Home" Program and "You Are Not Alone" Program: https://www.sdsheriff.gov/community/take-me-home-registry

Transportation

- San Diego County Volunteer Driver Coalition; (888) 924-3228, http://factsd.org

Download Resource page and other documents at https://ChampionsforHealth.org/alzheimers
Or photocopy from Guidelines booklet for patients and family members

You have just received a diagnosis of dementia.

Now what?

1 Ask questions about the disease and make sure you understand the answers.

New questions will come up over the weeks and months to come, and your health care provider and team are here to walk this journey with you and your family.

2 Learn as much as you can.

There are many resources available through local and national organizations, including educational programs and support groups, as well as online resources. Knowledge is power.

3 Understand this is a marathon, not a sprint.

There will be many good years ahead, and now is the time to plan for what you want your life to look like now, while the individual with memory decline is able to enjoy life with family and friends.

4 Get your docs in order!

There are a number of documents that should be written or updated. Establish with whom clinicians can discuss patient care with an updated HIPAA form, and who can make medical decisions when the individual with cognitive decline cannot (Advance Directive form). Discuss legal and financial issues with family and get help from professionals to plan now for future.

5 Live a brain-healthy life.

Evidence has shown that the best options for enhancing quality of life is a healthy diet, physical activity, social connections, brain stimulation, and not smoking. And get plenty of rest. This applies to individuals with dementia and their care partners.

FIRST STEP

Resources:

- **Information and Community Resources**

  Alzheimer's Association
  (800) 272-3900 *www.alz.org*

  Alzheimer's San Diego
  (858) 492-4400 *www.alzsd.org*

  Southern Caregiver Resource Center
  (800) 827-1008 *caregivercenter.org*

- **Medical Advance Care Planning**

  PREPARE *prepareforyourcare.org*

- **Legal and Financial Advance Care Planning**

  Elder Law and Advocacy
  (858) 565-1392 *www.seniorlaw-sd.org*

- **Understanding your Health Insurance**

  Health Insurance Counseling and Advocacy Program
  (858) 565-1392 *cahealthadvocates.org*

THE ALZHEIMER'S Project Prevention • Care • Community Support | CHAMPIONS for HEALTH | DEMENTIA Care Aware | GERIATRIC

Available in:
English
Spanish
Tagalog
Mandarin
Vietnamese
Somali
Korean
Farsi
Arabic

- 10 Warning Signs of Dementia
- Signs of Healthy Aging
- You've Just Received a Diagnosis. Now What? – English
- You've Just Received a Diagnosis. Now What? – Spanish
- Mild Cognitive Impairment
- MIND Diet Food Options
- Assisting Caregivers Plan through the Stages
- Challenges of Caring for an Individual Living with Dementi
- Challenges of Caring – Spanish version
- Self-Care for Caregivers – English
- Self-Care for Caregivers – Spanish
- Link to DEER Caregiver Resources – Dementia Self-Manag
- Driving Information and Contract

All available at:
https://championsforhealth.org/alzheimers/assisting-caregivers/

You can add this QR code to your AVS or
local organizations providing caregiver r

The Alzheimer's Project Clinical Roundtable facilitated by

ChampionsforHealth.org/alzheimers

Website updated regularly with most current information

The Alzheimer's Project Clinical Roundtable funded by

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