Nonpharmacological Interventions for People Living with Cognitive Impairment and Dementia

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Disclosures

None

Disclaimer

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HIV and Cognition

- HIV-associated neurocognitive disorder
  - Up to 50% of individuals with HIV?
  - Attention, executive functioning, memory and processing speed
  - Concerns about existing criteria
    - High false positive rate
    - Impact of education, cultural and socioeconomic factors
    - Causation/comorbidities
  - Possible shared mechanism with other neurodegenerative diseases
    - Inflammation
    - Amyloid beta deposition
  - Decreased cognitive reserve

Chemparthy et al, 2021; Nightingale et al, 2023

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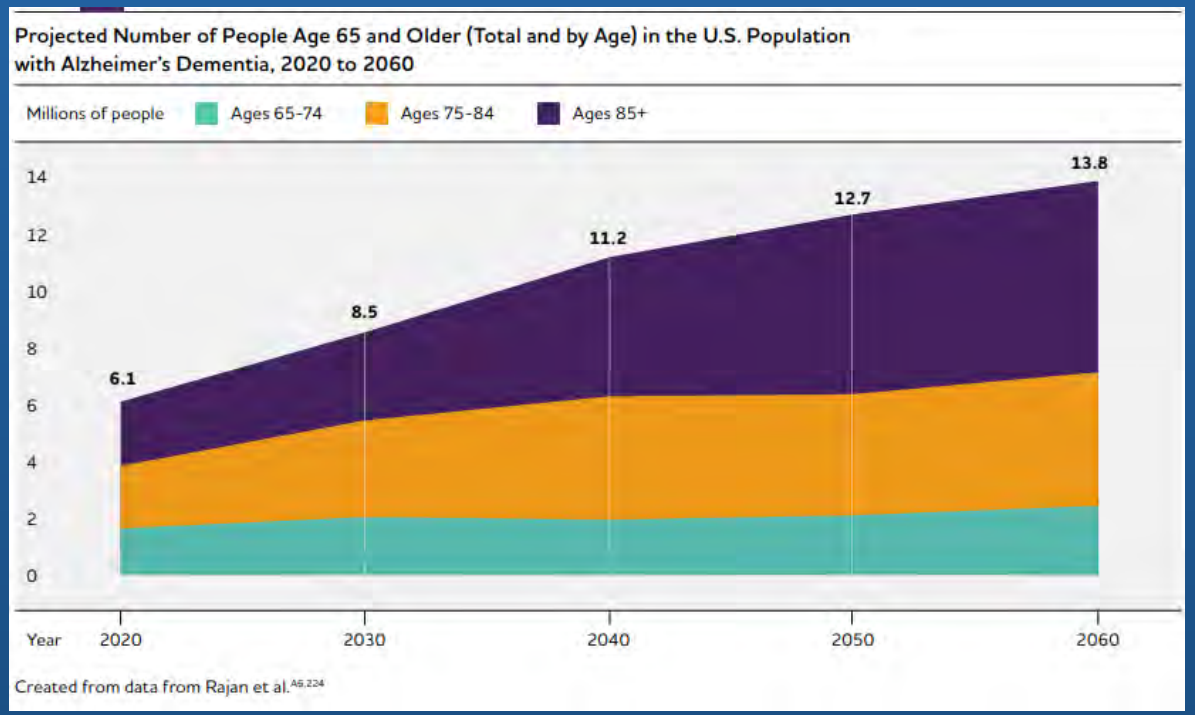
2025 US Facts and Figures

- 7,200,000 Americans with Alzheimer's
  - 5,000,000 -7,000,000 with MCI
  - 50% due to AD
  - 15,000,000 with SCI

- 11% general risk after age 65
  - 65-74 = 5.1%
  - 75-84 = 13.2%
  - 85+ = 33.4%

- 45% with a diagnosis
  - <50% disclosed
  - <50% of providers with standard protocols



Alzheimer's Association. 2025 Alzheimer's Disease Facts and Figures. Alzheimers Dement 2025;21(5).

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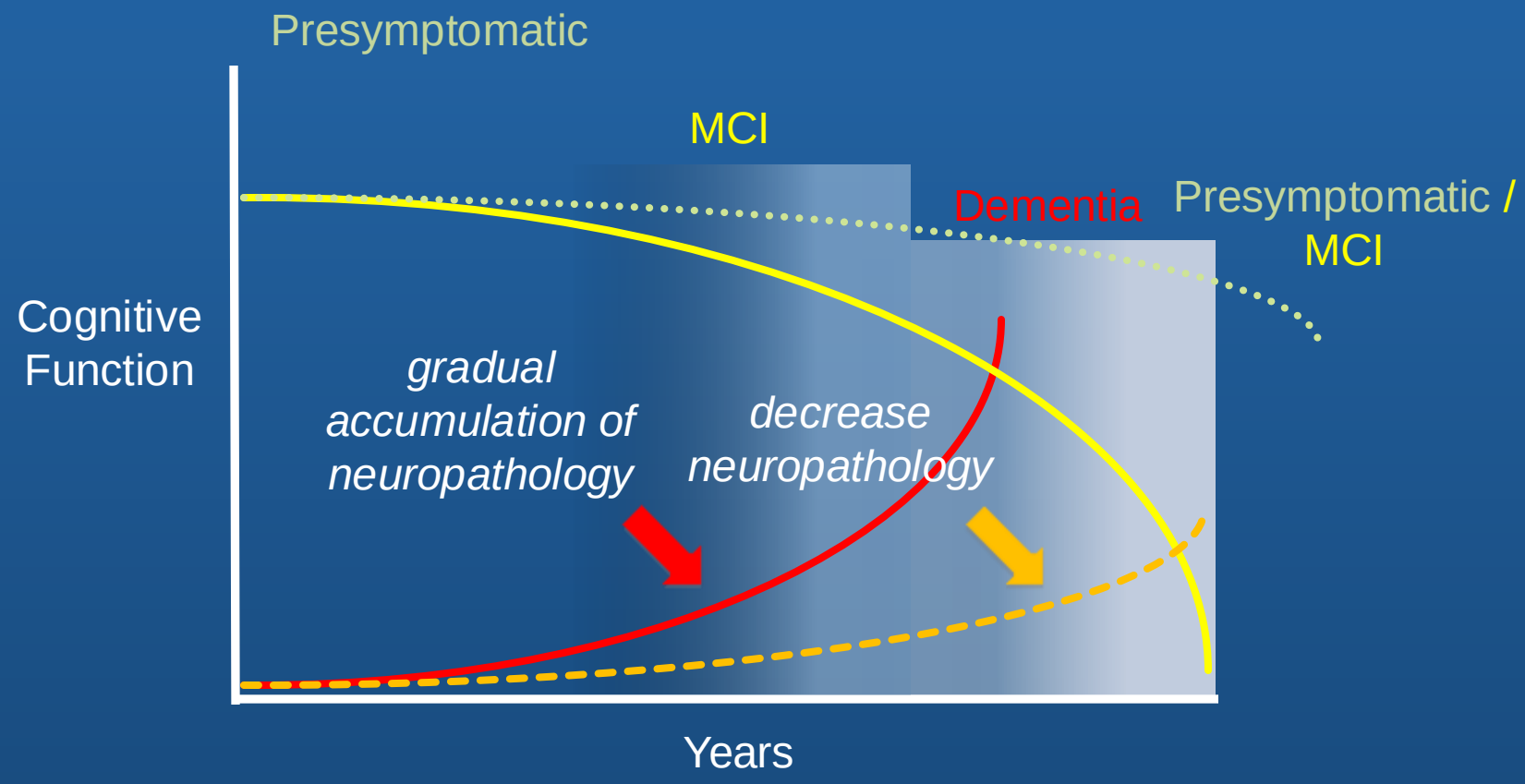
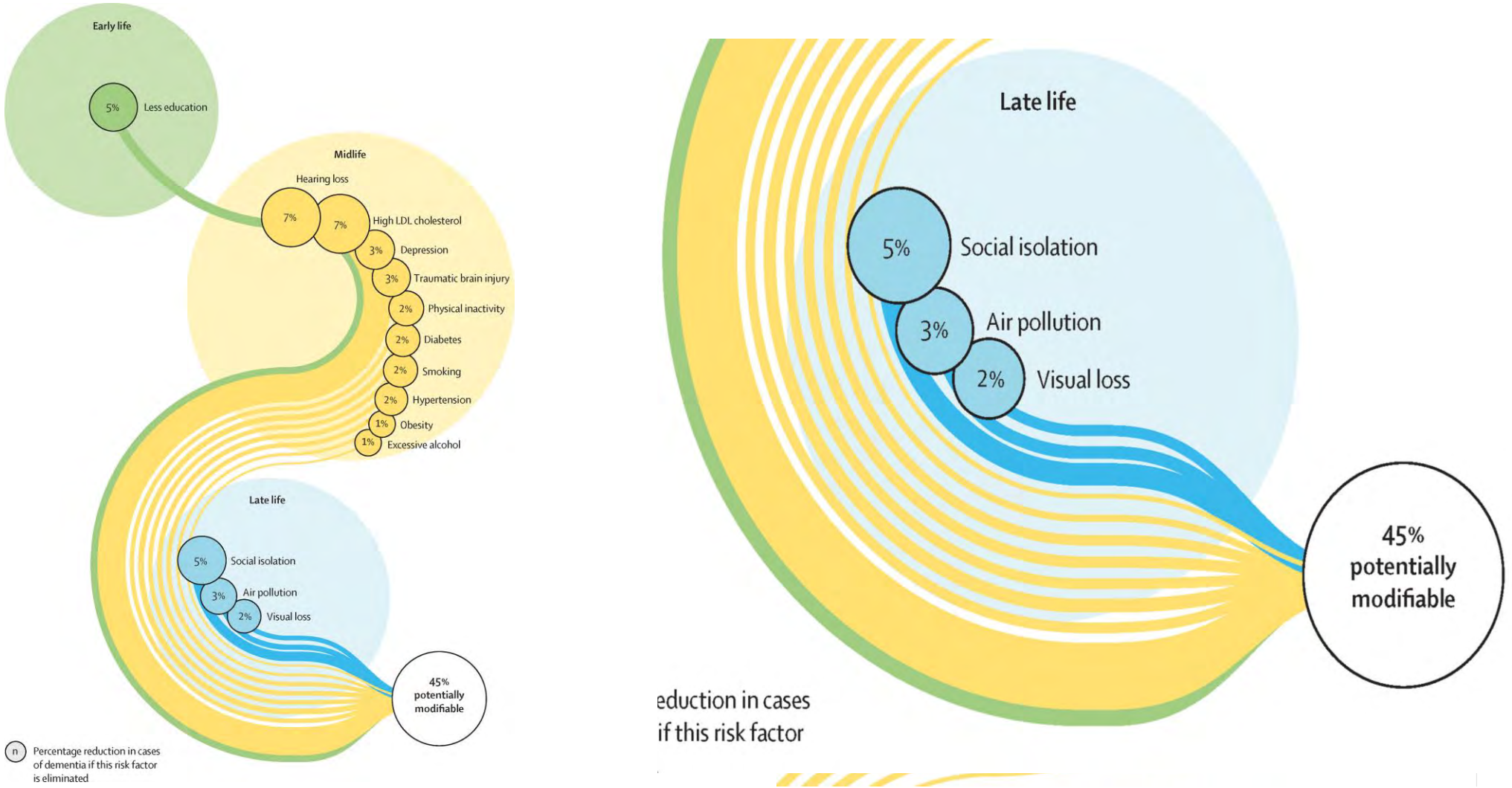
Treatment Targets



Lancet Commission



Dementia Prevention, Intervention, and Care Livingston et al., 2024

Prevention and Interventions

- Treatment of Modifiable Risk Factors
  - Cardiovascular
  - Sedentary lifestyle
  - Sleep disorders/disruption
  - Alcohol
- Cardiovascular Exercise
- Cognitive Activation and Rehabilitation
- Dietary Interventions
- Meditation/Mindfulness-Based Stress Reduction
- Community Engagement and Socialization

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Exercise, Physical Activity and Cognitive Impairment

- Over 90 meta-analyses in the last 5 years
  - Less work in HAND or HABI (Nweke et al, 2022;
- Highest quality/most consistent evidence
- Likely multiple mechanisms of action (Wilckens et al., 2021, Hippocampus)
- Likely beneficial in multiple domains
  - Cognition (processing speed, EF>memory) (Wang et al., 2020, Aging)
  - Physical function/mobility/falls (Lai et al., 2019, AM J Phys Med Rehabil)
  - Sleep (O'Caoimh et al., 2019)
  - Neuropsychiatric symptoms (Watt, et al, 2021, BMJ)
- Likely most beneficial in combination with other NPTs
- Pooled effects highest for delaying onset>MCI>dementia
  - Group > individual
  - Across settings, including home-based (de Almeida, 2020, Gerontologist)

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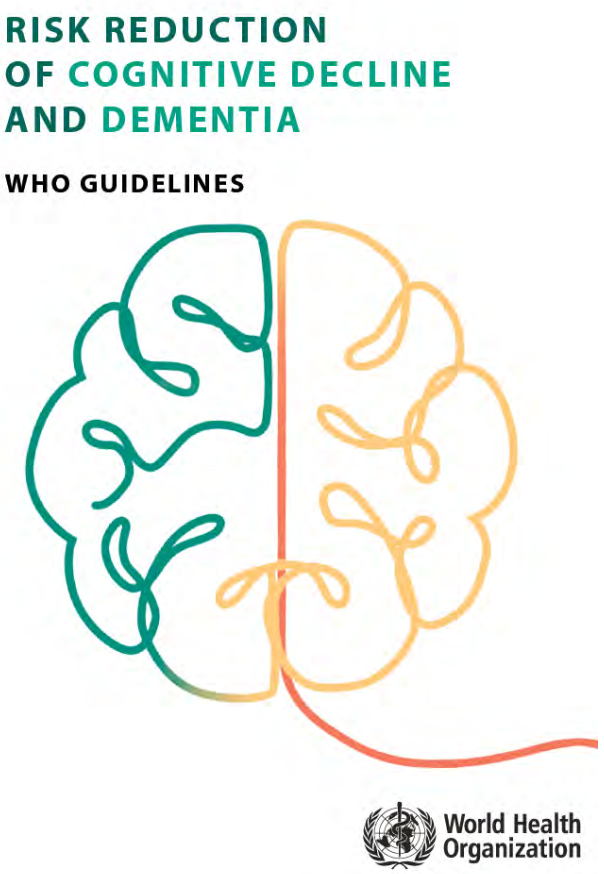
Exercise and Physical Activity

- Should be recommended to adults with normal cognition to reduce the risk of cognitive decline.
  - Quality of evidence: moderate
  - Strength of the recommendation: strong

- May be recommended to adults with MCI to reduce the risk of cognitive decline.
  - Quality of evidence: low
  - Strength of the recommendation: conditional

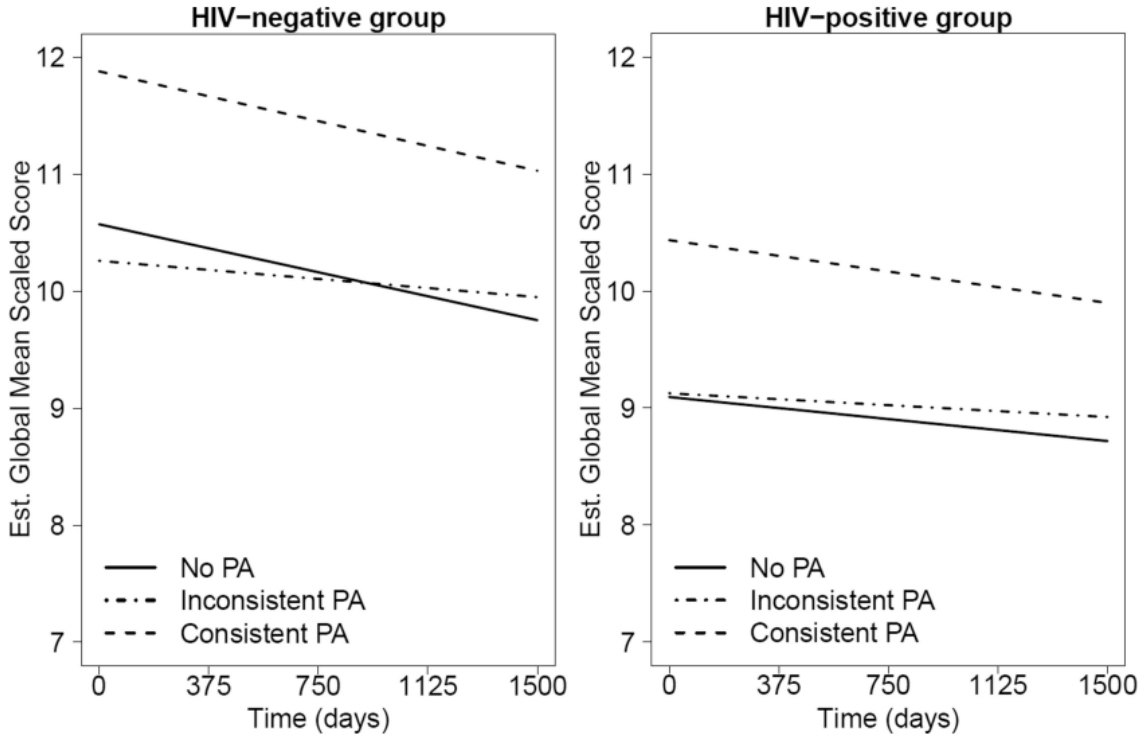
- 150 min of moderate-intensity or 75 min vigorous-intensity /week
  - Double for additional health benefits
- Aerobic activity = 10+ minutes' duration
- Poor mobility = balance and fall prevention on 3+ days/week
- Muscle-strengthening = major muscle groups on 2+ days/week
- Limitations = as physically active as abilities and conditions allow

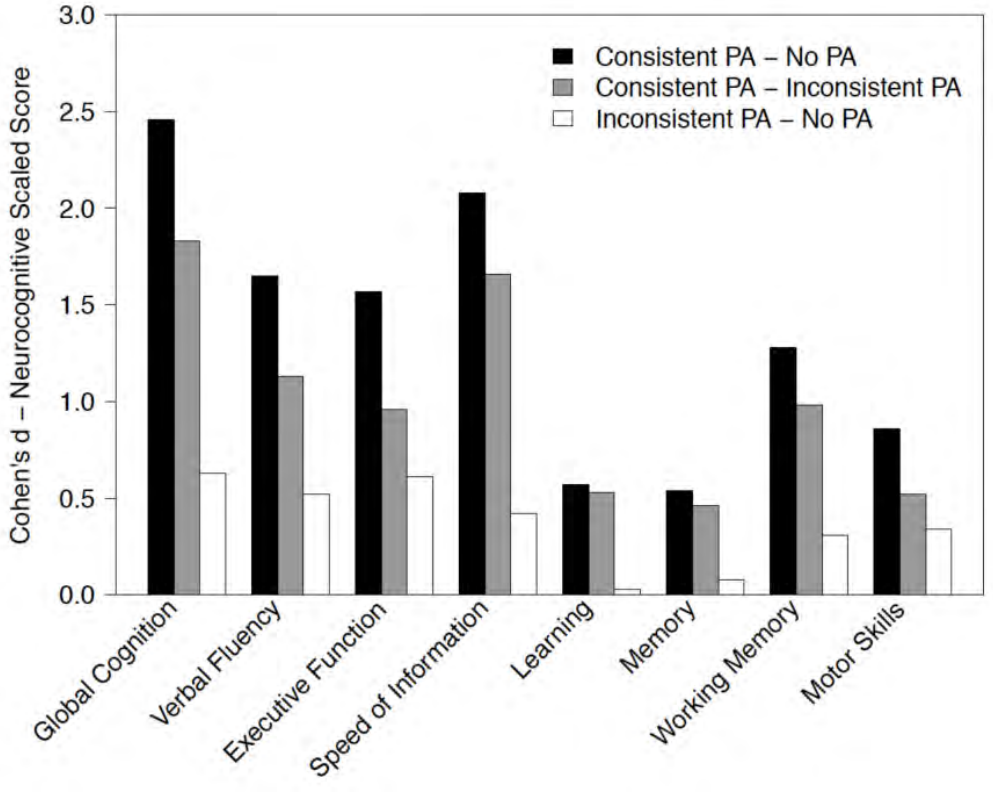


World Health Organization, 2019

Exercise and Physical Activity : HIV and Cognition

Impact of physical activity on neurocognitive functioning among HIV-Infected adults (Dufour et al., 2018)

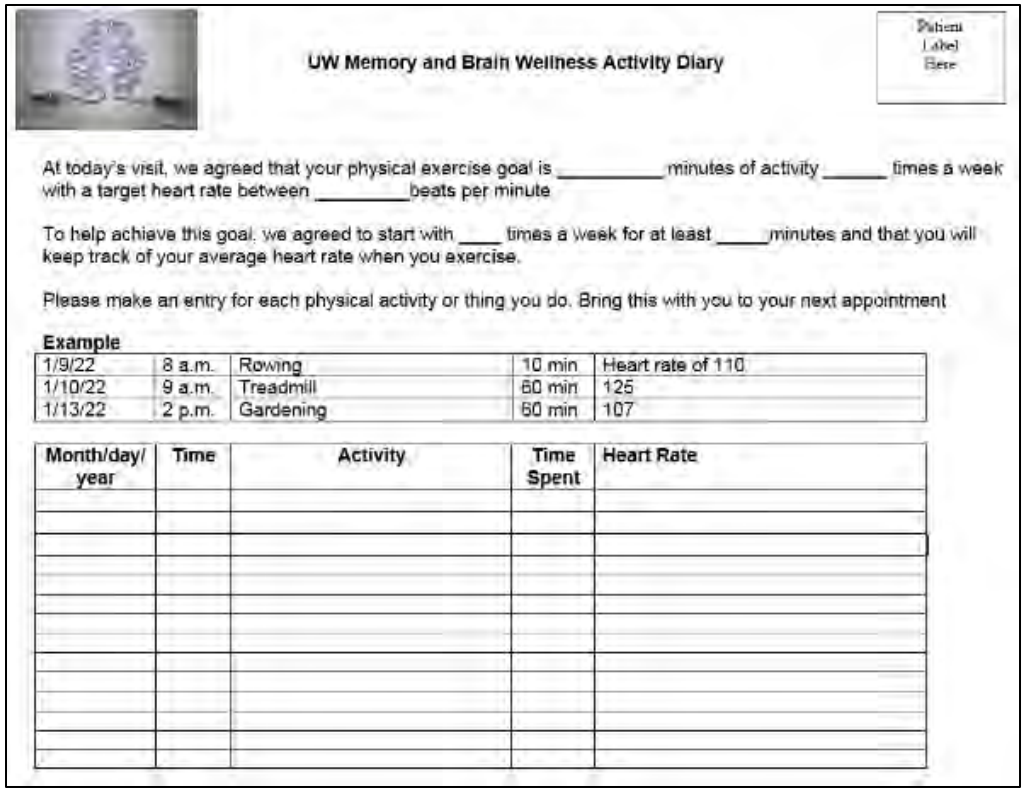




AIDS Behav. 2018 May ; 22(5): 1562–1572. doi:10.1007/s10461-016-1643-z.

How to Implement

- Scheduling and structure
- Create accountability
  - Classes
  - Exercise partner(s)
  - PT/Trainer
  - Exercise Diaries
  - FitBit/exercise trackers
  - Check-in calls
- Program for variability and engagement
- Graduated, well-paced incremental increases
- Motivational interviewing/enhancement
  - “You know why I want you to exercise, why do you want to?”
  - “From ‘not at all’ to ‘very,’ how likely are you to _____? What would get you to ‘very’?”



UW Memory and Brain Wellness Activity Diary

Patient Label Here

At today's visit, we agreed that your physical exercise goal is _____ minutes of activity _____ times a week with a target heart rate between _____ beats per minute

To help achieve this goal, we agreed to start with ____ times a week for at least _____ minutes and that you will keep track of your average heart rate when you exercise.

Please make an entry for each physical activity or thing you do. Bring this with you to your next appointment

Example

1/9/22	8 a.m.	Rowing	10 min	Heart rate of 110
1/10/22	9 a.m.	Treadmill	60 min	125
1/13/22	2 p.m.	Gardening	60 min	107

Month/day/ year	Time	Activity	Time Spent	Heart Rate

Mental Exercise and Cognitive Activity

JAMA Network Open

Original Investigation | Infectious Diseases

Evaluation of Computerized Cognitive Training and Cognitive and Daily Function in Patients Living With HIV

A Meta-analysis

Jiaqi Wei, BS; Jianhua Hou, MS; Tingting Mu, BS; Jun Sun, PhD; Shuang Li, MS; Hao Wu, MD; Bin Su, PhD; Tong Zhang, MD, PhD

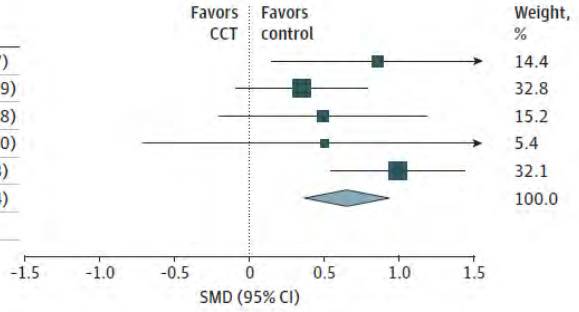
- Improvements in:
  - Abstraction/executive function
  - Attention/working memory
  - Memory
  - Motor skills
  - Speed of information processing
  - Daily function
- No change in:
  - Sensory and perceptual skills
  - Verbal language skills

Speed of information processing

Source	Participants, No. CCT	Control	SE	SMD (95% CI)	Weight, %
Cody et al,[41] 2020	17	16	0.36	0.85 (0.14 to 1.57)	14.4
Ezeamama et al,[42] 2020	41	40	0.22	0.35 (-0.09 to 0.79)	32.8
Fazeli et al,[49] 2019	17	16	0.35	0.49 (-0.20 to 1.18)	15.2
Ownby et al,[54] 2017	6	5	0.61	0.49 (-0.71 to 1.70)	5.4
Vance et al,[56] 2021	48	40	0.23	0.98 (0.54 to 1.43)	32.1
Total	129	117	NA	0.65 (0.37 to 0.94)	100.0

Heterogeneity: $\tau^2 = 0.01$; $\chi^2 = 4.60$; $df = 4$; $P = .33$; $I^2 = 13\%$

Test for overall effect: $z = 4.50$; $P < .001$

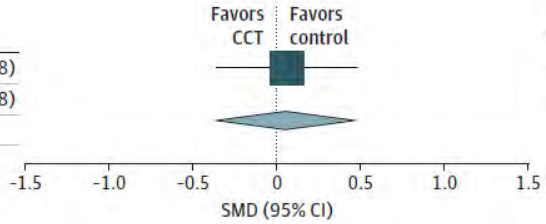


Sensory and perceptual skills

Source	Participants, No. CCT	Control	SE	SMD (95% CI)	Weight, %
Vance et al,[56] 2021	48	40	0.21	0.06 (-0.36 to 0.48)	100
Total	48	40	NA	0.06 (-0.36 to 0.48)	100

Heterogeneity: NA

Test for overall effect: $z = 0.29$; $P = .78$



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How to Implement

- Engaging in a variety of activities that challenge memory, language, spatial reasoning, attention, etc.
  - Tasks emphasizing processing speed may most helpful (Rebok et al, 2014, JAGS)
- The difficulty should be adjustable to gently but consistently push your skills (without being too frustrating or discouraging)
- Activities done as a group or with a partner
- Activities that involve new learning (i.e., a new card game, language, instrument, lecture series)
- At least an hour a day of things that keep your mind active, like reading, socializing, games
- Some pre-packaged, computerized programs include:
  - Posit Science / Brain HQ - https://www.brainhq.com/
  - Lumosity - https://www.lumosity.com/
  - AARP Brain Games - https://stayingsharp.aarp.org/about/brain-health/games/

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Cognitive Rehabilitation

- Restitution vs. Compensation
- Internal vs External Strategies
  - Encoding
    - Mnemonic
    - Chaining (forward/backward)
    - Chunking
    - Errorless learning
  - Storage
    - PQRST
    - Spaced retrieval
  - Retrieval
    - Cues/prompts
    - Recognition strategies

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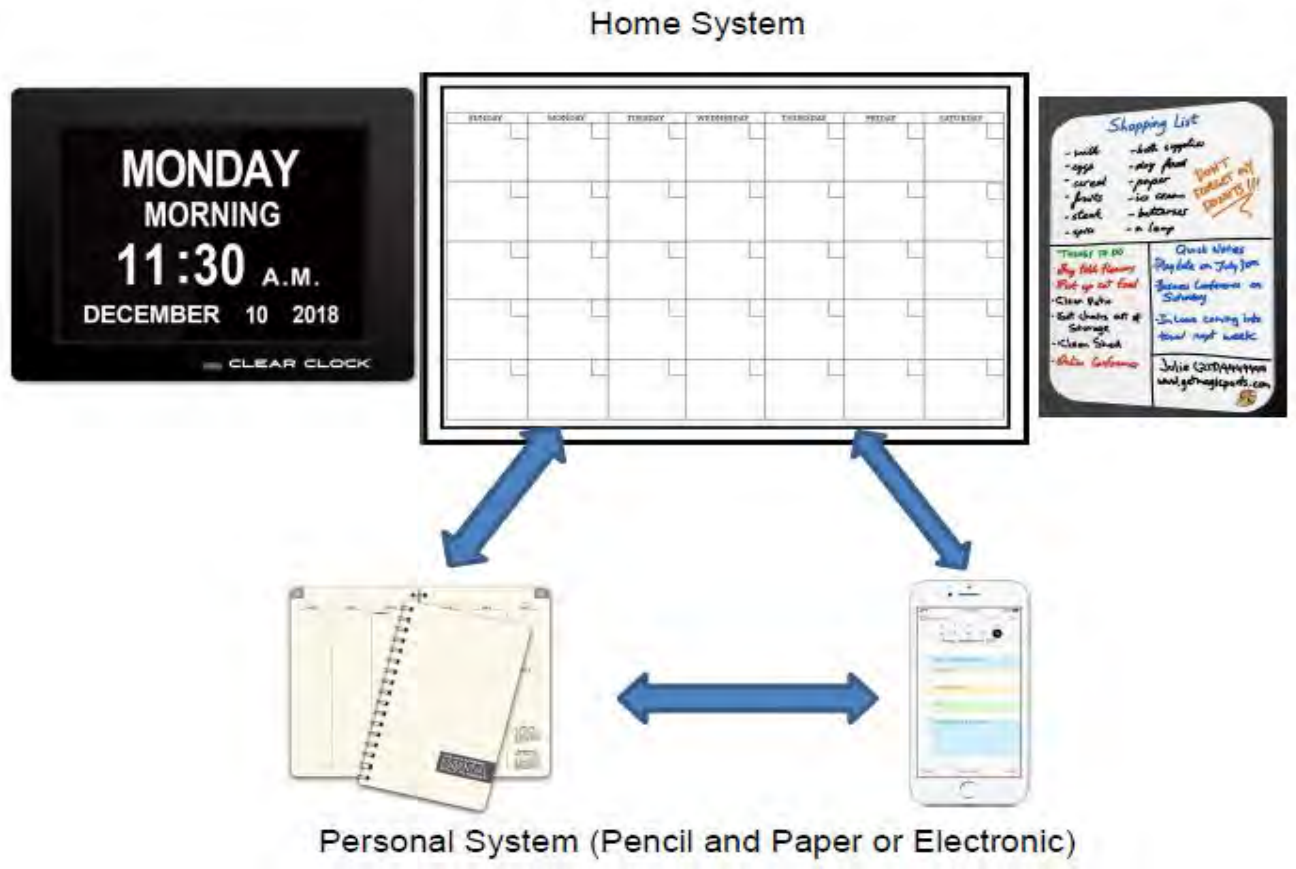
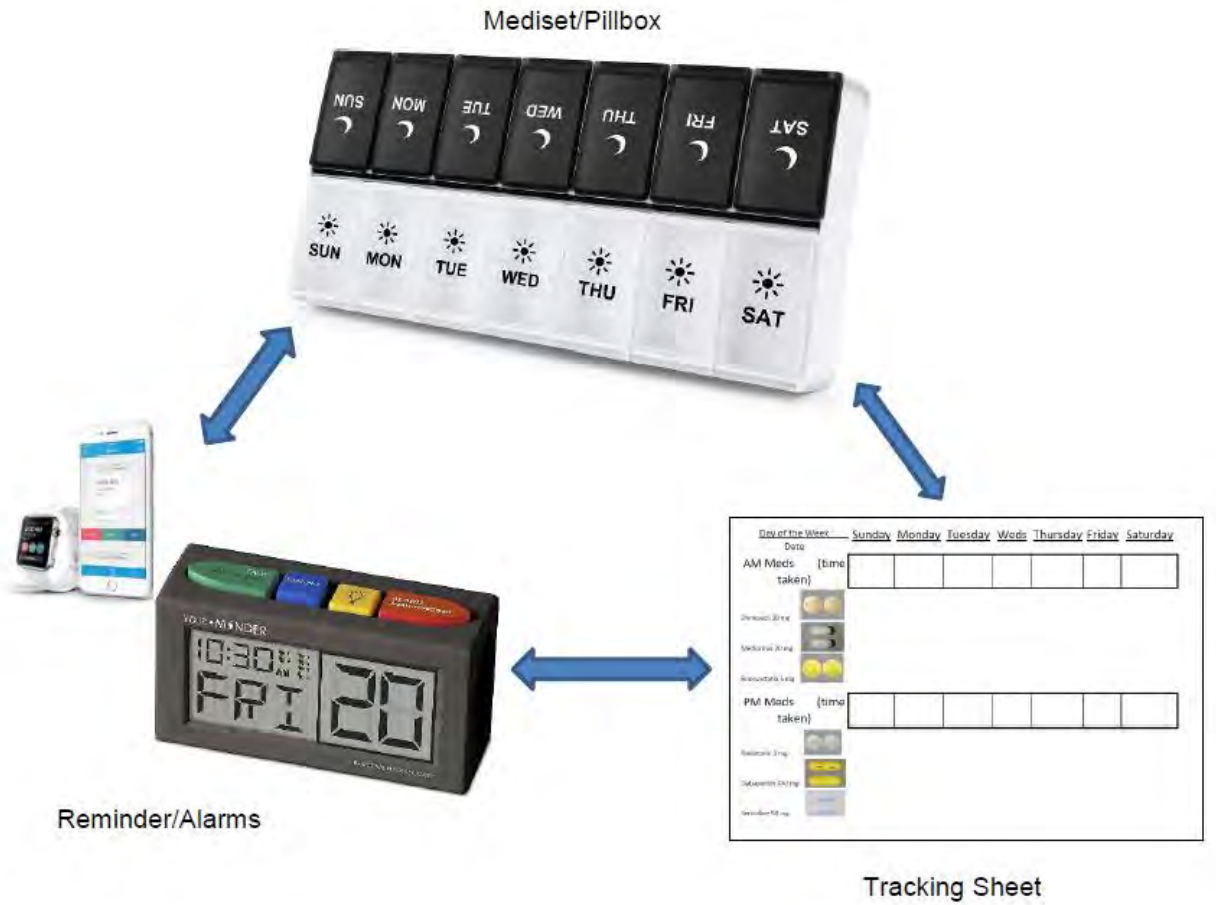
Cognitive Training: Scaffolding

- External devices include:
  - Information display items
    - Clocks, calendars, digital photo frames
  - Electronic reminders
    - Phones, pagers, pillboxes
  - Location detection devices
    - Electronic tagging
  - Way-finding
    - GPS, architectural design
  - Electronic storage
    - PDA, mobile phone
  - Diaries, organizers, Filofaxes
  - Storage devices



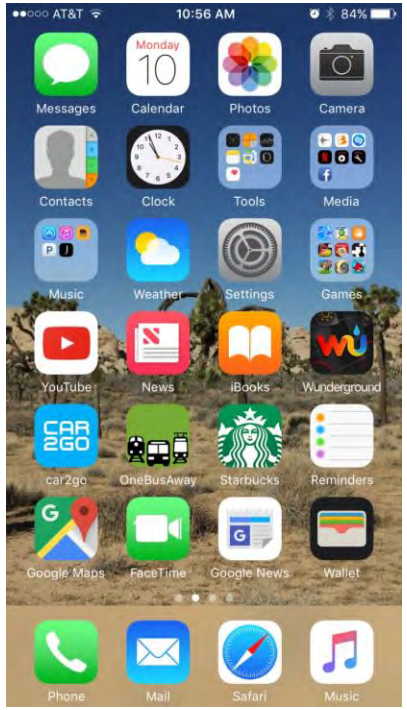
Memory Rehabilitation - Combined

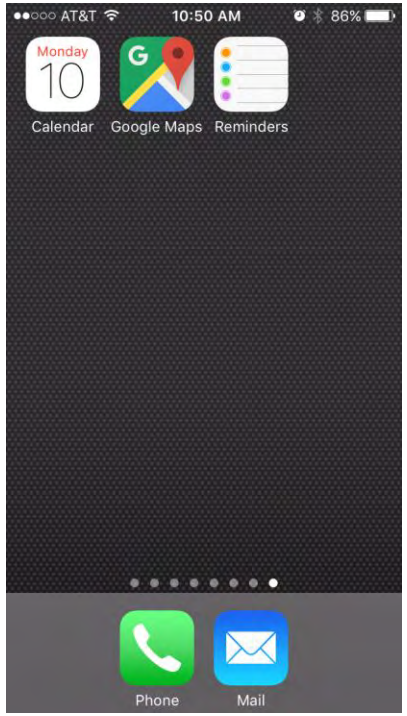
- Compensatory System
  - Mediset
  - Pill reminders/alarms
  - Tracking Sheet
  - Incorporate other tools/techniques
    - Calendar
    - Errorless learning
    - Location of practice



How to Implement

- Referral to SLP/cognitive rehabilitation/OT/therapist
- Critical importance of a care partner
  - Follow through
  - Carryover
  - Generalization/adaptation
- Capitalizing on previously used tools
- Shopping for the right version of the tool
- Recruiting the family or friend tech support person
- Picking one area/intervention at a time
- Stressing the importance of practice and need for time

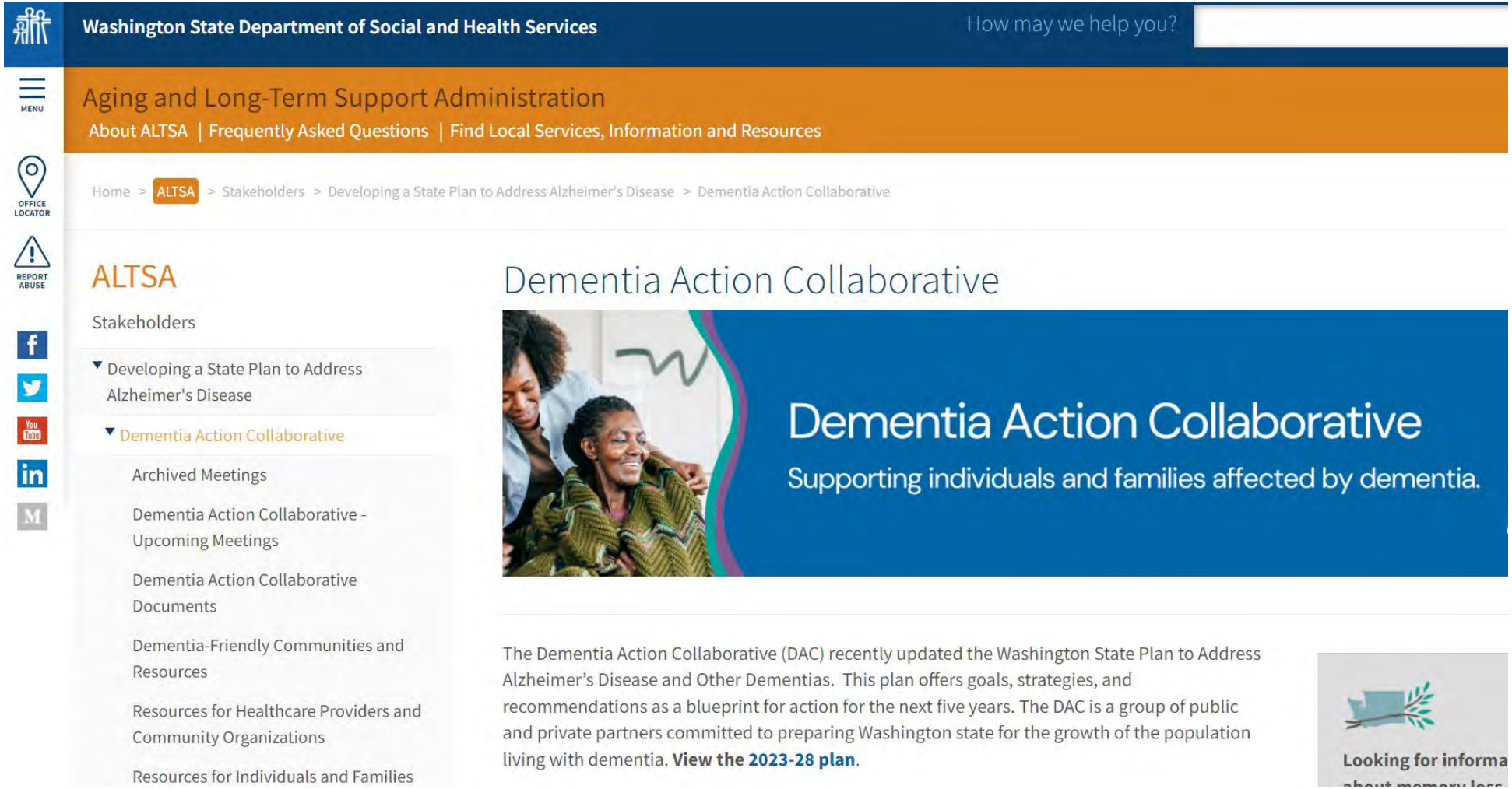




Programs and Services

Dementia Action Collaborative Resources

https://www.dshs.wa.gov/altsa/dementia-action-collaborative

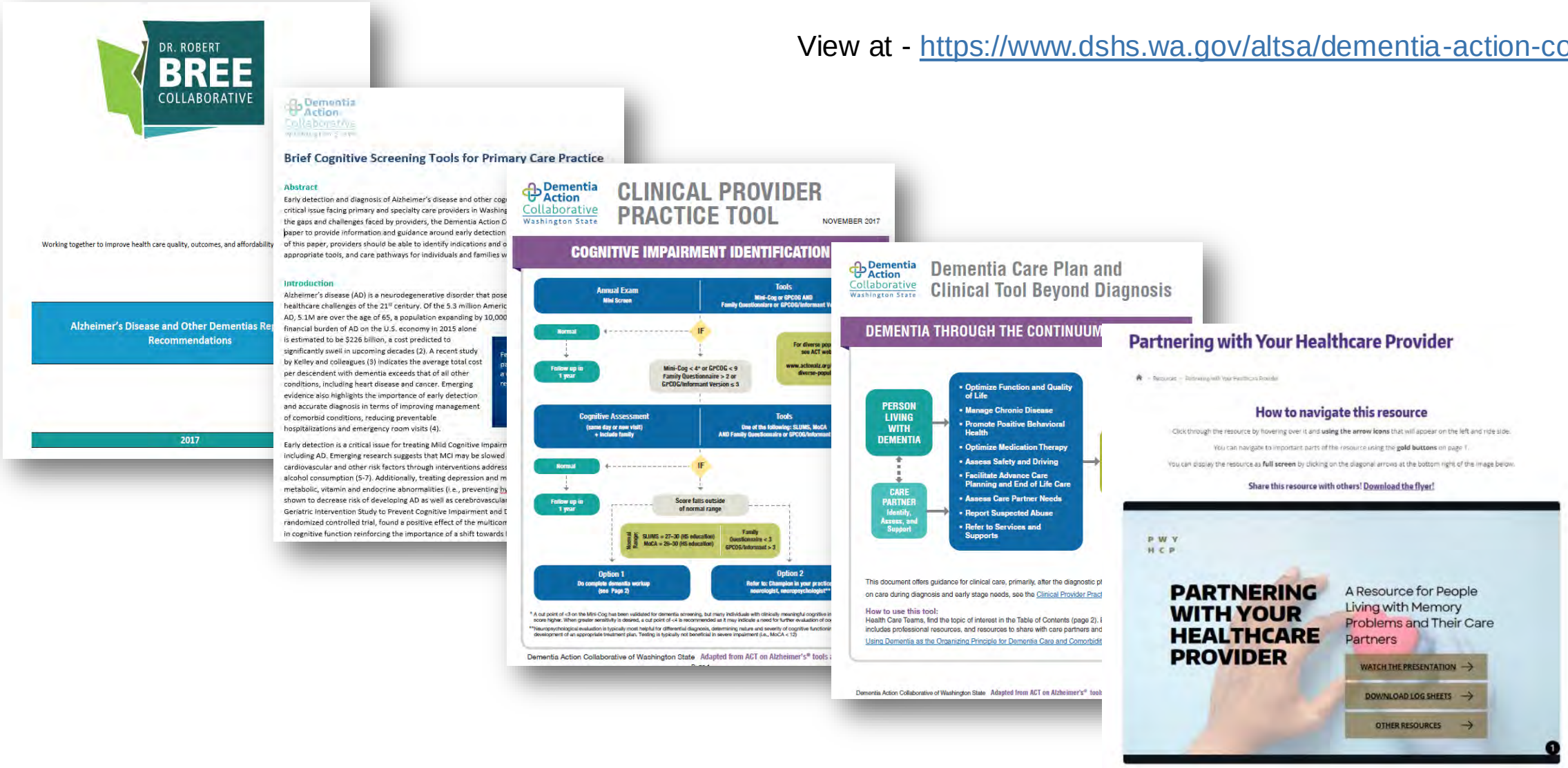


You'll find Resource Pages for:

- Individuals & Families
- **Health Care Providers**
- Dementia Friendly Communities
- DAC Documents

Clinical Provider Practice Tools

View at - https://www.dshs.wa.gov/altsa/dementia-action-collaborative



Early Legal and Advance Care Planning

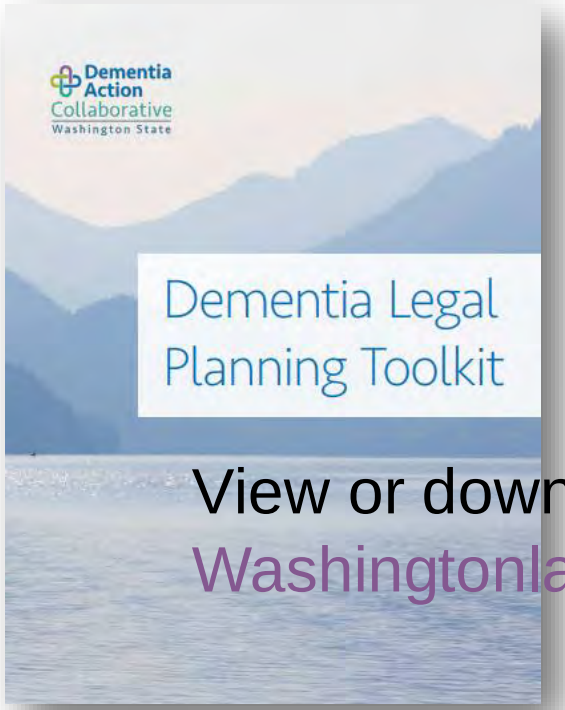
Dementia Legal Planning Toolkit provides information about:

- Dementia and Capacity
- Financial decisions
- Health care decisions
- And provides forms and additional resources

View online: Dementia Legal Planning Toolkit

Order paper copies/folders: Order Dementia Legal Planning Toolkit

Free though the Northwest Justice Project (NJP)



View or download at:
Washingtonlawhelp.org

Northwest Justice Project

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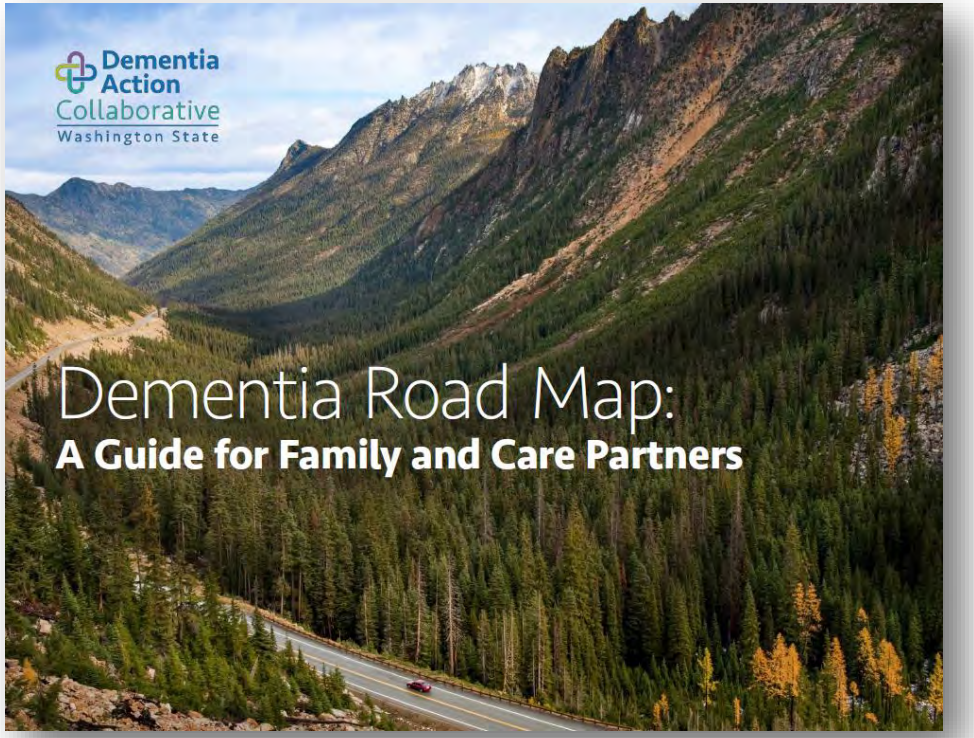
Dementia Road Map:
A Guide for Family and Care Partners

- Comprehensive yet simple to follow guidance document
- Online PDF version
- Print version – disseminated over **100,000** already
- Sections on MCI, dementia stages
- Recently translated into Spanish and Russian



Consumers order 1-5 copies: Dementiaroadmap@dshs.wa.gov
View online at: https://www.dshs.wa.gov/altsa/dementia-action-collaborative
Organizations/bulk copies: Follow instructions or go to MyPrintDesk

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“I have a good life”

“After hearing the news, I just felt totally lost. But you know what, I have a good life. That sounds crazy, but I do!

I get out, I have fun, and I don’t worry about Alzheimer’s. Because if you can’t fix it, then you have to find a way to live with it.

I’ve got a group of people who love me, and who stand by me, and that is what life is supposed to be.

I just want all the happiness I can have, and that’s what I go for.”

~Alice P.

Bellevue, WA

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UW Medicine
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Thank you for your attention!

Questions?

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