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Behavioral Interventions to Prevent, Delay, or Mitigate Dementia Effects

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Learning Objectives

- Discuss the current state of knowledge about the impact of behavioral interventions intended to prevent or delay dementia.
- Describe a multicomponent intervention program (HABIT) that combines promising behavioral interventions to help maintain function in people with Mild Cognitive Impairment
- Explain the effect of behavioral interventions on caregivers of individuals with memory loss

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Disclosures

- I receive funding from PCORI and have received funding from the NIH.
- I receive royalties from the book MCI and Dementia; Definitions, Diagnosis and Treatment
- Brain Fitness' research described herein was supported by grants from Posit Science Inc. to Mayo Clinic, USC and UCSF. I have no financial interests in this company.
- The Mayo HABIT program to be discussed today generates revenue for Mayo. I do not receive additional direct financial beyond normal salary benefit from the delivery of this program



Outline	
 The Opportunity of Mild Cognitive Impairment Secondary Prevention Cognitive training Physical Exercise Compensation Integrated approach Break Psychology's role in Tertiary prevention Dementia behavior management 	
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Delaying/Preventing AD

- Some people die with AD changes in their brain without ever showing dementia in life
 - It is possible to have cognitive/functional resilience (reserve) in the presence of brain disease
- If we could delay clinical onset of AD more people would die without showing dementia
 Can we enhance cognitive reserve?
- Or we at least we can theoretically compress
 the period of morbidity
 - > We can enhance functional resilience





earliest biomarker to become a Auguard and a second seco













	Timeline	
	 1986-AAMI et al 1991-MCI Flicker Ferris and Reisberg 1994-APOE and mild memory impairment 	Total MCI articles in Pubmed 320
	 1996-MCI paper in NP journals 1999-MCI 'Petersen criteria'-Petersen, Smith, Waring et al., 2004-Winblad et al MCI consensus criteria 2011-MCI due toNIA-Alz Assn Sperling 	1763
	 2012-National Plan to Address Alzheimers 2013- DSM-5 mild Neurocognitive DO 2015- National Alzheimer's Plan 	11963
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Prevention

Primary

- measures provided to individuals to prevent the onset of a targeted condition.
- Secondary
 - measures that identify and treat asymptomatic persons who have already developed risk factors or preclinical disease but in whom the condition is not clinically apparent.

Tertiary

- the care of established disease, with attempts made to restore to highest function, minimize the negative effects of disease, and prevent disease-related complications.
- U.S. Preventative Services Task Forces' Guide to Clinical Preventive Services (2d edition, 1996)

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Approaches

- Physical Exercise
- Cognitive training
- Compensation

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Physical Exercise and Cognition

- · Meta-analysis
- · 16 prospective epidemiological studies
- Relative risk highest physical activity compared to lowest:
- · Regular exercise and physical activity:
 - > 0.72 for dementia (CI 0.60-0.86, p<0.001)
 - > 0.55 for AD (Cl 0.36-0.84, p=0.006)
 > 0.82 for PD (Cl 0.57-1.18, p=0.28)

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	No. (%)			
Frequency of Exercise Intensity	Mild Cognitive Impairment (n=198)	Normal Cognition (n=1126)	OR (95% CI)ª	<i>P</i> Value
	Physic	al Exercise in Midlife		
Light	,			
None	25 (12.6)	104 (9.2)	1:00 [Reference]	
Any	173 (87.4)	1022 (90.8)	0.90 (0.55-1.47)	.68
Moderate			()	
None	58 (29.3)	193 (17.1)	1.00 [Reference]	
Any	140 (70.7)	933 (82.9)	0.61 (0.43-0.88)	.008 ^t
Vigorous				
None	127 (64.1)	670 (59.5)	1.00 [Reference]	
Any	71 (35.9)	456 (40.5)	0.82 (0.59-1.15)	.25
	Physica	I Exercise in Late Life		
Light				
None	52 (26.3)	184 (16.3)	1.00 [Reference]	
Any	146 (73.7)	942 (83.7)	0.69 (0.47-1.00)	.048
Moderate				
None	103 (52.0)	426 (37.8)	1.00 [Reference]	
Any	95 (48.0)	700 (62.2)	0.68 (0.49-0.93)	.02°
Vigorous			\sim	
None	171 (86.4)	969 (86.1)	1.00 [Reference]	
Any	27 (13.6)	157 (13.9)	1.14 (0.72-1.81)	.58

Mayo Clinic Study of Aging



Moderator variables

Gender?

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- Mayo Clinic Study on Aging found equivalent effect for men and women.
- Canadian Study of Health and Aging: association in women but not men

Moderator Variables

- APOE status?
 - > Arizona APOE cohort
- > Women only
- Aerobic fitness associated with better cognition in ApoE-e4 homozygotes currently cognitively normal

FLORIDA Istatistical Istatistical Constraints





Exercise as an Intervention: 2010 Meta-Analysis

29 RCTs; Most with cognitively normal older adults

Cognitive Domain	Effect size
Attention/speed	g = 0.158 (CI=0.055-0.260; p = .003)
Executive function	g = 0.123 (CI = 0.021-0.225; p = .018)
Working memory	g = 0.032 (CI = -0.103-0.166; p = .64)
Memory	g = 0.128 (CI = 0.015-0.241; p = .026)

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Meta Analysis

- Conclusion: Aerobic exercise benefits attention, speed, executive function, and memory in healthy older adults.
- Duration and intensity did not have a moderating effect
- Improvements in executive function smaller in MCI, but memory improvement stronger (g=.24)

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MCL specific trials Scherder et al. Aging & Mental Heath 2005; 9(3): 272-280. • small N. MCl Walking vs. face/hand exercise vs. control. immediate EF benefit but dissipated. Wan Uffelen et al. Br.J Sports Med 2008; 42:344-351 • small N. MCl Walking vs. face/hand exercise vs. control. immediate EF benefit but dissipated. Man Uffelen et al. Br.J Sports Med 2008; 42:344-351 • small N. MCl Walking vs. face/hand exercise vs. control. Momain effect Mathemschlager et al. JAMA 2008; 300(9): 1027-103 • small N. Mcl Walking vs. face/hand exercise vs. stretching control. exercise. "mode3t" improvement Baker et al. Arch Neurol. 2010;67(1): 71-79 • swicklike memory impairment but some MCl, RCT, education momen but some impact in both. Executive functioning measures Lam et al. Int J Geriatr Psychiatry 2011;26:733-740 • Amcl High infensity aerobic exercise vs. stretching control; 6 mitervention: Ta Chi group more likely to be stable after intervention: Ta Chi group more likely to be stable after intervention: Ta Chi group more likely to be stable after Smith et al. J of Alzheimer's Disease. 2013;197-215 • Small N. 12 weeks. 4/week supervised treadmill. MCl vs. hormad Control, MRI activation during memory task improved in both and AULT improved from baseline in Mcl.









Hippocampal Volumes

Single blind RCT

- · 120 cognitively normal older adults
- Aerobic exercise vs. stretching/toning control
- · 3 days/week, one year



Conclusions

- Physical activity definitely improves cardiovascular health
- Physical activity modestly improves cognition in older, cognitively normal adults
- Initial trials mixed but suggest physical activity may also help cognition in individuals with MCI.
- Meditative activities may also have a positive impact on brain health.

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Approaches

- Cognitive stimulation
- Cognitive training
- Cognitive rehabilitation

G	General 'Brain Maintenance' Products									
	Product	Company	Platform	Description	Validation	Price				
	Brain Age (2)	Nintendo	Nintendo DS	Math problems, memory games, Suduko	Very limited	\$99				
	Fitbrains .com	Vivity Labs	Online	Memory, language, concentration games	Very limited	Free or \$80/yr				
	<u>Happy-neuron</u> .com	Scientific Brain Training	Online	Attention, language, memory, visual-spatial and executive function	Low	\$100/yr				
	Lumosity.com	Lumos Labs	Online	Attention, memory, problem solving	Low	\$80/yr				
	Mindfit/ Cognifit PC	Cognifit	Software/ Online	⁴ 14 cognitive abilities that are susceptible to	Low	\$149				
				aging"						
	ORIDA Adapted	I from; Fernandez, A	& Goldberg, E. (20	109). The Sharpbrains Guide to Brain	Fitness. San Francis	co, Sharpbrains.				



Targeted 'Brain Training' Products

Product	Company	Platform	Description	Validation	n Price
<u>Brain</u> Fitness	Posit Science	Software	Auditory processing speed.	Moderate	\$395
Insight	Posit Science	Software	Visual and auditory processing speed.	Low- Moderate	\$395
<u>Intelligym</u>	Applied Cognitive Engineering	Software	Peripheral vision, decision making for basketball/ hockey	Low	\$99
<u>CogniFit</u> <u>Senior</u> Driver	Cognifit	Software/ Online	"14 cognitive abilities that are susceptible to aging"	Low	\$99



Stanford Longevity Center Statement

"We object to the claim that brain games offer consumers a scientifically grounded avenue to reduce or reverse cognitive decline when there is no compelling scientific evidence to date that they do. The promise of a magic bullet detracts from the best evidence to date, which is that cognitive health in old age reflects the long-term effects of healthy, engaged lifestyles. In the judgment of the signatories below, exaggerated and misleading claims exploit the anxieties of older adults about impending cognitive decline. We encourage continued careful research and validation in this field."

A Consensus on the Brain Training Industry from the Scientific Community," Max Planck Institute for furman Development and Stanford Center on Longevity, accessed (add date), http://menevity/stanford.edublog/sci/14/10/15 the consensus-on-the-train-training-industry-from-the-scientific-communi



Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE) Willis, Unverzagt, et al

- Training normal older adults in mnemonics (M), processing speed (PS) and reasoning (R).
- Training effects lasted over 5 years.
- 'MCI' pts could benefit from R and PS but not M training.
- Little or no transfer

Dimension of Transfer	Near	Far
Temporal	Immediately after training completion	Weeks to years after training with no practice is between
Functional	Same mind-set for training as for transfer task	Different mind-set for training than for transfer task
Modality: sensory	Same sensory modality for training as for transfer task	Different sensory modality for transfer task than for training
Modality: Testing Format	Same testing format for training as for transfer task	Different testing format for training than for transfer







A Ladder of Assessments To Measure 'Transfer' Assessments Very Massesments Very Assessments Very A







lowa Healthy and Active Minds Study (IHAMS)-Wolinsky et al, 2013, PLOS-one

- Road Tour-Posit Science
 Part of Insight, now BrainHQ
- 681 Subjects
- Middle age and older
- Speed of processing and useful field of view gains transferred to Trails, Symbol Digit, and Stroop
- Effect sizes .2-.35

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Original	ARTICLE	•47 with persons with MCI		
Computer based (Compilia Training			
for Mild Cognit	ive Impairment			
Results from a Pilot Rand	Monoionificant			
Deborak E. Barnes, PhD, MPH,* † Kristin	ne Yaffe, MD,*†‡§ Nataliya Belfer, PhD,*	difference		
William J. Jagust, MD,1 Charles D. and Joel H. K	winam J. Jagues, MD.) Charles Decart, MD.; Bruce R. Reed, MD.; and Jod H. Kramer, PsyD.;			
	Realt We not much a relation determined controlled trial of a summary summary house that and emission controlled trial real and a			
Key Wole, hanna, apal, copinie, agnitor rakoliniane, Motiosch. Wy performed a plot randomiend, controllat trail of networks, ampeter-based registron missing in G tophota with and copieties impairment. The intervention games groups and the provide and the apacian impairment. The intervention games groups and the apacian impairment of the intervention of the provide and difference for determined and apace and the provide and difference for determined and apace and difference for determined and apace and difference for determined and differ		groups an		
exercise specifically designed to improve an advery proceeding meet and accuracy for 100min/d, 54/wk for 6 works; the control group performal more passive computer activities (mading, beaming,	(Alaheimer Dis Asure Disord 2009;23:205-200)	(P=0.26).		
mean age of 74 years and 80% went mer; 77% metrodisky completed training. On our primary susceme, Repeatable Battery for Austement of Nampsychological Statust tail score improved 0.56 statustered deviations (SD) in the interestion remain	There is growing interest in the potential for lifestyle interventions such as mental activity to improve matter for the chert term and possible the	 Effect Size 		
(P = 0.007) compared with 0.013D in the control group (P = 0.03) for a non-ignificant difference between the groups of 0.355D $(P = 0.26)$ On 12 accordary outcome measure, most differences between the groups were not statistically significant. However, we observed a pairies in which offset stats for websit	organitie electrice and clean of a state pointiety later organities decline and clean of the membra in the long term. The Alzheiner's Association Maintain Yoar Brain compaign recommends taking sensiti Partieres one of the lay components of a "build healthy" Effective. In addition,	0.33		
learning and memory makems tended to favor the intervention group whenas effect sizes for language and viscogatial function measures tended to favor the control group, which misss the	the Alubriner's Association has meenly partnered with the Centers for Disease Costsol and Prevention to develop the Hardler Busic Industry, which recommends studying			
possibility that these toxining programs may have domain-specific effects. We conclude that in test-toy computer-based mental activity is feasible in subjects with mild cognitive impairment and that larger titals are worranted.	the effects of mental activity as part of its Road Map for maintaining or improving the cagnitive performance of all aduts. These recommendations are hard on recent studies			
	demonstrating that the brain is highly plastic and capable of generaling new symptic connections and narrows themselvest \$6.4 Product is mire how found that mireship			
n movies for previous assumpt 29, 2021, interprint Oxforder 22, 2020. From the "Departments of Dephsing (Diversing); (Epideoxielong), Delevanity of California, San Francisco (UCD); (Marid Hadi))	mind in an enriched' environment-which includes			

Conclusion

- Cognitive training targeting perceptual discrimination and processing speed can enhance working memory in normal older adults
- Similar effect sizes are evident in MCI patients
- · Effect wanes if training is discontinued
- Remains to be seen if this leads to improved 'cognitive reserve' in MCI











Cognitive Interventions

- Improving/Restitution
 - (Cognitive Stimulation/Cognitive Training)
 - > Trying to get back to baseline functioning
 - "Rebuilding" the circuits in the brain
 - Strengthening the ability
- Compensating
 - (Cognitive Training/Cognitive Rehabilitation)
 - Learning ways to get around cognitive deficit in daily life.
 - > Adapting to the deficit

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Cognitive Rehabilitation/ Compensation Approaches

- · Internal strategies
 - > Mnemonics
 - Face name associations



- External strategies
 - Environmental adaptations (e.g.
 - Memory notebooks

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Literature in a Snapshot

- When you focus on learning a specific piece of information, it works (Valenzuela & Sachdev, 2009, Am J Geriatr Psych)
- · Some reports of improvement in ADLs
 - Using mixed intervention of education, memory mnemonics, relaxation, and memory aid use (Kurz et al., 2008, Int J Geriatr Psychiatry; Londos et al., 2008, Am J AD Other Demen)
- Focused memory training have not demonstrated transference to ADLs

Literature in a Snapshot

- Improved mood and QOL (e.g., Kurz et al., 2008, Int J Geriatr Psychiatry; Londos et al., 2008, Am J AD & Other Demen)
- Significant methodological limitations (e.g., Hampstead, Gillis, & Stringer, 2014)
 - Multiple interventions at once
 - Small samples
 - > Low emphasis on real word generalizability

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Memory Support System (MSS)

- Training to use a calendar/note taking system to compensate for memory loss
- Capitalize on preserved skills in early memory loss
 - > Exploit intact procedural or "habit" memory
- Compensation aids may perhaps extend the time individuals can function independently and offer symptom reduction

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Training Sessions

- Manualized approach with training stages
- 3, 2, and 1 session(s) a week for 2 weeks each, for a total of 6 weeks.
- Sessions provide
 - orientation
 - > modeling
 - > practice use
 - homework assignments

Greenaway et al. 2008, Am J Alzheimers Dis Other Demen













		requisition	Questions						
Client Namer Ack the indicated questions in a different support person) or they self cue. Score direct cue. Score "0" if patient is unable	order every tin "2" if the pers a to demonstra	e you ask ther on needs to be de.	n. Score "3" given indir	Date: if the respo rect cue(s). S	nse is giv core a "J	to en or poin " if the pe	ted to wit	h no ene s to be gi	s (by iven a
Date									
What is today's date? Where do you find the date? At the top of each page What are the 3 sections of the calcodor?			_						
Names all 3 sections How will you know if you completed a task or appointment? Check it off							-		
Where do you write things that need to be done but are <u>not</u> scheduled at a specific time? To be Done Today (Action List) section									
How would you mark those items that are high priority? Demonstrates use of a priority system									
Where do you write appointments that are scheduled at specific time? Next to the three in Appointments (Scheduled Events) accilor-tight page									
How many times will you refer to your calendar? Morning, neon, and evening									
As apposed to things you need to do, where would you journal things you want to remember? Journal (Things To Remember) section									
Total Score for each session					-	-	-	-	



Progressing through the Learning Phases

Acquisition:

How will you know if you completed a task or and appointment?

Application:

• Did you make it to all of your appointments and get all of your planned tasks done yesterday?

Adaptation:

Do you have anything that did not get done? What would you do if you had not gotten everything done?

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Support Partner's Role

- Partner asks Intervention Questions 2-3 times a day that apply to learning phases
- It is essential that the partner practice with the patient between sessions to form the HABIT
- Partner is trained to appropriately cue and question (a skill they can use beyond the calendar!)
- Partner participation maximizes the benefits of training while not overwhelming the person with multiple daily appointments





























Mood, Self Efficacy, and QOL

MCI individual:

- Significantly improved memory self efficacy by training end
- Program partner:
 - By 8 week and 6 months post, intervention group reported significantly better mood, trend toward worsening mood in controls
 - > By 6 months, control group had significant worsening of caregiver burden

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What Can the Psychologist Help With?

- Teaching a compensation strategy for improved/ maintained independence
- Teaching organization in keeping up with things
- Helping improve medication/ medical regimen adherence
- · Fostering return to work, hobbies, lifestyle
- Encouraging reflection on what is most important (what is most important in your life to remember)



Rationale for Social Support

- Joosten-Weyn et al. 2008
 - > 22 MCI patients/caregivers in group therapy
 - > Patients: Increase in acceptance
 - Caregivers: Increased awareness of memory and behavioral problems

Sampson et al. 2009

- Social engagement in 10,720 individuals (13% MCI)
- Mortality risk greater in medium and low social engagement groups

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Rationale for Social Support (cont.)

- Joosten-Weyn et al. 2011
 - > 93 MCI/caregiver dyads and 30 wait-list controls
 - > Acceptance increased group therapy vs. controls
- Williams et al. 2010
 - > 25 systematic reviews, 250 research studies
 - > Higher risk of AD
 - Degree of loneliness
 - Decreased social networking
 - · Diminished activity level

Rationale for Education

Focus on dementia education for caregivers

- Caregiver depression higher when less knowledge (Blieszner & Roberto 2010)

- Savvy Caregiver Program (Hepburn et al. 2007) > 52 dementia caregivers > Psychoeducation or wait-list control > Knowledge, skills, and information on attitudes and self-care
 - Improvements: Competence, mastery, sense of self, distress
- Graham et al. 1997 > 109 dementia caregivers > Greater knowledge Less depression More competence and confidence

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The Case for Multicomponent Programs

- Olazaran et al. 2010
- Nonpharmacological therapies (NPTs) in AD and related disorders (ADRD)
- Meta-analysis of 179 randomized, controlled trials belonging to 26 intervention categories
- Key findings:
 - Multicomponent interventions based on caregiver support and education delayed institutionalization of persons with ADRD
 - > Effects on cognition, ADLs, behavior, and mood similar to effects obtained by medication
 - No side effects from NPTs and more readily individualized than medication
 - > NPTs should be complementary to medication









Healthy Action to Benefit Independence and Thinking

- 50 hours of programming (5 components, 1 hour each day x 10 days)
 - Individualized calendar training (compensation training)
 - Computer lab: Brain Fitness (Posit)
 - > Physical activity (Yoga)
 - Separate group support for participant and partners
 - > Wellness education
- Program partner required

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Program Philosophy

- Research suggests multiple lifestyle factors impact brain health and we frequently make these recommendations to our patients.
- Research also suggests patients are usually unable to initiate these behaviors on their own.
- HABIT is designed to help launch these behaviors and we believe that these habits, when supported by a partner, can compensate for certain memory deficits and promote optimal wellness for mind and body.



Measures

- Center for Epidemiologic Studies Depression Scale (CES-D)
- REACH Anxiety Inventory
- > Quality of Life-AD (QOL)
- Self-Efficacy Scale in MCI
- » Neuropsychiatric Inventory (NPI)
- Caregiver Burden Questionnaire
- Everyday Cognition (E-Cog)

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Methods

- · Self- and caregiver-report survey data
- · 149 HABIT participant/caregiver dyads
 - > Baseline, intervention end, 3 months
 - > 56 dyads 1-year data
- 66 Control dyads (MCI/partner, no HABIT)
 - > "Baseline" and 3 months later

Demographics (MCI)	
---------------------------	--

HABIT Participants			Control Patients			
Age	73.90	(8.10)	Age	73.80	(7.70)	
Education	16.10	(2.40)	Education	15.80	(2.80)	
Sex	81 M	/ 69 F	Sex	41 M	/ 25 F	
MCI Duration	1.20	(1.30)	MCI Duration	2.20	(2.70)*	
DRS Total	127.70	(10.20)	DRS Total	131.50	(6.10)*	
ORIDA bh Science Center						



Demographics (Caregivers)

	HA	BIT	Controls		
	Age	69.30 (10.30)	Age	68.40 (10.40)	
	Education	16.30 (2.20)	Education	15.50 (2.70)*	
	Sex	55 M / 95 F	Sex	19 M / 47 F	
	Relationship	84.8% sps/ptnr	Relationship	83.3% sps/ptnr	
		8.1% daughter		12.1% daughter	
		0.7% son		0.0% son	
		2.0% other fam		3.0% other fam	
		3.4% friend		0.0% friend	
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Summary of Results

- Compared to Controls, MCI HABIT Participants reported a greater sense of self-efficacy and improvement in QOL 3 months post intervention
- Compared to Caregivers of Controls, HABIT Caregivers reported a greater decrease in perceived burden at 3-month follow-up
- · Similar trends at 1-year follow-up
- Higher memory compensation learning scores associated with better Total Everyday Cognition score 1 year post HABIT (p < .001)

Conclusions

- Multicomponent programs may be as important, if not more so, than medication in the near term in delaying functional decline.
- Programs such as HABIT create an opportunity for partners to pull together, not pull apart to face the diagnosis of MCI.
- Active participation in confronting illness increases both individuals' chances of success.

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UNIVERSITY of FLORIDA Health Science Center

Comparative Effectiveness of Behavioral Interventions to Prevent or Delay Dementia (CEBIPODD)

Funded by the Patient Centered Outcomes Research Institute (PCORI) 5/2014-4/2017

Comparative Effectiveness of Behavioral Interventions to Prevent or Delay Dementia

- · 15 sessions across 4 sites
- · 300 participants targeted
- New design to test multicomponent outcomes
 Subtractive not additive
- · Randomizes Sessions not individuals

Comparative Effectiveness of Behavioral Interventions to Prevent or Delay Dementia

- Patients and caregivers determine most important outcome(s)
- One 10-day session at each site (AZ, FL, MN) quarterly
- 18 month outcome
- Booster sessions at 6 and 12 months









Tertiary Prevention: Person Centered Approaches to Dementia Behavior Management

Learning objectives

At the end of this session participants will be able to describe:

•Three disease specific challenging behaviors seen in dementia

•Three mediators of challenging behavior in dementia

•Three person centered strategies for reducing challenging behavior

Case 1: A family needs your help 83-year old woman Hallucinating 'Agitated'

What Else Do You Want To Know ?

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Standard Hx

- Macular degeneration
- MMSE 22/27 (copy design, write sentence, follow written command not administered)
- Rheumatoid arthritisprednisone, Cymbalta,
- Aricept, ropinirole
- Hx of parkinsonism, fluctuations, ? RBD

- Sees small children
- Early morning confusion, ? dream content
- Agitated when staff don't take action to help the children etc.
- Many times recognizes
 hallucinations as such

What To Recommend ?

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Person centered

- Retired librarian
- Widowed
- 2 children
- · Loved to read
- · Loved opera

Recommendations

- Provide audio books, favorite opera on ipod
- Discuss trade offs of parkinsonism control vs. hallucination management with patient and determine her preferences
- When hallucinations do occur attribute to 'those darn medicines acting up again' to provide context reduce stigma

Person Centered Strategies

- Behavioral Symptoms Nomenclature
- Approach
- Empirical basis
- Proactive interventions
- New opportunities
- You're the team

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Plan for today

- Behavioral Symptoms Nomenclature
- Dementia Behavioral Assessment and
- Approach
- Empirical basis
- Proactive interventions
- New opportunities
- You're the team

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Non-cognitive symptoms of dementia

- Functional Impairments
- Psychiatric Symptoms
- Behavioral Disturbance/Symptoms

Alzheimer and Auguste D-1908

- · Woman with delusions of infidelity
- · Later described cognitive impairment



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Cognitive Impairment and Behavioral Disturbance

- Hallucinations in delirium and/or dementia (10-25%)
 - Hallucinations-a false perception without a stimulus basis
 - Misperceptions-an incorrect perception
 - of a existing stimulus (30%)

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Cognitive Impairment and Behavioral Disturbance

- Delusions in dementia (30-40%)
 - Delusion-fixed beliefs incorrect belief without perceptual base
 - Illusion-belief based on erroneous interpretation of stimulus
 - Confabulation/déjà vu'-sense of familiarity, misremembering

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Cognitive Impairment and Behavioral Disturbance

Agitation

- > Striking other patients violating his or her space
- Yelling out
- Refusing Cares





Additional Factors

- In 70% of cases etiology of dementia not . specified
- · In 20% of cases there is conflict between staff and family
- In 80% of cases residents are observed to be content less the 50% of the time

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Most Important Components of Consult

Philosophy

- There will be behavior problems in dementia
 Reduction in frequency or intensity is a treatment
 success
- Environment can adapt more readily the dementia patient
- Behavior is communication
 Must detect what behavior is trying to say

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Approaches

- · Behaviors compete in real time
 - Activities based care
 - Tasks appropriate to level of impairment
- · Be proactive not reactive
 - avoid PRN approaches
- Use what they give you
 - memory impairment potentiates distraction
 - Utilization behavior potentiates engagement

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Problem Behaviors Frequency







Case 1

- Behavior=real hallucinations (not misperceptions)
- Etiology=LBD
- · Severity=mild
- Mediators=physical medical (meds)
- · History=mother/librarian/opera lover
- Targets=more 'reading/music', increase medication attribution

Diagnosis and Behavioral Disturbance

Alzheimer's Disease
 Memory based syndromes (e.g. 'delusions')

- Lewy Body Dementia
 > Hallucinations or sleep/wake syndromes
- Frontotemporal Dementias
 - > Disinhibition or impulse control syndromes
- Depression Anxiety based syndromes
- Alcohol, Wernicke-Korsakoffs

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Cases

- Case 2 (65 y.o. man-FTD)
 - Only words were '100%'
 - Aggressing towards others
 - Eating all the food once the cart arrived
- Case 3 (78 y.o. woman- CVAs including cerebellar stroke)

Ataxia

- 'Striking' during cares

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Behavior is communication

- As language skills decline, overt behavior will fill the void. This implies:
 - Behavior is not random
 - Behavior is adaptive for that person
 - Behavior is goal directed

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What is behavior communicating

- Pain
- Boredom
- Overstimulation/Understimulation
- Depression
- Apprehension

Mediators of Disruptive Behaviors in Dementia

- Physical Health Factors
- Psychological Health Factors
- Environment, Task, Approach
- Social History



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Why Difficult Behaviors Occur

Physical & Emotional Health

- > Effects of medications
- > Impaired vision or hearing
- > Acute or chronic illness > Dehydration
- > Constipation
- > Depression
- > Fatigue
- > Physical discomfort

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Why Difficult Behaviors Occur

The Environment

- > Too large, too cluttered, too noisy
- Misinterpreting stimuli
- > Too much or too little stimulation
- > Loss of orientation
- Sensory confusion
- > Unpredictable, unstructured or unfamiliar
- environment
- > The "mood"





Why Difficult Behaviors Occur

The Task

- > Too complicated
- > Too many steps Tools unformilian (auon if the
- Task unfamiliar (even if they have done it many times before)
- Feeling rushed
- > Fear of the task

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Why Difficult Behaviors Occur

Our Approach and Communication Style

- > Not understanding what is being said
- > Inability to feel understood
- > Caregiver verbal and non-verbal approach
- Inconsistency of caregivers

Why Difficult Behaviors Occur

Social History

- > Left work every day at same time
- > Always took baths not showers
- > Took care of the kids
- > Observant of religious traditions
- > Was sexually abused

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Cases

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- Case 4 (78-year-old woman with AD)
 - Can recall certain recent events
 - Wants brother to 'get her out'
 - Verbally abusive to staff, aggressive behavior to residents entering her room
 - Helped discover cortisone

Approaches

- Adequate redirection
 _ Join, validate, distract
- Illusion of control
- Emotional mirroring
- · Appropriate level of stimulation

Cannot create a behavior vacuum

- Behaviors compete in real time
- Increasing frequency of desired behaviors
 reduce the frequency of undesired behaviors

· Ask 'when is the person at there best?'



ABCs of Behavior

'Wild type'

Antecedent→ Behavior→ Consequence

Traditional Behavior Management (requires memory!)

Behavior← Consequence

Dementia Behavior Management

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Antecedent → Behavior



Plan for today

- Behavioral Symptoms Nomenclature
- Approach
- Empirical basis
- New opportunities

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Managing Difficult Behaviors possible strategies...

- Anger/Agitation
 - > Alternate quiet and active periods
 - > Simplify environment
 - > Over-stimulation/Under-stimulation(bored)
 - > Offer failure free activities
 - > Provide choices
 - > Consider your verbal and non-verbal message
 - > Join, Validate, Re-Direct

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Managing Difficult Behavior

possible strategies...

- · Suspiciousness or Paranoia
 - > Learn favorite hiding places (keep spare items)
 - > Explain misinterpretation if appropriate
 - > Do not argue or disagree
 - > Respond to the feeling behind the words
 - > Join, Validate, Distract

Managing Difficult Behaviors

possible strategies...

- Difficulty with tasks and/or personal cares
 - > Demonstrate, get them started (apraxia;
 - difficulty initiating and completing a task)Provide distraction (something to hold)
 - > Offer choices, provide "control"
 - > Use Humor
 - > Reassure, comfort, distract

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Managing Difficult Behaviors

possible strategies...

- · Excessive or repetitive actions
 - Respond to the emotion
 - Remind with brief statement
 - > Use written or picture reminders
 - > Consider waiting to discuss plans
 - > Consider items in environment (coats)
 - > Remember question is new to person

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KEY POINTS

- Behavior = Communication
- · Approach is everything!
- · Communication is everything!
- The environment sets the tone for behaviors
- Re-direction begins with validation & joining
- Don't create a behavior vacuum
- Choose your battles

Cases

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- Case 4 (84 y.o. man with long hx of renal failure, comorbid AD)

 Combative during and after dialysis
- Care 5 (86 y.o. woman with AD)

 Combative during weekly 'vitals'





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When to initiate palliative care in degenerative dementia ?

<image><image><image><image><image>











Sexual Behaviors in facilities same as at home

- Flirtation/sexual talk
- Touch
- Intercourse
- Masturbation

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Frequency of 'sexual' behavior problems in dementia

- 18% -Sexual aggression-Ryden (1988)
- 2.6-8%-Sexually inappropriate behaviors-(Harris and Weirs-1998)
- 5-25%- 'Inappropriate behaviors' -(Ott et al, 2000).
 - Included sexual behaviors, noisemaking, smearing feces
 - increasing with dementia severity
 - no difference male to female







Steps to Institutional Policy regarding Sexual Behaviors

- 1. Assemble a Team
- 2. Study the Issues
- 3. Focus groups?
- 4. Review other organizations' policies
- 5. Create working definitions of key concepts
- 6. Pre-define interventions
- 7. Draft Policy
- 8. Implement Policy
- 9. Evaluate Policy

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Assessing Sexual Situations

	LEVEL 1	Intimacy/	Courtship	behavio
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- LEVEL 2 Verbal sexual talk/ language
- LEVEL 3 Self-directed sexual behaviors
- LEVEL 4 Physical sexual behaviors directed towards co-resident with agreement LEVEL 5 Unwanted, overt physical sexual
 - behaviors directed toward others

//www.rgpc.ca/best/BPC%20-%20Sexuality/SexualityPracticeGuidelinesLLGDraft_17.pdf

Level 1 Intimacy/ Courtship behaviors

- No risk associated with this behavior, if both persons consenting : Overall goal of staff response is to provide socially appropriate context for relationship that offers comfort and reassurance.
- This behavior is viewed primarily as an intimacy relationship between two adults that are mutually consenting, implied by behavior toward each other.

rgpc.ca/best/BPC%20-%20Sexuality/SexualityPracticeGuidelinesLLGDraft_17.pdf

- Source of urgency associated with this behavior is usually staff and/or family discomfort. Staff may wish to protect family.
- The couple may need to have intimacy needs recognized and privacy respected. (Schofield, 2002)

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LEVEL 2 Verbal sexual talk/ language

- Low level of risk associated with this behavior:
- Often occurs during personal care.
- · Staff to recognize their feelings of unease
- · Respond respectfully.
- Punitive language not helpful
- · Redirected into a more socially appropriate context.

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LEVEL 3 Self-directed sexual behaviors

- Low level of risk.
- Assess for safety/health (e.g. excessive behavior may lead to skin/peri issues).
- Focus on creative solutions for the resident (this may include sexually-explicit materials &/or vibrators),
- Maintain privacy, dignity, safety and least restriction (Zeiss & Kasl-Godley, 2001).

http://www.rgpc.ca/best/BPC%20-%20Sexuality/SexualityPracticeGuidelinesLLGDraft_17.pdf UF FEORITA

LEVEL 4 Physical sexual behaviors directed towards coresident with agreement

- Moderate level of risk associated with this behavior. SPRING INTO...ASSESSMENT
- Is dementia sufficiently mild so the capacity to make decisions regarding basic needs and immediate gratification such as sexual activity is retained (Post, 2000).
- Any signs of sexual overtures that are actually unwelcome. Does one partner in the pairing look distressed, upset, worried?

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LEVEL 4 Physical sexual behaviors directed towards coresident with agreement

- What is the extent of sexual behaviors?
- Can the residents give an account of behaviors they would find acceptable/unacceptable?
- Do they have the ability to say "no" or indicate refusal and/or acceptance?
- Do they have the ability to avoid exploitation?

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Sexual Behavior: Nonpharmacologic Treatments • DBART Philosophy #2; 'Cannot create a chavioral vacuum. • What behaviors will you increase? • Appropriate touch • Belonging...pet therapy, an inanimate object to 'care' for, reminiscing.

"Appropriate Touch"

- Hand shakes
- Holding Hands
- Massage
- Hair care
- Dancing

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Sexual behavior: Pharmacologic treatments

• "No randomized controlled trials exist for any treatment of sexual disinhibition in dementia and there are no trials comparing different pharmacological agents."

Tucker I. (2010). Management of inappropriate sexual behaviors in dementia: a literature review. International Psychogeriatrics. 22:683-92.

Plan for today

- Behavioral Symptoms Nomenclature
- Approach
- Role of Medications
- Empirical basis
- Proactive interventions
- New opportunities

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V. in	VA study: A systematic review of non-pharmacological interventions for behavioral symptom of dementia				
	Cognitive Emotion Oriented interventions				
	Reminiscence Therapy	Not supported			
	Simulated presence therapy	May have adverse effects			
	Validation Therapy	Insufficient evidence			
	'O' Neil et al, VA-ESP Project #05-225:2011				

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Sensory stimulation inte	erventions
	No ovidence
Acupuncture	NU EVIDENCE
Aromatherapy	Insufficient evidence

V. in	VA study: A systematic review of non-pharmacological interventions for behavioral symptom of dementia				
	Sensory stimulation interventions				
	Acupuncture	No evidence			
	Aromatherapy	Insufficient evidence			
	Light Therapy	Insufficient evidence			
	Massage	Beneficial effects			
	Music Therapy	Has potential			
UF TOTAL Neil et al, VA-ESP Project #05-225:2011					



V. in	VA study: A systematic review of non-pharmacological interventions for behavioral symptom of dementia				
	Behavior Management Techniques				
	Functional analysis, token economies habit training, muscle relaxation	Some support			
	Other				
	Animal therapy	Potential benefit			
	Exercise	Improved sleep			
	'O' Neil et al, VA-ESP Project	#05-225:2011			
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Agency for Healthcare Research &Quality

Challenges to studies in this area

- Many different behavioral phenotypes will be combined under same label
 - Wandering, yelling, striking might all be called agitation
- In randomized studies must assume common cause for behavior
 - However same behavioral phenotype will have many different causes/mediators

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Challenges to studies in this area

- · Often dealing with low frequency behaviors
- Frequently studying reactive not proactive interventions
- Ignores different etiologies and severity levels of people in providing standardized intervention
- · Problems of treatment diffusion

A gold standard study

- Cohen-Mansfield, J., Libin A., and Marx, M.S., (2007) Nonpharmacological Treatment of Agitation: A Controlled Trial of Systematic Individualized Intervention, *J Gerontol A Biol Sci Med Sci* (2007) 62 (8): 908-916.
- · Randomized facilitets.
- · Individualized treatments
- · Found decreased agitation, increased pleasure

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Plan for today

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Systematic Proactive approaches

- ARTZ for Alzheimers
- · I'm Still Here
- Music and Memory project

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Systematic P	roactive Approaches
ARTZ for Alzheimers	S
ATT is Areas for Advance's (*	10 Bratations 9 0 8 4 4 5
Artiso to Autometric	a vito neuro pery neu orizona ordena
📑 🕲 You 🗰	*Art reveals to us the essence of things, the essence of our excitance.* - Fludolf Amhelim
ARTISTS FOR ALZHEIMER'S	2 B B B
ARTZ NEEDS YOUR SUPPORT	
	ARTZ: Community Inclusion from A - Z!
Donate Now!	APT/2 is an organization that links antistic and cultural institutions to people living with demontia and their care partners. Influenced by solence and cocklogy, APT case stratice appendences a keys to undor charativity, create new memories, strengthen and develop relationships, and enrich lives in fundamental ways.
UF FLORIDA	ARTZ recognizes the wholeness that is inherent in each person, regardless of a diagnosis. We celebrate each person's capacity to participate in the journey of life.

Systematic Proactive Approaches



Systematic Proactive Approaches

Intergenerational school or daycare

Plan for today

- Behavioral Symptoms Nomenclature
- Approach
- Role of Medications
- Empirical basis
- Proactive interventions
- New opportunities

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Telemedicine Practice

- · DBART model conducive to telemedicine
- Use facilities existing equipment or Fedex computer
- Skype, iChat, Vidyo or others

Business Model Direct Payment

- Psychologist
 - Review faxed records, see patient, conduct mental status, interview team, bill Diagnostic Interview
- Psychiatrist
 - > same as above bill appropriate EM code
- · Both add qualifier

Business Model Cost offset

- Defer inpatient admissions
- Short Length of stay
- Avoid readmission

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Advantages

- Increase access with no additional personnel costs; drive time replaced by televisits
- Telemedicine modifier codes exist
- Could eventually make service available throughout state by offering instructions on how to link to us.
- Builds care facilities dementia management capacity

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What about billing?

www.cms.gov/Outreach-and.../ Medicare.../telehealthsrvcsfctsht.pdf



Service	Healthcare Common Procedure Coding System (HCPCS)/CPT Code		
Telehealth consultations, emergency department or initial inpatient	HCPCS codes G0425 - G0427		
Follow-up inpatient telehealth consultations furnished to beneficiaries in hospitals or SNFs	HCPCS codes G0406 - G0408		
Office or other outpatient visits	CPT codes 99201 - 99215		
Subsequent hospital care services, with the limitation of 1 telehealth visit every 3 days	CPT codes 99231 - 99233		
Subsequent nursing facility care services, with the limitation of 1 telehealth visit every 30 days	CPT codes 99307 - 99310		
Individual and group kidney disease education services	HCPCS codes G0420 and G0421		
Individual and group diabetes self-management training services, with a minimum of 1 hour of in-person instruction to be furnished in the initial year training period to ensure effective injection training	HCPCS codes G0108 and G0109		
Individual and group health and behavior assessment and intervention	CPT codes 96150 - 96154		
Individual psychotherapy (effective for services furnished on or after January 1, 2013)	CPT codes 90832 - 90834 and 90836 - 90838		
Psychiatric diagnostic interview examination (effective for services furnished on or after January 1, 2013)	CPT codes 90791 and 90792		
End-Stage Renal Disease (ESRD)-related services included in the monthly capitation payment	CPT codes 90951, 90952, 90954, 90955, 90957, 90958, 90960, and 90961		
Individual and group medical nutrition therapy	HCPCS code G0270 and CPT codes 97802 - 97804		
Neurobehavioral status examination	CPT code 96116		
Smoking cessation services	HCPCS codes G0436 and G0437 and CPT codes 99406 and 99407		
(

Medicare will pay if...

- CMS considers county underserve as defined by Health Professional Shortage area
- Patient is seen in Skill Care facility or underserved clinic
- Direct visual contact with pt is made
- · We use telemedicine modifier
- Facility can also receive originating site facility fee HCPCS code Q3014.

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Conclusion

- It is possible in fact essential to manage behavioral challenges 'in situ'
- Behavioral strategies are essential, medications are helpful for specific targets
- Telecommunications can teleport in additional sets of eyes, ears, and brains

Conclusions

- · PRNs are too late; manage antecedents
- · Person's history should be your guide
- Consider iatrogensis, opportunities for comfort care

Conclusions

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- The underlying basis for cognitive impairment will influence the type and course of behavioral disturbance
- Disruptive behavior may at times represent a form of adaptive communication
- Cannot create a behavioral vacuum
 What is it you want the person to do?

Conclusions

- Behavioral approaches may be effective in managing/tolerating behaviors
- Can augment or supplant medication approaches

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 Normal Statements
 Normal Statements

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 - R01NR 12419-01: A Multicenter Rehabilitation Intervention for Amnestic Mild Cognitive Impairment (Greenaway & Locke)
 - Alzheimer's Association NIRG: A Memory Compensation Intervention for Mild Cognitive Impairment (Greenaway)
 - Emory University ADRC NIRG-07-58843 Pilot grant: Interventions for Amnestic Mild Cognitive Impairment (Greenaway)
 - > Mayo Clinic Clinical Research Award and Clinical Practitioner Investigator Award: Memory Support System for Amnestic Mild Cognitive Impairment (Greenaway and Smith)



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