

Brain Health Evidence-Successes of Communities Who Embraced Culture Change

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Changing the culture in long-term memory care

- Long term memory care is often assumed to serve a custodial function in the care of those with Alzheimer's Disease.
- This is our experience at Silverado with Nexus, a strength-based brain health initiative within an enriched environment and the benefits seen for our residents and associates.

Staying Sharp



- In 2010, AHRQ reviewed all the evidence on the prevention of Alzheimer's Disease
- **There were associations found, but nothing that could prevent Alzheimer's Disease**

These are associated with an increased risk of developing Alzheimer's Disease

- Age
- Diabetes
- Depression
- Smoking
- APOE4 status
- TBI*
- Hyperlipidemia and obesity in mid-life
- Saturated fats and trans fats



(Associations not cause and effect. AHRQ, 2010)

These are associated with a reduced risk of Alzheimer's Disease



- Use of statins
- More years of education
- Moderate alcohol use
- **Higher levels of cognitive engagement and physical leisure activity**
- Higher intake of fruit and vegetables through adult life

• (Associations not cause and effect. AHRQ, 2010)

Why a new program at Silverado?

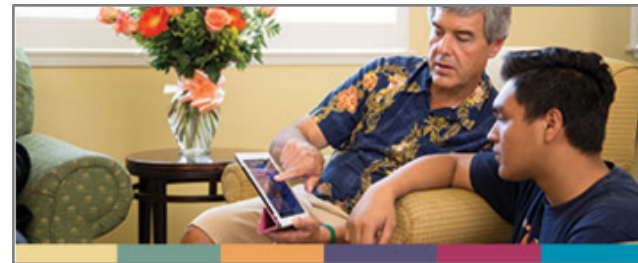
- Mounting evidence is showing that there are modifiable lifestyle factors that not only can delay the onset of a dementia but also delay the progression of a dementia.



Building Connections through Science and
Social Engagements

6 Pillars of Nexus

- Physical activity
- Stress reduction
- Social clubs with purposeful activities
- Cognitive compensation strategies
- iPad brain fitness (BrainHQ)
- Support group



Photos above are of Silverado residents participating in the nexus program

Physical Activity Evidence

- **Longitudinal studies show an association between higher levels of physical activity and a reduced risk of cognitive decline and dementia.**

Blondell, Sarah J., Rachel Hammersley-Mather, and Jacob Lennert Veerman. "Does physical activity prevent cognitive decline and dementia?: A systematic review and meta-analysis of longitudinal studies." *BMC public health* 14.1 (2014).

- **Exercise increases hippocampal volume and levels of brain derived neurotropic factor and improves memory.**

Erickson, Kirk I., et al. "Exercise training increases size of hippocampus and improves memory." *Proceedings of the National Academy of Sciences* (2011): 201015950.

- **Physical activity has been found to both delay onset and slow the progression of Alzheimer's Disease.**

Myuri Ruthirakuhan, et al, "Use of Physical and Intellectual Activities and Socialization in the Management of Cognitive Decline of Aging and in Dementia: A Review," *Journal of Aging Research*, 2012

Physical Activity Evidence

- **Exercise benefits executive function (planning, coordination, working memory, abstract thinking, judgment)** Smith PJ, Blumenthal JA, Hoffman BM, et al. "Aerobic exercise and neurocognitive performance: a meta-analytic review of randomized controlled trials." *Psychosomatic Medicine* 2010; 72(3):239Y252
- **Aerobic exercise has been found to be associated with significantly larger brain hippocampal volumes and better spatial memory**
- **Randomized clinical trials have found that in MCI and dementia, participants had better cognitive scores after 6-12 months of exercise.** Ahlskog et al, "Physical exercise as a Preventative or Disease- Modifying Treatment of Dementia or Brain Aging" *Mayo Clinic Proceedings*, Sept 2011, 86(9), 876-884

Purposeful Activity/Social Network Evidence

- **A strong social network including close social ties protected against cognitive decline.**

Andrew, M. K., & Rockwood, K. (2010). "Social vulnerability predicts cognitive decline in a prospective cohort of older Canadians." *Alzheimer's & Dementia*, 6.4 (2010), 319-325

- **Larger social networks have a protective influence on cognitive function in elderly women.**

Crooks VC, Lubben J, Petitti DB, et al." Social network, cognitive function, and dementia incidence among elderly women." *American Journal of Public Health* 98.7 (2008): 1221

- **Social network size modified the association between pathology and cognitive function in Alzheimer's Disease.**

Bennett, David A et al, "The effect of social networks on the relation between Alzheimer's disease pathology and level of cognitive function in old people: a longitudinal cohort study." *The Lancet Neurology* 5.5 (2006): 406-412

Purposeful Social Activity

- Cooking for happy hour
- Creating welcome gifts for new residents and professional resources
- Gardening for the community
- Bar-B-Q (dignity of risk)
- Builder's Club
- Receptionist
- Beer making

Stress Reduction Evidence

- **Meditation may offer considerable promise for improving cognition, mood, sleep, and related outcomes in adults with or at risk for cognitive impairment.** Innes, Kim E., and Terry Kit Selfe. "Meditation as a Therapeutic Intervention for Adults at Risk for Alzheimer's Disease – Potential Benefits and Underlying Mechanisms." *Frontiers in Psychiatry* 5 (2014): 40. PMC
- **Chanting meditation increases cerebral blood flow.** Khalsa, Dharma Singh, et al. "Cerebral blood flow changes during chanting meditation." *Nuclear medicine communications* 30.12 (2009): 956-961.
- **A study of patients with MCI found that those who did mindfulness-based stress reduction through yoga and meditation had less brain atrophy than those who did not.** Wells, Rebecca Erwin, et al. "Meditation's impact on default mode network and hippocampus in mild cognitive impairment: A pilot study." *Neuroscience letters* 556 (2013): 15-19.

Stress Reduction

- Yoga
- Laughter Yoga
- Tai Chi
- Chair Chi
- Medication

Cognitive Compensation Evidence

- **A recent meta-analysis reviewed the benefit of complex education, occupation and mental activity and concluded that the higher brain reserve was associated with a 46% reduced risk of dementia.** Valenzuela, Michael J. "Brain reserve and the prevention of dementia." *Current opinion in psychiatry* 21.3 (2008): 296-302
- **Engagement in cognitively stimulating activities early in the course of Alzheimer's was associated with slower cognitive decline.** Treiber, Katherine A., et al. "Cognitive stimulation and cognitive and functional decline in Alzheimer's disease: the Cache County Dementia Progression Study." *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* (2011).

Cognitive Compensation Strategies

- Learning sign language, spanish
- Word games
- Poetry Club
- Pen pals
- Improv Group
- Theater Group
- Science Club

Brain HQ Evidence

- **Computer based cognitive training improved attention, verbal memory and ADL's.** Stavros, Zafeiropoulos, Kounti Fotini, and Tsolaki Magda.
"Computer based cognitive training for patients with mild cognitive impairment (mci)."
Proceedings of the 3rd international conference on pervasive technologies related to assistive environments. ACM, 2010
- **MCI patients who used a digital brain fitness program, showed a trend towards memory improvement and improved activation in the hippocampus.i**
- Barnes, Deborah E., et al. "Computer-based cognitive training for mild cognitive impairment: results from a pilot randomized, controlled trial." *Alzheimer disease and associated disorders* 23.3 (2009): 205

Support Group Evidence

- **Support groups for individuals with early stage dementia showed positive feelings of purposefulness, gratification, belongingness and survival.**
- **Early-stage memory loss support groups show significant benefits in quality of life and self esteem**

MIND Diet

Mediterranean and **DASH** diet to stop **Neurodegenerative Delay**

- Green leafy vegetables 2-6 times a week
- A salad and one vegetable daily
- Nuts 5 times a week
- Berries twice a week
- Beans 3 times a week
- Whole grains 3 servings a day
- Fish at least once a week
- Poultry twice a week
- Olive oil
- 1 glass of wine daily

MIND Diet Avoidance:

- Red meat once a week max
- Butter or stick margarine (1T. Max)
- Cheese twice a week max
- Pastries and sweets 5 times a week max
- Fried foods once a week max

Assessment of NEXUS Residents

- Every 6 months:
 - **MMSE**
- Every 3 months:
 - **BARS (Brief Agitation Rating Scale)**
 - **Cornell Depression Scale for Depression in Dementia**
 - **Basic ADL component of the Alzheimer's Disease Cooperative Study Unit-ADL scale**

What are the culture changing benefits we have seen with Nexus for our residents?

- Person's with Alzheimer's Disease are assumed to have a steady downward trajectory to their disease. In 3 Silverado communities: 52% of those residents participating in Nexus showed improvement in their functional status and 43% showed cognitive improvement.
- Nexus, as a strength based program reduces the stigma of having a memory impairing disease.
- Further research is ongoing to identify the specific elements of both the Nexus program and the environment which lead to the clinical improvements seen and then replicating these results in all 33 Silverado memory care communities.

What are the culture changing benefits we have seen with Nexus for our Associates?

- An interest in brain health practices and overall health for themselves, and their families
- Encourages innovation, energizes, cognitive impairment does not define their residents.

**How can you age well and
incorporate the NEXUS
pillars of brain health into
your own life?**

Get moving and stay strong!

- Start 30 minutes of walking a day and strength training 3 times a week



Maintain a network of strong social connections



Try new activities or do things in a novel way



Manage your stress!

- Kirtan Kriya meditation, yoga
- Tai chi for balance



Follow the MIND diet



Volunteer, become involved in something bigger than yourself



Thank you!