Brain Food: EVIDENCE BASED BRAIN HEALTHY NUTRITION

ADI 2014    May 3, 2014

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Conflict of Interest Disclosure
Nancy Emerson Lombardo, PhD

• Salary: none       Royalty: none   Profits: None
• Intellectual Property Rights: 3 Trademarks
• Ownership Interest: sole owner of HealthCare Insights, LLC, a woman owned small business dba Brain Health and Wellness Center
• Consulting Fees: Company receives from variety clients including assisted living, nursing homes and adult day health, senior centers, local Alzheimer’s Associations to bring brain foods to dietary operations or to give educational presentations on brain foods and other brain healthy lifestyles
Learning Objectives

1. Review evidence for some brain healthy foods;
2. Learn about one evidence-based whole food nutrition program and selection of a combination of over the counter nutritional supplements for clinical trial;
3. Summary of results of pilot feasibility effectiveness clinical trial at Boston University
4. Learn which factors appear to facilitate bringing brain foods to care homes and adult day programs for people with dementia.
5. Appraise results of these efforts
Progress in Brain Health Lifestyle Research

• Leaders in brain healthy lifestyles in US, Europe and across world - most doing their work in the last 5-15 years
• 2007-2008 in US: research emphasizing importance of lifestyle in both prevention and treatment of AD
• May 15 2012: USA announces National Plan to Combat Alzheimer’s Disease; includes lifestyle research
• Europe has 3 major prevention trials; all are collaborating; Finland FINGER will report soon
• First broad diet randomized clinical trial improves cognition- reported summer 2013
• Alzheimer’s Disease International February 2014 releases ADI Nutrition and Dementia Report
Drugs Not Yet the Answer

• Current drugs important, but limited effect
  – Experimental drugs aiming at more potency all failed in recent Phase 3 trials
  – Side effects

• A-beta has normal function
  – part of innate immune system
  – goal is to decrease & prevent clumping, not eliminate (MGH researchers)

• Pathology of Alzheimer’s starts decades before symptoms

• Hopeful for future: HEALTHY LIFESTYLES- Nutrition, Exercise & More
Lifestyle Matters: Brain Foods To Save Our Brains and Bodies Can Motivate Change in Individuals and Organizations

**Nutrition**, both body and brain health focused, is

- “last frontier” of improving treatment in long term care and acute care
- Acting on new evidence takes time;
  - Organizations adopting the MPN™ are ahead of the curve
  - Home care, including AAA
  - Meals on wheels & Nutrition programs
  - Adult day health
  - and residential care
MPN™ is an Evidence-Based Program

• Over 750 studies plus dozens more every year
• Food & nutrients can help overcome or facilitate mechanisms thought to affect etiology of Alzheimer’s Disease (multiple pathways)
• Based on strategies not individual foods
• Delicious recipes
• Guidelines for chefs & us
  – Menus
  – Food to buy, avoid

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Chronic Conditions Influence Risk

• Cardiovascular Disease
  – Each vascular risk factor adds risk for Alzheimer’s Disease & severity of dementia

• Pre-Diabetes/Insulin Resistance and Diabetes
  – Linked to cognitive decline and risk of dementia
  – Shrinks hippocampus - even in teenagers!
  – Excess sugar is toxic to the brain
Chronic Conditions Influence Risk-2

- **Destructive Processes**
  - **Oxidative Stress**
    - Side Effect of breathing; excess oxygen.
    - Leads to the destruction of DNA
    - Leads to excess amounts of amyloid beta, and eventually toxic forms
    - Aggravates all chronic conditions
    - Contributes to Inflammation in body and brain
    - Antioxidants vital to counter oxidative stress; physical exercise helps too
  
  - **Inflammation**
    - Inflammation linked to many diseases (diabetes, heart disease, stroke, arthritis, osteoporosis, some cancers, including AD & Parkinson’s, & MS)
    - Inflammation increases oxidative stress; spiraling process
Risk may vary by ethnicity

- Japanese Diet Study found 80% of Alzheimer’s Disease patients had pre-diabetes or Type II diabetes
- In US, African Americans have twice the risk of Alzheimer’s Disease &
- Hispanics 150% risk of whites
- Straying from heritage diets may be key factor in these statistics
- African heritage diet may be especially brain healthy
Scientific evidenced-based research demonstrating a correlation between nutrition and cognitive health.

Development of Memory Preservation Nutrition®
MPN™ - 6 Strategies*

1. Increase Amount & Variety of Anti-oxidants - spices, vegetables-leafy greens, nuts & seeds, fruits, berries, cocoa solids, whole grains

2. Increase Omega-3s - fish, seafood, fish oil, canola oil, flax seed; decrease omega 6s - no corn oil, use olive oil

3. Reduce Inflammation – berries, spices, green, ginger teas, fish


5. Reduce LDL cholesterol and avoid trans fats— Eat healthy fats and fiber & other cholesterol lowering foods, Avoid sugar

6. Assure adequate B, D & E vitamins - especially D3, 8-pt E including tocotrienols, B12 & niacin; beware 0f excess B6, folate

*Disclaimer-Check with your Physician before making dietary changes

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MPN™ Principles

• Consume:
  – Whole foods—not packaged or processed
  – More plant foods, fewer animal foods
  – Greater variety of foods in moderation
  – Spices, Whole Grains, Nuts/Seeds, Omega-3’s Every Day
  – 3 meals with 1-2 snacks. Fish min. 3x/wk. Herbal teas.
  – Typical desserts no more 3X week; Avoid HFCS & Trans Fats

• “Drink Up!” Hydrate with water & 100% juices

• Avoid some genetically modified foods

• Gut health may be key – eat pro-biotic and pre-biotics

• Supplement if needed-Omega 3s, Vitamins B,D3 & E(all 8 forms
  vitamin E); and herb/spice or veggie/fruit based supplements.
Research Support for MPN™
Over 750 studies-Here is a sampling

• Individual foods & nutrients may help/hinder brain function
  – Pinpointed by hundreds of lab studies in mice
  – Dozens of longitudinal studies in humans
    • Looking at particular types of foods
    • (circumstantial evidence)
  – Recent studies suggest multiple whole foods protective than single foods or nutrients

• Poor diet increases Alzheimer’s Disease risk and decline rate
  – Japanese who strayed from traditional diet
  – French study demonstrated decline rate
Antioxidants: Key to Brain Health

• Oxidative stress plays major role in brain cell deterioration, AD pathology, dementia symptoms & risk. (Morris 2002)

• Every anti-oxidant food tested in AD mice led to better thinking & reduced beta-amyloid.

• Dark Chocolate!
Spices, Dried Beans & Fruit in Istanbul Spice Bazaar (ADI 2005)
Spice Up Your Life
To Power Up Your Brain

• All herbs and spices
  – Potent anti-oxidants
  – Mildly to strongly anti-inflammatory
• Potent anti-inflammatory agents
  – Hot peppers, turmeric, ginger, oregano, rosemary, aloe vera and many others
• Those with high ORAC values likely reduce excessive levels of beta-amyloid
• Cinnamon
  – Blocks A-beta excess and oligomerization
  – Lowers cholesterol and blood sugar (RCT humans)
• Improved acetylcholine levels & cognition in pilot randomized clinical trials in early AD patients
  – Sage, lemon balm, saffron over past decade
  – 20 mg saffron tied 10 mg Aricept with no side effects-how much is 20 mg how often
• U of Miami – Aloe Vera improved cognition in AD

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Vitamin D – another key to Brain Health?

• Vitamin D deficiencies are related to higher rates of cognitive decline, \(^1\) depression, and Alzheimer’s \(^2\) (plus diabetes, MS, cancer, stroke, influenza & other infections, osteoporosis, muscle weakness).

• Severely deficient (<25 nmol/L) have 4 x risk of cognitive impairment; deficient (>25,<50) have 1.5 times the risk of those with sufficient blood levels (.75 nmol/L) (Llewellyn 2010)

• 2000 IU of vitamin D3 now the MINIMUM dose; no toxicity below 10,000 IU observed (IOM)
Combination Of Foods More Potent Than Single Foods

- Eating foods typical of “Mediterranean Diet” Reduces Risk of AD by 40%; Also lowers risk of conversion of MCI to AD
- Nutrients, in combination, lower risk:
  - High intake of variety of foods typical of Mediterranean diet
  - Low intakes of high-fat animal foods, i.e. dairy, red meat, organ meat and butter, and of saturated fats & Omega 6’s

- DASH Anti-Hypertensive Diet lowers risk of dementia
Few Clinical Trials As Yet

• Human clinical trials - only a few, just beginning
  – B vitamins, fish oil – mixed results
  – Small pilot RCTs trials with herbs very promising (aloe vera, saffron, sage, lemon balm)
  – High glycemic index, high sat. fats (bad) vs. low glycemic, low sat fat (good) for brain
  – Post test cognitive tests with major RCT of Mediterranean Diet most substantial evidence to date
Spanish Med Diet Better For Cognition

• First gold standard randomized clinical trial to prove that healthier diet improves cognition
• 522 adults at high risk of CVD (part of 7500 larger RCT showed 30% reduction 1st time heart attacks and strokes).
• Med diet groups increased adherence by 1.8 out of 14 points, either more olive oil or nuts or both daily, & + 1/3 servings fish/week & 0.4 more servings legumes/wk
• Conclusion: Intervention with Mediterranean Diets enhanced with either EVOO or nuts results in better cognition* compared with a low-fat diet

* Clock Drawing Test (CDT) and Mini-Mental State Examination (MMSE)
Research Support for Brain Foods - Future

• Alz Dis International Nutrition & Dementia report Feb 2014
• Coming Soon: Finnish Lifestyle RCT
• Heritage diets maybe relevant

African Heritage more brainy than Mediterranean?
BUSBM Conducted First Clinical Trial Testing Full-Spectrum Nutrients from Plants (vegetables, fruits, herbs and spices) in Boston, Massachusetts

Combined with fish oils and vitamin D.

• Using “off the shelf” products
• Preclinical trials in transgenic mice
• Human trials – Phase I, in healthy older adults
Boston University “Nutritional Supplement Combination Therapy”: The NSCT Study

- Funded by national Alzheimer’s Association
- Research designed by Nancy Emerson Lombardo, PhD
- Boston University ADC and Bedford Veterans Administration
- Independent PI: Sanford Auerbach, MD (neurologist at BUSM)
- First time testing a COMBINATION of promising plant nutrients with fish oil and vitamin D.
  - All are derived from brain healthy whole foods & spices.
- Chosen to target inflammation, oxidative stress, help blood sugar control, increase neuronal/dendritic growth, reduce pathological over-production of A-beta & tau.

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Poly-Nutritional Supplement Intervention- Phase I Open Label

• 5 US products chosen from strategies of the MPN - in capsule form, for future double-blinded RCT
• Concentrated fruit/vegetable powder - BerryGreen®
• Concentrated blend of spices & herbs (broad spectrum) with potent anti-inflammatory actions - Zyflamend®)
• Cod Liver Oil w/ vitamin D & an enhanced DHA fish oil to total 2.2 gm of DHA & .7 gm EPA
• 2000 IU of vitamin D3.
• 6-8 months long for 20-25 cognitively normal people.

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Spices to Reduce Inflammation in Zyflamend

- Ginger
- Turmeric
- Oregano
- Rosemary
- Green tea
- Holy Basil – also reduces cortisol
- Scuteleria
- Chinese Goldthread
- Cinnamon
MPNSP - Highly Significant Main Effect for Mitochondrial Function

- Combination of Berry Green, Zyflamend and Cod Liver Oil improves cognition & mitochondrial function in AD triply-transgenic mice known to develop features of AD with age (Jon Valla, Ph.D., et. al. IANA 2010)

- The MPNSP supplemented diet overcome mitochondrial dysfunction in 3xTG AD Mice in several important brain regions where AD patients show significant bio-energy declines, related to memory and learning

- Highly significant interaction between diet and gender in posterior cingulate cortex

- No effect on wild-type mice

© 2010 Jon Valla, Nancy Emerson Lombardo, et. al.
Cytochrome Oxidase Brain Regional Analysis

- Quantifiable endogenous marker of mitochondrial function and brain regional energy demand.
- Brain enzyme histochemistry followed by neuroanatomic densitometric imaging, 55 regions analyzed across entire brain.
- Initial Diet x Genotype ANOVA and post hoc 2-tailed t-tests (p<0.05).

Several brain regions showed CO levels significantly restored to control (WT) levels, including key learning/memory areas such as posterior cingulate cortex (CGp), amygdala (BLA), and mediodorsal thalamus (MD).

Slide courtesy of Dr. Jon Valla, Barrow Neurological Inst.
Methods of NSCT Human Trial: Phase I Open Label Clinical Trial

**Inclusion Criteria included:**
1) cognitively normal
2) with scores of MMSE 28-30 and normal CDR,
3) aged 50-90,
4) a sixth-grade education or better,
5) Residing in the community
6) No medical contraindications
7) additional criteria including no immediate prior use of study botanical supplements, stable use of other supplements and medications.

**Intervention:**
Participants took NSCT pills* for 6 months
- after 2 months titration to full dosage of 19 pills (See Table 1).
- Supplements included Vitamin D, fish oils, and 2 multi-plant-based supplements
## Results: Subject Characteristics

<table>
<thead>
<tr>
<th>Age</th>
<th>70.7 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>13 Female, 8 Male</td>
</tr>
<tr>
<td>Education</td>
<td>17.6 years</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 White, 3 Black, 2 Other</td>
</tr>
</tbody>
</table>
Results Suggest NSCT Is Feasible, Safe and Tolerable In Cognitively Normal Adults

- **Attrition Rates.** Of those who consented to participate (n=21, 13 females), 76.2% completed the 8-month protocol. Five participants withdrew: 1 with intolerable side effects and 4 for competing health conditions.

- **Compliance rates** were high (82% on average)

- **Self-reported Adverse Effects** significantly decreased ($p = .013$) relative to baseline.

- **Biomarkers:** Only two biomarkers significantly changed from baseline values.

- **More biomarkers remain to be assessed.**
Conclusion:

• A regimen of 19 nutritional daily supplements is feasible, safe, and tolerable for cognitively healthy older adults as demonstrated by the uniformly high compliance and low attrition rates of this study.

• Until additional and more sensitive assays are performed on remaining blood and urine specimens, it is unclear whether the NSCT regimen has any significant clinical implications.

• A much larger trial is necessary to better answer questions, particularly if this or similar combination of supplements may be beneficial for reducing risk of Alzheimer’s disease.
References:


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Jon Valla, PhD and his team:
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\textsuperscript{1} Midwestern University, College of Osteopathic Medicine, Glendale, AZ;
\textsuperscript{2} Arizona State University, Tempe, AZ;
\textsuperscript{3} Arizona Alzheimer’s Consortium
\textsuperscript{4} Barrow Neurological Institute, St. Joseph’s Hospital & Medical Center, Phoenix, AZ;
Bringing Brain Foods to Community

- Educational presentations of which foods help, which hurt brain (e.g. excess sugar, trans fats, too many animal foods)
- Pilot work to help care homes and day programs change food they serve older adults and people with dementia
MPN™ Successfully Implemented
Senior Living Residences of Massachusetts in 6 of their assisted living communities

Amazing Place Day Program in Houston, Texas

Private Coaching

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Memory Preservation Nutrition®:
A Multiple Nutrition Strategy Using Whole Foods – Assisted Living facilities in New England:
Senior Living Residences, LLC
## FINDINGS: % of Pantry Items in 7 sites with Transfats, or Excess Sugar or Salt

<table>
<thead>
<tr>
<th>Where in Pantry</th>
<th>Total in Category</th>
<th>% Trans fats (any)</th>
<th>% Sodium over 480 mg*/srvg</th>
<th>% Sodium over 140 mg*/srvg</th>
<th>% Sugar over 10 grams/srvg</th>
<th>% Sugar over 7 grams/srvg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Goods</td>
<td>551</td>
<td>12.9%</td>
<td>8.5%</td>
<td>38.8%</td>
<td>24.7%</td>
<td>30.3%</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>60</td>
<td>11.7%</td>
<td>23.3%</td>
<td>51.7%</td>
<td>8.3%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Cooler</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freezer</td>
<td>67</td>
<td>31.3%</td>
<td>9.0%</td>
<td>61.2%</td>
<td>58.2%</td>
<td>61.2%</td>
</tr>
<tr>
<td>Total</td>
<td>678</td>
<td>14.6%</td>
<td>9.9%</td>
<td>42.2%</td>
<td>26.5%</td>
<td>32.0%</td>
</tr>
</tbody>
</table>
Conclusions about Food Ingredients

• Confirmation that most processed and prepared foods are likely to be problematic
• Foods for the elderly need to be especially scrutinized given their age, multiple chronic diseases, and vulnerability.
• The primary problems identified as sugar, salt and trans fats are likely to be in high amounts in your pantries
• Often the food service version of a consumer product has higher levels of the problem elements
• Another major problem: absence of healthy ingredients such as whole grains, nuts, seeds, beans, lentils, vegetables, fruits, spices and herbs
MPN™ Implementation

METHODS:

• Coaching
• Empowerment models
• Menu review, recipe development, cook-offs
• Progress monitoring
• Team building

QUALITY ASSURANCE:

• Menu review & improvements
• Pantry/purchase reviews
• Meal testing & observation
• Interviews with staff, participants, caregivers

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MPN™ Implementation Steps

**ACTIONS:**

• Assessment of current practices and preferences

• Consultation to change practices, doable steps, phased in stages

• Training and educational sessions with all participants, staff, families, and referral sources, community

• Engage participants, caregivers, staff, in fun activities
  – *Encourages change*
  – *Engage all senses for positive change*
  – *Engage participants in guiding choices*
  – *Experience delicious, new, brain-healthy foods and recipes*
Keys To Facilitating Changes & Success

Know how and what to do:

- Team approach
- Phased approach
- Visible and subtle changes
- Leadership support
- Buy-In from ALL
- Enthusiastic Chefs
- Engage seniors & families
- Atmosphere of trust, respect, caring for seniors

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## Selected Survey Results from 50 Amazing Place Participants  
(November, 2013)

<table>
<thead>
<tr>
<th>Item</th>
<th>Number Responding</th>
<th>% Yes</th>
<th>% So-so / Maybe</th>
<th>% No</th>
<th>% Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Say Eating Healthy is Important/Very Impet</td>
<td>49</td>
<td>93%</td>
<td>--</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Enjoying Helping Decide New Foods</td>
<td>48</td>
<td>68%</td>
<td>21%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Fewer Red Meats/More Seafood?</td>
<td>47</td>
<td>52%</td>
<td>33%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>More Vegetables Than Meat?</td>
<td>48</td>
<td>42%</td>
<td>17%</td>
<td>37%</td>
<td>4%</td>
</tr>
<tr>
<td>Beans/Lentils Good for You?</td>
<td>47</td>
<td>81%</td>
<td>13%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Eat Too Many Sweets Here?</td>
<td>48</td>
<td>12.5%</td>
<td>--</td>
<td>87.5%</td>
<td></td>
</tr>
<tr>
<td>Love or Like Fruit as a Dessert?</td>
<td>48</td>
<td>85%</td>
<td>8%</td>
<td>6%</td>
<td></td>
</tr>
</tbody>
</table>
# Amazing Place Family Caregiver Survey

<table>
<thead>
<tr>
<th>Question</th>
<th># Responses</th>
<th>Very Willing; likes vary/Very Important</th>
<th>Willing/Important</th>
<th>Somewhat Willing/Somewhat Important</th>
<th>Not Willing; Doesn’t Like New Foods/Not Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willingness of Loved One to Try Unfamiliar Foods</td>
<td>31</td>
<td>29%</td>
<td>29%</td>
<td>39%</td>
<td>3%</td>
</tr>
<tr>
<td>How Important Fruits &amp; Vegetables for Body/Brain Health</td>
<td>30</td>
<td>90%</td>
<td>10%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Degree want to be Involved in AP nutritional program</td>
<td>29</td>
<td>In -depth info &amp; changes at home</td>
<td>Attend Info sessions about changes</td>
<td>Receive printed info on changes</td>
<td>Not interested in changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41%</td>
<td>7%</td>
<td>38%</td>
<td>14%</td>
</tr>
</tbody>
</table>

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Possible Goals 1-Menu Changes

- Some obvious, some subtle in changed recipes (stealth health)
  - Increased use of spices by participants and dietary staff
  - Increased vegetables used in menus and recipes
  - More whole grains
  - Healthier snacks
  - More fresh fruit
  - Healthier desserts – biggest challenge, maybe most important
  - Introduction of yogurt and yogurt based foods,
  - Introduce, increase amounts of other pro & pre-biotics
    - What is a “prebiotic”
Possible Goals 2- Pantry Changes

– Gradual replacement of most foodstuffs containing high %’s of sodium, sugar/HFCS, and all transfats
– Introduction to brain healthy ingredients.
– E.g. more produce, spices/herbs, nuts, seeds, beans
– Whole grains and varied grains
– Movement toward 100% fruit juices and of low sodium vegetable juices
– Healthy fats

• **Method changes**
  – Using fewer purchased entrees, desserts & salad dressings.
## Typical Menu Plans for ADH & Assisted Living

<table>
<thead>
<tr>
<th>Menu Element</th>
<th>Prior</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pork or beef entrees</td>
<td>40%</td>
<td>20% or less; less than once week ideal</td>
</tr>
<tr>
<td>Fish or Seafood</td>
<td>10-15%</td>
<td>40% - offered daily if two+ choices</td>
</tr>
<tr>
<td>Vegan</td>
<td>0%</td>
<td>10-20%</td>
</tr>
<tr>
<td>Desserts</td>
<td></td>
<td>Decrease sugar, sodium, trans fats</td>
</tr>
<tr>
<td>--% Fruit or fruit-based</td>
<td>0-40%</td>
<td>Daily</td>
</tr>
<tr>
<td>--%&quot;From scratch&quot; if not fruit</td>
<td>20%</td>
<td>60-80%, brain healthy ingredients</td>
</tr>
<tr>
<td>Snacks, % sweet</td>
<td>80-100%</td>
<td>5-20% including yogurt parfaits and fruit; trail mix</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Introduce vegetables, savory snacks</td>
</tr>
<tr>
<td>Vegetables, Spices &amp; Herbs</td>
<td>inadequate</td>
<td>Increase greatly both variety and amount; leafy greens 3x/week to daily</td>
</tr>
<tr>
<td>Beans, lentils</td>
<td>Not often, low amount</td>
<td>3-7 x/week in soups, salads, side dishes, entrees, snacks (e.g. hummus)</td>
</tr>
<tr>
<td>Healthy Oils</td>
<td>rare</td>
<td>Daily, increase amount, variety</td>
</tr>
<tr>
<td>General</td>
<td></td>
<td>Decrease sodium, sugar, trans fats</td>
</tr>
</tbody>
</table>

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## Amazing Menu & Pantry Makeover

<table>
<thead>
<tr>
<th>Menu Element</th>
<th>Prior</th>
<th>Achieved Amazing Place in 8 months using MPN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pork or beef entrees</td>
<td>40%</td>
<td>15%</td>
</tr>
<tr>
<td>Fish or Seafood</td>
<td>10-15%</td>
<td>30%</td>
</tr>
<tr>
<td>Vegan</td>
<td>0%</td>
<td>5-10% -urging to do more. Initial confusion between vegetarian and vegan</td>
</tr>
<tr>
<td>Desserts</td>
<td>90%</td>
<td>Stopped using ALL unhealthy desserts</td>
</tr>
<tr>
<td>--% Fruit or fruit-based</td>
<td>0-40%</td>
<td>85%; introduced yogurt desserts to add probiotics</td>
</tr>
<tr>
<td>--% “From scratch” if not fruit</td>
<td>20%</td>
<td>90% (trained volunteers to assist making brain healthy desserts)</td>
</tr>
<tr>
<td>Snacks, % sweet</td>
<td>80-100%</td>
<td>100% brain healthy; Initially achieved 20% sweet tasting, but slipped back to 60% sweet tasting including fruit and yogurt parfaits;</td>
</tr>
<tr>
<td>Vegetables, Spices &amp; Herbs</td>
<td>Too few</td>
<td>Doubled+ volume and variety; leafy greens nearly every day as salads or cooked greens; increased use of more spices, herbs, no more seasoned salts</td>
</tr>
<tr>
<td>Beans, lentils</td>
<td>Not often, low a’nt</td>
<td>From almost never to several times a week in soups, as salads, sides or as entrees</td>
</tr>
<tr>
<td>Plus Nuts &amp; Seeds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy Oils</td>
<td>rare</td>
<td>Olive Oil and healthy instead of Cottonseed Oil; Stopped using trans-fat-filled margarine</td>
</tr>
<tr>
<td>Unhealthy foods</td>
<td>Too many</td>
<td>Got rid of all foods w/ trans fats, &amp; those w/ highest levels sodium &amp; sugar</td>
</tr>
<tr>
<td>Salad Dressings –from scratch</td>
<td>Rare to none; NaCl &amp; Sugar</td>
<td>Plan to make 75% or more of own salad dressings</td>
</tr>
<tr>
<td>Whole grains &amp; vary</td>
<td>0-20%</td>
<td>All rice brown, breads whole grain, introduced quinoa</td>
</tr>
</tbody>
</table>
1st Vegan Meal at Amazing Place!

Food Service Director Linda St. Hill created the first vegan meal in November. Linda is from Barbados!

- Brown rice
- Fresh tomato slice
- Greens sautéed in olive oil
- Black-eyed Pea “Loaf” with tomato/veggie sauce
- Cornbread

Photo compliments of the very enthusiastic Executive Director!
Participants Embrace Changes

• Consistent with results of both caregiver and participant surveys, changes to date have been readily embraced.
• No push back!
• Even when changes were fairly rapid
• After a week’s educational session and taste testing during consultants visits, snacks go from 100% sweets to 10-20% “over night” (rest veggies) and no problems.
• Big menu changes also accepted.
  – Vegan entrees; more beans and lentils
  – Most desserts are now fresh or canned fruits
An MPN Lunch at Amazing Place: People with Dementia Love Brain Food!
MPN™ Results in Assisted Living & ADH

• Older adults DO accept most changes and are able to make informed, healthy choices daily
• NO reported adverse effects
• Change is contagious; takes time
  – appear eager to learn better nutrition for themselves
  – Some is visible; other is invisible
• Reinforcement needed
  – Refresher educational sessions
  – QA checks necessary
Results: Feasibility & Acceptability

• Some changes more easily accepted than others, additional changes happen over time
  – **Visible**: Brown rice, whole grains, more fish & vegetables, spices on tables, low salt veg. juice, more plant foods.
  – **Invisible**: spices, omega 3’s (flaxseed, CLO) whole grains, kelp powder & vegetables in recipes, less salt, 100% fruit juices.
Many Lifestyle Factors are Common to Brain, Heart, & Body Health

• Physical Exercise
• Sleep
• Managing Stress & Depression
• Nutrition
• Social Engagement & Community
• Spirituality
• Creative Expression
• Meaning & Purpose
• Humor, plus many others!
Our team’s Brain Health & Wellness Center® program has been evolving for 15 years.

Multidisciplinary team:
Registered Dieticians, Nutritionists, Cognitive Rehab expert, Educators, Gerontologists, Marketing, Administration

BHWC team at Dementia Care at AAIC Boston, MA July 2013
MUCHAS GRACIAS!
Merci Beaucoup!
Спасибо
(Spasibo)
Obrigada

Thank you for your kind attention!
Muchas Gracias
Thank You!

Learn more about Brain Health!
Subscribe to our e-newsletter at
brainwellness.com
nemerson@brainwellness.com