DIRECTOR'S MESSAGE

Collaborative Science — A Key to the Center's Progress

Dear Friends and Colleagues:

Science, in our world today, is increasingly collaborative. With more than seven million researchers around the world, drawing on a combined international R&D spend of several hundred billion dollars and publishing in approximately 25,000 separate scientific journals each year,* science has evolved from the days of Einstein and Edison. Complex data is now transmitted at the click of a button, and important research findings are shared across continents, oceans, and time zones. Research is conducted in more places than ever before, but it is also more interlinked.

* UNESCO Institute of Statistics

Collaborative science — the teaming together of researchers to enhance the quality of scientific research through knowledge, networks, financial resources, and technology — is a defining key to our Center's progress and achievement. As the scale of our projects intensifies and expands, the efficiency, effectiveness, and integrity of our research depends greatly on the quality of our collaborators as we address one of the most pressing global scientific challenges of our time.

At the Comprehensive Center on Brain Aging and Silberstein Alzheimer's Institute we believe in the value and importance of collaborative science, as we collaborate both internally — between various departments and schools at NYU — as well as externally, with other U.S. and international research and medical centers. In the next few pages, you will read about a few of our Center's collaborative programs and initiatives, and our quest to work with the best science that has to offer — in terms of people, institutions, and technology.

Regards,
Ralph A. Nixon, MD, PhD
Director, Comprehensive Center on Brain Aging and Silberstein Alzheimer's Institute

RESEARCH SPOTLIGHT

Sleep: An Awakening Element in Our Understanding of Alzheimer's Disease

By: Ricardo S. Osorio, MD, NYU Center for Brain Health; and Janna Mantua, NYU Sleep Disorders Center

Sleep was originally considered to be merely a passive physiological state, and dream interpretation received a disproportionately large focus in sleep research until the early 1950s. With the discovery of the cyclical nature of Rapid Eye Movement (REM) and non-REM sleep, and with the standardization of overnight sleep studies (called polysomnograms) in the 1970s, it became clear that the brain has almost continuous internal activity during sleep. This knowledge led to the idea that sleep may play an active role in contributing to many brain processes, including reorganization of neuronal circuitry, strengthening of existing brain connections, creation of new neurons, and also the processing and consolidation of memories. Other currently proposed functions of sleep include the regulation of the immune, cardiovascular, and endocrine systems.

Sleep and Aging

The amount of time spent in each sleep stage varies throughout development. Newborns, for example, often have a large amount of REM sleep, which gradually decreases into adulthood, when the average night contains only about 90–120 minutes. The observation that the percentage of REM sleep is very high during the first stages of life further supports the notion that sleep is crucial for brain development and continued brain maintenance. Along with this reduction of REM sleep, additional changes in sleep stages and circadian physiology (the internal timekeeping system) can be seen throughout life, and even into late adulthood. Sleep changes that may accompany

Continued on page 6.
Alzheimer’s Disease

visits. The person should have regular contact with the volunteer and will be able to attend all study visits.

require participants to have a study partner — a friend or relative who can accompany volunteers to clinic

Falls Prevention Program

The following studies are open for enrollment at the Silberstein Alzheimer’s Institute. All clinical trials

Clinical T rial s Update

A multidisciplinary investigative team of

basic, clinical, community, and population-

oriented NYU research faculty has received a falls prevention grant from the Clinical-

Translational Science Institute to implement

an innovative approach to reducing falls in an “at risk” clinical population. Collectively, the research group represents expertise in occupational therapy, neurology, rehabilita-

tive medicine, geriatrics, social gerontology, and public health. “Invested in advancing innovations that promote healthy aging and reduce unintentional injuries among community-dwelling older adults, we formed this cross-school collaborative,” said James E. Galvin, MD, MPH, Director of the Pearl I. Barlow Center for Memory Evaluation and Treatment and Director of the Alzheimer Disease Assistance Center. “Although persons with dementia have an increased fall risk, assessment and manage-

ment of fall risk is not routinely part of standard clinical care. Embedding a falls prevention program within the Barlow Center is an ideal venue for fostering collaborative science to address this significant public health problem,” added Dr. Galvin.

Preventing Falls

What can one do to prevent falls? Dr. Galvin provides advice: “Exercise, exercise, exercise. Focus on increasing leg strength and improving balance, and try to have your routine get more challenging over time. Tai Chi programs are especially good. Second, have your physician review your medications. Certain drugs may cause dizziness or drowsiness. Also, make

sure you have your eyes examined at least once a year.” He also recommends making your home safer by reducing tripping hazards, improving lighting, adding grab bars in showers and near toilets, and railings on stairways. “It is also beneficial to get adequate calcium and vitamin D, either from food or supplements. And lastly, get screened for osteoporosis.”

The NYU collaborative will ensure linkages across systems of care and disciplines, facili-

tating collaboration and continuity of care for persons with dementia at high fall risk and infor-

m the successful translation of evidence-based fall prevention programs into clinical settings, where at-risk populations are seen. Initially, the program will pilot the intervention in 20 individuals from the Pearl Barlow Center and collect data. ●

Principal Investigator: Jane Bear-Lehman, PhD, OTR, FAOTA, Associate Professor and Department Chair, Department of Occupa-

tional Therapy, NYU Steinhardt School of Culture, Education and Human Development; Co-Investigators: James Galvin, MD, MPH, Professor of Neurology, Psychiatry, Nutrition and Public Health, Director of Pearl I. Barlow Center for Memory Evaluation and Treat-

ment, Director of the Alzheimer Disease Assistance Center, NYU Langone School of Medicine; Valery Lanyi, MD, Clinical Professor, Department of Rehabilitative Medicine, NYU Langone School of Medicine; Victoria H. Raveis, PhD, Professor and Department Chair, Department of Occupa-

tional Therapy, NYU Steinhardt School of Culture, Education and Human Development, College of Dentistry and Global Institute of Public Health.

Pilots Falls Prevention Program

Falls are the second leading cause of accidental death in the United States. Seventy-five percent of these falls occur in the older adult population. One third of the older adults who fall, sustain a hip fracture, and are hospitalized, die within a year. Falls not only affect the quality of life of the individual but also influence the caregiver and family. Health care costs for falls and rehabilitation average 70 billion dollars a year. Even if the fall does not result in hospitalization, fear of falling becomes a major factor for the individual. Fear leads to inactivity and loss of confidence. This, in turn produces a cycle of fear, loss of self-confidence, and inactivity, thereby decreasing the quality of life and increasing the risk of falls.

Clinical Trials Update

The following studies are open for enrollment at the Silberstein Alzheimer’s Institute. All clinical trials require participants to have a study partner — a friend or relative who can accompany volunteers to clinic visits. The person should have regular contact with the volunteer and will be able to attend all study visits.

Alzheimer’s Disease Neuroimaging Initiative 2 (ADNI2)

We are seeking healthy volunteers who are concerned about their memory as well as people with mild Alzheimer’s disease to participate in ADNI2, a landmark NIH research study examining the subtle changes in the brains of older people many years before symptoms of memory decline. The main goal is to identify and understand which biomarkers best track the progression of memory/cognitive decline. Volunteers may be fluent in English or Spanish and must be at least 55 years old.

People should have a diagnosis of Alzheimer’s disease or be in general good health with only concerns about memory changes. This is not a drug study. Using advanced imaging techniques and biomarkers found in blood and cerebrospinal fluid, we will monitor your health and memory over five years — at no cost to you.

Alzheimer’s Disease Prevention Study

Are you currently in good physical and mental health but concerned that your memory is not as good as it used to be? We are exploring the use of currently FDA-approved medications that may help safeguard the memory region of the brain known as the hippocampus by promoting the growth of neurons. If you are between the ages of 60 and 80, in good general health and worry about changes in your memory, you may be eligible for this study.

TMS and Cognitive Stimulation

We are seeking volunteers who have been diagnosed with mild-to-moderate Alzheimer’s disease for a 35-week study that will test the effectiveness of a noninvasive procedure known as Transcranial Magnetic Stimulation or TMS. Participants will have six weeks of daily treatment of active or placebo TMS with cognitive training during this study. TMS has been approved for use in treatment of people with depression and is also being investigated for efficacy in people with Parkinson’s. Enrollment begins in June.

For more information on these trials, please contact either:

● Dana Pogorelec at 212-263-5708 / dana.pogorelec@nyumc.org

● Brittany Cerbone at 212-263-5845 / brittany.cerbone@nyumc.org

● Christina Michel at 212-263-0771 / christina.michel@nyumc.org

For answers to other questions about these studies, please contact Dr. James Galvin at 212-263-5708 / James.Galvin@nyumc.org

Studies Opening Soon

We anticipate starting several new investigational studies in the upcoming months that will test the safety and efficacy of oral medications, including but not limited to Beta Secretase Inhibitors, Monoamine Oxidase Inhibitors (MAOIs), and Insulin Sensitizers. We are also preparing to begin studies involving nutritional compounds as well as intravenous infusions to target excess beta amyloid protein. It is hoped that these com-

pounds may have a disease-modifying effect in addition to a reduction of the cognitive and behavioral symptoms that develop over time with Alzheimer’s disease. ●

For more information on these trials, please contact either:

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● Brittany Cerbone at 212-263-5845 / brittany.cerbone@nyumc.org

● Christina Michel at 212-263-0771 / christina.michel@nyumc.org
Sundowning: Tips for Reducing Disorientation

Sundown syndrome, or “sundowning,” refers to a state of confusion and is broadly used to describe a set of neuropsychiatric symptoms occurring in elderly patients at sunset, evening, or at night. Sundowning isn’t a disease, but a symptom that often occurs in people with dementia, such as those with Alzheimer’s disease. Research shows that 20 to 45 percent of Alzheimer’s patients will experience some sort of sundowning confusion.

James E. Galvin, MD, MPH. Director of the Pearl Barlow Center at the Silberstein Alzheimer’s Institute, offers an explanation and insight. “For patients with sundowning syndrome, a multitude of behavioral problems begin to occur in the evening or while the sun is setting. These behaviors represent a wide variety of symptoms such as confusion, disorientation, anxiety, agitation, aggression, pacing, wandering, screaming, yelling and so forth. Other clinical features of sundowning include mood swings, abnormally demanding attitude, suspiciousness, and visual and auditory hallucinations. It can be very challenging for caregivers to deal with these symptoms. This may be due to the loss of visual cues needed for orientation as the level of ambient light decreases. There may also be disruptions in the sleep-wake cycle so that instead of becoming tired and preparing for bed, patients with dementia may become overly aroused and agitated.”

Dr. Galvin adds, “Sundowning seems to be more frequent with patients during the middle stages of Alzheimer’s disease and other dementias, and seems to subside with the progression of a patient’s dementia into the more severe stages. Patients may not be aware of their behaviors or be able to describe the triggers for their confusion. It is important to explain to caregivers that this behavioral pattern is abnormal.”

**Sundowning Factors**

Factors that may aggravate late-day confusion include:

- Fatigue
- Low lighting
- Increased shadows
- Disruption of the body’s “internal clock”

While no one is certain how or why this late-day behavior occurs, many experts attribute it to the following factors:

- End-of-day exhaustion (both mental and physical) in the patient and caregiver
- Disturbances in the internal body clock, causing biological mix-up between day and night
- Reduced lighting and increased shadows
- Disorientation due to the inability to separate dreams from reality while sleeping
- Trouble falling and staying asleep (a common trait among older adults)
- Medication side effects, or wearing off of medication

For patients with sundowning syndrome, a multitude of behavioral problems begin to occur in the evening or while the sun is setting... symptoms such as confusion, disorientation, anxiety, agitation, aggression, pacing, wandering, screaming, and yelling.

Other clinical features of sundowning include mood swings, abnormally demanding attitude, suspiciousness, and visual and auditory hallucinations.

**Tips for Reducing Sundowning Disorientation**

- Plan for activities and exposure to light during the day to encourage nighttime sleepiness.
- Limit caffeine and sugar to morning hours.
- Serve dinner early and offer a light snack before bedtime.
- Keep a night light on to reduce agitation that occurs when surroundings are dark or unfamiliar.
- In a strange or unfamiliar setting such as a hospital, bring familiar items such as photographs or a radio from home.
- Speak to your healthcare provider to review medications and dose timing.
- Evaluate environment to reduce excess noise or overstimulation.

Research suggests that a low dose of melatonin — a naturally occurring hormone that induces sleepiness — in combination with exposure to bright light during the day may help minimize the disorientation associated with sundowning. Other non-pharmacological approaches may include the use of lavender oil and/or chamomile tea to increase relaxation.

“An essential tip I share with caregivers who ask about this is to maintain a regular schedule. This is more important than one may imagine. For a person with Alzheimer’s it is comforting to have a regular routine of mealtimes, waking up and going to bed,” says Dr. Galvin. He also suggests, “If the patient’s condition permits, having increased daily activity can help promote an earlier bedtime and need for sleep. Physical activity is a great therapy for Alzheimer’s, and a natural way to encourage night sleep. Patients may wish to take naps during the day, but unintentionally getting too much sleep will affect sleep at night. Lastly, limit distractions during the evening hours such as loud music, television, social visits.”

**Advice for Caregivers**

- When the patient or loved one is agitated, approach them in a calm, reassuring manner and let them know they will be all right and are in a safe place.
- Caregivers should try to find out if the patient is in need of something, or if there is anything specific that is triggering their symptom (i.e. hunger, need to use bathroom).
- Keep a stable home routine.

Dr. Galvin points out, “It is best not to argue with the patient in a confused state. Do not ask for explanations as to why they are confused. This may just aggravate the situation. And lastly, do not try to physically restrain your loved one. Allow them to walk or pace under your supervision.”

**Sources:**

- www.alz.org; www.nrdc vhcmh.gov

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**CLINICAL NEWS**

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**FACTS**

**Did You Know?**

Smoking and heavy drinking are two of the most preventable risk factors for Alzheimer’s disease. When you stop smoking, the brain benefits from improved circulation almost immediately, regardless of your age. However, brain changes from alcohol abuse can only be reversed in their early stages. Alcoholism is associated with extensive cognitive problems. Because alcohol’s effects on cognition, brain disorders, and brain chemistry share some features with Alzheimer’s effects on these three areas, it is plausible that alcohol use might also increase the risk of developing AD. It is best to reduce the level of alcohol.

A publication of NYU Langone Medical Center / Comprehensive Center on Brain Aging

CLINICAL NEWS
CBA Researchers Wisniewski and Goni Receive U.S. Patent

In April, two researchers from the Comprehensive Center on Brain Aging, Thomas Wisniewski, MD, and Fernando Goni, PhD, representing NYU’s Departments of Neurology, Psychiatry and Pathology, were awarded a U.S. patent for their ground-breaking research on “Immunotherapy Targeting of the Shared Abnormal Conformational State of Amyloidogenic Peptides/Proteins.”

Patent Number 8,409,584 covers, for the first time, a few million peptides that can be eventually utilized to modulate an immune therapy, using one’s own immune system to help restore homeostasis and fight diseases such as Alzheimer’s Disease (AD); as well as related disorders, such as Fronto-Temporal Dementia (FTD); all forms of Prion disease, including Creutzfeldt-Jacob Disease (CJD); and other neurodegenerative diseases like Parkinson’s and Huntington’s disease.

Said Ralph A. Nixon, PhD, MD, Director of the CBA, “Immunotherapy has tremendous potential in helping us find a way to fight these deadly diseases. It is unusual these days to have a single patent awarded with so many potential therapeutic compounds.”

Drs. Goni and Wisniewski have already validated the system in mice which cover all different aspects of AD; and have produced a set of several monoclonal antibodies that could detect specific pathological forms of proteins/peptides present in AD, FTD, Prion Diseases, and Parkinson’s. Any of these conformational monoclonal antibodies could have therapeutic benefits by targeting only the toxic forms and leaving the normal proteins intact. The characterization of the monoclonals for neurodegenerative diseases has already begun at NYU and researchers Wisniewski and Goni are hopeful that they will get some potentially “good” candidates in the near future.

Rising Star: Charles Hoeffer, PhD

Charles Hoeffer is presented with the Blas Frangione Young Investigator Merit Award by Drs. Frangione and Nixon.

Charles Hoeffer, PhD, assistant professor, Department of Physiology and Neuroscience, NYU School of Medicine was recently awarded $150,000 over a three-year period from the Alzheimer’s Association for his research studying the toxic effects of the tau protein.

Additionally, recognizing the achievements of outstanding young investigators in the field of brain aging research, the Blas Frangione Young Investigator Merit Award was also presented to Dr. Hoeffer. He received an unrestricted prize of $5,000 to be used for research purposes, and was given the honor of presenting his research at the Center’s annual Research Day in March.

Dr. Hoeffer’s work involves discovery of new mechanisms that function in the regulation of protein synthesis during synaptic plasticity. The idea is that synapses, which are the sites of connections between nerve cells and other nerve cells, have a “plastic” property. That is, they’re changeable, in shape or their function, over periods of time. Understanding how Alzheimer’s disease-related proteins work in synaptic failure in AD will likely improve our understanding of how disease-related tau causes cognitive and memory problems in human patients. These studies will also provide valuable information on the efficacy of a new therapy for treating AD and other diseases related to pathological Tau.

Also supporting early career development, the Alzheimer’s Association’s New Investigator Research Grant funds promising scientists who have earned their doctoral degree within the last 10 years. The purpose of this program is to provide newly independent investigators with funding that will allow them to develop preliminary or pilot data, to test procedures and to develop hypotheses.

Healthy Blueberry Smoothie

**THE “PROTECTIVE” POWER OF BLUEBERRIES**

Research shows that blueberries may help protect the brain from the damage caused by free radicals and may reduce the effects of age-related conditions such as Alzheimer’s disease or dementia. Blueberries are rich in antioxidants — substances in food that protect your cells against free radical damage. Free radicals are molecules produced from the breakdown of food and from contact with environmental toxins such as tobacco smoke. These molecules damage cells, increasing your risk of heart disease and cancer. Studies also show that diets rich in blueberries significantly improved both the learning and muscle function of aging rats, making them mentally equivalent to much younger rats.

**INGREDIENTS:**

- ½ cup of fresh or frozen blueberries
- ⅓ cup of low-fat vanilla yogurt
- ⅓ cup of 1% fat milk ice

**LOW IN CALORIES**

As long as you use low-fat dairy products and the fruit as its own natural sweetener, this blueberry smoothie makes it a low-calorie treat, containing only 114 calories. If you follow a 2,000-calorie diet, the smoothie meets less than 10 percent of your daily calorie needs, plus provides you with a healthy serving of fruit and milk.

**HIGH IN CALCIUM**

Using milk and yogurt in the blueberry smoothie makes it a good source of calcium, with 207 milligrams. Adequate intakes of calcium are needed to help keep your bones healthy and strong. Adults need 1,000 to 1,200 milligrams of calcium a day. One blueberry smoothie meets about 20 percent of your daily needs.

**GOOD SOURCE OF POTASSIUM**

This smoothie is also a good source of potassium. Your body needs potassium to help maintain fluid balance and normal muscle and nerve function. Including potassium-rich foods in your diet may also help lower blood pressure by decreasing the effects of sodium.

Source: www.hoefher.com

**MindMatters** | SPRING / SUMMER 2013

A publication of NYU Langone Medical Center | Comprehensive Center on Brain Aging

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While most people in the United States living with Alzheimer’s and other dementias are non-Hispanic whites, older African-Americans and Hispanics are proportionately more likely than older whites to have Alzheimer’s disease and other dementias, according to a Special Report published by the Alzheimer’s Association. Studies indicate that in our country, older African-Americans are about twice as likely to have Alzheimer’s and other dementias as older whites. The Alzheimer’s Association report states that despite some evidence of racial differences in the influence of genetic risk factors for Alzheimer’s and other dementias, genetic factors do not appear to account for these large differences across minority groups. Instead, health conditions such as high blood pressure and diabetes that increase one’s risk for Alzheimer’s disease and other dementias are more prevalent in African-American and Hispanic communities. Lower levels of education, poverty, effects of racism, and other socioeconomic characteristics in these communities may also increase risk. Furthermore, there is evidence that missed diagnoses are more common among older African-Americans and Hispanics than among older whites. These are all disconcerting facts.

Founded in 1996, the NYU Multicultural Program at the Alzheimer’s Disease Center is committed to increasing the representation of African Americans, Caribbean Americans, Latinos, and other underserved populations within their research studies focused on Alzheimer’s and related diseases of the brain. Over time, the Program has evolved. Today, it serves as a primary recruitment vehicle in order to create a more diverse research subject pool, and facilitates investigations of relationships between sociodemographic and sociocultural factors and brain aging and dementia. “Our Program makes it possible for us to recruit Alzheimer’s patients and control subjects from underserved minority communities and creates an unprecedented opportunity for these populations to participate in research protocols and clinical drug trials,” said Karyn Marsh, PhD, Director of the Program, and Managing Associate Director of the Comprehensive Center on Brain Aging. “These groups face increased risk for and challenges in coping with Alzheimer’s disease. Our goal is to study the impact of race, ethnicity, and socioeconomic factors on the clinical assessment, presentation, and course of Alzheimer’s disease, but on a more human level, we are here to assist and serve the minorities in our neighborhoods. We are committed to reaching out to this segment of our community in order to help them better understand risk factors and lifestyle issues, make more informed decisions, and also educate caregivers to better understand the disease,” she added. Dr. Marsh has focused her research studies over the past decade on the link between lifestyle and socioeconomic factors and health disparities that affect African Americans, Hispanics, and other minorities.

As part of the Program, all research subjects undergo structured, comprehensive diagnostic interviews to assess severity of cognitive and functional impairment. Participants agree to provide a study partner who serves as a knowledgeable collateral source of information; they also agree to be re-assessed annually. The Program provides an annual diagnostic research evaluation including lab work and Magnetic Resonance Imaging (MRI), counseling and education for research participants and their families, as well as an opportunity to participate in clinical trials. As part of the psychosocial evaluation, participants with normal cognitive function and those with Mild Cognitive Impairment, as well as caregivers and/or family members of participants with dementia, are interviewed and assessed in order to measure the emotional and social consequences of caregiving and are provided guidance and referral services when necessary.

Trained clinicians diagnose and stage the severity of dementia using the Clinical Dementia Rating (CDR). For Spanish-speaking subjects with limited English vocabulary, a bilingual staff member conducts the full interview and assessments in Spanish.

Recently, the program recruited research physician, Ricardo Osorio, MD, who is bilingual and bicultural. The faculty and staff of the Program reflect the racial and ethnic diversity of the population they serve.

Additionally, the Multicultural Program extends its reach by providing on and off-site memory screenings and educational presentations on memory loss, dementia, and Alzheimer’s disease, in close association with a number of minority-based agencies.

Last year, the Program’s staff delivered more than 50 educational presentations in Spanish and English and addresses more than 100 free memory screenings at various locations in the NY tri-state area. Program leaders collaborate with centers such as the Bellevue Geriatrics Clinic (Manhattan); La Clinica Nueva Esperanza (Queens); the Quincy Senior Residence (Brooklyn); the Puerto Rican Institute for the Elderly (Queens); the Greater Harlem Nursing Home; and the Bowery Mission Women’s Center (Manhattan).

“The recruitment of racially diverse subject populations into clinical research studies has been a focus of interest of many researchers because the recruitment and retention of diverse study participants is essential in unraveling health disparities. We, at NYU, are committed to discerning exactly how these factors operate together to effect the health disparities that plague African American older adults and their minority counterparts — to not only help these communities of today, but of tomorrow,” concluded Dr. Marsh.

For more information, please call:

Dorothy Patterson, Program Coordinator, at (212) 263-3201

Milena Perez, Program Coordinator (for Spanish-speaking participants) at (212) 263-7651

The NYU Alzheimer’s Disease Center (ADC) joined the celebration of Hispanic Heritage by hosting for the first time in NYU’s history an all-Spanish Educational Seminar, “Alzheimer y Parkinson en la Comunidad Latina” (Alzheimer’s and Parkinson’s in the Latino Community). More than 75 attended the two and a half-hour event including healthcare professionals, family caregivers, patients, and individuals from the community. As part of the ADC Education Core in the planning and execution of the event was the Black and Latino Student Association (BALSAS). The program focused on the importance of getting an early evaluation and diagnosis, but also shared her personal journey as a caregiver for her parents.

Based on the success of this historical event, the ADC plans to make this an annual educational seminar to present a variety of topics of interest to the Spanish speaking community in the New York tri-state area.
age include a reduced amount of non-REM sleep, an earlier bed time and morning awakening, and an increase in awakenings during the night. After the age of 60, assuming one is in good health, further age-dependent sleep changes are, at most, modest. If any age-related sleep disruptions are present, however, they may be exacerbated by other co-existing illnesses. For example, sleep may be badly disrupted by conditions such as cardiovascular disease, cancer, nocturia (a condition in which you wake up during the night to urinate), chronic pain, diabetes, and depression. It is estimated that 40–70 percent of older adults experience chronic sleep problems, and about 50 percent of the cases are untreated by primary care physicians. Because of age-related physiological changes, the risk of acquiring such disorders increases as people grow older. The high prevalence of sleep issues and the decline in sleep quality in older adults, in combination with prior knowledge of the importance of sleep for brain health, has led to research on the relationship between cognition and sleep in the elderly population.

Sleep and Brain Neurodegeneration

Recently, scientists at the University of California, Berkeley (Mander BA, 2013) found a link between age-related brain atrophy and a decreased amount of non-REM sleep, a characteristic often seen in older adults. Findings from this study support the theory that age-related brain degeneration diminishes the amount of non-REM sleep obtained during the night. Because we know that non-REM sleep is important for memory formation and consolidation, the functional consequence of this reduction may be impairment in long-term memory. Similar recent work from Washington University (Holtzman DM, 2013), suggests that amyloid deposition in the cognitively normal pre-clinical stage of Alzheimer’s disease (AD) is associated with impaired sleep quality and frequent daytime napping. The link between sleep disorders and brain health is being further explored by teams of researchers at NYU and the Comprehensive Center on Brain Aging. Through a collaborative effort between the NYU Center for Brain Health, the NYU Sleep Disorders Center and the University of Gothenburg (Sweden), an exciting and novel study has been developed to test whether cognitively normal elderly with sleep-related breathing disorders, including sleep apnea, show biomarker evidence of preclinical AD. These disorders are seen in 30–80 percent of individuals aged 60+ years, compared to less than 10 percent at 40 years.

In our ongoing study, 75 percent of elderly participants have been shown to have sleep-related breathing disorders. In addition, a large portion of these subjects also show biological markers of tangle formation and decreased glucose metabolism in the brain. In a previous study, we also found an association between sleep loss and abnormally low levels of the protein fragment beta-amyloid in cerebrospinal fluid surrounding the brain. Low cerebrospinal beta-amyloid levels are an indication of high amyloid levels in the brain, a key hallmark of early AD. Because of these findings, we hypothesize that Sleep Disordered Breathing (SDB) may be associated with other hallmarks of Alzheimer’s, including atrophy (brain shrinkage) and cognitive decline. This suggests that SDB may cause damage to the brain that can have long-term consequences on cognitive abilities. One possible mechanism is temporarily depriving it of oxygen, promoting brain inflammation or using other toxic mechanisms. Altogether these studies suggest that late-life brain neurodegeneration and preclinical AD brain changes may lead to sleep disturbances, specifically SDB in the elderly. Alternatively, the opposite may also be true, and sleep abnormalities may actually be a risk factor for AD-related changes in the brain. These emerging theories make sleep a new key element for the promotion of healthy brain aging and a potential therapeutic target for AD prevention. The benefits of this learned knowledge about normal and pathological sleep have not been effectively passed on to the general public and practicing physicians, and sleep remains a “dormant” scientific interest. For this purpose, we are currently performing studies investigating these important questions in normal elderly by examining the long-term associations between sleep disorders and cognitive decline, using innovative techniques of neuroimaging and cerebrospinal fluid biomarkers for the detection of neurodegeneration. Our ultimate goal would be to launch a treatment study to prevent (or delay) AD in subjects with sleep disorders.
Creating a Crisis Kit for Emergencies

“When you are caring for a person with Alzheimer’s disease, even an expected hospitalization can feel like a crisis,” says Mary S. Mittelman, Dr. PH, Director of the Psychosocial Research and Support Program at the Comprehensive Center on Brain Aging, and Research Professor in the Department of Psychiatry at NYU Langone Medical Center. “Planning in advance will reduce the stress on you in an emergency and make it easier for both you and your relative to get through the experience.”

Dr. Mittelman and her colleague, Cynthia Epstein, LCSW, co-authored The Alzheimer’s Health Care Handbook: How to Get the Best Medical Care for Your Relative with Alzheimer’s Disease, In and Out of the Hospital. One of the chapters describes how to create a “crisis kit” that you can take to the hospital, so that important documents and personal items will be available.

What Should Be in the Crisis Kit?

Dr. Mittelman and Ms. Epstein recommend compiling the following information in an envelope or folder marked with your family member’s name and the words Important Information in bold letters.

- Your relative’s Social Security and Medicare numbers. Details about other medical insurance, including the name of the carrier and the policy number.
- A photocopy of insurance cards.
- Your relative’s date of birth and address.
- The names of other people to contact in an emergency if you are not available.
- Copies of advance directives (health care proxy and/or living will).
- A completed Profile of the Person with Memory Impairment. This is a form designed to describe your family member quickly and clearly to anyone who will be caring for him/her. It gives details about the way that person functions — if he/she can dress, bathe and feed independently; walk with or without assistance; and understand instructions. Equally important, it will guide those who do not know your relative in terms of what kinds of situations are likely to be upsetting and the best strategies to calm him/her down. A completed Profile includes medical history, medications, notes on allergies, a section describing interests, activities, normal daily routine, and much more. To obtain a Profile form, please visit the NYU Alzheimer’s Disease Center’s website: http://adc.med.nyu.edu/resources/clinical-tools

- A copy of your family member’s most recent EKG (electrocardiogram); you may ask the primary care physician to give you a copy for this purpose.

- A list of medications and dosages — including everything your family member takes, prescription and over the counter. It is especially important to list vitamins and other supplements as these can interact with other medicines and affect response to anesthesia, etc.

- In addition, the authors suggest including personal items in the crisis kit, so that at the time of an emergency you do not need to be concerned with packing a bag for the hospital. They recommend putting your relative’s name on all personal items and not packing anything of value. Following are suggested items:

  - Bathrobe and slippers.
  - Toiletries (toothbrush, toothpaste, hair brush, shampoo, soap).
  - Incontinence products.
  - Containers for glasses, hearing aid, dentures, etc.
  - Something to keep your relative occupied, such as a magazine, book or portable radio/CD or DVD player.
  - A picture of a familiar person or place that has special meaning to your relative.
  - A few dollars to buy a newspaper, magazine, or refreshment, which will contribute to your relative’s feeling of self-esteem.

Additionally, it is important to plan ahead of time who will accompany your relative to the hospital if you are at work or not available. Ideally, this person should be someone who lives nearby and who knows your relative well. Having the crisis kit prepared will be especially useful in this scenario. Make sure whoever is on standby knows where the crisis kit is, what it contains, and how to get in touch with your or another family member as soon as possible. If the information about advanced planning for medical decisions is contained in the crisis kit, whoever takes your relative to the hospital will have access to it and be able to convey it to the appropriate hospital personnel.

The authors also suggest thinking through who will stay with your relative while he/she is in the hospital. Persons with dementia need extra supervision and personal care during their hospital stay. This doesn’t mean that you need to stay with your relative at all times. Instead you should try to make arrangements to have other family members come in and share the caring, or hire someone, if necessary. “It is perfectly fine to do this,” says Ms. Epstein. “No single person can do all the caregiving — you will need backup.”

Lastly, make plans for someone to take over as many of your responsibilities as possible — care of pets, plants, household, etc. — if your relative requires a hospital stay. This will enable you to focus on the task at hand without additional worries. “Of course, you cannot think of everything in advance. There will always be the unexpected. But the more preparations you can make, the more confident you will feel in your ability to help your family member with Alzheimer’s disease get through a medical crisis,” adds Dr. Mittelman.

Dr. Mittelman and the clinicians on her staff have been developing, conducting, and evaluating psychosocial interventions to support people with Alzheimer’s disease and their family members for more than two decades. She has co-authored several books with Ms. Epstein and has published extensively in peer-reviewed journals. The book, How To Get the Best Medical Care for Your Relative with Alzheimer’s Disease In and Out of the Hospital, is soon to be re-published.

Planning in advance for a medical emergency will reduce the stress on you and make it easier for both you and your relative to get through the experience.
Is Mild Cognitive Impairment the first step toward an Alzheimer’s diagnosis?

Not necessarily. As we age, some of us may have more memory problems than others. This condition is referred to as Mild Cognitive Impairment (MCI). If someone has MCI this usually means they have mild problems with thinking and memory that do not generally interfere with everyday activities. Those with MCI can progress to Alzheimer’s disease over time. Not everyone with MCI develops dementia, though people with MCI are at higher risk than similar aged people without these symptoms.

Is there a link between Down Syndrome and Alzheimer’s?

Those affected by Down syndrome, also called Trisomy 21, have a greatly increased risk of developing Alzheimer’s disease. Studies suggest that more than 75 percent of those with Down’s, aged 65 and older, have Alzheimer’s disease. This represents nearly six times the percentage of people in this age group who do not have Down syndrome. Advancing age also increases the chances that a person with Down syndrome will develop Alzheimer’s. Current research shows that the extra gene “dosage” caused by having an abnormal third copy of chromosome 21, and particularly the extra copy of the “amyloid” gene, are the principal factors responsible for the very high risk for Alzheimer’s in people with Down syndrome.

NYU Langone Medical Center
Comprehensive Center on Brain Aging
145 East 32nd Street, 2nd & 5th Floors
New York, NY 10016
T: 212.263.0731
E: info.aging@nyumc.org
W: aging.med.nyu.edu

Editorial Staff
Camy Sleeman, Editor in Chief/Copy Editor
Daniel Raabe, Art Director
Alie Freund, Editorial Associate

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Q & A With Dr. Nixon

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