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ALZHEIMER'S DISEASE RESEARCH

HEARING

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED EIGHTH CONGRESS

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ALZHEIMER'S DISEASE RESEARCH

THURSDAY, MARCH 23, 2004

U.S. SENATE,
SUBCOMMITTEE ON LABOR, HEALTH AND HUMAN SERVICES, AND EDUCATION, AND RELATED AGENCIES,
COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 9:33 a.m., in room SD–G50, Dirksen Senate Office Building, Hon. Mike DeWine presiding.

Present: Senators DeWine and Harkin.

OPENING STATEMENT OF SENATOR MIKE DE WINE

Senator DEWINE. Good morning. This morning I would like to welcome the members of the Alzheimer's Association and to congratulate all of you on the tremendous progress that you have made in the prevention, diagnosis, and treatment of Alzheimer's disease. We are pleased to be part of your 16th Public Policy Forum and to kick-off your Capitol Hill Day with this hearing this morning.

We are honored to have before the subcommittee a distinguished panel of scientists, advocates and patients to discuss Alzheimer's disease. Senator Arlen Specter wanted me to express his regret that he has a scheduling conflict and may be joining us a little later today. He wanted me to convey to you his appreciation for your tireless efforts, tireless efforts on behalf of Alzheimer's patients and certainly their families.

In our Nation today there are approximately 4.5 million Americans with Alzheimer's disease. In addition to the unbelievable human cost, there is, of course, the economic cost, a cost of over $100 billion every year. For years scientists have been predicting that the number of individuals with the disease will steadily rise and now a recent study in dictates that the Alzheimer's epidemic will be even worse than previously thought. The study predicts the prevalence of Alzheimer's disease will increase 27 percent by the year 2020, 70 percent by 2030 and nearly 300 percent by 2050, when as many as 16 million Americans could be stricken. If these predictions become a reality scientists agree the disease could destroy our health care system and bankrupt Medicare and Medicaid, not to mention what this will do to our families. In my home State of Ohio alone there are approximately 212,000 people with Alzheimer's disease today. Based on population growth, unless science finds a way to prevent or delay the onset of this disease that number will skyrocket to 308,000 by the year 2025.

PREPARED STATEMENT

The Federal Government's involvement in Alzheimer's disease research began in 1976, when three of the Institutes at the National Institutes of Health invested a total of $3.8 million in research into finding the cause of the disease. Today, 19 Institutes have Alzheimer's projects as part of their research agenda and it is projected that $698.9 million will be spent on the disease in fiscal year 2005. The National Institute on Aging funds a network of approximately 30 Alzheimer's disease research centers around the country, one of which is operated by Case Western Reserve University Hospitals of Cleveland. The $6.5 billion that the Federal Government has invested in Alzheimer's disease research over the past 29 years has resulted in tremendous progress. We have seen great improvements in diagnostic tools that can help providers diagnose the disease with more than 90 percent accuracy. Genes have been identified that may put people at increased risk for developing Alzheimer's disease and medications are now available that can help to alleviate the symptoms of disease. This subcommittee is proud of our investment in Alzheimer's research. These funds are not only important for our loved ones but are a critical investment in the future of America.

[The statement follows:]

PREPARED STATEMENT OF SENATOR MIKE DEWINE

The Subcommittee will come to order. This morning I would like to welcome the members of the Alzheimer's Association and congratulate you on the tremendous progress that you have made in the prevention, diagnosis, and treatment of Alzheimer's disease. I am pleased to be a part of your 16th public policy forum and to kick off your Capitol Hill Day with this hearing.

We are honored to have before the Subcommittee a distinguished panel of scientists, advocates, and patients to discuss Alzheimer's disease. Senator Specter wanted me to express his regret that he has a scheduling conflict and may be joining us a little later. He wanted me to convey to you his appreciation for your tireless efforts on behalf of Alzheimer's patients and their families.

In our Nation today, there are approximately 4.5 million Americans with Alzheimer's disease, costing the economy over $100 billion annually. For years, scientists have been predicting that the number of individuals with the disease will steadily rise. And now, a recent study indicates that an Alzheimer's epidemic will be even worse than previously thought. The study predicts the prevalence of Alzheimer's disease will increase 27 percent by 2020, 70 percent by 2030, and nearly 300 percent by 2050, when as many as 16 million Americans will be stricken. If these predictions become a reality, scientists agree that the disease could easily destroy our health care system and bankrupt Medicare and Medicaid.

In my home state of Ohio, alone, there are approximately 212,000 people with Alzheimer's disease. Based on population growth, unless science finds a way to prevent or delay the onset of this disease, that number will skyrocket to 308,000 by 2025!

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This Subcommittee is proud of our investment in Alzheimer's. These funds are not only important for our loved ones, but are a critical investment in the future of America.

STATEMENT OF DR. RICHARD J. HODES, DIRECTOR, NATIONAL INSTITUTE ON AGING, NATIONAL INSTITUTES OF HEALTH, DEPARTMENT OF HEALTH AND HUMAN SERVICES

Senator DEWINE. This subcommittee is now pleased to hear from our first witness. Dr. Richard Hodes is the Director of the National Institute on Aging at the National Institutes of Health. Since 1993, Dr. Hodes has served as the Director of the National Institute on Aging. He has also held several other posts at the NIH, including clinical investigator at the National Cancer Institute, a program coordinator for the U.S.-Japan Cooperative Cancer Research Program and Deputy Chief of the Cancer Institute's Immunology Branch. He is a graduate of Yale University and received his M.D. from Harvard Medical School.

Doctor, thank you very much for joining us and you may proceed.

Dr. HODES. Senator DeWine, thank you for the opportunity to join this hearing on Alzheimer's disease, a topic of great interest and concern to us all. You have well summarized the burden that Alzheimer's provides and presents to individuals, to families, to the health care system and in fact to society as a whole. Fortunately, these stark numbers do not tell the whole story and in fact the progress in Alzheimer's research offers promise to develop effective methods of treatment, to delay, ultimately to prevent Alzheimer's disease.

Research from the laboratory, from clinical studies, from epidemiologic studies have continued to point towards clues of the underlying risk factors for Alzheimer's disease. We know that age is an outstanding example of these risk factors such that by age 85 and older nearly half of the individuals at that age will be affected. Understanding who is at high risk, who is not and why, is a critical aspect of identifying the process and developing means to intervene to alter it. We understand at the level of genetics a number of genes which cause early-onset of familial Alzheimer's disease and we've begun to learn more about those genes which are involved in the more common late-onset examples of Alzheimer's disease. A year ago we mentioned an Alzheimer's disease Genetics Initiative and I'm pleased to report this year that initiative is well underway. The National Institute on Aging, together with the very critical collaboration of the Alzheimer's Association and dedicated patients and their families have moved significantly towards the goal of accruing a larger number of individuals necessary to identify genes, understand risk factors and develop new targets for intervention.

DIABETES

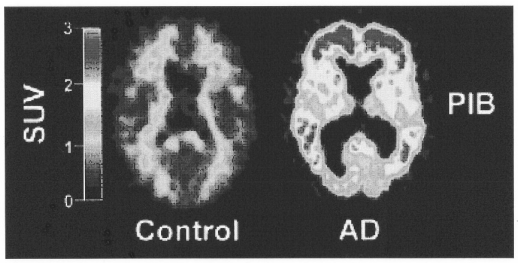
In an effort to understand modifiable risk factors for Alzheimer's disease, it has been determined that diabetes, a condition which affects some 17 million Americans, increases the risk of dementia. It appears, however, from a recent study that, among older women with diabetes, those who have had treatment to control glucose have a decreased risk of Alzheimer's disease and so NIA-supported investigators working with the National Heart, Lung and Blood Institute's Action to Control Cardiovascular Risk in Diabetes (AC-

CORD) study, are looking to determine whether aggressive treatment to control blood sugar will effectively prevent Alzheimer's disease in individuals with diabetes.

NEUROIMAGING

Brain imaging has been a modality that's been critical in providing a window to the brain, understanding both structure and function, the changes which precede and accompany Alzheimer's disease. However, until recently we have been unable to actually image the lesion specific to Alzheimer's. In the past year there has been a report of a very important element of progress toward this end, illustrated in the first slide displayed on the screen here.

PET Imaging of Amyloid Deposits in Alzheimer's Disease vs Normal Controls



PET imaging with a novel tracer, Pittsburgh Compound-B (PIB), can provide quantitative information on amyloid deposits in living subjects.

Source: Klunk, et al. *Ann Neurol* 2004: 55:306-319.

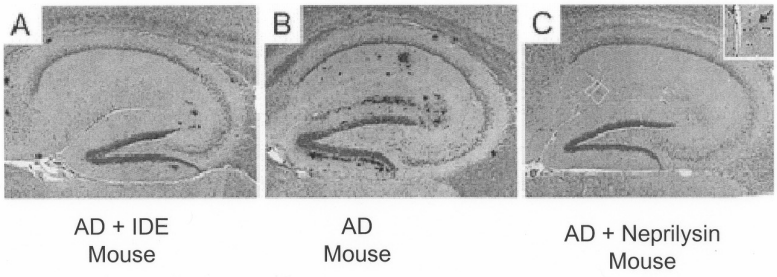
This is the result of studies identifying a novel tracer called Pittsburgh Compound B that appears to bind specifically to and therefore can help imaging of the amyloid lesions in the brain. The ability to identify such lesions will allow for earlier diagnosis and if this application proves to be valid, in fact may allow us to monitor the course of interventions designed to treat and even prevent disease.

We talked a year ago about a Neuroimaging Initiative and again I'm pleased to report that this Initiative is now well underway with applications received under peer review and if peer review is indeed positive with the ability to begin the study within the current year. This is a really novel and landmark collaboration; it involves NIH, the Food and Drug Administration, the Center for Medicare and Medicaid Services, private sector pharmaceutical industries and imaging industries as well as the very important collaboration of the Alzheimer's Association. Its goal is to identify imaging markers that will allow early diagnosis of the disease and perhaps even more importantly allow us to monitor the progress in response to interventions, allowing us to more effectively, more rapidly and

more cost-effectively develop interventions to treat and prevent disease.

The development of treatments for Alzheimer's disease is based on clues that come from laboratory as well as epidemiologic studies and among the examples of newer approaches towards treating the lesions of Alzheimer's disease is that illustrated in this next figure, which uses a very important mouse model of Alzheimer's disease.

Prevention of Amyloid Plaques in a Mouse Model of Alzheimer's Disease



Source: Selkoe et al. *Neuron* 2003; 40: 1087-1093.

What's shown here in the middle panel, pointed to by the arrow, is an example of the lesions, which are actually amyloid plaques in this mouse model of Alzheimer's disease, distributed in an area that's very similar to those which are seen in human patients with the disease. And the panels to either side are the result of expressing in these mice an increased level of proteins, in one case insulin-degrading enzyme, the other neprilysin, two naturally occurring compounds, and an example of the in which natural defenses can be mobilized to decrease, reverse, even prevent the accumulation of amyloid lesions. This provides an example, a model for the way in which such laboratory findings can be translated ultimately into interventions for humans.

Finally, at the same time that we work towards developing cures and prevention for Alzheimer's itself, we retain a focus on the important population of care givers who take care of those currently afflicted with Alzheimer's disease. And so a clinical trial called REACH, Resources for Enhancing Alzheimer's Care Giver Health, is targeted at helping the status of care givers who all too often themselves suffer emotionally, physically and economically and the outstanding work they do to care for those with Alzheimer's.

PREPARED STATEMENT

It is not possible to be precise in predicting exactly which of these research directions will most quickly produce the final out-

come we desire, treatment, delay and ultimately prevention, but the pace of research summarized in some examples here provides hope greater than ever before that we will, in fact, find these interventions in time to spare many from the affliction of Alzheimer's disease.

I again thank you for the opportunity to be here and welcome any questions that you may have.

[The statement follows:]

PREPARED STATEMENT OF DR. RICHARD J. HODES

Senator Specter and Members of the Committee: Thank you for inviting me to appear before you today to discuss Alzheimer's disease (AD), an issue of interest and concern to us all. I am Dr. Richard Hodes, Director of the National Institute on Aging (NIA), the lead federal agency for Alzheimer's disease research. I am delighted to be here today to tell you about the progress we are making toward understanding, treating, and preventing AD.

As you know, AD is a devastating condition with a profound impact on individuals, families, the health care system, and society as a whole. Approximately 4.5 million Americans are currently battling AD, with annual costs for the disease estimated to exceed $100 billion.[1] Moreover, the rapid aging of the American population threatens to increase this burden significantly in the coming decades: Demographic studies suggest that if current trends hold, the annual number of incident cases of AD will begin to sharply increase around the year 2030, when all the baby boomers (born between 1946 and 1964) will be over age 65. By the year 2050, the number of Americans with AD could rise to some 13.2 million, an almost three-fold increase.[2]

But these numbers, however stark, do not tell the whole story. Although AD remains a major public health issue for the United States, we have made, and are continuing to make, dramatic gains in our ability to understand and diagnose AD that offer us the hope of preventing and treating the disease, to reverse the current trends. As a part of our Government and Performance Results Act, NIH has developed a long-term, high-risk goal of identifying at least one clinical intervention that will delay the progression, delay the onset, or prevent Alzheimer's disease.

RISK FACTORS

Many Americans wonder whether they or their loved ones are at risk of developing AD. Sadly, as they age, many of them will be. The risk of AD increases dramatically with age, with nearly half of all individuals over age 85 being diagnosed.[3] Many older Americans struggle with mild cognitive impairment (MCI), a condition that is frequently a precursor to AD; in one recent population-based study of cognition in the elderly, 22 percent of participants over 75, and 29 percent of those over 85, were diagnosed with MCI.[4] Determining who is at high risk of developing AD and who is not—and why—will enable us to identify potential targets for preventive intervention, as well as those individuals who might benefit most from such interventions.

Through laboratory, clinical and population-based research, we have identified a number of risk factors for AD, including both genetic and lifestyle factors. We already know of three major genes for early-onset disease and have identified a major risk factor gene, ApoE4, for the more common late-onset disease. Recent findings are enabling us to close in on several others, thought to be on chromosomes 9, 10, and 12.

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[1] Data from the Alzheimer's Association. See also Ernst, RL; Hay, JW. "The U.S. Economic and Social Costs of Alzheimer's Disease Revisited." American Journal of Public Health 1994; 84(8): 1261–1264. This study cites figures based on 1991 data, which were updated in the journal's press release to 1994 figures.

[2] Hebert, LE; Scherr, PA; Bienias, JL; Bennett, DA; Evans, DA. "Alzheimer Disease in the U.S. Population: Prevalence Estimates Using the 2000 Census." Archives of Neurology August 2003; 60 (8): 1119–1122.

[3] Data from the Alzheimer's Association. See also Evans, DA; Funkenstein, HH; Albert, MS; et al. "Prevalence of Alzheimer's Disease in a Community Population of Older Persons: Higher than Previously Reported." *JAMA* 1989; 262(18): 2552–2556.

[4] Lopez O, Jagust WJ, DeKosky ST, Becker JT, et al. "Prevalence and Classification of Mild Cognitive Impairment in the Cardiovascular Health Study Cognition Study." *Arch Neuro* 60: 1385–1389, 2003.

However, neuroscientists have become increasingly interested in a specific set of genes that may influence not whether, but when, a person might develop symptoms of neurodegenerative disease. Delaying the onset of AD symptoms by even five years could greatly reduce the numbers of people who will have the disease, as well as providing additional cognitively-healthy time to those who will eventually be diagnosed.

Recently, NIH-supported investigators found a gene on chromosome 10 that they believe influences the age of onset of both Alzheimer's disease and Parkinson's disease. Using a novel method to match the genes of people affected with these diseases with the age at which study participants started developing symptoms, the scientists found that one gene, GSTO1, was significantly associated with late onset of both Alzheimer's and Parkinson's. This important work gives us new clues to the role of genetics in the timing of late-life forms of these devastating neurodegenerative diseases.

Last year this Committee heard about the NIA's AD Genetics Initiative, a program to accelerate the pace of AD genetics research by creating a large repository of DNA and cell lines from families with multiple AD cases. The goal of this initiative is to develop strategies for identifying the additional late-onset AD (LOAD) risk factor genes, associated environmental factors, and the interactions of genes and the environment. The NIA's AD Genetics Initiative will intensify sample collection and encourage data sharing by providing access to a national repository to qualified investigators.

This year, we have launched several well-integrated components of the Genetics Initiative. Mechanisms to efficiently identify and share large numbers of samples for AD genetic analysis have been developed through the recently-enlarged National Cell Repository for AD (NCRAD), and eighteen of the NIA's Alzheimer's Disease Centers (ADCs) have received supplemental funding to recruit new family members for participation. Uniform standards for sample collection have also been developed.

In order to publicize the initiative, the NIA Office of Communications and Public Liaison, together with its Alzheimer's Disease Education and Referral Center, Columbia University, and NCRAD, partnered with the Alzheimer's Association to conduct focus groups and develop materials to publicize the initiative and help recruiting efforts. These publicity materials, including a workbook, CD ROM, fact sheet, and brochure were distributed at a recent meeting of all Alzheimer's centers and have been sent to ADCs and Alzheimer's Association chapters to further recruitment efforts.

As of Late January, over 200 families, of the approximately 1,000 needed, have been evaluated and are now enrolled in the study, and over 800 blood samples have been logged at NCRAD. Working groups have been established which are helping to determine the most useful phenotypic data to be included in the data bank along with the biological samples. A major goal is the long-term follow-up of individuals participating in the study.

Type 2 diabetes, which, according to the American Diabetes Association, affects approximately 17 million Americans, is another potential risk factor for cognitive decline and AD. In a recent study, researchers found that compared to older non-diabetic women, older women with type 2 diabetes were about 30 percent more likely to score poorly on tests of cognitive function, and that the risk increased with the duration of their condition. However, the diabetic women in the study who took glucose-lowering pills had a risk similar to non-diabetic women. Recognizing the potential link between type 2 diabetes and cognitive decline, NIA researchers are currently participating in an offshoot of the National Heart, Lung, and Blood Institute's Action to Control Cardiovascular Risk in Diabetics (ACCORD) study. ACCORD evaluates whether more intensive glucose, blood pressure and lipid management can reduce cardiovascular disease in people with diabetes; the aim of this sub-study, ACCORD-MIND, is to test whether the rate of cognitive decline and structural brain change in people with diabetes treated with standard care guidelines is different than in people with diabetes treated with intensive care guidelines. Recruitment for the ACCORD study began in January 2003, and we anticipate that 2,800 people will participate in ACCORD-MIND.

IMAGING

Powerful imaging techniques, including positron emission tomography (PET) and magnetic resonance imaging (MRI), are opening a window into the brain, allowing us to visualize not only anatomical structures but also functional processes and activities at the molecular level. The refinement of these techniques continues to have a profound effect on all areas of AD research.

For example, improvements in brain imaging, coupled with the development of more sensitive cognitive tests, are enabling us to diagnose AD in the research setting with greater precision than ever before, despite the fact that there remains no scientifically validated method to visualize AD's characteristic amyloid plaques and neurofibrillary tangles in a living human. However, even this may be changing. Researchers have recently developed the first radiotracers, including a molecule called Pittsburgh Compound-B, that facilitate visualization of amyloid deposition in living AD patients using PET scans. Although further research is needed, these molecules may eventually offer us a powerful and accurate diagnostic tool for the disease.

Visualization of brain structures and activities may also enable us to identify people at risk of developing the disease even decades before the onset of symptoms. In a recent study, investigators used positron emission tomography (PET) to examine the brains of asymptomatic young adults (ages 20–39) who were carriers of the APOE-e4 gene, a common susceptibility gene for late-onset AD. Middle-aged carriers of this gene are known to have abnormally low rates of metabolism in the same brain regions as patients with AD; in this study, the investigators found the same brain abnormalities in the younger carriers of the gene. The precise link between the APOE-e4 gene, the altered metabolism, and AD remains unknown, and more research is needed on this provocative finding, but it may offer important clues to AD's etiology and perhaps even a target for future prevention efforts.

Advances in imaging also have the potential to speed our basic understanding of the disease—for example, to determine which pathological features of AD (plaque and tangle development, cell death, loss of connections between neurons) best correlate with cognitive loss. Improved imaging techniques may further enable us to visualize the effects of therapeutic interventions more rapidly and accurately, with the potential for making AD clinical intervention trials smaller, faster and more affordable.

Last year, we told this Committee about our plans for a Neuroimaging Initiative, a longitudinal, prospective, natural history study of normal aging, mild cognitive impairment, and early AD to evaluate neuroimaging techniques such as MRI and PET, as well as other biological markers. This year, I am pleased to tell you that work on the Initiative is underway. We have issued a Request for Applications and have received submitted applications. In addition, we have secured the participation of several key industry participants. Awards will be made this summer, with work on the project to begin shortly thereafter. The study objectives are to:

—Identify the best markers for early diagnosis of AD
—Identify markers for following disease progression and monitoring treatment response
—Develop surrogate endpoints for clinical trials
—Decrease time and expense of drug development
—Establish methods for the collection, processing, and distribution of neuroimaging data in conjunction with other biological, clinical, and neuropsychological data

The initiative is planned as a partnership among the NIA/NIH, academic investigators, the pharmaceutical and imaging equipment industries, the Food and Drug Administration, the Centers for Medicare and Medicaid Services, and the NIH Foundation, with participation from the Alzheimer's Association and the Institute for the Study of Aging. The clinical, imaging, and biological data and samples will be made available, with appropriate safeguards to ensure participant privacy, to all scientific investigators in the academic and industrial research communities.

PREVENTION AND TREATMENT

As imaging and laboratory studies tell us more about AD's pathology, we are identifying a number of novel molecular characteristics that may prove to be targets for treating the disease or preventing it altogether. For example, enhancing the brain's self-protective capacity by inducing production of naturally-occurring proteins that destroy beta amyloid shows promise in mice that have been genetically altered to produce amyloid plaques. In a recent study, boosting production of two proteins, insulin-degrading enzyme and neprilysin, in neurons of these mice reduced brain amyloid levels, slowed or even prevented amyloid plaque formation, and prevented their premature death.

In this endeavor, animal models—particularly transgenic mice, but also worms, dogs, and even non-human primates—are invaluable research resources for studying age-related and disease-related changes in the brain and for testing promising interventions. For example, investigators recently studied the effects of an enriched diet on age-related cognitive decline in dogs, a model that mimics the behavioral and brain pathological declines of older humans more closely than rodent models. Young

and old dogs were given a series of baseline cognitive tests. Half of each age group then remained on a standard diet, while the other half of each age group was placed on a diet enriched with antioxidants and mitochondrial co-factors, which are thought to improve nerve cell energy and efficiency and decrease production of molecules that contribute to oxidative damage in the brain. Animals remained on their respective diets for six months and then were assessed again for cognitive performance on a variety of tasks. When tested, old dogs on the control diet learned more slowly than the young dogs and made significantly more errors; however, when compared to the old animals on the control diet, old animals on the enriched diet showed significantly better learning, although not to the level of the younger animals. The success of this simple, cost-effective intervention has significant implications for dietary interventions that might lessen or even prevent some of the cognitive decline seen with age and with disease; a pilot trial of similar antioxidants in older Down syndrome patients who have developed AD is currently under way.

In fact, NIA is currently supporting 25 AD clinical trials, including large-scale prevention trials, which are testing agents such as hormones, anti-inflammatory drugs, statins, homocysteine-lowering vitamins, and anti-oxidants for their effects on slowing progress of the disease, delaying AD's onset, or preventing the disease altogether. Other intervention trials are assessing the effects of various compounds on the behavioral symptoms (agitation, aggression, and sleep disorders) of people with AD.

CAREGIVING

Most of the over 4 million Americans with AD today are cared for outside the institutional setting by an adult child or in-law, a spouse, another relative, or a friend. Caregivers frequently experience significant emotional stress, physical strain, and financial burdens, yet they often do not receive adequate support for their remarkable efforts. Several recent studies have explored the problems faced by caregivers of AD patients, and have sought to design interventions to reduce their burdens. Although family caregiving has been extensively studied, there has been less research on the impact of end-of-patient-life on caregivers who are family members of persons with dementia or to the caregivers' responses to the death of the patient. As part of the NIA's Resources for Enhancing Alzheimer's Caregiver Health (REACH) study, a multisite randomized clinical intervention of 1,222 caregiver and recipient dyads, investigators assessed the type and intensity of care provided by 217 family caregivers to persons with dementia during the year before the patient's death, as well as the caregivers' responses to the death. Additionally, this group was compared to the 180 caregivers who institutionalized their family member. The researchers found that the in-home caregivers reported tremendous levels of stress in the year leading up to the care recipient's death, and that levels of caregiver depression "spiked" immediately following the care recipient death. However, the caregivers in this study demonstrated tremendous resilience: Within fifteen weeks of the recipient's death, depression returned to pre-death levels, and within one year, depression was significantly lower than prior to the care recipients' death. Importantly, caregiver depression for those placing their loved ones in an institution was slightly higher both pre- and post-death than for those caring for the patient at home. These findings suggest that interventions for caregiver support are particularly critical in the periods immediately prior to and immediately after the patient's death.

The NIA's REACH Project, a large, multi-site intervention study of family caregivers of AD patients, was designed to characterize and test promising interventions for enhancing family caregiving. Nine different social and behavioral interventions were tested, and investigators found that the combined effect of certain interventions alleviated caregiver burden, and that certain specific interventions, such as structured family therapy, reduced depression. The second phase of the study, REACH II, combines elements of the diverse interventions tested in REACH into a single multi-component psychosocial intervention and is ongoing.

CONCLUSION

It is difficult to predict the pace of science or to know with certainty what the future will bring. However, the progress we have already made will help us speed the pace of discovery, unravel the mysteries of AD's pathology, and develop safe, effective preventions and treatments, to the benefit of older Americans.

Thank you for giving me this opportunity to share with you our progress on Alzheimer's disease. I would be happy to answer any questions you may have.

Senator DEWINE. Doctor, I think what we are going to do is to ask you to wait. We have several other Senators who, I know, want

to ask questions. And if we could excuse you just for a moment we are going to put our second panel on and then we will have your questions. Thank you very much.

Let me introduce our second panel at this point. Sheldon Goldberg joined the Alzheimer's Association as its present chief executive officer on December 1, 2002. Previously Mr. Goldberg was the president and CEO of the Jewish Home and Hospital in New York. He holds a B.S. in Educational Psychology from the University of Wisconsin.

Denis Kroucik was an electronics repairman at a steel plant in Lorraine, Ohio, until he was diagnosed with Alzheimer's disease in 2002 at the age of 56. He is currently taking one of the five available Alzheimer's drugs and is participating in an Alzheimer's study at the Memory and Aging Center at the University Hospitals of Cleveland. He and his wife Barbara have six children and five grandchildren and they reside in O'Leary, Ohio.

Johnny Orr remains the winningest coach in Iowa State University history, with 218 wins in his 14-season career as Iowa State University's men's basketball coach. Prior to his career in Iowa he was the men's basketball coach at the University of Michigan. Mr. Orr was a two-time All-American at Beloit College in Wisconsin and played for the NBA, St. Louis Bombers, and Waterloo Hawks. He is accompanied by his wife, Romie, who was diagnosed with Alzheimer's disease in October 2002. Mrs. Orr was a physical education teacher prior to her retirement in 1980. They have been married for 55 years and have four daughters and six grandchildren. They reside in West Des Moines, Iowa.

Phyllis Campbell is the president of the Urban League of Lancaster County, Pennsylvania. She received her Bachelor's Degree from Morgan State University and her Master's Degree from the University of Pennsylvania.

David Snowden is a professor in the Department of Neurology in the College of Medicine in the Sanders-Brown Center on Aging at the University of Kentucky. He is a director of the Nun Study, a longitudinal study which looked at the health and aging of 678 members of the School Sisters of Notre Dame. Dr. Snowden earned his Ph.D. from the University of Minnesota. He is accompanied by Sister Kunkel. Sister was educated by the School Sisters of Notre Dame from elementary school through college. She received her Bachelor's Degree from the College of Notre Dame of Maryland, her Master's Degree from Boston College. She joined the School Sisters in September of 1932. In 1990 she entered the Nun Study. Dr. Snowden devotes an entire chapter of his book, "Aging With Grace," to Sister and her life's story. In that chapter she describes herself as having two good traits, "I am alert and I am vertical."

Shelley Fabares is a National Board Member of the Alzheimer's Association. She starred as a television newscaster in television's hit comedy series, "Coach." She is also well-known for her starring roles in "One Day at a Time" and "The Donna Reed Show." Today she dedicates much of her time to the National Alzheimer's Association. She became involved in the organization after caring for her mother throughout her 8-year battle with the disease. She has testified before this subcommittee in 1990, 1992 and 1993, and we

certainly welcome her back as well. We welcome all of our witnesses.

STATEMENT OF JOHNNY ORR, HUSBAND OF ALZHEIMER'S PATIENT, WEST DES MOINES, IA

ACCOMPANIED BY ROMIE ORR, ALZHEIMER'S PATIENT

Senator DEWINE. Let me start, from my left and your right, we will start with Mr. Orr. Pass the microphone down and make sure it is on. You have to push it down.

Mr. ORR. Can you hear me?

Senator DEWINE. Very well, very well.

Mr. ORR. Good morning, Senator DeWine and members of the subcommittee. Romie and I are honored to be in Washington and are especially glad to see our friend, Senator Harkin. We haven't seen him yet but I'm sure he's going to be here.

Senator DEWINE. He is coming.

Mr. ORR. Romie and I are here today to do whatever we can to help the fight against Alzheimer's. Like almost everyone else in this hearing room, we have been touched directly by Alzheimer's disease. We initially became Alzheimer's advocates after a very good friend of ours lost his wife. She had Alzheimer's for 30 years. In the Fall of 2002, I was honored to be selected as a celebrity chair of the Alzheimer's Association Greater Iowa Chapter Memory Walk. And about a month after the Memory Walk, Romie was diagnosed with Alzheimer's. She was 73. This diagnosis was surprising since Romie was in great shape and didn't appear to have any health problems. She exercises regularly and had maintained an active lifestyle since retiring from her job as a physical education teacher in 1980. There was no history of Alzheimer's in her family. Although two of our daughters noticed that Romie occasionally had difficulty recalling names or events, we both assumed that that memory lapse was a part of the normal aging process. We mentioned the memory problems to Romie's physician at her annual physical in October 2002. A memory test indicated signs of dementia, and we were referred to an Alzheimer's specialist, Dr. Bender. After additional tests Dr. Bender concluded that Romie was in the early stages of Alzheimer's disease. Dr. Bender immediately started Romie on one of the Alzheimer's drugs currently available, vitamins E and C and Ginkgo Biloba. Dr. Bender also encouraged Romie to keep exercising, watch her diet, in addition to doing other activities to stimulate her brain.

It has been about 18 months since her diagnosis and Romie is doing quite well. Her Alzheimer's seems to be progressing slowly and although she no longer drives she still cooks, buns once in awhile, does laundry and maintains the finances for one of our three homes. She plays golf, although less often than she has in the past, and she has no trouble keeping up with our six grandchildren. She reads a lot, continues to do our holiday cards, participates in our family gold tournament each Summer, we go out to dinner regularly with friends and travel between our homes in Iowa and Florida. She still loves basketball as much as I do and we're looking forward to attending the NCAA championship next week in San Antonio. We haven't missed a tournament in 48 years.

We've learned a lot about Alzheimer's disease since Romie was diagnosed and we have many reasons to be hopeful. Significant advances in medical research have resulted in new and promising treatments. The Alzheimer's drug that Romie takes is one of five prescriptions available in pharmacies today. Improved diagnostic tools are helping doctors diagnose Alzheimer's earlier and with greater accuracy, allowing individuals like Romie to maintain their quality of life as long as possible. Scientists are engaged in additional research to develop strategies for slowing this progression. The goal of a world without Alzheimer's disease is within reach. In order to realize a future without Alzheimer's, we must ensure that the Federal Government maintains its commitment to fund promising research.

Romie and I thank this committee, and especially you, Senator Harkin, for your outstanding leadership in the fight to increase funding for research at the National Institutes of Health. We recognize that your challenge this year is especially difficult and pledge to do whatever we can to help you continue the momentum that has brought us to this historic point. For our children and grandchildren, and for the families of people sitting in this room, we cannot afford to back down now. Alzheimer's is a tough opponent but we can beat it. We have recruited a dream team of the best scientists and we have a game plan that will lead us to victory. In order to execute this plan we need an additional $40 million in funding this year for clinical trials to identify treatments that can slow or halt the onset and progression of Alzheimer's.

On behalf of our entire family, Senator DeWine, we thank you for giving us the opportunity to be here today. And Romie would now like to say a few words to conclude our testimony.

Senator DEWINE. Good. Thank you very much. Mrs. Orr.

SUMMARY STATEMENT OF ROMIE ORR

Mrs. ORR. Good morning.

Senator DEWINE. Good morning.

Mrs. ORR. I'm here today because I'm the patient, I'm the one that has it. My diagnosis, I was lucky. You know, you've got to get a diagnosis first. And that's not easy because there's no finite way to say this one has it, this one doesn't. Charles Coughlin and Robert Bender, both of Des Moines, together diagnosed me with my Alzheimer's disease. Our two youngest daughters went with their dad and I to see these doctors and they were right there when we got the message. But my family is represented today even though neither of the doctors could be here. You've met my husband John, our daughter Jennifer Davis of Lemont, Illinois, daughter Leslie Boylen and her daughter, Rachel, Laurens, Iowa, daughter Becky Montgomery and her son Jamie of Anthon, Iowa.

PREPARED STATEMENT

When my Alzheimer's diagnosis was made I didn't feel my life had fallen apart. I decided, as Johnny told you, not to drive but I can swim, I can golf and because of my strong medicine I do walk with the craziest gait you ever saw. It's a very wide stride so I can keep my balance and not fall over. I don't want any other Alzheimer's patient to stop living or to be afraid or depressed or need-

ing to change their life's goals. I may or may not be a typical patient but I am lucky. With good doctors, good medicine and a desire to help others with this disease. I'm here to ask Congress to help their constituents legislation that will help find that help.

Do you have any questions?

Senator DEWINE. Mrs. Orr, thank you very much.

Mrs. ORR. Thank you very much for having me.

[The statement follows:]

PREPARED STATEMENT OF JOHNNY ORR

Good morning Senator Harkin, Senator DeWine and members of the Subcommittee. Romie and I are honored to be in Washington and are especially glad to see our good friend, Senator Harkin, once again.

Romie and I are here today to do whatever we can to help in the fight against Alzheimer's. Like almost everyone else in this hearing room, we have been touched directly by Alzheimer's disease. We initially became Alzheimer advocates after a very good friend of mine lost his wife to the disease. In the fall of 2002, I was honored to be selected as the celebrity chair of the Alzheimer's Association Greater Iowa Chapter Memory Walk. About a month after the Memory Walk, Romie was diagnosed with Alzheimer's disease. She was 73 years old.

The diagnosis was surprising since Romie was in great shape and didn't appear to be having any health problems. She exercised regularly and had maintained an active lifestyle since retiring from her job as a physical education teacher in 1980. There was no history of Alzheimer's disease in her family. Although two of our daughters noticed that Romie occasionally had difficulty recalling names or events, we both assumed that the memory lapses were part of the normal aging process. We mentioned the memory problems to Romie's general physician at her annual physical in October 2002. A memory test indicated signs of dementia and we were referred to an Alzheimer's specialist named Dr. Bender. After additional tests, Dr. Bender concluded that Romie was in the early stages of Alzheimer's disease.

Dr. Bender immediately started Romie on one of the Alzheimer drugs currently available, vitamins E and C and ginko biloba. Dr. Bender also encouraged Romie to keep exercising and watch her diet, in addition to doing activities to stimulate her brain.

It has been about 18 months since her diagnosis and Romie is doing quite well. Her Alzheimer's seems to be progressing slowly. Although she no longer drives, she still cooks, does laundry and maintains the finances for one of our three homes. She plays golf, although less often than she has in the past, and has no trouble keeping up with our six grandchildren. She reads a lot, continues to do our holiday cards and participates in our family golf tournament each summer. We go out to dinner regularly with friends and travel between our homes in Iowa and Florida. Romie may not be able to recall what we had for lunch but she easily remembers basketball games from my days at Michigan and Iowa State. She still loves basketball almost as much as I do and we're looking forward to attending the NCAA championship in a few weeks. We haven't missed an NCAA tournament in 48 years.

We've learned a lot about Alzheimer's disease since Romie was diagnosed and we have many reasons to be hopeful. Significant advances in medical research have resulted in new and promising treatments. The Alzheimer drug that Romie takes is one of five prescriptions available in pharmacies today. Improved diagnostic tools are helping doctors diagnose Alzheimer's earlier and with greater accuracy, allowing individuals like Romie to maintain their quality of life for as long as possible. Scientists are engaged in additional research to develop strategies for slowing the progression of the disease process. The goal of a world without Alzheimer's disease is within reach.

In order to realize a future without Alzheimer's disease, we must ensure that the federal government maintains its commitment to fund promising research. Romie and I thank this committee and especially you Senator Harkin for your outstanding leadership in the fight to increase funding for research at the National Institutes of Health. We recognize that your challenge this year is especially difficult and pledge to do whatever we can to help you continue the momentum that has brought us to this historic point. For our children and grandchildren and for the families of the people sitting in this room, we cannot afford to back down now.

I faced a lot of tough opponents in 44 years of coaching and I'm proud to say that I never lost a game without a fight. Alzheimer's is a tough opponent but we can beat it. We have recruited a dream team of the best scientists and we have a

gameplan that will lead us to victory. In order to execute this gameplan, we need an additional $40 million in funding this year for clinical trials to identify treatments that can slow or halt the onset and progression of Alzheimer's disease.

On behalf of our entire family, we thank you for giving us the opportunity to be here today. Romie would now like to say a few words to conclude our testimony.

Senator DEWINE. We will go through the whole panel and then we will have some questions. We appreciate you and Mr. Orr being here very much.

Mrs. ORR. Thank you.

Senator DEWINE. Mr. Kroucik. Thank you for joining us.

STATEMENT OF DENNIS KROUCIK, ALZHEIMER'S PATIENT, ELRYIA, OH

Mr. KROUCIK. Thank you for having me. Good morning, Senator DeWine. My name is Denis Kroucik. I am honored to be here representing the great State of Ohio and the Cleveland area chapter of Alzheimer's.

Two years ago, at age 56, I was diagnosed with Alzheimer's disease. The 3 years prior to my diagnosis were frustrating and scary for me. I had always enjoyed gardening and was good at it. I suddenly found it was taking me a whole day to complete my work when normally it would only take me a few hours. I was also having trouble at work. At the time I was an electrician at a steel plant in Lorraine. I would get lost walking around the plant, couldn't find my way out; I missed routine items on my safety checklist and couldn't remember my children's names anymore when co-workers would ask me how they were doing. There were times I drove home from work at night after working overtime and I couldn't find my way home. I had to follow other traffic, hoping I would find my way home. I thought my problems were caused by lack of sleep, job-related stress because there were rumors that our plant would be closing and I would lose my job. And I am also a diabetic and for awhile my wife, Barb, thought that the problem with fatigue and memory problems were due to low blood sugar. Barb kept on encouraging me to see a doctor but I kept on putting it off out of embarrassment. I figured that it was normal to have memory lapses at my age, even though it was early 50s.

The turning point came one day at work. I was going through a routine checklist and forgot to lock out a 13,800 volt bus supply. I nearly electrocuted myself and a fellow employee. Barb put me in the car the next day and took me to the doctor immediately. A week later, after a battery of psychological tests and an MRI, a neurologist gave me the terrible news, "You have Alzheimer's disease." The changes in my life were very swift and immediate. I lost my job, had to give up my car keys. I felt humiliated, useless and I didn't even want to get up in the morning. I felt like a little kid, wondering if Barb was going to have to take care of me like my mother once did. I was angry, depressed, scared and I was losing my independence. It was a terrible tragedy.

My doctor put me on a newer Alzheimer's drug as well as B–12, Vitamin E, Ibuprofen. The Alzheimer's drug made such a difference in my life. I felt human again. Barb and I contacted the Cleveland area chapter of Alzheimer's Association. The people at this chapter were so nice and understanding of what both of us were going through. They helped us learn a lot about the disease and how it

could be treated. I realized then that I could have a life after Alzheimer's.

Today I work out at the local YMCA twice a week, a friend drops me off, picks me up. Barb watches me as well; she quit her job as a furniture salesperson last year so she could spend more time together with us. Sometimes I get very caught up in what I'm doing and at times I lose track of time. Barb reminds me to stop, take a break, have something to eat. I need especially to be careful because of my diabetes. I am very active at the Cleveland chapter of Alzheimer's; 2 weeks ago I spoke at an Alzheimer's legislation in Columbus for the Alzheimer's Consul Memory Day.

PREPARED STATEMENT

I came to Washington today to testify in this hearing for many reasons. The most important reasons are my wife, my six children, and my five grandchildren. I just hope and pray that I am the only person in my family to experience what it's like to live with Alzheimer's disease. I am encouraged by the progress that has been achieved in the fight against this terrible disease. New research is coming out every day. My doctors think that we will soon be able to slow the progression of the disease and the process and postpone the onset of this risk if the funding for the research keeps pace with the scientific momentum. I am grateful for the Federal dollars that have been spent on Alzheimer's research so far and I encourage this committee to continue to increase the funding for the research. It won't be easy given the current budget situation. However, it is something we have to do. We can't afford to wait. I am participating in an Alzheimer's study in the University of Memory and Aging at the University Hospitals in Cleveland. What will happen if the funding of this study is cut? How many more scientific opportunities will be lost if Congress decides that we can't afford to increase the funding for Alzheimer's research? How many more lives will be lost in this disease?

I want to thank Senator DeWine for inviting me to speak today. It is an honor to be here and I am happy to answer any questions you might have.

[The statement follows:]

PREPARED STATEMENT OF DENNIS KROUCIK

Good morning Senator DeWine and Senator Harkin. My name is Dennis Kroucik. I am honored to be here today representing the great state of Ohio and the Cleveland Area chapter of the Alzheimer's Association.

Two years ago, at age 56, I was diagnosed with Alzheimer's disease. The three years prior to my diagnosis were frustrating and scary. I had always enjoyed gardening and was good at it. I suddenly found that it was taking me a whole day to complete a gardening chore that used to take only a few hours. I was also having trouble at work. At the time I was an electrician at a steel plant in Lorain. I would get lost walking around the plant. I'd miss routine items on my safety checklist and couldn't remember my children's names when coworkers asked how they were doing. There were times that I drove home from work at night by following traffic because I couldn't remember how to get from the plant to our house. I thought that my problems were caused by lack of sleep or job-related stress. There were rumors that the plant would be closing and we'd all lose our jobs. I am also diabetic and for awhile, my wife Barb and I thought that the fatigue and memory problems were due to low blood sugar. Barb kept encouraging me to see a doctor but I put it off. I figured that it was normal to have memory lapses at my age.

The turning point came one day at work. I was going through a routine safety checklist and forgot to lock-out a 13,800-volt machine. I nearly electrocuted myself.

Barb put me in the car the next day and took me to the doctor. A week later, after a battery of psychological tests and an MRI, a neurologist gave me the terrible news. I had Alzheimer's disease.

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Today I workout at the local YMCA twice a week. A friend drops me off and picks me up. Barb watches out for me as well. She quit her job as a furniture salesperson last year so that we could spend more time together. Sometimes I get very caught up in what I am doing and lose track of time. Barb reminds me to stop and take a break or have something to eat. I need to be especially careful about eating because of my diabetes. I am very active with the Cleveland Area chapter of the Alzheimer's Association. Two weeks ago I spoke before more than 100 Ohio legislators at the Alzheimer's Ohio Council Memory Day in Columbus.

I came to Washington to testify at this hearing for many reasons. The most important reasons are my wife, my six children and my five grandchildren. I hope and pray that I am the only person in my family who will experience what it is like to live with Alzheimer's disease. I am encouraged by the progress that has been achieved in the fight against this terrible disease. New research is coming out everyday. My doctors think that we will soon be able to slow the progression of the disease process and postpone onset in those at risk if the funding for research keeps pace with the scientific momentum. I am grateful for the federal dollars that have been spent on Alzheimer research so far and encourage this committee to continue to increase the funding for research. It won't be easy given the current budget situation. However, it is something we have to do. We cannot afford to wait. I am participating in an Alzheimer research study at the University Memory and Aging Center through the University Hospitals of Cleveland. What will happen if funding for the study is cut? How many other scientific opportunities will be lost if Congress decides that we cannot afford to increase funding for Alzheimer research this year? How many more lives will be lost to Alzheimer's disease?

I want to thank you Senator DeWine for inviting me to speak today. It is an honor to be here and I am happy to answer any questions you may have.

Senator DEWINE. Thank you very much.

Ms. Fabares.

STATEMENT OF SHELLEY FABARES, NATIONAL BOARD MEMBER, ALZHEIMER'S ASSOCIATION, STUDIO CITY, CA

Ms. FABARES. Thank you, Senator DeWine and Senator Harkin, when you get here, nice to see you, and members of the subcommittee. Thank you for inviting me to testify today on so important a subject.

Like so many people in this hearing room I have been touched directly by Alzheimer's disease. My mother Elsa Rose Fabares, died of this hideous illness in September 1992 after suffering for 8 long years from the fear, confusion, dread, increasing incoherence, and ultimately infantile state that it so often produces. But I'm here today, not only as a family member; in a way I'm also here as this panel's historian. I first testified as you said, before Congress about Alzheimer's disease in 1990 and the last time was actually in 1995, nearly a decade ago. In the interim I've been struggling with my own health issues, a hip replacement and liver transplant, and the time and attention they require. I am happy to report that I am now feeling great and I am thrilled to be able to come to Wash-

ington again to speak on behalf of the millions of individuals and families who are dealing with this disease day in and day out.

Looking back over the past 10 years I am in awe at what has been accomplished and I am keenly aware that this progress has been made possible by the support you and the Alzheimer's Association have given to solving the puzzle of Alzheimer's. To highlight just a few of the remarkable advances achieved, though some have already been mentioned, the concepts of cure and prevention, inconceivable 10 years ago are now real possibilities. Four treatments have been approved by the FDA and 20 trials are underway with widely used drugs like Ibuprofen and Vitamin E that might reduce the risk of Alzheimer's. We can now diagnose, with a high degree of accuracy and at much earlier stages of the disease when available treatments are likely to be the most effective. That's why people with Alzheimer's, like Frank Carlino, who testified several years ago, and Mrs. Orr, today are able to come before you and speak for themselves. Knowledge of the biology of this disease has opened doors to the possibility of a vaccine that might fight the toxic proteins that cause Alzheimer's. Scientists are closing in on the search for markers that will identify its development long before symptoms appear, a key to speeding drug trials and targeting new medications to those who really need them. And research on therapies and care giving strategies, as well as on the effects of lifestyle in maintaining cognitive function all promise to extend independence and keep brains healthy and functioning longer.

When all these accomplishments are added up it is clear that your investment in research is paying off hugely. Scientists who are by nature cautious and skeptical are now positively exuberant about the promise of prevention and treatments that will stop or substantially delay this disease. While they won't be pinned down on a date, most are quite optimistic that it can and will be done and probably sooner than they imagined. There is now enough hope and solid scientific backing for the Alzheimer's Association to launch its "Maintain Your Brain" campaign. This campaign draws on scientific evidence linking cardiovascular disease and Alzheimer's and suggests some relatively simple things people can do to keep their brains, as well as their bodies, healthy. This too is evidence of the value of our investments in research over the past 10 years.

I've spent a lot of time traveling around the country talking to individuals and families who are dealing with Alzheimer's disease. A few have been able to come to Washington to tell their own stories, like Christine Frey, from Peoria, Illinois, who talked about her seven relatives who've already died from the disease and how it hangs like a death sentence over her own life. Like Maureen Reagan, or 10-year-old Walter Dawson of Falls City, Oregon, whose father's Alzheimer's disease jeopardized his future. Or Catherine Brewer of Northport, New York, or Beverly Hines of Vassalboro, Maine, who both suffered terrible stress-related illnesses directly linked to their care giving responsibilities.

Now, because of better diagnostic tools, more people with the disease are speaking up and speaking out for themselves. No one is better able to convey the urgency or our research efforts than someone living with Alzheimer's and talking to us in her own voice.

And the voices, sadly, are increasing in numbers, leaving few families untouched. The Coalition of Hope that we are going to be announcing today is further evidence of the growing chorus of Americans who are no longer willing to sit on the sidelines and allow this disease to consume our families and our Nation with its voracious and destructive appetite. The Coalition members understand all too well that if we don't continue our commitment to Alzheimer's research we face a bleak future indeed.

Mr. Chairman, when I was last here science was just building the caissons on either side of this vast Alzheimer's river. These caissons that would form the foundation for a scientific bridge that someday will allow us to surmount the human destruction caused by this river. But the bridge is not complete and the river's rush continues to consume millions of lives. We are well within striking distance and we can finish the bridge but only if we maintain our investment in research. Would the public sit by quietly if we were to stop construction on any of Nation's major bridges when they were 50 to 80 percent finished? Of course not. Nor will they nor can they sit by if we shift our attention away from completing the job of Alzheimer's disease when we are so close. The millions of victims past, present and future demand that the job be finished and the sooner the better. The consequence of success are huge, the consequences of failure too horrific to comprehend.

PREPARED STATEMENT

For Mrs. Orr and her children, for Christine Frey and Walter Dawson and Frank Carlino, for our parents, our children and ourselves, we urge you to please stay the course so we can someday have a world without Alzheimer's.

Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF SHELLEY FABARES

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Like so many people in this hearing room, I have been touched directly by Alzheimer's disease. My mother, Elsa Rose Fabares, died of this hideous illness in September of 1992 after suffering for eight long years from the fear, confusion, dread, increasing incoherence and ultimately infantile state that it so often produces.

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—Scientists are closing in on the search for markers that will identify its development long before symptoms appear—a key to speeding drug trials and targeting new medications to those who really need them.

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For Mrs. Orr and her children, for Christine Frye and Walter Dawson and Frank Carlino . . . for our parents, our children and ourselves, we urge you to please stay the course so we can someday have a world without Alzheimer's disease.

Senator DEWINE. Thank you very much. Mr. Goldberg.

STATEMENT OF SHELDON GOLDBERG, PRESIDENT AND CEO, ALZHEIMER'S ASSOCIATION, CHICAGO, IL

Mr. GOLDBERG. Thank you Senator DeWine, Senator Harkin. I appreciate the opportunity to again appear before this committee. And I again remind you I am privileged to be part of the Alzheimer's Association and serve as its president.

As you may well know, the goal of the Alzheimer's Association is very singular in purpose. It is to provide to care and support but also and perhaps more importantly to find a cure for this disease to create the world without Alzheimer's disease. And I am privileged to come and tell you that we can now start communicating to our public that there is progress being made and the possibility even exists that we can see the time when we can find a way of stopping this disease. And that is a direct result of research.

Senators, it is because of you, it is you have led the charge, it is you who have had the vision, it is you who have provided the funds to provide the research, and we appreciate it greatly. And I think you're seeing some of the results of that research. There are successes and there is a very optimistic future to go ahead. And so I am privileged to be able to convey to the American people, on behalf of the Alzheimer's Association that tremendous hope exists that we can defeat this disease in the time to come.

I am privileged to also introduce to you today and introduce again to our public a new coalition. And this coalition has come together and it represents at this time 60 million Americans, over 150 organizations and growing on a daily basis. And it includes the usual organizations to some degree. Certainly the Older Women's League is a member, certainly Family Care givers Alliance, the National Center on Black Aging, AARP, and the National Association of Retired Federal Employees. But I have to tell you that this coalition is just beginning and its taken on a whole new crew of suspects. And let me share some of the names.

The Philadelphia Grange has joined us. And the Iowa Egg and Milk Producers have signed on, as this is their cause. The Kentucky Farm Bureau has joined us. The Idaho Fraternal Order of Police. The Tennessee Firemen's Association, the Mississippi School Administrators, the Indian Tribes of Alaska, the Urban League, the NAACP, LULAC, the American Baptist Church, Presbyterian Congregations, Catholic Congregations, Episcopal Congregations, Jewish Congregations and the list goes on and on. We've been joined by union locals from Teamsters and Electrical Workers, to State legislators and to representatives of county government. To the Sons of Italy and to the Polish American Congress. And this is just to mention a very few of the organizations that have joined us and I promise you that many more will be joining us in this movement to find a way of curing this disease.

You know, it's interesting, why would they join this cause? Why would these new suspects come to the cause of Alzheimer's where traditionally it has been an aging cause? And that is very simple. This disease touches so many peoples' lives. It touches families, it touches communities and it destroys individual lives. And people are beginning to realize very clearly it does not recognize race, it does not recognize income, it does not recognize where you live, it doesn't pay attention to your occupation. It is evident that presidents will get this disease and have gotten this disease, and people from all positions in life are suffering from this disease. And these organizations are joining us in our fight to find a way of curing this disease. The movement wishes to accomplish one thing, and that is to ensure that Alzheimer's is not inevitable and that Alzheimer's is not hopeless and that the research continues. They simply know

that their families and their communities and their basic economic security is being undermined and that is the reason these organizations have come together. They clearly understand that it is bankrupting our Federal Government, and I mean by that, its impact on Medicare and its impact on Medicaid. They see very clearly that it is draining millions, billions of dollars from American industry and it is destroying the retirement security that people feel and the serenity that they feel in their lives.

You noted that there are 4.5 million Americans today afflicted with this and countless family members, and these numbers are going to grow geometrically as the baby boomers begin to—as we see the iceberg of the baby boomers coming down because we are only seeing the tip of the iceberg at this point in time. The baby boomers will have a tremendous impact as we move into this century and this disease will cause tremendous havoc, both on these individuals' family, on the health care and the American business which we all want to flourish and succeed. And that is the reason the Coalition has come together.

We are very, very concerned that the funding which you have started and the leadership from this Committee and the leader from this body continue. We are asking this body to continue with at least $40 million to continue the research that has been started, to continue the progress of finding a solution, to finding a cure to this horrible disease. I promise you that this Coalition will only grow stronger, it will become more and more of a movement as more and more people understand the dimensions and the impact this disease is having on our society, on our government, on our industry and all the destruction it causes on the families.

PREPARED STATEMENT

So on behalf of the Alzheimer's Association, and I say on behalf of this Coalition of Hope, which represents countless American people, we thank you for your leadership and we ask for your support and continue the funding and increasing the research.

Thank you very much, Senators.

[The statement follows:]

PREPARED STATEMENT OF SHELDON GOLDBERG

Senator DeWine, Senator Harkin. Thank you for inviting me back to talk to you about Alzheimer's disease. I am even more excited to be here today than I was last year at this time.

The Alzheimer's Association's goal of delaying the disabling symptoms of Alzheimer's disease, and eventually preventing the disease now appears possible. For the first time, creating "A World Without Alzheimer's" is within reach. And it's because of you—your vision in claiming the Alzheimer research agenda and your steady, sustained commitment to moving it forward.

Because of your leadership, we can go to the American people now with a new message of hope. We can—we will—have a future where Alzheimer's disease is only a memory.

This morning, I speak not just for the Alzheimer's Association but also on behalf of a new Coalition of Hope, which we are announcing today.

This is a coalition of over 150 organizations, representing more than 50 million Americans, who have joined the fight against Alzheimer's disease. You can count on us to support of your efforts to increase funding for Alzheimer research and services.

The Coalition includes groups you might expect to see—the Older Women's League, the Family Caregiving Alliance, the National Center and Caucus on Black Aging, AARP, the National Association of Retired Federal Employees. We are grateful for their support.

But this movement extends far beyond the aging community. Take a close look. It includes, for example:

—The Pennsylvania Grange, Iowa Eggs and Milk Producers, and the Kentucky Farm Bureau,
—The Idaho Fraternal Order of Police and the Tennessee Firemen's Association,
—The Mississippi Association of School Administrators,
—The Indian Tribes of Alaska, the Urban League, the NAACP and LULAC,
—Southern Baptist, Catholic, Episcopal, Jewish, Assembly of God, Presbyterian, and Assembly of God Congregations,
—Locals of the International Brotherhood of Electrical Workers and Teamsters,
—State legislators and county governments, and
—The Sons of Italy and the Polish American Congress.

Why, one might ask, have all these "unlikely suspects" made Alzheimer's their cause. They have joined us in the fight against Alzheimer's because it's a disease that touches so many families and communities. It doesn't recognize race or income, or whether you live in a big city or small town. But for the first time ever there's hope to significantly delay the onset of the disease and lessen its impact. These organizations have joined us to ensure that Alzheimer's disease need not be inevitable or hopeless.

But left unchecked, Alzheimer's will undermine our families, communities, and basic economic security.

It will overwhelm our health care system, bankrupt Medicare and Medicaid, drain billions of dollars from American business, and destroy retirement security for tens of millions of families.

—Today, 4.5 million Americans and their families are already facing Alzheimer's, with all of its emotional and financial devastation.
—Millions of workers are leaving their jobs or cutting back work to provide Alzheimer care. That lost productivity is the major reason why Alzheimer's is costing American businesses an estimated $61 billion.
—Medicare is spending 3 times more on beneficiaries with Alzheimer's disease. Six years from now, Alzheimer's will cost the program $50 billion.
—State Medicaid programs are spending $18 billion to help people with dementia pay for their nursing homes. That will bill be 80 percent greater by 2010.

But this is all just the tip of the iceberg. The babyboomers are still below the surface. When Alzheimer's starts to hit them, the numbers will begin to skyrocket. By the middle of the century, 11 to 16 million could have the disease. We will not be able to withstand the explosion of costs—to families, to taxpayers, to the health care system, to American business.

The Coalition of Hope is organized to make sure that does not happen. If the current pace and momentum is maintained we may be able to delay the onset and progression of the Alzheimer's as well as prevent the disease, saving not only billions of dollars to our health care system but also saving millions of lives. The baby boomers may indeed be the first generation not having to face Alzheimer's.

But for those who may still get it, we will slow its progression enough that most will never reach the advanced stages of the disease. That means we will no longer have nursing homes filled with people with dementia.

This is not the time to tell the scientists to slow down. But that is exactly what will happen unless we continue to expand the public investment in Alzheimer research.

I am not a scientist, but I have spent a lot of time talking with scientists. Let me give you just a few examples of the opportunities we will miss if we stick with current and proposed funding levels:

—Thanks to your investment, the best scientists in the world are chomping at the Alzheimer bit—and that means NIA is receiving record numbers of applications. But at current budgets, they will be able to fund only about 15 percent of those proposals—for less than the 20–25 percent of past years. And they can only do that much by cutting $1 of every $5 out of the successful grants. Think how many scientific opportunities we are missing.
—Even existing, highly productive program projects are at risk. The Healthy Aging and Dementia project at Washington University in St. Louis is just one example. This is the team that created the assessment instrument that is now the clinical standard. They discovered with others the concept of mild cognitive impairment. Now they have turned to the next critical question in Alzheimer prevention—how to identify "normal" adults who are at high risk, so we can treat them in time. The St. Louis team started recruiting people in their 40s and 50s whose parent had Alzheimer's. These volunteers have been through a lot already—blood draws, lumbar punctures, and MRIs. But they are going to

have to put that study on hold, because NIA is cutting their approved budget by 30 percent.

—What about the large scale clinical trials that have been so much the focus of this Committee's concern? After all, research doesn't mean a lot in the real world until we are successful in getting science from the bench to the bedside.

—Scientists at the University of California in San Diego are poised to start the next big trial of combinations of anti-oxidants. This offers one of the most exciting possibilities for a safe and relatively inexpensive way to protect against Alzheimer's. But NIA does not have the money to get it started.

—Even trials that are well underway—like the ginko biloba trial Dr. DeKosky testified to this Committee about—will have to be slowed down. There may be no money to analyze the data that has already been collected on the hundreds of volunteers who have participated in this trial.

This is a travesty. We cannot let it happen.

We know you face many competing priorities, with very little discretionary money in the budget.

We understand that, after doubling the NIH budget, there are those who are ready to say, "we've done enough."

But if we slow down now, we will be throwing away much of the investment the American taxpayers have already made in Alzheimer research.

We must continue, and build on, the progress of the last twenty years.

We are asking you to increase funding for Alzheimer research by $40 million for fiscal year 2005 to maintain the ongoing national collaborative research to improve neuroimaging technologies for early detection and large-scale clinical trials to test the effectiveness of vitamins and other large-scale clinical trials for treatments that would slow or delay the progression of Alzheimer's.

Research on Alzheimer's is on the brink of major breakthroughs that will provide the effective means to delay and, ultimately, to prevent the devastation of dementia.

This effort will not be possible without your support, the Coalition of Hope, and the nationwide network of investigators working closely with the NIA's 29 Alzheimer's Disease Centers around the United States.

That is a modest request, given the urgency of the Alzheimer crisis and the enormity of the scientific opportunities. But it would be enough to sustain the momentum in tough budget times.

On behalf of the Alzheimer's Association and the entire Coalition of Hope, thank you.

Senator DEWINE. Thank you very much. Dr. Snowden.

STATEMENT OF DR. DAVID SNOWDEN, PROFESSOR IN THE DEPARTMENT OF NEUROLOGY AND THE SANDERS-BROWN CENTER ON AGING AT THE UNIVERSITY OF KENTUCKY, LEXINGTON, KY

ACCOMPANIED BY SISTER GENEVIEVE KUNKEL, NUN STUDY PARTICIPANT

Dr. SNOWDEN. Good morning. I am David Snowden, I am a Professor of Neurology from the Sanders-Brown Center on Aging at the University of Kentucky Medical Center. I'm also the Director of the Nun Study, a longitudinal study on aging and Alzheimer's disease. I am here not just to describe some of the important findings of our study but also to emphasize the importance of this type of research and to urge you to find some way to keep this and other critical research going forward.

To understand how disease is caused and prevented, we usually follow a population of people over time and see who develops the disease and who doesn't. In 1990 funding from the National Institute on Aging allowed us to start a long-term study of older members of the School Sisters of Notre Dame Congregation. Three factors made this population of nuns a rich source of research data and biologic material. First, members of this community have a shared common environmental lifestyle from early adulthood, which holds many confounding factors constant. Second, each convent has an archive of information on each Sister, from the time

she entered the congregation as a young woman until her death. The archives provide a unique window into the early and middle lives of the Sisters decades before any of them developed Alzheimer's disease. The third critical element is the courage and altruism of this inspired group of women, all of whom agreed to donate their brains at death for our studies.

The 678 nuns agreed to give us complete access to their personal and medical records and participate in annual examinations of their mental and physical function. We have followed them meticulously since 1990 and to date almost 500 brains have been donated, making it one of the world's largest neuropathologic studies. Participants in our study range in age from 75 to 107 years of age. Sister Genevieve Kunkel, from our Baltimore convent who is sitting with me today, is a stellar example from our study. She has avoided Alzheimer's and aged in a truly healthy and beautiful manner. Sister Genevieve describes healthy aging as being "alert and vertical." And in her comments at the end of my presentation you'll witness the human potential available to all of us in a world without Alzheimer's disease.

The Nun Study represents a long-term investment. Since 1990 we have received $12 million of funding from the National Institute on Aging. Has the investment been worth it? You be the judge. We were the first study to show how a preventable disease like stroke can trigger the symptoms of dementia in persons with an Alzheimer's brain. We were one of the first studies to show that a deficiency in folic acid, a vitamin, accelerates the brain-damaging effects of Alzheimer's disease. We were the first study to show that Alzheimer's pathology and symptoms are predicted by low linguistic ability in autobiographies completed 60 years before. This suggests that Alzheimer's, like cancer and heart disease, is a lifelong disease process.

This is only the beginning. We still have a great deal more to do and are accelerating our progress by sharing our unique research materials with other scientists. For example, if we secure funding scientists at several collaborating universities will use genetic material to create a complete genetic library for each nun. A nonhuman genome project, if you will, that will be linked to our treasury of information from the Sisters' medical and personal histories, annual medical exams and autopsy findings. Since we began the Nun Study, we have seen an explosion in medical and scientific technology which has opened up enormous opportunities for discover. The price tag for these sophisticated studies has skyrocketed. It's offset, however, by the knowledge gained that leads to new prevention strategies that can reduce human suffering and health care costs.

I urge Congress to find some way to significantly increase research funding because a world without Alzheimer's is literally within our grasp.

Now I would like to ask Sister Genevieve Kunkel, one of our participants in the Nun Study, to add some brief comments.

Sister GENEVIEVE KUNKEL. Thank you. Let me begin by saying I pray daily for wisdom and prudence and this morning I prayed extra hard for these gifts. It has been privilege and pleasure to be an active participant for 14 years in Dr. Snowden's research. And

there have been some personal perks, like an appearance with him and Katie Couric and a full chapter in his book, "Aging With Grace." Not displeasing at all for one in her late 80s.

It is rewarding to have frequent, friendly and informative reports from Dr. Snowden and his dedicated staff, assuring us Sisters that the donation of our brain is contributing significantly to this promising study of the dread disease of Alzheimer's. As a School Sister of Notre Dame for more than 72 years, it is good for mind and spirit and body to know that I can still, even as a fully-retired Sister, continue to be a vital part of this ongoing project. My philosophy as a woman, a religious and a teacher, has always been to be grateful for the past, enthusiastic about the present and confident about the future. Dr. Snowden's cause is a good one. I'm grateful for it and enthusiastic about it.

PREPARED STATEMENT

I was asked a second question. What is it like to watch those with whom you live afflicted with Alzheimer's? To phrase it bluntly it isn't easy. As a Sister, my faith that this is part of the Pascal mystery of Lent, reaching up or leading up to Easter and eternal life, eases the pain somewhat. May 1, I will celebrate the 70th anniversary of my professional vows, a commitment I made in 1934 with 55 other young women. It is saddening to watch my friends, my Sisters stricken with the diminishments of ailing and failing. And when these are accompanied by Alzheimer's it seems and is so much more devastating. How painful to see Sisters much younger than I enter this darkened world. How often I ask, why them? Why not me? Living with this reality daily has made me more prayerful about finding a cure and more zealous to remain actively involved in the Nun Study of Dr. Snowden.

Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF DR. DAVID SNOWDEN

Good morning. I am Dr. David Snowdon and I am a Professor in the Department of Neurology and the Sanders-Brown Center on Aging at the University of Kentucky Medical Center. I am the director of the Nun Study, a longitudinal study of health and aging.

I am delighted to be here with the School Sisters of Notre Dame—not just to describe some of the important findings of our study, but also to emphasize how important this type of long-term research investigation is to solving the enigma of Alzheimer's disease, and to urge you to find some way to keep this critical work going forward—as fast as possible.

Prevention depends upon understanding risk factors and how we can protect against them. To do that, we usually follow a population of people over a time and see who develops disease and who doesn't. After conducting a pilot study of Minnesota nuns in the 1980s, the staff of the National Institute on Aging encouraged us to submit a grant application to expand the Nun Study to all older School Sisters of Notre Dame throughout the United States, including those living in Minnesota, Wisconsin, Illinois, Missouri, Maryland, Connecticut, and Mississippi. The institute funded our study in 1990, and it has been ongoing ever since.

Three factors made this religious population a rich source of research data and biologic material. First, this is a community whose members have had shared a common environment and lifestyle from early adulthood—which holds many confounding factors relatively constant. Second, each convent has an archive of information on each sister, from the time she entered the congregation as a young woman until her death. The archives provide a unique window into the early and middle lives of the sisters, decades before any of them developed Alzheimer's disease.

The third critical element is the courage and altruism of this inspired group of women, all of whom agreed to donate their brains at death for our studies. This allowed us to investigate risk and protective factors by comparing the brain tissue of cognitively-intact sisters to those who had severe symptoms of Alzheimer's, and every shade of gray in between these extremes. The 678 nuns in our study agreed to give us complete access to their historic personal and medical records, and participate in annual examinations of the mental and physical function. We have followed them meticulously since 1991 and to date almost 500 brains have been donated by these carefully studied women—making it one of the world's largest neuropathologic studies.

Participants in our study range in age from 75 to 107 years old. Sister Genevieve Kunkel from our Baltimore convent, who is sitting with me today, is one of our stellar examples from the study. She has avoided Alzheimer's and aged in a truly healthy and beautiful manner. Sister Genevieve describes healthy aging as being "alert and vertical"—in her comments at the end of my presentation you will witness the human potential available to all of us in a world without Alzheimer's.

I would like to underscore that this has been an interdisciplinary effort at the University of Kentucky—involving social scientists, anthropologists, molecular biologists, pathologists, and physicians. As we have progressed to more sophisticated questions, we are increasingly engaging scientists from other research institutions and other scientific disciplines. To maximize the federal government's and the sisters' investment in this study, we are making our rich source of data and tissue available to researchers across the United States.

The Nun Study represents a long-term investment by the Federal Government. Since 1990, we have received $12 million from the National Institute on Aging. Has the investment been worth it? You be the judge.

—We were the first study to show how a preventable disease like stroke can trigger the symptoms of dementia in a person with an Alzheimer-brain.

—We were one of the first studies to show that deficiency in the vitamin Folic Acid appears to accelerate the brain-damaging effect of Alzheimer's disease.

—We were one of the first studies to show that Alzheimer's, like cancer and heart disease, is a life-long disease process. While it has been known for decades that low education is a risk factor for Alzheimer's, it has not been know why—is it related to early brain and cognitive development, a higher prevalence of lifestyle risk factors, or reduced access to health care in those with low education? Early cognitive development is likely to be a primary explanation. Linguistic analyses of autobiographies written by the nuns in early life indicates that low verbal skills are a potent predictor of Alzheimer's pathology in the brain and Alzheimer's symptoms 60 years after the autobiographies were written.

And this is only the beginning. We still have a great deal more to do.

We continue to pursue other novel approaches to the study of Alzheimer's disease. For example, over 95 percent of people will develop the protein deposits, the so-called plaque and tangle lesions of Alzheimer's, if they live to be old enough. Yet most will somehow escape showing any significant symptoms of this disease. We and other scientists are trying to get a better understanding how such people avoid symptoms despite having the disease present in their brain.

We are also carefully studying the small minority of participants who never show the development of any significant Alzheimer's lesions—people who truly inhabiting a pristine world without Alzheimer's. Once we understand that, we'll be in a much better position to develop preventive interventions.

If we can attain additional funding in the future, the long-term investment by the National Institute on Aging will provide even more added-value:

i. For example, with nearly 500 brains in hand we are now working with world-renowned experts in the study of blood vessel diseases. This will allow us to get a better understanding of how the health and disease status of microscopic, small, and large blood vessels in the brain are related to Alzheimer's, other dementias, overall health and function, and longevity. By sharing brain tissue and data already collected on nearly 500 study participants with scientists at other U.S. research institutes, our colleagues there will have the ability to quickly and inexpensively perform new promising investigations that would otherwise cost literally 10's of millions dollars and take 10 to 20 years to complete. With only a couple millions dollars of funding, we can have the answers within a few years.

ii. Working with scientists at the University of Kentucky, Johns Hopkins University, and the University of Minnesota, we are now pursuing a strategy to use the genetic material collected from these nuns to ultimately create a genetic library for each of the 678 study participants. That is, the complete genome of each sister, all 30,000 plus genes, will ultimately be described and available in

a computer database. If this study is funded, instead of going to the laboratory to study a single gene, investigators will simply log onto to the Nun Study Genetic Library to access the entire genetic structure of each sister, as well as all the risk factor data, medical history, and findings from the brain autopsy.

Since we began the Nun Study, we have seen an explosion in medical and scientific technology and methods, which has opened up enormous new opportunities for discovery. When we began, in 1991, we asked the sisters to donate some blood for future studies. At the time, we envisioned looking at nutrients and other chemicals in the blood, and possibly a gene or two. Never would we have imagined that development of technologies like gene amplification and micro-array analysis would allow us to determine the entire genome of individual sisters; or that we would need sophisticated data storage and data analyses techniques to handle this mind-boggling amount of genetic information. All of these add value to what we started, but, they all cost money.

The Nun Study is just one example of how the National Institute on Aging has capitalized on a long term funding strategy to provide a unique perspective on aging and Alzheimer's disease. Other investigators are pursuing unique populations, and there is much that remains to be done, especially in the study of dementia in specific racial and ethnic populations—an area of study that at best, we have only rudimentary understanding.

We cannot put these studies off years and decades into the future. We need to conduct them now. There is still time to find answers and get interventions in place before the disease progresses further in the baby boomers, and subsequent generations. With only a minimal increase in National Institutes of Health funding this year, our research team and others across the United States will be stalled in our search for vital information about the prevention and treatment of this devastating disease. I urge Congress to find a way to make the commitment to finish the job it started. A world without Alzheimer's is within our grasp.

Senator DEWINE. Sister, thank you very much.

Let me turn at this point to Senator Harkin. Before I do, let me just, if I could, make a comment, and that is that Senator Specter and Senator Harkin, as already been noted by several of our panelists, have certainly been the great leaders in this Congress and in this country for funding of Alzheimer's, as they have in other areas of health research. And it has been my privilege to serve with both of them here in Congress and just to watch this great leadership. So, Senator Harkin, your comments?

STATEMENT OF SENATOR TOM HARKIN

Senator HARKIN. Well Mr. Chairman, thank you very much. I apologize for being somewhat late. I am also going to apologize for having to leave early. I have two cities from Iowa who are waiting for me over in the Russell Building right now, that is, the Chambers of Commerce and business leaders that I have to go meet with. You understand that, right Johnny? And so I will apologize for leaving a little bit early also.

I just want to thank all of you for being here. You will excuse me if I pick on a couple of people. First, Shelley Fabares, who said she was first here in 1990, I remember it well, I was chairman at that time of this subcommittee, and came back repeatedly every year for the Alzheimer's Association. You know my thoughts and prayers were with you during your struggles in the 1990s when you had your own health problems but your husband continually assured me that you were a fighter and that you were going to get through it. And it is great to see you here and looking so well again, Shelley.

Ms. FABARES. Thank you, Senator.

Senator HARKIN. It is great to have you back.

Ms. FABARES. Thank you so much.

Senator HARKIN. And just again, thanks for never giving up in your own personal struggle but also in the struggle for continued increased funding for Alzheimer's. You have just been a real stalwart for the last, well, 16 years, I guess it is since I have known you.

To Johnny and Romie Orr, again, thank you for being here. And for giving witness and testimony to what you have been through. I do not know if it was said, Mr. Chairman, but Johnny Orr is the winningest coach in Iowa State University history basketball. That is my alma mater so I follow that pretty closely. And you and Romie have been married how long? Fifty-five years now, did you say? Fifty-five years. Good for you. And I know how much you have worked on this issue, we have talked about it in the past and it is just good to see you here. Romie, I know that you have been doing a lot of good things. Oh, by the way, I notice that your doctor is Dr. Bender. He is a great doctor. He treated my brother and got him through some years of some dementia problems also so I have great respect for him and for his ability. So you are living proof that he does pretty good stuff, right? Gives you good advice.

RESEARCH APPLICATION FUNDING

To the rest of you who are here. Dr. Hodes, thank you for your leadership at the National Institute on Aging. I would like to just ask what the funding this year would mean for the Neuroimaging Initiative that you are doing in terms of how many applications, how many research applications can actually be funded compared to what we were doing in the past. If you could either answer it now or I can just submit that in writing and you can get it back to me because I want to know what this small increase in funding that we have this year, what that may mean. And if you have a succinct answer, if you could just respond to me on that. What are we looking at in terms of the reduced number, if there will be one, in funding for peer-reviewed grant applications that would be involved with the Neuroimaging Initiative?

Dr. HODES. Well, if I may, sir, just to answer first generally for NIA and for the Alzheimer's research supported by NIA, whereas in prior years we were able to fund approximately 25 percent or one-fourth of meritorious applications our best estimates at this point of the year is that we're funding approximately 15 percent. And in order to accomplish that we in fact have had to make very significant reductions in the amount of award to even achieve a raised pay line or a higher success rate for Research Project Grants (RPG).

Senator HARKIN. So 15 percent and with reduced awards.

Dr. HODES. This is correct.

Senator HARKIN. And in the past you have been as high as 20?

Dr. HODES. Approximately 25 percent.

Senator HARKIN. 25 percent. I just want to note that for the record, Mr. Chairman, that even though we are giving a slight increase what it means is that we will be able to fund fewer grants, and I did not know about the reduced amount of the awards also.

Dr. HODES. I don't want to miss this or any opportunity to thank Congress for the support in the past or in the period they're doubling in particular. The success of this investment is, I think, mani-

fest in the number of investigators who are now taking advantage of past research findings and opportunities and submitting meritorious applications. And a part of the challenge in funding an appropriate percentage is that the ingenuity, the opportunities, the genius of the scientific community has not slowed down even if the budget increase has.

Senator HARKIN. Very good. Again, Johnny and Mrs. Orr, thank you very much for being here. I am really proud of you and proud to represent you here in the U.S. Senate. These are two of our best known Iowans, of course, as I said, he coached Iowa State, and that's the premiere college in America, we know that. But actually, Romie is really the expert, right?

Mr. ORR. I was at Michigan too, don't forget.

Senator HARKIN. I know but that was a long time ago.

Mr. ORR. Senator Harkin, we've been involved in a lot of things in Iowa together.

Senator HARKIN. Yes.

Mr. ORR. And he's always been very supportive and you know, I can't explain to you, I was worried about the time element, but until it hits you, or someone close to you, it's hard to explain it. It's really hard to explain it.

Senator HARKIN. Romie, I mean, I know you are under Dr. Bender's care but what are some of the things you are doing now to kind of forestall the impact of Alzheimer's?

Mrs. ORR. I'm taking Aricept.

Senator HARKIN. Oh yes.

Mrs. ORR. Which is a wonderful medication. I take one pill a day. And then I take a large range of vitamins, Gingko Biloba and Vitamin E and Vitamin C. And I take the vitamins twice a day and I take Zoloft at night.

Senator HARKIN. Yes.

Mrs. ORR. And I'm getting along fine. I have a wonderful time. I'm a rug hooker. I hook rugs.

Senator HARKIN. Okay.

Mr. ORR. Imagine me marrying a hooker? Been living with her for 55 years.

Senator HARKIN. She hooked you good.

Mrs. ORR. My current project is a big tapestry of the harvester, up by Marshalltown.

Senator HARKIN. Yes, sure.

Mrs. ORR. And I'm going to put, I just told my daughters today that I'm going to put the Alzheimer's signature right underneath my signature on this work of art; I call it a work of art. I was given the ability to copy it, for one copy.

Senator HARKIN. Well Romie, you are a former physical education instructor.

Mrs. ORR. Right.

Senator HARKIN. So obviously you are in great physical shape. You said something about your doing mental things, too. Hooking rugs, obviously, but what else?

Mrs. ORR. Well, that helps so, it really does because there's a bit of color planning and everything going all through that.

Senator HARKIN. I see.

Mrs. ORR. The other thing I do is play solitaire. I play three games of two different solitaire every single day, no matter what.

Senator HARKIN. Oh, that is good.

Mrs. ORR. It keeps me sharp. It takes a lot of time so I don't have to stay in the kitchen all day long.

Mr. ORR. You have to be careful at our house, anymore, what you grab though, sometimes. She put the Cascade in the refrigerator the other day and that was a little difficult mixing that up, you know? But we've done great.

Senator HARKIN. That is good.

Mr. ORR. And we've approached this thing as optimistically as you can possibly do it. And so have my daughters and hopefully we're going to whip this thing. And it's a terrible thing.

Senator HARKIN. Well, I would expect nothing less than the utmost optimism from Johnny Orr, I can tell you that, and Romie also, both of you. And thank you all again, very much. Shelley again, it is great to see you back and it is great to see you back in full health again. It is wonderful. And please give Mike my best.

Ms. FABARES. I will. Thank you.

Senator HARKIN. Thank you all very much. Thank you, Mr. Chairman.

Senator DEWINE. Thank you very much. Dr. Snowden, tell us a little bit more about your study. What activities early in life, let us put this maybe in a practical, easy to understand for anybody who might be watching this or who might read about it, what activities would you recommend or things would you recommend for people early in their life? And then, what would you recommend for someone later in their life? Someone who is 60, 70 years old, 80 years old. However later in life is. I mean, what did you learn, just tell us what you learned that would be helpful to people? Some of this is heredity, obviously, but some of it maybe can be influenced.

Dr. SNOWDEN. Well, Alzheimer's is obviously a thinking disease and it does make some sense that your development of thinking abilities in early life may play a role in buffering you against this thinking disease decades later, as well as maintaining your thinking ability throughout your middle and late ages. It's been known for probably 15, 20 years that education is strongly related to the risk of dementia; the lower the education, the higher the risk of Alzheimer's disease. And that's true whether you're in China, France, Africa, or in the United States. What it is about education in early life has been a little bit of a mystery. With the Sisters we have the benefit of having autobiographies that Sister Genevieve and others wrote when they were in their early 20s and teens. And so we have looked at the linguistic ability, or basically the number of ideas that they can pack into sentences 60 years before they ever developed Alzheimer's disease, and we can see basically that those who had really good language ability could pack a lot of sentences—a lot of ideas into sentences. And 60 years later when we looked at their brain they had dramatically less Alzheimer's disease in their brain and they have a dramatically lower risk of Alzheimer's. So obviously language is extremely important, it's probably the key human skill that we have that we do our best work and our worst work through organizing groups through language. And language is probably the thing that really, when it starts to

decline in Alzheimer's then you have all sorts of social problems and the patient being able to communicate with the family and the family communicating with the patient. So, simply promoting education, Head Start, probably during the first 5 to 6 years of life is really critical in developing language ability. And this is obviously a good thing anyway because we're all big advocates of education.

During middle again, certainly——

Senator DEWINE. Which gives us one more reason to do what we should be doing anyway.

Dr. SNOWDEN. Absolutely, right, absolutely. So education is really, it's a critical, it's a, you know, major foundation for so many things and may have implications decades and decades later on your risk of Alzheimer's and health care costs. So certainly education is a key factor and particularly early-life education is important.

During middle life it's important to maintain your cognitive abilities and that can be something as simple as buckling your seatbelt up because we know that head injury is also a risk factor for Alzheimer's disease. It's certainly something that's preventable and something that we should do for other very good reasons. And certainly trying to prevent other diseases to have affects on thinking ability like stroke is something one can do through middle and late age. It's always been an issue though, you know, does reading and doing the New York Times puzzles and so forth, crossword puzzles, will that have an effect on your risk of Alzheimer's. And that's been difficult because as people develop the disease obviously their thinking ability and their ability to do crossword puzzles decline. So it's hard to know which came first, the low ability in doing crosswords or reading or do the Alzheimer's symptoms come first. But because of the funding from the National Institute of Aging there have now been clinical trials that have been started and results are starting to come out suggesting that if you experimentally randomly assign thinking tasks to elderly people that that will help them maintain their thinking abilities and the suggested evidence is that this ultimately may lead to a lower risk of Alzheimer's.

So I'd say the bottom line is that, you know, whether or not you get any disease, be it an infectious disease like HIV or a disease like cancer, heart disease or Alzheimer's, there's a consequence of a long chain of events and starting from conception with the genes to young age to middle age and late age, and so what we want to do as individuals and public is we want to focus in on the weak links in that chain that we can do something about. Certainly education, certainly prevention programs for head trauma, stroke prevention programs, nutritional programs also, I think, will have a potentially large effect if we can get more funding of nutritionally studies. Because Alzheimer's is a brain-wasting disease and it makes sense that the last thing you want to do when your brain is being wasted by Alzheimer's is nutritionally deprive it. So eating a lot of fruits and vegetables and for scientists to figure out what is it about specific components of diet, from Gingko to teas to vitamins that may help in slowing down the degeneration of the brain tissue.

Senator DEWINE. Did your study, and anybody else can jump in here, I am not going to just focus on Dr. Snowden's study, but any-

one else who wants to jump in is fine, on the nutrition side, did your study indicate any, as far as the history of the nuns, maybe it was a more controlled group there, were you able to tell any difference in the nutrition there?

Dr. SNOWDEN. Well certainly our big finding in the nutrition area has been with the vitamin Folic Acid, that we could see as the higher of the blood level of the Folic Acid in the Sister that even when she had Alzheimer's disease in her brain that the higher the Folic Acid the less damage to the brain with Sisters who had an Alzheimer's brain. So Folic Acid is extremely important from conception on and obviously is critical to the development of the spinal cord and the brain during the fetal development. Certainly for the March of Dimes that's probably their poster child now is they're really trying to get pregnant women, or women who may get pregnant, to eat Folic more, to get more Folic Acid even before they know they're pregnant. So we know it's important in the development of the nervous system, the brain and the spinal cord. It shouldn't be too surprising to suggest that it also may be very important in the maintenance of the brain, particularly when it's under attack. But that's just one potential candidate. Dr. Hodes could tell us much more about the possibilities of new findings and new studies going on in nutrition. It's something we all can do.

Senator DEWINE. My wife was the nutritionist in the family. What does that translate for me, for the average person. What does that mean? What do you eat, what do you not eat? What does that translate to? What is the diet recommendation?

Dr. SNOWDEN. Well, the easiest way is a multi-vitamin pill.

Senator DEWINE. Okay, that is the cheap way, maybe not cheap, that is the easy way.

Dr. SNOWDEN. Because of a Federal lawsuit many years ago that Folic Acid was added to enriched wheat products that means that whether you're eating pretzels on the plane or enriched breads or breakfast cereals, the Folic Acid—this was designed to try to get Folic Acid in the food stream so that women, before they got pregnant or before they knew they were pregnant, were getting Folic Acid. And that's what's happened over the last several years is that the Folic Acid levels have risen dramatically in the United States. And if Folic Acid ends up being definitely shown to reduce the risk of Alzheimer's disease the Federal law that got Folic Acid into the food stream may end up being the really first classic health maneuver that was designed to reduce Alzheimer's disease without changing anybody's behavior.

Dr. HODES. I'd be happy to elaborate on that.

Senator DEWINE. Please, jump in, Doctor.

Dr. HODES. As Dr. Snowden has emphasized we've learned a lot from clinical and epidemiologic studies, and the Nun Study is an eminent one among those. But what we've learned are suggestions of factors which may correlate with risk of Alzheimer's disease and therefore which may be causally related. So as he points out, clues come from educational history or diet, and most importantly these clues then need to be translated into clinical studies that directly test the effects, along the lines of nutrition and the specific agents that have been mentioned already; there are studies in progress looking at the effects of Folate, B vitamins, antioxidants and their

impact on Alzheimer's. And these are studies that are capable of providing the most definitive answers.

The other general point that I would make in elaboration is that in addition to the important factors through the developmental lifespan of an individual from conception to birth and on, we've learned things in the past decade or so about changes which can occur in an adult, even in older adults, that really ran in the face of what had been dogma not so long ago so that Dr. Snowden and others in the field well understand. A decade of so ago it was well presumed that the brain cells one had as an adult were all one was ever going to have, there was no capacity to regenerate new brain cells. So when cells were lost they were lost forever without replacements. We've learned from animal studies and from humans that in fact the brain is capable, in critical areas, of generating new cells and intriguingly that in animal studies in particular it appears that the pace at which these new cells are generated can be influenced by activity, by physical activity and by intellectual or environmental challenge. So there is hope not only for interventions early in life, which we would all agree are the most effective for prevention, but also for interventions throughout the lifespan that are capable of modifying, preventing and, in principle, even reversing some of the neuronal loss or loss of function in brain cells that is the hallmark of Alzheimer's disease.

Mr. GOLDBERG. Senator.

Senator DEWINE. Mr. Goldberg.

Mr. GOLDBERG. We indicated that we started a Coalition to do this but part of this is also a concept called "Maintain Your Brain" and we'll be doing lots of advertising. And there are only indications, but strong indications, such things as high cholesterol levels, such things as diabetes, watching your sugar, such things as maintaining a good proper blood pressure, all have indications, as well as diet, all have indications that they may help to promote a healthier lifestyle, a better heart but also diminish the risks of Alzheimer's as well. And so that is a message we are going to try to convey to the American people as well, that these things can help, perhaps if not give you a better heart but we think have strong indications to help maintain the brain as well.

Senator DEWINE. That is basically one more reason to do all the right things, then.

Mr. GOLDBERG. Just what our mothers told us.

Senator DEWINE. So, I guess one summary would be to also stay intellectually active. I assume that would have some positive impacts. Dr. Snowden, do we have any data on that? I mean, that is intuitively what you would think but is there any kind of data on that?

Dr. SNOWDEN. Yeah, well there are some clinical trials that have come out that suggest that experimentally getting older Americans to do mentally challenging activities seems to reduce the decline in mental function. But my understanding is that these studies really didn't have the capacity to enroll thousands of people in order to directly test whether that actually ended up reducing the risk of developing Alzheimer's. These studies ultimately will lead to that but it will take more and more years. I mean, basically the National Heart and Lung and Blood Institute, you know, in the 1960s

and 1970s put literally billions of dollars into large-scale population studies in order to study things that we take for granted now, like blood pressure and cholesterol and diet and smoking. We need that kind of, you know, I know it's probably fantasy land but that's the kind of commitment we need, that we've committed billions into studying the heart, I think we need to commit billions into studying large human population studies, particularly clinical trials so we can figure out what to tell people. Because ultimately it's going to end up reducing dramatically health care costs and human suffering. The ultimate in all this is prevention. It's like people drowning in a river and somebody's physician's down there trying to pull people out of the river who are drowning and somebody comes up to him and says the bridge is broken upstream, and the physician says, I'm too busy here to fix the bridge. Well, we need to fix the bridge. That's where the future is, is in preventing these diseases. And in general a lot of things that appear to be good for the heart, for overall health are good for the brain. So a lot of the potential interventions really could reduce Alzheimer's but also reduce stroke, heart disease and potentially cancers as well. So there's a lot riding on this and you pay now or you pay huge amounts later in human suffering and health care costs.

Senator DEWINE. I want to get back to the question of the money. This subcommittee, frankly, when you testify in essence you are preaching to the choir. As you know, this subcommittee is very, very supportive, the chairman has been very, very supportive, as you know, Senator Harkin has, the rest of us have been. But I would like for you, any of you, to try to maybe put this in perspective as far as when we look at the next few years, and you have touched on this a little bit, but try to give us some idea so as we talk to our colleagues and as we talk to our constituents and we talk to the taxpayers, what we can tell them, what, in these tight budget times, what additional money, what we can expect it possibly can do. You do not have a crystal ball but what is the best case here? Give us the ammunition.

Mr. GOLDBERG. Could I make two arguments? If you go to a Governor today in America he will tell you that the thing that is driving the State budgets, which are in trouble, is Medicaid. And the biggest reason people are in nursing homes in this country is Alzheimer's disease. Sixty-five percent of the people in nursing homes today carry a diagnosis of Alzheimer's disease. And what's facing you dramatically is the Medicare program. The Medicare program, a person with Alzheimer's disease, costs three times the amount as the same person at the same age go broke. And if you start looking at the what the baby boomers, the numbers that are going to retire in a few years, they will drive the Federal budget. And I happen to believe there will be such a crisis in the Federal budget that I think it will cause the Medicare program to go broke. I think that is the driver. There was a commercial a few years ago, I remember this, it says, you pay me now or you pay me later. I don't think we can afford the price later.

Senator DEWINE. Anybody else? Good. Very good. Dr. Hodes, you want to take this on a little bit?

Dr. HODES. Yes, thank you.

Senator DEWINE. You have already touched on this a little bit but just kind of give us the big, long-term view on this.

FUNDING IMPACT

Dr. HODES. Yes, to expand on what I'd said earlier, these past years through the wisdom and generosity of Congress and the American public have seen the kind of explosion and information about Alzheimer's that we've heard about today translated now into larger number of prevention and treatment trials than have ever been possible before. And we have now a research community with true genius that is energized with ideas for translating basic science and laboratory discovery into clinical trials and interventions. The momentum of the science in this field is reflected in the applications that we have before us for studies that span the spectrum of basic science through clinical application which we will, with whatever funds are made available, support to the best wisdom of peer review and our own priorities. However, it is also quite clearly true that the numbers of meritorious applications that cannot be funded under this present year's budget is something far in excess of what we've seen before. What does this mean beyond numbers? What does it translate into? It means that we will have fewer opportunities to carry out the basic science to understand the molecular underpinnings of disease which are the basis for understanding future interventions. It means more immediately that we will have to make difficult choices about which promising interventions we attempt. We will not be able to carry out as many studies as rapidly as possible, which in the end, predictably, will have the effect of delaying ultimately what we all feel confident will be the cure. So the more restrained we are in budget now, even with our best exercise of judgement, predictably the more time it will take to make the progress necessary to finally address the problem and eradicate it.

Senator DEWINE. Very good. Well, we just appreciate your testimony, all of you, very much. It has been very, very helpful. It has really put a human face on this very, very tough disease and we appreciate all of you taking your time to travel here and to testify. And on behalf of all the subcommittee we really, really appreciate it. We are going to continue our commitment, I think you know this subcommittee is behind you and behind these efforts. So we are going to continue to work with you and look forward to continuing our efforts together. Thank you very much.

ADDITIONAL SUBMITTED PREPARED STATEMENTS

We have received the prepared statements of Senator Mary L. Landrieu and Phyllis Campbell, president, Urban League of Lancaster County, PA. They will be placed in the hearing record.

[The statements follow:]

PREPARED STATEMENT OF SENATOR MARY L. LANDRIEU

Thank you, Mr. Chairman.

The subject of today's hearing is one that deserves our utmost attention. It is estimated that today, 4.5 million Americans have Alzheimer's Disease (AD). As the average life expectancy continues to increase, and the baby boomer population, as much as some of us may like to deny it, are beginning to age, the number of people affected with AD will skyrocket. If the current trend of AD continues, it is expected

that by 2050, between 12 million and 16 million people will suffer with AD. Something must be done to prevent these estimates from becoming fact.

Much advancement has been made in the field of AD research. Scientists have discovered many of the common characteristics of patients with AD: it is clear that age is a factor; scientists have noted the large deposits of beta-amyloid that occur during the process of AD; having large amounts of homocysteine can almost double one's chances of having AD, as research has shown. These advancements are great and have allowed scientists to find drugs that can help slow down the effects of AD, however, there is still no known cure. The fact of the matter is that today, if you are diagnosed with AD, you will have AD for the rest of your life, and it is highly probable that AD will cause your death.

It is clear that more research is needed to find a cure for AD, but we as the keepers of the purse strings for federal medical funding, we are not allowing this research to take place. In the fiscal year 2004 appropriations bill, the boost in funding for Alzheimer research at the National Institutes of Health (NIH) was only 3.7 percent, compared to the 15 and 16 percent increases that we have given NIH during the five years prior. Similarly, the funding for the Alzheimer Disease Demonstration Grant Program was cut by $1.5 million in fiscal year 2004. And it appears that these trends of lowered funding are not stopping. In the President's fiscal year 2005 Budget Request, the funding level for Alzheimer research at NIH was increased by only 2.7 percent.

As the federal deficit continues to balloon out of control, we must be wise in how we spend our money. One practical way to prudently spend our money is to fund projects and research that will save us money in the future. Funding Alzheimer research is a prime example of this. If scientists can discover a cure for AD, we would literally save billions in the next few years. It is estimated that if the number of people affected by AD continues to increase as expected, the cost of AD on Medicare will increase from $31.9 billion in 2000 to $49.3 billion (over 50 percent) by 2010, while the cost of AD on Medicaid will increase by 80 percent (from $18.2 billion to $33 billion) over that same period of time. Moreover, government is not the only entity getting hit with this heavy bill. Today, seven out of ten people affected with AD live at home with 75 percent of their care being family and friends. This causes AD to cost American businesses over $60 billion every year, over half of which is costs relating to caregivers of AD, loss in productivity, absenteeism, and worker replacement. By actually increasing funding for research to find a cure for AD, we can prevent these extreme costs from occurring.

AD affects millions of Americans: one out of every ten Americans has a family member who is stricken with this fatal disease, and one out of every three Americans knows someone with it. We are on the brink of being able to reverse the current rising trends of AD, but in order to do this we must provide scientists and researchers with the funds they need. Thank you.

PREPARED STATEMENT OF PHYLLIS CAMPBELL, PRESIDENT, URBAN LEAGUE OF LANCASTER COUNTY, PENNSYLVANIA

Good morning, Senators. Thank you for inviting me here today. I am honored—and a bit overwhelmed—to sit here with people who are devoting their lives to the fight against Alzheimer's disease. And I want to pay a special tribute to Coach and Mrs. Orr for their courage in sharing their very personal story.

Let me make clear at the outset that I am not an expert on Alzheimer's disease. I have friends and acquaintances who are struggling with this awful disease, and I see the horrible toll it is taking on them. I consider myself fortunate that my family does not have first hand experience with this disease.

So, why I am testifying. I am here as the President of the Lancaster County Urban League. We are one of more than 150 organizations, representing over 53 million people, that have joined the Alzheimer's Association in a Coalition of Hope, to bring more attention and resources to the fight against Alzheimer's disease.

As you know, the African-American community faces many public health crises—from infant mortality, to AIDS, to heart disease and diabetes. While our attention was otherwise focused, Alzheimer's disease has invaded our community and stolen from us some of our richest resources—our grandparents, our parents, our spouses.

Alzheimer's has become a silent epidemic among African-Americans. But we can be silent no longer. That is why we, like many other Urban Leagues around the country, have joined the Coalition of Hope.

There are at least five compelling reasons why African-Americans must join the fight against Alzheimer's.

First, we are getting older—and age is a key risk factor for Alzheimer's. By the middle of the century, there will be four times as many African-Americans aged 65 and over than there are today (11 million compared with 2.8 million in 2000). And there will be six times as many of us aged 85 and over (over 2 million compared with 300,000 today)—when we will be most at risk for Alzheimer's. If we come down with Alzheimer's at the same rate everyone else does, more than 5 million African-American babyboomers will get Alzheimer's disease.

Second, there is evidence we may be at greater risk than others. I'm told that three out of four studies that have looked at Alzheimer's in our community show rates of dementia ranging from 14 percent to 100 percent higher than in white Americans. We need to figure out why this is happening, and what we can do about it.

Third, there is growing and alarming evidence that Alzheimer's may be linked to vascular disease, which is rampant in our community. I've heard about the study that shows people with high blood pressure are twice as likely to get Alzheimer's. That frightens me, because 65 percent percent of African-American elders have hypertension (compared with 51 percent of white elders.) And African-Americans have a 60 percent higher risk of type 2 diabetes—a condition that contributes directly to vascular disease.

Fourth, dementia among African-Americans is seriously unreported. We tend to be diagnosed at later stages of Alzheimer's, even though everything I've heard is that treatment works best when it is started early in the disease. We must get our community to recognize the early signs of dementia, to understand that this is not just normal aging, and to seek evaluation and treatment.

Fifth, we must make sure that potential treatments for Alzheimer's will work for African-Americans. There is growing evidence that the genetics of Alzheimer's may be different in African-Americans, and that our response to drug treatments may vary. NIA must have the resources it needs to identify all of the genetic risk factors for Alzheimer's disease, and to speed up the clinical trials of promising drug therapies. And we must make sure there is enough money in those studies to involve sufficient numbers of African-Americans in order to draw valid and specific conclusions for our community.

That is why I am here today, on behalf of the Lancaster County Urban League and all of the members of the Coalition of Hope—to urge you to provide sufficient funds for NIA and NIH to complete its work on Alzheimer's disease. So that Alzheimer's will become nothing more than a memory, not just for African-Americans but for all of us.

Thank you.

ADDITIONAL COMMITTEE QUESTIONS

Senator DEWINE. There will be some additional questions which will be submitted for your response in the record.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR MARY L. LANDRIEU

Question. Some critics of increasing funding for research have argued that the increases NIH received for Alzheimer research prior to last fiscal year flooded NIH, and thus increases of that size are no longer necessary. Will the decrease in the rate of increase of funding impede Alzheimer research at NIH? If so, what will you not be able to do now?

Answer. A decrease in funding at this time would mean the National Institute on Aging (NIA) could not award grants to Alzheimer's disease (AD) research projects at levels recommended by the scientific peer review process. The NIA pay line for AD research will only reach to around 16 percent in fiscal year 2004, compared to 25 percent in fiscal year 2003. This means that only 1 out of 6 peer-reviewed studies is able to be funded. To reach even this level, new awards have had to be cut by an average of 18 percent, with the result that applicants have had to remove some of their aims, or in the case of large grants, some whole projects have been eliminated. The surge in Alzheimer's disease (AD) research initiatives and grant applications generated by the generous doubling of NIH budget between fiscal year 1999 and fiscal year 2003 continues at a volume that far exceeds current or projected funding. In fiscal year 2004, the NIA received many more grant applications than

anticipated (approximately 40 percent more applications in fiscal year 2004 than received in fiscal year 2003), and at the same time, average grant costs have risen.

The budget doubling of past fiscal years has also fast-tracked NIA AD clinical trials and made possible some exciting and innovative research collaborations. Continued funding at adequate levels will be needed to maintain and promote these scientific endeavors. NIA supports approximately 25 AD clinical trials, including large-scale prevention trials, which are testing agents such as anti-inflammatory drugs, statins, homocysteine-lowering vitamins, and anti-oxidants for their effects on slowing progress of the disease, delaying the onset of AD, or preventing the disease altogether. The price of conducting these AD prevention trials has increased and cost from $6 to $8 million per trial annually to enroll the needed number of subjects (as many as 2,000 for some studies) and to evaluate treatment effects. Finding a biological way to accurately track AD development and progression is one of the objectives of the $60 million, 5-year NIA Neuroimaging Initiative (ADNI). This is a large-scale public-private partnership among NIA/NIH, academic investigators, the pharmaceutical and imaging equipment industries through the Foundation for the NIH, the Food and Drug Administration, and with participation from the Alzheimer's Association. This initiative is slated to begin in October 2004 with patient recruitment in April 2005. At current funding levels, only MRI and PET, but not other imaging modalities, will be evaluated in the ADNI for utility as surrogate markers in AD. These other modalities could include, for example, magnetic resonance spectroscopy (MRS) to measure certain neurochemical compounds, functional MRI (fMRI) to measure brain function in response to certain stimuli, and diffusion tensor imaging (DTI) to measure the fiber pathways that connect different parts of the brain.

Question. A large amount of progress in finding a cure for Alzheimer's Disease has been made in recent history, and it appears that we are on the brink of finding a cure. Pretending that money is an unlimited resource, how much money do you estimate it would take to find a cure for AD?

Answer. It is difficult to predict the pace or certainty of scientific discovery or to estimate the funding needed to find a cure. However, it can be said a significant increase in funding for Alzheimer's disease research would allow for new and expanded efforts in basic, translational and clinical research, while capitalizing on the many new initiatives and findings that were made possible during the years of the NIH doubling, including the entry of new investigators into this challenging field of AD research.

Recent advances in Alzheimer's disease research, coupled with new and improved technologies in areas such as imaging, as well as the ever-expanding knowledge and tools available in the field of genetics, are creating new opportunities to make advances in preventing, treating, slowing the progression and possibly curing Alzheimer's disease. Researchers continue to make new basic research discoveries about the death of neurons and loss of their connections, and how to prevent this; pathways leading to plaque and tangle formation, and how to remove them, including promising vaccine therapy; protein aggregation and how to dissolve the aggregates; and underlying causes of memory loss and how to prevent this. In the area of translational research, better animal models of AD for testing possible therapies are being developed and many studies are being conducted on possible ways of preventing amyloid and tangle accumulation. Pre-clinical drug research and AD Prevention trials are providing us with some information which will be crucial to understanding how to prevent or delay the onset of Alzheimer's.

CONCLUSION OF HEARING

Senator DEWINE. Thank you all very much for being here. That concludes our hearing.

[Whereupon, at 10:30 a.m., Thursday, March 23, the hearing was concluded, and the subcommittee was recessed, to reconvene subject to the call of the Chair.]

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