Introduction

National Alzheimerâ€™s Project Act

Alzheimerâ€™s Disease and Related Dementias

The Challenges

Framework and Guiding Principles

Goals as Building Blocks for Transformation

2021 Update

Goal 1: Prevent and Effectively Treat Alzheimerâ€™s Disease and Related Dementias by 2025

Strategy 1.A: Identify Research Priorities and Milestones

Strategy 1.B: Expand Research Aimed at Preventing and Treating Alzheimerâ€™s Disease and Related Dementias

Strategy 1.C: Accelerate Efforts to Identify Early and Presymptomatic Stages of Alzheimerâ€™s Disease and Related Dementias

Strategy 1.D: Coordinate Research with International Public and Private Entities

Strategy 1.E: Facilitate Translation of Findings into Medical Practice and Public Health Programs

Goal 2: Enhance Care Quality and Efficiency

Strategy 2.A: Build a Workforce with the Skills to Provide High-Quality Care

Strategy 2.B: Ensure Timely and Accurate Diagnosis

Strategy 2.C: Educate and Support People with Alzheimerâ€™s Disease and Related Dementias and Their Families upon Diagnosis

Strategy 2.D: Identify High-Quality Dementia Care Guidelines and Measures Across Care Settings

Strategy 2.E: Explore the Effectiveness of New Models of Care for People with Alzheimerâ€™s Disease and Related Dementias

Strategy 2.F: Ensure that People with Alzheimerâ€™s Disease and Related Dementias Experience Safe and Effective Transitions between Care Settings and Systems

P

Strategy 2.G: Advance Coordinated and Integrated Health and Long-Term Services and Supports for People Living with Alzheimerâ€™s Disease and Related Dementias

Strategy 2.H: Improve Care for Populations Disproportionally Affected by Alzheimerâ€™s Disease and Related Dementias, and for Populations Facing Care Challenges

Goal 3: Expand Supports for People with Alzheimerâ€™s Disease and Related Dementias and Their Families

Strategy 3.A: Ensure Receipt of Culturally and Linguistically Appropriate Education, Training, and Support Materials

Strategy 3.B: Enable Family Caregivers to Continue to Provide Care while Maintaining Their Own Health and Well-Being

Strategy 3.C: Assist Families in Planning for Future Care Needs

Strategy 3.D: Maintain the Dignity, Safety and Rights of People with Alzheimerâ€™s Disease and Related Dementias

Strategy 3.E: Assess and Address the Long-Term Services and Supports Needs of People with Alzheimerâ€™s Disease and Related Dementias

Goal 4: Enhance Public Awareness and Engagement

Strategy 4.A: Educate the Public about Alzheimerâ€™s Disease and Related Dementias

Strategy 4.B: Work with State, Tribal, and Local Governments to Improve Coordination and Identify Model Initiatives to Advance Alzheimerâ€™s Disease and Related Dementias Awareness and Readiness across the Government

Strategy 4.C: Coordinate United States Efforts with Those of the Global Community

Goal 5: Improve Data to Track Progress

Strategy 5.A: Enhance the Federal Governmentâ€™s Ability to Track Progress

On January 4, 2011, the National Alzheimer's Project Act (NAPA) (Public Law 111-375) was signed into law. The Act defines "Alzheimer's" as Alzheimer's disease and Alzheimerâ€™s disease-related dementias (AD/ADRD) and requires the Secretary of the U.S. Department of Health and Human Services (HHS) to establish the National Alzheimer's Project to:

Create and maintain an integrated National Plan to overcome Alzheimer's disease;

Coordinate Alzheimer's disease research and services across all federal agencies;

Accelerate the development of treatments that would prevent, halt, or reverse the course of Alzheimer's disease;

Improve early diagnosis and coordination of care and treatment of Alzheimer's disease;

Decrease disparities in Alzheimer's disease for racial and ethnic minority populations that are at higher risk for Alzheimer's disease; and,

Coordinate with international bodies to fight Alzheimer's disease globally.

The law also establishes the Advisory Council on Alzheimer's Research, Care, and Services (Advisory Council) and requires the Secretary of HHS, in collaboration with the Advisory Council, to create and maintain a National Plan to overcome AD/ADRD.

NAPA offers a historic opportunity to address the many challenges facing people with AD/ADRD and their families. Given the great demographic shifts that will occur over the next 30 years, including the doubling of the population of older adults, the success of this effort is of great importance to people with AD/ADRD and their family members, caregivers, public policy makers, and health and social service providers.

Alzheimerâ€™s Disease and Related Dementias

Alzheimer's disease (AD) is an irreversible, progressive brain disease that affects as many as 5.5 million Americans.[1] It slowly destroys brain function, leading to cognitive decline (e.g., memory loss, language difficulty, poor executive function), behavioral and psychiatric disorders (e.g., depression, delusions, agitation), and declines

in functional status (e.g., ability to engage in activities of daily living (ADLs) and self-care).[2] In 1906, Dr. Alois Alzheimer first documented the disease when he identified changes in the brain tissue of a woman who had memory loss, language problems, and unpredictable behavior. Her brain tissue included abnormal clumps (amyloid plaques) and tangled bundles of fibers (neurofibrillary tangles). Brain plaques and tangles, in addition to the loss of connections between neurons, are the main pathological features of AD.[3] However, other pathologic features occur commonly in the brain of older Americans diagnosed with AD, and these are thought to also contribute to the burden of dementia in the United States.[3, 4]

In addition to AD, this National Plan addresses Alzheimer's disease-related dementias (ADRD) consistent with the approach Congress used in NAPA. ADRD include frontotemporal dementia (FTD), Lewy body dementia (LBD), vascular contributions to cognitive impairment and dementia (VCID), and mixed dementias -- especially AD mixed with cerebrovascular disease or Lewy bodies. It is often difficult to distinguish between AD and ADRD in terms of clinical presentation and diagnosis. Some of the basic neurodegenerative processes have common pathways. Many people have the pathology of more than one type of dementia in their brains.[5] People with all forms of dementia and their families and caregivers face similar challenges in finding appropriate and necessary medical care and community-based services. As such, many of the actions described in this plan are designed to address these conditions collectively.

The first symptom of AD/ADRD is often memory impairment; however, poor attention and executive function, behavioral disorders, visual disturbances, sleep disruption or motor symptoms can often be the presenting symptoms. As the disease progresses, memory can decline, and other functions like language skills and decision making become more difficult. Personality and behavior changes often occur. Over time, a person with the disease may no longer recognize family and friends. Eventually, many persons who survive with AD/ADRD are completely reliant on others for assistance with even the most basic ADLs, such as eating, dressing, and bathing.[4, 6]

In more than 90% of people with AD/ADRD, symptoms do not appear until after age 60, and the incidence of the disease increases with age from 5.3% among adults ages 65-74 to 34.6% among adults aged 85 and older.[7] The causes of AD/ADRD are not completely understood, but researchers believe they include a combination of genetic, environmental, and lifestyle factors.[4] The importance of any one of these factors in increasing or decreasing the risk of developing AD/ADRD may differ from person to person. In rare cases, known as early-onset or younger-onset dementia, people develop symptoms in their 30s, 40s, or 50s. A significant number of people with Down syndrome develop dementia in their 50s or younger, often placing increased burden on their families and caregivers. The relative risk of dementia

is higher in rural than urban areas, particularly among minority populations. Nationally, Black Americans are twice as likely and Hispanic or Latino (Hispanic) Americans are 1.5-times as likely to develop AD/ADRD compared to White Americans.[8, 9]

AD/ADRD is a major public health issue and will increasingly affect the health and well-being of the population. Unless the diseases can be effectively treated or prevented, the number of Americans with AD/ADRD will increase significantly in the next 2 decades as the population ages. The Bureau of the Census estimates that the number of people age 65 and older in the United States will almost double, to 88 million by 2050. The prevalence of people with AD/ADRD doubles for every 5-year interval beyond age 65. Without a preventive treatment or cure, the significant growth in the population over age 85 that is estimated to occur between 2015 and 2050 (from 6.3 million to 19 million) suggests a substantial increase in the number of people with AD/ADRD.

Significant emotional, physical, and financial stress is placed on individuals with AD/ADRD and their family members. Unpaid caregivers, often family members and friends, provide the majority of care for people with AD/ADRD in the community. Unpaid caregivers frequently do not identify themselves as such; they may be a wife, daughter, husband, parent, son, or friend helping a person whom they care about. However, the intensive support required for a person with AD/ADRD can negatively impact the caregiver's emotional and physical health and well-being and their ability to work. Unpaid caregivers often report symptoms of depression and anxiety, and they have poorer health outcomes than their peers who do not provide such care.[6]

Dementia care costs are significant and often a burden to families and others providing unpaid care. Recent estimates from one nationally representative study found that paid and unpaid care costs for people older than age 70 with dementia in the United States in 2010 were between $159 billion and $215 billion. These figures include direct medical expenditures, costs for long-term services and supports (LTSS) including institutional and home and community-based services (HCBS), and two different estimates of the value of unpaid care provided by family members and friends. These costs could rise dramatically with the increase in the numbers of older adults in coming decades. Care costs per person with dementia in 2010 ranged from $75,000 to $83,000 depending on how unpaid care costs were estimated.[10] These national dementia care costs are comparable to, if not greater than, those for heart disease and cancer.[11]

Caring for people with the disease also strains health and long-term care systems. Individuals with AD/ADRD use a disproportionate amount of health care resources; for instance, they are hospitalized 2-3 times as often as people of

the same age who do not have the disease.[12] Similarly, estimates from national data show that nearly seven out of ten residents in assisted living residences have some form of cognitive impairment.[13] As the number of people with AD/ADRD grows over the next 3 decades, these diseases will place a major strain on these care systems as well as on Medicare and Medicaid, the major funders of institutional, clinical care, and HCBS. Although Medicaid, a program for eligible low income Americans, covers long-term care such as nursing home care and HCBS, Medicare does not. Most Americans underestimate the risk of disability and the need for long-term care. More than half of older adults turning 65 today will develop a disability such as AD/ADRD serious enough to require LTSS, although most will need assistance for less than 2 years. About one in seven will have a disability for more than 5 years. On average, an American turning 65 today will incur $138,000 in future LTSS costs. Families will pay about half of the costs themselves out-of-pocket with the rest covered by current public programs and private insurance.[14]

The Challenges

The National Plan was designed to address the major challenges presented by AD/ADRD:

While research on AD/ADRD has made steady progress, there are no pharmacological or other interventions known to definitively prevent, treat, or cure the diseases. While HHS and other groups have taken steps to develop quality measures to assess dementia care and to improve the training of the health and long-term care workforce -- for both paid and unpaid caregivers -- there is room for improvement. Family members and other unpaid caregivers, who take on the responsibility of caring for a person with AD/ADRD, also need services and supports. The majority of people with AD/ADRD live in the community, where their families provide most of their care. The toll of caregiving can have major implications for caregivers and families as well as population health, with about one-third of caregivers reporting symptoms of depression.[13, 15] Stigmas and misconceptions associated with AD/ADRD are widespread and profoundly impact the care provided to and the isolation felt by people with AD/ADRD and their families and caregivers. Public and private sector progress is significant but should be coordinated and tracked. In addition, data to track the incidence, prevalence, trajectory, and costs of AD/ADRD are limited.

Framework and Guiding Principles

The enactment of NAPA provided an opportunity to focus the Nation's attention on the challenges of AD/ADRD. In consultation with stakeholders both inside and outside of the Federal Government, this National Plan represents the

blueprint for achieving the vision of a nation free of AD/ADRD.

Central to and guiding the National Plan are the people most intimately impacted by AD/ADRD -- those who have the diseases and their families and other caregivers. Individuals with AD/ADRD and their caregivers receive assistance from both the clinical health care system and long-term care including HCBS, legal services, and other social services. Both the clinical care and community/support environments need better tools to serve people with AD/ADRD and their unpaid caregivers. Ongoing and future research seeks to identify interventions to assist clinicians, supportive service providers, HCBS providers, persons living with dementia, and caregivers. All of these efforts must occur in the context of improved awareness of the diseases, their risk factors, and their impacts, as well as opportunities for improvement. The Plan aims to address these key needs. HHS is committed to tracking and coordinating the implementation of NAPA and making improvements aimed at achieving its ambitious vision.

The National Plan continues to be guided by three principles:

Optimize Existing Resources and Improve and Coordinate Ongoing Activities. The first step in developing the National Plan was to set up a federal interagency working group and conduct an inventory of all federal activities involving AD/ADRD. In creating the Plan, HHS and its partners sought to leverage these resources and activities, improve coordination, and reduce duplication of efforts to better meet the challenges of AD/ADRD. The activities included in the inventory comprise ongoing work and new opportunities. The federal working group process continues to improve coordination and awareness throughout the Federal Government and set in motion commitments for further collaboration. Further, this process has allowed for identification of non-AD-specific programs and resources that may be leveraged to advance AD/ADRD care and prevention. Support Public-Private Partnerships. The scope of the challenges of AD/ADRD is so great that partnerships with a multitude of public and private stakeholders are essential to making progress. The original National Plan began the partnership process by identifying areas of need and opportunity. The Plan continues to rely on the Advisory Council in particular to identify key areas where public-private partnerships can improve outcomes. Transform the Way We Approach Alzheimer's Disease and Related Dementias. The National Plan recognizes that this undertaking will require continued, large-scale, coordinated efforts across the public and private sectors. With principles 1 and 2 above, as well as the ambitious vision that the Federal Government has committed to through this Plan, HHS and its federal partners continue to take transformative action needed to address these diseases. With ongoing input from the Advisory Council, the Federal Government continues to identify the most promising areas for progress and marshal resources from both within and outside the government to act on these opportunities.

Goals as Building Blocks for Transformation

Achieving the vision of eliminating the burden of AD/ADRD starts with concrete goals. Below are the five that form the foundation of the National Plan:

Prevent and Effectively Treat Alzheimer's Disease and Related Dementias by 2025. Enhance Care Quality and Efficiency. Expand Supports for People with Alzheimer's Disease and Related Dementias and their Families. Enhance Public Awareness and Engagement. Track Progress and Drive Improvement.

2021 Update

This is the ninth Update to the National Plan. In addition to the five goals mentioned above, in 2021 a sixth goal is being added:

Accelerate Action to Promote Healthy Aging and Reduce Risk Factors for Alzheimerâ€™s Disease and Related Dementias

In recognition of the advances in understanding of risk factors for AD/ADRD, in July 2020 the Advisory Council on Alzheimerâ€™s Research, Care, and Services recommended the creation of a subcommittee focused on modifiable risk factors. The subcommittee was charged with exploring the evidence and ways to reduce the burden of risk factors to prevent or delay onset of AD/ADRD. Subcommittee members represented various areas of expertise, including research, public health, innovation, and clinical care and were from diverse racial, ethnic, and geographical backgrounds. The subcommittee reviewed the evidence and received extensive stakeholder feedback. In July 2021, the subcommittee recommended that HHS add a sixth goal to the National Plan to address AD/ADRD focused on risk reduction. The subcommitteeâ€™s recommendation was adopted by the Advisory Council on July 19, 2021.

Based on this recommendation and the latest research, HHS and its federal partners added this sixth goal, Accelerate Action to Promote Healthy Aging and Reduce Risk Factors for Alzheimerâ€™s Disease and Related Dementias to the National Plan in this 2021 Update. Under the new goal, the federal agencies will advance and expand research on risk factors for AD/ADRD. They will also strengthen the infrastructure needed to disseminate information about risk factors, interventions to address them, and related health promotion activities to health care and community providers and to public health networks.

Figure 1 shows how all six goals cover the issues related to AD/ADRD throughout the disease trajectory.

Image

As of December 2021, the United States is still in the midst of the COVID-19 pandemic. The sheer volume of federal activities to address the pandemic, support older adults at highest risk of COVID-19 infection and mortality, and vaccinate Americans of all ages, is too great to include in this Update and goes well beyond the scope of the National Plan. Instead, agencies have had to adapt their programs, activities, and interventions to navigate the challenges of the pandemic as seamlessly and effectively as possible. Integrating their work into the existing framework of the National Plan is meant to represent those ongoing processes and achievements.

Goal 1: Prevent and Effectively Treat Alzheimerâ€™s Disease and Related Dementias by 2025

Research continues to expand our understanding of the causes of, treatments for, and prevention of AD/ADRD. For example, in 2021 the Food and Drug Administration (FDA) approved aducanumab under the accelerated approval pathway. This goal seeks to develop additional prevention and treatment modalities by 2025. Ongoing research and clinical inquiry can inform our ability to prevent AD/ADRD, minimize its symptoms, and delay its progression. Under this goal, HHS will prioritize and accelerate the pace of scientific research and ensure that as evidence-based solutions are identified, they are quickly translated, put into practice, and brought to scale so that individuals with AD/ADRD can benefit from increases in scientific knowledge. HHS will identify interim milestones and set ambitious deadlines for achieving these milestones in order to meet this goal.

Strategy 1.A: Identify Research Priorities and Milestones

Research agencies undertake research planning processes on an ongoing basis, but a special effort is needed to identify the priorities and milestones to achieve Goal 1. The actions below will identify the priorities, establish milestones, and ensure that appropriate stakeholders are involved in the planning process aimed at preventing AD/ADRD and minimizing it as a health burden by 2025. During the course of this work, National Institutes of Health (NIH) and partner agencies will develop research priorities and a plan for implementing each phase of research in a coordinated manner.

(UPDATED) Action 1.A.1: Regularly convene an Alzheimerâ€™s disease research summit to update priorities

Lead Agency: NIH/NIA

Partners: national and international experts, public and private stakeholders, academia, industry, professional and advocacy groups

The 2021 Alzheimerâ€™s Disease Research Summit was held virtually in April. This was the fourth such summit, with previous summits occurring in 2012, 2015, and 2018. The summits bring together a multi-stakeholder community, including government, industry, academia, private foundation, and patient advocacy groups, to identify research priorities and further translate AD/ADRD research findings into practice. The goal is to accelerate the development of effective, disease-modifying, and palliative therapies for the cognitive as well as neuropsychiatric symptoms of Alzheimer's. The 2021 Summit built on the foundation laid through the work of the previous summit participants. Participants provided individual input that showcased progress to date and identified further gaps and opportunities toward the goal of precision medicine for AD/ADRD treatment and prevention. NIH is committed to regularly updating its research priorities and plans are underway for the next AD Research Summit in 2024.

For more information see:

(ONGOING) Action 1.A.2: Solicit diverse community input on Alzheimerâ€™s disease research priorities

Lead Agency: NIA

National research summits (including the Alzheimerâ€™s Disease Research Summit, Alzheimerâ€™s Disease-Related Dementias Summit, and National Research Summit on Care, Services, and Supports for Persons with Dementia and their Caregivers) are held yearly on a rotating basis to gather scientific input and identify gaps and opportunities. This information factors into NIHâ€™s research plan for the 2025 goal, which is outlined as a series of research implementation milestones. These milestones and the accompanying milestone database are updated annually based on this diverse input. This planning process and its systematic updates have informed the research community about NIHâ€™s interests and priorities in funding projects in AD/ADRD. As of July 2020, the milestone database now includes better tracking of progress including success criteria and specific implementation activities.

For more information, see:

(ONGOING) Action 1.A.3: Regularly update the National Plan and refine Goal 1 strategies and action items based on feedback and input

Lead Agency: ASPE

Partners: NAPA Advisory Council, NIH/NIA

HHS and its federal partners will use the diverse input received through the Research Summits on AD/ADRD and on Care and Services to inform implementation of the National Plan. An updated Goal 1 will reflect the priorities, milestones, and timeline elements identified through these processes to accelerate research in this area. These will be incorporated into the next iteration of the National Plan and will be updated on an annual basis with the assistance of consensus advice from the Advisory Council.

(ONGOING) Action 1.A.4: Update research priorities and milestones

Lead Agency: ASPE

Partners: NAPA Advisory Council, NIH/NIA

To ensure that the research priorities and milestones reflect the broad input of the scientific community and the public, one Advisory Council meeting per year will be focused on this area. The Research Subcommittee of the Advisory Council will collect input and recommend priorities and milestones for consideration by the Advisory Council as official recommendations. As appropriate, researchers in the field will also be invited to present at these meetings.

(ONGOING) Action 1.A.5: Create a timeline with milestones for achieving Goal 1

Lead Agencies: NIA, NINDS

Since the advent of the National Plan, NIHâ€™s planning process for research on AD/ADRD has expanded in inclusion and

scope among NIH Institutes and Centers and stakeholders across the scientific and care communities. Hearing a diverse expertise and opinions is critical to updating research recommendations based on an open review of scientific progress. It also ensures prioritization based on important scientific questions that must be answered to advance our understanding of these complex disorders and helps identify how federal and other public and private organizations can most effectively collaborate to address research priorities. Ultimately, information obtained through the various research summits results in the formation and/or update of the implementation research milestones, which set forth activities through FY 2025 to address the goals of the National Plan. The latest of these updates took place after the Alzheimerâ€™s Disease Research Summit in April 2018 and Alzheimerâ€™s Disease-Related Dementias Summit in March 2019. Updates are in process following the 2020 Care Summit and the 2021 Alzheimerâ€™s Disease Research Summit.

For more information, see:

(ONGOING) Action 1.A.6: Regularly convene an Alzheimerâ€™s disease-related dementias summit to review progress on research recommendations, and refine and add new recommendations as appropriate based on recent scientific discoveries

Lead Agency: NINDS

Partners: academia, industry, professional and advocacy groups

The National Institute of Neurological Disorders and Stroke (NINDS) convened the most recent ADRD Summit on March 14-15, 2019. The next ADRD Summit will take place in March 2022, and initial planning is underway. As in the past, researchers, clinicians, patients, caregivers, families, and advocates will gather to assess scientific progress and update research recommendations for the ADRD scientific communities including a special focus on mixed dementias, VCID, FTD, and LBD as well as the broader cross-cutting areas, such as AD/ADRD health disparities.

For more information, see:

(UPDATED) Action 1.A.7: Regularly convene a Research Summit on Care, Services, and Supports for Persons with Dementia and their Caregivers

Lead Agencies: ASPE, NIH

Partners: NAPA Advisory Council, academia, industry, professional and advocacy groups

Following the success of the first Summit in 2017, the second National Research Summit on Care, Services, and Supports for Persons with Dementia and their Caregivers, hosted and sponsored by the National Instituteon Aging (NIA) with support from contributors through the Foundation for the NIH, was held as a Virtual Summit Series in 2020.

The 2020 Care Summit brought together individuals representing a variety of disciplines and backgrounds, including researchers as well as those living with dementia, care partners, providers, and advocates to identify evidence-based programs, strategies, approaches, and other research that can be used to improve the care, services, and support of persons living with dementia and their caregivers. Released in December 2020, the final report summarizes research gaps and opportunities for propelling advances in policy, practice, and care. These include the need for research on the economic impact of care on individuals, families, health systems, and society; and the need for innovation in how medical care and LTSS for persons with dementia are organized, financed, and delivered. There is strong evidence of profound disparities in dementia care among subpopulations most affected by AD/ADRD, and new research is needed to explore effects on health and receipt of care in subpopulations that are less well understood (e.g., minoritized populations and those who live alone with dementia).

For more information, see:

(ONGOING) Action 1.A.8: Regularly review the Congressionally Directed Medical Research Programâ€™s Peer Reviewed Alzheimer's Research Program Strategic Plan

Lead Agency: DoD

The Congressionally Directed Medical Research Program (CDMRP) is a partnership between the U.S. Congress, the military, and the public to fund innovative and impactful research in targeted program areas. One of the CDMRPâ€™s is the Peer Reviewed Alzheimer's Research Program (PRARP), which is specifically focused on understanding the relationship between traumatic brain injury (TBI) and dementia. In 2019, the PRARP released an updated Strategic Plan that identified the high-impact research goals in the areas of TBIs and AD/ADRD. The Strategic Plan summarizes research funding and findings though the PRARP program since 2011, and identified short, medium, and long-term goals for the program.

For more information, see:

Strategy 1.B: Expand Research Aimed at Preventing and Treating Alzheimerâ€™s Disease and Related Dementias

HHS and its federal partners will expand clinical trials on pharmacologic and non-pharmacologic interventions to prevent AD/ADRD and manage and treat its symptoms. The Federal Government will address the challenge of enrolling people in clinical trials who are representative of the countryâ€™s diverse population, including racial and ethnic groups that are at higher risk for AD/ADRD, through new partnerships and outreach. These actions will build on ongoing research focused on the identification of genetic, molecular, and cellular targets for interventions and build on recent advances in the field.

(UPDATED) Action 1.B.1: Expand research to identify the molecular and cellular mechanisms underlying Alzheimerâ€™s disease and related dementias, and translate this information into potential targets for interventions

Lead Agencies: NIA, NINDS

Partners: potential research partners in the public and private sectors

In the past year, NIA and NINDS have issued several funding opportunity announcements (FOAs) focused on research to help develop a better understanding of the growing list of genetic risk factors and molecular pathways that are involved in AD/ADRD. For example, in 2020, under the â€œMolecular Mechanisms of Blood Brain Barrier Function and Dysfunction in AD/ADRDâ€• FOA, NINDS funded four large research teams to examine how damage to the blood brain barrier occurs and how it may contribute to cognitive impairment. In response to these FOAs and investigator-initiated studies, researchers are developing a new generation of research tools to identify, explore, and validate a variety of targets with therapeutic potential. These sophisticated tools allow researchers to collect and integrate layers of biological data in novel ways, opening the door to new insights into the origins and progression of AD/ADRD.

These new tools are also helping researchers gain a clearer picture of the complex underlying mechanisms of these devastating neurological disorders. They are leading to an understanding of the interplay among relevant molecules and systems, the relationship between amyloid and tau proteins, the role of immunity and inflammation, the involvement of metabolic and cardiovascular pathways, the regulation of cell-type-specific proteome dynamics, the characterization of

the preclinical/prodromal phase of a-synucleinopathies, the etiology of infectious pathogens in AD/ADRD, and the selective cell and network vulnerability and impact of brain aging in neurodegenerative diseases. This broader view of the basic biology of AD/ADRD could lead to potential breakthroughs. One type of tool that is critical for understanding what may be happening in the brains of patients is animal models. To fill the critical need for next-generation animal models for AD/ADRD, NINDS recently awarded several large grants under the Development and Validation of Advanced Mammalian Models for AD/ADRD FOA in order to develop models for FTD, VCID, LBD, and mixed dementias/neurodegeneration.

For more information, see:

A key part of NIHâ€™s strategy for developing new treatments for AD/ADRD is to bolster the translation of basic research findings into discovery and development of new drugs and devices for disease treatment and prevention. The length of time required for researchers to discover a biological mechanism of disease, such as a gene variant that does not function normally, and then develop an effective treatment without toxic side effects has been 12-15 years. Additionally, very few drug candidates or devices succeed through the pipeline to reach FDA approval, because they are not found to be both safe and effective. To accelerate the discovery of effective treatments that will become broadly available to the public, NIH has developed programs to make data, knowledge, and research tools widely available to all researchers. Instead of competing with each other, stakeholders in industry, academia, and government are collaborating to reach a common goal: developing effective treatments for AD/ADRD.

For more information, see:

Thanks to the substantial investment in AD/ADRD research over the past several years, NIH has increased its drug discovery efforts significantly. Of the many therapeutic programs supported by NIH for AD/ADRD, ten have now matured through the preclinical development process and are currently being tested in humans in Phase I and Phase II clinical trials. These ten new drug candidates target multiple aspects of the disease process including neuroinflammation, proteostasis (e.g., abnormal protein folding), neurogenesis, synaptic dysfunction, etc.

Established in 2019, TaRget Enablement to Accelerate Therapy development for Alzheimerâ€™s Disease (TREAT-AD) consortium is another recent addition to NIH-supported translational infrastructure established through the Alzheimerâ€™s Centers for Discovery of New Medicines. This $73 million enterprise has two translational centers with a

common mission: to diversify and accelerate therapy development for AD/ADRD through the development of open-source tools, reagents, and methods for robust validation of candidate targets delivered by the Accelerating Medicines PartnershipÂ® Program for Alzheimerâ€™s Disease (AMPÂ®-AD) program and other target discovery programs and by integrating a set of novel targets into drug discovery campaigns. Each TREAT-AD center brings together world-class expertise in data science, computational biology, disease biology, structural biology, assay development, medicinal chemistry, pharmacology, and clinical research.

For more information, see:

NIHâ€™s Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are an integral source of capital for early-stage United States small businesses that are creating innovative technologies to improve health. These programs help small businesses break into the federal research and development arena, create life-saving technologies, and stimulate economic growth. This funding also helps the private sector bring promising technologies to the consumer market. Through these programs, NIH is leveraging the economic engine of small businesses to enhance scientific innovation. Before the increased funding for AD/ADRD (2010-2013), NIA awarded 73 AD/ADRD SBIR/STTR grants to 59 small companies. After the increased appropriations (2017-2020), NIA approximately tripled that achievement by awarding 235 AD/ADRD SBIR/STTR grants to 168 companies for discovery and development of new treatments as well as biomarker research and technologies for improving care and caregiving. In the past year, NIA partnered with the Administration for Community Living (ACL) to publish RFA-AG-21-025 - Development of Cost-Effective and Customizable Training and Education Platforms for AD/ADRD Caregivers that Focus on Addressing Financial Management and Legal Planning (R43/R44 Clinical Trial Not Allowed) for which seven awards were made.

For more information, see:

NIHâ€™s AMP-AD and AMP Program for Parkinsonâ€™s Disease (AMPÂ®-PD) programs have transformed the way that data and biological samples are shared freely, biological targets are discovered, and drug candidates are chosen and developed. NIH recently announced the next version of the AMP-AD program (2.0). During the first phase, the AMP-AD programâ€™s open science, big data approach enabled research teams to identify and make publicly-available more than 500 unique candidate targets for this complex disease. In the second phase, NIH is leading research efforts to enable a precision medicine approach to discovery of novel therapeutic targets and biomarkers. AMP-AD will also focus on generating data from diverse cohorts, specifically Black and Latino cohorts who are disproportionately affected by the disease. All

data and analytical tools will be made available to the wider research community through a centralized data infrastructure, the AD Knowledge Portal. The AD Knowledge Portal also serves as the central repository for the other NIH open science target discovery consortia, Molecular Mechanisms of the Vascular Etiology of Alzheimer's Disease (M2OVE-AD), Resilience-AD, and Psych-AD.

For more information see:

NIA recently funded several new projects through its Alzheimerâ€™s Drug Development Program. Each project is focused on developing a new drug that targets a different biological process, such as brain inflammation, known to go awry during the development of AD/ADRD. If successful, these NIH-supported preclinical drug development studies will result in new candidate drugs that could then be tested in people.

For more information, see:

In 2020, NIH broke ground on its Bethesda, Maryland, campus to construct a new intramural research facility devoted to AD/ADRD research. This Center for Alzheimerâ€™s Disease and Related Dementias (CARD) will support basic, preclinical, and clinical research. Center initiatives will complement and enhance the work of thousands of researchers nationwide and beyond who are exploring disease mechanisms to translate scientific knowledge into ways to better prevent and treat these diseases. While the dedicated facility is expected to fully open its doors in early 2022, CARD researchers are already building multi-disciplinary collaborations among scientists on the NIH campus and in academia and industry.

For more information see:

NIH provides new animal models for basic research or for therapy development. For example, to date, research teams that are part of the NIA-supported Model Organism Development and Evaluation for Late-Onset Alzheimerâ€™s Disease (MODEL-AD) consortium have created more than 50 genetically modified mouse models. These mice are available to the research community through the Jackson Laboratory Center for Alzheimerâ€™s and Dementia Researchâ€™s Mouse Model Resource, and the data, protocols, and other resources are available through the AD Knowledge Portal.

For more information see:

NIHâ€™s ability to quickly respond to the urgent need for vaccine and treatment development for the coronavirus pandemic was made possible through experience from its already-established open science initiatives such as the AMP-AD and AMP-PD programs, M2OVE-AD, Resilience-AD, Psych-AD, MODEL-AD, and TREAT-AD. These and similar NIH initiatives have transformed the way that scientists collaborate rather than compete, share their data and biological samples, work together to discover new biological mechanisms of disease, and find new drug candidates for testing.

For more information see:

One way that NIH works to find effective ways to treat dementia is by considering drugs that FDA has already deemed safe for people with other conditions. The NIA Intramural Research Program has recently launched the Drug Repurposing for Effective Alzheimerâ€™s Medicines (DREAM) study. DREAM is a collaboration with researchers at Harvard Medical School, Rutgers University, and Johns Hopkins University School of Medicine to repurpose FDA-approved drugs for treatment of dementia. NIA also funds drug repurposing research at its grantee institutions. NIH released a funding initiative in 2020 called Translational Bioinformatics Approaches to Advance Drug Repositioning and Combination Therapy Development for Alzheimerâ€™s Disease, which aims to leverage the power of big data and open science in advancing drug repurposing and combination therapy development.

For more information see:

NIA supports the Alzheimerâ€™s Disease Preclinical Efficacy Database (AlzPED), which plays a role in creating a road map towards increased rigor and reproducibility in preclinical AD/ADRD studies. AlzPED, a joint project of NIA, the NIH Library, the Alzheimerâ€™s Association, and the Alzheimerâ€™s Drug Discovery Foundation, is a publicly-available, searchable knowledge database which hosts 1,000+ studies on preclinical testing of candidate therapeutics for AD/ADRD.

For more information, see:

The AD Knowledge Portal, an informatics data-sharing platform that began as the data repository for the AMP-AD Target Discovery Program, and the portal-linked, open-source platform Agora have enabled access to a vast amount of high-quality molecular data, analytical results, and candidate targets generated by the AMP-AD program research teams. The AD Knowledge Portal now includes data and resources from other NIA-supported team-science projects operating under open science principles.

For more information, see:

NIAâ€™s Small Research Grant Program for the Next Generation of Researchers in AD/ADRD Research Program is designed to encourage a next generation of scientists to pursue research and academic careers in neuroscience, AD/ADRD, and healthy brain aging. NIA seeks to turn fresh ideas from scientists in other fields into pilot studies for innovative AD/ADRD research programs that leverage and build upon their existing expertise and to build a more robust pipeline of committed AD/ADRD researchers.

For more information, see:

(UPDATED) Action 1.B.2: Expand genetic epidemiologic research to identify biological and genetic risk and protective factors for Alzheimerâ€™s disease and related dementias

Lead Agencies: NIA, NINDS

Partners: research partners in the public and private sectors

Another key component in the growing toolkit of precision medicine for AD/ADRD is the Alzheimer's Disease Sequencing Project (ADSP), an international resource of genetics data from multiple centers and studies. Launched in 2012, the ADSP is designed to promote innovative collaboration among scientists to provide genetic samples for sequencing with the goal of identifying from multi-ethnic populations new genetic variants that influence risk and protection from AD/ADRD. This project involves more than 150 international investigators at 33 institutions. Data come from more than 60 cohorts of research participants. The Genome Center for Alzheimerâ€™s Disease quality control checks and harmonizes all of the genetic data so that when a variant in the genome is uncovered, it can be compared against the data from thousands of other genomes. The NIA Genetics of Alzheimerâ€™s Disease Data Storage Site (NIAGADS) serves as the ADSP Data Coordinating Center. In 2017, NIA launched the ADSP Follow-Up Study, and in 2021 the Follow-Up Study 2.0. Together, these initiatives aim to pursue rare variants in a range of different populations (e.g., Black, Hispanic, American Indian/Alaska Native [AI/AN], Asian). Teams are presently working to recruit new cohorts of ethnically diverse participants.

In keeping with the high priority that the AD/ADRD genetics community places on diversity, the ADSP plans to have more

than 100,000 ethnically diverse study participants by 2023. An important overarching goal of the ADSP Follow-Up Study is to genetically define sub-groups of subjects that carry specific sets of genes and match them with biomarkers, functional genomics, and clinical data. This will define subtypes of the disease. Defining subtypes will allow better selection of subjects for clinical trials because outcomes of drug therapies can be better targeted toward groups of individuals who have similar characteristics. It is particularly important to define ethnic diversity in terms of disease risk because ethnic groups vary widely in the degree of risk at particular locations in the genome and it is likely the clinical trials will need to be designed differently depending upon the ethnicity of the study population.

The 2021 Phenotypic Data Harmonization Initiative is harmonizing clinical data from all of the ethnic cohorts in the ADSP. These data will become a long-lived â€œlegacyâ€• dataset that will be perpetually curated. A network of researchers with expertise in genetics, epidemiology, and clinical specialties are working with the ADSP and with study cohort leads on data harmonization efforts to optimize the ability to identify well-targeted therapeutic approaches for AD/ADRD. The National Alzheimerâ€™s Coordinating Center (NACC) shares phenotypic and related clinical data with the ADSP and is strongly supporting this initiative.

The ADSP also recently launched a Machine Learning/Artificial Intelligence initiative. The amount of genetic data that now is available is massive and it has been extraordinarily difficult to analyze using classical methods because the data are so complex. This initiative supports the development of fast and efficient Machine Learning/Artificial Intelligence approaches to identify the genetics that increase risk of or protection against AD/ADRD. The emphasis is on the development and sharing of transformative Machine Learning/Artificial Intelligence-based systems, emerging tools, and modern technologies for the analysis of genetic data.

In 2021, the ADSP also launched a Functional Genomics consortium. Functional interpretation of genetic variations has been challenging historically and remains a persistent bottleneck in genetic studies of complex diseases. This hinders the discovery of genetic-based targets for therapeutics. To connect genetic variants to downstream effectors and functions, a number of issues will be addressed by this initiative, including the need to: (1) pinpoint causal variants that affect disease susceptibility and/or progression; (2) characterize the molecular and biochemical effect of these variants and identify the target genes on which these variants act and the cell-types and states in which these variants operate; (3) determine links to heterogeneous cellular and pathologic mechanisms; and (4) identify genetic drivers underlying AD endophenotypes that are clinically relevant but difficult to ascertain. Investigators from the AMP-AD program and ADSP Consortia are working together to find intersections between the gene clusters that

the ADSP has identified and the functional networks that the AMP-AD program team has reported.

NIAGADS now hosts 74 human genetics datasets with 90,743 samples and has a genomics database for cross-referencing and visualizing known genomic variants. All data generated by the ADSP are deposited into NIAGADS. As of August 2020, NIAGADS has shared 16,906 whole-genomes and 20,504 whole-exomes to the research community and anticipates sharing an additional 30,000 whole-genomes by the end of the year. Using data from NIAGADS and other repositories, scientists have been able to expand the number of known genetic risk factors for AD/ADRD, and several others are under investigation.

The National Centralized Repository for Alzheimerâ€™s Disease and Related Dementias (NCRAD) is an NIA-supported resource to help scientists accelerate and streamline their efforts. NCRAD serves AD/ADRD scientists by banking a wide range of biospecimens, recently including pluripotent stem cells. Through a collaboration with NIAGADS, NCRAD supports state-of-the-art genome and genotyping arrays for samples in several new studies, including the 90+ Study, a longitudinal study of aging and cognition among participants over age 90, and the Amyloid Neuroimaging and Genetics Initiative, an add-on for participants in the Imaging Dementia-Evidence for Amyloid Scanning Study.

For more information, see:

In addition to ADSP, NIA has several ongoing FOAs that call for research to enhance the ability to uncover the genetic underpinnings of AD/ADRD, furthering our understanding of rare risk and protective variants. Today, thanks in part to the increased investment in AD/ADRD research, scientists have identified variants in more than 50 regions of the genome that may increase risk for the disease. Of these, variants in more than 23 individual genes have been linked to increased risk of late-onset Alzheimerâ€™s disease (LOAD). These genetic regions appear in clusters that point toward what may be highly relevant molecular pathways. By understanding key pathways, researchers may be able to develop prevention strategies and treatments for AD/ADRD.

For more information, see:

To advance further discovery for genetic factors and molecular pathways involved in FTD, NIH is also supporting the FTD Sequencing Consortium. This genetics consortium is composed of researchers at universities in the United States and at NIH who are utilizing whole-genome sequence technology to generate sequence for 4,000 autopsy-confirmed and

clinical characterized FTD cases.

For more information, see:

NINDS continues to support new initiatives focused on identifying vascular risk profiles that may predict cognitive decline and dementia. For example, in late 2019 NINDS launched Determinants of Incident Stroke Cognitive Outcomes and Vascular Effects on Recovery, a large 6-year prospective clinical research study which aims to determine the specific subsets of stroke events that cause and do not cause cognitive impairment and dementia in post-stroke populations. In 2020, NINDS launched â€œDiverse VCID: White Matter Lesion Etiology of Dementia in Diverse Populations,â€• which is a consortium supporting 27 investigators at 12 institutions to conduct clinical research using MRI and other measures to determine how white-matter lesions contribute to cognitive impairment and dementia. Both of these research programs include a special focus on racial and ethnic populations that experience dementia health disparities, as well as elucidating what additional clinical factors and co-morbidities synergize with stroke to result in cognitive impairment and dementia outcomes.

For more information, see:

In 2021, U.S. Department of Veterans Affairs (VA) provided supplemental funds to studies that curate and develop AD phenotypes using VA clinical data. These studies would produce pilot data for VA to contribute to collaboration with the NIA.

(UPDATED) Action 1.B.3: Increase enrollment in clinical trials and other clinical research through community, national, and international outreach

Lead Agency: NIA

Partners: ACL, FDA, VA, CDC, HRSA

Starting in 2016, with facilitation by the Alzheimerâ€™s Association and in close collaboration with experts from government, private, and academic sectors, NIA led an effort to develop comprehensive goals and strategies to enhance recruitment into clinical research, particularly focusing on underrepresented communities. To ensure broader input,

NIA gathered feedback on the recruitment strategies through the IdeaScale crowdsourcing platform. These efforts resulted in the National Strategy for Recruitment and Participation in Alzheimerâ€™s Disease and Related Dementias Clinical Research.

For more information, see:

In 2019, NIA launched Alzheimerâ€™s and Dementia Outreach, Recruitment, and Engagement Resources (ADORE), a searchable collection of materials designed to support recruitment and retention into clinical trials and studies. ADORE supports the National Strategy and represents some of the materials and activities that Alzheimer's Disease Research Centers (ADRCs), Alzheimerâ€™s Clinical Trials Consortium (ACTC), NIA and the broader NIH, and other organizations have developed to engage people in research. In addition, NIA developed several collateral materials to include in ADORE, including a recruitment planning guide, a series of testimonial videos, and an easy-to-read booklet to promote older adult research participation. The repository has evolved as researchers have nominated their resources for NIAâ€™s consideration. Newly added resources include a brain donation Q&A web page, an infographic on the difference between clinical trials and observational studies, tools to reduce disparities in research participation among Asian Americans and Pacific Islanders (AAPI), a dementia-friendly toolkit, educational and recruitment videos, a brain health guide, and a research participant Q&A flyer.

NIA recently released a webâ€•based communication tool, called Outreach Pro, that will enable health care professionals in the community to easily produce a â€œpackageâ€• of tailored materials and strategies that can be branded locally to increase participant recruitment for clinical studies. NIA conducted focus groups, surveys, and stakeholder interviews to tailor recruitment materials for clinical studies to reach underrepresented populations more effectively. Using the findings from this research, NIA in 2020 developed a set of materials and messaging, including videos and other multi-media, print ads, posters, and social media, tailored to Spanish-speaking communities and available in both English and Spanish. A similar approach was used in 2019 to develop materials for Black audiences. Outreach Pro allows the research community to access, adapt, and personalize these materials for underrepresented communities. Outreach Pro launched in Summer 2021.

For more information, see:

NIA continues to promote participation in AD/ADRD clinical trials, studies, and registries through Alzheimers.gov and

its Alzheimerâ€™s Disease Education and Referral (ADEAR) website portal; clinical trials listing and monthly e-alert to more than 26,000 subscribers; social media; infographics; presentations; promotion of ADORE materials; and collaboration with other federal agencies and advocacy organizations to encourage research participation among older adults, including through the Focus on Aging interagency webinar series. All materials are drafted in plain language formats for ease of communications.

For more information, see:

In 2020, NIA collaborated with the Alzheimerâ€™s Association to host the Developing Applied Science of Recruitment and Retention for Alzheimerâ€™s Disease and Related Dementias Clinical Research Symposium at the 2020 Alzheimerâ€™s Association International Conference (AAIC). This virtual symposium provided a broad perspective that builds on existing scientific knowledge to support the goal of ultimately accelerating and expanding research efforts on recruitment strategies for clinical trials.

For more information, see:

A key factor for improving enrollment is to help researchers monitor actual recruitment against planned milestones. To achieve the ability to track, report, and manage enrollment data, NIA is developing and will soon launch a unified Clinical Research Operations and Management System (CROMS). Through CROMS, NIA will track, manage, and report enrollment data and activities made possible via the NIA-funded clinical research portfolio. CROMS will provide critical and real-time information to ensure that NIA-supported clinical studies are making appropriate progress toward reaching their inclusion recruitment goals related to multiple underrepresented groups.

For more information, see:

Through the Examining Diversity, Recruitment, and Retention in Aging Research funding opportunity, NIA awarded support for several projects focused on improving research tools, methods, and recruitment practices.

For more information, see:

Since 2020, the VA has been one of the recruitment networks for the NIA-funded Pragmatic Evaluation of Events and

Benefits of Lipid-lowering in Older Adults trial, which aims to determine whether statin can prevent dementia and disability in addition to heart disease and other cardiovascular-related deaths. The VA Cooperative Studies Program (CSP) Pharmacy Coordinating Center serves as the central pharmacy for the trial to distribute medications to study participants.

For more information, see:

In 2019, the Health Resources and Services Administrationâ€™s (HRSAâ€™s) Geriatrics Workforce Enhancement Program (GWEP) Notice of Funding Opportunity included language calling for applicants to describe how they would educate and train patients, families, caregivers, direct care workers, health care providers, and health professions students, faculty, residents, and fellows on when it is appropriate to recruit older adults into research. This training continues into the second year of funding (FY 2020).

For more information, see:

(UPDATED) Action 1.B.4: Monitor and identify strategies to increase enrollment of racial and ethnic minorities in Alzheimerâ€™s disease and related dementias studies

Lead Agencies: NIA, NIMHD

Partner: ACL

See Action 1.B.3 for updates regarding the National Strategy for Recruitment and Participation in Alzheimerâ€™s Disease Clinical Research released in Fall 2018. This strategy includes approaches to increase enrollment of racial and ethnic minorities in AD/ADRD studies as recommended by the National Strategy Groupâ€™s Local, Diverse Working Group and outlined in the Alzheimerâ€™s Disease and Related Dementias Clinical Studies Recruitment Planning Guide.

For more information, see:

In April 2018, NIA released a new FOA -- Examining Diversity, Recruitment and Retention in Aging Research -- to encourage building new, collaborative teams to target gaps in recruitment and retention methods and outcomes, as well

as to establish the community infrastructure needed to accelerate recruitment. Another FOA encourages applications that examine mediators of disparities in AD/ADRD, using diverse cohorts of subjects with a focus on strategies for recruitment and retention in clinical trials. In addition to disparities-focused initiatives, NINDS has now issued several clinical research FOAs which require investigators to apply their research questions to at least two populations of study. Another initiative invites applications for sample acquisition, genome-wide association studies, whole-genome sequencing, quality control checking, variant calling, data calling, data-sharing, data harmonization, and analysis that will support the generation of data from multi-ethnic cohorts for the ADSP Follow-Up Study 2.0. These grant activities are ongoing.

For more information, see:

In 2021, NIA provided 1-year supplemental funds to five VA sites to facilitate subject recruitment to NIA-funded studies.

Additionally, the National Institute on Minority Health and Health Disparities (NIMHD) began a new clinical trial on â€œAddressing the Knowledge and Recruitment Gap in Alzheimerâ€™s Disease and Precision Medicine among Native Peopleâ€•. This study will evaluate recruitment strategies for AI/AN and proposes several specific aims: create culturally-appropriate materials on Alzheimerâ€™s Disease and Precision Medicine (AD-PM) (Phase 1); evaluate the clarity and acceptability of the materials and their effect on completion of the AD-PM Module in a randomized controlled trial and subsequent enrollment into an AD-PM cohort (Phase 2); identify patient-level predictors of enrollment; and evaluate potential differences in the effectiveness of recruitment approach by age, sex, education, cultural identity, and rurality (Phase 2).

For more information, see:

The NIA-supported ACTC aims to develop and implement cutting-edge participant recruitment and retention strategies, especially in diverse populations, and to establish a new Minority Outreach and Recruitment Team. This network of clinical trials with 35 United States sites will develop, harness, and deploy the best practices and latest methods for the conduct of AD/ADRD trials.

For more information, see:

NIA also supports 33 ADRCs at major medical institutions across the United States. Researchers at these ADRCs are working to translate research advances into improved strategies for prevention, diagnosis, treatment, and care for people living with AD/ADRD. Although each ADRC has its own area of emphasis, these ADRCs also enhance research on AD/ADRD via a network approach that encourages the exchange of new research ideas and approaches as well as data, biological samples, and genetic information. The ADRCs also enhance and promote diversity of research participants. For example, the ADRCs have set up a Hispanic interest group that includes a Listserv for Hispanic researchers, those with an interest in research with Hispanic participants, and issues specific to Spanish language assessment. This group is helping to ensure that materials are available in Spanish, thereby addressing the needs of Spanish speaking participants, and to assure research capacity (with both materials and staff training) for assessment in Spanish. In addition to Spanish, assessments at ADRCs have also been translated into Chinese.

To further incentivize innovative ideas and opportunities in AD/ADRD research, NIA has funded four exploratory ADRCs. These new centers will broaden current ADRC research initiatives with underrepresented populations such as Black Americans, Native Americans, and those in rural communities -- all of which have different risk factors for developing these devastating diseases.

See Action 1.B.3 for information on Outreach Pro, a web-based tool that will enable health care professionals in the community to easily produce a â€œpackageâ€• of tailored materials and strategies that can be branded locally to increase participant recruitment for clinical studies. Designed to help reach multiple cultures and those who do not speak English, the tool was launched in July 2021. It enables the research community to access, adapt, and personalize the materials that NIA has developed for underrepresented communities.

NIA has been conducting focus groups, surveys, and stakeholder interviews to tailor recruitment materials for clinical studies to reach underrepresented populations more effectively. Using the findings from this research, NIA has developed a set of materials and messaging, including videos and other multi-media, print ads, posters, and social media, tailored to diverse populations, including Black and Hispanic, in both English and Spanish. Currently, materials are in development for Chinese Americans, Indian Americans, and Filipino Americans in both English and their respective languages. In 2022, NIA will use a similar approach to develop materials for AI/AN. NIA has also recently developed a Spanish version of the Alzheimers.gov website. All materials developed are available to the public in both ADORE and Outreach Pro.

NIA recently funded Foundations of Representative Engagement, Valid, and Effective Recruitment in Alzheimerâ€™s Research. Through this project, researchers are developing and implementing novel methods for recruitment, engagement, and retention of minorities into AD/ADRD studies through community engagement and the ADRCs. The research team is also developing recruitment, engagement, and retention metrics and interventions and establishing communications frameworks to improve literacy for both the general public and research communities.

For more information, see:

In April 2021, NIA hosted a virtual meeting to discuss the potential and planning of a practice-based research network (PBRN) to address the disparities gap with the recruitment and retention of diverse and under-served populations in AD/ADRD clinical research studies. PBRNs are networks of health care clinicians and practices working together to answer community-based health care questions, to translate research findings into practice, and to directly engage diverse and under-served communities in AD/ADRD clinical research. NIA is investigating the possibility of developing a PBRN as a long-term solution to create sustainable and mutually beneficial relationships with under-served communities to address the systemic barriers that reduce their potential to participate in AD/ADRD and aging clinical research studies. Since the meeting, NIA has been working to organize an external group of researchers and community organizations to offer input, feedback, and recommendations on how to develop a successful AD/ADRD PBRN. A subsequent step will be to identify potential PBRN models and pilot them in communities to assess feasibility and impact on clinical study participation as well as community engagement around participation.

For more information, see:

(ONGOING) Action 1.B.5: Conduct clinical trials on the most promising pharmacologic interventions

Lead Agency: NIA

Partner: VA

Most of the NIH-supported drug trials for AD/ADRD are in an early stage, which means Phase 1 or Phase 2 trials, but several Phase 3 trials are also in progress. With each successive phase, a longer period of time and more participants are needed to conduct the study. A number of NIAâ€™s large, late-stage clinical trials, which primarily target

amyloid, will be complete before 2025. While the lack of success in multiple amyloid trials is disappointing, it is not uninformative; AD/ADRD researchers continue to learn from each study. Moreover, NIA supports a diverse set of intervention targets (neurotransmitter receptors, cell metabolism, vasculature, growth factors, etc.); amyloid is only one of those targets. Of the more than 50 pharmacological trials supported by NIA, most investigate targets other than amyloid.

ACTC, a next-generation clinical trials infrastructure designed to harness best practices and latest methods for AD/ADRD trials, includes 35 member sites across the United States along with numerous participating sites in the United States and other countries. ACTC trials are supported by a funding opportunity for Phases Ib-III of pharmacological and non-pharmacological interventions in individuals across the AD/ADRD spectrum from presymptomatic to more severe stages of disease. A key area of focus for ACTC is improving diversity in recruitment and in the clinical trial workforce. The Minority Outreach and Recruitment Team is developing central and local partnerships with diverse communities to enhance representation of these underrepresented groups in AD/ADRD trials. The ACTC Inclusion and Diversity Committee has been conducting mentorship activities for ACTC junior investigators and trial study staff. Additionally, the ACTC Patient Advisory Board has been constituted with a focus on inclusion of individuals from underrepresented populations as well as from across the disease spectrum. Sharing of data and biosamples is another key element of the ACTC, and it is part of NIAâ€™s enabling infrastructure for data-driven and predictive therapy development. All design, methods, procedures, etc. developed will be shared with the larger research community as will trial data and biosamples per NIA requirements noted earlier.

For more information, see:

In addition to ACTC infrastructure, NIH currently sponsors approximately 270 active trials of interventions to enhance cognitive health in older adults and to prevent, treat, or manage AD/ADRD. NIH also released several FOAs specifically focused on clinical trials for AD/ADRD. These include pharmacologic as well as lifestyle interventions.

For more information, see:

(UPDATED) Action 1.B.6: Expand research focused on needs related to the intersection of Down syndrome and Alzheimerâ€™s disease and related dementias

Lead Agency: NIH

In FY 2018, appropriations provided by Congress allowed NIH to not only expand its current efforts on Down syndrome and AD/ADRD, but to build an integrated effort across NIH that will be truly transformative in this area and other commonly co-occurring conditions in individuals with Down syndrome. The INvestigation of Co-occurring conditions across the Lifespan to Understand Down syndromE (INCLUDE) project was launched in June 2018 in support of a congressional directive. INCLUDE focuses on three overall goals: (1) conducting targeted, high-risk, high-reward basic science studies on chromosome 21; (2) assembling a large study population of individuals with Down syndrome; and (3) including individuals with Down syndrome in existing clinical trials. In FY 2021, Congress appropriated an additional $65 million to expand INCLUDE.

In FY 2018, NIH spent almost $23 million to jump-start INCLUDE via administrative supplements, including one focused on creating an AD/ADRD clinical trial network for adults with Down syndrome. This network, the ACTC-Down Syndrome Network aims to utilize the existing depth and breadth of expertise across its ACTC infrastructure to conduct AD/ADRD clinical trials in adults with Down syndrome. The overarching goal of the project is to build an efficient clinical trial network to address the critical need for treatment of AD/ADRD in adults with Down syndrome. The project received additional funding in FY 2020 to continue and expand this work. In FY 2019, through the INCLUDE project, a project focused on clinical trials to prevent AD/ADRD in Down syndrome was funded.

For more information, see:

Alzheimerâ€™s Biomarker Consortium-Down Syndrome (ABC-DS) is a multi-disciplinary, multi-site longitudinal study examining biomarkers of AD in a large cohort of adults with Down syndrome ages 25 and above. ABC-DS was initiated in 2015 by NIA and National Institute of Child Health and Human Development (NICHD) with the funding of two groups of research collaborators -- Neurodegeneration in Aging Down Syndrome and Alzheimer's Disease in Down Syndrome. In September 2020, the continuation of ABC-DS was funded by NIA, NICHD and the Trans-NIH INCLUDE Project. ABC-DS researchers will follow the cohort of people with Down syndrome to conduct three projects. The next iteration of ABC-DS includes an emphasis on increasing the diversity of individuals in the cohort of adults with Down syndrome. The Alzheimerâ€™s Disease/Down Syndrome Outreach, Recruitment, and Engagement Core will rapidly disseminate information to Down syndrome communities and engage underrepresented ethnic groups.

A recent analysis of data from ABC-DS suggests that people with Down syndrome show similar changes in metabolic processes as people with late-stage AD. The same pattern of metabolic changes occurs for people with Down syndrome who go on to develop AD and people with late-stage AD. The findings suggest that measures of metabolic substances may have potential as blood-based biomarker tests.

In 2020, NACC developed a Down syndrome-specific clinical and cognitive assessment module, implemented for use in research that is harmonized with some of the ABC-DS clinical and neuropsychological measures and available for use by ADRCs and Intellectual and Developmental Disabilities Research Centers for research purposes. Data and biosamples generated from the participants who are being evaluated with the module will also be available for broader sharing.

For more information, see:

NIA and NICHD have also collaborated to produce and disseminate information for people with Down syndrome and their families regarding the interplay of Down syndrome and dementia, and the importance of participating in research. Efforts include a fact sheet, Alzheimerâ€™s Disease in People with Down Syndrome, and outreach via email and social media.

For more information, see:

(ONGOING) Action 1.B.7: Issue a joint Department of Veterans Affairs/National Institute on Aging career development award for physician scientists new to the area of dementia research

Lead Agency: VA

In FY 2021, the VA funded several research proposals in response to the early career physician-scientist mentored research in AD/ADRD funding announcement. This program has been approved for another year.

(NEW) Action 1.B.8: Research the impacts of COVID-19 and Post-COVID Conditions on risk of AD/ADRD, cognition, and brain health

Lead Agencies: NIH, NIA

NIH is looking closely at the long-term effects of COVID-19 infection via the recently launched RECOVER Initiative, which is applying a meta-cohort study design to pool participants in combination with real-world data to propel multiple research studies forward, including research into potential effects on cognition and cognitive decline.

For more information, see:

At the institute level, NIA issued its own Notices of Special Interest (NOSI) in order to stimulate much-needed research on aging and COVID-19. The NIA NOSI is intended to support administrative and revision supplements on COVID-19 related topics in the realm of neuroscience and AD/ADRD research, aging biology, behavioral and social research, and geriatrics and gerontology. In addition, NIA has issued a funding opportunity for a COVID-19 clinical trial implementation grant on aging-related topics in at-risk older adult populations, including those with cognitive impairment and AD/ADRD. In 2021, NIA also issued a NOSI to stimulate research on neurological and neurocognitive sequelae originating from SARS-CoV-2 infection in aging and age-related neurodegeneration. NINDS issued a funding opportunity titled, Impact of COVID-19 on Dementia Risk, Progression and Outcomes in AD/ADRD Populations (NOT-NS-21-037) to solicit research on the effect of COVID-19 exposure on subjects who have, or are at risk for, developing AD/ADRD.

NIA is also co-sponsoring a variety of other COVID-targeted funding opportunities, such as those specific to the Rapid Acceleration of Diagnostics Underserved Populations initiative, which seeks to enable and enhance COVID-19 testing in under-served and vulnerable populations (e.g., residents of nursing homes and assisted living facilities, individuals with cognitive impairment or dementia). More generally, NIA has provided support to its stakeholders and grantees throughout the COVID-19 Public Health Emergency (PHE), including those who work in the field of AD/ADRD. This support encompasses ongoing communications on COVID-19 related issues (e.g., multiple 2021 web updates), outreach on federal COVID-19 resources for older adults, and flexibilities for grant applicants whose research has been affected by the pandemic.

For more information, see:

Strategy 1.C: Accelerate Efforts to Identify Early and Presymptomatic Stages of Alzheimerâ€™s Disease and Related Dementias

Significant advances in the use of imaging and biomarkers in brain, blood, and spinal fluid have made it possible to detect the onset of AD/ADRD and track its progression with the hope that it will be possible to monitor the effect of treatment in people with the disease. Without these advances, these neurodegenerative processes could only be evaluated in non-living tissues. Accelerated research will improve and expand the application of biomarkers in research and practice. These advances have shown that the brain changes that lead to AD/ADRD begin up to 10 years before symptoms. Identifying imaging and other biomarkers in presymptomatic people will facilitate earlier diagnoses in clinical settings, as well as aid in the development of more efficient interventions to slow or delay progression.

(UPDATED) Action 1.C.1: Identify imaging and biomarkers to monitor disease progression

Lead Agencies: NIA, NINDS

Partners: ADNI partners, AMP partners

The Alzheimer's Disease Neuroimaging Initiative (ADNI) has contributed to much progress in neuroimaging and biomarker refinement. ADNI, a long-running, NIH-supported study, was designed to develop tools for clinical trials by tracking how neuroimaging and fluid biomarkers change with disease onset and progression. Launched by NIH in 2004, this landmark public-private partnership looks at how the evolution of clinical symptoms and neurocognitive testing in healthy controls, people with mild cognitive impairment (MCI), and people with mild AD correlates with changes in multiple biomarkers reflecting disease development. The biomarkers developed and validated in ADNI are being used more and more in clinical trials. ADNI has also pioneered rapid, transparent data-sharing while protecting participantsâ€™ privacy. Qualified researchers across the world can access ADNI brain scan images and biomarker data through a web-based portal once data are quality-controlled and added to the database. ADNI also shares the blood, cerebrospinal fluid, and DNA it has collected with other investigators who are developing novel biomarkers. Now in its 17th year, the three phases of ADNI (ADNI1/GO, ADNI2, and ADNI3) have developed biomarkers for use in selecting clinical trial participants and for assessing treatment outcomes. When ADNI3 was launched in 2016, ADNI data had already been downloaded for research purposes more than 11 million times and scientists had used ADNI data to publish more than 1,200 scientific papers.

For more information, see:

The AMP-AD program, as noted above, is an NIH led precompetitive public-private partnership to identify and validate the most promising biological targets of AD to advance diagnostic and drug development. The first phase, the AMP-AD program 1.0, consisted of two components: The Biomarkers Project and the Target Discovery and Preclinical Validation Project. The Biomarkers Project incorporated tau positron emission tomography (PET) imaging into two NIH-funded prevention trials (A4 Trial and Dominantly Inherited Alzheimer Network Trial Unit [DIAN-TU]). Data-sharing under the AMP-AD program includes making the screening data and biosamples available after enrollment completion and making post-randomization data and biosamples available as soon as possible after completion without compromising trial integrity. The Anti-Amyloid Treatment in Asymptomatic Alzheimer's Disease (A4) trial has achieved the first milestone by making the pre-screening data and biosamples available (via the Laboratory of Neuroimaging). This is the first registration trial to ever do so, and since the data was made available there have been over 600 data requests and nine publications using the A4 screening data.

For more information, see:

In 2019 and early 2020, NIH-supported scientists reported advances in the development of blood-based tests that could enable rapid screening of volunteers who wish to enroll in studies. Using a blood test to screen would reduce the number of research volunteers who undergo brain PET imaging or spinal taps, which are expensive and invasive. Since Fall 2020, physicians in clinical practice can order a blood test for amyloid protein, a hallmark sign of AD, for an individual who is not participating in a study. Several other blood tests are in development. In addition, advances were made in brain imaging, most notably the FDA-approval of the first PET scan product to detect tau tangles in the brain, another hallmark sign of Alzheimerâ€™s. In addition to blood tests, other NIH-supported research projects are designed to look beyond current measures to identify people with dementia earlier in the disease process. These include changes in vision and pupil responses that may signal AD, or a combined decline in memory and walking speed as a sign of dementia.

For more information, see:

To meet the pressing need to better understand the prevalence, progression, and clinical impact of Alzheimerâ€™s among Mexican Americans, NIH awarded additional funding in 2020 for more PET scan and other biomarker measures to the ongoing Health and Aging Brain Among Latino Elders (HABLE) study. The additional funding will support the Health and Aging Brain Among Latino Elders-Amyloid, Tau, and Neurodegeneration (HABLE-AT(N)) study, which enables researchers to

collect amyloid and tau PET imaging and other biomarker measures. The goal is to better understand health disparities of brain aging and AD/ADRD between Mexican Americans and non-Hispanic Whites. An additional benefit of HABLE and HABLE-AT(N) will be the ability to better classify/categorize participants into groups by type of dementia and stage of the disease. This will help facilitate potential enrollment in future studies and the tailoring of therapies as they become available.

For more information, see:

At Columbia University, investigators recruit students from underrepresented groups to conduct research projects with neuroimaging data for their NIA-funded Summer of Translational Aging Research for Undergraduates. The trainees are helping to develop brain images as biomarkers of dementia through NIAâ€™s Advancing Diversity in Aging Research Through Undergraduate Education program.

For more information, see:

To enable better patient stratification, diagnosis, and tracking of disease progression in LBD, FTD, VCID, and dementias with mixed etiologies, NINDS continues to release funding opportunities to support the development of biomarkers, including imaging ligands, for AD/ADRD. For example, NINDS recently launched the Center Without Walls for PET Ligand Development for AD/ADRD. This consortium is applying cryo-electron microscopy to visualize, at atomic-level resolution, the structures of protein aggregates found in several AD/ADRD. These highly detailed structures will then be used to design and validate sensitive PET imaging probes in order to better observe differing AD/ADRD disease pathologies in patients. Such PET markers should enhance differential dementia diagnosis and serve as markers of disease progression in future AD/ADRD clinical trials.

To further our understanding of potential biomarkers for LBD, NINDS is supporting several projects and programs including AMP-PD, a public-private partnership conducting deep molecular characterization and longitudinal clinical profiling of Parkinsonâ€™s disease and LBD patient data and biosamples. In the past year, the AMP-PD program has added data and samples from patients with LBD. NIH is also continuing to support five research teams that aim to discover biomarkers that will improve the efficiency and outcome of Phase II clinical trials for LBD. In addition, NIH recently released a new funding opportunity to invite new research into the identification of biomarkers for LBD. Through this new opportunity, NIH seeks research projects that will increase our understanding of how clinical information from

people with LBD corresponds with abnormal areas observed in brain tissue collected after death. In an ongoing study, NIH-funded researchers are working to develop a skin test to detect LBD-associated forms of alpha-synuclein. The team reported recently that they detected deposits of the clumped protein in skin samples from people with LBD but not in healthy people, which provides hope for the development of an easy-to-administer LBD and Parkinsonâ€™s disease biomarker.

For more information, see:

In 2020, NINDS renewed the small vessel VCID Biomarkers Consortium (MarkVCID) program, which aims to develop and validate candidate human biomarkers for VCID that would enable more accurate identification of those at-risk for long-term cognitive decline and tracking of disease progression in individuals already affected by cognitive impairment and dementia. Several biomarker kits have been developed and preliminarily validated. These kits have now moved into Phase 2 testing for use in high thru-put clinical trials.

For more information, see:

In addition to these large initiatives, NIA and NINDS have released FOAs in the past year that call for research to further the development of imaging and biomarker research.

For more information, see:

(UPDATED) Action 1.C.2: Maximize collaboration among federal agencies and with the private sector

Lead Agencies: NIA, NINDS

Partners: FDA, AMP partners

NIH engages in multiple partnership opportunities with the private sector and other federal agencies to facilitate collaborative efforts across the entire AD/ADRD research landscape. ADNI, the AMP-AD program, and the AMP-PD program discussed above are three large examples of these partnerships.

The NIA IMbedded Pragmatic Alzheimerâ€™s Disease and AD-Related Dementias Clinical Trials (IMPACT) Healthcare Collaboratory received COVID-19 supplements to establish partnerships with the nursing home industry to develop data-sharing infrastructure and reporting systems to monitor the effects of the COVID-19 vaccines administered to frail older adults, on whom the vaccines were not widely tested prior to approval for use. These initiatives provided near real-time insight into the use, effects and outcomes related to use of COVID-19 vaccines among this population and electronic health record (EHR) data from nursing homes was used by the Centers for Disease Control and Prevention (CDC); the Advisory Committee on Immunization Practices) to monitor adverse events. In the near future, the nursing home EHR data will be linked with the Centers for Medicare & Medicaid Services (CMS) claims data, which can be used to improve our national response to the pandemic and public health outcomes for older adults.

For more information, see:

Another example is the Collaboration for Alzheimerâ€™s Prevention (CAP). CAP is a public-private partnership that brings together research groups to harmonize biomarker, clinical, and cognitive measures and align data-sharing and sample-sharing approaches used in certain trials so that findings can inform the entire research community. CAP includes researchers from three trials co-funded by NIH, industry, and foundations: the Alzheimer's Prevention Initiative, the A4 study, and the DIAN-TU. Collaborative efforts like CAP provide an effective platform for implementation of AD/ADRD research standards and advancing AD/ADRD prevention research with rigor, care, and maximal impact.

For more information, see:

Also, the International Alzheimer's and Related Dementias Research Portfolio (IADRP) facilitates the tracking of research support in the public and private sectors, including the initiatives mentioned above.

For more information, see:

Strategy 1.D: Coordinate Research with International Public and Private Entities

In order to facilitate communication and collaboration, build synergy, and leverage resources, it is imperative that research across nations and across funders be coordinated. The actions below will formalize the coordination process

beyond HHS and the Federal Government and make research available to the public for input.

(UPDATED) Action 1.D.1: Inventory Alzheimerâ€™s disease and related dementias research investments

Lead Agency: NIA

IADRP, a free, searchable database providing a global overview of AD/ADRD research and funding, is an invaluable tool for assessing and planning AD/ADRD research projects. Funding organizations, researchers, and advocates are discovering IADRP's merits to help them coordinate strategies, leverage resources, avoid duplication, and identify promising areas of growth. Since NIH launched the database in 2012, in collaboration with the Alzheimer's Association, IADRP has amassed information on over 10,000 unique projects from 2008 through 2020, reflecting more than $8 billion in research funding worldwide. The number of contributors is growing, too. During the past 5 years, more than 40 funding organizations across greater than ten countries have joined the IADRP effort.

In 2018, the IADRP database was relaunched with several changes to the Common Alzheimerâ€™s Disease Research Ontology, including greater specificity in the coding of FTD, LBD, and VCID. Additionally, users can now link research to related clinical trials, patents, and data repositories, as well as visualize search results with dynamic charts and graphs.

For more information, see:

NIH is committed to data-sharing as a way to synergize research and facilitate collaborative science while ensuring appropriate protections for research involving human data and oversight of research conduct, data quality, data management, data-sharing and data use. A collaborative approach among the major cohorts could expedite epidemiological discovery by assembling multi-level data collected across the lifespan and by providing a framework for multi-disciplinary research. NIHâ€™s aging and AD/ADRD cohorts have been central to this mission, providing pivotal information on healthy aging and factors related to risk of and protection for AD/ADRD. A comprehensive, and publicly accessible inventory of cohorts is fundamental to facilitate collaborative scientific efforts, sharing of data and cost-effective assembly and utilization of resources. In return, this will assist the research community in the planning of new studies and will enable NIA in maximizing the returns on investments. NIA is working with the NIH Center for Information Technology to pilot-test the creation of a database for cohorts supported by NIA. The

objectives of this project are to create a user-friendly cohort database of NIAâ€™s longitudinal studies which will:

Increase transparency and scientific quality and collaboration through public access to the aging and AD/ADRD cohortâ€™s descriptive information.

Assist the research community in identifying and accessing population resources for research in aging and AD/ADRD.

Improve the return on investment in the cohortsâ€™ infrastructure for researchers and NIA.

Promote collaborative research projects for topics not easily addressed by a single study.

(UPDATED) Action 1.D.2: Expand international outreach to enhance collaboration

Lead Agency: NIA

NIA participated in the Alzheimerâ€™s Disease Fundersâ€™ meeting held during the 2020 AAIC, as well as quarterly international fundersâ€™ calls led by the Alzheimerâ€™s Association. Also, IADRP, maintained by NIA, includes data from over 40 public and private funding organizations across more than ten countries and is publicly-available for use.

For more information, see:

The NIA-supported the Health and Retirement Study (HRS) Harmonized Cognitive Assessment Protocol (HCAP) project is an innovative approach to assessing trends in cognitive function and aging in the United States and worldwide. The primary aim of the HRS, funded by NIA and the Social Security Administration, is to collect and distribute longitudinal multi-disciplinary data on a nationally representative sample of over 20,000 Americans over the age of 50 for research on aging. To provide the research community with new and richer data to study the prevalence, predictors, and outcomes of cognitive impairment and dementia, NIH first supported HCAP during the HRSâ€™s 2016 field period. In this field period, investigators administered a supplemental in-home, 1-hour battery of cognitive tests to 3,496 randomly selected HRS respondents age 65 and older, along with a 20-minute informant interview. Many of the HCAP participants also participated in the HRS venous blood study, which is projected to yield plasma AD biomarkers when

there is consensus on the best protocol for their analysis. Genotype information are already available for those HCAP (and HRS) participants who consented to being genotyped. The data from that 2016 assessment have now been made publicly-available to the scientific community and analyses are underway. A second wave of HCAP assessment was scheduled for 2020 but was postponed due to the COVID-19 pandemic. It is now projected to be back in the field as soon as the necessary home visits to the HCAP respondents are deemed to be safe. To further facilitate health disparities research, the HRS is adding 2,000 additional racial and ethnic minority respondents. By continuing to diversify this cohort, researchers using HRS data will be better able to design studies that provide insights into potential racial/ethnic differences in the incidence, prevalence, and impact of AD/ADRD.

For more information, see:

HCAP is also being administered in a diverse range of countries, where HRS-like representative population surveys are conducted, including China, England, India, Mexico, South Africa, Chile, and parts of the European Union. To date, the data from England, India, South Africa, and Mexico have been publicly released, and initial data release from China is expected by the end of 2021.

For more information, see:

In 2019, NIA funded a research network to facilitate collaboration among longitudinal studies of aging around the world to harmonize methods and content. The ultimate goal of the HCAP Network is to develop international data resources for the study of AD/ADRD that will expand research opportunities to exploit cross-country variation in key life-course factors that likely affect cognitive function and the risk for AD/ADRD, such as educational attainment, wealth, retirement policies, diet, and the prevalence and treatment of cardiovascular risk factors. Currently, 11 studies representing countries from all over the world participate in Network activities.

For more information, see:

The rationale for NIAâ€™s support to global AD/ADRD research and training is compelling. The wide variety of diets, health-related behaviors, and environmental exposures, as well as genetic variation within low and middle-income countries (LMICs) and their respective populations can provide valuable insight on factors that contribute or protect against AD/ADRD. Research in LMICs will not only help to mitigate AD/ADRD in the developing world but will also

increase our knowledge of the complexity and heterogeneity of this disease in the global context. Data from these studies may be extrapolated to United States populations that share similar sociodemographic backgrounds to LMIC populations (e.g., race/ethnicity, low-resource, rural, etc.). To this end, NIA collaborates with the NIHâ€™s Fogarty International Center (FIC) to support global research for AD/ADRD in LMICs. NIA is currently collaborating with FIC on the Global Environmental and Occupational Health (GEOHealth) Program with the aim to support research on environmental and occupational health threats in relation to AD/ADRD. Each NIA GEOHealth hub will be supported by two coordinated, linked awards: (1) a cooperative research award to an institution in a developing nation; and (2) a training award to a United States institution with substantial NIH involvement to coordinate research training. Over the past 19 years, NIA has also worked with FIC on the Global Brain and Nervous System Disorders Research Across the Lifespan initiative, which supports investigator-initiated and exploratory research on brain and other nervous system function and disorders throughout life in LMICs. These supported grants represent strong collaborations between United States investigators and their LMIC partners. For applications submitted in 2018-2020 NIA has supported nine grants under this initiative. NIA is working to support the development of early-stage investigators who have begun to establish research programs and who will be ready to assume leadership roles in their field of expertise and will be poised to change theory, practice, and health outcomes related to the health of older individuals in LMICs through partnership in the Emerging Global Leader Award (K43) and Institutional Training Program (D43). The Emerging Global Leader Award will provide LMIC early-stage investigators the opportunity for joint mentorship by a United States and LMIC established researcher while the Institutional Training Award will support collaborative research training between institutions in the United States and LMICs for research on chronic, non-communicable diseases including AD/ADRD.

For more information, see:

Strategy 1.E: Facilitate Translation of Findings into Medical Practice and Public Health Programs

Currently, promising research and interventions are published in the research literature and presented at scientific meetings. Additional steps are needed to highlight promising findings and to facilitate dissemination and implementation of effective interventions quickly and accurately to the general public, medical practitioners, the pharmaceutical industry, and public health systems.

(UPDATED) Action 1.E.1: Leverage public and private collaborations to facilitate dissemination, translation, and implementation of research findings

Lead Agency: NIA

Partners: FDA, ACL, CDC, partner organizations

NIA continues to expand its efforts to educate clinicians about recent research findings, clinical practice tools for assessment, diagnosis and management of cognitive impairment, training materials, and a patient checklist handout in English and Spanish, and other resources available online in a mini-portal of resources for professionals.

NIA also continues to promote research findings through press releases, research highlights, and feature articles.

In 2020, NIA and partner federal agencies led efforts to update and enhance the Alzheimers.gov website. NIA launched this new portal to Federal Government AD/ADRD information and resources in February 2021. The site features:

Information about AD/ADRD.

Tips and resources for caregivers and people living with dementia.

Updates on Federal Government activities to address AD/ADRD.

How to take part in clinical research and how to find studies.

Resources for health care providers, community and public health workers, and researchers.

For more information, see:

NIA is developing a web page to support the publicâ€™s understanding of cognitive assessment research and NIA-funded research in this area.

The AMP-AD Target Discovery Project has generated a wealth of molecular data from over 3,000 human brain and plasma samples collected in several NIA-supported AD cohorts and brain banks. The project makes these datasets available to the greater research community through the AMP-AD Knowledge Portal. More than 3,000 researchers around the world have

used the NIH-supported AD Knowledge Portal to advance research on AD/ADRD.

In 2018, these novel target predictions, along with the data and analyses that led to their discovery, were m

Reference

Introduction to Environmental Engineering and Science

Usability Engineering