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PERSPECTIVE

Inviting Veterans InTo Enrollment in Alzheimer's Disease Research Centers (INVITE-ADRC): An NIA and VA-sponsored initiative to increase veteran participation in aging and dementia research

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Abstract

INTRODUCTION: Older military veterans often present with unique and complex risk factors for Alzheimer's disease (AD) and related dementias. Increasing veteran participation in research studies offers one avenue to advance the field and improve health outcomes.

METHODS: To this end, the National Institute on Aging (NIA) and Department of Veterans Affairs (VA) partnered to build infrastructure, improve collaboration, and intensify targeted recruitment of veterans. This initiative, INViting Veterans InTo Enrollment in Alzheimer's Disease Research Centers (INVITE-ADRC), provided funding for five sites and cross-site organizing structure. Diverse and innovative recruitment strategies were used.

RESULTS: Across five sites, 172 veterans entered registries, and 99 were enrolled into ADRC studies. Of the enrolled, 39 were veterans from historically underrepresented racial and ethnic groups.

CONCLUSIONS: This initiative laid the groundwork to establish sustainable relationships between the VA and ADRCs. The partnership between both federal agencies

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demonstrates how mutual interests can accelerate progress. In turn, efforts can help our aging veterans.

KEYWORDS

dementia, Department of Veterans Affairs, National Institute on Aging, recruitment, veterans

1 | INTRODUCTION

1.1 | Dementia: Impact on veterans and the need for veteran-focused research

According to the 2021 Census, the United States is home to 16.5 million military veterans (\approx 6.4% of the adult population) and approximately half of veterans are aged \geq 65 years.¹ In general, US veterans are an aging population heavily weighted by those who served in the Vietnam conflict, and with numerous risk factors for Alzheimer's disease (AD) and related dementias (ADRD).^{2,3} Some of these unique risk factors include: increased exposure to traumatic brain injury (TBI),⁴ post-traumatic stress disorder (PTSD), sleep disturbances, and depression.⁵⁻⁸ Such comorbidities frequently co-occur with hypertension, hyperlipidemia, and obesity—factors that also increase AD risk.^{9,10} AD neuropathology, characterized by neuritic plaques composed chiefly of amyloid beta ($A\beta$) and neurofibrillary tangles composed primarily of tau, starts several decades before symptom onset.¹¹ Military service–related exposures may contribute to increased AD risk via early changes in processing and clearance of $A\beta$, acceleration of tau pathology, and promotion of inflammatory changes.^{12,13} Women veterans with TBI, PTSD, and depression also have a significant increase in the risk of developing dementia compared to women without these diagnoses.¹⁴ Therefore, there is a growing need to understand veteran-specific risk, diagnosis, and progression factors associated with ADRD. The Department of Veterans Affairs (VA) and the National Institute on Aging (NIA)-funded Alzheimer's Disease Research Centers (ADRCs) are ideally positioned to collaboratively address and mitigate the public health threat posed by dementia. Strategic joint efforts to increase veteran enrollment into existing NIA-funded ADRCs and affiliated research studies are a critical first step in systematically addressing veteran-specific risk. This paper describes the first formal research collaboration between the NIA and VA with attention to the outcomes and lessons learned.

1.2 | VA: Background and context for AD research

The Veterans Health Administration (VHA), the division within the VA responsible for health care, supports the largest integrated health-care system in the United States and provides care for \approx 9 million veterans, across nearly 1300 facilities.¹⁵ In addition, VHA ranks as one of the nation's leaders in clinical health research, across thousands of studies, resulting in numerous health-care advancements.^{16,17} The 2018–2024

VA Strategic Plan outlines priorities to rapidly advance technology and groundbreaking research to provide veterans with personalized medicine and tailored treatments.¹⁸ In addition, the VHA has prioritized research on veteran-specific illnesses, injuries, and risk factors such as those that increase risk for dementia.

The VA Office of Research and Development (ORD) supports a national research enterprise that spans scientific discovery and testing across a spectrum of conditions.¹⁸ Activities involve preclinical, clinical, health services, genomics, data science, and rehabilitation work that address a range of ADRD-related topics. Research within VA can be done solely as a VA intramural activity or in collaboration with others including federal, industrial, and non-profit corporate entities. For example, in 2006, the San Francisco VA, in collaboration with the Department of Defense and the University of California, San Francisco (UCSF) founded the Center for Imaging of Neurodegenerative Diseases.¹⁹ In 2011–2014, VA researchers demonstrated effectiveness of an insulin-based nasal spray and vitamin E supplementation to delay cognitive decline in older adults.¹⁹ In 2014, results of a VA cooperative study showed that in patients with mild to moderate AD, 2000 IU/d of alpha tocopherol resulted in slower functional decline relative to a placebo condition.⁴ In 2019–2020, specific risk factors of high low-density lipoprotein cholesterol and Type 2 diabetes were found to be associated with early-onset AD and greater risk of functional decline, respectively.²⁰ In 2021, rodent models revealed that modulation of a key enzyme in forming amyloid plaques could prevent AD.²¹ In 2022, a large national study of nearly two million veterans demonstrated important racial and ethnic disparities in ADRD incidence highlighting the need for further research to identify underlying mechanisms for these differences.²²

1.3 | Current state of VA–academic institutional collaboration structure

The VA attracts leading health-care providers and researchers by prioritizing and encouraging partnerships with academic institutions. At $>$ 100 sites, VA clinicians work to improve health care for veterans and enhance their work experience through thriving collaborations with researchers at affiliated universities. Many VA researchers also maintain academic affiliations and engage in active VA–university collaborations. However, policies aimed at protecting veterans' personal health-care information and/or eliminating government waste can create challenges to scientific collaborations that involve resource and/or data sharing that are critical to research. Furthermore, differences in operational procedures and implementation of general requirements

for human-subjects research between VA and the academic affiliate can introduce barriers to seamless interactions, despite close geographic proximity between the two. Such barriers often arise because policies are designed for each institution to be independently responsible for their respective activities and do not necessarily consider collaborative contexts. These challenges highlight a need for clearly defined processes and infrastructure with expertise in understanding and managing requirements to support successful VA-academic alliances centered on mutual interests. In 2018, the National Cancer Institute (NCI) and the VA launched an interagency partnership, successfully creating the infrastructure to offer veterans the opportunity to participate in NCI-supported cancer clinical trials, while ensuring data security.²³ As an underrepresented population in cancer research studies, veterans, through this partnership, gain access to cutting-edge treatments, which helps ensure research results will be relevant to the veteran population.

1.4 | Challenges and opportunities of working with veterans

Due to stigma, poor health, and limited treatment options, recruiting participants for dementia-related research studies can be difficult.^{24,25} Nevertheless, military veterans offer both unique challenges and opportunities to research recruitment. Some veterans may hesitate to participate due to privacy and confidentiality, lack of trust in federal entities, and dissatisfaction with the government²⁶ while others may be particularly motivated to enroll to help others, arising from their sense of military comradery and service.²⁷ This latter point has been particularly central to the VA's efforts in recruiting nearly one million veterans into one of the largest genomic research resources in the world: the Million Veteran Program.²⁸

Previous work has found that veterans are willing to allow their medical records to be shared with researchers especially when they were also allowed control over whether and how their medical records were used.^{29,30} Although many veterans experience a disconnect¹⁵ when transitioning from military to civilian life, research participation can offer relief by providing meaningful social or mission-driven connections, especially with fellow veterans.³¹ In fact, veterans have been actively engaging in research; for example, veterans readily signed up for research opportunities during the COVID-19 pandemic by joining a research registry for clinical studies.³² Throughout the years, strategies to support veteran recruitment have been identified, including engaging veterans in the design and conduct of research studies in a community-engaged research model,³³ prioritizing greater transparency during study recruitment to build trust, involving VA health-care providers, including VA settings for the research environment, and tailoring social media and outreach activities to the interest and values of veterans.³⁴ For veterans from underrepresented groups, here defined as veterans from historically minoritized racial and ethnic groups,³⁵ strategies derived from aspects from both community-engaged research and from community-based participatory research (CBPR) models, which emphasize creating trust

and building relationships as well as involving the population of interest in the research design prior to research recruitment,³³ are increasingly recognized as critical to increase diversity in research participation.

1.5 | NIA-VA initiative and pilot program

The NIA funds 37 ADRCs at major medical and academic institutions across the country. In addition to supporting their unique research interests and local community populations, the ADRC's efforts are strengthened by working together to advance ADRC research. All ADRC research participants complete assessments in the Uniform Data Set (UDS), including neurological exam data, cognitive testing, and informant reports, as well as biospecimen collection.^{36,37} The de-identified UDS data are shared centrally at the National Alzheimer's Coordinating Center (NACC) while corresponding biospecimens are stored at the National Centralized Repository for Alzheimer's Disease and Related Dementias (NCRAD). (See Figure 1 for a map of the ADRC network, which highlights the five selected sites as well as opportunities for additional ADRC/VA collaborations.) Given the co-location of nationally funded ADRCs with VA medical centers (VAMCs), there was a prime opportunity to implement and assess strategies to facilitate recruitment of military veterans into ADRC research.

Given the outlined need to increase veteran participation in aging and dementia research, the primary objective of the initiative was to develop a novel pilot program to identify effective and sustainable strategies to intensify the recruitment and retention of veterans in NIA-funded ADRC clinical research studies. Broadly, each site created dedicated teams charged with developing, implementing, and evaluating novel approaches to increase veteran recruitment and retention as research participants, including an emphasis on underrepresented populations. Increasing the number of veterans included in a research "registry" of potentially interested persons willing to be contacted regarding study participation was also a goal.

A larger aim was to explore how productive collaborations between two federal agencies and their leadership can identify and address systemic challenges faced by many individual sites. The program was created in 2020–2021 and is modeled after the NCI and VA Interagency Group to Accelerate Trials Enrollment (NAVIGATE)²³ and its precursor, the VA Network of Dedicated Enrollment Sites (NODES) established by the Cooperative Studies Program (CSP).³⁸ These initiatives served to support the needs of individual sites and to build the infrastructure to reduce common barriers to meeting research enrollment and retention goals. The dementia research-focused initiative is called INViting Veterans InTo Enrollment in ADRCs (INVITE-ADRC). This report aims to describe the process of building ADRC-VA collaborations, report preliminary progress across the five initially selected sites, and discuss lessons learned and best practices for other ADRCs that may be interested in joining forces with their local VA.

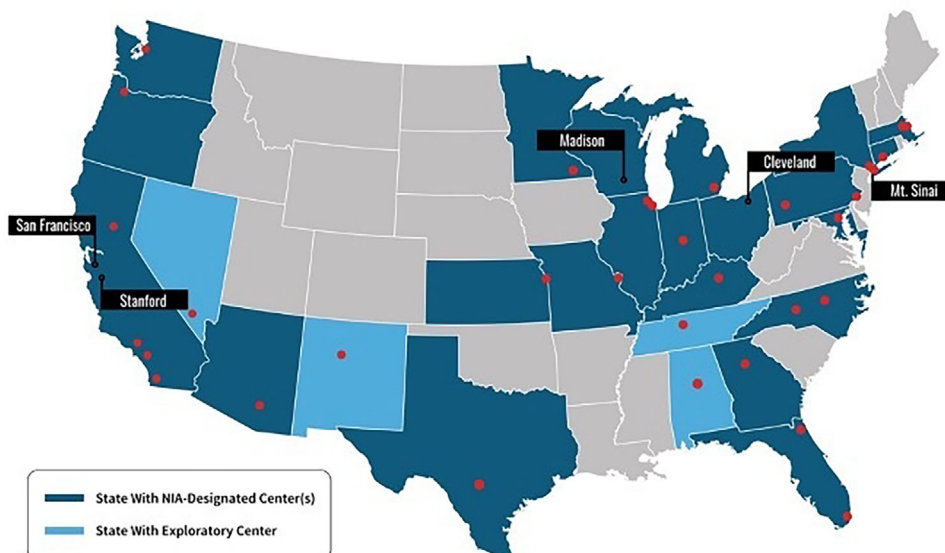


FIGURE 1 Geographical distribution of the five selected sites for INVITE-ADRC. INVITE-ADRC, Inviting Veterans InTo Enrollment in Alzheimer's Disease Research Centers; NIA, National Institute on Aging.

2 | METHODS

This collaborative NIA–VA initiative funded five sites for INVITE-ADRC and these sites were tasked to focus on local clinical research partnerships; operational/regulatory requirements; and creating a culture promoting the importance of engaging and including veterans, their clinicians, and caregivers in NIA-funded ADRC research. These efforts led to a network in which each site shared progress and data, ideas for pragmatic solutions, and strategies for veteran recruitment and retention in ADRC clinical studies in monthly (virtual) meetings with NIA and VA leadership and program staff.

2.1 | Application requirements and selection process

Applications were open to active ADRCs that are co-localized with VA facilities or research centers and that have demonstrated previous experience with key partnership activities (see Table 1). Applicants were required to hire a central and dedicated Recruitment Coordinator to accomplish the aims of the supplemental funding opportunity. Potential research participants would be identified by leveraging co-localized VAMCs and/or VA-supported research infrastructure such as Geriatric Research Education and Clinical Centers (GRECCs), Mental Illness Research Education and Clinical Centers (MIRECCs), and/or the CSP. The Recruitment Coordinator was expected to be a local champion for aging and dementia studies and work with local clinical and scientific leaders. The Recruitment Coordinator's goals were to recruit, guide, and track enrollment and retention of veteran participants into available clinical research through ADRCs, ADRC-affiliated clinical trials (including the Alzheimer's Clinical Trials Consortium), and biomarker and population studies.

The NIA administratively reviewed the submitted applications. Applications included a proposed set of activities centering on a recruitment and retention plan. Proposals described current capacity for proposed activities, recruitment coordinator selection process, engagement with local VAMCs, and specific innovative and novel strategies to accomplish the proposed aims. In addition, sites were required to have a process for tracking and submitting progress to NIA monthly (see Table 1 for full description proposal criteria and possible deliverables).

2.2 | INVITE-ADRC infrastructure building

The five funded sites were: Cleveland Clinic/University Hospitals of Cleveland (partnered with VA Northeast Ohio Healthcare System); Mount Sinai Hospital (Bronx VAMC); Stanford University (VA Palo Alto Health Care System); University of California, San Francisco (San Francisco VAMC); and the University of Wisconsin (William S. Middleton Memorial Veterans Hospital).

NIA–VA central coordinating teams met for an initial orientation of the goals of the program. Each site shared their specific aims, the multidisciplinary team composition, and initial strategies for accomplishing the aims. Participation was required on monthly (virtual) meetings with NIA and VA leadership and program staff and all funded Recruitment Coordinators were asked to report progress, identify challenges, and share ideas for pragmatic solutions. To structure clear communication across sites, encourage ambitious goals, track progress, and support accountability, the objective and key result (OKR) approach was used.³⁹ OKR provides a structure to set goals and determine measurable progress milestones, both of which can be recalibrated along the life of a project. It is also the approach more broadly used by VA ORD and facilitated the cultural alignment

TABLE 1 Requirements and deliverables for administrative supplements to ADRCs for pilot programs to increase the recruitment and retention of military veterans in AD and related dementias clinical research studies (INVITE-ADRC).

Requirements to apply/proposal review criteria	<ul style="list-style-type: none"> • Current active ADRC status • ADRC is co-localized with VA-supported research infrastructure • Existing VAMC outreach and partnership • Familiarity and experience with VA stakeholders, health records systems, and relevant policies/regulations • Focus on veterans from historically underrepresented populations • Strategies for integrating veteran-focused efforts beyond the funding period • Willingness to be part of a NIA/VA partnered monthly meetings • Willingness to engage in evaluation activities to assess strategies
Potential deliverables (outcomes)	<ul style="list-style-type: none"> • Measurable improvement in ADRC/VA collaboration • Submission of stand-alone R01 applications to further test promising veteran recruitment interventions across ADRCs • Development of sustainable processes to facilitate ADRC/VA collaborations • Development of innovative and/or novel strategies for recruiting and retaining veteran participants in VA research and clinical infrastructure • Quantification of the impact of dedicating targeted resources toward recruiting veterans through ADRCs. • Completion of a summary of effective, as well as ineffective, strategies and approaches (including identification of challenges, lessons learned, and resolutions) implemented by each site • Contribution of tested recruitment/retention plans, best practices, and outreach materials to the NIA Alzheimer's Disease Outreach, Recruitment, and Engagement Repository to assist other ADRCs and future clinical studies

Abbreviations: AD, Alzheimer's disease; ADRC, Alzheimer's Disease Research Center; INVITE-ADRC, INViting Veterans InTo Enrollment in Alzheimer's Disease Research Centers; NIA, National Institute on Aging; VA, Department of Veterans Affairs; VAMC, Veterans Affairs Medical Center; VHA, Veterans Healthcare Administration.

among its research enterprise units. Each site determined objectives and several key results to measure for each objective and report to the entire group on progress each month for the first year of this supplement. This served to keep the vision and mission centered while allowing flexibility for each site to determine unique OKRs in service of increasing veteran enrollment in NIA-funded dementia research.

The initial meetings focused on the process of gaining local approvals required for executing the aims of each supplement. In addition to regulatory approvals required, which were lengthy across the five sites, all five sites also had to modify planned recruitment strategies due to the ongoing COVID-19 pandemic, including associated closures and staff turnover. As the timeframe progressed, the emphasis shifted to actively achieving the goals of the supplement. In addition, the Recruitment Coordinators, Principal Investigators, and program staff strategized how the lessons learned from the supplement period could be documented and shared with other sites that wish to accomplish similar aims. Where applicable, VA ORD leadership and staff provided guidance and connections to other research networks to harmonize activities and practices in the start-up activities.

3 | RESULTS

3.1 | Site-specific strategies and operational approaches

Both independently and collaboratively, the five sites had various strategies to increase veteran recruitment and enrollment into ADRC studies. Initially, approaches were mostly pragmatic and pulled

from prior researcher experiences, particularly given the COVID-19 pandemic limitations. However, over time and through collaborations established through the coordinator monthly meeting, sites expanded their approaches to increase veteran recruitment via a variety of partnership models. In addition, each site had an aim or sub-aim to specifically recruit veterans from underrepresented racial and ethnic groups.^{35,40} We describe these strategies below by site. Recruitment materials also are available to the research community through the Alzheimer's & Dementia Outreach, Recruitment and Engagement Resources (ADORE) resource repository (<https://www.nia.nih.gov/research/alzheimers-dementia-outreach-recruitment-engagement-resources/about>). Figure 2 provides a summary of referral sources used across sites, as well as VA-specific programs and clinics that are amenable to research collaborations.

3.2 | Cleveland ADRC and VA Northeast Ohio Healthcare System

The VA Northeast Ohio Healthcare System sought to build upon three local strengths including a diverse population of veterans, a strong research infrastructure, and collaborations between the Cleveland ADRC (<https://clevelandadrc.org>) partners at the Cleveland Clinic and University Hospitals. The first aim used a community-engagement model³³ to promote recruitment of veterans through regular meetings with their diverse Veteran Advisory Board (VAB) to inform all phases of their research program. These activities led to additional outreach activities with local and statewide veteran groups and included the recruitment of a veteran to the Cleveland ADRC collaborator's minority advisory board. They partnered with investigators and clinicians

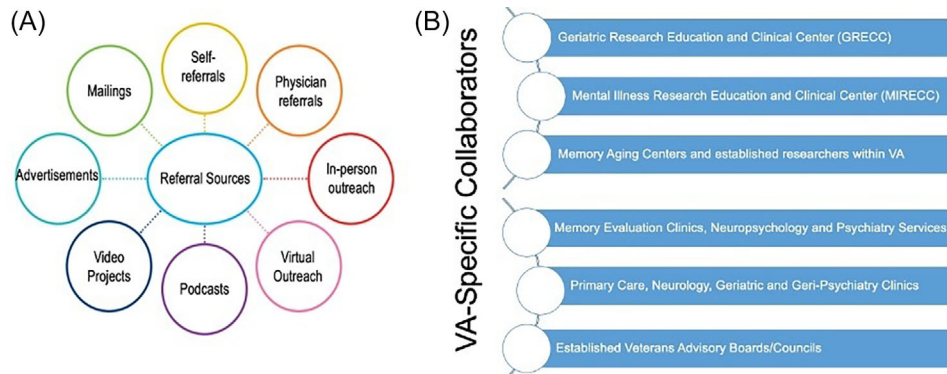


FIGURE 2 A, Recruitment sources used across sites, both within the VA and in community settings. B, VA-specific clinics and programs amenable to collaborating with ADRCs. ADRCs, Alzheimer's Disease Research Centers; VA, Department of Veterans Affairs.

at the local GRECC⁴¹ by presenting the work of the Cleveland ADRC at regular and ongoing dementia program meetings. The second aim explored how core military values may influence a veteran's decision to participate in dementia-related research. With the Cleveland ADRC, they created recruitment videos that included military core values or education only (as a control). These videos were shown to veterans before and after surveys to assess willingness to participate in dementia-related research. The third aim incorporated each of these strengths to promote the recruitment of veterans with an emphasis on underrepresented populations. The final aim sought to strengthen collaborations between VA investigators and existing Cleveland ADRC investigators by distributing information via attendance at their regularly scheduled meetings and sharing information via e-mail. As a result, there is now an established, core group of VA clinicians, investigators, and research study staff developing a VA institutional review board (IRB) protocol that will allow veterans to enroll in the ADRC at the Cleveland VA. Most importantly, this site has developed a working relationship with the partnered institutions and has identified a process for data sharing acceptable to VA privacy and security regulations.

3.3 | Mount Sinai ADRC and James J. Peters VAMC

Through a multisite collaboration with the Mount Sinai ADRC (<https://icahn.mssm.edu/research/adrc>), the James J. Peters VAMC in the Bronx specifically aimed to improve recruitment and retention among the veteran population and to include diversity recruitment among veterans. This site focused on providing sustainable recruitment into ADRC-related studies with specific emphasis on biomarkers and disease prevention efforts. The Mount Sinai ADRC and Bronx VA partnered with multiple teams within the VA, such as the GRECC, Bronx Regional Health Information Organization (RHIO), and the Patient Aligned Care Team (PACT). With the help of local VA networks, this site was able to cultivate a mailing list, and send recruitment letters to participants previously enrolled in VA research. Longstanding relationships between the geri-psychiatry clinic and the Mount Sinai ADRC enabled physicians to continue to refer patients to the registry and studies, which increased veteran referrals and enrollment. This site

used a community-engaged research model³³ to successfully establish a VAB. Quarterly meetings of the VAB engaged with veterans and caregivers, and helped to inform veterans of research at the VA and how the ADRC could enhance recruitment and further reach individuals in the local community.

3.4 | Stanford ADRC and VA Palo Alto Health Care System

Investigators at the Stanford ADRC (<https://med.stanford.edu/adrc.html>) and VA Palo Alto Health Care System, who mostly have dual appointments, also aimed to increase veteran recruitment and retention into ADRC research endeavors. This site had a secondary aim to increase enrollment of veterans from historically underrepresented populations, such as Latinx veterans.⁴² To accomplish these first two aims, this site took a tiered approach to recruitment. The first tier included close collaborations and “warm hand-offs” from VA clinics to the Stanford ADRC. The second included collaborating with existing VA research projects to enroll those who were interested in further research participation opportunities. The third tier included a post-card mailing system to reach veterans in the community who may or may not be enrolled with VA health care. Last, the fourth tier included community education and outreach events. Within each of these tiers, research personnel emphasized the importance of recruiting, prioritizing, and enrolling veterans from underrepresented populations, particularly Latinx veterans. In addition to these first two aims, this site also assembled a VAB to provide guidance on the most effective strategies for engaging veterans and supporting their enrollment into the Stanford ADRC, which spanned community engaged research and aspects of CBPR models.³³ This group worked toward evaluating the strategies put forth by the team and provided critical feedback on what would be most compelling and useful for veterans. Last, the Stanford ADRC and VA Palo Alto site aimed to develop veteran-centered biomarker disclosure protocols which would be modeled after the Stanford ADRC Work Group on Informative Biomarker Disclosure and the Advisory Group on Risk Evidence Education for Dementia (<https://www.agreedementia.org>).

3.5 | UCSF ADRC and San Francisco VAMC

UCSF's Memory and Aging Center (<https://memory.ucsf.edu>) used a community-engaged research model³³ and proposed to leverage the VA-based multidisciplinary Memory Evaluation Clinic comprised of a neurologist, geropsychiatrist, neuropsychologist, nurse, and clinical research coordinator to conduct the initial ADRC screening, recruitment, enrollment, and ADRC Clinical Core visit at the San Francisco VA (SFVA). This would facilitate enrollment of veterans into the ADRC Clinical Core by making participation more convenient, as well as mitigate the participant burden pursuing referrals to UCSF ADRC sub-projects and trials. In parallel with these on-site activities, this site aimed to offer flexible participation options including direct referral to the UCSF ADRC for the initial visit and remote enrollment/intake options, leveraging the team's track record of pioneering telehealth for rural veterans with dementia. Interested participants would then be connected with the designated recruitment coordinator to schedule the visit. SFVA patients seen within the past year would be sent letters inviting them to participate in addition to being approached directly in the VA memory clinic. Last, the UCSF ADRC team aimed to develop a military exposome survey battery to investigate unique risk factors to aging in veterans. In collaboration with an NIA-funded R01 project, the survey battery would be coded into a tablet-based application to facilitate collaboration with other ADRCs and further the understanding of potential risk factors unique to the aging veteran population.

3.6 | Wisconsin ADRC and VA Madison Health Care

The Wisconsin ADRC (<https://www.adrc.wisc.edu/>) set several specific goals to increase veteran enrollment. First, the team worked to strengthen the partnership between the Wisconsin ADRC and the Madison VA Research Service to address the long-standing barriers to recruitment of veterans into non-VA-funded studies and to build infrastructure to support dementia research at the VA. Specifically, an interinstitutional task force was created to identify regulatory issues and seek solutions and develop electronic data sharing and storage processes. A veteran research engagement group to consult across veteran-related projects was launched, with an initial panel of 13 male and female veterans from diverse eras and age groups. A Marine veteran was hired into the recruitment coordinator role. A second parallel aim was targeted recruitment of veterans as part of existing Wisconsin ADRC community-based outreach. To this end, the team created veteran-specific recruitment materials and made contacts with local veteran service organizations. As part of the existing collaboration with a nearby tribal nation, efforts focused on Native American veterans and a Native recruitment coordinator was hired. In the context of restrictions related to the pandemic, innovative outreach included creation of a podcast and an interview on the tribal radio station. These efforts, as well as the INVITE-ADRC initiative were highlighted by the NIA for Veteran's Day 2021.⁴³

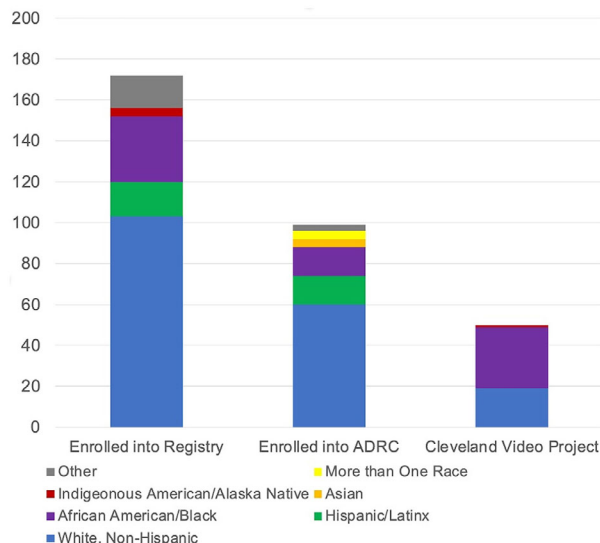


FIGURE 3 Cumulative veteran enrollment numbers across the five sites (October 2020–March 2023). ADRC, Alzheimer's Disease Research Center.

3.7 | Summary of site-specific strategies and operational approaches

Recruitment strategies aimed at soliciting veteran volunteers included referrals from clinics and VA researchers. Across the five sites, a total of 12 VA-based clinics and research programs (examples are provided in Figure 2B) were enlisted to provide referrals and study information to veterans seeking care within the VA. Most sites created new veteran-focused recruitment materials, which are available on ADORE (<https://www.nia.nih.gov/research/alzheimers-dementia-outreach-recruitment-engagement-resources>). Consistent with community-engaged research models,³³ four of the five sites created or used a veteran-centered advisory council or engagement group to strengthen partnerships between the academic affiliate ADRC and VA facility and to get feedback from key stakeholders.^{44,45} These groups totaled 31 members, most of whom were veterans, veteran caregivers, and/or veteran health-care providers. CBPR was further used to reach veterans who do not receive care within the VA, as well as veterans from underrepresented groups. Specific accomplishments of each site are detailed below (see Figure 3 for cumulative enrollment numbers across the five sites).

3.8 | Recruitment results by site

The VA Northeast Ohio Healthcare System was able to recruit 50 individuals (31 from racial/ethnically underrepresented groups, 96.8% Black, 3.2% Indigenous American/Alaska Native, 16% female) into their video project and enrolled five into the Cleveland ADRC. They were able to hold two in-person outreach events and two remote events. They have successfully established collaborations within the GRECC, as well as the neurology and psychiatry departments of the Cleveland

VA. With the recent submission and approval of the ADRC VA IRB protocol this site anticipates significant improvement in enrollment of veterans into the Cleveland ADRC database.

Mount Sinai Hospital sent out 259 recruitment letters and received 80 responses. Follow-up calls were made to the individuals who did not respond. By establishing collaborations with the GRECC and VA providers of geri-psychiatry and neurology departments, 124 individuals (64 from racial/ethnically underrepresented groups, 26.7% Hispanic, 48.4% Black, 4.9% female) were recruited into the registry, a database of individuals interested in participating in research; 35 were enrolled (24 from underrepresented groups, 31.3% Black, 27.5% Hispanic, all male) to be followed on an annual basis and 4 (3 Black, 1 female) were enrolled into clinical trials.

The Stanford ADRC was able to hold one in-person outreach event and 22 remote events, which reached a total of 481 individuals. Toward the end of the supplement period, nearly 4000 postcards were mailed to households that included a Latinx veteran, per US Census Data. The multitiered approach resulted in 23 veterans (4 from racial/ethnically underrepresented groups, 50% Hispanic/Latinx, 25% Black, 25% more than one race, 8.7% female) enrolling into the Stanford ADRC. This site developed a "pocket guide" for clinicians and researchers to quickly reference relevant eligibility criteria and study requirements. Sustainable collaborations were established with the California State Alzheimer's Disease Center, GRECC, MIRECC, and established VA researchers.

The UCSF ADRC was able to recruit 21 veterans (9 from racial/ethnically underrepresented groups, 22.2% Black, 11.1% Hispanic, 44.4% Asian, 22.2% more than one race, 22.2% female), 11 of whom were newly recruited into the UCSF ADRC and military exposome project. In addition, 13 veterans undergoing continued follow-up at the UCSF ADRC were also recruited into the military exposome project. This site established collaborations with SFVA Memory Evaluation Clinic, MIRECC, UCSF Memory and Aging Center, as well as outside providers.

The University of Wisconsin was able to recruit 48 individuals (5 from racial/ethnically underrepresented groups, 20% Black, 80% Indigenous American/Alaska Native, 20% female) into the registry, a database of interested individuals; 15 (2 from racial/ethnically underrepresented groups, 50% Black, 50% more than one race, 50% female) were enrolled into the Wisconsin ADRC through community-based events. This site was able to hold nine in-person outreach events, which included distributing flyers, staffing tabled events, submitting newspaper articles, and ensuring visibility in veteran publications and podcasts. The Wisconsin ADRC also partnered with Madison VA research staff to launch a new, ongoing Veteran Research Engagement Group ($N = 13$) to promote knowledge about research among veterans and family members and increase future recruitment success via veteran consultation.

3.9 | Institutionalizing best practices

One final effort was the establishment of a writing committee tasked with documenting activities and collecting data for the network. This

paper represents this group's first major product to help with disseminating information and strategies for other ADRCs and/or groups with shared interests.

4 | DISCUSSION

The development of equitable treatments for ADRD requires enrollment of diverse sets of study participants including military veterans. Cutting-edge research efforts that are ongoing at national ADRCs require dedicated recruitment of veterans into these studies to address the specific clinical needs of our aging veterans. Recruiting veterans presents a unique set of challenges as well as opportunities. The INVITE-ADRC initiative sought to (1) identify effective and sustainable strategies to intensify recruitment and retention of veterans into ADRD clinical research studies and (2) further leverage VA-academic partnerships to support more effective scientific collaborations. Five active NIA-funded ADRC sites were awarded 12 months of funding to complete their proposed projects. These five sites accomplished, to varying degrees, the two measurable goals: (1) increasing enrollment of military veterans into NIA-funded ADRC studies, and (2) establishing an infrastructure to disseminate the process of collaborations between two federal agencies resulting in a summary of best practices and lessons learned. This initiative also served as an initial platform for how two funding agencies can work together toward a larger national AD research enterprise.

4.1 | Lessons learned

Through monthly virtual meetings, collaborative efforts with local VAs, and innovative outreach strategies, the INVITE-ADRC initiative accomplished an initial infrastructure to combine National Institutes of Health (NIH) and VA missions under a common goal. We present here a brief list of key "lessons learned" over the course of INVITE-ADRC related to increasing collaboration and building infrastructure in each ADRC-VA partnership. Table 2 outlines the successes and challenges that the pilot program encountered.

4.2 | Best practices in recruitment strategies

Successful recruitment of veterans for dementia-related research studies requires a veteran-centric approach. Our work pointed to the value of involving veterans' trusted health-care providers in the research recruitment strategies. Realizing the constraints on provider time we suggest carrying out recruitment activities where veterans receive services. These settings foster veteran engagement by increasing comfort and fostering trust. Additionally, supporting veterans' engagement and improved understanding of research value allows for the leveraging of their commitment to service. Specifically, engaging individual veterans and/or veterans' advisory boards can give voice to veteran perspectives, build trust, and result in an optimized avenue for veteran recruitment into research.^{46,47}

TABLE 2 Successes and challenges learned from the INVITE-ADRC initiative.

Successes	<ul style="list-style-type: none"> • Efforts to build bridges and infrastructure to support clinic-based and research referral processes were successful. These were felt to reduce barriers and pave the way for increased research participation by veterans over time, particularly when veterans perceive a “warm hand-off” from clinic providers to research staff. • At various sites, successful approaches in the face of regulatory barriers included seeking incremental approvals (e.g., using VA as recruitment/referral site only, not as a data collection site), building on existing approved studies, and making use of existing web-based resources regarding regulatory requirements. • The COVID-19 pandemic offered opportunities for innovation that may have increased reach of recruitment efforts (e.g., virtual research visits, virtual educational events, and social media engagement).
Challenges	<ul style="list-style-type: none"> • Understanding and planning how regulatory requirements at both partner institutions are best addressed takes time. Focus on relationship building from the start and plan ahead for delays. As one of the goals and deliverables of this pilot, the team has generated a document that summarizes processes that address VA compliance and academic IRB issues. • Each site will have specific local barriers to participation by veterans that need to be addressed within the academic–VA partnership. For example, some ADRC site protocols and geographic locations created the need for travel and overnight accommodation reimbursement, necessitating ongoing partnership discussions on funding and logistics to realistically increase access for veterans to participate in ADRC research. • Institutional challenges that were consistent across sites included identifying staff at each site best positioned to help resolve questions and barriers, including in cases of staff turnover (complicated by the COVID-19 pandemic) and the lengthy timeframe for academic staff to obtain VA credentials, if needed. Prioritizing close communication between sites across time, maintaining consistency of personnel (and therefore of institutional knowledge across the partnership), and planning ahead are crucial. • Project timing during the COVID-19 pandemic also resulted in significant challenges in: attaining recruitment goals, building relationships, and generalizing evaluation findings.

Abbreviations: ADRC, Alzheimer's Disease Research Center; INVITE-ADRC, INViting Veterans InTo Enrollment in Alzheimer's Disease Research Centers; IRB, institutional review board; VA, Department of Veterans Affairs.

While the five awardee sites had slightly different study aims, all were able to build relationships with departments within the VA. Dedicated funding for recruitment coordinators to launch these efforts was critical. Funding amounts per site are publicly available on NIH RePORTER. Several sites noted the importance of collaborating with VA primary care clinics and other VA health-care providers. Staff in these departments helped to increase study referrals alongside self-referrals and outside physician referrals. Building these relationships helped bridge the gap between VA clinical care and research. In addition, while recruiting into studies, two sites formed research registries. These registries served as a database of veterans who may not necessarily participate in research at the time of joining but can still be updated on ADRC research opportunities and receive newsletter updates.

Sites funded through INVITE-ADRC reported mixed success with the use of social media, community outreach events, and mailings tailored to the interest and values of veterans to facilitate recruitment.^{48,49} Social media can build awareness and/or could be specifically disseminated to existing veterans' groups. However, clear policy and guidelines for recruitment of research volunteers via social media are not well established and the environment can provoke negative comments and therefore must be carefully monitored.⁵⁰ Attendance at outreach events, and subsequent engagement by veterans, was an additional challenge to anticipate and plan for over the course of the pandemic. While virtual educational events were well attended, the translation of these community outreach events into veterans volunteering for target research studies was not successful. Instead, the ability to interact in person with older veterans, once pandemic restrictions were lifted, yielded best results.

4.3 | NIA and VA collaboration

As noted, one of the broader aims of INVITE-ADRC was to continue the model for interagency collaboration toward improved clinical research recruitment created by NAVIGATE in developing effective high-level communication and agreements between two federal agencies, to support academic and VA partnerships at sites across the system. This was in large part successful, and strong collaborations were launched and nurtured throughout the project. For example, including seasoned leaders from each agency (NIA and VA) with professional interest in aging and dementia research and prior experience navigating such partnerships in other domains (e.g., NAVIGATE) proved to be invaluable. As a result of INVITE-ADRC, there is a guidance document in development with the goal of clarifying research compliance requirements applicable to VA–academic affiliate partnerships. This guidance will be relevant to research efforts well beyond ADRC.

4.4 | Conclusions and future opportunities

While there were some initial challenges, the INVITE-ADRC initiative has been very successful in establishing formal ADRC–VA collaborations across five academically affiliated ADRCs and partnered VA facilities. All five collaborations were able to implement numerous outreach activities tailored to engage and educate veterans about dementia and successfully recruit a significant number of veterans into ADRC research. Additionally, this project was able to successfully lay the groundwork for infrastructure to support further efforts to

ensure inclusion of veterans in research studies, particularly veterans from underrepresented groups. These efforts also laid the groundwork for future studies to further increase representation by including gender, biological sex, language, income, educational level, and health literacy, thereby accounting for potential structural and social determinants of health. The bridges and communities built as a result of this opportunity will continue into the future and will help lead to critical breakthroughs related to veteran-specific risk factors and disease progression for ADRD.

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CONFLICT OF INTEREST STATEMENT

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