

Supporting Statement B for

**Recruitment and Screening for the
Insight into Determination of Exceptional Aging and Longevity
(IDEAL) Study (NIA)**

Revised [Final Date]

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Table of Contents

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

B.1 RESPONDENT UNIVERSE AND SAMPLING METHODS

1

B.2 PROCEDURES FOR COLLECTION OF INFORMATION

3

B.3 METHODS TO MAXIMIZE RESPONSE RATES AND DEAL WITH NON-RESPONSE

7

B.4 TEST PROCEDURES FOR METHODS TO BE UNDERTAKEN

8

B.5 INDIVIDUALS CONSULTED ON STATISTICAL ASPECTS AND INDIVIDUALS COLLECTING AND/OR ANALYZING THE DATA

8

List of Attachments

Attachment 1	IDEAL Recruitment Presentations
Attachment 2	IDEAL Organizational Recruitment Letters
Attachment 3	IDEAL Recruitment Poster
Attachment 4	IDEAL Recruitment Brochure and Post Card
Attachment 5a	IDEAL Telephone Screening Interview Part 1
Attachment 5b	IDEAL Telephone Screening Interview Part 2
Attachment 6	IDEAL Pre-Visit Confirmation Letter(s) for Physical Screening
Attachment 7	IDEAL Screening Exam
Attachment 8	IDEAL Consent Booklet and Form
Attachment 9	IDEAL CMS Mailing Materials
Attachment 10	IDEAL BLSA PIA
Attachment 11	NIEHS IRB Approval Letter

B. 1 Respondent Universe and Sampling Methods

Since no preliminary information was available on the characteristics of the study population that we are targeting for this study and because we are exploring multiple characteristics potentially associated with the IDEAL status, a “traditional” sample size calculation was not conducted. We have already available BLSA data for 480 non-IDEAL participants 80 and older that had their follow-up visit after 2003 and therefore were assessed with the current protocol and have biological samples already available. However, of these 480 non-IDEAL participants, only 400 have complete data. Based on the current BLSA population, at least 100 individuals who are no longer IDEAL will become greater than 80 years old between 2011 and 2016. This was the rationale for selecting 500 new IDEAL participants to be entered in the BLSA. We conducted a power calculation for allele frequency comparisons between genotypes assuming 500 “Elite Aging” individuals and 500 unrelated BLSA control participants. We calculated power across a range of detectable effect sizes using a strict significance threshold of 9.1×10^{-8} corresponding to a conservative Bonferroni corrected genome-wide significance level of ~ 0.05 assuming 550,000 independent tests for the genes included in the Illumina chip. This sample size allows 80% power to detect relative risks between 1.5 and 2.0 when comparing allele frequencies between 500 cases and 500 controls. Power calculations assume a multiplicative model and a disease prevalence of 1%.

Likelihood of attrition whether because participants no longer choose to participate or because they “lose the ideal condition” after age 80, although impossible to estimate, is probably very high. We have therefore focused on addressing the main aims

of the study using data collected during the initial visit, and we should have enough “events” for analysis.

Probability sampling is not being used because there are an insufficient number of potentially eligible participants. In order to achieve the desired sample size, all potentially eligible participants must be given an opportunity to participate in the screening process.

The rollout plan for recruitment was based on an analysis of the population density of residents 80 years and older found throughout the catchment area, coupled with geographic proximity to Baltimore. The catchment area consists of 150 miles around Baltimore. By identifying target-rich segments of the geographic area available for recruitment, we plan to continue recruitment efforts in a manner that is both time-and resource efficient. We began our outreach and marketing in the easily accessible cities/counties in the Baltimore area and reaching older adult residents primarily through their organizational affiliations (whether faith based, senior centers or senior residences). We used census block density data to identify naturally occurring elder communities as well as neighborhoods with relatively high populations of older adults. We have expanded our efforts into areas with smaller populations of older adult residents.

The recruitment effort for IDEAL commenced in April of 2011 and is still in progress.

We launched the recruitment effort in waves as shown below:

- **Wave 1 (commenced in April of 2011 and continued for a period of 12 months)**
Baltimore City and Baltimore County
Additional counties in Maryland: Anne Arundel, Calvert, Carroll, Harford,
Howard Montgomery, and Frederick
Counties in Virginia: Arlington and Fairfax
Washington, D.C.
- **Wave 2 (12-24 months)**

Continued recruitment within the counties identified in Wave 1
Prince George's County, Maryland
Loudon, Virginia
Philadelphia, Pennsylvania

We plan to launch recruitment efforts into the catchment areas bordering the 150 mile radius of Baltimore

- **Wave 3 (36-48 months)**
Continued recruitment within the counties identified in Waves 1 and 2
New Castle, Delaware
Counties in New Jersey: Camden Middlesex, Monmouth, Ocean, Burlington, Mercer
Counties in Pennsylvania: Adams, Berks, Chester, Delaware, Lancaster, Lehigh, Luzerne, Montgomery, Northumberland, York

The first **twelve** months of recruitment in 2011, focused on saturating and recruiting from the high density areas immediately around Baltimore, including Baltimore City and Baltimore County, **followed by Anne Arundel, Calvert, Carroll, Frederick, Howard, and Harford Counties, and, more recently,** Montgomery County, Maryland, Northern Virginia, and Washington, D.C. We **have** conducted **ed** thorough outreach in these initial cities and counties of interest, broadening our recruitment area over time as we blanket a particular community with information and material regarding the study and recruitment. This timeline **has been** flexible, however, and **when** we have **had** opportunities or identified **ed** a need earlier in the process to begin recruitment in other geographical areas we **have done** so.

We **have** expanded **ed** to Philadelphia **and other nearby Pennsylvania counties** after focusing on Maryland, **DC, and Northern Virginia.** The first two waves of recruitment **have been** conducted in areas with a combined 80+ population of 203,097. We will also expand recruitment into outlying areas in the later part of the recruitment cycle, including more rural area and smaller towns, based on population density and other factors.

The plan has been to conduct approximately one hundred recruitment activities (e.g., presentations, expos, health fairs, sponsorships, etc.) per year. At the presentations and other activities, we explain the purpose of the IDEAL Study, the eligibility criteria, and what is required of participants. Presentations are made to audiences of at least 20 potentially eligible seniors, whereas tables at expos, health fairs, and sponsored events (e.g., Senior Olympic events) reach audiences of 100 or more, among whom there may be 20 potentially eligible seniors. The goal is that each activity will generate 15 people who are either willing to participate or who know someone who may qualify and is willing to participate in Stage One (telephone interview) of the screening process. The annual response rate is:

$$\frac{\text{The number of people who complete the interview (200)}}{\text{The number of people who receive the presentation (500)}} = \text{approximately } 40\%$$

The recruitment effort also includes newspaper, radio and television promotion, which provide information about the IDEAL Study, and advertise the website address and phone number for interested potential participants to call to participate in the telephone interview. While it is not possible to determine how many people are exposed to the media campaign, to date we have received modest response to print media in local news forums. Together with the new media efforts by Boscobel Marketing Communication, Inc., the ongoing media campaign has allowed us to improve upon the response rate from the presentations and other activities.

As we identify “best sources” for recruitment and develop relationships with agencies and personnel, we have cycled back through recruitment locations in subsequent years. We have returned to present the study again at the most fruitful locations, have refreshed materials and renewed contacts as staff turnover occurs, and have oriented new and ongoing staff to the study goals and criteria for inclusion. We also remind contacts

that over the life of the project, some potentially eligible individuals will “age into” the target population of interest and should be brought to our attention at that time. In other words, we facilitate tracking of 78 and 79 year olds who will soon turn 80 and are healthy and interested in the study.

Additionally, we have received approval from Centers for Medicare and Medicaid Services (CMS) to send a direct mailing containing study information to selected CMS beneficiaries who meet the IDEAL age and geographic eligibility criteria, were alive as of June 2013, and whose claims data in 2011 did not include exclusionary chronic conditions (e.g., stroke, heart disease, cancer, diabetes, chronic kidney disease, Alzheimer’s, etc.). Westat worked with the CMS to determine criteria for pre-screening beneficiaries and a resulting file of 282,745 beneficiary IDs was delivered. Following standard CMS protocol for research studies, all beneficiaries are sent an advanced notice concerning the IDEAL Study by the Beneficiary Contact Service (BCS), and are offered the opportunity to opt out of receiving the IDEAL mailing. If they do not opt out, Westat mails a letter and study brochure inviting recipients to review the listed eligibility criteria and either call the 800 number or return a postcard with their contact information recorded. Please see Attachment 9 for copies of the BCS advanced letter and the IDEAL mailing materials.

The utilization of recruitment waves has provided an essential framework for organizing, scheduling, and tracking our recruitment efforts according to general geographic areas (e.g., cities and counties) and ensuring that all parts of the geographic catchment are included. Although we prioritized the rollout according to 1) proximity to Harbor Hospital and 2) population density of persons 80 and older, we have learned that

as we move through the areas identified in each wave, we have built up a network of programs and organizations with which we engage and frequently reconnect. Based on the effectiveness of this relationship building we no longer expect to be exclusively in any one area or wave at a time, but rather as we continue movement through wave 3 we will also continue to be responsive to and provide information for contacts in all the areas where we have established ties. For example, we may return annually to certain areas and events in order to look for prospective participants who have aged into the IDEAL population since we last did recruitment.

B. 2 Procedures for collection of information

Given the study's target population, we still anticipate that face-to-face presentations, relationship building with senior organizations, and material sharing, combined with the CMS mailing, to likely be the most effective recruitment approaches. However, we believe a multi-faceted recruitment approach is critical and we will continue to seek to reach the target audience in a wide variety of ways. Our recruitment methods are also based on an assessment that *word-of-mouth* may well be the most effective way of identifying potential eligible persons. The process of asking those with whom we interact if they know a potential candidate for the study will be highlighted in project conversations and presentations. As participants are identified, both at the presentation phase and during screening, we utilize a "snowball" sampling approach and ask that recruits share with us any family, friends, or acquaintances who might meet the criteria for participation. We have continued working closely with the IRB to identify acceptable approaches for contacting additional subjects identified in this manner (as demonstrated by the CMS mailing initiative). The initial contact is made via presentations,

printed materials and other activities to various organizations that cater to or involve large numbers of seniors.

We have aimed to do 100 recruitment presentations and other activities per year. We have identified the appropriate organizations in each of the recruitment areas. To date, we have worked with more than 150 organizations and individuals in the study catchment area and continue to identify more. The Recruitment Coordinator sends a recruitment letter (Attachment2) to the appropriate person at each organization. The letter is followed by a phone call to answer any questions, arrange to make a presentation, be an exhibitor, etc., or arrange to send print material for display. The presentation is 15-30 minutes in length, depending on the format chosen (Attachments 1) and has a standardized format and content. There is a team of four presenters who have been given standardized training which included the opportunity to practice the presentation and receive feedback from experience recruiters. To minimize travel costs the Recruitment Coordinator makes every effort to group the presentations to allow a single presenter to make multiple presentations on the same day.

During the presentation or other recruitment activity the audience is given an 800 number for those who are interested to call to complete Stage One of the recruitment. The number is also included in the study brochure, poster, postcards, and advertisements. Stage One is a ten minute telephone interview that consists of questions concerning demographics, physical ability, health status, and medical conditions. Please see Attachments 5a and b for copies of the two telephone interviews.

Those who are eligible after completing the second part of the telephone interview are asked to complete the second stage of the screening process. The physical exam is

scheduled at the participant's convenience. The physical examination is a modified version of the full BLSA assessment protocol consisting of the following components:

- General appearance (alertness, awareness, posture and motor behavior, appearance, mood, apparent mental health and functional status)
- Vital signs (blood pressure)
- Heart and lung auscultation
- Sensory systems including
 - Vision (Jaeger Eye Card)
 - Hearing (Whisper voice test)
 - Sensory proprioception (Test awareness of the body in space using the feet)
 - Neuropathy (Monofilament)
 - Neurological (The Romberg Test)
- Movement and strength of the upper and lower extremities.
 - Extremities inspection
 - Pronator Drift
 - Leg Strength

In addition the potential participant is asked to complete physical performance tests consisting of tests of standing balance; a measured walk, and chair stands; a Blessed-Information –Memory- Concentration Test (BIMC) and a Mini Mental State Exam (MMSE); an electrocardiogram; and a blood draw.

When the study was initiated, the majority of the physical exams were conducted by Westat screening staff in the home of the potential participant. However, in August 2013, these activities were transferred to the NIA's BLSA clinic at MedStar Harbor

Hospital in Baltimore, and NIA staff onsite at MedStar Harbor Hospital assumed all screening duties. Prior to the clinic visit potential participants receive a packet of information including a cover letter and a copy of the consent booklet and form (see Attachments 6 and 8). The blood analysis is carried out by the NIA Research Laboratory. The results of the examinations are recorded on the Physical Examination Forms. Please see Attachment 7 for a copy of the Physical Exam Forms.

The NIA uses a paper form programmed using Teleform for the telephone screening interview and screening examination. For these forms, Teleform creates an image of the scanned form and extracts data according to rules defined for the form. Form templates are defined to identify skip patterns and valid response options. Subsequent data verification is done in a paperless environment using the scanned images of the forms, and hard copy forms are available in the library for reference to address scanning problems that may have resulted from handwriting that is difficult to read or forms that have been damaged before scanning. Quality control steps are embedded throughout the Teleform processing cycle for both web capture and hardcopy scanning and data capture. For hardcopy scanning these include setting appropriate sensitivity levels for verifier review and procedures for handling blank fields. A data decision log is maintained where decisions affecting all forms and decisions affecting individual forms are documented.

As data from individual data collection forms are captured and reviewed for quality, data are exported to a SQL database. These are further reviewed and edited in accordance with study decisions. This includes generation and review of frequencies and cross tabulations as well as comparison of IDs between the scanned data and the

participant tracking data. Hand offs and deliveries of data are accompanied by appropriate documentation including logs of form verification and data decisions as well as data and file descriptions.

Lab test results are received from the NIA Research Laboratory. The results data are checked to ensure that results are received for each sample submitted and that values are complete and within lab-provided ranges.

B.3 Methods to Maximize Response Rates and Deal with Nonresponse.

As explained in Section B1, the goal is an annual response rate from the presentation of 75% based on the following equation:

$$\frac{\text{The number of people who complete the interview (200)}}{\text{The number of people who receive the presentation (500)}} = \text{approximately } 40\%$$

Time and experience have enabled us to target our recruitment activities to those that will yield greater numbers of respondents using various methods. Prior to the recruitment activity, the recruitment team typically confers with the host organization to gain their help in pre-selecting suitable attendees. During the presentation or other recruitment activity, the team tracks the number of people who attend, and gauges the likely number who are potentially eligible, after which they confer with the host organization again regarding audience reception. Finally, data on recruitment sources is collected during Stage One of the screening process and relayed back to the recruitment team. The audience is also invited to provide suggestions regarding ways to improve the presentation. Similar follow-up is done with regard to distribution of materials; the recruitment coordinator contacts all locations where posters and brochures have been placed to make sure that they have an adequate supply. The presentations and other

recruitment activities are augmented by local print, radio, and television advertisement that provide information concerning the study and the 800 number to call in and complete Stage One of the recruitment process.

We are monitoring our recruitment activities closely, including requesting detailed referral information during the telephone screener in order to determine which activities and events stimulate the most calls. Therefore, the per-recruitment activity response rate is one of various gauges for evaluating the effectiveness of our recruitment efforts. Additionally, we have been adjusting our approach in different areas according to differences in availability and coverage provided by different outlets and settings for presentation and other recruitment activities (e.g., local newspapers, community newsletters, senior centers, church groups, etc.). In some areas, in-person presentations may be of greater impact, whereas in others, communication through other media may factor more significantly. Regardless, as some approaches and some geographic areas are found to not yield sufficient response to meet our needs, we reduce our efforts in these areas in favor of the ones that do provide better a response, and our tracking and self-assessment efforts support this process.

If despite our best efforts we are unable to enroll at least 300 IDEAL participants, it may be possible to prolong the enrollment time by at least 1 year.

B. 4 Test Procedures for Methods to be Undertaken

Although the presentations and print media have not been tested using a focus group. They have been designed by experienced recruiters and those who are familiar with the target audience.

B.5 Individual Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

The purpose of this project is to recruit participants for the IDEAL Study, as such, there are no statistical analyses. The sampling plan was developed by Westat and Dr. Ferrucci at the National Institute of Aging (NIA).

The data **are** collected by personnel hired and trained by **the NIA**. The physical exam **is** conducted by nurse **practitioners** with current licensures in the state of Maryland.

The data will also be analyzed by **the NIA**.