

Women's Health Initiative 2016 Data Training Long Life Study (LLS)

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Outline

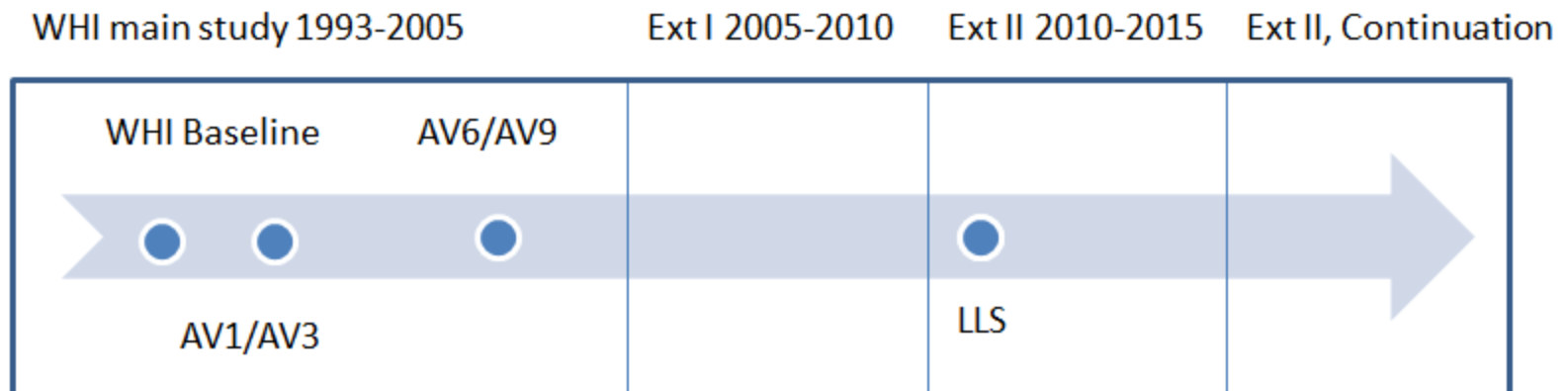
1. Background/purpose of LLS
2. Eligibility criteria
3. Enrolled population
4. Data/blood collection
5. Related ancillary studies
6. Where to find the data


Purpose of the Long Life Study

- Establish a new baseline from which studies on aging and health/disease could be conducted and replenish the WHI biospecimen resource for a subset of the WHI cohort.

Different times, different measures

- 2012/2013, during Extension II (14-19 years post baseline)
- First time new blood specimens and physical measures were collected since the main WHI study ended in 2005
- The WHI clinical centers closed at the end of Extension I, so blood and data collection could not occur in a clinical setting
- WHI partnered with Examination Management Services, Inc. (EMSI), a home blood and data collection service, to do the one-time LLS exam
at the participants' homes





Long Life Study was designed to maximize the potential scientific opportunities in a cost-efficient manner, taking advantage of existing resources

LLS Eligibility Criteria

- Medical Records Cohort (MRC): all Hormone Trial, African Americans, and Hispanics in WHI Extension II
- CVD biomarker data from WHI baseline
- GWAS data
- at least 63 years old by 1/1/12
- Exclusion criteria:
 - unable to provide informed consent (e.g., dementia)
 - residing in an institution (e.g., skilled nursing facility)
- Targeted enrollment was 8,000
- Three phases of eligibility due to lower than expected consent rate – **14,081 eligible**

Phase	Inclusion criteria	Eligible	Date selected
Phase I	MRC, GWAS, baseline CVD biomarkers, age 72+ years (on 1/1/12)	9,930	10/5/2011
Phase II	MRC, GWAS, baseline CVD biomarkers, age 63+ years (on 1/1/12)	2,651	5/3/2012
Phase III	MRC, oversampling of minorities (no age restriction), European American age 81+ years (on 8/1/12), GWAS and baseline CVD biomarker tests completed subsequent to consent mailing for all Phase III eligibles	1,500	8/2/2012
Total	Phase I, Phase II, and Phase III eligible	14,081	

LLS Final Enrolled Population

- 9,246 consenters
 - 7,875 completed exams
 - 7,481 successful blood draws
- From the 2015 WHI annual progress report:

Table 13.1
Consent Status for Long Life Study Participants

Data as of: September 20, 2013

	N	(%)
Number eligible	14081	
Phase 1: Age 72-79	9930	(70.5%)
Phase 2: Age 63-72	2651	(18.8%)
Phase 3: Age 64-98	1500	(10.7%)
Consented	9246	(65.7%) ¹
Completed visit	7875	(85.2%) ²
Age at visit		
63-69	724	(9.2%)
70-79	3050	(38.7%)
80-89	3689	(46.8%)
≥90	412	(5.2%)
Race/ethnicity		
White	3910	(49.7%)
Black	2651	(33.7%)
Hispanic	1314	(16.7%)
Blood draw	7481	(95.0%) ³

¹ Percentage of eligible

² Percentage of consented

³ Percentage of completed visit

At the exam: physical measurements

Form 301 (f301_whills_inv.dat)

- Pulse, BP
- Height and waist circumference (inches)
- Weight (lbs)
- Grip strength (right and left)
- Short Physical Performance Battery (SPPB) components:
 - 4 balance tests
 - Timed Walk (3 or 4 meters)
 - Chair stand

Calculated variables: physical measurements

Form 301 (f301_whills_inv.dat)

- Calculated variables:

- Body Mass Index (BMI)
- Short Physical Performance Battery (SPPB) scores*
 - Look Ahead – based on Health ABC
 - Established Populations for the Epidemiologic Studies of the Elderly (EPESE)

*See F301 supplemental documentation for a description of the scoring algorithms (www.whi.org/researchers/data/Pages/categories/measurements.aspx).

Medical and Physical Measurements

Form 301 Supplemental Documentation:

- Long Life Study Short Physical Performance Battery (SPPB) Scoring
- Informational data items related to the AS 286 - Objective Physical Activity and Cardiovascular Health Study (OPACH) were collected on Form 301, but those data are not included in this release.

BMD summary: Bone Density measurements were collected on a subsample of 11,020 participants at three clinical sites (see the subsample definitions on the previous WHI Data on this site). See the 2005 progress report for a summary of bone mineral density analysis, including percent change from baseline; see page 2-6 for HT table, page 3-13 for DM, page 4-3 for CaD, and page 5-2 for OS. For the standardized procedures for performing the measurements, see Vol. 6 – DXA Quality Assurance of the WHI (1993-2005) manuals under the Documentation tab.

Data Dictionaries

Fasting* blood draw

Vials collected at the exam:

1. EDTA PST**

2. 2 ml EDTA (for CBC)

3. 10 ml EDTA

4. SST**

5. PAXgene®

Stored in the repository:

1. EDTA plasma (separator)

2. DNA from buffy coat

3. Red blood cells

4. EDTA plasma

5. Serum (separator)

6. RNA

*Participants were asked to fast for 12 hours. Actual fasting hours were recorded on Form 301.

**PST = plasma separation tube, SST = serum separation tube



Unique to LLS samples: 100% DNA and RNA already extracted; blood has already been sub-aliquoted (250 ul subs).

We have RNA! Please use it!

- RNA is a new resource for WHI
 - Only available for LLS participants
- RNA was extracted from PAXgene® tubes in 2012/2013 and has been stored at -80°C
- Performed well in a pilot study in 2015 (AS518 - RNA sequencing)
 - AS518 RNA integrity analysis (RIN) indicated high quality

LLS blood: data available in spec_results_ctos_inv under W64

- **Complete blood counts (CBC) with differential (fresh whole blood at Seattle Cancer Care Alliance clinical lab):** red blood cell (RBC), white blood cell (WBC), platelets, hemoglobin (Hgb), hematocrit (Hct), auto-differential, RBC parameters, and platelet parameters
- **CVD Biomarkers (serum at the University of Minnesota ADRL lab):** glucose, insulin, creatinine, CRP, and lipids (HDL, LDL, triglyceride, cholesterol)

Outcomes since LLS

- LLS blood collection may be closer to some outcomes than WHI baseline
- Verified outcomes after LLS blood draw (as of 9/30/15)
 - Total cardiovascular disease: 268
 - Total cancer: 208
 - Hip fracture: 78
 - Total deaths: 422
- See the 2015 WHI annual progress report Long Life Study (section 13), tables 13.6 and 13.7 for counts further broken down by outcome, age at visit, and race/ethnicity

Related Ancillary Studies

- **AS286 (OPACH):** Objective Physical Activity and Cardiovascular Health in Women
 - PI: Andrea LaCroix
 - n=~7,000
 - Data collection: falls calendar, accelerometry, physical activity questionnaire (Form 321)
- **AS340 (WHI-FI):** Evidence for Establishing Optimum Protein Intake in Older Adults
 - PI: Jeannette Beasley
 - n=6,095
 - Data collection: food frequency questionnaire (FFQ)
- **AS337:** B&T lymphocyte sub populations
 - PI: Kerstin Edlefsen/Alex Reiner
 - n=600
 - Data collection: T and B lymphocyte subsets by flow cytometry

Note: *This data has not been included in the investigators' data release yet. Please contact the PIs for access to this ancillary study data.*

Review: LLS basics

- Subset of WHI participants with rich data (n=7,875 MRC)
- Longitudinal measures 14-19 years apart (Baseline / LLS)
 - Physical measures
 - CVD biomarkers
 - Complete Blood Count (CBC)
 - Blood and DNA
- Data collected at participant homes rather than clinical centers
- Outcomes after LLS blood draw have occurred

Review: where to find the data

- Physical measurements:
 - Baseline: **f80&90_ctos_inv.dat**
 - LLS: **f301_whills_inv.dat**
- CBC:
 - Baseline: **cbc_ctos_inv.dat**
 - LLS: **spec_results_ctos_inv** (under W64, includes differential)
- CVD biomarkers:
 - Baseline: **spec_results_ctos_inv** (under W54, W58, or W66)
 - LLS: **spec_results_ctos_inv** (under W64)
- GWAS data:
 - Phase I and II eligibles: included in **dbGaP** WHI Harmonized and Imputed GWAS data (**phs000746**)
 - Phase III eligibles (W66): **dbGaP submission in process** (will NOT be harmonized or imputed)
- Ancillary study data (AS286, AS340, AS337): **Ask PI**

Note difference in units

Questions?

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<https://www.whi.org/studies/SitePages/Long%20Life%20Study.aspx>