
# Women's Health Initiative

# 2016 Annual Progress Report

**Data as of: September 30, 2016**

**The data, if any, contained in this report/deliverable are preliminary and may contain unvalidated findings. These data are not intended for public use. Public use of these data could create erroneous conclusions which, if acted upon, could threaten public health or safety.**


# Women's Health Initiative

# 2016 Annual Progress Report

**Data as of: September 30, 2016**

**Prepared by**
**WHI Clinical Coordinating Center**
**Fred Hutchinson Cancer Research Center**

**Garnet Anderson, Principal Investigator**

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# 1. Overview

## 1.0 Background

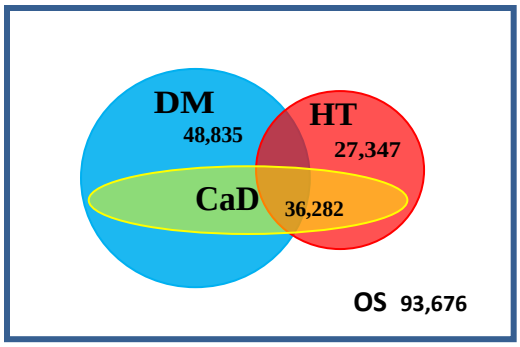


**Figure 1:** Original design of the WHI partial factorial trial and observational study of 161,808 postmenopausal women.

Between 1993 and 1997, WHI investigators at 40 Clinical Centers recruited 161,808 women into the overall program; 68,132 were randomized into one or more arms of the clinical trial component (CT) and 93,676 were enrolled into the observational study (OS). During 2004-2005, the close-out period for the original program, 115,407 women consented to five additional years of follow-up, representing 76.9% of the 150,076 participants who were alive and in active follow-up at this time. At the end of the first extension period in 2010, participants were again offered the opportunity to continue and 86.9% of the 107,706 eligible women agreed (n=93,567).

## 1.1 The 2010-2020 Extension Study

The follow-up protocol for 2015-2020 is essentially unchanged from the protocol for the previous 5 years (2010-2015). All participants are contacted annually, primarily by mail, for health and selected exposure updates. For reports of designated health events, the effort to obtain documentation has been reduced to a subset. Continuing in 2015-2020, cardiovascular events and hip fractures are only documented in a subset of participants referred to as the Medical Records Cohort (MRC). The MRC is comprised of former hormone trial (HT) participants and all African American and Hispanic participants, regardless of their previous enrollment status. Active outcome data collection for the remaining participants (the Self-Report Cohort or SRC) is limited to self-report with the exception of cancer, for which NCI is supporting the documentation and coding of all incident primary cancers.

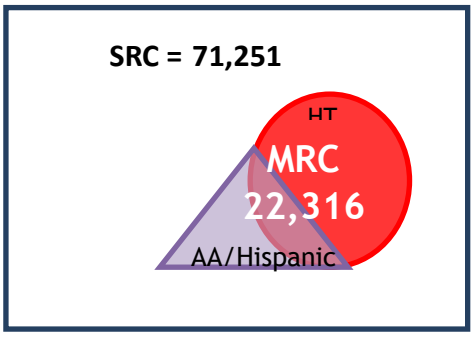


**Figure 2:** 2010-2020 Extension Study design reflecting differing levels of outcomes ascertainment: Medical Records Cohort (MRC) and Self-Report Cohort (SRC).

The CCC conducts annual mailings of follow-up questionnaires to all eligible participants. The RCs and their collaborating centers contact non-responders, collect and submit medical records for all of the designated outcomes to the CCC, and participate in a range of scientific endeavors. The CCC fulfills the RC role for two former Field Centers (Seattle and LaJolla). The MedStar Field Center closed in October 2015, and those participants are now followed by the RC in Buffalo, NY. As of September 2016, 77,203 women remain in active follow-up (Table 1.4), 58.2% of whom are 80 or older.

## 1.2 Progress on primary study objectives

This report provides an update on study status through September 2016. Though follow-up rates have remained excellent, there has been a noticeable drop in initial mailing response and overall response in the last two years. Year 5 mailing response was 86.9% after 2 mailings, and the overall response was 91.4% including phone follow-up (Tables 1.5-1.6). In progress now, the year 6 mailing response to date was 82.0%, and reached 88.8% when including forms collected through phone follow-up. Given there was not a need to re-consent participants prior to this phase of the study, it is somewhat expected that we would see this attrition over time.

For the designated WHI outcomes, clinical event rates using the fully adjudicated outcomes through September 2016 are presented by original study component, age and race (Sections 2-5). Using the newer study components and extending those criteria back in time, we present data for the MRC and SRC, and women who would have been in those groups had they participated in the 2010-2020 Extension Study to comprise the MRC Supercohort and SRC Supercohort. Fully adjudicated events available through September 2016 are provided for the MRC Supercohort. For the SRC Supercohort, fully adjudicated events are provided for the interval from enrollment to September 2010 or September 2016 as appropriate. One unsurprising factor affecting participation is increasing proportion of the cohort that is deceased: 13.4% of Extension Study 2010-2020 participants were deceased as of September 2016 (Table 5.1).

Table 6.1 provides a current summary of the agreement rates between self-reported events and the centrally adjudicated events among MRC participants. In general, 50% to 70% of self-reported cardiovascular outcomes are confirmed as the reported diagnosis. Often, however, a related diagnosis is found.

The WHI Long Life Study (LLS), which consisted of an in-person visit with 7,875 of the oldest women in the MRC (details in Section 13), now has post-LLS blood draw outcomes available for analyses. Women were preferentially sampled based on availability of GWAS data, CVD biomarkers and older ages. Verified and self-reported outcomes are available (Tables 7.2-7.4) stratified by age at randomization and race. So far, 416 LLS participants have had verified cardiovascular outcomes (up from 268 last year), 316 have had a verified cancer (up from 208 last year), and 670 have died after the LLS blood draw. The most frequent self-reported outcomes after the draw so far are: macular degeneration (N=602), Alzheimer's disease (N=488), osteoarthritis (N=465) and COPD (N=410).

## 1.3 Engaging investigators

Section 8 addresses publications. To streamline this report, we include only those manuscripts published in the last year. A full listing and status of all proposed ancillary studies and manuscripts is available on the WHI website (www.whi.org). There have been 2,669 approved manuscript proposals and 1,423 are published or in press (Table 8.1), 215 of which were published in the last year (Table 8.2). Investigators using WHI data continue to present high-quality science of broad interest, with publications in the last year in many high-impact journals such as *Circulation*, *JNCI*, *Nature Genetics*, and *JAMA Internal Medicine*. In addition to manuscripts addressing cardiovascular disease among WHI participants, there have been a substantial number of manuscripts addressing

topics in cancer, diabetes, genetics, and aging, including a special issue of the *Journal of Gerontology* that included a series of articles about our participants who are over 80 years old, and a special issue of the *Gerontologist* that included a series of papers about our women veterans.

The cohort continues to serve as the critical backbone for ancillary studies large and small. The COcoa Supplement and Multivitamin Outcomes Study (COSMOS) trial (PIs: JoAnn Manson and Howard Sesso) and the WHI Strong and Healthy (WHISH) trial (PIs: Charles Kooperberg, Andrea LaCroix, Marcia Stefanick) both successfully launched early in 2015. In addition to the trials, four ancillary studies to the trials have been funded so far (COSMOS – Mind, COSMOS – Web, COSMOS – Eye, and WHISH 2 Prevent Heart Failure), with one other likely to receive funding in the coming year.

Various core studies have generated genetic data for over 30,000 WHI participants using a number of approaches (genome-wide association studies, exome sequencing, typing of ancestry informative markers, metabochip typing), along with CVD biomarker data. These data are shared through dbGaP and BIOLINCC, providing an opportunity for outside investigators to use these resources. Whole genome sequencing for more than 11,000 WHI participants, through the TopMED program, has been completed, and those data will be available through dbGaP in the coming year.

**Table 1.1**
**WHI Centers and Principal Investigators**

**Clinical Coordinating Center**

| Principal Investigator | Institution | Location |
|---|---|---|
| Garnet Anderson, PhD | Fred Hutchinson Cancer Research Center | Seattle, WA |

**Regional Centers**

| Principal Investigator | Institution | Location |
|---|---|---|
| Rebecca Jackson, MD | Ohio State University | Columbus, OH |
| Lewis Kuller, MD, DrPH | University of Pittsburgh | Pittsburgh, PA |
| Marian Limacher, MD | University of Florida | Gainesville, FL |
| JoAnn Manson, MD, DrPH | Brigham and Women's Hospital | Boston, MA |
| Sally Shumaker, PhD | Wake Forest University | Winston-Salem/Greensboro, NC |
| Marcia Stefanick, PhD | Stanford University | San Jose, CA |
| Cynthia Thomson, PhD, RD | University of Arizona | Tucson, AZ |
| Jean Wactawski-Wende, PhD | University at Buffalo | Buffalo, NY |
| Jennifer Robinson, MD, MPH | University of Iowa | Iowa City/ Bettendorf, IA |

**Former Principal Investigators**

| Principal Investigator | Institution | Location |
|---|---|---|
| Shirley Beresford, PhD | Fred Hutchinson Cancer Research Center | Seattle, WA |
| Robert Brunner, PhD | University of Nevada | Reno, NV |
| Robert Brzyski, MD | University of Texas | San Antonio, TX |
| Bette Caan, PhD | Kaiser Foundation Research Institute | Oakland, CA |
| Rowan Chlebowski, MD, PhD | University of California, Los Angeles | Torrance, CA |
| J. David Curb, MD | University of Hawaii | Honolulu, HI |
| Charles Eaton, MD | Memorial Hospital of Rhode Island | Pawtucket, RI |
| Gerardo Heiss, MD MPH | University of North Carolina, Chapel Hill | Chapel Hill, NC |
| Hoda Anton-Culver, PhD | University of California, Irvine | Irvine, CA |
| Barbara Howard, PhD | MedStar Research Institute | Washington, D.C. |
| Karen Johnson, MD, MPH | University of Tennessee | Memphis, TN |
| Jane Kotchen, MD, MPH | Medical College of Wisconsin | Milwaukee, WI |
| Andrea LaCroix, PhD | FHCRC for UCSD/La Jolla | Seattle, WA |
| Dorothy Lane, MD, MPH | Research Foundation SUNY, Stony Brook | Stony Brook, NY |
| Norman Lasser, MD, PhD | University of Medicine and Dentistry | Newark, NJ |
| Erin LeBlanc, MD | Oregon Health & Science University | Portland, OR |
| Cora Lewis, MD, MSPH | University of Alabama at Birmingham | Birmingham, AL |
| Simin Liu, MD, ScD, MPH, MS | University of California, Los Angeles | Los Angeles, CA |
| Karen Margolis, MD | University of Minnesota | Minneapolis, MN |
| Lisa Martin, MD, FACC | George Washington University | Washington, DC |
| Mary-Jo O'Sullivan, MD | University of Miami | Miami, FL |
| Judith Ockene, PhD | University of Massachusetts | Worcester, MA |
| Larry Phillips, MD | Emory University | Atlanta, GA |
| Lynda Powell, PhD | Rush University Medical Center | Chicago, IL |
| Ross Prentice, PhD | Fred Hutchinson Cancer Research Center | Seattle, WA |
| Haleh Sangi-Haghpeykar, PhD | Baylor College of Medicine | Houston, TX |

**Table 1.1 (continued)**
**WHI Centers and Principal Investigators**

**Former Principal Investigators**

| Principal Investigator | Institution | Location |
|---|---|---|
| John Robbins, MD | University of California, Davis | Sacramento, CA |
| Gloria Sarto, MD | University of Wisconsin | Madison, WI |
| Michael Simon, MD | Wayne State University | Detroit, MI |
| Michael Thomas, MD | University of Cincinnati | Cincinnati, OH |
| Linda Van Horn, PhD, RD | Northwestern University | Chicago/Evanston, IL |
| Mara Vitolins, PhD | Wake Forest University | Winston-Salem/Greensboro, NC |
| Sylvia Wassertheil-Smoller, PhD | Albert Einstein College of Medicine | Bronx, NY |

**Table 1.2**
**Consent Status by Study Component and Arm**

Data as of: September 30, 2016

| WHI Enrollment | Enrolled in WHI | Eligible for extension 2005-2010[1] | Consented N | Consented % |
|---|---|---|---|---|
| Hormone Therapy | 27347 | 25194 | 20433 | 81.1 |
| With Uterus | 16608 | 15408 | 12788 | 83.0 |
| E+P | 8506 | 7878 | 6545 | 83.1 |
| Placebo | 8102 | 7530 | 6243 | 82.9 |
| Without Uterus | 10739 | 9786 | 7645 | 78.1 |
| E-alone | 5310 | 4851 | 3778 | 77.9 |
| Placebo | 5429 | 4935 | 3867 | 78.4 |
| Dietary Modification | 48835 | 45560 | 37858 | 83.1 |
| Intervention | 19541 | 18207 | 14769 | 81.1 |
| Comparison | 29294 | 27353 | 23089 | 84.4 |
| Calcium and Vitamin D | 36282 | 34447 | 29862 | 86.7 |
| Active | 18176 | 17280 | 15025 | 87.0 |
| Placebo | 18106 | 17167 | 14837 | 86.4 |
| Clinical Trial Total | 68132 | 63332 | 52176 | 82.4 |
| Observational Study | 93676 | 86744 | 63231 | 72.9 |
| Total | 161808 | 150076 | 115407 | 76.9 |

| WHI Enrollment | Enrolled in extension 2005-2010 | Eligible for extension 2010-2020[1] | Consented N | Consented % |
|---|---|---|---|---|
| Hormone Therapy | 20433 | 18794 | 15584 | 82.9 |
| With Uterus | 12788 | 11789 | 9891 | 83.9 |
| E+P | 6545 | 6048 | 5047 | 83.4 |
| Placebo | 6243 | 5741 | 4844 | 84.4 |
| Without Uterus | 7645 | 7005 | 5693 | 81.3 |
| E-alone | 3778 | 3479 | 2834 | 81.5 |
| Placebo | 3867 | 3526 | 2859 | 81.1 |
| Dietary Modification | 37858 | 35594 | 30690 | 86.2 |
| Intervention | 14769 | 13922 | 12014 | 86.3 |
| Comparison | 23089 | 21672 | 18676 | 86.2 |
| Calcium and Vitamin D | 29862 | 27975 | 24231 | 86.6 |
| Active | 15025 | 14083 | 12242 | 86.9 |
| Placebo | 14837 | 13892 | 11989 | 86.3 |
| Clinical Trial Total | 52176 | 48697 | 41499 | 85.2 |
| Observational Study | 63231 | 59009 | 52068 | 88.2 |
| Total | 115407 | 107706 | 93567 | 86.9 |

[1] Eligibility defined as alive at the beginning of consent and willing to be contacted.

**Table 1.3**
**Consent Status by Age at Enrollment and Race/Ethnicity**

Data as of: September 30, 2016

| | Clinical Trial | | | | Observational Study | | | |
|---|---|---|---|---|---|---|---|---|
| WHI Enrollment | Enrolled in WHI | Eligible for extension 2005-2010[1] | Consented N | Consented % | Enrolled in WHI | Eligible for extension 2005-2010[1] | Consented N | Consented % |
| **Total** | 68132 | 63332 | 52176 | 82.4 | 93676 | 86744 | 63231 | 72.9 |
| Age | | | | | | | | |
| 50-54 | 9188 | 8754 | 7237 | 82.7 | 12381 | 11969 | 8996 | 76.9 |
| 55-59 | 14661 | 13940 | 11724 | 84.1 | 17329 | 16565 | 12732 | 74.2 |
| 60-69 | 31389 | 29290 | 24528 | 83.7 | 41200 | 38502 | 28582 | 65.6 |
| 70-79 | 12894 | 11348 | 8687 | 76.6 | 22766 | 19708 | 12921 | 72.9 |
| Race/Ethnicity | | | | | | | | |
| American Indian/Alaska Native | 292 | 260 | 185 | 71.2 | 421 | 372 | 217 | 58.3 |
| Asian/Pacific Islander | 1519 | 1414 | 1105 | 78.1 | 2671 | 2444 | 1291 | 52.8 |
| Black/African American | 6983 | 6423 | 4769 | 74.2 | 7635 | 6868 | 3585 | 52.2 |
| Hispanic/Latina | 2875 | 2686 | 1791 | 66.7 | 3609 | 3333 | 1598 | 47.9 |
| White | 55525 | 51682 | 43680 | 84.5 | 78016 | 72504 | 55767 | 76.9 |
| Unknown | 938 | 867 | 646 | 74.5 | 1324 | 1223 | 773 | 63.2 |

| | Clinical Trial | | | | Observational Study | | | |
|---|---|---|---|---|---|---|---|---|
| WHI Enrollment | Enrolled in extension 2005-2010 | Eligible for extension 2010-2020[1] | Consented N | Consented % | Enrolled in extension 2005-2010 | Eligible for extension 2010-2020[1] | Consented N | Consented % |
| **Total** | 52176 | 48697 | 41499 | 85.2 | 63231 | 59009 | 52068 | 88.2 |
| Age | | | | | | | | |
| 50-54 | 7237 | 7068 | 6249 | 88.4 | 8996 | 8802 | 8225 | 93.4 |
| 55-59 | 11724 | 11329 | 10055 | 88.8 | 12732 | 12400 | 11481 | 92.6 |
| 60-69 | 24528 | 22940 | 19642 | 85.6 | 28582 | 26820 | 23716 | 88.4 |
| 70-79 | 8687 | 7360 | 5553 | 75.4 | 12921 | 10987 | 8646 | 78.7 |
| Race/Ethnicity | | | | | | | | |
| American Indian/Alaska Native | 185 | 174 | 147 | 84.5 | 217 | 204 | 171 | 83.8 |
| Asian/Pacific Islander | 1105 | 1050 | 845 | 80.5 | 1291 | 1224 | 1035 | 84.6 |
| Black/African American | 4769 | 4459 | 3420 | 76.7 | 3585 | 3358 | 2716 | 80.9 |
| Hispanic/Latina | 1791 | 1701 | 1226 | 72.1 | 1598 | 1527 | 1246 | 81.6 |
| White | 43680 | 40704 | 35363 | 86.9 | 55767 | 51969 | 46296 | 89.1 |
| Unknown | 646 | 609 | 498 | 81.8 | 773 | 727 | 604 | 83.1 |

[1] Eligibility defined as alive at the beginning of consent and willing to be contacted.

**Table 1.4**
**Counts of Participants with Active[1] Participation by Current Age, Race/Ethnicity and Cohort**

Data as of: September 30, 2016

| | Clinical Trial (N=34,286) | | Observational Study (N=42,917) | | MRC Super Cohort (N=17,980) | | SRC Super Cohort (N=59,223) | | Total (N=77,203) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % |
| **Age on 9/30/2016** | | | | | | | | | | |
| <75 | 4611 | 13.4 | 6742 | 15.7 | 2895 | 16.1 | 8458 | 14.3 | 11353 | 14.7 |
| 75-79 | 9718 | 28.3 | 11169 | 26.0 | 4989 | 27.7 | 15898 | 26.8 | 20887 | 27.1 |
| 80-84 | 9590 | 28.0 | 10901 | 25.4 | 4628 | 25.7 | 15863 | 26.8 | 20491 | 26.5 |
| 85-89 | 6858 | 20.0 | 8942 | 20.8 | 3582 | 19.9 | 12218 | 20.6 | 15800 | 20.5 |
| 90-94 | 2912 | 8.5 | 4255 | 9.9 | 1552 | 8.6 | 5615 | 9.5 | 7167 | 9.3 |
| 95+ | 597 | 1.7 | 908 | 2.1 | 334 | 1.9 | 1171 | 2.0 | 1505 | 1.9 |
| **Race/Ethnicity** | | | | | | | | | | |
| American Indian/Alaska Native | 122 | 0.4 | 137 | 0.3 | 49 | 0.3 | 210 | 0.4 | 259 | 0.3 |
| Asian/Pacific Islander | 745 | 2.2 | 896 | 2.1 | 202 | 1.1 | 1439 | 2.4 | 1641 | 2.1 |
| Black/African American | 2740 | 8.0 | 2188 | 5.1 | 4928 | 27.4 | 0 | 0.0 | 4928 | 6.4 |
| Hispanic/Latina | 1041 | 3.0 | 1070 | 2.5 | 2111 | 11.7 | 0 | 0.0 | 2111 | 2.7 |
| White | 29223 | 85.2 | 38137 | 88.9 | 10527 | 58.5 | 56833 | 96.0 | 67360 | 87.3 |
| Unknown | 415 | 1.2 | 489 | 1.1 | 163 | 0.9 | 741 | 1.3 | 904 | 1.2 |

**Age[2] Distribution by Race/Ethnicity for Active[1] WHI Extension Study 2010-2020 Participants**

Data as of: September 30, 2016

| | Total (N = 77,203) | | American Indian/ Alaskan Native (N = 259) | | Asian/Pacific Islander (N = 1,641) | | Black/African American (N = 4,928) | | Hispanic/ Latina (N = 2,111) | | White (N = 67,360) | | Unknown (N = 904) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| **Age on 9/30/2016** | | | | | | | | | | | | | | |
| <75 | 11353 | 14.7 | 62 | 23.9 | 337 | 20.5 | 1050 | 21.3 | 529 | 25.1 | 9216 | 13.7 | 159 | 17.6 |
| 75-79 | 20887 | 27.1 | 78 | 30.1 | 448 | 27.3 | 1512 | 30.7 | 667 | 31.6 | 17964 | 26.7 | 218 | 24.1 |
| 80-84 | 20491 | 26.5 | 59 | 22.8 | 396 | 24.1 | 1280 | 26.0 | 481 | 22.8 | 18045 | 26.8 | 230 | 25.4 |
| 85-89 | 15800 | 20.5 | 36 | 13.9 | 305 | 18.6 | 758 | 15.4 | 323 | 15.3 | 14187 | 21.1 | 191 | 21.1 |
| 90-94 | 7167 | 9.3 | 24 | 9.3 | 120 | 7.3 | 261 | 5.3 | 97 | 4.6 | 6587 | 9.8 | 78 | 8.6 |
| 95+ | 1505 | 1.9 | 0 | 0.0 | 35 | 2.1 | 67 | 1.4 | 14 | 0.7 | 1361 | 2.0 | 28 | 3.1 |

[1] Active participation is defined as current (Form 33 within the last 15 months) or recent (Form 33 between 15 and 24 months ago) follow-up.
[2] Age on September 30, 2016.

**Table 1.5**
**Response Rates to CCC Annual Mailings**
**Extension Study 2010-2020, Follow-up Years 5 and 6**

Data as of: September 30, 2016

| | 1st Mailing Period | | | | 2nd Mailing Period | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Study** | **Form[1]** | **Sent Mail 1** | **Response** | | **Past 2nd mailing period** | **Sent Mail 2** | | **Response** | | **Cumulative Response** |
| **Year 5** | | | | | | | | | | |
| **Total** | 33 | 81713 | 65342 | 80.0% | 81713 | 14448 | 17.7% | 4870 | 33.7% | 86.9% |
| | 151 | 81712 | 64757 | 79.3% | 81712 | 15000 | 18.4% | 5197 | 34.7% | 86.5% |
| | 157 | 81721 | 64568 | 79.0% | 81721 | 15266 | 18.7% | 5311 | 34.8% | 86.5% |
| | 521 | 4704 | 3596 | 76.5% | 4704 | 797 | 16.9% | 273 | 34.3% | 83.0% |
| **HT** | 33 | 13245 | 10169 | 76.8% | 13245 | 2675 | 20.2% | 841 | 31.4% | 84.2% |
| | 151 | 13245 | 10067 | 76.0% | 13245 | 2764 | 20.9% | 887 | 32.1% | 83.7% |
| | 157 | 13245 | 10042 | 75.8% | 13245 | 2803 | 21.2% | 894 | 31.9% | 83.7% |
| | 521 | 1156 | 847 | 73.3% | 1156 | 218 | 18.9% | 71 | 32.6% | 80.5% |
| **DM** | 33 | 27016 | 21423 | 79.3% | 27016 | 4939 | 18.3% | 1678 | 34.0% | 86.6% |
| | 151 | 27016 | 21246 | 78.6% | 27016 | 5100 | 18.9% | 1770 | 34.7% | 86.2% |
| | 157 | 27018 | 21163 | 78.3% | 27018 | 5207 | 19.3% | 1820 | 35.0% | 86.1% |
| | 521 | 1689 | 1261 | 74.7% | 1689 | 294 | 17.4% | 101 | 34.4% | 81.4% |
| **CaD** | 33 | 21267 | 16863 | 79.3% | 21267 | 3917 | 18.4% | 1270 | 32.4% | 86.4% |
| | 151 | 21267 | 16731 | 78.7% | 21267 | 4036 | 19.0% | 1350 | 33.5% | 86.0% |
| | 157 | 21269 | 16662 | 78.3% | 21269 | 4127 | 19.4% | 1387 | 33.6% | 85.9% |
| | 521 | 1503 | 1131 | 75.3% | 1503 | 257 | 17.1% | 79 | 30.7% | 81.4% |
| **OS** | 33 | 45560 | 36874 | 80.9% | 45560 | 7679 | 16.9% | 2634 | 34.3% | 87.7% |
| | 151 | 45559 | 36534 | 80.2% | 45559 | 8010 | 17.6% | 2837 | 35.4% | 87.3% |
| | 157 | 45566 | 36451 | 80.0% | 45566 | 8138 | 17.9% | 2892 | 35.5% | 87.3% |
| | 521 | 2233 | 1764 | 79.0% | 2233 | 350 | 15.7% | 126 | 36.0% | 85.4% |
| **Year 6** | | | | | | | | | | |
| **Total** | 33 | 69511 | 52143 | 75.0% | 57422 | 13339 | 23.2% | 3847 | 28.8% | 82.0% |
| | 151 | 69510 | 51536 | 74.1% | 57421 | 13896 | 24.2% | 4161 | 29.9% | 81.6% |
| | 521 | 63347 | 46934 | 74.1% | 51298 | 12447 | 24.3% | 3849 | 30.9% | 81.8% |
| **HT** | 33 | 11187 | 7975 | 71.3% | 9442 | 2470 | 26.2% | 627 | 25.4% | 78.7% |
| | 151 | 11187 | 7892 | 70.6% | 9442 | 2544 | 26.9% | 675 | 26.5% | 78.4% |
| | 521 | 10765 | 7661 | 71.2% | 9034 | 2373 | 26.3% | 670 | 28.2% | 79.3% |
| **DM** | 33 | 22832 | 17009 | 74.5% | 19243 | 4508 | 23.4% | 1296 | 28.8% | 81.9% |
| | 151 | 22832 | 16795 | 73.6% | 19243 | 4718 | 24.5% | 1409 | 29.9% | 81.5% |
| | 521 | 20584 | 15094 | 73.3% | 17016 | 4204 | 24.7% | 1282 | 30.5% | 81.4% |
| **CaD** | 33 | 17977 | 13348 | 74.3% | 15183 | 3571 | 23.5% | 997 | 27.9% | 81.5% |
| | 151 | 17977 | 13200 | 73.4% | 15183 | 3719 | 24.5% | 1078 | 29.0% | 81.1% |
| | 521 | 16507 | 12126 | 73.5% | 13723 | 3355 | 24.5% | 1006 | 30.0% | 81.4% |
| **OS** | 33 | 38945 | 29601 | 76.0% | 31635 | 7141 | 22.6% | 2134 | 29.9% | 82.8% |
| | 151 | 38944 | 29262 | 75.1% | 31634 | 7441 | 23.5% | 2304 | 31.0% | 82.4% |
| | 521 | 35313 | 26519 | 75.1% | 28014 | 6614 | 23.6% | 2119 | 32.0% | 82.6% |

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living (ADL); Form 157 = Supplemental Questionnaire 2014-2015; Form 521 = Physical Activity Questionnaire.

**Table 1.6**
**Response Rates to Regional Center Follow-up and Cumulative Response**
**Extension Study 2010-2020 Follow-up Years 5 and 6**

Data as of: September 30, 2016

| Study | Form[1] | Eligible for RC Follow-up | Respondents | | Total Estimated Response Rate |
|---|---|---|---|---|---|
| **Year 5** | | | | | |
| **Total** | 33 | 12510 | 7569 | 60.5% | 91.4% |
| | 151 | 13289 | 4642 | 34.9% | 87.6% |
| | 157 | 14143 | 73 | 0.5% | 82.2% |
| | 521 | 3923 | 2 | 0.1% | 43.2% |
| **HT** | 33 | 2445 | 1732 | 70.8% | 90.8% |
| | 151 | 2657 | 1005 | 37.8% | 85.2% |
| | 157 | 2832 | 13 | 0.5% | 78.1% |
| | 521 | 899 | 0 | 0.0% | 44.1% |
| **DM** | 33 | 4278 | 2661 | 62.2% | 91.7% |
| | 151 | 4521 | 1704 | 37.7% | 87.9% |
| | 157 | 4847 | 28 | 0.6% | 81.9% |
| | 521 | 1408 | 0 | 0.0% | 44.2% |
| **CaD** | 33 | 3384 | 2239 | 66.2% | 91.9% |
| | 151 | 3594 | 1377 | 38.3% | 87.7% |
| | 157 | 3849 | 21 | 0.6% | 81.6% |
| | 521 | 1139 | 0 | 0.0% | 46.0% |
| **OS** | 33 | 6547 | 3717 | 56.8% | 91.3% |
| | 151 | 6937 | 2247 | 32.4% | 87.9% |
| | 157 | 7340 | 36 | 0.5% | 83.3% |
| | 521 | 1892 | 2 | 0.1% | 42.6% |
| **Year 6** | | | | | |
| **Total** | 33 | 2662 | 1624 | 61.0% | 88.8% |
| | 151 | 2815 | 1020 | 36.2% | 83.1% |
| | 521 | 2041 | 4 | 0.2% | 72.4% |
| **HT** | 33 | 571 | 389 | 68.1% | 87.7% |
| | 151 | 604 | 215 | 35.6% | 79.5% |
| | 521 | 515 | 0 | 0.0% | 71.6% |
| **DM** | 33 | 965 | 604 | 62.6% | 89.2% |
| | 151 | 1025 | 373 | 36.4% | 83.2% |
| | 521 | 766 | 0 | 0.0% | 71.7% |
| **CaD** | 33 | 796 | 523 | 65.7% | 89.2% |
| | 151 | 851 | 309 | 36.3% | 82.4% |
| | 521 | 654 | 0 | 0.0% | 72.4% |
| **OS** | 33 | 1311 | 762 | 58.1% | 88.8% |
| | 151 | 1386 | 494 | 35.6% | 83.7% |
| | 521 | 933 | 4 | 0.4% | 73.0% |

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living (ADL); Form 157 = Supplemental Questionnaire 2014-2015; Form 521 = Physical Activity Questionnaire.

**Table 1.7**
**Response Rates to CCC Annual Mailings, Extension Study 2010-2020 Year 5 by Cohort and Regional Center**

Data as of: September 30, 2016

| | 1st Mailing Period | | | | 2nd Mailing Period | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cohort | Form[1] | Sent Mail 1 | Response | | Past 2nd mailing period | Sent Mail 2 | | Response | | Cumulative Response |
| **Total** | 33 | 81713 | 65342 | 80.0% | 81713 | 14448 | 17.7% | 4870 | 33.7% | 86.9% |
| | 151 | 81712 | 64757 | 79.3% | 81712 | 15000 | 18.4% | 5197 | 34.7% | 86.5% |
| | 157 | 81721 | 64568 | 79.0% | 81721 | 15266 | 18.7% | 5311 | 34.8% | 86.5% |
| | 521 | 4704 | 3596 | 76.5% | 4704 | 797 | 16.9% | 273 | 34.3% | 83.0% |
| **Medical Record** | 33 | 18962 | 14117 | 74.5% | 18962 | 4174 | 22.0% | 1279 | 30.6% | 82.4% |
| **Cohort** | 151 | 18962 | 13978 | 73.7% | 18962 | 4307 | 22.7% | 1352 | 31.4% | 81.9% |
| | 157 | 18963 | 13941 | 73.5% | 18963 | 4368 | 23.0% | 1365 | 31.3% | 81.9% |
| | 521 | 1696 | 1189 | 70.1% | 1696 | 344 | 20.3% | 110 | 32.0% | 77.4% |
| **Self Report** | 33 | 62751 | 51225 | 81.6% | 62751 | 10274 | 16.4% | 3591 | 35.0% | 88.3% |
| **Cohort** | 151 | 62750 | 50779 | 80.9% | 62750 | 10693 | 17.0% | 3845 | 36.0% | 87.9% |
| | 157 | 62758 | 50627 | 80.7% | 62758 | 10898 | 17.4% | 3946 | 36.2% | 87.9% |
| | 521 | 3008 | 2407 | 80.0% | 3008 | 453 | 15.1% | 163 | 36.0% | 86.2% |
| **Regional Center** | | | | | | | | | | |
| **Boston** | 33 | 8952 | 7027 | 78.5% | 8952 | 1538 | 17.2% | 513 | 33.4% | 85.1% |
| | 151 | 8952 | 6960 | 77.8% | 8952 | 1602 | 17.9% | 541 | 33.8% | 84.7% |
| | 157 | 8952 | 6943 | 77.6% | 8952 | 1632 | 18.2% | 563 | 34.5% | 84.7% |
| | 521 | 267 | 197 | 73.8% | 267 | 25 | 9.4% | 11 | 44.0% | 79.4% |
| **Buffalo** | 33 | 12792 | 10120 | 79.1% | 12792 | 2270 | 17.8% | 801 | 35.3% | 86.6% |
| | 151 | 12792 | 10017 | 78.3% | 12792 | 2371 | 18.5% | 865 | 36.5% | 86.3% |
| | 157 | 12792 | 9989 | 78.1% | 12792 | 2422 | 18.9% | 876 | 36.2% | 86.2% |
| | 521 | 731 | 515 | 70.5% | 731 | 127 | 17.4% | 43 | 33.9% | 77.7% |
| **Columbus** | 33 | 9456 | 7635 | 80.7% | 9456 | 1550 | 16.4% | 591 | 38.1% | 87.8% |
| | 151 | 9456 | 7556 | 79.9% | 9456 | 1626 | 17.2% | 629 | 38.7% | 87.4% |
| | 157 | 9457 | 7545 | 79.8% | 9457 | 1640 | 17.3% | 625 | 38.1% | 87.4% |
| | 521 | 494 | 351 | 71.1% | 494 | 69 | 14.0% | 34 | 49.3% | 78.1% |
| **Gainesville** | 33 | 7485 | 5670 | 75.8% | 7485 | 1718 | 23.0% | 471 | 27.4% | 83.5% |
| | 151 | 7485 | 5600 | 74.8% | 7485 | 1789 | 23.9% | 516 | 28.8% | 82.7% |
| | 157 | 7486 | 5593 | 74.7% | 7486 | 1806 | 24.1% | 524 | 29.0% | 82.7% |
| | 521 | 340 | 246 | 72.4% | 340 | 87 | 25.6% | 24 | 27.6% | 80.3% |
| **Iowa** | 33 | 7878 | 6518 | 82.7% | 7878 | 1240 | 15.7% | 502 | 40.5% | 89.9% |
| | 151 | 7878 | 6458 | 82.0% | 7878 | 1288 | 16.4% | 536 | 41.6% | 89.6% |
| | 157 | 7879 | 6439 | 81.7% | 7879 | 1307 | 16.6% | 545 | 41.7% | 89.5% |
| | 521 | 384 | 310 | 80.7% | 384 | 62 | 16.2% | 18 | 29.0% | 86.5% |
| **Pittsburgh** | 33 | 3564 | 2850 | 80.0% | 3564 | 638 | 17.9% | 229 | 35.9% | 87.1% |
| | 151 | 3564 | 2837 | 79.6% | 3564 | 649 | 18.2% | 237 | 36.5% | 87.0% |
| | 157 | 3567 | 2826 | 79.2% | 3567 | 661 | 18.5% | 237 | 35.9% | 86.7% |
| | 521 | 151 | 127 | 84.1% | 151 | 21 | 13.9% | 7 | 33.3% | 88.7% |
| **Seattle** | 33 | 3854 | 3144 | 81.6% | 3854 | 627 | 16.3% | 208 | 33.2% | 88.5% |
| | 151 | 3853 | 3117 | 80.9% | 3853 | 656 | 17.0% | 229 | 34.9% | 87.7% |
| | 157 | 3854 | 3106 | 80.6% | 3854 | 669 | 17.4% | 237 | 35.4% | 87.6% |
| | 521 | 260 | 212 | 81.5% | 260 | 41 | 15.8% | 12 | 29.3% | 86.5% |
| **Stanford** | 33 | 13847 | 11553 | 83.4% | 13847 | 2107 | 15.2% | 735 | 34.9% | 89.5% |
| | 151 | 13847 | 11480 | 82.9% | 13847 | 2169 | 15.7% | 777 | 35.8% | 89.3% |
| | 157 | 13849 | 11438 | 82.6% | 13849 | 2228 | 16.1% | 811 | 36.4% | 89.2% |
| | 521 | 982 | 802 | 81.7% | 982 | 156 | 15.9% | 54 | 34.6% | 88.0% |
| **Tucson** | 33 | 5446 | 4228 | 77.6% | 5446 | 1126 | 20.7% | 327 | 29.0% | 84.6% |
| | 151 | 5446 | 4193 | 77.0% | 5446 | 1160 | 21.3% | 344 | 29.7% | 84.3% |
| | 157 | 5446 | 4178 | 76.7% | 5446 | 1177 | 21.6% | 356 | 30.3% | 84.2% |
| | 521 | 552 | 419 | 75.9% | 552 | 122 | 22.1% | 47 | 38.5% | 85.0% |
| **Wake Forest** | 33 | 8439 | 6597 | 78.2% | 8439 | 1634 | 19.4% | 493 | 30.2% | 85.1% |
| | 151 | 8439 | 6539 | 77.5% | 8439 | 1690 | 20.0% | 523 | 31.0% | 84.7% |
| | 157 | 8439 | 6511 | 77.2% | 8439 | 1724 | 20.4% | 537 | 31.2% | 84.6% |
| | 521 | 543 | 417 | 76.8% | 543 | 87 | 16.0% | 23 | 26.4% | 81.4% |

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 157 = Supplemental Questionnaire 2014-2015; Form 521 = Physical Activity Questionnaire.

**Table 1.7 (continued for year 6)**
**Response Rates to CCC Annual Mailings, Extension Study 2010-2020 Year 6 by Cohort and Regional Center**

Data as of: September 30, 2016

| | 1st Mailing Period | | | | 2nd Mailing Period | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cohort | Form[1] | Sent Mail 1 | Response | | Past 2nd mailing period | Sent Mail 2 | | Response | | Cumulative Response |
| **Total** | 33 | 69511 | 52143 | 75.0% | 57422 | 13339 | 23.2% | 3847 | 28.8% | 82.0% |
| | 151 | 69510 | 51536 | 74.1% | 57421 | 13896 | 24.2% | 4161 | 29.9% | 81.6% |
| | 521 | 63347 | 46934 | 74.1% | 51298 | 12447 | 24.3% | 3849 | 30.9% | 81.8% |
| **Medical Record** | 33 | 16039 | 10971 | 68.4% | 13433 | 3865 | 28.8% | 974 | 25.2% | 76.5% |
| **Cohort** | 151 | 16038 | 10847 | 67.6% | 13432 | 3976 | 29.6% | 1043 | 26.2% | 76.2% |
| | 521 | 15326 | 10453 | 68.2% | 12759 | 3685 | 28.9% | 1019 | 27.7% | 77.1% |
| **Self Report** | 33 | 53472 | 41172 | 77.0% | 43989 | 9474 | 21.5% | 2873 | 30.3% | 83.7% |
| **Cohort** | 151 | 53472 | 40689 | 76.1% | 43989 | 9920 | 22.6% | 3118 | 31.4% | 83.3% |
| | 521 | 48021 | 36481 | 76.0% | 38539 | 8762 | 22.7% | 2830 | 32.3% | 83.3% |
| **Regional Center** | | | | | | | | | | |
| **Boston** | 33 | 7905 | 5794 | 73.3% | 6437 | 1511 | 23.5% | 426 | 28.2% | 79.5% |
| | 151 | 7905 | 5724 | 72.4% | 6437 | 1572 | 24.4% | 459 | 29.2% | 79.2% |
| | 521 | 7361 | 5315 | 72.2% | 5893 | 1451 | 24.6% | 440 | 30.3% | 79.3% |
| **Buffalo** | 33 | 11091 | 8231 | 74.2% | 8838 | 2174 | 24.6% | 583 | 26.8% | 81.2% |
| | 151 | 11091 | 8139 | 73.4% | 8838 | 2266 | 25.6% | 633 | 27.9% | 80.9% |
| | 521 | 10349 | 7590 | 73.3% | 8097 | 2104 | 26.0% | 619 | 29.4% | 81.3% |
| **Columbus** | 33 | 8273 | 6360 | 76.9% | 6592 | 1377 | 20.9% | 450 | 32.7% | 83.7% |
| | 151 | 8273 | 6282 | 75.9% | 6592 | 1451 | 22.0% | 488 | 33.6% | 83.0% |
| | 521 | 7601 | 5764 | 75.8% | 5920 | 1288 | 21.8% | 461 | 35.8% | 83.3% |
| **Gainesville** | 33 | 6656 | 4575 | 68.7% | 5464 | 1638 | 30.0% | 367 | 22.4% | 76.0% |
| | 151 | 6656 | 4512 | 67.8% | 5464 | 1683 | 30.8% | 387 | 23.0% | 75.2% |
| | 521 | 6236 | 4260 | 68.3% | 5044 | 1549 | 30.7% | 378 | 24.4% | 76.2% |
| **Iowa** | 33 | 6929 | 5475 | 79.0% | 5622 | 1144 | 20.4% | 387 | 33.8% | 86.2% |
| | 151 | 6929 | 5416 | 78.2% | 5622 | 1207 | 21.5% | 412 | 34.1% | 85.7% |
| | 521 | 6196 | 4848 | 78.2% | 4889 | 1044 | 21.4% | 376 | 36.0% | 86.1% |
| **Pittsburgh** | 33 | 3110 | 2318 | 74.5% | 2613 | 650 | 24.9% | 189 | 29.1% | 82.4% |
| | 151 | 3110 | 2298 | 73.9% | 2613 | 668 | 25.6% | 203 | 30.4% | 82.4% |
| | 521 | 2735 | 2016 | 73.7% | 2238 | 585 | 26.1% | 180 | 30.8% | 82.4% |
| **Seattle** | 33 | 3050 | 2335 | 76.6% | 2725 | 626 | 23.0% | 192 | 30.7% | 83.6% |
| | 151 | 3050 | 2311 | 75.8% | 2725 | 648 | 23.8% | 205 | 31.6% | 83.3% |
| | 521 | 2734 | 2091 | 76.5% | 2415 | 561 | 23.2% | 183 | 32.6% | 84.0% |
| **Stanford** | 33 | 10875 | 8610 | 79.2% | 9492 | 1782 | 18.8% | 594 | 33.3% | 85.8% |
| | 151 | 10874 | 8498 | 78.2% | 9491 | 1876 | 19.8% | 664 | 35.4% | 85.5% |
| | 521 | 9550 | 7414 | 77.6% | 8167 | 1649 | 20.2% | 580 | 35.2% | 85.0% |
| **Tucson** | 33 | 4311 | 3113 | 72.2% | 3826 | 967 | 25.3% | 245 | 25.3% | 79.5% |
| | 151 | 4311 | 3067 | 71.1% | 3826 | 1022 | 26.7% | 278 | 27.2% | 79.1% |
| | 521 | 3875 | 2762 | 71.3% | 3397 | 897 | 26.4% | 238 | 26.5% | 78.8% |
| **Wake Forest** | 33 | 7311 | 5332 | 72.9% | 5813 | 1470 | 25.3% | 414 | 28.2% | 80.5% |
| | 151 | 7311 | 5289 | 72.3% | 5813 | 1503 | 25.9% | 432 | 28.7% | 80.3% |
| | 521 | 6710 | 4874 | 72.6% | 5238 | 1319 | 25.2% | 394 | 29.9% | 80.8% |

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 521 = Physical Activity Questionnaire.

**Table 1.8**
**Response Rates to Regional Center Follow-up and Cumulative Response**
**Extension Study 2010-2020, Follow-up Year 5 by Cohort and Regional Center**
Data as of: September 30, 2016

| Cohort | Form[1] | Eligible for RC Follow-up | Respondents | | Total Estimated Response Rate |
|---|---|---|---|---|---|
| **Total** | 33 | 12510 | 7569 | 60.5% | 91.4% |
| | 151 | 13289 | 4642 | 34.9% | 87.6% |
| | 157 | 14143 | 73 | 0.5% | 82.2% |
| | 521 | 3923 | 2 | 0.1% | 43.2% |
| **Medical Record Cohort** | 33 | 3943 | 2686 | 68.1% | 89.4% |
| | 151 | 4228 | 1622 | 38.4% | 83.7% |
| | 157 | 4557 | 20 | 0.4% | 75.8% |
| | 521 | 1515 | 1 | 0.1% | 40.6% |
| **Self Report Cohort** | 33 | 8567 | 4883 | 57.0% | 92.0% |
| | 151 | 9061 | 3020 | 33.3% | 88.8% |
| | 157 | 9586 | 53 | 0.6% | 84.2% |
| | 521 | 2408 | 1 | 0.0% | 44.6% |
| **Regional Center** | | | | | |
| **Boston** | 33 | 1565 | 764 | 48.8% | 89.6% |
| | 151 | 1642 | 550 | 33.5% | 86.9% |
| | 157 | 1681 | 6 | 0.4% | 81.1% |
| | 521 | 374 | 0 | 0.0% | 31.6% |
| **Buffalo** | 33 | 1988 | 1620 | 81.5% | 92.3% |
| | 151 | 2108 | 1337 | 63.4% | 90.0% |
| | 157 | 2537 | 28 | 1.1% | 80.3% |
| | 521 | 945 | 1 | 0.1% | 33.7% |
| **Columbus** | 33 | 1304 | 935 | 71.7% | 93.0% |
| | 151 | 1432 | 61 | 4.3% | 83.8% |
| | 157 | 1454 | 5 | 0.3% | 83.1% |
| | 521 | 371 | 0 | 0.0% | 39.3% |
| **Gainesville** | 33 | 1353 | 450 | 33.3% | 85.1% |
| | 151 | 1467 | 311 | 21.2% | 82.4% |
| | 157 | 1513 | 17 | 1.1% | 78.7% |
| | 521 | 292 | 0 | 0.0% | 36.9% |
| **Iowa** | 33 | 791 | 607 | 76.7% | 94.8% |
| | 151 | 842 | 421 | 50.0% | 92.2% |
| | 157 | 907 | 5 | 0.6% | 87.0% |
| | 521 | 132 | 0 | 0.0% | 54.1% |
| **Pittsburgh** | 33 | 706 | 327 | 46.3% | 89.0% |
| | 151 | 715 | 238 | 33.3% | 86.6% |
| | 157 | 739 | 3 | 0.4% | 80.2% |
| | 521 | 285 | 0 | 0.0% | 30.1% |
| **Seattle** | 33 | 554 | 255 | 46.0% | 89.2% |
| | 151 | 659 | 22 | 3.3% | 82.8% |
| | 157 | 673 | 0 | 0.0% | 82.2% |
| | 521 | 230 | 0 | 0.0% | 43.8% |
| **Stanford** | 33 | 1914 | 1360 | 71.1% | 94.6% |
| | 151 | 1978 | 721 | 36.5% | 90.0% |
| | 157 | 2018 | 4 | 0.2% | 85.0% |
| | 521 | 641 | 0 | 0.0% | 51.4% |
| **Tucson** | 33 | 870 | 517 | 59.4% | 90.6% |
| | 151 | 921 | 417 | 45.3% | 88.6% |
| | 157 | 1002 | 1 | 0.1% | 81.1% |
| | 521 | 225 | 1 | 0.4% | 61.8% |
| **Wake Forest** | 33 | 1465 | 734 | 50.1% | 89.5% |
| | 151 | 1525 | 564 | 37.0% | 87.2% |
| | 157 | 1619 | 4 | 0.3% | 80.8% |
| | 521 | 428 | 0 | 0.0% | 46.3% |

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 157 = Supplemental Questionnaire 2014-2015; Form 521 = Physical Activity Questionnaire.

**Table 1.8 (continued for year 6)**
**Response Rates to Regional Center Follow-up and Cumulative Response**
**Extension Study 2010-2020 Follow-up, Year 6 by Cohort and Regional Center**

Data as of: September 30, 2016

| Cohort | Form[1] | Eligible for RC Follow-up | Respondents | | Total Estimated Response Rate |
|---|---|---|---|---|---|
| **Total** | 33 | 2662 | 1624 | 61.0% | 88.8% |
| | 151 | 2815 | 1020 | 36.2% | 83.1% |
| | 521 | 2041 | 4 | 0.2% | 72.4% |
| **Medical Record** | 33 | 890 | 573 | 64.4% | 85.7% |
| **Cohort** | 151 | 938 | 338 | 36.0% | 77.7% |
| | 521 | 815 | 0 | 0.0% | 68.5% |
| **Self Report** | 33 | 1772 | 1051 | 59.3% | 89.8% |
| **Cohort** | 151 | 1877 | 682 | 36.3% | 84.9% |
| | 521 | 1226 | 4 | 0.3% | 74.5% |
| **Regional Center** | | | | | |
| **Boston** | 33 | 319 | 174 | 54.6% | 87.1% |
| | 151 | 327 | 133 | 40.7% | 83.3% |
| | 521 | 239 | 0 | 0.0% | 70.2% |
| **Buffalo** | 33 | 443 | 342 | 77.2% | 90.0% |
| | 151 | 466 | 282 | 60.5% | 86.5% |
| | 521 | 400 | 1 | 0.3% | 70.4% |
| **Columbus** | 33 | 277 | 182 | 65.7% | 89.8% |
| | 151 | 308 | 2 | 0.7% | 75.3% |
| | 521 | 208 | 1 | 0.5% | 73.4% |
| **Gainesville** | 33 | 252 | 75 | 29.8% | 79.3% |
| | 151 | 283 | 59 | 20.9% | 75.2% |
| | 521 | 193 | 0 | 0.0% | 71.3% |
| **Iowa** | 33 | 222 | 102 | 46.0% | 88.6% |
| | 151 | 237 | 84 | 35.4% | 86.7% |
| | 521 | 153 | 2 | 1.3% | 79.5% |
| **Pittsburgh** | 33 | 152 | 97 | 63.8% | 89.8% |
| | 151 | 153 | 76 | 49.7% | 86.3% |
| | 521 | 116 | 0 | 0.0% | 67.7% |
| **Seattle** | 33 | 99 | 76 | 76.8% | 92.1% |
| | 151 | 115 | 3 | 2.6% | 75.2% |
| | 521 | 66 | 0 | 0.0% | 74.7% |
| **Stanford** | 33 | 380 | 303 | 79.7% | 94.3% |
| | 151 | 393 | 155 | 39.4% | 86.5% |
| | 521 | 260 | 0 | 0.0% | 72.8% |
| **Tucson** | 33 | 209 | 115 | 55.0% | 86.9% |
| | 151 | 214 | 96 | 44.9% | 84.2% |
| | 521 | 170 | 0 | 0.0% | 69.1% |
| **Wake Forest** | 33 | 309 | 158 | 51.1% | 86.2% |
| | 151 | 319 | 130 | 40.8% | 83.8% |
| | 521 | 236 | 0 | 0.0% | 74.1% |

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 521 = Physical Activity Questionnaire.

**Table 2.1**
**Participation and Vital Status: OS Participants**

Data as of: September 30, 2016
**WHI Extension Study 2010-2020 Participants**

| | OS Participants (N = 52,068) N | % |
|---|---|---|
| **Vital Status/Participation** | | |
| Deceased | 7115 | 13.7 |
| Alive: Current Participation[1] | 40707 | 78.2 |
| Alive: Recent Participation[2] | 2210 | 4.2 |
| Alive: Past/Unknown Participation[3] | 49 | 0.1 |
| Stopped Follow-Up[4] | 986 | 1.9 |
| Lost to Follow-Up[5] | 1001 | 1.9 |

Data as of: September 30, 2016; Status as of September 30, 2010
**WHI Extension Study 2005-2010 Participants**

| | OS Participants (N = 63,231) N | % |
|---|---|---|
| **Vital Status/Participation** | | |
| Deceased | 4747 | 7.5 |
| Alive: Current Participation[1] | 57201 | 90.5 |
| Alive: Recent Participation[2] | 369 | 0.6 |
| Alive: Past/Unknown Participation[3] | 34 | 0.1 |
| Stopped Follow-Up[4] | 607 | 1.0 |
| Lost to Follow-Up[5] | 273 | 0.4 |

Data as of: September 30, 2016; Status as of April 8, 2005
**WHI Participants**

| | OS Participants (N =93,676) N | % |
|---|---|---|
| **Vital Status/Participation** | | |
| Deceased | 6346 | 7.1 |
| Alive: Current Participation[1] | 78251 | 87.6 |
| Alive: Recent Participation[2] | 424 | 0.5 |
| Alive: Past/Unknown Participation[3] | 47 | 0.1 |
| Stopped Follow-Up[4] | 2264 | 2.5 |
| Lost to Follow-Up[5] | 2001 | 2.2 |

[1] Participants who have filled in a Form 33 within the last 15 months.
[2] Participants who last filled in a Form 33 between 15 and 24 months ago.
[3] Participants without a Form 33 within the last 24 months, who have been located (as indicated on Form 23) within the last 6 months.
[4] Participants with codes 5 (no follow-up) or 8 (absolutely no follow-up) on Form 7 or 9.
[5] Participants not in any of the above categories.

**Table 2.2**
**Verified Outcomes (Annualized Percentages) by Age at Enrollment for OS Participants**

Data as of: September 30, 2016; Events through September 30, 2010

| Outcome | Total | Age at Enrollment 50-54 | 55-59 | 60-69 | 70-79 |
|---|---|---|---|---|---|
| **Number enrolled** | 93676 | 12381 | 17329 | 41200 | 22766 |
| **Mean follow-up (months)** | 136.7 | 146.4 | 145.1 | 137.4 | 124.0 |
| **Cardiovascular** | | | | | |
| CHD[1] | 4224 (0.40%) | 159 (0.11%) | 361 (0.17%) | 1781 (0.38%) | 1923 (0.82%) |
| CHD death[2] | 1576 (0.15%) | 40 (0.03%) | 93 (0.04%) | 548 (0.12%) | 895 (0.38%) |
| Clinical MI | 3089 (0.29%) | 125 (0.08%) | 287 (0.14%) | 1384 (0.29%) | 1293 (0.55%) |
| Angina[3] | 2834 (0.38%) | 124 (0.12%) | 318 (0.22%) | 1319 (0.41%) | 1073 (0.62%) |
| CABG/PTCA | 4608 (0.43%) | 199 (0.13%) | 534 (0.25%) | 2305 (0.49%) | 1570 (0.67%) |
| Carotid artery disease | 843 (0.08%) | 41 (0.03%) | 79 (0.04%) | 385 (0.08%) | 338 (0.14%) |
| Congestive heart failure, WHI[3] | 2295 (0.31%) | 81 (0.08%) | 174 (0.12%) | 882 (0.27%) | 1158 (0.67%) |
| Stroke | 3356 (0.31%) | 103 (0.07%) | 253 (0.12%) | 1410 (0.30%) | 1590 (0.68%) |
| PVD | 840 (0.08%) | 23 (0.02%) | 74 (0.04%) | 381 (0.08%) | 362 (0.15%) |
| Coronary disease[4] | 9135 (0.86%) | 393 (0.26%) | 936 (0.45%) | 4074 (0.86%) | 3732 (1.59%) |
| **Total cardiovascular disease** | 13153 (1.23%) | 539 (0.36%) | 1269 (0.61%) | 5769 (1.22%) | 5576 (2.37%) |
| **Cancer** | | | | | |
| Breast cancer | 6052 (0.57%) | 724 (0.48%) | 1087 (0.52%) | 2833 (0.60%) | 1408 (0.60%) |
| Invasive breast cancer | 5006 (0.47%) | 578 (0.38%) | 884 (0.42%) | 2337 (0.50%) | 1207 (0.51%) |
| Non-invasive breast cancer | 1111 (0.10%) | 156 (0.10%) | 213 (0.10%) | 529 (0.11%) | 213 (0.09%) |
| Ovarian cancer | 564 (0.05%) | 61 (0.04%) | 107 (0.05%) | 251 (0.05%) | 145 (0.06%) |
| Endometrial cancer[5] | 831 (0.08%) | 77 (0.05%) | 154 (0.07%) | 385 (0.08%) | 215 (0.09%) |
| Colorectal cancer | 1354 (0.13%) | 78 (0.05%) | 144 (0.07%) | 624 (0.13%) | 508 (0.22%) |
| Other cancer[6] | 6635 (0.62%) | 491 (0.33%) | 924 (0.44%) | 3163 (0.67%) | 2057 (0.87%) |
| **Total cancer** | 14519 (1.36%) | 1361 (0.90%) | 2289 (1.09%) | 6796 (1.44%) | 4073 (1.73%) |
| **Fractures** | | | | | |
| Hip fracture | 2199 (0.21%) | 52 (0.03%) | 131 (0.06%) | 777 (0.16%) | 1239 (0.53%) |
| **Deaths** | | | | | |
| Cardiovascular deaths | 3524 (0.33%) | 87 (0.06%) | 213 (0.10%) | 1207 (0.26%) | 2017 (0.86%) |
| Cancer deaths | 4521 (0.42%) | 263 (0.17%) | 519 (0.25%) | 2065 (0.44%) | 1674 (0.71%) |
| Other known cause | 3087 (0.29%) | 120 (0.08%) | 203 (0.10%) | 1185 (0.25%) | 1579 (0.67%) |
| Unknown cause | 74 (0.01%) | 6 (<0.01%) | 10 (<0.01%) | 26 (0.01%) | 32 (0.01%) |
| **Total death** | 11206 (1.05%) | 476 (0.32%) | 945 (0.45%) | 4483 (0.95%) | 5302 (2.25%) |
| **Death plus post-WHI deaths[7]** | 15164 (1.24%) | 605 (0.35%) | 1188 (0.50%) | 5868 (1.10%) | 7503 (2.73%) |

[1] "CHD" includes clinical MI and CHD death.
[2] "CHD death" includes definite and possible CHD death.
[3] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.
[4] "Coronary disease" includes clinical MI, CHD death, angina, congestive heart failure, and CABG/PTCA; angina and congestive heart failure were not collected in the WHI Extension Study 2005-2010.
[5] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[6] Only one report of "other cancer " is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.
[7] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

**Table 2.3**
**Verified Outcomes (Annualized Percentages) by Race/Ethnicity for OS Participants**

Data as of: September 30, 2016; Events through September 30, 2010

| Outcomes | Race/Ethnicity: American Indian/Alaskan Native | Asian/Pacific Islander | Black/African American | Hispanic/ Latina | White | Unknown |
|---|---|---|---|---|---|---|
| **Number enrolled** | 421 | 2671 | 7635 | 3609 | 78016 | 1324 |
| **Mean follow-up (months)** | 120.0 | 121.7 | 118.2 | 113.5 | 140.4 | 127.9 |
| **Cardiovascular** | | | | | | |
| CHD[1] | 23 (0.55%) | 62 (0.23%) | 370 (0.49%) | 82 (0.24%) | 3628 (0.40%) | 59 (0.42%) |
| CHD death[2] | 13 (0.31%) | 25 (0.09%) | 186 (0.25%) | 27 (0.08%) | 1303 (0.14%) | 22 (0.16%) |
| Clinical MI | 13 (0.31%) | 44 (0.16%) | 227 (0.30%) | 63 (0.18%) | 2699 (0.30%) | 43 (0.30%) |
| Angina[3] | 18 (0.58%) | 40 (0.20%) | 250 (0.44%) | 80 (0.31%) | 2412 (0.39%) | 34 (0.34%) |
| CABG/PTCA | 23 (0.55%) | 57 (0.21%) | 287 (0.38%) | 123 (0.36%) | 4053 (0.44%) | 65 (0.46%) |
| Carotid artery disease | 5 (0.12%) | 9 (0.03%) | 40 (0.05%) | 16 (0.05%) | 760 (0.08%) | 13 (0.09%) |
| Congestive heart failure, WHI[3] | 16 (0.52%) | 22 (0.11%) | 233 (0.41%) | 42 (0.16%) | 1948 (0.31%) | 34 (0.34%) |
| Stroke | 14 (0.33%) | 75 (0.28%) | 272 (0.36%) | 65 (0.19%) | 2874 (0.31%) | 56 (0.40%) |
| PVD | 3 (0.07%) | 6 (0.02%) | 88 (0.12%) | 8 (0.02%) | 722 (0.08%) | 13 (0.09%) |
| Coronary disease[4] | 53 (1.26%) | 125 (0.46%) | 783 (1.04%) | 217 (0.64%) | 7836 (0.86%) | 121 (0.86%) |
| **Total cardiovascular disease** | 67 (1.59%) | 210 (0.78%) | 1117 (1.49%) | 296 (0.87%) | 11272 (1.23%) | 191 (1.35%) |
| **Cancer** | | | | | | |
| Breast cancer | 17 (0.40%) | 126 (0.47%) | 376 (0.50%) | 138 (0.40%) | 5333 (0.58%) | 62 (0.44%) |
| Invasive breast cancer | 16 (0.38%) | 106 (0.39%) | 302 (0.40%) | 108 (0.32%) | 4421 (0.48%) | 53 (0.38%) |
| Non-invasive breast cancer | 1 (0.02%) | 22 (0.08%) | 80 (0.11%) | 32 (0.09%) | 966 (0.11%) | 10 (0.07%) |
| Ovarian cancer | 1 (0.02%) | 6 (0.02%) | 28 (0.04%) | 18 (0.05%) | 508 (0.06%) | 3 (0.02%) |
| Endometrial cancer[5] | 1 (0.02%) | 12 (0.04%) | 28 (0.04%) | 12 (0.04%) | 763 (0.08%) | 15 (0.11%) |
| Colorectal cancer | 4 (0.09%) | 28 (0.10%) | 124 (0.16%) | 29 (0.08%) | 1155 (0.13%) | 14 (0.10%) |
| Other cancer[6] | 23 (0.55%) | 116 (0.43%) | 376 (0.50%) | 116 (0.34%) | 5913 (0.65%) | 91 (0.64%) |
| **Total cancer** | 45 (1.07%) | 274 (1.01%) | 883 (1.17%) | 307 (0.90%) | 12835 (1.41%) | 175 (1.24%) |
| **Fractures** | | | | | | |
| Hip fracture | 5 (0.12%) | 21 (0.08%) | 47 (0.06%) | 19 (0.06%) | 2086 (0.23%) | 21 (0.15%) |
| **Deaths** | | | | | | |
| Cardiovascular deaths | 23 (0.55%) | 68 (0.25%) | 360 (0.48%) | 72 (0.21%) | 2948 (0.32%) | 53 (0.38%) |
| Cancer deaths | 13 (0.31%) | 86 (0.32%) | 343 (0.46%) | 96 (0.28%) | 3935 (0.43%) | 48 (0.34%) |
| Other known cause | 25 (0.59%) | 47 (0.17%) | 245 (0.33%) | 90 (0.26%) | 2645 (0.29%) | 35 (0.25%) |
| Unknown cause | 0 (0.00%) | 2 (0.01%) | 7 (0.01%) | 8 (0.02%) | 56 (0.01%) | 1 (0.01%) |
| **Total death** | 61 (1.45%) | 203 (0.75%) | 955 (1.27%) | 266 (0.78%) | 9584 (1.05%) | 137 (0.97%) |
| **Death plus post-WHI deaths[7]** | 93 (1.77%) | 317 (0.90%) | 1403 (1.45%) | 419 (0.90%) | 12707 (1.25%) | 225 (1.32%) |

[1] "CHD" includes clinical MI and CHD death.
[2] "CHD death" includes definite and possible CHD death.
[3] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.
[4] "Coronary disease" includes clinical MI, CHD death, angina, congestive heart failure, and CABG/PTCA; angina and congestive heart failure were not collected in the WHI Extension Study 2005-2010.
[5] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[6] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin.
[7] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

**Table 2.4**
**Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for OS Participants Who Did Not Report a Prevalent Condition at Baseline**

Data as of: September 30, 2016; Events through September 30, 2016

| | | Age at Enrollment | | | |
|---|---|---|---|---|---|
| **Outcome** | **Total** | **50-54** | **55-59** | **60-69** | **70-79** |
| **Number enrolled** | 93676 | 12381 | 17329 | 41200 | 22766 |
| **Mean follow-up (months)** | 170.0 | 188.7 | 187.0 | 171.9 | 143.7 |
| **Hospitalizations** | | | | | |
| Ever | 64029 (4.82%) | 6703 (3.44%) | 10641 (3.94%) | 29254 (4.96%) | 17431 (6.39%) |
| Two or more | 43938 (3.31%) | 4014 (2.06%) | 6837 (2.53%) | 20474 (3.47%) | 12613 (4.63%) |
| **Other** | | | | | |
| DVT[1] | 1795 (0.14%) | 141 (0.07%) | 236 (0.09%) | 876 (0.15%) | 542 (0.21%) |
| Pulmonary embolism | 1481 (0.11%) | 141 (0.07%) | 242 (0.09%) | 718 (0.12%) | 380 (0.14%) |
| Diabetes (treated) | 11260 (0.88%) | 1591 (0.84%) | 2258 (0.86%) | 5184 (0.91%) | 2227 (0.85%) |
| Gallbladder disease[2,3] | 5652 (0.95%) | 832 (0.96%) | 1141 (0.98%) | 2534 (0.99%) | 1145 (0.85%) |
| Hysterectomy | 4709 (0.35%) | 728 (0.37%) | 1088 (0.40%) | 2136 (0.36%) | 757 (0.28%) |
| Glaucoma[3] | 8452 (1.26%) | 843 (0.87%) | 1364 (1.04%) | 3886 (1.32%) | 2359 (1.56%) |
| Osteoporosis[3] | 20667 (3.20%) | 2090 (2.21%) | 3364 (2.62%) | 9501 (3.38%) | 5712 (4.01%) |
| Osteoarthritis[4] | 26106 (3.35%) | 4009 (2.84%) | 5470 (3.08%) | 11524 (3.49%) | 5103 (3.89%) |
| Rheumatoid arthritis[3] | 4571 (0.68%) | 634 (0.67%) | 877 (0.68%) | 1880 (0.64%) | 1180 (0.76%) |
| Intestinal polyps | 21447 (1.78%) | 3194 (1.72%) | 4721 (1.87%) | 9701 (1.83%) | 3831 (1.63%) |
| Lupus | 1502 (0.11%) | 211 (0.11%) | 288 (0.11%) | 680 (0.12%) | 323 (0.12%) |
| Kidney stones[3,4] | 2314 (0.34%) | 292 (0.31%) | 433 (0.33%) | 994 (0.34%) | 595 (0.38%) |
| Cataracts[3,4] | 27103 (4.66%) | 1726 (1.81%) | 4088 (3.20%) | 14045 (5.47%) | 7244 (7.13%) |
| Hypertension treated w/pills | 32793 (3.38%) | 4297 (2.64%) | 6302 (2.95%) | 14749 (3.53%) | 7445 (4.25%) |
| COPD[5] | 3776 (0.83%) | 422 (0.65%) | 733 (0.82%) | 1964 (0.98%) | 657 (0.69%) |
| Macular degeneration[6] | 10142 (1.16%) | 679 (0.53%) | 1320 (0.75%) | 4981 (1.29%) | 3162 (1.76%) |
| Alzheimer's disease[6] | 7201 (0.82%) | 287 (0.23%) | 641 (0.37%) | 3552 (0.92%) | 2721 (1.52%) |
| Parkinson's disease[6] | 1372 (0.16%) | 93 (0.07%) | 194 (0.11%) | 768 (0.20%) | 317 (0.18%) |

[1] Inpatient DVT only.
[2] "Gallbladder disease" includes self-reports of both hospitalized and non-hospitalized events.
[3] Data not collected for the WHI Extension Studies 2005-2020.
[4] These outcomes have not been self-reported on all versions of Form 33. The annualized percentages are corrected for the different amounts of follow-up.
[5] Data only collected during the WHI Extension Study 2010-2020.
[6] Data only collected during the WHI Extension Studies 2005-2020.

**Table 2.4 (continued)**
**Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for OS Participants Who Did Not Report a Prevalent Condition at Baseline**

Data as of: September 30, 2016; Events through September 30, 2016

| | Race/Ethnicity | | | | | |
|---|---|---|---|---|---|---|
| **Outcomes** | **American Indian/ Alaskan Native** | **Asian/Pacific Islander** | **Black/African American** | **Hispanic/ Latina** | **White** | **Unknown** |
| **Number enrolled** | 421 | 2671 | 7635 | 3609 | 78016 | 1324 |
| **Mean follow-up (months)** | 143.8 | 144.7 | 138.4 | 133.7 | 176.1 | 154.5 |
| **Hospitalizations** | | | | | | |
| Ever | 272 (5.39%) | 1173 (3.64%) | 4523 (5.14%) | 1736 (4.32%) | 55502 (4.85%) | 823 (4.83%) |
| Two or more | 190 (3.77%) | 612 (1.90%) | 2840 (3.22%) | 1005 (2.50%) | 38734 (3.38%) | 557 (3.27%) |
| **Other** | | | | | | |
| DVT[1] | 7 (0.15%) | 13 (0.04%) | 155 (0.18%) | 29 (0.07%) | 1570 (0.14%) | 21 (0.13%) |
| Pulmonary embolism | 4 (0.08%) | 11 (0.03%) | 104 (0.12%) | 18 (0.05%) | 1330 (0.12%) | 14 (0.08%) |
| Diabetes (treated) | 76 (1.71%) | 313 (1.02%) | 1240 (1.57%) | 515 (1.36%) | 8941 (0.80%) | 175 (1.07%) |
| Gallbladder disease[2,3] | 31 (1.32%) | 81 (0.46%) | 374 (0.77%) | 230 (1.18%) | 4860 (0.97%) | 76 (0.94%) |
| Hysterectomy | 11 (0.22%) | 78 (0.24%) | 172 (0.20%) | 139 (0.35%) | 4239 (0.37%) | 70 (0.41%) |
| Glaucoma[3] | 45 (1.64%) | 253 (1.35%) | 987 (1.97%) | 308 (1.31%) | 6737 (1.18%) | 122 (1.32%) |
| Osteoporosis[3] | 90 (3.29%) | 625 (3.50%) | 1069 (2.06%) | 735 (3.21%) | 17825 (3.29%) | 323 (3.64%) |
| Osteoarthritis[4] | 97 (3.46%) | 754 (3.30%) | 1838 (3.57%) | 1007 (3.83%) | 22037 (3.31%) | 373 (3.55%) |
| Rheumatoid arthritis[3] | 38 (1.39%) | 98 (0.52%) | 661 (1.33%) | 382 (1.65%) | 3306 (0.58%) | 86 (0.95%) |
| Intestinal polyps | 74 (1.61%) | 482 (1.67%) | 1567 (1.94%) | 637 (1.70%) | 18422 (1.78%) | 265 (1.74%) |
| Lupus | 10 (0.20%) | 25 (0.08%) | 142 (0.16%) | 72 (0.18%) | 1233 (0.11%) | 20 (0.12%) |
| Kidney stones[3,4] | 17 (0.61%) | 40 (0.21%) | 263 (0.50%) | 125 (0.53%) | 1825 (0.32%) | 44 (0.47%) |
| Cataracts[3,4] | 102 (4.20%) | 683 (4.33%) | 1937 (4.26%) | 894 (4.11%) | 23094 (4.73%) | 393 (5.02%) |
| Hypertension treated w/pills | 135 (4.07%) | 791 (3.44%) | 2081 (4.71%) | 1163 (3.79%) | 28158 (3.29%) | 465 (3.79%) |
| COPD[5] | 18 (0.92%) | 38 (0.28%) | 200 (0.55%) | 75 (0.42%) | 3405 (0.90%) | 40 (0.64%) |
| Macular degeneration[6] | 29 (0.76%) | 140 (0.56%) | 323 (0.47%) | 208 (0.63%) | 9327 (1.27%) | 115 (0.96%) |
| Alzheimer's disease[6] | 25 (0.66%) | 108 (0.43%) | 376 (0.55%) | 157 (0.48%) | 6434 (0.88%) | 101 (0.84%) |
| Parkinson's disease[6] | 6 (0.16%) | 17 (0.07%) | 70 (0.10%) | 29 (0.09%) | 1231 (0.17%) | 19 (0.16%) |

[1] Inpatient DVT only.
[2] "Gallbladder disease" includes self-reports of both hospitalized and non-hospitalized events.
[3] Data not collected for the WHI Extension Studies 2005-2020.
[4] These outcomes have not been self-reported on all versions of Form 33. The annualized percentages are corrected for the different amounts of follow-up.
[5] Data only collected during the WHI Extension Study 2010-2020.
[6] Data only collected during the WHI Extension Studies 2005-2020.

**Table 3.1**
**Participation and Vital Status: CT Participants**

Data as of: September 30, 2016
**WHI Extension Study 2010-2020 Participants**

| | CT Participants (N = 41,499) N | % |
|---|---|---|
| **Vital Status/Participation** | | |
| Deceased | 5438 | 13.1 |
| Alive: Current Participation[1] | 32438 | 78.2 |
| Alive: Recent Participation[2] | 1848 | 4.5 |
| Alive: Past/Unknown Participation[3] | 35 | 0.1 |
| Stopped Follow-Up[4] | 796 | 1.9 |
| Lost to Follow-Up[5] | 944 | 2.3 |

Data as of: September 30, 2016; Status as of September 30, 2010
**WHI Extension Study 2005-2010 Participants**

| | CT Participants (N = 52,176) N | % |
|---|---|---|
| **Vital Status/Participation** | | |
| Deceased | 3801 | 7.3 |
| Alive: Current Participation[1] | 46889 | 89.9 |
| Alive: Recent Participation[2] | 443 | 0.8 |
| Alive: Past/Unknown Participation[3] | 38 | 0.1 |
| Stopped Follow-Up[4] | 651 | 1.2 |
| Lost to Follow-Up[5] | 354 | 0.7 |

Data as of: September 30, 2016; Status as of April 8, 2005
**WHI Participants**

| | CT Participants (N = 68,132) N | % |
|---|---|---|
| **Vital Status/Participation** | | |
| Deceased | 3699 | 5.4 |
| Alive: Current Participation[6] | 61162 | 89.8 |
| Alive: Recent Participation[7] | 339 | 0.5 |
| Alive: Past/Unknown Participation[8] | 10 | <0.1 |
| Stopped Follow-Up[4] | 2194 | 3.2 |
| Lost to Follow-Up[5] | 728 | 1.1 |

[1] Participants who have filled in a Form 33 within the last 15 months.
[2] Participants who last filled in a Form 33 between 15 and 24 months ago.
[3] Participants without a Form 33 within the last 24 months, who have been located (as indicated on Form 23) within the last 6 months.
[4] Participants with codes 5 (no follow-up) or 8 (absolutely no follow-up) on Form 7 and 9.
[5] Participants not in any of the above categories.
[6] Participants who have filled in a Form 33 within the last 9 months.
[7] Participants who last filled in a Form 33 between 9 and 18 months ago.
[8] Participants without a Form 33 within the last 18 months, who have been located (as indicated on Form 23) within the last 6 months.

**Table 3.2**
**Verified Outcomes (Annualized Percentages) by Age at Enrollment for CT Participants**

Data as of: September 30, 2016; Events through September 30, 2010

| Outcome | Total | Age at Enrollment 50-54 | 55-59 | 60-69 | 70-79 |
|---|---|---|---|---|---|
| **Number randomized** | 68132 | 9188 | 14661 | 31389 | 12894 |
| **Mean follow-up (months)** | 146.5 | 155.8 | 152.7 | 145.9 | 134.0 |
| **Cardiovascular** | | | | | |
| CHD[1] | 3570 (0.43%) | 193 (0.16%) | 406 (0.22%) | 1663 (0.44%) | 1308 (0.91%) |
| CHD death[2] | 1186 (0.14%) | 48 (0.04%) | 86 (0.05%) | 503 (0.13%) | 549 (0.38%) |
| Total MI[3] | 2733 (0.33%) | 155 (0.13%) | 339 (0.18%) | 1288 (0.34%) | 951 (0.66%) |
| Clinical MI | 2657 (0.32%) | 149 (0.12%) | 331 (0.18%) | 1250 (0.33%) | 927 (0.64%) |
| Angina[4] | 2414 (0.43%) | 129 (0.16%) | 331 (0.27%) | 1215 (0.48%) | 739 (0.73%) |
| CABG/PTCA | 3951 (0.48%) | 217 (0.18%) | 551 (0.30%) | 2084 (0.55%) | 1099 (0.76%) |
| Carotid artery disease | 697 (0.08%) | 27 (0.02%) | 90 (0.05%) | 375 (0.10%) | 205 (0.14%) |
| Congestive heart failure,WHI[4] | 1748 (0.31%) | 81 (0.10%) | 172 (0.14%) | 745 (0.29%) | 750 (0.74%) |
| Stroke | 2687 (0.32%) | 120 (0.10%) | 268 (0.14%) | 1259 (0.33%) | 1040 (0.72%) |
| PVD | 647 (0.08%) | 29 (0.02%) | 86 (0.05%) | 333 (0.09%) | 199 (0.14%) |
| Coronary disease[5] | 7786 (0.94%) | 442 (0.37%) | 1016 (0.54%) | 3795 (0.99%) | 2533 (1.76%) |
| **Total cardiovascular disease** | 10794 (1.30%) | 587 (0.49%) | 1361 (0.73%) | 5222 (1.37%) | 3624 (2.52%) |
| **Cancer** | | | | | |
| Breast cancer | 4227 (0.51%) | 514 (0.43%) | 940 (0.50%) | 2000 (0.52%) | 773 (0.54%) |
| Invasive breast cancer | 3419 (0.41%) | 391 (0.33%) | 768 (0.41%) | 1613 (0.42%) | 647 (0.45%) |
| Non-invasive breast cancer | 863 (0.10%) | 129 (0.11%) | 183 (0.10%) | 413 (0.11%) | 138 (0.10%) |
| Ovary cancer | 372 (0.04%) | 35 (0.03%) | 73 (0.04%) | 191 (0.05%) | 73 (0.05%) |
| Endometrial cancer[6] | 572 (0.07%) | 64 (0.05%) | 138 (0.07%) | 274 (0.07%) | 96 (0.07%) |
| Colorectal cancer | 1116 (0.13%) | 71 (0.06%) | 181 (0.10%) | 542 (0.14%) | 322 (0.22%) |
| Other cancer[7] | 4966 (0.60%) | 406 (0.34%) | 846 (0.45%) | 2484 (0.65%) | 1230 (0.85%) |
| **Total cancer** | 10628 (1.28%) | 1040 (0.87%) | 2070 (1.11%) | 5170 (1.35%) | 2348 (1.63%) |
| **Fractures** | | | | | |
| Hip fracture | 1639 (0.20%) | 32 (0.03%) | 115 (0.06%) | 665 (0.17%) | 827 (0.57%) |
| **Deaths** | | | | | |
| Cardiovascular deaths | 2401 (0.29%) | 86 (0.07%) | 173 (0.09%) | 974 (0.26%) | 1168 (0.81%) |
| Cancer deaths | 3123 (0.38%) | 190 (0.16%) | 432 (0.23%) | 1566 (0.41%) | 935 (0.65%) |
| Other known cause | 2008 (0.24%) | 83 (0.07%) | 190 (0.10%) | 850 (0.22%) | 885 (0.61%) |
| Unknown cause | 47 (0.01%) | 2 (<0.01%) | 11 (0.01%) | 20 (0.01%) | 14 (0.01%) |
| **Total death** | 7579 (0.91%) | 361 (0.30%) | 806 (0.43%) | 3410 (0.89%) | 3002 (2.08%) |
| **Death plus post-WHI deaths[8]** | 9461 (1.03%) | 431 (0.33%) | 951 (0.46%) | 4159 (1.00%) | 3920 (2.44%) |

[1] "CHD" includes clinical MI and CHD death.
[2] "CHD death" includes definite and possible CHD death.
[3] "Total MI" includes clinical MI and evolving Q-wave MI.
[4] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.
[5] "Coronary disease" includes clinical MI, evolving Q-wave MI, possible evolving Q-wave MI, CHD death, angina, congestive heart failure, and CABG/PTCA; Q-wave MI, angina and CHF were not collected during the WHI Extension Study 2005-2010.
[6] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[7] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.
[8] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

**Table 3.3**
**Verified Outcomes (Annualized Percentages) by Race/Ethnicity for CT Participants**

Data as of: September 30, 2016; Events through September 30, 2010

| | Race/Ethnicity | | | | | |
|---|---|---|---|---|---|---|
| **Outcomes** | **American Indian/Alaskan Native** | **Asian/Pacific Islander** | **Black/African American** | **Hispanic/ Latina** | **White** | **Unknown** |
| **Number enrolled** | 292 | 1519 | 6983 | 2875 | 55525 | 938 |
| **Mean follow-up (months)** | 135.1 | 140.5 | 139.2 | 131.5 | 148.5 | 137.3 |
| **Cardiovascular** | | | | | | |
| CHD[1] | 8 (0.24%) | 46 (0.26%) | 348 (0.43%) | 72 (0.23%) | 3048 (0.44%) | 48 (0.45%) |
| CHD death[2] | 2 (0.06%) | 13 (0.07%) | 161 (0.20%) | 22 (0.07%) | 969 (0.14%) | 19 (0.18%) |
| Total MI[3] | 7 (0.21%) | 40 (0.22%) | 232 (0.29%) | 56 (0.18%) | 2361 (0.34%) | 37 (0.34%) |
| Clinical MI | 7 (0.21%) | 39 (0.22%) | 227 (0.28%) | 54 (0.17%) | 2295 (0.33%) | 35 (0.33%) |
| Angina[4] | 12 (0.51%) | 30 (0.25%) | 298 (0.53%) | 80 (0.36%) | 1964 (0.43%) | 30 (0.41%) |
| CABG/PTCA | 13 (0.40%) | 42 (0.24%) | 337 (0.42%) | 104 (0.33%) | 3412 (0.50%) | 43 (0.40%) |
| Carotid artery disease | 3 (0.09%) | 3 (0.02%) | 43 (0.05%) | 6 (0.02%) | 632 (0.09%) | 10 (0.09%) |
| Congestive heart failure, WHI[4] | 5 (0.21%) | 17 (0.14%) | 244 (0.43%) | 49 (0.22%) | 1409 (0.31%) | 24 (0.32%) |
| Stroke | 10 (0.30%) | 40 (0.22%) | 331 (0.41%) | 62 (0.20%) | 2204 (0.32%) | 40 (0.37%) |
| PVD | 5 (0.15%) | 7 (0.04%) | 99 (0.12%) | 8 (0.03%) | 520 (0.08%) | 8 (0.07%) |
| Coronary disease[5] | 26 (0.79%) | 98 (0.55%) | 852 (1.05%) | 210 (0.67%) | 6500 (0.95%) | 100 (0.93%) |
| **Total cardiovascular disease** | 40 (1.22%) | 141 (0.79%) | 1208 (1.49%) | 276 (0.88%) | 8991 (1.31%) | 138 (1.29%) |
| **Cancer** | | | | | | |
| Breast cancer | 10 (0.30%) | 95 (0.53%) | 365 (0.45%) | 104 (0.33%) | 3609 (0.53%) | 44 (0.41%) |
| Invasive breast cancer | 7 (0.21%) | 72 (0.40%) | 287 (0.35%) | 86 (0.27%) | 2932 (0.43%) | 35 (0.33%) |
| Non-invasive breast cancer | 3 (0.09%) | 25 (0.14%) | 82 (0.10%) | 20 (0.06%) | 723 (0.11%) | 10 (0.09%) |
| Ovarian cancer | 2 (0.06%) | 10 (0.06%) | 27 (0.03%) | 9 (0.03%) | 319 (0.05%) | 5 (0.05%) |
| Endometrial cancer[6] | 1 (0.03%) | 7 (0.04%) | 37 (0.05%) | 13 (0.04%) | 506 (0.07%) | 8 (0.07%) |
| Colorectal cancer | 6 (0.18%) | 24 (0.13%) | 116 (0.14%) | 31 (0.10%) | 922 (0.13%) | 17 (0.16%) |
| Other cancer[7] | 12 (0.37%) | 79 (0.44%) | 360 (0.44%) | 125 (0.40%) | 4332 (0.63%) | 58 (0.54%) |
| **Total cancer** | 29 (0.88%) | 203 (1.14%) | 854 (1.05%) | 264 (0.84%) | 9156 (1.33%) | 122 (1.14%) |
| **Fractures** | | | | | | |
| Hip fracture | 5 (0.15%) | 16 (0.09%) | 40 (0.05%) | 24 (0.08%) | 1542 (0.22%) | 12 (0.11%) |
| **Deaths** | | | | | | |
| Cardiovascular deaths | 9 (0.27%) | 30 (0.17%) | 319 (0.39%) | 45 (0.14%) | 1971 (0.29%) | 27 (0.25%) |
| Cancer deaths | 11 (0.33%) | 50 (0.28%) | 267 (0.33%) | 90 (0.29%) | 2664 (0.39%) | 41 (0.38%) |
| Other known cause | 13 (0.40%) | 22 (0.12%) | 180 (0.22%) | 44 (0.14%) | 1727 (0.25%) | 22 (0.21%) |
| Unknown cause | 0 (0.00%) | 3 (0.02%) | 7 (0.01%) | 3 (0.01%) | 33 (<0.01%) | 1 (0.01%) |
| **Total death** | 33 (1.00%) | 105 (0.59%) | 773 (0.95%) | 182 (0.58%) | 6395 (0.93%) | 91 (0.85%) |
| **Death plus post-WHI deaths[8]** | 48 (1.25%) | 148 (0.73%) | 1012 (1.09%) | 253 (0.65%) | 7869 (1.05%) | 131 (1.06%) |

[1] "CHD" includes clinical MI and CHD death.
[2] "CHD death" includes definite and possible CHD death.
[3] "Total MI" includes clinical MI and evolving Q-wave MI.
[4] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.
[5] "Coronary disease" includes clinical MI, CHD death, angina, congestive heart failure, and CABG/PTCA; Q-wave MI, angina and CHF were not collected during the WHI Extension Study 2005-2010.
[6] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[7] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin.
[8] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

**Table 3.4**
**Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for CT Participants Who Did Not Report a Prevalent Condition at Baseline**

Data as of: September 30, 2016; Events through September 30, 2016

| Outcome | Total | Age at Enrollment 50-54 | 55-59 | 60-69 | 70-79 |
|---|---|---|---|---|---|
| **Number randomized** | 68132 | 9188 | 14661 | 31389 | 12894 |
| **Mean follow-up (months)** | 183.2 | 199.0 | 195.9 | 183.5 | 156.8 |
| **Hospitalizations** | | | | | |
| Ever | 49576 (4.77%) | 5417 (3.55%) | 9638 (4.03%) | 23831 (4.96%) | 10690 (6.35%) |
| Two or more | 35765 (3.44%) | 3440 (2.26%) | 6480 (2.71%) | 17580 (3.66%) | 8265 (4.91%) |
| **Other** | | | | | |
| DVT[1] | 1819 (0.18%) | 134 (0.09%) | 293 (0.13%) | 888 (0.19%) | 504 (0.31%) |
| Pulmonary embolism | 1404 (0.14%) | 124 (0.08%) | 247 (0.10%) | 727 (0.15%) | 306 (0.18%) |
| Diabetes (treated) | 10641 (1.07%) | 1572 (1.06%) | 2409 (1.04%) | 5029 (1.09%) | 1631 (1.02%) |
| Gallbladder disease[2,3] | 5248 (1.15%) | 746 (1.07%) | 1195 (1.15%) | 2463 (1.21%) | 844 (1.05%) |
| Hysterectomy | 3444 (0.56%) | 511 (0.58%) | 876 (0.58%) | 1610 (0.58%) | 447 (0.47%) |
| Glaucoma[3] | 7565 (1.44%) | 744 (0.96%) | 1457 (1.23%) | 3662 (1.54%) | 1702 (1.86%) |
| Osteoporosis[3] | 14695 (2.85%) | 1450 (1.88%) | 2635 (2.24%) | 7142 (3.07%) | 3468 (3.92%) |
| Osteoarthritis[4] | 21696 (3.25%) | 3416 (2.86%) | 5166 (3.02%) | 9860 (3.40%) | 3254 (3.75%) |
| Rheumatoid arthritis[3] | 4009 (0.76%) | 538 (0.70%) | 866 (0.74%) | 1822 (0.77%) | 783 (0.84%) |
| Intestinal polyps | 17548 (1.81%) | 2594 (1.76%) | 4254 (1.87%) | 8291 (1.87%) | 2409 (1.62%) |
| Lupus | 1096 (0.11%) | 152 (0.10%) | 251 (0.11%) | 514 (0.11%) | 179 (0.11%) |
| Kidney stones[3,4] | 1877 (0.36%) | 241 (0.31%) | 379 (0.32%) | 898 (0.38%) | 359 (0.38%) |
| Cataracts[3,4] | 21570 (4.54%) | 1468 (1.90%) | 3731 (3.20%) | 11649 (5.43%) | 4722 (7.09%) |
| Hypertension treated w/pills | 26510 (3.56%) | 3627 (2.92%) | 5935 (3.22%) | 12392 (3.74%) | 4556 (4.34%) |
| COPD[5] | 3212 (0.97%) | 335 (0.70%) | 722 (0.96%) | 1721 (1.13%) | 434 (0.79%) |
| Macular degeneration[6] | 7684 (1.23%) | 502 (0.55%) | 1163 (0.81%) | 4016 (1.39%) | 2003 (2.01%) |
| Alzheimer's disease[6] | 5703 (0.91%) | 223 (0.25%) | 621 (0.43%) | 2962 (1.03%) | 1897 (1.91%) |
| Parkinson's disease[6] | 944 (0.15%) | 70 (0.08%) | 180 (0.13%) | 522 (0.18%) | 172 (0.17%) |

[1] Inpatient DVT only.
[2] "Gallbladder disease" includes self-reports of both hospitalized and non-hospitalized events.
[3] Data not collected for the WHI Extension Studies 2005-2020.
[4] These outcomes have not been self-reported on all versions of Form 33 during WHI follow-up. The annualized percentages are corrected for the different amounts of follow-up.
[5] Data only collected during the WHI Extension Study 2010-2020.
[6] Data only collected during the WHI Extension Studies 2005-2020.

**Table 3.4 (continued)**
**Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for CT Participants Who Did Not Report a Prevalent Condition at Baseline**

Data as of: September 30, 2016; Events through September 30, 2016

| | Race/Ethnicity | | | | | |
|---|---|---|---|---|---|---|
| **Outcomes** | **Am Indian/ Alaskan Native** | **Asian/Pacific Islander** | **Black/African American** | **Hispanic/ Latina** | **White** | **Unknown** |
| **Number randomized** | 292 | 1519 | 6983 | 2875 | 55525 | 938 |
| **Mean follow-up (months)** | 165.2 | 174.9 | 167.9 | 157.1 | 187.0 | 169.5 |
| **Hospitalizations** | | | | | | |
| Ever | 200 (4.98%) | 843 (3.81%) | 4735 (4.84%) | 1602 (4.26%) | 41567 (4.80%) | 629 (4.75%) |
| Two or more | 148 (3.68%) | 498 (2.25%) | 3314 (3.39%) | 989 (2.63%) | 30397 (3.51%) | 419 (3.16%) |
| **Other** | | | | | | |
| DVT[1] | 7 (0.18%) | 9 (0.04%) | 209 (0.22%) | 34 (0.09%) | 1542 (0.18%) | 18 (0.14%) |
| Pulmonary embolism | 7 (0.18%) | 6 (0.03%) | 142 (0.15%) | 23 (0.06%) | 1212 (0.14%) | 14 (0.11%) |
| Diabetes (treated) | 51 (1.39%) | 270 (1.29%) | 1510 (1.73%) | 564 (1.59%) | 8087 (0.96%) | 159 (1.27%) |
| Gallbladder disease[2,3] | 22 (1.31%) | 86 (0.81%) | 420 (0.85%) | 243 (1.45%) | 4403 (1.18%) | 74 (1.20%) |
| Hysterectomy | 8 (0.46%) | 51 (0.35%) | 229 (0.53%) | 124 (0.58%) | 3000 (0.57%) | 32 (0.41%) |
| Glaucoma[3] | 40 (1.85%) | 153 (1.35%) | 1005 (1.96%) | 338 (1.59%) | 5930 (1.37%) | 99 (1.47%) |
| Osteoporosis[3] | 66 (3.04%) | 389 (3.49%) | 909 (1.71%) | 639 (3.12%) | 12483 (2.96%) | 209 (3.11%) |
| Osteoarthritis[4] | 95 (3.76%) | 511 (3.13%) | 2022 (3.33%) | 968 (3.64%) | 17794 (3.22%) | 306 (3.55%) |
| Rheumatoid arthritis[3] | 32 (1.55%) | 74 (0.66%) | 682 (1.33%) | 357 (1.70%) | 2787 (0.65%) | 77 (1.13%) |
| Intestinal polyps | 80 (2.15%) | 352 (1.74%) | 1847 (2.03%) | 619 (1.72%) | 14420 (1.79%) | 230 (1.89%) |
| Lupus | 8 (0.20%) | 16 (0.07%) | 142 (0.15%) | 52 (0.14%) | 863 (0.10%) | 15 (0.11%) |
| Kidney stones[3,4] | 15 (0.71%) | 47 (0.42%) | 190 (0.35%) | 100 (0.48%) | 1501 (0.35%) | 24 (0.35%) |
| Cataracts[3,4] | 92 (4.68%) | 428 (4.21%) | 2002 (4.10%) | 828 (4.10%) | 17927 (4.62%) | 293 (4.72%) |
| Hypertension treated w/pills | 105 (3.91%) | 552 (3.61%) | 2238 (4.50%) | 1136 (4.01%) | 22156 (3.47%) | 323 (3.56%) |
| COPD[5] | 19 (1.41%) | 34 (0.44%) | 243 (0.73%) | 89 (0.63%) | 2791 (1.03%) | 36 (0.79%) |
| Macular degeneration[6] | 26 (0.98%) | 99 (0.71%) | 373 (0.62%) | 192 (0.79%) | 6924 (1.34%) | 70 (0.82%) |
| Alzheimer's disease[6] | 20 (0.75%) | 89 (0.64%) | 490 (0.81%) | 191 (0.79%) | 4851 (0.94%) | 62 (0.73%) |
| Parkinson's disease[6] | 3 (0.11%) | 17 (0.12%) | 62 (0.10%) | 27 (0.11%) | 823 (0.16%) | 12 (0.14%) |

[1] Inpatient DVT only.
[2] "Gallbladder disease" includes self-reports of both hospitalized and non-hospitalized events.
[3] Data not collected for the WHI Extension Studies 2005-2020.
[4] These outcomes have not been self-reported on all versions of Form 33 during WHI follow-up. The annualized percentages are corrected for the different amounts of follow-up.
[5] Data only collected during the WHI Extension Study 2010-2020.
[6] Data only collected during the WHI Extension Studies 2005-2020.

**Table 4.1**
**Verified Primary and Other Cancers (Annualized Percentages): CT and OS Participants**
Data as of: September 30, 2016; Events through September 30, 2016

| | CT | OS | Total |
|---|---|---|---|
| **Number of participants** | 68132 | 93676 | 161808 |
| **Mean follow-up time (months)** | 183.2 | 170.4 | 175.8 |
| **Overall cancer** | 13429 (1.29%) | 18001 (1.35%) | 31430 (1.33%) |
| Primary cancer | | | |
| Breast cancer | 5230 (0.50%) | 7324 (0.55%) | 12554 (0.53%) |
| Invasive breast cancer | 4287 (0.41%) | 6101 (0.46%) | 10388 (0.44%) |
| Non-invasive breast cancer | 1029 (0.10%) | 1316 (0.10%) | 2345 (0.10%) |
| Ovarian cancer | 466 (0.04%) | 702 (0.05%) | 1168 (0.05%) |
| Endometrial cancer[1] | 716 (0.07%) | 986 (0.07%) | 1702 (0.07%) |
| Colorectal cancer | 1401 (0.13%) | 1673 (0.13%) | 3074 (0.13%) |
| Other cancer | | | |
| Accessory sinus | 3 (<0.01%) | 7 (<0.01%) | 10 (<0.01%) |
| Adrenal gland | 6 (<0.01%) | 9 (<0.01%) | 15 (<0.01%) |
| Anus | 44 (<0.01%) | 65 (<0.01%) | 109 (<0.01%) |
| Appendix | 18 (<0.01%) | 21 (<0.01%) | 39 (<0.01%) |
| Biliary tract, parts of (other/unspecified) | 86 (0.01%) | 88 (0.01%) | 174 (0.01%) |
| Bladder | 409 (0.04%) | 500 (0.04%) | 909 (0.04%) |
| Bones/joints/articular cartilage (limbs) | 5 (<0.01%) | 7 (<0.01%) | 12 (<0.01%) |
| Bones/joints/articular cartilage (other) | 10 (<0.01%) | 10 (<0.01%) | 20 (<0.01%) |
| Brain | 146 (0.01%) | 180 (0.01%) | 326 (0.01%) |
| Cervix | 61 (0.01%) | 59 (<0.01%) | 120 (0.01%) |
| Central Nervous System (excludes brain) | 1 (<0.01%) | 3 (<0.01%) | 4 (<0.01%) |
| Connective/subcutaneous/soft tissues | 72 (0.01%) | 87 (0.01%) | 159 (0.01%) |
| Endocrine glands, related structures | 1 (<0.01%) | 2 (<0.01%) | 3 (<0.01%) |
| Esophagus | 74 (0.01%) | 81 (0.01%) | 155 (0.01%) |
| Eye and adnexa | 46 (<0.01%) | 31 (<0.01%) | 77 (<0.01%) |
| Genital organs | 42 (<0.01%) | 75 (0.01%) | 117 (<0.01%) |
| Kidney | 308 (0.03%) | 354 (0.03%) | 662 (0.03%) |
| Larynx | 27 (<0.01%) | 23 (<0.01%) | 50 (<0.01%) |
| Leukemia | 429 (0.04%) | 546 (0.04%) | 975 (0.04%) |
| Liver | 107 (0.01%) | 148 (0.01%) | 255 (0.01%) |
| Lung | 1560 (0.15%) | 2054 (0.15%) | 3614 (0.15%) |
| Lymph nodes | 2 (<0.01%) | 1 (<0.01%) | 3 (<0.01%) |
| Lymphoma, Hodgkins | 24 (<0.01%) | 45 (<0.01%) | 69 (<0.01%) |
| Lymphoma, Non-Hodgkins | 668 (0.06%) | 962 (0.07%) | 1630 (0.07%) |
| Melanoma of the skin | 967 (0.09%) | 1263 (0.09%) | 2230 (0.09%) |
| Multiple myeloma | 255 (0.02%) | 308 (0.02%) | 563 (0.02%) |
| Oral (mouth) | 17 (<0.01%) | 15 (<0.01%) | 32 (<0.01%) |
| Palate | 13 (<0.01%) | 18 (<0.01%) | 31 (<0.01%) |
| Pancreas | 476 (0.05%) | 602 (0.05%) | 1078 (0.05%) |
| Parotid gland (Stensen's duct) | 22 (<0.01%) | 35 (<0.01%) | 57 (<0.01%) |
| Peripheral nerves and autonomic nervous system | 1 (<0.01%) | 1 (<0.01%) | 2 (<0.01%) |
| Pyriform sinus | 0 (0.00%) | 2 (<0.01%) | 2 (<0.01%) |
| Respiratory system, intrathoracic, other | 1 (<0.01%) | 2 (<0.01%) | 3 (<0.01%) |
| Salivary glands, major (other/unspecified) | 5 (<0.01%) | 12 (<0.01%) | 17 (<0.01%) |
| Stomach | 117 (0.01%) | 153 (0.01%) | 270 (0.01%) |
| Thyroid | 203 (0.02%) | 271 (0.02%) | 474 (0.02%) |
| Tongue, part of (other/unspecified) | 35 (<0.01%) | 41 (<0.01%) | 76 (<0.01%) |
| Urinary organs (other/unspecified) | 14 (<0.01%) | 19 (<0.01%) | 33 (<0.01%) |
| Uterus, not otherwise specified[1] | 43 (<0.01%) | 56 (<0.01%) | 99 (<0.01%) |
| Other/unknown site of cancer | 660 (0.06%) | 849 (0.06%) | 1509 (0.06%) |
| Other/unknown cancers reported on death form | 158 (0.02%) | 315 (0.02%) | 473 (0.02%) |

[1] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.

**Table 4.2**
**Verified Primary and Other Cancers (Annualized Percentages) by Race/Ethnicity: CT and OS Participants**
Data as of: September 30, 2016; Events through September 30, 2016

| | Race/Ethnicity | | | | | |
|---|---|---|---|---|---|---|
| | American Indian/Alaskan Native | Asian/Pacific Islander | Black/African American | Hispanic/ Latina | White | Unknown |
| **Number of participants** | 713 | 4190 | 14618 | 6484 | 133541 | 2262 |
| **Mean follow-up time (months)** | 152.9 | 156.2 | 153.0 | 144.5 | 180.8 | 161.0 |
| **Overall cancer** | 99 (1.09%) | 567 (1.04%) | 2076 (1.11%) | 703 (0.90%) | 27611 (1.37%) | 374 (1.23%) |
| Primary cancer | | | | | | |
| Breast cancer | 38 (0.42%) | 265 (0.49%) | 883 (0.47%) | 297 (0.38%) | 10936 (0.54%) | 135 (0.44%) |
| Invasive breast cancer | 32 (0.35%) | 218 (0.40%) | 706 (0.38%) | 242 (0.31%) | 9081 (0.45%) | 109 (0.36%) |
| Non-invasive breast cancer | 7 (0.08%) | 51 (0.09%) | 195 (0.10%) | 61 (0.08%) | 2003 (0.10%) | 28 (0.09%) |
| Ovarian cancer | 3 (0.03%) | 17 (0.03%) | 69 (0.04%) | 36 (0.05%) | 1031 (0.05%) | 12 (0.04%) |
| Endometrial cancer[1] | 2 (0.02%) | 21 (0.04%) | 85 (0.05%) | 29 (0.04%) | 1540 (0.08%) | 25 (0.08%) |
| Colorectal cancer | 11 (0.12%) | 57 (0.10%) | 275 (0.15%) | 75 (0.10%) | 2615 (0.13%) | 41 (0.14%) |
| Other cancer | | | | | | |
| Accessory sinus | 0 (0.00%) | 0 (0.00%) | 1 (<0.01%) | 0 (0.00%) | 9 (<0.01%) | 0 (0.00%) |
| Adrenal gland | 0 (0.00%) | 0 (0.00%) | 2 (<0.01%) | 1 (<0.01%) | 12 (<0.01%) | 0 (0.00%) |
| Anus | 1 (0.01%) | 2 (<0.01%) | 8 (<0.01%) | 5 (0.01%) | 92 (<0.01%) | 1 (<0.01%) |
| Appendix | 0 (0.00%) | 0 (0.00%) | 4 (<0.01%) | 3 (<0.01%) | 31 (<0.01%) | 1 (<0.01%) |
| Biliary tract, parts of (other/unspecified) | 2 (0.02%) | 2 (<0.01%) | 11 (0.01%) | 11 (0.01%) | 146 (0.01%) | 2 (0.01%) |
| Bladder | 2 (0.02%) | 10 (0.02%) | 48 (0.03%) | 12 (0.02%) | 829 (0.04%) | 8 (0.03%) |
| Bones/joints/articular cartilage (limbs) | 0 (0.00%) | 1 (<0.01%) | 0 (0.00%) | 0 (0.00%) | 10 (<0.01%) | 1 (<0.01%) |
| Bones/joints/articular cartilage (other) | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 19 (<0.01%) | 1 (<0.01%) |
| Brain | 1 (0.01%) | 3 (0.01%) | 10 (0.01%) | 5 (0.01%) | 305 (0.02%) | 2 (0.01%) |
| Cervix | 0 (0.00%) | 1 (<0.01%) | 16 (0.01%) | 5 (0.01%) | 95 (<0.01%) | 3 (0.01%) |
| Central Nervous System (excludes brain) | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 4 (<0.01%) | 0 (0.00%) |
| Connective/subcutaneous/soft tissues | 0 (0.00%) | 4 (0.01%) | 6 (<0.01%) | 4 (0.01%) | 144 (0.01%) | 1 (<0.01%) |
| Endocrine glands, related structures | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 3 (<0.01%) | 0 (0.00%) |
| Esophagus | 1 (0.01%) | 0 (0.00%) | 9 (<0.01%) | 2 (<0.01%) | 140 (0.01%) | 3 (0.01%) |
| Eye and adnexa | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 3 (<0.01%) | 73 (<0.01%) | 1 (<0.01%) |
| Genital organs | 0 (0.00%) | 1 (<0.01%) | 3 (<0.01%) | 3 (<0.01%) | 109 (0.01%) | 1 (<0.01%) |
| Kidney | 7 (0.08%) | 12 (0.02%) | 53 (0.03%) | 20 (0.03%) | 561 (0.03%) | 9 (0.03%) |
| Larynx | 0 (0.00%) | 0 (0.00%) | 6 (<0.01%) | 0 (0.00%) | 44 (<0.01%) | 0 (0.00%) |
| Leukemia | 0 (0.00%) | 16 (0.03%) | 57 (0.03%) | 14 (0.02%) | 879 (0.04%) | 9 (0.03%) |
| Liver | 2 (0.02%) | 15 (0.03%) | 21 (0.01%) | 17 (0.02%) | 195 (0.01%) | 5 (0.02%) |
| Lung | 15 (0.17%) | 53 (0.10%) | 239 (0.13%) | 51 (0.07%) | 3205 (0.16%) | 51 (0.17%) |
| Lymph nodes | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 0 (0.00%) | 3 (<0.01%) | 0 (0.00%) |

[1] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.

**Table 4.2 (continued)**
**Verified Primary and Other Cancers (Annualized Percentages) by Race/Ethnicity: CT and OS Participants**
Data as of: September 30, 2016; Events through September 30, 2016

| | Race/Ethnicity | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | American Indian/Alaskan Native | | Asian/Pacific Islander | | Black/African American | | Hispanic/ Latina | | White | | Unknown | |
| Lymphoma, Hodgkins | 0 | (0.00%) | 1 | (<0.01%) | 4 | (<0.01%) | 5 | (0.01%) | 58 | (<0.01%) | 1 | (<0.01%) |
| Lymphoma, Non-Hodgkins | 4 | (0.04%) | 27 | (0.05%) | 59 | (0.03%) | 44 | (0.06%) | 1477 | (0.07%) | 19 | (0.06%) |
| Melanoma of the skin | 3 | (0.03%) | 7 | (0.01%) | 8 | (<0.01%) | 13 | (0.02%) | 2180 | (0.11%) | 19 | (0.06%) |
| Multiple myeloma | 3 | (0.03%) | 1 | (<0.01%) | 71 | (0.04%) | 18 | (0.02%) | 464 | (0.02%) | 6 | (0.02%) |
| Oral (mouth) | 0 | (0.00%) | 0 | (0.00%) | 2 | (<0.01%) | 0 | (0.00%) | 30 | (<0.01%) | 0 | (0.00%) |
| Palate | 0 | (0.00%) | 1 | (<0.01%) | 1 | (<0.01%) | 0 | (0.00%) | 29 | (<0.01%) | 0 | (0.00%) |
| Pancreas | 4 | (0.04%) | 30 | (0.06%) | 89 | (0.05%) | 25 | (0.03%) | 916 | (0.05%) | 14 | (0.05%) |
| Parotid gland (Stensen's duct) | 0 | (0.00%) | 2 | (<0.01%) | 7 | (<0.01%) | 1 | (<0.01%) | 47 | (<0.01%) | 0 | (0.00%) |
| Peripheral nerves and autonomic nervous system | 0 | (0.00%) | 0 | (0.00%) | 0 | (0.00%) | 0 | (0.00%) | 2 | (<0.01%) | 0 | (0.00%) |
| Pyriform sinus | 0 | (0.00%) | 0 | (0.00%) | 0 | (0.00%) | 0 | (0.00%) | 2 | (<0.01%) | 0 | (0.00%) |
| Respiratory system, intrathoracic, other | 0 | (0.00%) | 0 | (0.00%) | 0 | (0.00%) | 0 | (0.00%) | 3 | (<0.01%) | 0 | (0.00%) |
| Salivary glands, major (other/ unspecified) | 0 | (0.00%) | 0 | (0.00%) | 0 | (0.00%) | 0 | (0.00%) | 17 | (<0.01%) | 0 | (0.00%) |
| Stomach | 1 | (0.01%) | 15 | (0.03%) | 35 | (0.02%) | 8 | (0.01%) | 207 | (0.01%) | 4 | (0.01%) |
| Thyroid | 1 | (0.01%) | 10 | (0.02%) | 34 | (0.02%) | 9 | (0.01%) | 413 | (0.02%) | 7 | (0.02%) |
| Tongue, part of (other/unspecified) | 0 | (0.00%) | 2 | (<0.01%) | 2 | (<0.01%) | 0 | (0.00%) | 70 | (<0.01%) | 2 | (0.01%) |
| Urinary organs (other/unspecified) | 1 | (0.01%) | 1 | (<0.01%) | 4 | (<0.01%) | 1 | (<0.01%) | 26 | (<0.01%) | 0 | (0.00%) |
| Uterus, not otherwise specified[1] | 0 | (0.00%) | 2 | (<0.01%) | 12 | (0.01%) | 4 | (0.01%) | 77 | (<0.01%) | 4 | (0.01%) |
| Other/unknown site of cancer | 5 | (0.06%) | 25 | (0.05%) | 84 | (0.05%) | 40 | (0.05%) | 1339 | (0.07%) | 16 | (0.05%) |
| Other/unknown cancers reported on death form | 1 | (0.01%) | 9 | (0.02%) | 42 | (0.02%) | 13 | (0.02%) | 401 | (0.02%) | 7 | (0.02%) |

[1] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.

**Table 4.3**
**Self Reported Fractures (Annualized Percentages): CT and OS Participants**

Data as of: September 30, 2016; Events through September 30, 2016

| | CT | | OS | | Total | |
|---|---|---|---|---|---|---|
| **Number of participants** | 68132 | | 93676 | | 161808 | |
| **Mean follow-up time (months)** | 183.2 | | 170.4 | | 175.8 | |
| Elbow | 1134 | (0.11%) | 1542 | (0.12%) | 2676 | (0.11%) |
| Foot | 3739 | (0.36%) | 4764 | (0.36%) | 8503 | (0.36%) |
| Hand | 1071 | (0.10%) | 1252 | (0.09%) | 2323 | (0.10%) |
| Hip | 2721 | (0.26%) | 3766 | (0.28%) | 6487 | (0.27%) |
| Knee | 1632 | (0.16%) | 2154 | (0.16%) | 3786 | (0.16%) |
| Lower arm | 5428 | (0.52%) | 6904 | (0.52%) | 12332 | (0.52%) |
| Lower leg | 4114 | (0.40%) | 5077 | (0.38%) | 9191 | (0.39%) |
| Pelvis | 1409 | (0.14%) | 2230 | (0.17%) | 3639 | (0.15%) |
| Tailbone | 488 | (0.05%) | 726 | (0.05%) | 1214 | (0.05%) |
| Upper arm | 3187 | (0.31%) | 3901 | (0.29%) | 7088 | (0.30%) |
| Upper leg | 1151 | (0.11%) | 1597 | (0.12%) | 2748 | (0.12%) |
| Spine | 3687 | (0.35%) | 5278 | (0.40%) | 8965 | (0.38%) |
| Other | 8068 | (0.78%) | 10513 | (0.79%) | 18581 | (0.78%) |
| Any fracture | 24339 | (2.34%) | 31878 | (2.40%) | 56217 | (2.37%) |

**Table 4.4**
**Cause of Death[1] (Annualized Percentages): CT and OS Participants**
Data as of: September 30, 2016; Events through September 30, 2016

| | CT | | OS | | Total | |
|---|---|---|---|---|---|---|
| **Number of participants** | 68132 | | 93676 | | 161808 | |
| **Mean Follow-up Time (months)** | 210.0 | | 203.0 | | 206.0 | |
| **Death plus post-WHI deaths** | 18124 | (1.52%) | 27533 | (1.74%) | 45657 | (1.64%) |
| Adjudicated death | 16828 | (1.41%) | 25201 | (1.59%) | 42029 | (1.51%) |
| Centrally adjudicated death | 9104 | (0.76%) | 4870 | (0.31%) | 13974 | (0.50%) |
| Locally adjudicated death (final) | 1 | (<0.01%) | 5556 | (0.35%) | 5557 | (0.20%) |
| Identified by NDI search | 7723 | (0.65%) | 14775 | (0.93%) | 22498 | (0.81%) |
| Not yet adjudicated | 286 | (0.02%) | 58 | (<0.01%) | 344 | (0.01%) |
| Form 120 death[2] | 1010 | (0.08%) | 2274 | (0.14%) | 3284 | (0.12%) |
| **Cardiovascular** | | | | | | |
| Atherosclerotic cardiac | 2452 | (0.21%) | 3465 | (0.22%) | 5917 | (0.21%) |
| Definite CHD deaths after 10/99 | 876 | (0.07%) | 986 | (0.06%) | 1862 | (0.07%) |
| Possible CHD deaths after 10/99 | 1564 | (0.13%) | 2448 | (0.15%) | 4012 | (0.14%) |
| Cerebrovascular | 1302 | (0.11%) | 1991 | (0.13%) | 3293 | (0.12%) |
| Pulmonary embolism | 115 | (0.01%) | 120 | (0.01%) | 235 | (0.01%) |
| Other cardiovascular | 1585 | (0.13%) | 2566 | (0.16%) | 4151 | (0.15%) |
| Unknown cardiovascular | 32 | (<0.01%) | 110 | (0.01%) | 142 | (0.01%) |
| **Total cardiovascular deaths** | 5486 | (0.46%) | 8252 | (0.52%) | 13738 | (0.49%) |
| **Cancer** | | | | | | |
| Breast cancer | 454 | (0.04%) | 1026 | (0.06%) | 1480 | (0.05%) |
| Ovarian cancer | 324 | (0.03%) | 518 | (0.03%) | 842 | (0.03%) |
| Endometrial cancer | 92 | (0.01%) | 115 | (0.01%) | 207 | (0.01%) |
| Colorectal cancer | 433 | (0.04%) | 606 | (0.04%) | 1039 | (0.04%) |
| Uterus cancer | 55 | (<0.01%) | 76 | (<0.01%) | 131 | (<0.01%) |
| Lung cancer | 1294 | (0.11%) | 1629 | (0.10%) | 2923 | (0.11%) |
| Pancreas cancer | 473 | (0.04%) | 649 | (0.04%) | 1122 | (0.04%) |
| Lymphoma (NHL only) | 246 | (0.02%) | 373 | (0.02%) | 619 | (0.02%) |
| Leukemia | 243 | (0.02%) | 318 | (0.02%) | 561 | (0.02%) |
| Brain cancer | 151 | (0.01%) | 181 | (0.01%) | 332 | (0.01%) |
| Multiple myeloma | 176 | (0.01%) | 224 | (0.01%) | 400 | (0.01%) |
| Other cancer | 1062 | (0.09%) | 1457 | (0.09%) | 2519 | (0.09%) |
| Unknown cancer site | 258 | (0.02%) | 448 | (0.03%) | 706 | (0.03%) |
| **Total cancer deaths** | 5261 | (0.44%) | 7620 | (0.48%) | 12881 | (0.46%) |
| **Accident/injury** | | | | | | |
| Homicide | 14 | (<0.01%) | 21 | (<0.01%) | 35 | (<0.01%) |
| Accident | 428 | (0.04%) | 624 | (0.04%) | 1052 | (0.04%) |
| Suicide | 27 | (<0.01%) | 53 | (<0.01%) | 80 | (<0.01%) |
| Other injury | 25 | (<0.01%) | 33 | (<0.01%) | 58 | (<0.01%) |
| **Total accident/injury deaths** | 494 | (0.04%) | 731 | (0.05%) | 1225 | (0.04%) |
| **Other** | | | | | | |
| Alzheimer's disease | 786 | (0.07%) | 1353 | (0.09%) | 2139 | (0.08%) |
| COPD | 741 | (0.06%) | 1000 | (0.06%) | 1741 | (0.06%) |
| Pneumonia | 467 | (0.04%) | 722 | (0.05%) | 1189 | (0.04%) |
| Pulmonary fibrosis | 204 | (0.02%) | 241 | (0.02%) | 445 | (0.02%) |
| Renal failure | 268 | (0.02%) | 410 | (0.03%) | 678 | (0.02%) |
| Sepsis | 431 | (0.04%) | 594 | (0.04%) | 1025 | (0.04%) |
| Dementia, NOS | 866 | (0.07%) | 1429 | (0.09%) | 2295 | (0.08%) |
| Amyotrophic Lateral Sclerosis | 95 | (0.01%) | 136 | (0.01%) | 231 | (0.01%) |
| Parkinson's | 190 | (0.02%) | 306 | (0.02%) | 496 | (0.02%) |
| Hepatic cirrhosis | 106 | (0.01%) | 130 | (0.01%) | 236 | (0.01%) |
| Other known cause | 1558 | (0.13%) | 2712 | (0.17%) | 4270 | (0.15%) |
| Unknown cause | 885 | (0.07%) | 1839 | (0.12%) | 2724 | (0.10%) |
| **Total other cause deaths** | 6597 | (0.55%) | 10872 | (0.69%) | 17469 | (0.63%) |

[1] Includes deaths for non-Extension Study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.
[2] Includes SRC participants and discovered deaths among non-Extension Study 2010-2020 participants that occurred during Extension Study 2010-2020.

**Table 5.1**
**Participation and Vital Status: WHI Participants by Extension Study Participation and Cohort**

Data as of: September 30, 2016
**WHI Extension Study 2010-2020 Participants**

| | MRC Super Cohort (N = 22,316) | | SRC Super Cohort (N = 71,251) | | Total Participants (N = 93,567) | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **Vital Status/Participation** | | | | | | |
| Deceased | 3022 | 13.5 | 9531 | 13.4 | 12553 | 13.4 |
| Alive: Current Participation[1] | 16769 | 75.1 | 56376 | 79.1 | 73145 | 78.2 |
| Alive: Recent Participation[2] | 1211 | 5.4 | 2847 | 4.0 | 4058 | 4.3 |
| Alive: Past/Unknown Participation[3] | 30 | 0.1 | 54 | 0.1 | 84 | 0.1 |
| Stopped Follow-Up[4] | 525 | 2.4 | 1257 | 1.8 | 1782 | 1.9 |
| Lost to Follow-Up[5] | 759 | 3.4 | 1186 | 1.7 | 1945 | 2.1 |

Data as of: September 30, 2016; Status as of September 30, 2010
**WHI Extension Study 2005-2010 Participants**

| | MRC Super Cohort (N = 29,368) | | SRC Super Cohort (N = 86,039) | | Total Participants (N = 115,407) | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **Vital Status/Participation** | | | | | | |
| Deceased | 2352 | 8.0 | 6196 | 7.2 | 8548 | 7.4 |
| Alive: Current Participation[1] | 25887 | 88.1 | 78203 | 90.9 | 104090 | 90.2 |
| Alive: Recent Participation[2] | 321 | 1.1 | 491 | 0.6 | 812 | 0.7 |
| Alive: Past/Unknown Participation[3] | 32 | 0.1 | 40 | <0.1 | 72 | 0.1 |
| Stopped Follow-Up[4] | 462 | 1.6 | 796 | 0.9 | 1258 | 1.1 |
| Lost to Follow-Up[5] | 314 | 1.1 | 313 | 0.4 | 627 | 0.5 |

Data as of: September 30, 2016; Status as of April 8, 2005
**WHI Participants**

| | MRC Super Cohort (N = 44,174) | | SRC Super Cohort (N = 117,634) | | Total Participants (N = 161,808) | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| **Vital Status/Participation** | | | | | | |
| Deceased | 2816 | 6.5 | 7229 | 6.3 | 10045 | 6.4 |
| Alive: Current Participation[6] | 37147 | 86.1 | 102266 | 89.5 | 139413 | 88.5 |
| Alive: Recent Participation[7] | 343 | 0.8 | 420 | 0.4 | 763 | 0.5 |
| Alive: Past/Unknown Participation[8] | 20 | <0.1 | 37 | <0.1 | 57 | <0.1 |
| Stopped Follow-Up[4] | 1701 | 3.9 | 2757 | 2.4 | 4458 | 2.8 |
| Lost to Follow-Up[5] | 1127 | 2.6 | 1602 | 1.4 | 2729 | 1.7 |

[1] Participants who have filled in a Form 33 within the last 15 months.
[2] Participants who last filled in a Form 33 between 15 and 24 months ago.
[3] Participants without a Form 33 within the last 24 months, who have been located (as indicated on Form 23) within the last 6 months.
[4] Participants with codes 5 (no follow-up) or 8 (absolutely no follow-up) on Form 7 or 9.
[5] Participants not in any of the above categories.
[6] CT participants who have filled in a Form 33 within the last 9 months; and OS participants who have filled in a Form 33 within the last 15 months.
[7] CT participants who last filled in a Form 33 between 9 and 18 months ago; and OS participants who last filled in a Form 33 between 15 and 24 months ago.
[8] CT participants without a Form 33 within the last 18 months, who have been located (as indicated on Form 23) within the last 6 months; and OS participants without a Form 33 within the last 24 months, who have been located (as indicated on Form 23) within the last 6 months.

**Table 5.2**
**Verified Outcomes (Annualized Percentages) by Age at Enrollment for MRC Super Cohort Participants**
Data as of: September 30, 2016; Events through September 30, 2016

| Outcomes | Total | Age at Enrollment 50-54 | 55-59 | 60-69 | 70-79 |
|---|---|---|---|---|---|
| **Number randomized** | 44174 | 6788 | 9352 | 19418 | 8616 |
| **Mean follow-up (months)** | 165.8 | 174.8 | 175.7 | 166.9 | 145.6 |
| **Cardiovascular** | | | | | |
| CHD[1] | 3108 (0.51%) | 204 (0.21%) | 379 (0.28%) | 1454 (0.54%) | 1071 (1.02%) |
| CHD death[2] | 1252 (0.21%) | 48 (0.05%) | 114 (0.08%) | 530 (0.20%) | 560 (0.54%) |
| Clinical MI | 2208 (0.36%) | 163 (0.16%) | 298 (0.22%) | 1070 (0.40%) | 677 (0.65%) |
| Angina[3] | 1625 (0.47%) | 114 (0.20%) | 226 (0.30%) | 785 (0.52%) | 500 (0.76%) |
| CABG/PTCA | 2869 (0.47%) | 229 (0.23%) | 464 (0.34%) | 1462 (0.54%) | 714 (0.68%) |
| Carotid artery disease | 493 (0.08%) | 20 (0.02%) | 71 (0.05%) | 274 (0.10%) | 128 (0.12%) |
| Congestive heart failure, WHI[3] | 1246 (0.36%) | 84 (0.15%) | 145 (0.19%) | 531 (0.35%) | 486 (0.74%) |
| Heart failure, UNC[4] | 2436 (0.40%) | 140 (0.14%) | 250 (0.18%) | 1125 (0.42%) | 921 (0.88%) |
| Stroke | 2445 (0.40%) | 150 (0.15%) | 292 (0.21%) | 1157 (0.43%) | 846 (0.81%) |
| PVD | 629 (0.10%) | 39 (0.04%) | 91 (0.07%) | 327 (0.12%) | 172 (0.16%) |
| DVT | 996 (0.16%) | 87 (0.09%) | 168 (0.12%) | 474 (0.18%) | 267 (0.26%) |
| Pulmonary embolism | 790 (0.13%) | 74 (0.07%) | 134 (0.10%) | 383 (0.14%) | 199 (0.19%) |
| DVT/PE | 1429 (0.23%) | 120 (0.12%) | 236 (0.17%) | 699 (0.26%) | 374 (0.36%) |
| Coronary disease[5] | 6773 (1.11%) | 500 (0.51%) | 935 (0.68%) | 3185 (1.18%) | 2153 (2.06%) |
| Aortic aneurysm[6] | 48 (0.02%) | 3 (0.01%) | 6 (0.01%) | 30 (0.03%) | 9 (0.02%) |
| Atrial fibrillation[6] | 1129 (0.52%) | 84 (0.24%) | 171 (0.35%) | 598 (0.63%) | 276 (0.74%) |
| Valvular heart disease[6] | 304 (0.14%) | 21 (0.06%) | 39 (0.08%) | 164 (0.17%) | 80 (0.21%) |
| **Total cardiovascular disease[7]** | 9321 (1.53%) | 664 (0.67%) | 1280 (0.93%) | 4390 (1.63%) | 2987 (2.86%) |
| **Cancer** | | | | | |
| Breast cancer | 2755 (0.45%) | 400 (0.40%) | 617 (0.45%) | 1263 (0.47%) | 475 (0.45%) |
| Invasive breast cancer | 2245 (0.37%) | 307 (0.31%) | 503 (0.37%) | 1019 (0.38%) | 416 (0.40%) |
| Non-invasive breast cancer | 559 (0.09%) | 98 (0.10%) | 122 (0.09%) | 272 (0.10%) | 67 (0.06%) |
| Ovarian cancer | 252 (0.04%) | 23 (0.02%) | 50 (0.04%) | 132 (0.05%) | 47 (0.04%) |
| Endometrial cancer[8] | 315 (0.05%) | 48 (0.05%) | 83 (0.06%) | 135 (0.05%) | 49 (0.05%) |
| Colorectal cancer | 876 (0.14%) | 79 (0.08%) | 138 (0.10%) | 424 (0.16%) | 235 (0.22%) |
| Other cancer[9] | 3707 (0.61%) | 328 (0.33%) | 633 (0.46%) | 1831 (0.68%) | 915 (0.88%) |
| **Total cancer** | 7388 (1.21%) | 828 (0.84%) | 1438 (1.05%) | 3513 (1.30%) | 1609 (1.54%) |
| **Fractures** | | | | | |
| Hip fracture | 1301 (0.21%) | 38 (0.04%) | 101 (0.07%) | 551 (0.20%) | 611 (0.58%) |
| **Deaths** | | | | | |
| Cardiovascular deaths | 2705 (0.44%) | 111 (0.11%) | 246 (0.18%) | 1118 (0.41%) | 1230 (1.18%) |
| Cancer deaths | 2681 (0.44%) | 196 (0.20%) | 404 (0.30%) | 1313 (0.49%) | 768 (0.73%) |
| Other known cause | 2380 (0.39%) | 124 (0.13%) | 238 (0.17%) | 1070 (0.40%) | 948 (0.91%) |
| Unknown cause | 80 (0.01%) | 4 (<0.01%) | 14 (0.01%) | 33 (0.01%) | 29 (0.03%) |
| Not yet adjudicated | 344 (0.06%) | 20 (0.02%) | 43 (0.03%) | 177 (0.07%) | 104 (0.10%) |
| **Total death** | 8190 (1.34%) | 455 (0.46%) | 945 (0.69%) | 3711 (1.37%) | 3079 (2.94%) |
| **Death plus post-WHI deaths** | 12448 (1.66%) | 672 (0.54%) | 1349 (0.80%) | 5511 (1.68%) | 4916 (3.83%) |

[1] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Studies 2005-2020.
[2] "CHD death" includes definite and possible CHD death.
[3] Angina and CHF are not verified outcomes in the WHI Extension Studies 2005-2020. Reported statistics represent experience during the original program.
[4] Definite or possible decompensated heart failure adjudicated by UNC.
[5] "Coronary disease" includes clinical MI, evolving Q-wave MI, possible evolving Q-wave MI, CHD death, angina, congestive heart failure, UNC heart failure, and CABG/PTCA; Q-wave MI, angina, and congestive heart failure are not collected in the WHI Extension Studies 2005-2020.
[6] Aortic aneurysm, atrial fibrillation and valvular heart disease are new adjudicated outcomes during the WHI Extension Study 2010-2020.
[7] Total CVD does not include aortic aneurysm, atrial fibrillation or valvular heart disease.
[8] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[9] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.

**Table 5.3**
**Verified Outcomes (Annualized Percentages) by Race/Ethnicity for MRC Super Cohort Participants**
Data as of: September 30, 2016; Events through September 30, 2016

| | Race/Ethnicity | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Outcomes** | **American Indian/ Alaskan Native** | | **Asian/Pacific Islander** | | **Black/African American** | | **Hispanic/ Latina** | | **White** | | **Unknown** | |
| **Number randomized** | 130 | | 527 | | 14618 | | 6484 | | 22030 | | 385 | |
| **Mean follow-up (months)** | 159.7 | | 161.0 | | 153.0 | | 144.5 | | 180.7 | | 166.6 | |
| **Cardiovascular** | | | | | | | | | | | | |
| CHD[1] | 10 | (0.58%) | 26 | (0.37%) | 904 | (0.48%) | 196 | (0.25%) | 1943 | (0.59%) | 29 | (0.54%) |
| CHD death[2] | 6 | (0.35%) | 10 | (0.14%) | 452 | (0.24%) | 61 | (0.08%) | 716 | (0.22%) | 7 | (0.13%) |
| Clinical MI | 6 | (0.35%) | 20 | (0.28%) | 573 | (0.31%) | 154 | (0.20%) | 1431 | (0.43%) | 24 | (0.45%) |
| Angina[3] | 7 | (0.69%) | 14 | (0.34%) | 548 | (0.48%) | 160 | (0.33%) | 884 | (0.49%) | 12 | (0.40%) |
| CABG/PTCA | 10 | (0.58%) | 22 | (0.31%) | 717 | (0.38%) | 256 | (0.33%) | 1835 | (0.55%) | 29 | (0.54%) |
| Carotid artery disease | 1 | (0.06%) | 3 | (0.04%) | 93 | (0.05%) | 22 | (0.03%) | 371 | (0.11%) | 3 | (0.06%) |
| Congestive heart failure, WHI[3] | 3 | (0.30%) | 9 | (0.22%) | 477 | (0.42%) | 91 | (0.19%) | 655 | (0.36%) | 11 | (0.37%) |
| Heart failure, UNC[4] | 8 | (0.46%) | 19 | (0.27%) | 694 | (0.37%) | 128 | (0.16%) | 1568 | (0.47%) | 19 | (0.36%) |
| Stroke | 12 | (0.69%) | 20 | (0.28%) | 770 | (0.41%) | 173 | (0.22%) | 1447 | (0.44%) | 23 | (0.43%) |
| PVD | 3 | (0.17%) | 7 | (0.10%) | 226 | (0.12%) | 24 | (0.03%) | 365 | (0.11%) | 4 | (0.07%) |
| DVT | 5 | (0.29%) | 4 | (0.06%) | 179 | (0.10%) | 35 | (0.04%) | 768 | (0.23%) | 5 | (0.09%) |
| Pulmonary embolism | 4 | (0.23%) | 2 | (0.03%) | 166 | (0.09%) | 17 | (0.02%) | 591 | (0.18%) | 10 | (0.19%) |
| DVT/PE | 8 | (0.46%) | 4 | (0.06%) | 279 | (0.15%) | 45 | (0.06%) | 1081 | (0.33%) | 12 | (0.22%) |
| Coronary disease[5] | 21 | (1.21%) | 55 | (0.78%) | 2053 | (1.10%) | 514 | (0.66%) | 4072 | (1.23%) | 58 | (1.09%) |
| Aortic aneurysm[6] | 0 | (0.00%) | 0 | (0.00%) | 17 | (0.02%) | 3 | (0.01%) | 28 | (0.03%) | 0 | (0.00%) |
| Atrial fibrillation[6] | 0 | (0.00%) | 2 | (0.08%) | 138 | (0.19%) | 63 | (0.19%) | 914 | (0.84%) | 12 | (0.63%) |
| Valvular heart disease[6] | 1 | (0.16%) | 3 | (0.11%) | 44 | (0.06%) | 18 | (0.06%) | 234 | (0.21%) | 4 | (0.21%) |
| **Total cardiovascular disease[7]** | 30 | (1.73%) | 78 | (1.10%) | 2888 | (1.55%) | 698 | (0.89%) | 5553 | (1.67%) | 74 | (1.38%) |
| **Cancer** | | | | | | | | | | | | |
| Breast cancer | 8 | (0.46%) | 35 | (0.50%) | 883 | (0.47%) | 297 | (0.38%) | 1513 | (0.46%) | 19 | (0.36%) |
| Invasive breast cancer | 7 | (0.40%) | 27 | (0.38%) | 706 | (0.38%) | 242 | (0.31%) | 1248 | (0.38%) | 15 | (0.28%) |
| Non-invasive breast cancer | 1 | (0.06%) | 9 | (0.13%) | 195 | (0.10%) | 61 | (0.08%) | 288 | (0.09%) | 5 | (0.09%) |
| Ovarian cancer | 1 | (0.06%) | 3 | (0.04%) | 69 | (0.04%) | 36 | (0.05%) | 139 | (0.04%) | 4 | (0.07%) |
| Endometrial cancer[8] | 1 | (0.06%) | 2 | (0.03%) | 87 | (0.05%) | 29 | (0.04%) | 194 | (0.06%) | 2 | (0.04%) |
| Colorectal cancer | 1 | (0.06%) | 17 | (0.24%) | 275 | (0.15%) | 75 | (0.10%) | 499 | (0.15%) | 9 | (0.17%) |
| Other cancer[9] | 12 | (0.69%) | 46 | (0.65%) | 909 | (0.49%) | 310 | (0.40%) | 2396 | (0.72%) | 34 | (0.64%) |
| **Total cancer** | 22 | (1.27%) | 98 | (1.39%) | 2076 | (1.11%) | 703 | (0.90%) | 4425 | (1.33%) | 64 | (1.20%) |
| **Fractures** | | | | | | | | | | | | |
| Hip fracture | 5 | (0.29%) | 9 | (0.13%) | 122 | (0.07%) | 63 | (0.08%) | 1091 | (0.33%) | 11 | (0.21%) |
| **Deaths** | | | | | | | | | | | | |
| Cardiovascular deaths | 12 | (0.69%) | 17 | (0.24%) | 921 | (0.49%) | 150 | (0.19%) | 1590 | (0.48%) | 15 | (0.28%) |
| Cancer deaths | 8 | (0.46%) | 35 | (0.50%) | 772 | (0.41%) | 244 | (0.31%) | 1597 | (0.48%) | 25 | (0.47%) |
| Other known cause | 10 | (0.58%) | 23 | (0.33%) | 613 | (0.33%) | 186 | (0.24%) | 1529 | (0.46%) | 19 | (0.36%) |
| Unknown cause | 0 | (0.00%) | 1 | (0.01%) | 25 | (0.01%) | 12 | (0.02%) | 39 | (0.01%) | 3 | (0.06%) |
| Not yet adjudicated | 0 | (0.00%) | 2 | (0.03%) | 104 | (0.06%) | 15 | (0.02%) | 220 | (0.07%) | 3 | (0.06%) |
| **Total Death** | 30 | (1.73%) | 78 | (1.10%) | 2435 | (1.31%) | 607 | (0.78%) | 4975 | (1.50%) | 65 | (1.22%) |
| **Death plus post-WHI deaths** | 37 | (1.69%) | 129 | (1.44%) | 4071 | (1.67%) | 1142 | (1.02%) | 6966 | (1.85%) | 103 | (1.58%) |

[1] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Studies 2005-2020.
[2] "CHD death" includes definite and possible CHD death.
[3] Angina and CHF are not verified outcomes in the WHI Extension Studies 2005-2020. Reported statistics represent experience during the original program.
[4] Definite or possible decompensated heart failure adjudicated by UNC.
[5] "Coronary disease" includes clinical MI, evolving Q-wave MI, possible evolving Q-wave MI, CHD death, angina, congestive heart failure, UNC heart failure, and CABG/PTCA; Q-wave MI, angina and congestive heart failure are not collected in the WHI Extension Studies 2005-2020.
[6] Aortic aneurysm, atrial fibrillation and valvular heart disease are new adjudicated outcomes during the WHI Extension Study 2010-2020.
[7] Total CVD does not include aortic aneurysm, atrial fibrillation or valvular heart disease.
[8] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[9] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.

**Table 5.4**
**Verified Outcomes (Annualized Percentages) by Age at Enrollment for SRC Super Cohort Participants**

Data as of: September 30, 2016; Events through September 30, 2010 and September 30, 2016

| | Total | | Age at Enrollment 50-54 | | 55-59 | | 60-69 | | 70-79 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Outcomes through Extension Study 2005-2010** | | | | | | | | | | |
| **Number randomized** | 117634 | | 14781 | | 22638 | | 53171 | | 27044 | |
| **Mean follow-up (months)** | 142.7 | | 154.9 | | 151.9 | | 142.9 | | 128.1 | |
| **Cardiovascular**[1] | | | | | | | | | | |
| CHD[2] | 5427 | (0.39%) | 201 | (0.11%) | 488 | (0.17%) | 2358 | (0.37%) | 2380 | (0.82%) |
| CHD death[3] | 1884 | (0.13%) | 49 | (0.03%) | 103 | (0.04%) | 689 | (0.11%) | 1043 | (0.36%) |
| Clinical MI | 4044 | (0.29%) | 159 | (0.08%) | 398 | (0.14%) | 1834 | (0.29%) | 1653 | (0.57%) |
| Angina[4] | 3623 | (0.38%) | 139 | (0.11%) | 423 | (0.22%) | 1749 | (0.41%) | 1312 | (0.63%) |
| CABG/PTCA | 6113 | (0.44%) | 241 | (0.13%) | 711 | (0.25%) | 3161 | (0.50%) | 2000 | (0.69%) |
| Carotid artery disease | 1111 | (0.08%) | 48 | (0.03%) | 117 | (0.04%) | 520 | (0.08%) | 426 | (0.15%) |
| Congestive heart failure, WHI[4] | 2797 | (0.29%) | 78 | (0.06%) | 201 | (0.11%) | 1096 | (0.26%) | 1422 | (0.68%) |
| Stroke | 4253 | (0.30%) | 124 | (0.06%) | 319 | (0.11%) | 1854 | (0.29%) | 1956 | (0.68%) |
| PVD | 984 | (0.07%) | 24 | (0.01%) | 88 | (0.03%) | 460 | (0.07%) | 412 | (0.14%) |
| Coronary disease[5] | 11764 | (0.84%) | 455 | (0.24%) | 1243 | (0.43%) | 5452 | (0.86%) | 4614 | (1.60%) |
| **Total cardiovascular disease** | 16760 | (1.20%) | 626 | (0.33%) | 1661 | (0.58%) | 7660 | (1.21%) | 6813 | (2.36%) |
| **Fractures**[1] | | | | | | | | | | |
| Hip fracture | 2955 | (0.21%) | 63 | (0.03%) | 186 | (0.06%) | 1108 | (0.18%) | 1598 | (0.55%) |
| **Outcomes through Extension Study 2010-2020** | | | | | | | | | | |
| **Number randomized** | 117634 | | 14781 | | 22638 | | 53171 | | 27044 | |
| **Mean follow-up (months)** | 179.6 | | 201.9 | | 197.7 | | 180.8 | | 149.7 | |
| **Cancer** | | | | | | | | | | |
| Breast cancer | 9799 | (0.56%) | 1257 | (0.51%) | 2019 | (0.54%) | 4584 | (0.57%) | 1939 | (0.57%) |
| Invasive breast cancer | 8143 | (0.46%) | 995 | (0.40%) | 1662 | (0.45%) | 3830 | (0.48%) | 1656 | (0.49%) |
| Non-invasive breast cancer | 1786 | (0.10%) | 279 | (0.11%) | 383 | (0.10%) | 819 | (0.10%) | 305 | (0.09%) |
| Ovarian cancer | 916 | (0.05%) | 105 | (0.04%) | 175 | (0.05%) | 431 | (0.05%) | 205 | (0.06%) |
| Endometrial cancer[6] | 1408 | (0.08%) | 148 | (0.06%) | 311 | (0.08%) | 655 | (0.08%) | 294 | (0.09%) |
| Colorectal cancer | 2198 | (0.12%) | 121 | (0.05%) | 280 | (0.08%) | 1078 | (0.13%) | 719 | (0.21%) |
| Other cancer[7] | 11761 | (0.67%) | 1044 | (0.42%) | 1926 | (0.52%) | 5744 | (0.72%) | 3047 | (0.90%) |
| **Total cancer** | 24042 | (1.37%) | 2482 | (1.00%) | 4362 | (1.17%) | 11450 | (1.43%) | 5748 | (1.70%) |
| **Deaths** | | | | | | | | | | |
| Cardiovascular deaths | 6409 | (0.36%) | 140 | (0.06%) | 354 | (0.09%) | 2425 | (0.30%) | 3490 | (1.03%) |
| Cancer deaths | 7676 | (0.44%) | 460 | (0.18%) | 992 | (0.27%) | 3683 | (0.46%) | 2541 | (0.75%) |
| Other known cause | 6464 | (0.37%) | 191 | (0.08%) | 439 | (0.12%) | 2691 | (0.34%) | 3143 | (0.93%) |
| Unknown cause | 2407 | (0.14%) | 80 | (0.03%) | 218 | (0.06%) | 1129 | (0.14%) | 980 | (0.29%) |
| **Total death** | 22956 | (1.30%) | 871 | (0.35%) | 2003 | (0.54%) | 9928 | (1.24%) | 10154 | (3.01%) |
| **Death plus post-WHI deaths**[8] | 33209 | (1.64%) | 1122 | (0.40%) | 2593 | (0.62%) | 13805 | (1.50%) | 15689 | (3.88%) |

[1] Cardiovascular diseases and hip fracture are not adjudicated for SRC Super Cohort participants during the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program and the Extension Study 2005-2010.
[2] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Study 2005-2010.
[3] "CHD death" includes definite and possible CHD death.
[4] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.
[5] "Coronary disease" includes clinical MI, evolving Q-wave MI, possible evolving Q-wave MI, CHD death, angina, congestive heart failure, and CABG/PTCA; Q-wave MI, angina, and congestive heart failure were not collected in the WHI Extension Study 2005-2010.
[6] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[7] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.
[8] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

**Table 5.5**
**Verified Outcomes (Annualized Percentages) by Race/Ethnicity for SRC Super Cohort Participants**

Data as of: September 30, 2016; Events through September 30, 2010 and September 30, 2016

| | Race/Ethnicity | | | |
|---|---|---|---|---|
| | **American Indian/ Alaskan Native** | **Asian/Pacific Islander** | **White** | **Unknown** |
| **Outcomes through Extension Study 2005-2010** | | | | |
| **Number randomized** | 583 | 3663 | 111511 | 1877 |
| **Mean follow-up (months)** | 125.1 | 127.8 | 143.5 | 131.0 |
| **Cardiovascular**[1] | | | | |
| CHD[2] | 26 (0.43%) | 87 (0.22%) | 5233 (0.39%) | 81 (0.40%) |
| CHD death[3] | 13 (0.21%) | 30 (0.08%) | 1806 (0.14%) | 35 (0.17%) |
| Clinical MI | 16 (0.26%) | 66 (0.17%) | 3906 (0.29%) | 56 (0.27%) |
| Angina[4] | 23 (0.52%) | 56 (0.20%) | 3492 (0.39%) | 52 (0.36%) |
| CABG/PTCA | 30 (0.49%) | 77 (0.20%) | 5922 (0.44%) | 84 (0.41%) |
| Carotid artery disease | 7 (0.12%) | 10 (0.03%) | 1074 (0.08%) | 20 (0.10%) |
| Congestive heart failure, WHI[4] | 18 (0.41%) | 30 (0.11%) | 2702 (0.30%) | 47 (0.32%) |
| Stroke | 17 (0.28%) | 101 (0.26%) | 4059 (0.30%) | 76 (0.37%) |
| PVD | 6 (0.10%) | 8 (0.02%) | 951 (0.07%) | 19 (0.09%) |
| Coronary disease[5] | 67 (1.10%) | 178 (0.46%) | 11349 (0.85%) | 170 (0.83%) |
| **Total cardiovascular disease** | 89 (1.46%) | 291 (0.75%) | 16116 (1.21%) | 264 (1.29%) |
| **Fractures**[1] | | | | |
| Hip fracture | 7 (0.12%) | 29 (0.07%) | 2892 (0.22%) | 27 (0.13%) |
| **Outcomes through Extension Study 2010-2020** | | | | |
| **Number randomized** | 583 | 3663 | 111511 | 1877 |
| **Mean follow-up (months)** | 151.3 | 155.5 | 180.8 | 159.9 |
| **Cancer** | | | | |
| Breast cancer | 30 (0.41%) | 230 (0.48%) | 9423 (0.56%) | 116 (0.46%) |
| Invasive breast cancer | 25 (0.34%) | 191 (0.40%) | 7833 (0.47%) | 94 (0.38%) |
| Non-invasive breast cancer | 6 (0.08%) | 42 (0.09%) | 1715 (0.10%) | 23 (0.09%) |
| Ovarian cancer | 2 (0.03%) | 14 (0.03%) | 892 (0.05%) | 8 (0.03%) |
| Endometrial cancer[6] | 1 (0.01%) | 21 (0.04%) | 1362 (0.08%) | 24 (0.09%) |
| Colorectal cancer | 10 (0.14%) | 40 (0.08%) | 2116 (0.13%) | 32 (0.13%) |
| Other cancer[7] | 38 (0.52%) | 197 (0.41%) | 11370 (0.68%) | 156 (0.62%) |
| **Total cancer** | 77 (1.05%) | 469 (0.99%) | 23186 (1.38%) | 310 (1.24%) |
| **Deaths** | | | | |
| Cardiovascular deaths | 33 (0.45%) | 111 (0.23%) | 6161 (0.37%) | 104 (0.42%) |
| Cancer deaths | 27 (0.37%) | 147 (0.31%) | 7404 (0.44%) | 98 (0.39%) |
| Other known cause | 44 (0.60%) | 86 (0.18%) | 6258 (0.37%) | 76 (0.30%) |
| Unknown cause | 4 (0.05%) | 27 (0.06%) | 2343 (0.14%) | 33 (0.13%) |
| **Total death** | 108 (1.47%) | 371 (0.78%) | 22166 (1.32%) | 311 (1.24%) |
| **Death plus post-WHI deaths**[8] | 178 (1.88%) | 717 (1.13%) | 31787 (1.65%) | 527 (1.67%) |

[1] Cardiovascular diseases and hip fracture are not adjudicated for SRC Super Cohort participants during the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program and the Extension Study 2005-2010.
[2] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Study 2005-2010.
[3] "CHD death" includes definite and possible CHD death.
[4] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.
[5] "Coronary disease" includes clinical MI, evolving Q-wave MI, possible evolving Q-wave MI, CHD death, angina, congestive heart failure, and CABG/PTCA; Q-wave MI, angina and congestive heart failure were not collected in the WHI Extension Study 2005-2010.
[6] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[7] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.
[8] Includes deaths for non-Extension study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.

**Table 5.6**
**Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for MRC Super Cohort Participants Who Did Not Report a Prevalent Condition at Baseline**

Data as of: September 30, 2016; Events through September 30, 2016

| Outcome | Total | Age at Enrollment 50-54 | 55-59 | 60-69 | 70-79 |
|---|---|---|---|---|---|
| **Number randomized** | 44174 | 6788 | 9352 | 19418 | 8616 |
| **Mean follow-up (months)** | 165.6 | 174.5 | 175.4 | 166.7 | 145.4 |
| Angina[1] | 3748 (0.61%) | 439 (0.44%) | 637 (0.47%) | 1783 (0.66%) | 889 (0.85%) |
| Diabetes (treated) | 7294 (1.20%) | 1260 (1.28%) | 1650 (1.21%) | 3311 (1.23%) | 1073 (1.03%) |
| Hysterectomy | 1737 (0.28%) | 269 (0.27%) | 434 (0.32%) | 788 (0.29%) | 246 (0.24%) |
| Osteoarthritis | 12821 (2.10%) | 2186 (2.22%) | 2916 (2.13%) | 5626 (2.09%) | 2093 (2.01%) |
| Intestinal polyps | 10258 (1.68%) | 1608 (1.63%) | 2394 (1.75%) | 4737 (1.76%) | 1519 (1.46%) |
| Lupus | 771 (0.13%) | 128 (0.13%) | 166 (0.12%) | 351 (0.13%) | 126 (0.12%) |
| Hypertension treated w/pills | 15958 (2.62%) | 2582 (2.62%) | 3516 (2.57%) | 7012 (2.60%) | 2848 (2.73%) |
| COPD | 1794 (0.29%) | 229 (0.23%) | 422 (0.31%) | 889 (0.33%) | 254 (0.24%) |
| Macular degeneration | 3936 (0.65%) | 305 (0.31%) | 607 (0.44%) | 1944 (0.72%) | 1080 (1.03%) |
| Alzheimer's disease | 3383 (0.56%) | 173 (0.18%) | 372 (0.27%) | 1682 (0.62%) | 1156 (1.11%) |
| Parkinson's disease | 501 (0.08%) | 52 (0.05%) | 83 (0.06%) | 267 (0.10%) | 99 (0.09%) |

| Outcomes | Race/Ethnicity Am Indian/ Alaskan Native | Asian/Pacific Islander | Black/African American | Hispanic/ Latina | White | Unknown |
|---|---|---|---|---|---|---|
| **Number randomized** | 130 | 527 | 14618 | 6484 | 22030 | 385 |
| **Mean follow-up (months)** | 159.7 | 161.0 | 152.5 | 144.0 | 180.7 | 166.6 |
| Angina[1] | 18 (1.04%) | 26 (0.37%) | 1278 (0.69%) | 383 (0.49%) | 2008 (0.61%) | 35 (0.65%) |
| Diabetes (treated) | 24 (1.39%) | 85 (1.20%) | 2750 (1.48%) | 1079 (1.39%) | 3289 (0.99%) | 67 (1.25%) |
| Hysterectomy | 4 (0.23%) | 11 (0.16%) | 401 (0.22%) | 263 (0.34%) | 1043 (0.31%) | 15 (0.28%) |
| Osteoarthritis | 48 (2.78%) | 166 (2.35%) | 3860 (2.08%) | 1975 (2.54%) | 6654 (2.01%) | 118 (2.21%) |
| Intestinal polyps | 32 (1.85%) | 103 (1.46%) | 3414 (1.84%) | 1256 (1.61%) | 5371 (1.62%) | 82 (1.53%) |
| Lupus | 3 (0.17%) | 5 (0.07%) | 284 (0.15%) | 124 (0.16%) | 351 (0.11%) | 4 (0.07%) |
| Hypertension treated w/pills | 58 (3.35%) | 186 (2.63%) | 4319 (2.32%) | 2299 (2.95%) | 8965 (2.70%) | 131 (2.45%) |
| COPD | 10 (0.58%) | 11 (0.16%) | 443 (0.24%) | 164 (0.21%) | 1153 (0.35%) | 13 (0.24%) |
| Macular degeneration | 11 (0.64%) | 30 (0.42%) | 696 (0.37%) | 400 (0.51%) | 2771 (0.84%) | 28 (0.52%) |
| Alzheimer's disease | 10 (0.58%) | 29 (0.41%) | 866 (0.47%) | 348 (0.45%) | 2107 (0.64%) | 23 (0.43%) |
| Parkinson's disease | 2 (0.12%) | 7 (0.10%) | 132 (0.07%) | 56 (0.07%) | 301 (0.09%) | 3 (0.06%) |

[1] During WHI Extension Study 2005-2010, the outcome was angina with hospitalization for a heart condition that may or may not have been related to the angina.

**Table 5.7**
**Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by Age at Enrollment and Race/Ethnicity for SRC Super Cohort Participants Who Did Not Report a Prevalent Condition at Baseline**

Data as of: September 30, 2016; Events through September 30, 2016

| Outcome | Total | Age at Enrollment 50-54 | 55-59 | 60-69 | 70-79 |
|---|---|---|---|---|---|
| **Number randomized** | 117634 | 14781 | 22638 | 53171 | 27044 |
| **Mean follow-up (months)** | 179.3 | 201.7 | 197.5 | 180.6 | 149.4 |
| DVT, IP/OP | 4068 (0.23%) | 306 (0.12%) | 615 (0.17%) | 2020 (0.25%) | 1127 (0.33%) |
| PE, IP/OP | 2236 (0.13%) | 182 (0.07%) | 367 (0.10%) | 1133 (0.14%) | 554 (0.16%) |
| PE, IP | 2055 (0.12%) | 170 (0.07%) | 335 (0.09%) | 1046 (0.13%) | 504 (0.15%) |
| PE, OP | 104 (0.01%) | 9 (<0.01%) | 19 (0.01%) | 59 (0.01%) | 17 (0.01%) |
| Diabetes (treated) | 14607 (0.83%) | 1903 (0.77%) | 3017 (0.81%) | 6902 (0.86%) | 2785 (0.83%) |
| Hysterectomy | 6416 (0.36%) | 970 (0.39%) | 1530 (0.41%) | 2958 (0.37%) | 958 (0.28%) |
| Osteoarthritis | 34981 (1.99%) | 5239 (2.11%) | 7720 (2.07%) | 15758 (1.97%) | 6264 (1.86%) |
| Intestinal polyps | 28737 (1.63%) | 4180 (1.68%) | 6581 (1.77%) | 13255 (1.66%) | 4721 (1.40%) |
| Lupus | 1827 (0.10%) | 235 (0.09%) | 373 (0.10%) | 843 (0.11%) | 376 (0.11%) |
| Pills for hypertension | 43345 (2.47%) | 5342 (2.15%) | 8721 (2.34%) | 20129 (2.51%) | 9153 (2.72%) |
| COPD | 5194 (0.30%) | 528 (0.21%) | 1033 (0.28%) | 2796 (0.35%) | 837 (0.25%) |
| Macular degeneration | 13890 (0.79%) | 876 (0.35%) | 1876 (0.50%) | 7053 (0.88%) | 4085 (1.21%) |
| Alzheimer's disease | 9521 (0.54%) | 337 (0.14%) | 890 (0.24%) | 4832 (0.60%) | 3462 (1.03%) |
| Parkinson's disease | 1815 (0.10%) | 111 (0.04%) | 291 (0.08%) | 1023 (0.13%) | 390 (0.12%) |

| Outcomes | Race/Ethnicity Am Indian/ Alaskan Native | Asian/Pacific Islander | White | Unknown |
|---|---|---|---|---|
| **Number randomized** | 583 | 3663 | 111511 | 1877 |
| **Mean follow-up (months)** | 151.0 | 154.9 | 180.6 | 159.5 |
| DVT, IP/OP | 15 (0.20%) | 31 (0.07%) | 3964 (0.24%) | 58 (0.23%) |
| PE, IP/OP | 7 (0.10%) | 16 (0.03%) | 2187 (0.13%) | 26 (0.10%) |
| PE, IP | 7 (0.10%) | 14 (0.03%) | 2011 (0.12%) | 23 (0.09%) |
| PE, OP | 0 (0.00%) | 2 (<0.01%) | 101 (0.01%) | 1 (<0.01%) |
| Diabetes (treated) | 103 (1.40%) | 498 (1.05%) | 13739 (0.82%) | 267 (1.07%) |
| Hysterectomy | 15 (0.20%) | 118 (0.25%) | 6196 (0.37%) | 87 (0.35%) |
| Osteoarthritis | 144 (1.96%) | 1099 (2.32%) | 33177 (1.98%) | 561 (2.25%) |
| Intestinal polyps | 122 (1.66%) | 731 (1.55%) | 27471 (1.64%) | 413 (1.66%) |
| Lupus | 15 (0.20%) | 36 (0.08%) | 1745 (0.10%) | 31 (0.12%) |
| Pills for hypertension | 182 (2.48%) | 1157 (2.45%) | 41349 (2.46%) | 657 (2.63%) |
| COPD | 27 (0.37%) | 61 (0.13%) | 5043 (0.30%) | 63 (0.25%) |
| Macular degeneration | 44 (0.60%) | 209 (0.44%) | 13480 (0.80%) | 157 (0.63%) |
| Alzheimer's disease | 35 (0.48%) | 168 (0.36%) | 9178 (0.55%) | 140 (0.56%) |
| Parkinson's disease | 7 (0.10%) | 27 (0.06%) | 1753 (0.10%) | 28 (0.11%) |

IP = Inpatient; OP = Outpatient

**Table 5.8**
**Verified Other Cancers (Annualized Percentages): MRC and SRC Super Cohort Participants**
Data as of: September 30, 2016; Events through September 30, 2016

| | MRC Super Cohort | SRC Super Cohort |
|---|---|---|
| **Number of participants** | 44174 | 117634 |
| **Mean follow-up time (months)** | 165.8 | 179.6 |
| **Overall cancer** | 7388 (1.21%) | 24042 (1.37%) |
| Primary cancer | | |
| Breast cancer | 2755 (0.45%) | 9799 (0.56%) |
| Invasive breast cancer | 2245 (0.37%) | 8143 (0.46%) |
| In-situ breast cancer | 559 (0.09%) | 1786 (0.10%) |
| Ovarian cancer | 252 (0.04%) | 916 (0.05%) |
| Endometrial cancer[1] | 313 (0.05%) | 1389 (0.08%) |
| Colorectal cancer | 876 (0.14%) | 2198 (0.12%) |
| Other cancer | | |
| Accessory sinus | 1 (<0.01%) | 9 (<0.01%) |
| Adrenal gland | 4 (<0.01%) | 11 (<0.01%) |
| Anus | 24 (<0.01%) | 85 (<0.01%) |
| Appendix | 11 (<0.01%) | 28 (<0.01%) |
| Biliary tract, parts of (other/unspecified) | 52 (0.01%) | 122 (0.01%) |
| Bladder | 218 (0.04%) | 691 (0.04%) |
| Bones/joints/articular cartilage (limbs) | 1 (<0.01%) | 11 (<0.01%) |
| Bones/joints/articular cartilage (other) | 6 (<0.01%) | 14 (<0.01%) |
| Brain | 59 (0.01%) | 267 (0.02%) |
| Cervix | 39 (0.01%) | 81 (<0.01%) |
| Central Nervous System (excludes brain) | 1 (<0.01%) | 3 (<0.01%) |
| Connective/subcutaneous/soft tissues | 37 (0.01%) | 122 (0.01%) |
| Endocrine glands, related structures | 0 (0.00%) | 3 (<0.01%) |
| Esophagus | 45 (0.01%) | 110 (0.01%) |
| Eye and adnexa | 22 (<0.01%) | 55 (<0.01%) |
| Genital organs | 17 (<0.01%) | 100 (0.01%) |
| Kidney | 180 (0.03%) | 482 (0.03%) |
| Larynx | 20 (<0.01%) | 30 (<0.01%) |
| Leukemia | 225 (0.04%) | 750 (0.04%) |
| Liver | 81 (0.01%) | 174 (0.01%) |
| Lung | 1009 (0.17%) | 2605 (0.15%) |
| Lymph nodes | 1 (<0.01%) | 2 (<0.01%) |
| Lymphoma, Hodgkins | 22 (<0.01%) | 47 (<0.01%) |
| Lymphoma, Non-Hodgkins | 338 (0.06%) | 1292 (0.07%) |
| Melanoma of the skin | 334 (0.05%) | 1896 (0.11%) |
| Multiple myeloma | 179 (0.03%) | 384 (0.02%) |
| Oral (mouth) | 5 (<0.01%) | 27 (<0.01%) |
| Palate | 7 (<0.01%) | 24 (<0.01%) |
| Pancreas | 285 (0.05%) | 793 (0.05%) |
| Parotid gland (Stensen's duct) | 13 (<0.01%) | 44 (<0.01%) |
| Peripheral nerves and autonomic nervous | 0 (0.00%) | 2 (<0.01%) |
| Pyriform sinus | 0 (0.00%) | 2 (<0.01%) |
| Respiratory system, intrathoracic, other | 0 (0.00%) | 3 (<0.01%) |
| Salivary glands, major (other/unspecified) | 3 (<0.01%) | 14 (<0.01%) |
| Stomach | 86 (0.01%) | 184 (0.01%) |
| Thyroid | 99 (0.02%) | 375 (0.02%) |
| Tongue, part of (other/unspecified) | 15 (<0.01%) | 61 (<0.01%) |
| Urinary organs (other/unspecified) | 9 (<0.01%) | 24 (<0.01%) |
| Uterus, not otherwise specified[1] | 27 (<0.01%) | 72 (<0.01%) |
| Other/unknown site of cancer | 373 (0.06%) | 1136 (0.06%) |
| Other/unknown cancers reported on death | 97 (0.02%) | 376 (0.02%) |

[1] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.

**Table 5.9**
**Self Reported Fractures (Annualized Percentages): MRC and SRC Super Cohort Participants**

Data as of: September 30, 2016; Events through September 30, 2016

| | MRC Super Cohort | SRC Super Cohort |
|---|---|---|
| **Number of participants** | 44174 | 117634 |
| **Mean follow-up time (months)** | 165.8 | 179.6 |
| Elbow | 604 (0.10%) | 2072 (0.12%) |
| Foot | 1832 (0.30%) | 6671 (0.38%) |
| Hand | 552 (0.09%) | 1771 (0.10%) |
| Hip | 1392 (0.23%) | 5095 (0.29%) |
| Knee | 972 (0.16%) | 2814 (0.16%) |
| Lower arm | 2932 (0.48%) | 9400 (0.53%) |
| Lower leg | 2220 (0.36%) | 6971 (0.40%) |
| Pelvis | 660 (0.11%) | 2979 (0.17%) |
| Tailbone | 238 (0.04%) | 976 (0.06%) |
| Upper arm | 1677 (0.27%) | 5411 (0.31%) |
| Upper leg | 574 (0.09%) | 2174 (0.12%) |
| Spine | 1719 (0.28%) | 7246 (0.41%) |
| Other | 4079 (0.67%) | 14502 (0.82%) |
| Any fracture | 12890 (2.11%) | 43327 (2.46%) |

**Table 5.10**
**Cause of Death[1] (Annualized Percentages): MRC and SRC Super Cohort Participants**
Data as of: September 30, 2016; Events through September 30, 2016

| | MRC Super Cohort | | SRC Super Cohort | |
|---|---|---|---|---|
| **Number of participants** | 44174 | | 117634 | |
| **Mean Follow-up Time (months)** | 204.0 | | 206.7 | |
| **Death plus post-WHI deaths** | 12448 | (1.66%) | 33209 | (1.64%) |
| Adjudicated death | 12043 | (1.60%) | 29986 | (1.48%) |
| Centrally adjudicated death | 6462 | (0.86%) | 7512 | (0.37%) |
| Locally adjudicated death | 693 | (0.09%) | 4864 | (0.24%) |
| Identified by NDI search | 4888 | (0.65%) | 17610 | (0.87%) |
| Not yet adjudicated | 344 | (0.05%) | 0 | (0.00%) |
| Form 120 death[2] | 61 | (0.01%) | 3223 | (0.16%) |
| **Cardiovascular** | | | | |
| Atherosclerotic cardiac | 1868 | (0.25%) | 4049 | (0.20%) |
| Definite CHD deaths after 10/99 | 645 | (0.09%) | 1217 | (0.06%) |
| Possible CHD deaths after 10/99 | 1223 | (0.16%) | 2789 | (0.14%) |
| Cerebrovascular | 974 | (0.13%) | 2319 | (0.11%) |
| Pulmonary embolism | 79 | (0.01%) | 156 | (0.01%) |
| Other cardiovascular | 1134 | (0.15%) | 3017 | (0.15%) |
| Unknown cardiovascular | 36 | (<0.01%) | 106 | (0.01%) |
| **Total cardiovascular deaths** | 4091 | (0.54%) | 9647 | (0.48%) |
| **Cancer** | | | | |
| Breast cancer | 345 | (0.05%) | 1135 | (0.06%) |
| Ovarian cancer | 182 | (0.02%) | 660 | (0.03%) |
| Endometrial cancer | 39 | (0.01%) | 168 | (0.01%) |
| Colorectal cancer | 312 | (0.04%) | 727 | (0.04%) |
| Uterus cancer | 41 | (0.01%) | 90 | (<0.01%) |
| Lung cancer | 900 | (0.12%) | 2023 | (0.10%) |
| Pancreas cancer | 308 | (0.04%) | 814 | (0.04%) |
| Lymphoma (NHL only) | 152 | (0.02%) | 467 | (0.02%) |
| Leukemia | 134 | (0.02%) | 427 | (0.02%) |
| Brain cancer | 65 | (0.01%) | 267 | (0.01%) |
| Multiple myeloma | 135 | (0.02%) | 265 | (0.01%) |
| Other cancer | 681 | (0.09%) | 1838 | (0.09%) |
| Unknown cancer site | 163 | (0.02%) | 543 | (0.03%) |
| **Total cancer deaths** | 3457 | (0.46%) | 9424 | (0.47%) |
| **Accident/injury** | | | | |
| Homicide | 16 | (<0.01%) | 19 | (<0.01%) |
| Accident | 283 | (0.04%) | 769 | (0.04%) |
| Suicide | 18 | (<0.01%) | 62 | (<0.01%) |
| Other injury | 25 | (<0.01%) | 33 | (<0.01%) |
| **Total accident/injury deaths** | 342 | (0.05%) | 883 | (0.04%) |
| **Other** | | | | |
| Alzheimer's disease | 529 | (0.07%) | 1610 | (0.08%) |
| COPD | 487 | (0.06%) | 1254 | (0.06%) |
| Pneumonia | 323 | (0.04%) | 866 | (0.04%) |
| Pulmonary fibrosis | 135 | (0.02%) | 310 | (0.02%) |
| Renal failure | 266 | (0.04%) | 412 | (0.02%) |
| Sepsis | 340 | (0.05%) | 685 | (0.03%) |
| Dementia, NOS | 591 | (0.08%) | 1704 | (0.08%) |
| Amyotrophic Lateral Sclerosis | 40 | (0.01%) | 191 | (0.01%) |
| Parkinson's | 106 | (0.01%) | 390 | (0.02%) |
| Hepatic cirrhosis | 83 | (0.01%) | 153 | (0.01%) |
| Other known cause | 1159 | (0.15%) | 3111 | (0.15%) |
| Unknown cause | 155 | (0.02%) | 2569 | (0.13%) |
| **Total other cause deaths** | 4214 | (0.56%) | 13255 | (0.65%) |

[1] Includes deaths for non-Extension Study participants after the main WHI study close-out. Annualized rates incorporate additional follow-up from the NDI search.
[2] SRC Super Cohort or non-Extension Study 2010-2020 MRC Super Cohort Participants only.

**Table 6.1**
**Agreement of the Central Adjudications with Self-Reports for Outcomes Reported in Extension Study 2010-2020**

Data as of: September 30, 2016

| | Participants with a self-report[1] | Closed | | Confirmed | | Denied – related outcome found[2] | | Denied – unrelated outcome found | | Denied – no outcome found | | Administrative denials | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | (%)[3] | N | (%)[3] | N | (%)[3] | N | (%)[3] | N | (%)[3] |
| **Cardiovascular** | | | | | | | | | | | | | |
| Clinical MI | 436 | 421 | 97% | 263 | (62%) | 89 | (21%) | 5 | (1%) | 64 | (15%) | 0 | (0%) |
| CABG | 158 | 156 | 99% | 109 | (70%) | 38 | (24%) | 3 | (2%) | 6 | (4%) | 0 | (0%) |
| PTCA | 477 | 464 | 97% | 310 | (67%) | 91 | (20%) | 5 | (1%) | 57 | (12%) | 1 | (0%) |
| Carotid artery disease | 142 | 139 | 98% | 73 | (53%) | 48 | (35%) | 1 | (1%) | 17 | (12%) | 0 | (0%) |
| Stroke | 798 | 770 | 96% | 505 | (66%) | 76 | (10%) | 0 | (0%) | 185 | (24%) | 4 | (1%) |
| PVD | 198 | 188 | 95% | 81 | (43%) | 36 | (19%) | 20 | (11%) | 51 | (27%) | 0 | (0%) |
| DVT | 507 | 481 | 95% | 267 | (56%) | 25 | (5%) | 91 | (19%) | 98 | (20%) | 0 | (0%) |
| Pulmonary embolism | 275 | 264 | 96% | 219 | (83%) | 11 | (4%) | 13 | (5%) | 21 | (8%) | 0 | (0%) |
| Atrial fibrillation | 1471 | 1428 | 97% | 765 | (54%) | 191 | (13%) | 14 | (1%) | 458 | (32%) | 0 | (0%) |
| Valvular heart disease | 290 | 276 | 95% | 199 | (72%) | 49 | (18%) | 1 | (0%) | 27 | (10%) | 0 | (0%) |
| **Cancers** | | | | | | | | | | | | | |
| Breast cancer | 2274 | 2241 | 99% | 2189 | (98%) | 11 | (0%) | 0 | (0%) | 41 | (2%) | 0 | (0%) |
| Ovarian cancer | 257 | 253 | 98% | 163 | (64%) | 66 | (26%) | 10 | (4%) | 14 | (6%) | 0 | (0%) |
| Endometrial cancer | 375 | 370 | 99% | 289 | (78%) | 70 | (19%) | 4 | (1%) | 7 | (2%) | 0 | (0%) |
| Cervical cancer | 56 | 53 | 95% | 14 | (26%) | 28 | (53%) | 3 | (6%) | 8 | (15%) | 0 | (0%) |
| Colorectal cancer | 637 | 628 | 99% | 530 | (84%) | 61 | (10%) | 2 | (0%) | 34 | (5%) | 1 | (0%) |
| Bladder cancer | 266 | 259 | 97% | 224 | (86%) | 26 | (10%) | 1 | (0%) | 8 | (3%) | 0 | (0%) |
| Brain cancer | 92 | 90 | 98% | 29 | (32%) | 34 | (38%) | 5 | (6%) | 22 | (24%) | 0 | (0%) |
| Esophagus cancer | 49 | 49 | 100% | 30 | (61%) | 10 | (20%) | 0 | (0%) | 9 | (18%) | 0 | (0%) |
| Gallbladder/bile duct cancer | 56 | 54 | 96% | 21 | (39%) | 28 | (52%) | 2 | (4%) | 3 | (6%) | 0 | (0%) |
| Kidney cancer | 203 | 201 | 99% | 118 | (59%) | 54 | (27%) | 4 | (2%) | 25 | (12%) | 0 | (0%) |
| Leukemia | 223 | 215 | 96% | 166 | (77%) | 17 | (8%) | 3 | (1%) | 29 | (13%) | 0 | (0%) |
| Liver cancer | 182 | 176 | 97% | 37 | (21%) | 95 | (54%) | 11 | (6%) | 33 | (19%) | 0 | (0%) |
| Lung cancer | 815 | 795 | 98% | 661 | (83%) | 64 | (8%) | 8 | (1%) | 62 | (8%) | 0 | (0%) |
| Lymphoma/Hodgkin's | 319 | 312 | 98% | 245 | (79%) | 45 | (14%) | 8 | (3%) | 14 | (4%) | 0 | (0%) |
| Melanoma | 904 | 891 | 99% | 661 | (74%) | 32 | (4%) | 5 | (1%) | 193 | (22%) | 0 | (0%) |
| Multiple myeloma | 130 | 130 | 100% | 111 | (85%) | 9 | (7%) | 0 | (0%) | 10 | (8%) | 0 | (0%) |
| Pancreas cancer | 266 | 260 | 98% | 215 | (83%) | 27 | (10%) | 1 | (0%) | 17 | (7%) | 0 | (0%) |
| Stomach cancer | 91 | 89 | 98% | 34 | (38%) | 35 | (39%) | 1 | (1%) | 19 | (21%) | 0 | (0%) |

[1] Excludes duplicates and prior conditions.
[2] All cardiovascular outcomes are considered related, all cancers are considered related and all fractures are considered related.
[3] Percentages between parentheses are relative to "closed."

**Table 6.1 (continued)**
**Agreement of the Central Adjudications with Self-Reports for Outcomes Reported in Extension Study 2010-2020**

Data as of: September 30, 2016

| | Participants with a self-report[1] | Closed | | Confirmed | | Denied – related outcome found[2] | | Denied – unrelated outcome found | | Denied – no outcome found | | Administrative denials | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | (%)[3] | N | (%)[3] | N | (%)[3] | N | (%)[3] | N | (%)[3] |
| Thyroid cancer | 122 | 120 | 98% | 96 | (80%) | 7 | (6%) | 1 | (1%) | 16 | (13%) | 0 | (0%) |
| Other genital organ cancer | 86 | 85 | 99% | 9 | (11%) | 67 | (79%) | 5 | (6%) | 4 | (5%) | 0 | (0%) |
| Other cancer[4] | 549 | 535 | 97% | 254 | (47%) | 114 | (21%) | 22 | (4%) | 145 | (27%) | 0 | (0%) |
| **Fractures** | | | | | | | | | | | | | |
| Hip fracture | 416 | 398 | 96% | 332 | (83%) | 0 | (0%) | 0 | (0%) | 65 | (16%) | 1 | (0%) |
| Upper leg fracture[5] | 230 | 215 | 93% | 0 | (0%) | 84 | (39%) | 25 | (12%) | 105 | (49%) | 1 | (0%) |

[1] Excludes duplicates and prior conditions.
[2] All cardiovascular outcomes are considered related, all cancers are considered related and all fractures are considered related.
[3] Percentages between parentheses are relative to "closed."
[4] Any cancer other than those listed above, excluding non-melanoma skin cancer.
[5] Upper leg fractures are only investigated for possible occurrence of hip fracture.

**Table 7.1**
**Consent Status for Long Life Study Participants**[1]

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%)[2] |
| Completed visit 2012-2013 | 7875 | (85.2%)[3] |
| 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%)[4] |

[1] Long Life Study participants are a subset of the Medical Records Cohort.
[2] Percentage of eligible.
[3] Percentage of consented.
[4] Percentage of completed visit.

**Table 7.2**
**Verified Outcomes by Age at Visit for Long Life Study (LLS) Participants After LLS Blood Draw**

Data as of: September 30, 2016; Events through September 30, 2016

| Outcomes | Total | Age at Visit 63-69 | 70-79 | 80-89 | ≥ 90 |
|---|---|---|---|---|---|
| **Number enrolled** | 7875 | 723 | 3052 | 3688 | 412 |
| **Cardiovascular** | | | | | |
| CHD[1] | 180 | 8 | 37 | 113 | 22 |
| CHD death[2] | 83 | 2 | 11 | 52 | 18 |
| Clinical MI | 139 | 7 | 33 | 86 | 13 |
| CABG/PTCA | 100 | 7 | 34 | 54 | 5 |
| Carotid artery disease | 14 | 0 | 4 | 9 | 1 |
| Heart failure, UNC | 146 | 3 | 29 | 100 | 14 |
| Stroke | 151 | 6 | 37 | 92 | 16 |
| PVD | 32 | 0 | 6 | 23 | 3 |
| DVT | 96 | 7 | 34 | 48 | 7 |
| Pulmonary embolism | 69 | 4 | 27 | 35 | 3 |
| Coronary disease | 259 | 11 | 60 | 162 | 26 |
| DVT/PE | 135 | 10 | 51 | 67 | 7 |
| Aortic aneurysm | 10 | 1 | 4 | 4 | 1 |
| Atrial fibrillation | 272 | 5 | 44 | 191 | 32 |
| Valvular heart disease | 74 | 2 | 12 | 51 | 9 |
| **Total cardiovascular disease** | 416 | 16 | 99 | 254 | 47 |
| **Cancer** | | | | | |
| Breast cancer | 102 | 8 | 56 | 37 | 1 |
| Invasive breast cancer | 90 | 5 | 50 | 33 | 2 |
| Non-invasive breast cancer | 15 | 4 | 7 | 4 | 0 |
| Ovarian cancer | 11 | 0 | 6 | 5 | 0 |
| Endometrial cancer | 9 | 0 | 4 | 5 | 0 |
| Colorectal cancer | 42 | 2 | 13 | 25 | 2 |
| Other cancer[3] | 189 | 10 | 61 | 105 | 13 |
| **Total cancer** | 316 | 20 | 126 | 156 | 14 |
| **Fractures** | | | | | |
| Hip fracture | 125 | 1 | 15 | 91 | 18 |
| **Deaths** | | | | | |
| Cardiovascular deaths | 225 | 6 | 28 | 143 | 48 |
| Cancer deaths | 128 | 5 | 34 | 79 | 10 |
| Other known cause | 196 | 2 | 29 | 136 | 29 |
| Unknown cause | 8 | 0 | 2 | 2 | 4 |
| Not yet adjudicated | 113 | 4 | 19 | 78 | 12 |
| **Total death** | 670 | 17 | 112 | 438 | 103 |

[1] CHD includes clinical MI and CHD death.
[2] CHD death includes definite and possible CHD death.
[3] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.

**Table 7.3**
**Verified Outcomes by Race/Ethnicity for Long Life Study (LLS) Participants After LLS Blood Draw**

Data as of: September 30, 2016; Events through September 30, 2016

| | Race/Ethnicity | | |
|---|---|---|---|
| **Outcomes** | **Black/African American** | **Hispanic/Latina** | **White** |
| **Number enrolled** | 2651 | 1314 | 3910 |
| **Cardiovascular** | | | |
| CHD[1] | 40 | 16 | 124 |
| CHD death[2] | 17 | 4 | 62 |
| Clinical MI | 31 | 15 | 93 |
| CABG/PTCA | 22 | 10 | 68 |
| Carotid artery disease | 5 | 0 | 9 |
| Heart failure, UNC | 29 | 13 | 104 |
| Stroke | 42 | 19 | 90 |
| PVD | 10 | 3 | 19 |
| DVT | 33 | 11 | 52 |
| Pulmonary embolism | 32 | 6 | 31 |
| Coronary disease | 57 | 23 | 179 |
| DVT/PE | 54 | 16 | 65 |
| Aortic aneurysm | 6 | 0 | 4 |
| Atrial fibrillation | 31 | 22 | 219 |
| Valvular heart disease | 6 | 6 | 62 |
| **Total cardiovascular disease** | 107 | 43 | 266 |
| **Cancer** | | | |
| Breast cancer | 37 | 18 | 47 |
| Invasive breast cancer | 29 | 18 | 43 |
| Non-invasive breast cancer | 9 | 1 | 5 |
| Ovarian cancer | 4 | 3 | 4 |
| Endometrial cancer | 2 | 2 | 5 |
| Colorectal cancer | 9 | 4 | 29 |
| Other cancer[3] | 46 | 31 | 112 |
| **Total cancer** | 90 | 54 | 172 |
| **Fractures** | | | |
| Hip fracture | 12 | 10 | 103 |
| **Deaths** | | | |
| Cardiovascular deaths | 48 | 13 | 164 |
| Cancer deaths | 35 | 14 | 79 |
| Other known cause | 36 | 17 | 143 |
| Unknown cause | 3 | 0 | 5 |
| Not yet adjudicated | 28 | 6 | 79 |
| **Total death** | 150 | 50 | 470 |

[1] CHD includes clinical MI and CHD death.
[2] CHD death includes definite and possible CHD death.
[3] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.

**Table 7.4**
**Self-Reported Outcomes by Age at Visit and Race/Ethnicity for Long Life Study (LLS) Participants Who Did Not Report a Prevalent Condition at Baseline After LLS Blood Draw**

Data as of: September 30, 2016; Events through September 30, 2016

| Outcome | Total | Age at Visit 63-69 | 70-79 | 80-89 | ≥ 90 |
|---|---|---|---|---|---|
| **Number randomized** | 7875 | 723 | 3052 | 3688 | 412 |
| Angina | 289 | 20 | 90 | 163 | 16 |
| Diabetes (treated) | 362 | 35 | 157 | 158 | 12 |
| Hysterectomy | 64 | 9 | 37 | 18 | 0 |
| Osteoarthritis | 465 | 49 | 211 | 182 | 23 |
| Intestinal polyps | 296 | 49 | 163 | 81 | 3 |
| Lupus | 21 | 3 | 10 | 8 | 0 |
| Pills for hypertension | 348 | 44 | 120 | 167 | 17 |
| COPD | 410 | 28 | 148 | 218 | 16 |
| Macular degeneration | 602 | 24 | 156 | 371 | 51 |
| Alzheimer's disease | 488 | 12 | 110 | 312 | 54 |
| Parkinson's disease | 53 | 5 | 23 | 23 | 2 |

| Outcome | Race/Ethnicity Black/African American | Hispanic/Latina | White |
|---|---|---|---|
| **Number randomized** | 2651 | 1314 | 3910 |
| Angina | 96 | 37 | 156 |
| Diabetes (treated) | 125 | 62 | 175 |
| Hysterectomy | 22 | 14 | 28 |
| Osteoarthritis | 162 | 81 | 222 |
| Intestinal polyps | 119 | 76 | 101 |
| Lupus | 5 | 5 | 11 |
| Pills for hypertension | 66 | 75 | 207 |
| COPD | 131 | 55 | 224 |
| Macular degeneration | 127 | 88 | 387 |
| Alzheimer's disease | 125 | 60 | 303 |
| Parkinson's disease | 21 | 10 | 22 |

**Table 8.1**
**WHI Manuscript Stages through September 2016**

| Stage # | Definition | Number |
|---|---|---|
| 12* | Published | 1423 |
| 11 | In press / accepted by journal | 12 |
| 10 | Submitted to journal | 34 |
| 9 | Final manuscript approved by P&P Committee | 196 |
| 8 | Final manuscript submitted to P&P Committee | 38 |
| 7 | Draft manuscript | 23 |
| 6 | Analysis completed | 37 |
| 5 | Analysis in progress | 58 |
| 4 | Analysis proposed | 4 |
| 3 | Manuscript proposal and writing group approved | 637 |
| 2 | Approved/Writing group nominations open | 207 |
| **Total** | | **2669** |

*Only Stage 12 papers published between September 2015 and October 2016 are included in Table 8.2

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **384** | Comparison of frailty phenotypes for prediction of mortality, incident falls, and hip fractures in older women | Zaslavsky, Zelber-Sagi, Gray, LaCroix, Brunner, Wallace, O'Sullivan, Cochrane, Woods | CT | J Am Geriatr Soc. 2016 Jun 16. doi: 10.1111/jgs.14233. [Epub ahead of print] | |
| **611** | A randomized trial of low-fat diet intervention on blood pressure and hypertension: tertiary analysis of the WHI Dietary Modification Trial | Allison, Aragaki, Ray, Margolis, Beresford, Kuller, O'Sullivan, Wassertheil-Smoller, Van Horn | CT | Am J Hypertens. 2015 Dec 26. pii: hpv196. [Epub ahead of print] | |
| **977** | Association of baseline depressive symptoms with prevalent and incident pre-hypertension and hypertension in postmenopausal Hispanic women: Results from the Women's Health Initiative | Zambrana, Lopez, Dinwiddie, Ray, Eaton, Phillips, Wassertheil-Smoller | Gen | PLoS One. 2016 Apr 28;11(4):e0152765. doi: 10.1371/journal.pone.0152765. eCollection 2016 | |
| **1115** | Obesity and structural brain integrity in older women: The Women's Health Initiative Magnetic Resonance Imaging Study | Driscoll, Gaussoin, Wassertheil-Smoller, Limacher, Casanova, Yaffe, Resnick, Espeland | WHIMS | J Gerontol A Biol Sci Med Sci. 2016 Mar 9. pii: glw023. [Epub ahead of print] | AS183 |
| **1145** | Genome-wide association study (GWAS) and genome-wide by environment interaction study (GWEIS) of depressive symptoms in African American and Hispanic/Latina women | Dunn, Wiste, Radmanesh, Almli, Gogarten, Sofer, Faul, Kardia, Smith, Weir, Goveas, Sarto, Snively, Wassertheil-Smoller, Smoller | Gen | Depress Anxiety. 2016 Apr;33(4):265-80. doi: 10.1002/da.22484 | M5 |
| **1155** | Alcohol use and breast cancer survival among participants in the Women's Health Initiative | Lowry, Kapphahn, Chlebowski, Li | Gen | Cancer Epidemiol Biomarkers Prev. 2016 May 19. pii: cebp.0151.2016. [Epub ahead of print] | |
| **1256** | Trans-ethnic meta-analysis and functional annotation illuminates the genetic architecture of fasting glucose and insulin | Liu, Liu, Franceschini, Meigs | Gen | Am J Hum Genet. 2016 Jul 7;99(1):56-75. doi: 10.1016/j.ajhg.2016.05.006. Epub 2016 Jun 16 | M5 |
| **1270** | Inhaled medication usage in post-menopausal women and lifetime tobacco smoke exposure: the Women's Health Initiative Observational Study | Piazza, Wactawski-Wende, DeBon, Hovey, Rivard, Smith, Hyland | Gen | Maturitas. 2016 Aug;90:42-8. doi: 10.1016/j.maturitas.2016.05.008. Epub 2016 May 17 | |
| **1326** | Diabetes, diabetes treatment and risk of thyroid cancer | Luo, Phillips, Liu, Wactawski-Wende, Margolis | Gen | J Clin Endocrinol Metab. 2016 Jan 13:jc20153901. [Epub ahead of print] | |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **1340** | Impact of residential UV exposure in childhood versus adulthood on skin cancer risk in Caucasian, postmenopausal women in the Women's Health Initiative | Ransohoff, Ally, Stefanick, Keiser, Spaunhurst, Kapphahn, Pagoto, Messina, Hedlin, Manson, Tang | OS | Cancer Causes Control. 2016 May 6. [Epub ahead of print] | |
| **1364** | Fusion of clinical and stochastic finite element data for hip fracture risk prediction | Jiang, Missoum, Chen | Gen | J Biomech. 2015 Nov 26;48(15):4043-52. doi: 10.1016/j.jbiomech.2015.09.044. Epub 2015 Oct 9 | |
| **1420** | Association between dietary inflammatory potential and breast cancer incidence and death: results from the Women's Health Initiative | Tabung, Steck, Liese, Zhang, Ma, Caan, Chlebowski, Freudenheim, Hou, Mossavar-Rahmani, Shivappa, Vitolins, Wactawski-Wende, Ockene, Hebert | Gen | Br J Cancer. 2016 Apr 21. doi: 10.1038/bjc.2016.98. [Epub ahead of print] | |
| **1425** | Vegetable protein intake is associated with lower gallbladder disease risk: findings from the Women's Health Initiative prospective cohort | Lander, Wertheim, Koch, Chen, Hsu, Thomson | Gen | Prev Med. 2016 Mar 20. pii: S0091-7435(16)30039-1. doi: 10.1016/j.ypmed.2016.03.016. [Epub ahead of print] | |
| **1431** | Nitrate medications, fractures and change in bone mineral density in postmenopausal women: results from the Women's Health Initiative | Golchin, Hohensee, LaCroix, Gray | Gen | J Bone Miner Res. 2016 Mar 18. doi: 10.1002/jbmr.2838. [Epub ahead of print] | |
| **1479** | Psychosocial clusters and their associations with well-being and health: an empirical strategy for identifying psychosocial predictors most relevant to racially/ethnically diverse women's health | Jabson, Bowen, Weinberg, Kroenke, Luo, Messina, Shumaker, Tindle | Gen | Clin Med Insights Womens Health. 2016 Jun 6;9(Suppl 1):31-40. doi: 10.4137/CMWH.S34692. eCollection 2016 | |
| **1492** | Associations between lifetime tobacco exposure with infertility and age at natural menopause: the Women’s Health Initiative Observational Study | Hyland, Piazza, Hovey, Tindle, Manson, Messina, Rivard, Smith, Wactawski-Wende | Gen | Tob Control. 2015 Dec 14. pii: tobaccocontrol-2015-052510. doi: 10.1136/tobaccocontrol-2015-052510. [Epub ahead | |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **1549** | Whole exome sequencing in atrial fibrillation | Lubitz, Brody, Bihlmeyer, Roselli, Weng, Christophersen, Alonso, Boerwinkle, Gibbs, Bis, NHLBI GO Exome Sequencing Project, Cupples, Mohler, Nickerson, Muzny, Perez, et al. | Gen | PLoS Genet. 2016 Sep 2;12(9):e1006284. doi: 10.1371/journal.pgen.1006284 | M24 |
| **1550** | Rare exome sequence variants in CLCN6 reduce blood pressure levels and hypertension risk | Yu, Pulit, Hwang, Brody, Amin, Auer, Bis, Boerwinkle, Burke, Chakravarti, Correa, Dreisbach, Ehret, Franceschini, Lin | Gen | Circ Cardiovasc Genet. 2016 Feb;9(1):64-70. doi: 10.1161/CIRCGENETICS.115.001215. Epub 2015 Dec 11 | M24 |
| **1596** | Coffee consumption and incidence of colorectal cancer in women | Groessl, Allison, Larson, Ho, Snetselaar, Lane, Tharp, Stefanick | OS | J Cancer Epidemiol. 2016;2016:6918431. doi: 10.1155/2016/6918431. Epub 2016 Apr 28 | |
| **1598** | Diabetes, metformin and incidence of and death from invasive cancer in postmenopausal women: Results from the Women's Health Initiative | Gong, Aragaki, Chlebowski, Manson, Rohan, Chen, Vitolins, Tinker, LeBlanc, Kuller, Hou, LaMonte, Luo, Wactawski-Wende | Gen | Int J Cancer. 2015 Nov 30. doi: 10.1002/ijc.29944. [Epub ahead of print] | |
| **1603** | Reproductive risk factors and coronary heart disease in the Women's Health Initiative Observational Study | Parikh, (Rodabough) Jeppson, Berger, Eaton, Kroenke, LeBlanc, Lewis, Loucks, Parker, Rillamas-Sun, Ryckman, Waring, Schenken, Edstedt-Bonamy, Allison, Howard, et al. | Gen | Circulation. 2016 Apr 19. pii: CIRCULATIONAHA.115.017854. [Epub ahead of print] | |
| **1617** | Cardiovascular health and incident cardiovascular disease and cancer: the Women's Health Initiative | Foraker, Abdel-Rasoul, Kuller, Jackson, Van Horn, Seguin, Safford, Wallace, Kucharska-Newton, Robinson, Martin, Agha, Hou, Williams, Tindle | Gen | Am J Prev Med. 2015 Oct 8. pii: S0749-3797(15)00482-1. doi: 10.1016/j.amepre.2015.07.039. [Epub ahead of print] | |
| **1627** | Tubal ligation and risk of endometrial cancer: Findings from the Women's Health Initiative | Winer, Lehman, Wactawski-Wende, Robinson, Simon, Cote | Gen | Int J Gynecol Cancer. 2016 Jan 29. [Epub ahead of print] | |
| **1629** | Urinary cadmium and risk of invasive breast cancer in the Women's Health Initiative | Adams, Shafer, Bonner, LaCroix, Manson, Meliker, Neuhouser, Newcomb | Gen | Am J Epidemiol. 2016 Mar 31. pii: kwv285. [Epub ahead of print] | AS290 |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **1657** | Pre-existing diabetes and lung cancer prognosis | Luo, Hendryx, Qi, Ho, Margolis | Gen | Br J Cancer. 2016 May 19. doi: 10.1038/bjc.2016.141. [Epub ahead of print] | W35 |
| **1683** | Benefit/risk for adjuvant breast cancer therapy with tamoxifen or aromatase inhibitor use by age, and race/ethnicity | Chlebowski, Haque, Hedlin, Col, Paskett, Manson, Kubo, Johnson, Wactawski-Wende, Pan, Anderson | CT | Breast Cancer Res Treat. 2015 Dec;154(3):609-16. doi: 10.1007/s10549-015-3647-1. Epub 2015 Nov 24 | |
| **1685** | Reproductive history and risk of type 2 diabetes mellitus in postmenopausal women: findings from the Women's Health Initiative | LeBlanc, Kapphahn, Hedlin, Desai, Parikh, Liu, Parker, Anderson, Aroda, Robinson, Woods, Waring, Lewis, Stefanick | Gen | Menopause. 2016 Jul 25. [Epub ahead of print] | |
| **1696** | Individual and neighborhood socioeconomic status and the association between air pollution and cardiovascular disease | Chi, Hajat, Bird, Cullen, Griffin, Miller, Shih, Stefanick, Vedal, Whitsel, Kaufman | OS | Environ Health Perspect. 2016 May 3. [Epub ahead of print] | AS220 |
| **1700** | Association of leptin with body pain in women | Younger, Kapphahn, Brennan, Sullivan, Stefanick | OS | J Womens Health (Larchmt). 2016 Mar 30. [Epub ahead of print] | AS189, BAA10, BAA11 |
| **1757** | Racial and ethnic variations in lung cancer incidence and mortality: results from the Women's Health Initiative | Patel, Wang, Kapphahn, Desai, Chlebowski, Simon, Bird, Corbie-Smith, Gomez, Adams-Campbell, Cote, Stefanick, Wakelee | Gen | J Clin Oncol. 2015 Dec 23. pii: JCO635789. [Epub ahead of print] | |
| **1774** | Associations of insulin and IGFBP-3 with lung cancer susceptibility in current smokers | Ho, Zheng, Chen, Wallace | Gen | J Natl Cancer Inst. 2016 Apr 12;108(7). pii: djw012. doi: 10.1093/jnci/djw012. Print 2016 Jul | AS266 |
| **1780** | Red blood cell fatty acids and incident diabetes mellitus in the Women's Health Initiative Memory Study | Harris, Luo, Pottala, Margolis, Espeland, Robinson | CT | PLoS One. 2016 Feb 16;11(2):e0147894. doi: 10.1371/journal.pone.0147894. eCollection 2016. | BAA19 |
| **1784** | Gene by environment investigation of incident lung cancer risk in African-Americans | David, Wang, Kapphahn, Hedlin, Desai, Henderson, Yang, Walsh, Schwartz, Wiencke, Spitz, Wenzlaff, Wrensch, Eaton, Furberg Barnes, Brown, et al. | Gen | EBioMedicine. 2016 Jan 11;4:153-61. doi: 10.1016/j.ebiom.2016.01.002. eCollection 2016 Feb | M5 |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **1798** | CYP24A1 variant modifies the association between use of oestrogen plus progestogen therapy and colorectal cancer risk | Garcia-Albeniz, Rudolph, Hutter, White, Lin, Rosse, Figueiredo, Harrison, Jiao, Potter, Caan, Stelling, Du, Warnick, Gong, et al. | OS | Br J Cancer. 2016 Jan 19;114(2):221-9. doi: 10.1038/bjc.2015.443. Epub 2016 Jan 14 | AS224 |
| **1805** | Performance of the breast cancer risk assessment tool among women age 75 years and older | Schonberg, Li, Eliassen, Davis, LaCroix, McCarthy, Rosner, Chlebowski, Rohan, Marcantonio, Ngo | Gen | J Natl Cancer Inst. 2015 Nov 30;108(3). pii: djv348. doi: 10.1093/jnci/djv348. Print 2016 Mar | |
| **1809** | Periodontal disease and breast cancer: prospective cohort study of postmenopausal women | Freudenheim, Genco, LaMonte, Millen, Hovey, Mai, Nwizu, Andrews, Wactawski-Wende | OS | Cancer Epidemiol Biomarkers Prev. 2016 Jan;25(1):43-50. doi: 10.1158/1055-9965.EPI-15-0750. Epub 2015 Dec 21 | AS15 |
| **1843** | Effects of hormone therapy on intraocular pressure: the Women's Health Initiative-Sight Exam Study | Vajaranant, Maki, Pasquale, Lee, Kim, Haan | CT | Am J Ophthalmol. 2016 Feb 29. pii: S0002-9394(16)30075-7. doi: 10.1016/j.ajo.2016.02.025. [Epub ahead of print] | AS62 |
| **1852** | Cross-sectional and longitudinal risk of physical impairment in a cohort of postmenopausal women who experience physical and verbal abuse | Cannell, Weitlauf, Maldonado-Molina, Andresen, Margolis, Manini | Gen | BMC Womens Health. 2015 Nov 11;15(1):98. doi: 10.1186/s12905-015-0258-2 | |
| **1856** | Genetic determinants of pelvic organ prolapse among African American and Hispanic women in the Women's Health Initiative | Giri, Wu, Ward, Hartmann, Park, North, Graff, Wallace, Bareh, Qi, O'Sullivan, Reiner, Edwards, Velez Edwards | Gen | PLoS One. 2015 Nov 6;10(11):e0141647. doi: 10.1371/journal.pone.0141647. eCollection 2015. | M5 |
| **1901** | A prospective study of soluble receptor for advanced glycation end-products and colorectal cancer risk in postmenopausal women | Chen, Duan, Tinker, Sangi-Haghpeykar, Strickler, Ho, Gunter, Rohan, Logsdon, White, Royse, El-Serag, Jiao | OS | Cancer Epidemiol. 2016 Apr 18;42:115-123. doi: 10.1016/j.canep.2016.04.004. [Epub ahead of print] | AS292 |
| **1905** | Impact of incident diabetes on atherosclerotic cardiovascular disease according to statin use history among postmenopausal women | Ma, Persuitte, Andrews, Hovey, LaMonte, Culver, Manson, Phillips, Liu, Eaton, Martin, Howard, Balasubramanian, Bird, Ockene, Sturgeon, et al. | Gen | Eur J Epidemiol. 2016 May 17. [Epub ahead of print] | |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **1937** | Physical impairment and body weight history in postmenopausal women: The Women's Health Initiative | Wanigatunga, Sourdet, LaMonte, Waring, Nassir, Garcia, Bea, Seguin, Ockene, Sarto, Stefanick, Limacher, Manini | OS | Public Health Nutr. 2016 Jun 8:1-9. [Epub ahead of print] | |
| **1941** | Newly developed chronic conditions and changes in health-related quality of life in postmenopausal women | Luo, Margolis, Bassuk, Eaton, Rossom, Safford, Wallace, Hendryx | OS | J Am Geriatr Soc. 2015 Oct 27. doi: 10.1111/jgs.13796. [Epub ahead of print] | |
| **1956** | Estrogen plus progestin and lung cancer: follow-up of the Women's Health Initiative Randomized Trial | Chlebowski, Wakelee, Pettinger, Rohan, Liu, Simon, Tindle, Messina, Johnson, Schwartz, Gass, Wactawski-Wende | Gen | Clin Lung Cancer. 2016 Jan;17(1):10-17.e1. doi: 10.1016/j.cllc.2015.09.004. Epub 2015 Oct 22 | |
| **1962** | Marginal structural models for the estimation of the risk of Diabetes Mellitus in the presence of elevated depressive symptoms and antidepressant medication use in the Women's Health Initiative observational and clinical trial cohorts | Frisard, Gu, Whitcomb, Ma, Pekow, Zorn, Sepavich, Balasubramanian | OS | BMC Endocr Disord. 2015 Oct 12;15(1):56. doi: 10.1186/s12902-015-0049-7 | |
| **1967** | Nonsyndromic cleft lip with or without cleft palate and cancer: Evaluation of a possible common genetic background through the analysis of GWAS data | Dunkhase, Ludwig, Knapp, Skibola, Figueiredo, Hosking, Ellinghaus, Landi, Ma, Nakagawa, Bohmer, Mattheisen, Nothen, Mangold | Gen | Genom Data. 2016 Aug 26;10:22-9. doi: 10.1016/j.gdata.2016.08.017. eCollection 2016 | AS224 |
| **1996** | Identification of rare variants in ATP8B4 as a risk factor for systemic sclerosis by whole-exome sequencing | Gao, Emond, Louie, Cheadle, Berger, Rafaels, Vergara, Kim, Taub, Ruczinski, Mathai, Rich, Nickerson, Hummers, Bamshad, Hassoun, et al. | Gen | Arthritis Rheumatol. 2016 Jan;68(1):191-200. doi: 10.1002/art.39449 | M24 |
| **2019** | Causal mediation analysis on failure time outcome without sequential ignorability | Zheng, Zhou | CT | Lifetime Data Anal. 2016 Jul 27. [Epub ahead of print] | |
| **2022** | Robust best linear estimator for Cox regression with instrumental variables in whole cohort and surrogates with additive measurement error in calibration sample | Wang, Song | CT | Biom J. 2016 Aug 22. doi: 10.1002/bimj.201500238. [Epub ahead of print] | W8 |
| **2044** | Relation of statin use with non-melanoma skin cancer: prospective results from the Women's Health Initiative | Wang, Stefanick, Kapphahn, Hedlin, Desai, Manson, Strickler, Martin, Wactawski-Wende, Simon, Tang | Gen | Br J Cancer. 2016 Feb 2;114(3):314-20. doi: 10.1038/bjc.2015.376. Epub 2016 Jan 7 | |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2075** | No association between dietary patterns and risk for cognitive decline in older women with 9-year follow-up: data from the Women's Health Initiative Memory Study | Haring, Wu, Mossavar-Rahmani, Snetselaar, Brunner, Wallace, Neuhouser, Wassertheil-Smoller | OS | J Acad Nutr Diet. 2016 Feb 23. pii: S2212-2672(15)01815-8. doi: 10.1016/j.jand.2015.12.017. [Epub ahead of print] | AS39 |
| **2090** | The impact of birth weight on cardiovascular disease risk in the Women's Health Initiative | Smith, Ryckman, Barnabei, Howard, Isasi, Sarto, Tom, Van Horn, Wallace, Robinson | OS | Nutr Metab Cardiovasc Dis. 2015 Nov 18. pii: S0939-4753(15)30006-5. doi: 10.1016/j.numecd.2015.10.015. [Epub ahead of print] | |
| **2094** | Longitudinal changes in the dietary inflammatory index: an assessment of the inflammatory potential of diet over time in postmenopausal women | Tabung, Steck, Zhang, Ma, Liese, Tylavsky, Vitolins, Ockene, Hebert | Gen | Eur J Clin Nutr. 2016 Jul 6. doi: 10.1038/ejcn.2016.116. [Epub ahead of print] | |
| **2095** | Patterns of change over time and history of the inflammatory potential of diet and risk of breast cancer among postmenopausal women | Tabung, Steck, Liese, Zhang, Ma, Johnson, Lane, Qi, Snetselaar, Vitolins, Ockene, Hebert | Gen | Breast Cancer Res Treat. 2016 Jul 30. [Epub ahead of print] | |
| **2131** | Continuous combined estrogen plus progestin and endometrial cancer: the Women's Health Initiative Randomized Trial | Chlebowski, Anderson, Sarto, Haque, Runowicz, Aragaki, Thomson, Howard, Wactawski-Wende, Chen, Rohan, Simon, Reed, Manson | CT | J Natl Cancer Inst. 2015 Dec 14;108(3). pii: djv350. Print 2016 Mar | |
| **2136** | A pilot study combining Go4Life® materials with interactive voice response system to promote physical activity in older women | Saquib, King, Castro, Tinker, Sims, Shikany, Bea, LaCroix, Van Horn, Stefanick | CT | J Women Aging. 2016;28(5):454-62. doi: 10.1080/08952841.2015.1018065. Epub 2016 Jul 7 | AS385 |
| **2137** | Fine-mapping of common genetic variants associated with colorectal tumor risk identified potential functional variants | Du, Jiao, Bien, Gala, Abecasis, Bezieau, Brenner, Butterbach, Caan, Carlson, Curtis, Harrison, Newcomb, Potter, Hsu, White, et al. | Gen | PLoS One. 2016 Jul 5;11(7):e0157521. doi: 10.1371/journal.pone.0157521. eCollection 2016 | AS224 |
| **2153** | Relationships between caffeine intake and risk for probable dementia or global cognitive impairment: The Women's Health Initiative Memory Study | Driscoll, Shumaker, Snively, Margolis, Manson, Vitolins, Rossom, Espeland | CT | J Gerontol A Biol Sci Med Sci. 2016 Sep 27. pii: glw078. [Epub ahead of print] | AS250 |
| **2187** | Long-term oral bisphosphonate use in relation to fracture risk in postmenopausal women with breast cancer: findings from the Women's Health Initiative | Drieling, LaCroix, Beresford, Boudreau, Kooperberg, Chlebowski, Gass, Crandall, Womack, Heckbert | Gen | Menopause. 2016 Nov;23(11):1168-1175. Epub 2016 Jul 18 | |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2188** | Statin use and all-cancer mortality: prospective results from the Women's Health Initiative | Wang, Aragaki, Tang, Kurian, Manson, Chlebowski, Simon, Desai, Wassertheil-Smoller, Liu, Kritchevsky, Wakelee, Stefanick | Gen | Br J Cancer. 2016 Jun 9. doi: 10.1038/bjc.2016.149. [Epub ahead of print] | |
| **2194** | Physical activity and sedentary behavior in relation to lung cancer incidence and mortality in older women: the Women's Health Initiative | Wang, Qin, Hedlin, Desai, Chlebowski, Gomez, Eaton, Johnson, Qi, Wactawski-Wende, Womack, Wakelee, Stefanick | Gen | Int J Cancer. 2016 Jul 20. doi: 10.1002/ijc.30281. [Epub ahead of print] | |
| **2204** | Longitudinal study of low serum LDL cholesterol and depressive symptom onset in postmenopause | Persons, Robinson, Coryell, Payne, Fiedorowicz | Gen | J Clin Psychiatry. 2016 Feb;77(2):212-20. doi: 10.4088/JCP.14m09505 | |
| **2212** | Genetic variant in ACVR2B is associated with lean mass | Klimentidis, Bea, Thompson, Klimecki, Hu, Wu, Nicholas, Ryckman, Chen | OS | Med Sci Sports Exerc. 2016 Feb 5. [Epub ahead of print] | |
| **2216** | Aging well: observations from the Women's Health Initiative Study | Woods, Rillamas-Sun, Cochrane, LaCroix, Seeman, Tindle, Zaslavsky, Bird, Johnson, Manson, Ockene, Seguin, Wallace | Gen | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S3-S12. doi: 10.1093/gerona/glv054. | |
| **2218** | Functional independence in late-life: Maintaining physical functioning in older adulthood predicts daily life function after age 80 | Vaughan, Leng, LaMonte, Tindle, Cochrane, Shumaker | Gen | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S79-86. doi: 10.1093/gerona/glv061 | |
| **2219** | Predictors of optimal cognitive aging in 80+ women: the Women's Health Initiative Memory Study | Goveas, Espeland, Resnick, Rapp, Shumaker, Manson, Ockene, Rossom, Tindle, Yaffe, Zaslavsky, Driscoll, Hogan, Kesler | WHIMS | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S62-71. doi: 10.1093/gerona/glv055 | AS39 |
| **2220** | Global quality of life among WHI women aged 80 years and older | Naughton, Brunner, Hogan, Danhauer, Brenes, Bowen, Snively, Goveas, Saquib, Zaslavsky, Shumaker | Gen | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S72-8. doi: 10.1093/gerona/glv056 | |
| **2221** | Physical functioning among women 80 years of age and older with and without a cancer history | Weaver, Leach, Leng, Danhauer, Klepin, Vaughan, Naughton, Chlebowski, Vitolins, Paskett | Gen | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S23-30. doi: 10.1093/gerona/glv073 | |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2222** | The impact of multimorbidity and coronary disease comorbidity on physical function in women aged 80 years and older: the Women's Health Initiative | Rillamas-Sun, LaCroix, Bell, Ryckman, Ockene, Wallace | Gen | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S54-61. doi: 10.1093/gerona/glv059 | |
| **2223** | The relationship of cardiovascular disease to physical functioning in women surviving to age 80 and above in the Women's Health Initiative | Stefanick, Brunner, Leng, Limacher, Bird, Garcia, Hogan, LaMonte, Mackey, Johnson, LaCroix, Robinson, Seguin, Tindle, Wassertheil-Smoller | Gen | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S42-53. doi: 10.1093/gerona/glv087 | |
| **2224** | Physical functioning among women aged 80 years and older with previous fracture | Crandall, LaMonte, Snively, LeBoff, Cauley, Lewis, Wallace, Li, Chen, Robbins, Wactawski-Wende | Gen | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S31-41. doi: 10.1093/gerona/glv060 | |
| **2225** | Correlates of successful aging in racial and ethnic minority women age 80 years and older: findings from the Women’s Health Initiative | Cene, Dilworth-Anderson, Leng, Garcia, Benavente, Rosal, Vaughan, Coker, Corbie-Smith, Kim, Bell, Robinson, Manson, Cochrane | Gen | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S87-99. doi: 10.1093/gerona/glv099 | |
| **2228** | Medication use trajectories of postmenopausal breast cancer survivors and matched cancer-free controls | Pan, Chlebowski, Simon, Ray, Livaudais, Sullivan, Stefanick, Wallace, LeBoff, Bluhm, Paskett | CT | Breast Cancer Res Treat. 2016 Apr 13. [Epub ahead of print] | |
| **2231** | Coffee and caffeine consumption and the risk of hypertension in postmenopausal women | Rhee, Qin, Hedlin, Chang, Bird, Zaslavsky, Manson, Stefanick, Winkelmayer | OS | Am J Clin Nutr. 2015 Dec 9. pii: ajcn120147. [Epub ahead of print] | |
| **2246** | Calibrating physical activity intensity for hip-worn accelerometry in women age 60 to 91 years: The Women's Health Initiative OPACH Calibration Study | Evenson, Wen, Herring, Di, LaMonte, Tinker, Lee, Rillamas-Sun, LaCroix, Buchner | Gen | Prev Med Rep. 2015;2:750-756. | AS286 |
| **2253** | Telomere structure and maintenance gene variants and risk of five cancer types | Karami, Han, Pande, Cheng, Rudd, Pierce, Nutter, Schumacher, Kote-Jarai, Lindstrom, Ulrich, Peters, Newcomb, Potter, White | Gen | Int J Cancer. 2016 Jul 26. doi: 10.1002/ijc.30288. [Epub ahead of print] | AS224 |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2267** | Common variants in the obesity-associated genes FTO and MC4R are not associated with risk of colorectal cancer | Yang, Thrift, Figueiredo, Jenkins, Schumacher, Conti, Lin, Win, Limburg, Berndt, Brenner, Chan, Chang-Claude, Hoffmeister, Hudson, Le Marchand, et al. | Gen | Cancer Epidemiol. 2016 Jul 21;44:1-4. doi: 10.1016/j.canep.2016.07.003. [Epub ahead of print] | AS224 |
| **2293** | Breast cancer and menopausal hormone therapy by race/ethnicity and body mass index | Chlebowski, Anderson, Aragaki, Prentice | CT | J Natl Cancer Inst. 2015 Nov 5;108(2). pii: djv327. doi: 10.1093/jnci/djv327. Print 2015 Feb. | |
| **2298** | Relationship of pre-diagnostic body mass index with survival after colorectal cancer: Stage-specific associations | Kocarnik, Chan, Slattery, Potter, Meyerhardt, Phipps, Nan, Harrison, Rohan, Qi, Hou, Caan, Kroenke, Strickler, Hayes, Schoen, et al. | Gen | Int J Cancer. 2016 Apr 28. doi: 10.1002/ijc.30163. [Epub ahead of print] | AS224 |
| **2316** | Diet quality and colorectal cancer risk in the Women's Health Initiative Observational Study | Vargas, Neuhouser, George, Thomson, Ho, Rohan, Kato, Nassir, Hou, Manson | OS | Am J Epidemiol. 2016 Jun 5. pii: kwv304. [Epub ahead of print] | |
| **2331** | Sodium intake and osteoporosis. Findings from the Women's Health Initiative | Carbone, Huang, Prentice, Tinker, Johnson, Thomas, Crandall, Cauley, LeBoff, Li, Wactawski-Wende, Bethel | Gen | J Clin Endocrinol Metab. 2016 Feb 10:jc20154017. [Epub ahead of print] | |
| **2336** | Common genetic variation and survival after colorectal cancer diagnosis: a genome-wide analysis | Phipps, Passarelli, Chan, Harrison, Hutter, Berndt, Caan, Chanock, Cheadle, Curtis, Duggan, Fuchs, Gala, Peters, Newcomb | Gen | Carcinogenesis. 2015 Nov 19. pii: bgv161. [Epub ahead of print] | AS224 |
| **2342** | Pet ownership and cancer risk in the Women's Health Initiative | Garcia, Lander, Wertheim, Manson, Volpe, Chlebowski, Stefanick, Lessin, Kuller, Thomson | Gen | Cancer Epidemiol Biomarkers Prev. 2016 Jun 30. pii: cebp.0218.2016. [Epub ahead of print] | |
| **2358** | Tissue factor pathway inhibitor, activated protein C resistance, and risk of coronary heart disease due to combined estrogen plus progestin therapy | Johnson, Aragaki, Jackson, Reiner, Sandset, Rosing, Dahm, Rosendaal, Manson, Martin, Liu, Kuller, Cushman, Rossouw | CT | Arterioscler Thromb Vasc Biol. 2016 Feb;36(2):418-24. doi: 10.1161/ATVBAHA.115.306905. Epub 2015 Dec 17 | |

**Table 8.2**
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| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2360** | The associations of leptin, adiponectin and resistin with incident atrial fibrillation in women | Ermakov, Azarbal, Stefanick, LaMonte, Li, Tharp, Martin, Nassir, Salmoirago-Blotcher, Albert, Manson, Assimes, Hlatky, Larson, Perez | OS | Heart. 2016 May 4. pii: heartjnl-2015-308927. doi: 10.1136/heartjnl-2015-308927. [Epub ahead of print] | AS189, AS191, AS238, AS266, BAA10, BAA11, W35 |
| **2361** | Optimism, cynical hostility, falls and fractures: The Women's Health Initiative Observational Studyy (WHI-OS) | Cauley, Smagula, Hovey, Wactawski-Wende, Andrews, Crandall, LeBoff, Li, Coday, Sattari, Tindle | OS | J Bone Miner Res. 2016 Aug 27. doi: 10.1002/jbmr.2984. [Epub ahead of print] | |
| **2389** | Circulating estrogens and postmenopausal ovarian cancer risk in the Women's Health Initiative Observational Study | Trabert, Brinton, Anderson, Pfeiffer, Falk, Strickler, Sliesoraitis, Kuller, Gass, Fuhrman, Xu, Wentzensen | OS | Cancer Epidemiol Biomarkers Prev. 2016 Feb 5. pii: cebp.1272.2015. [Epub ahead of print] | AS297 |
| **2390** | Serum estrogen and estrogen metabolites and endometrial cancer risk among postmenopausal women | Brinton, Trabert, Anderson, Falk, Felix, Fuhrman, Gass, Kuller, Pfeiffer, Rohan, Strickler, Xu, Wentzensen | OS | Cancer Epidemiol Biomarkers Prev. 2016 Apr 12. pii: cebp.0225.2016. [Epub ahead of print] | AS297 |
| **2395** | Racial and ethnic differences in atrial fibrillation risk factors and predictors in women: findings from the Women's Health Initiative | Rodriguez, Stefanick, Greenland, Soliman, Manson, Parikh, Martin, Larson, Hlatky, Nassir, Cene, Rodriguez, Albert, Perez | Gen | Am Heart J. 2016 Jun;176:70-7. doi: 10.1016/j.ahj.2016.03.004. Epub 2016 Mar 17 | W35 |
| **2406** | Body shape, adiposity index and mortality in post-menopausal women: Findings from the Women's Health Initiative | Thomson, Garcia, Wertheim, Hingle, Bea, Zaslavsky, Caire-Juvera, Rohan, Vitolins, Thompson, Lewis | OS | Obesity (Silver Spring). 2016 Mar 15. doi: 10.1002/oby.21461. [Epub ahead of print] | |
| **2420** | Low levels of circulating adiponectin are associated with multiple myeloma risk in overweight and obese individuals | Hofmann, Birmann, Teras, Pfeiffer, Wang, Albanes, Baris, Colditz, De Roos, Giles, Hosgood, Lan, Landgren, Liao, Rothman, Weinstein, et al. | Gen | Cancer Res. 2016 Feb 26. [Epub ahead of print] | AS389 |
| **2426** | Dietary patterns and fractures in postmenopausal women: results from the Women's Health Initiative | Haring, Crandall, Wu, LeBlanc, Shikany, Carbone, Orchard, Thomas, Wactawski-Wende, Li, Cauley, Wassertheil-Smoller | OS | JAMA Intern Med. 2016 Mar 28. doi: 10.1001/jamainternmed.2016.0482. [Epub ahead of print] | |

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| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2427** | Association between anthropometric measures and long-term survival in frail older women: Observations from the Women's Health Initiative Study | Zaslavsky, Rillamas-Sun, LaCroix, Zisberg, Shadmi, Woods, Cochrane, Edwards, Kritchevsky, Stefanick, Tinker, Vitolins, Wactawski-Wende | OS | J Am Geriatr Soc. 2016 Feb;64(2):277-284. doi: 10.1111/jgs.13930 | |
| **2455** | Hysterectomy and bilateral salpingo-oophorectomy: variations by history of military service and birth cohort | Callegari, Gray, Zephyrin, Harrington, Gerber, Cochrane, Weitlauf, Bean-Mayberry, Bastian, Mattocks, Haskell, Katon | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S67-77. doi: 10.1093/geront/gnv666 | |
| **2456** | Differences in active and passive smoking exposures and lung cancer incidence between Veterans and non-Veterans in the Women's Health Initiative | Bastian, Gray, DeRycke, Mirza, Gierisch, Haskell, Magruder, Wakelee, Wang, Ho, LaCroix | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S102-11. doi: 10.1093/geront/gnv664 | |
| **2457** | Aging well among women Veterans compared with non-Veterans in the Women's Health Initiative | LaCroix, Rillamas-Sun, Woods, Weitlauf, Zaslavsky, Shih, LaMonte, Bird, Yano, LeBoff, Washington, Reiber | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S14-26. doi: 10.1093/geront/gnv124 | |
| **2460** | Mortality in postmenopausal women by sexual orientation and Veteran status | Lehavot, Rillamas-Sun, Weitlauf, Kimberling, Wallace, Sadler, Woods, Shipherd, Mattocks, Cirillo, Stefanick, Simpson | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S150-62. doi: 10.1093/geront/gnv125 | |
| **2461** | Longitudinal cognitive trajectories of women veterans from the Women's Health Initiative Memory Study | Padula, Weitlauf, Rosen, Cochrane, Reiber, Naughton, Li, Rissling, Yaffe, Hunt, Stefanick, Johnson, Espeland | CT | Gerontologist. 2016 Feb;56(1):115-25. doi: 10.1093/geront/gnv663. Epub 2015 Nov 27 | AS39 |
| **2464** | Development and use of a traditional Mexican diet score in relation to systemic inflammation and insulin resistance among women of Mexican descent | Santiago-Torres, Tinker, Allison, Breymeyer, Garcia, Kroenke, Lampe, Shikany, Van Horn, Neuhouser | Gen | J Nutr. 2015 Oct 21. pii: jn213538. [Epub ahead of print] | |
| **2471** | Multiple healthful dietary patterns and type 2 diabetes in the Women's Health Initiative | Cespedes, Hu, Tinker, Rosner, Redline, Garcia, Hingle, Van Horn, Howard, Levitan, Li, Manson, Phillips, Rhee, Waring, Neuhouser, et al. | Gen | Am J Epidemiol. 2016 Mar 2. pii: kwv241. [Epub ahead of print] | |

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| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2474** | Detection of non-CLL-like monoclonal B cell lymphocytosis increases dramatically in the very elderly, while detection of CLL-like populations varies by race: findings in a multiethnic population-based cohort of elderly women | Edlefsen, Cherian, De Roos, Getaneh, Lessin, Li, Wood, Reiner | Gen | Ann Hematol. 2016 Jul 29. [Epub ahead of print] | AS337 |
| **2475** | Association of pain with physical function, depressive symptoms, fatigue, and sleep quality among Veteran and non-Veteran postmenopausal women | Patel, Cochrane, Turk, Bastian, Haskell, Woods, Zaslavsky, Wallace, Kerns | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S91-S101. doi: 10.1093/geront/gnv670 | |
| **2476** | Sleep disturbance, diabetes and cardiovascular disease in postmenopausal Veteran women | Rissling, Gray, Ulmer, Martin, Zaslavsky, Gray, Hale, Zeitzer, Naughton, Woods, LaCroix, Calhoun, Stefanick, Weitlauf | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S54-66. doi: 10.1093/geront/gnv668 | |
| **2483** | Duration of adulthood overweight, obesity, and cancer risk in the Women's Health Initiative: a longitudinal study from the United States | Arnold, Jiang, Stefanick, Johnson, Lane, LeBlanc, Prentice, Rohan, Snively, Vitolins, Zaslavsky, Soerjomataram, Anton-Culver | Gen | PLoS Med. 2016 Aug 16;13(8):e1002081. doi: 10.1371/journal.pmed.1002081. eCollection 2016 Aug | |
| **2486** | Meta-analysis of rare and common exome chip variants identifies S1PR4 and other loci influencing blood cell traits | Reiner, Franceschini, Auer, Peters, Kooperberg, Jackson, Pankratz, Brody, Chen, Boerwinkle, Ganesh | OS | Nat Genet. 2016 Jul 11. doi: 10.1038/ng.3607. [Epub ahead of print] | AS224, BAA14, M13, M24, W63 |
| **2487** | Low birth weight and risk of later-life physical disability in women | Spracklen, Ryckman, Robinson, Stefanick, Sarto, Anton, Wallace | OS | J Gerontol A Biol Sci Med Sci. 2016 Jul 20. pii: glw134. [Epub ahead of print] | |
| **2493** | Prediagnostic sleep duration and sleep quality in relation to subsequent cancer survival | Phipps, Bhatti, Neuhouser, Chen, Crane, Kroenke, Ochs-Balcom, Rissling, Snively, Stefanick, Treggiari, Watson | Gen | J Clin Sleep Med. 2015 Nov 19. pii: jc-00337-15. [Epub ahead of print] | |
| **2496** | Alcohol consumption levels and all-cause mortality among women Veterans and non-Veterans enrolled in the Women's Health Initiative | Simpson, Rillamas-Sun, Lehavot, Timko, Rubin, Cucciare, Williams, Padula, Hunt, Hoggatt | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S138-49. doi: 10.1093/geront/gnv667 | |
| **2502** | SNPs and breast cancer risk prediction for African American and Hispanic women | Allman, Dite, Hopper, Gordon, Starland-Davenport, Chlebowski, Kooperberg | Gen | Breast Cancer Res Treat. 2015 Dec;154(3):583-9. doi: 10.1007/s10549-015-3641-7. Epub 2015 Nov 20 | M5 |

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| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2503** | Participation in physical activity and risk for amyotrophic lateral sclerosis mortality among postmenopausal women | Eaglehouse, Talbott, Chang, Kuller | Gen | JAMA Neurol. 2016 Jan 19:1-9. doi: 10.1001/jamaneurol.2015.4487. [Epub ahead of print] | |
| **2507** | Anticholinergic medication use and falls in postmenopausal women: findings from the women's health initiative cohort study | Marcum, Wirtz, Pettinger, LaCroix, Carnahan, Cauley, Bea, Gray | Gen | BMC Geriatr. 2016 Apr 2;16(1):76 | |
| **2511** | Calcium plus vitamin D supplementation and height loss: findings from the Women's Health Initiative Calcium and Vitamin D clinical trial | Crandall, Aragaki, LeBoff, Li, Wactawski-Wende, Cauley, Margolis, Manson | CT | Menopause. 2016 Aug 1. [Epub ahead of print] | |
| **2520** | Hemostatic markers and long-term risk of intracerebral hemorrhage | Lee, Siddique, Kim, Green, Van Horn, Allison, Wassertheil-Smoller, Greenland | | J Stroke Cerebrovasc Dis. 2016 Apr 7. pii: S1052-3057(16)00155-5. doi: 10.1016/j.jstrokecerebrovasdis.2016.03.013. [Epub ahead of print] | AS438 |
| **2521** | Ages at menarche and menopause and reproductive lifespan as predictors of exceptional longevity in women: the Women's Health Initiative | Shadyab, Macera, Shaffer, Jain, Gallo, Gass, Waring, Stefanick, LaCroix | Gen | Menopause. 2016 Jul 25. [Epub ahead of print] | |
| **2525** | Analysis of heritability and shared heritability based on genome-wide association studies for thirteen cancer types | Sampson, Wheeler, Yeager, Panagiotou, Wang, Berndt, Lan, Abnet, Amundadottir, Figueroa, Kooperberg, Peters | Gen | J Natl Cancer Inst. 2015 Oct 12;107(12):djv279. doi: 10.1093/jnci/djv279. Print 2015 Dec | AS224, M4 |
| **2544** | Effects of hormone therapy on brain volumes changes of postmenopausal women revealed by optimally-discriminative voxel-based morphometry | Zhang, Casanova, Resnick, Manson, Baker, Padula, Kuller, Bryan, Espeland, Davatzikos | WHIMS | PLoS One. 2016 Mar 14;11(3):e0150834. doi: 10.1371/journal.pone.0150834. eCollection 2016 | AS183 |
| **2547** | Association between vitamin D status and age-related macular degeneration by genetic risk | Millen, Meyers, Liu, Engelman, Wallace, LeBlanc, Tinker, Iyengar, Robinson, Sarto, Mares | OS | JAMA Ophthalmol. 2015 Oct;133(10):1171-9. doi: 10.1001/jamaophthalmol.2015.2715 | AS257 |

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| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2551** | Identification of risk factors for mortality and poor-quality-of-life survival in frail older women participating in the Women's Health Initiative Observational Study | Zaslavsky, Woods, LaCroix, Cauley, Johnson, Cochrane, Zelber-Sagi | OS | J Am Geriatr Soc. 2016 Apr;64(4):831-7. doi: 10.1111/jgs.14042 | |
| **2568** | Trajectories in physical activity and sedentary time among women Veterans in the Women's Health Initiative | Washington, Gray, Hoerster, Katon, Cochrane, LaMonte, Weitlauf, Groessl, Bastian, Vitolins, Tinker | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S27-39. doi: 10.1093/geront/gnv676 | |
| **2575** | Kidney function and disability-free survival in older women | Cavanaugh, LaCroix, Kritz-Silverstein, Rillamas-Sun, Rifkin | Gen | J Am Geriatr Soc. 2016 Sep 21. doi: 10.1111/jgs.14433. [Epub ahead of print] | |
| **2576** | Neighborhood walkability and adiposity in the Women's Health Initiative Cohort | Sriram, LaCroix, Barrington, Corbie-Smith, Garcia, Going, LaMonte, Manson, Sealy-Jefferson, Stefanick, Waring, Seguin | Gen | Am J Prev Med. 2016 May 17. pii: S0749-3797(16)30101-5. doi: 10.1016/j.amepre.2016.04.007. [Epub ahead of print] | AS429 |
| **2578** | Fracture rates and bone density among postmenopausal Veteran and non-Veteran women from the Women's Health Initiative | LaFleur, Rillamas-Sun, Colon-Emeric, Knippenberg, Ensrud, Gray, Cauley, LaCroix | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S78-90. doi: 10.1093/geront/gnv677 | |
| **2583** | Genome-wide association study of platelet count identifies ancestry-specific loci in Hispanic/Latino Americans | Schick, Jain, Hodonsky, Morrison, Davis, Brown, Sofer, Conomos, Schurmann, McHugh, Bien, Auer, Franceschini, North, Thornton, Reiner, et al. | Gen | Am J Hum Genet. 2016 Feb 4;98(2):229-42. doi: 10.1016/j.ajhg.2015.12.003. Epub 2016 Jan 21 | M5 |
| **2585** | Military generation and its relationship to mortality in women Veterans in the Women's Health Initiative | Washington, Bird, LaMonte, Goldstein, Rillamas-Sun, Stefanick, Woods, Bastian, Gass, Weitlauf | Gen | Gerontologist. 2016 Feb;56 Suppl 1:S126-37. doi: 10.1093/geront/gnv669 | |
| **2586** | Prospective analysis of association between statins and pancreatic cancer risk in the Women's Health Initiative | Simon, Desai, Wallace, Wu, Howard, Martin, Schlecht, Liu, Jay, LeBlanc, Rohan, Manson | Gen | Cancer Causes Control. 2016 Feb 9. [Epub ahead of print] | |
| **2598** | Periodontal disease severity and cancer risk in postmenopausal women: the Buffalo OsteoPerio Study | Mai, LaMonte, Hovey, Freudenheim, Andrews, Genco, Wactawski-Wende | | Cancer Causes Control. 2016 Feb;27(2):217-28. doi: 10.1007/s10552-015-0699-9. Epub 2015 Dec 10 | AS382 |

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| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2604** | Application of a new statistical model for measurement error to the evaluation of dietary self-report instruments | Freedman, Midthune, Carroll, Commins, Arab, Baer, Moler, Moshfegh, Neuhouser, Prentice, Rhodes, Spiegelman, Subar, Tinker, Willett, Kipnis, et al. | CT | Epidemiology. 2015 Nov;26(6):925-33. doi: 10.1097/EDE.0000000000000377 | AS289 |
| **2618** | Rare variant associations with waist-to-hip ratio in European-American and African-American women from the NHLBI-Exome Sequencing Project | Kan, Auer, Wang, Bucasas, Cupples, Li, Ellis, Gross, Smith, Gross, Smith, Heard-Costa, Meigs, Pankow | Gen | Eur J Hum Genet. 2016 Jan 13. doi: 10.1038/ejhg.2015.272. [Epub ahead of print] | M24 |
| **2620** | Change in dietary patterns and change in waist circumference and DXA trunk fat among post-menopausal women | Cespedes, Tinker, Manson, Allison, Rohan, Zaslavsky, Waring, Asao, Rosal, Garcia, Neuhouser | Gen | Obesity (Silver Spring). 2016 Aug 22. doi: 10.1002/oby.21589. [Epub ahead of print] | |
| **2622** | Association of non-melanoma skin cancer with second non-cutaneous malignancy in the Women's Health Initiative | Ransohoff, Stefanick, Li, Kurian, Wakelee, Wang, Paskett, Han, Tang | OS | Br J Dermatol. 2016 May 26. doi: 10.1111/bjd.14766. [Epub ahead of print] | |
| **2637** | Circulating metabolites and survival among patients with pancreatic cancer | Yuan, Clish, Wu, Mayers, Kraft, Townsend, Zhang, Tworoger, Bao, Qian, Anderson, Cochrane, Manson, Fuchs, Wolpin | OS | J Natl Cancer Inst. 2016 Jan 11;108(6). pii: djv409. doi: 10.1093/jnci/djv409. Print 2016 Jun | AS214 |
| **2638** | Validity of self-reported medication use compared with pharmacy records in a cohort of older women: findings from the Women's Health Initiative | Drieling, LaCroix, Beresford, Boudreau, Kooperberg, Heckbert | Gen | Am J Epidemiol. 2016 Jul 7. pii: kwv446. [Epub ahead of print] | AS449 |
| **2642** | Prediagnostic plasma 25-hydroxyvitamin D and pancreatic cancer survival | Yuan, Qian, Babic, Morales-Oyarvide, Rubinson, Kraft, Ng, Bao, Giovannucci, Ogino, Stampfer, Gaziano, Sesso, Buring, Cochrane, Chlebowski, et al. | OS | J Clin Oncol. 2016 Jun 20. pii: JCO663005. [Epub ahead of print] | AS214 |
| **2643** | Testing the role of predicted gene knockouts in human anthropometric trait variation | Lessard, Low-Kam, Giri, Peters, Kooperberg, Reiner, Jackson, North, Jackson, Kooperberg | Gen | Hum Mol Genet. 2016 Feb 21. pii: ddw055. [Epub ahead of print] | M24 |

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| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2647** | Impact of Type 2 diabetes mellitus and postmenopausal hormone therapy on incidence of cognitive impairment in older women | Espeland, Brinton, Hugenschmidt, Manson, Craft, Yaffe, Weitlauf, Vaughan, Johnson, Padula, Jackson, Resnick, WHIMS Study Group | CT | Diabetes Care. 2015 Oct 20. pii: dc151385. [Epub ahead of print] | W63 |
| **2657** | Association of hemoglobin concentration with total and cause-specific mortality in a cohort of postmenopausal women | Kabat, Kim, Verma, Manson, Lessin, Kamensky, Lin, Wassertheil-Smoller, Rohan | Gen | Am J Epidemiol. 2016 Apr 13. pii: kwv332. [Epub ahead of print] | |
| **2678** | Periodontal pathogens and risk of incident cancer in postmenopausal women: the Buffalo OsteoPerio Study | Mai, Genco, LaMonte, Hovey, Freudenheim, Andrews, Wactawski-Wende | | J Periodontol. 2015 Oct 29:1-18. [Epub ahead of print] | AS382 |
| **2687** | Model-free estimation of recent genetic relatedness | Conomos, Reiner, Weir, Thornton | Gen | Am J Hum Genet. 2016 Jan 7;98(1):127-48. doi: 10.1016/j.ajhg.2015.11.022 | M5 |
| **2696** | Menopause accelerates biological aging | Levine, Lu, Chen, Hernandez, Singleton, Ferrucci, Bandinelli, Salfati, Manson, Quach, Kusters, Kuh, Wong, Teschendorffh, Widschwendter, Ritz, et al. | Gen | Proc Natl Acad Sci U S A. 2016 Jul 25. pii: 201604558. [Epub ahead of print] | BAA23 |
| **2711** | Meta-analysis of genome-wide association studies discovers multiple loci for chronic lymphocytic leukemia | Berndt, Camp, Skibola, Vijai, Wang, Gu, Nieters, Kelly, Smedby, Lan, Tinker, De Roos, North | Gen | Nat Commun. 2016 Mar 9;7:10933. doi: 10.1038/ncomms10933 | AS301 |
| **2720** | Enhancing breast cancer recurrence algorithms through selective use of medical record data | Kroenke, Chubak, Johnson, Castillo, Weltzien, Caan | Gen | J Natl Cancer Inst. 2015 Nov 18;108(3). pii: djv336. doi: 10.1093/jnci/djv336. Print 2016 Mar | AS370 |
| **2725** | Interactions between breast cancer susceptibility loci and menopausal hormone therapy in relationship to breast cancer in the Breast and Prostate Cancer Cohort Consortium | Gaudet, Barrdahl, Lindstrom, Travis, Auer, Buring, Chanock, Eliassen, Gapstur, Giles, Prentice | Gen | Breast Cancer Res Treat. 2016 Feb;155(3):531-40. doi: 10.1007/s10549-016-3681-7. Epub 2016 Jan 23 | M18 |
| **2738** | Genome-wide association study of generalized anxiety symptoms in the Hispanic Community Health Study/Study of Latinos | Dunn, Gallo, Gogarten, Sofer, Kerr, Chen, Stein, Guo, Jia, Qi, Rotter, Argos, Cai, Penedo, Perreira, Wassertheil-Smoller, et al. | OS | Am J Med Genet B Neuropsychiatr Genet. 2016 May 9. doi: 10.1002/ajmg.b.32448. [Epub ahead of print] | M5 |

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| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2751** | Association between chronic conditions and physical function among Veteran and non-Veteran women with diabetes | Gray, Katon, Rillamas-Sun, Bastian, Nelson, LaCroix, Reiber | | Gerontologist. 2016 Feb;56 Suppl 1:S112-25. doi: 10.1093/geront/gnv675 | |
| **2779** | Long-term effects on cognitive trajectories of postmenopausal hormone therapy in two age groups | Espeland, Rapp, Manson, Goveas, Shumaker, Hayden, Weitlauf, Gaussoin, Baker, Padula, Hou, Resnick | CT | J Gerontol A Biol Sci Med Sci. 2016 Aug 9. pii: glw156. [Epub ahead of print] | AS244, AS262 |
| **2791** | Association between body composition and hip fractures in older women with physical frailty | Zaslavsky, Li, Going, Datta, Snetselaar, Zelber-Sagi | OS | Geriatr Gerontol Int. 2016 May 10. doi: 10.1111/ggi.12798. [Epub ahead of print] | |
| **2792** | Association of dynamics in lean and fat mass measures with mortality in frail older women | Zaslavsky, Rillamas-Sun, Li, Going, Datta, Snetselaar, Zelber-Sagi | OS | J Nutr Health Aging. 2017;21(1):112-119. doi: 10.1007/s12603-016-0730-1 | |
| **2811** | Identification of a novel susceptibility locus at 13q34 and refinement of the 20p12.2 region as a multi-signal locus associated with bladder cancer risk in individuals of European ancestry | Figueroa, Middlebrooks, Banday, Ye, Garcia-Closas, Chatterjee, Koutros, Kiemeney, Rafnar, Bishop, Kooperberg, Hohensee, (Rodabough) Jeppson | Gen | Hum Mol Genet. 2016 Mar 15;25(6):1203-14. doi: 10.1093/hmg/ddv492. Epub 2016 Jan 4 | M8 |
| **2817** | Genetically predicted longer telomere length is associated with increased risk of B-cell lymphoma subtypes | Machiela, Lan, Slager, Vermeulen, Teras, Camp, Cerhan, Spinelli, Wang, Nieters, De Roos, Tinker, North | Gen | Hum Mol Genet. 2016 Apr 15;25(8):1663-76. doi: 10.1093/hmg/ddw027. Epub 2016 Feb 9 | AS301 |
| **2844** | Epigenetic aging and immune senescence in women with insomnia symptoms: Findings from the Women's Health Initiative Study | Carroll, Irwin, Levine, Seeman, Absher, Assimes, Horvath | Gen | Biol Psychiatry. 2016 Jul 26. pii: S0006-3223(16)32582-3. doi: 10.1016/j.biopsych.2016.07.008 | BAA23 |
| **2853** | Feasibility of self-administered sleep assessment in older women in the Women's Health Initiative (WHI) | Vaughan, Redline, Stone, Ulanski, Rueschman, Dailey, Rapp, Snively, Baker, Shumaker | OS | Sleep Breath. 2016 Jan 29. [Epub ahead of print] | AS413 |
| **2856** | Whole exome sequencing identifies loci associated with blood cell traits and reveals a role for alternative GFI1B splice variants in human hematopoiesis | Polfus, Khajuria, Schick, Pankratz, Pazoki, Brody, Chen, Auer, Floyd, Huang, Wallace, Franceschini, Psaty, Reiner | Gen | Am J Hum Genet. 2016 Aug 4;99(2):481-488. doi: 10.1016/j.ajhg.2016.06.016 | M24 |

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| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2894** | The effect of phenotypic outliers and non-normality on rare-variant association testing | Auer, Reiner, Leal | Gen | Eur J Hum Genet. 2016 Jan 6. doi: 10.1038/ejhg.2015.270. [Epub ahead of print] | AS224, BAA14, BAA3, M13, M24, W63 |
| **2911** | Breast cancer chemoprevention: targeting the estrogen receptor | Chlebowski, Prabhakar, Tagawa | N/A | American Journal of Hematology / Oncology. Vol. 12, No. 1, pp. 6-13, January 2016 | |
| **2922** | Hysterectomy, oophorectomy and risk of thyroid cancer | Luo, Hendryx, Manson, Liang | Gen | J Clin Endocrinol Metab. 2016 Jul 26:jc20162011. [Epub ahead of print] | |
| **2941** | A reference panel of 64,976 haplotypes for genotype imputation | McCarthy, Peters, Harrison, Kooperberg, Durbin, Abecasis, Marchini | Gen | Nat Genet. 2016 Oct;48(10):1279-83. doi: 10.1038/ng.3643. Epub 2016 Aug 22. | AS224 |
| **2961** | Improving our understanding of health issues in older women Veterans | Bastian, Hayes, Haskell, Atkins, Reiber, LaCroix, Yano | N/A | Gerontologist. 2016 Feb;56 Suppl 1:S10-3. doi: 10.1093/geront/gnv672 | |
| **2962** | Older women Veterans in the Women's Health Initiative | Reiber, LaCroix | N/A | Gerontologist. 2016 Feb;56 Suppl 1:S1-5. doi: 10.1093/geront/gnv673 | |
| **2963** | Who are the women Veterans in the Women's Health Initiative? | Weitlauf, Washington, Stefanick | N/A | Gerontologist. 2016 Feb;56 Suppl 1:S6-9. doi: 10.1093/geront/gnv674 | |
| **2978** | Living long and living well: Results from the Women's Health Initiative | Rapp, LaCroix, Shumaker | N/A | J Gerontol A Biol Sci Med Sci. 2015 Dec 17. pii: glv215. [Epub ahead of print] | |
| **2982** | Use of administrative data to increase the practicality of clinical trials: Insights from the Women's Health Initiative | Anderson, Burns, Larson, Shaw | N/A | Clin Trials. 2016 Jun 30. pii: 1740774516656579. [Epub ahead of print] | |

**Table 8.2**
**Publications since October 2015**

| MS# | Title | Authors | Focus | Reference | Study # |
|---|---|---|---|---|---|
| **2993** | Living well after 80 years: an introduction to the special issue | Rapp, LaCroix, Shumaker | N/A | J Gerontol A Biol Sci Med Sci. 2016 Mar;71 Suppl 1:S1-2. doi: 10.1093/gerona/glv214. Epub 2015 Dec 15 | |
| **3008** | TwoPhaseInd: an R package for estimating gene-treatment interactions and discovering predictive markers in randomized clinical trials | Wang, Dai | N/A | Bioinformatics. 2016 Nov 1;32(21):3348-3350. Epub 2016 Jul 4 | M13 |
| **3061** | Lifestyle and breast cancer | Chlebowski | N/A | In Breast Cancer-Innovations in Research and Management. Villardita MG, Galimberti V (eds). Springer, 2016. | |