Women's Health Initiative
2018 Annual Progress Report

Data as of: March 31, 2018

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1.   Overview

1.0   Background

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) (Figure 1). 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).
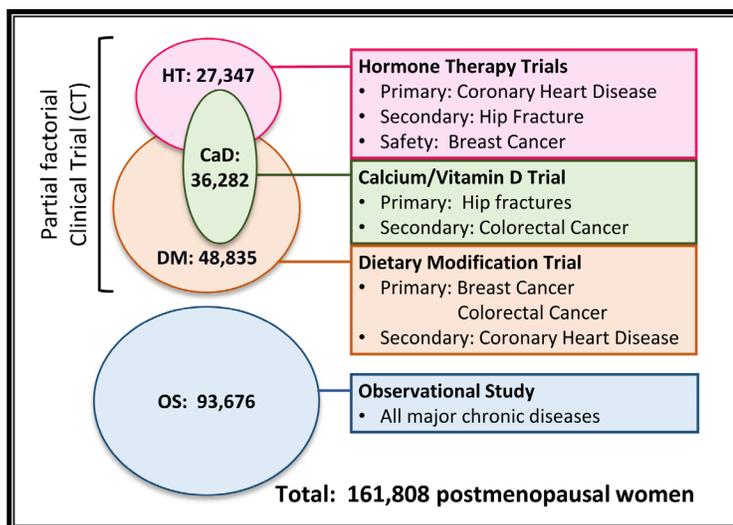
Figure 1. Original design of the WHI clinical trials and observational study, its components and outcomes.

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 (Figure 2). Active outcome data collection for the remaining participants (the Self-Report Cohort or SRC) is limited to self-report with the exception
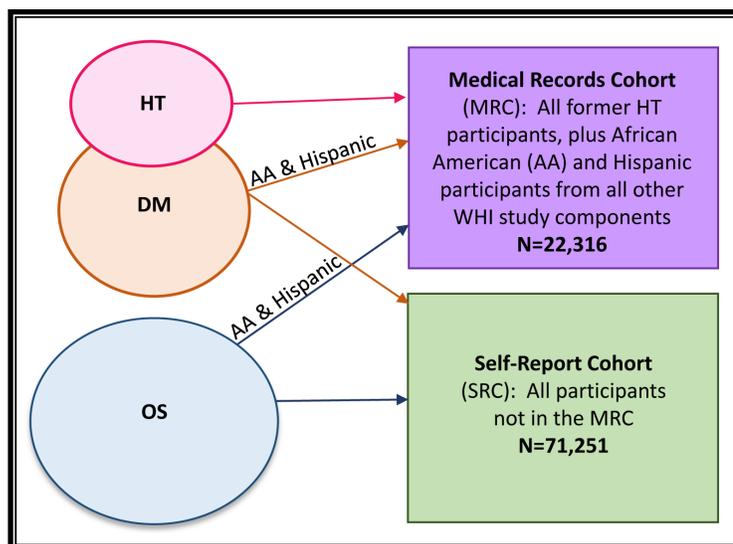
Figure 2. 2010–2020 Extension Study design reflecting differing levels of outcomes ascertainment: MRC and SRC.

of cancer, for which NCI is supporting the documentation and coding of all incident primary cancers. In addition to these cohorts, there are several active ancillary studies that are augmenting the endpoints documentation.

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). As of March 2018, 70,812 women remain in active follow-up (Table 1.4), 65% of whom are 80 or older.

1.2   Progress on primary study objectives

This report provides an update on study status through March 2018. Though follow-up rates have remained excellent, there has been a gradual drop in initial and overall response rates in the last two years. In 2016, mailing response was 84.7% after 2 mailings, and the overall response was 87.6% including phone follow-up (Tables 1.5-1.6). Initial mailing response in 2017 was 73.9%, reaching 82.9% when including phone follow-up. Given no re-consent was required prior to this phase of the study, we expected to see this attrition over time.

For the designated WHI outcomes, annualized clinical event rates based on fully adjudicated outcomes through March 2018 are presented by original study component, age and race (Sections 2-4). Using the newer study cohorts and extending those criteria back in time, we present data for the MRC and SRC Supercohorts, including data for women who would have been in those groups had they participated in the 2010-2020 Extension Study. Fully adjudicated events available through March 2018 are provided for the MRC Supercohort. For the SRC Supercohort, fully adjudicated events are provided for the interval from enrollment to September 2010 or March 2018 as appropriate. A large proportion of the cohort is deceased: 18.8% of Extension Study 2010-2020 participants had died as of March 2018 (Table 2.1).

Section 5 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 6), now has post-LLS outcomes available for analyses. LLS participants were preferentially sampled based on availability of GWAS data, CVD biomarkers and older ages. Verified and self-reported outcomes are presented (Tables 6.2-6.3) stratified by age at LLS study visit and race. So far, 680 LLS participants have had verified cardiovascular outcomes, 474 have had a verified cancer, and 1,154 have died after the LLS visit. The most frequent self-reported outcomes after the draw so far are: macular degeneration (N=826), Alzheimer's disease (N=753), osteoarthritis (N=636) and COPD (N=577).

1.3   Engaging investigators

Section 7 addresses 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). 3,099 manuscript proposals have been approved and 1,491 are published or in press (Table 7.2). 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 *Journal of Clinical Oncology*. In addition to manuscripts addressing cardiovascular disease among WHI participants, there have been a substantial number in cancer, diabetes, genetics, and aging.

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: Marcia Stefanick ,Charles Kooperberg, Andrea LaCroix) both successfully launched in 2015, with COSMOS completing randomizations of 4,611 WHI participants (among a total of 21,445 trial participants) in early 2018. In addition, five ancillary studies to these trials have been funded (COSMOS – Mind, COSMOS – Web, COSMOS – Eye, and WHISH 2 Prevent Heart Failure, and WHISHStar). The new WHI Sleep HyPoxia and End Results (WHISPER) study began recruiting in 2017, towards a goal of recruiting 6,500 WHI participants. Several of these studies are actively adjudicating endpoints, augmenting the outcomes data available for future analyses.

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. Two projects ancillary to TopMED have been funded and will provide additional molecular data, including gene methylation, metabolomics, and RNAseq data.

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

Field 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, DrPH	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
Barbara Howard, PhD	MedStar Research Institute	Washington, D.C.
Allen Hubbell, MD	University of California, Irvine	Irvine, CA
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
Karen Margolis, MD	University of Minnesota	Minneapolis, MN
Lisa Martin, MD FACC	George Washington University	Washington, DC
Lauren Nathan, MD	University of California, Los Angeles	Los Angeles, CA
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
Robert Wallace, MD MSc	University of Iowa	Iowa City/Bettendorf, IA
Sylvia Wassertheil-Smoller, PhD	Albert Einstein College of Medicine	Bronx, NY

Table 1.2
Consent Status by <u>Study Component</u> and <u>Arm</u>

Data as of: March 31, 2018

	Enrolled in WHI	Eligible for extension 2005-2010[1]	Consented N	%
WHI Enrollment				
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

	Enrolled in extension 2005-2010	Eligible for extension 2010-2020[1]	Consented N	%
WHI Enrollment				
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 <u>Age at Enrollment</u> and <u>Race/Ethnicity</u>

Data as of: March 31, 2018

	Clinical Trial				Observational Study			
	Enrolled in WHI	**Eligible for extension 2005-2010**[1]	**Consented**		**Enrolled in WHI**	**Eligible for extension 2005-2010**[1]	**Consented**	
			N	**%**			**N**	**%**
WHI Enrollment								
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			
	Enrolled in extension 2005-2010	**Eligible for extension 2010-2020**[1]	**Consented**		**Enrolled in extension 2005-2010**	**Eligible for extension 2010-2020**[1]	**Consented**	
			N	**%**			**N**	**%**
WHI Enrollment								
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 <u>Current Age</u>, <u>Race/Ethnicity</u> and <u>Cohort</u>

Data as of: March 31, 2018

	Clinical Trial (N=31,490)		Observational Study (N=39,322)		MRC Cohort[2] (N=16,417)		SRC Cohort[3] (N=54,395)		Total (N=70,812)	
	N	%	N	%	N	%	N	%	N	%
Age on 3/31/2018										
<75	2389	7.6	3788	9.6	1591	9.7	4586	8.4	6177	8.7
75-79	8502	27.0	10120	25.7	4481	27.3	14141	26.0	18622	26.3
80-84	9458	30.0	10857	27.6	4686	28.5	15629	28.7	20315	28.7
85-89	6964	22.1	8555	21.8	3409	20.8	12110	22.3	15519	21.9
90-94	3409	10.8	4789	12.2	1824	11.1	6374	11.7	8198	11.6
95+	768	2.4	1213	3.1	426	2.6	1555	2.9	1981	2.8
Race/Ethnicity										
American Indian/Alaska Native	107	0.3	130	0.3	41	0.2	196	0.4	237	0.3
Asian/Pacific Islander	686	2.2	826	2.1	183	1.1	1329	2.4	1512	2.1
Black/African American	2553	8.1	2035	5.2	4588	27.9	0	0.0	4588	6.5
Hispanic/Latina	986	3.1	1012	2.6	1998	12.2	0	0.0	1998	2.8
White	26775	85.0	34884	88.7	9459	57.6	52200	96.0	61659	87.1
Unknown	383	1.2	435	1.1	148	0.9	670	1.2	818	1.2

Age[4] Distribution by <u>Race/Ethnicity</u> for Active[1] WHI Extension Study 2010-2020 Participants

Data as of: March 31, 2018

	Total (N = 70,812)		American Indian/ Alaskan Native (N = 237)		Asian/Pacific Islander (N = 1,512)		Black/African American (N = 4,588)		Hispanic/ Latina (N = 1,998)		White (N = 61,659)		Unknown (N = 818)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Age on 3/31/2018														
<75	6177	8.7	35	14.8	214	14.2	607	13.2	321	16.1	4913	8.0	87	10.6
75-79	18622	26.3	71	30.0	408	27.0	1425	31.1	638	31.9	15880	25.8	200	24.4
80-84	20315	28.7	73	30.8	385	25.5	1317	28.7	545	27.3	17768	28.8	227	27.8
85-89	15519	21.9	36	15.2	326	21.6	814	17.7	342	17.1	13835	22.4	166	20.3
90-94	8198	11.6	18	7.6	139	9.2	346	7.5	128	6.4	7459	12.1	108	13.2
95+	1981	2.8	4	1.7	40	2.6	79	1.7	24	1.2	1804	2.9	30	3.7

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[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] The MRC Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.

[3] The SRC Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

[4] Age on March 31, 2018

Table 1.5
Response Rates to CCC Annual Mailings, Extension Study 2010-2020
<u>Year 2016</u> by Cohort and Regional Center

Data as of: March 31, 2018

Cohort	Form[1]	1st Mailing Period			2nd Mailing Period				Cumulative Response
		Sent Mail 1	Response		Past 2nd mailing period	Sent Mail 2		Response	
Total	33	76382	56551	74.0%	76382	17208	22.5%	5636	32.8%	84.7%
	151	74913	54596	72.9%	74913	17640	23.5%	5905	33.5%	83.8%
Medical Record Cohort[2]	33	17658	11880	67.3%	17658	4990	28.3%	1451	29.1%	79.5%
	151	17222	11342	65.9%	17222	5076	29.5%	1503	29.6%	78.4%
Self Report Cohort[3]	33	58724	44671	76.1%	58724	12218	20.8%	4185	34.3%	86.2%
	151	57691	43254	75.0%	57691	12564	21.8%	4402	35.0%	85.5%
Regional Center									
Boston	33	8357	6026	72.1%	8357	1869	22.4%	624	33.4%	82.6%
	151	8285	5899	71.2%	8285	1924	23.2%	655	34.0%	82.0%
Buffalo	33	12119	8776	72.4%	12119	2912	24.0%	962	33.0%	83.9%
	151	11912	8504	71.4%	11912	2965	24.9%	981	33.1%	82.9%
Columbus	33	8786	6682	76.1%	8786	1753	20.0%	638	36.4%	86.7%
	151	8638	6477	75.0%	8638	1802	20.9%	673	37.3%	85.8%
Gainesville	33	6956	4734	68.1%	6956	1968	28.3%	536	27.2%	79.1%
	151	6828	4555	66.7%	6828	2013	29.5%	556	27.6%	78.1%
Iowa	33	7354	5733	78.0%	7354	1458	19.8%	546	37.4%	88.4%
	151	7154	5498	76.9%	7154	1488	20.8%	561	37.7%	87.4%
Pittsburgh	33	3276	2400	73.3%	3276	793	24.2%	269	33.9%	85.0%
	151	3207	2313	72.1%	3207	810	25.3%	276	34.1%	84.2%
Seattle	33	3487	2712	77.8%	3487	705	20.2%	233	33.0%	87.0%
	151	3414	2615	76.6%	3414	724	21.2%	246	34.0%	86.4%
Stanford	33	13001	10169	78.2%	13001	2486	19.1%	868	34.9%	88.3%
	151	12663	9740	76.9%	12663	2561	20.2%	936	36.5%	87.6%
Tucson	33	5136	3646	71.0%	5136	1288	25.1%	376	29.2%	81.0%
	151	5053	3512	69.5%	5053	1335	26.4%	408	30.6%	80.2%
Wake Forest	33	7910	5673	71.7%	7910	1976	25.0%	584	29.6%	82.5%
	151	7759	5483	70.7%	7759	2018	26.0%	613	30.4%	81.8%

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living.
[2] The MRC Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.
[3] The SRC Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

Table 1.5 (continued)
Response Rates to CCC Annual Mailings, Extension Study 2010-2020 <u>Year 2017</u> by Cohort and Regional Center
Data as of: March 31, 2018

| Cohort | Form[1] | 1st Mailing Period | | | 2nd Mailing Period | | | | | Cumulative Response |
		Sent Mail 1	Response		Past 2nd mailing period	Sent Mail 2		Response		
Total	33	76596	56635	73.9%	76596	16863	22.0%	5215	30.9%	84.1%
	151	73464	53268	72.5%	73464	16972	23.1%	5265	31.0%	81.9%
	158	68792	50072	72.8%	68792	13399	19.5%	4460	33.3%	80.6%
Medical Record Cohort[2]	33	17808	11981	67.3%	17808	4869	27.3%	1341	27.5%	78.8%
	151	16943	11115	65.6%	16943	4841	28.6%	1324	27.3%	76.1%
	158	15785	10406	65.9%	15785	3753	23.8%	1089	29.0%	74.4%
Self Report Cohort[3]	33	58788	44654	76.0%	58788	11994	20.4%	3874	32.3%	85.7%
	151	56521	42153	74.6%	56521	12131	21.5%	3941	32.5%	83.6%
	158	53007	39666	74.8%	53007	9646	18.2%	3371	34.9%	82.5%
Regional Center										
Boston	33	8775	6352	72.4%	8775	1904	21.7%	619	32.5%	81.7%
	151	8476	6014	71.0%	8476	1929	22.8%	636	33.0%	80.3%
	158	7268	5197	71.5%	7268	1324	18.2%	430	32.5%	78.6%
Buffalo	33	12768	9212	72.1%	12768	3159	24.7%	960	30.4%	82.7%
	151	12295	8717	70.9%	12295	3172	25.8%	960	30.3%	80.8%
	158	10575	7523	71.1%	10575	2277	21.5%	705	31.0%	79.3%
Columbus	33	8829	6696	75.8%	8829	1580	17.9%	538	34.1%	85.6%
	151	8426	6269	74.4%	8426	1597	19.0%	548	34.3%	83.5%
	158	8249	6194	75.1%	8249	1371	16.6%	521	38.0%	82.7%
Gainesville	33	6718	4656	69.3%	6718	1748	26.0%	458	26.2%	79.8%
	151	6478	4401	67.9%	6478	1752	27.0%	446	25.5%	77.3%
	158	5804	3934	67.8%	5804	1324	22.8%	373	28.2%	76.0%
Iowa	33	7100	5619	79.1%	7100	1354	19.1%	469	34.6%	89.3%
	151	6761	5259	77.8%	6761	1361	20.1%	470	34.5%	86.6%
	158	6754	5240	77.6%	6754	1184	17.5%	447	37.8%	85.0%
Pittsburgh	33	3299	2400	72.7%	3299	817	24.8%	251	30.7%	84.2%
	151	3164	2258	71.4%	3164	817	25.8%	240	29.4%	81.6%
	158	3106	2228	71.7%	3106	683	22.0%	207	30.3%	80.0%
Seattle	33	3481	2699	77.5%	3481	652	18.7%	205	31.4%	87.2%
	151	3311	2508	75.7%	3311	664	20.1%	216	32.5%	84.9%
	158	3273	2477	75.7%	3273	556	17.0%	205	36.9%	83.0%
Stanford	33	12787	9930	77.7%	12787	2434	19.0%	855	35.1%	88.1%
	151	12177	9277	76.2%	12177	2443	20.1%	868	35.5%	85.6%
	158	12096	9216	76.2%	12096	2048	16.9%	803	39.2%	84.2%
Tucson	33	4971	3437	69.1%	4971	1391	28.0%	328	23.6%	79.2%
	151	4797	3255	67.9%	4797	1390	29.0%	331	23.8%	77.2%
	158	4759	3237	68.0%	4759	1201	25.2%	306	25.5%	76.1%
Wake Forest	33	7868	5634	71.6%	7868	1824	23.2%	532	29.2%	81.3%
	151	7579	5310	70.1%	7579	1847	24.4%	550	29.8%	79.2%
	158	6908	4826	69.9%	6908	1431	20.7%	463	32.4%	77.8%

[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2017.
[2] The MRC Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.
[3] The SRC Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

Table 1.6
Response Rates to Regional Center Follow-up and Cumulative Response
Extension Study 2010-2020, <u>Year 2016</u> by Cohort and Regional Center

Data as of: March 31, 2018

Cohort	Form[1]	Eligible for RC Follow-up	Respondents		Total Estimated Response Rate
Total	33	17271	9594	55.5%	87.6%
	151	17725	5197	29.3%	80.9%
Medical Record	33	5402	3310	61.3%	85.2%
Cohort[2]	151	5569	1769	31.8%	75.8%
Self Report	33	11869	6284	52.9%	88.3%
Cohort[3]	151	12156	3428	28.2%	82.5%
Regional Center					
Boston	33	2006	976	48.7%	86.3%
	151	2060	682	33.1%	82.3%
Buffalo	33	3029	1826	60.3%	88.3%
	151	3109	1258	40.5%	82.6%
Columbus	33	1781	1209	67.9%	89.7%
	151	1836	4	0.2%	76.1%
Gainesville	33	1869	1006	53.8%	84.3%
	151	1931	669	34.6%	78.4%
Iowa	33	1171	426	36.4%	86.6%
	151	1200	239	19.9%	82.1%
Pittsburgh	33	980	429	43.8%	83.4%
	151	1002	245	24.5%	77.1%
Seattle	33	841	520	61.8%	88.9%
	151	863	34	3.9%	75.3%
Stanford	33	2425	1769	72.9%	92.4%
	151	2480	887	35.8%	84.7%
Tucson	33	1222	478	39.1%	83.3%
	151	1268	336	26.5%	79.5%
Wake Forest	33	1947	955	49.0%	85.2%
	151	1976	843	42.7%	82.5%

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

[2] The MRC Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.

[3] The SRC Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

Table 1.6 (continued)
Response Rates to Regional Center Follow-up and Cumulative Response
Extension Study 2010-2020, <u>Year 2017</u> by Cohort and Regional Center

Data as of: March 31, 2018

Cohort	Form[1]	Eligible for RC Follow-up	Respondents		Total Estimated Response Rate
Total	33	18941	7515	39.7%	82.9%
	151	19442	3070	15.8%	73.4%
	158	17705	343	1.9%	71.6%
Medical Record	33	5917	2498	42.2%	78.8%
Cohort[2]	151	6054	1083	17.9%	67.2%
	158	5493	141	2.6%	64.0%
Self Report	33	13024	5017	38.5%	84.2%
Cohort[3]	151	13388	1987	14.8%	75.4%
	158	12212	202	1.7%	74.0%
Regional Center					
Boston	33	2232	704	31.5%	80.9%
	151	2293	192	8.4%	72.4%
	158	1946	5	0.3%	70.7%
Buffalo	33	3408	1267	37.2%	82.0%
	151	3475	966	27.8%	76.2%
	158	2989	230	7.7%	71.6%
Columbus	33	1933	958	49.6%	84.9%
	151	2001	2	0.1%	70.7%
	158	1921	1	0.1%	72.2%
Gainesville	33	2006	801	39.9%	79.8%
	151	2073	358	17.3%	69.9%
	158	1848	11	0.6%	66.3%
Iowa	33	1306	483	37.0%	84.8%
	151	1356	54	4.0%	74.2%
	158	1359	2	0.1%	75.3%
Pittsburgh	33	1052	345	32.8%	79.4%
	151	1074	120	11.2%	69.1%
	158	926	68	7.3%	71.0%
Seattle	33	885	435	49.2%	84.9%
	151	914	6	0.7%	69.4%
	158	862	5	0.6%	70.8%
Stanford	33	2691	1201	44.6%	86.3%
	151	2762	526	19.0%	76.6%
	158	2553	6	0.2%	75.1%
Tucson	33	1353	554	40.9%	81.1%
	151	1393	364	26.1%	73.9%
	158	1366	5	0.4%	68.6%
Wake Forest	33	2075	767	37.0%	81.1%
	151	2101	482	22.9%	74.1%
	158	1935	10	0.5%	69.4%

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[1] Form 33 = Medical History Update; Form 151 = Activities of Daily Living; Form 158 = Supplemental Questionnaire 2017.
[2] The MRC Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.
[3] The SRC Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

Table 2.1
Participation and Vital Status: WHI Participants by Extension Study Participation and Cohort

Data as of: March 31, 2018
WHI Extension Study 2010-2020 Participants

Vital Status/Participation	MRC Cohort[1] (N = 22,316)		SRC Cohort[2] (N = 71,251)		Total Participants (N = 93,567)	
	N	%	N	%	N	%
Deceased	4228	18.9	13380	18.8	17608	18.8
Alive: Current Participation[3]	15697	70.3	52888	74.2	68585	73.3
Alive: Recent Participation[4]	725	3.2	1530	2.1	2255	2.4
Alive: Past/Unknown Participation[5]	0	0.0	2	<0.1	2	<0.1
Stopped Follow-Up[6]	707	3.2	1764	2.5	2471	2.6
Lost to Follow-Up[7]	959	4.3	1687	2.4	2646	2.8

Data as of: March 31, 2018; Status as of September 30, 2010
WHI Extension Study 2005-2010 Participants

Vital Status/Participation	MRC Super Cohort[8] (N = 29,368)		SRC Super Cohort[9] (N = 86,039)		Total Participants (N = 115,407)	
	N	%	N	%	N	%
Deceased	2360	8.0	6210	7.2	8570	7.4
Alive: Current Participation[3]	25884	88.1	78195	90.9	104079	90.2
Alive: Recent Participation[4]	321	1.1	489	0.6	810	0.7
Alive: Past/Unknown Participation[5]	32	0.1	39	<0.1	71	0.1
Stopped Follow-Up[6]	459	1.6	794	0.9	1253	1.1
Lost to Follow-Up[7]	312	1.1	312	0.4	624	0.5

Data as of: March 31, 2018; Status as of April 8, 2005
WHI Participants

Vital Status/Participation	MRC Super Cohort[8] (N = 44,174)		SRC Super Cohort[9] (N = 117,634)		Total Participants (N = 161,808)	
	N	%	N	%	N	%
Deceased	2820	6.5	7233	6.3	10053	6.4
Alive: Current Participation[10]	37146	86.1	102265	89.5	139411	88.5
Alive: Recent Participation[11]	342	0.8	419	0.4	761	0.5
Alive: Past/Unknown Participation[12]	20	<0.1	37	<0.1	57	<0.1
Stopped Follow-Up[6]	1699	3.9	2757	2.4	4456	2.8
Lost to Follow-Up[7]	1127	2.6	1600	1.4	2727	1.7

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[1] The MRC Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.

[2] The SRC Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

[3] Participants who have filled in a Form 33 within the last 15 months.

[4] Participants who last filled in a Form 33 between 15 and 24 months ago.

[5] Participants without a Form 33 within the last 24 months, who have been located (as indicated on Form 23) within the last 6 months.

[6] Participants with codes 5 (no follow-up) or 8 (absolutely no follow-up) on Form 7 or 9.

[7] Participants not in any of the above categories.

[8] The MRC Super Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS.

[9] The SRC Super Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

[10] 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.

[11] 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.

[12] 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 2.2
Proxy Follow-up Status[1]:
WHI Extension Study 2010-2020 Participants by <u>Cohort</u>, <u>Current Age</u>[2], and <u>Race/Ethnicity</u>

Data as of: March 31, 2018

	Total		Current Age[2]							
			69-79		80-84		85-89		≥90	
	N	%	N	%	N	%	N	%	N	%
MRC Cohort[3]	(N = 15480)		(N = 5132)		(N = 4687)		(N = 3411)		(N = 2250)	
Proxy follow-up	583	3.8%	30	0.6%	103	2.2%	180	5.3%	270	12.0%
SRC Cohort[4]	(N = 51436)		(N = 15754)		(N = 15634)		(N = 12116)		(N = 7932)	
Proxy follow-up	1749	3.4%	81	0.5%	279	1.8%	569	4.7%	820	10.3%
Total	(N = 66916)		(N = 20886)		(N = 20321)		(N = 15527)		(N = 10182)	
Proxy follow-up	2332	3.5%	111	0.5%	382	1.9%	749	4.8%	1090	10.7%

	Race/Ethnicity											
	American Indian/ Alaskan Native		Asian/Pacific Islander		Black/African American		Hispanic/ Latina		White		Unknown	
	N	%	N	%	N	%	N	%	N	%	N	%
MRC Cohort[3]	(N = 41)		(N = 183)		(N = 4590)		(N = 1999)		(N = 9461)		(N = 148)	
Proxy follow-up	2	4.9%	7	3.8%	125	2.7%	54	2.7%	400	4.2%	3	2.0%
SRC Cohort[4]	(N = 196)		(N = 1329)		N/A		N/A		(N = 52225)		(N = 670)	
Proxy follow-up	7	3.6%	35	2.6%					1709	3.3%	26	3.9%
Total	(N = 237)		(N = 1512)		(N = 4590)		(N = 1999)		(N = 61686)		(N = 818)	
Proxy follow-up	9	3.8%	42	2.8%	125	2.7%	54	2.7%	2109	3.4%	29	3.5%

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[1] For participants alive as of March 31, 2018 and with current, recent or past/unknown participation.
[2] Age on March 31, 2018.
[3] The MRC Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS who consented to WHI Extension Study 2010-2020.
[4] The SRC Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study who consented to WHI Extension Study 2010-2020.

Table 2.3
Participation and Vital Status: <u>CT and OS Participants</u>

Data as of: March 31, 2018
<u>WHI Extension Study 2010-2020 Participants</u>

Vital Status/Participation	CT Participants (N = 41,499)		OS Participants (N = 52,068)	
	N	%	N	%
Deceased	7631	18.4	9977	19.2
Alive: Current Participation[1]	30456	73.4	38129	73.2
Alive: Recent Participation[2]	1043	2.5	1212	2.3
Alive: Past/Unknown Participation[3]	0	0.0	2	<0.1
Stopped Follow-Up[4]	1091	2.6	1380	2.7
Lost to Follow-Up[5]	1278	3.1	1368	2.6

Data as of: March 31, 2018; Status as of September 30, 2010
<u>WHI Extension Study 2005-2010 Participants</u>

Vital Status/Participation	CT Participants (N = 52,176)		OS Participants (N = 63,231)	
	N	%	N	%
Deceased	3812	7.3	4758	7.5
Alive: Current Participation[1]	46883	89.9	57196	90.5
Alive: Recent Participation[2]	442	0.8	368	0.6
Alive: Past/Unknown Participation[3]	37	0.1	34	0.1
Stopped Follow-Up[4]	649	1.2	604	1.0
Lost to Follow-Up[5]	353	0.7	271	0.4

Data as of: March 31, 2018; Status as of April 8, 2005
<u>WHI Participants</u>

Vital Status/Participation	CT Participants (N = 68,132)		OS Participants (N =93,676)	
	N	%	N	%
Deceased	3701	5.4	6352	7.1
Alive: Current Participation[6]	61160	89.8	78251	87.6
Alive: Recent Participation[7]	339	0.5	422	0.5
Alive: Past/Unknown Participation[8]	10	<0.1	47	0.1
Stopped Follow-Up[4]	2194	3.2	2262	2.5
Lost to Follow-Up[5]	728	1.1	1999	2.2

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[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; 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; 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; 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 2.4
Cause of Death[1] (Annualized Percentages): <u>MRC and SRC Super Cohort Participants</u>
Data as of: March 31, 2018; Events through March 31, 2018

	MRC Super Cohort[2]		SRC Super Cohort[3]	
Number of participants	44174		117634	
Mean follow-up (months)	217.5		219.8	
Death plus post-WHI deaths	14888	(1.86%)	39989	(1.86%)
Adjudicated death	14422	(1.80%)	37686	(1.75%)
Centrally adjudicated death	7286	(0.91%)	7379	(0.34%)
Locally adjudicated death	679	(0.08%)	4684	(0.22%)
Identified by NDI search	6457	(0.81%)	25623	(1.19%)
Not yet adjudicated	403	(0.05%)	0	(0.00%)
Form 120 death[4]	63	(0.01%)	2303	(0.11%)
Cardiovascular				
Atherosclerotic cardiac	2194	(0.27%)	4908	(0.23%)
Definite CHD deaths after 10/99	731	(0.09%)	1357	(0.06%)
Possible CHD deaths after 10/99	1463	(0.18%)	3533	(0.16%)
Cerebrovascular	1182	(0.15%)	2885	(0.13%)
Pulmonary embolism	89	(0.01%)	179	(0.01%)
Other cardiovascular	1430	(0.18%)	4002	(0.19%)
Unknown cardiovascular	39	(<0.01%)	102	(<0.01%)
Total cardiovascular deaths	4934	(0.62%)	12076	(0.56%)
Cancer				
Breast cancer	397	(0.05%)	1304	(0.06%)
Ovarian cancer	203	(0.03%)	747	(0.03%)
Endometrial cancer	44	(0.01%)	191	(0.01%)
Colorectal cancer	346	(0.04%)	830	(0.04%)
Uterus cancer	45	(0.01%)	111	(0.01%)
Lung cancer	994	(0.12%)	2310	(0.11%)
Pancreas cancer	364	(0.05%)	947	(0.04%)
Lymphoma (NHL only)	171	(0.02%)	544	(0.03%)
Leukemia	147	(0.02%)	510	(0.02%)
Melanoma	44	(0.01%)	143	(0.01%)
Brain cancer	73	(0.01%)	302	(0.01%)
Multiple myeloma	146	(0.02%)	296	(0.01%)
Other cancer	743	(0.09%)	1985	(0.09%)
Unknown cancer site	147	(0.02%)	469	(0.02%)
Total cancer deaths	3864	(0.48%)	10689	(0.50%)
Accident/injury				
Homicide	16	(<0.01%)	19	(<0.01%)
Accident	337	(0.04%)	975	(0.05%)
Suicide	18	(<0.01%)	64	(<0.01%)
Other injury	30	(<0.01%)	33	(<0.01%)
Total accident/injury deaths	401	(0.05%)	1091	(0.05%)
Other				
Alzheimer's disease	748	(0.09%)	2357	(0.11%)
COPD	567	(0.07%)	1570	(0.07%)
Pneumonia	387	(0.05%)	1006	(0.05%)
Pulmonary fibrosis	156	(0.02%)	395	(0.02%)
Renal failure	342	(0.04%)	536	(0.02%)
Sepsis	411	(0.05%)	845	(0.04%)
Dementia, other than Alzheimer's	784	(0.10%)	2448	(0.11%)
Amyotrophic lateral sclerosis	47	(0.01%)	209	(0.01%)
Parkinson's	148	(0.02%)	530	(0.02%)
Hepatic cirrhosis	93	(0.01%)	183	(0.01%)
Other known cause	1441	(0.18%)	4154	(0.19%)
Unknown cause	162	(0.02%)	1900	(0.09%)
Total other cause deaths	5286	(0.66%)	16133	(0.75%)

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[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] The MRC Super Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS.
[3] The SRC Super Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.
[4] Includes SRC Cohort participants and discovered deaths among non-Extension Study 2010-2020 participants that occurred during Extension Study 2010-2020.

Table 2.5
Cause of Death[1] (Annualized Percentages): <u>CT and OS Participants</u>
Data as of: March 31, 2018; Events through March 31, 2018

	CT		OS		Total	
Number of participants	68132		93676		161808	
Mean follow-up (months)	223.4		216.1		219.1	
Death plus post-WHI deaths	21852	(1.72%)	33025	(1.96%)	54877	(1.86%)
Adjudicated death	20769	(1.64%)	31339	(1.86%)	52108	(1.76%)
Centrally adjudicated death	9748	(0.77%)	4917	(0.29%)	14665	(0.50%)
Locally adjudicated death (final)	1	(<0.01%)	5362	(0.32%)	5363	(0.18%)
Identified by NDI search	11020	(0.87%)	21060	(1.25%)	32080	(1.09%)
Not yet adjudicated	344	(0.03%)	59	(<0.01%)	403	(0.01%)
Form 120 death[2]	739	(0.06%)	1627	(0.10%)	2366	(0.08%)
Cardiovascular						
Atherosclerotic cardiac	2913	(0.23%)	4189	(0.25%)	7102	(0.24%)
Definite CHD deaths after 10/99	990	(0.08%)	1098	(0.07%)	2088	(0.07%)
Possible CHD deaths after 10/99	1915	(0.15%)	3081	(0.18%)	4996	(0.17%)
Cerebrovascular	1601	(0.13%)	2466	(0.15%)	4067	(0.14%)
Pulmonary embolism	132	(0.01%)	136	(0.01%)	268	(0.01%)
Other cardiovascular	2110	(0.17%)	3322	(0.20%)	5432	(0.18%)
Unknown cardiovascular	35	(<0.01%)	106	(0.01%)	141	(<0.01%)
Total cardiovascular deaths	6791	(0.54%)	10219	(0.61%)	17010	(0.58%)
Cancer						
Breast cancer	536	(0.04%)	1165	(0.07%)	1701	(0.06%)
Ovarian cancer	362	(0.03%)	588	(0.03%)	950	(0.03%)
Endometrial cancer	101	(0.01%)	134	(0.01%)	235	(0.01%)
Colorectal cancer	498	(0.04%)	678	(0.04%)	1176	(0.04%)
Uterus cancer	65	(0.01%)	91	(0.01%)	156	(0.01%)
Lung cancer	1438	(0.11%)	1866	(0.11%)	3304	(0.11%)
Pancreas cancer	552	(0.04%)	759	(0.05%)	1311	(0.04%)
Lymphoma (NHL only)	280	(0.02%)	435	(0.03%)	715	(0.02%)
Leukemia	280	(0.02%)	377	(0.02%)	657	(0.02%)
Melanoma	84	(0.01%)	103	(0.01%)	187	(0.01%)
Brain cancer	167	(0.01%)	208	(0.01%)	375	(0.01%)
Multiple myeloma	192	(0.02%)	250	(0.01%)	442	(0.01%)
Other cancer	1131	(0.09%)	1597	(0.09%)	2728	(0.09%)
Unknown cancer site	246	(0.02%)	370	(0.02%)	616	(0.02%)
Total cancer deaths	5932	(0.47%)	8621	(0.51%)	14553	(0.49%)
Accident/injury						
Homicide	14	(<0.01%)	21	(<0.01%)	35	(<0.01%)
Accident	525	(0.04%)	787	(0.05%)	1312	(0.04%)
Suicide	27	(<0.01%)	55	(<0.01%)	82	(<0.01%)
Other injury	30	(<0.01%)	33	(<0.01%)	63	(<0.01%)
Total accident/injury deaths	596	(0.05%)	896	(0.05%)	1492	(0.05%)
Other						
Alzheimer's disease	1171	(0.09%)	1934	(0.11%)	3105	(0.11%)
COPD	878	(0.07%)	1259	(0.07%)	2137	(0.07%)
Pneumonia	569	(0.04%)	824	(0.05%)	1393	(0.05%)
Pulmonary fibrosis	248	(0.02%)	303	(0.02%)	551	(0.02%)
Renal failure	363	(0.03%)	515	(0.03%)	878	(0.03%)
Sepsis	536	(0.04%)	720	(0.04%)	1256	(0.04%)
Dementia, other than Alzheimer's	1204	(0.09%)	2028	(0.12%)	3232	(0.11%)
Amyotrophic lateral sclerosis	103	(0.01%)	153	(0.01%)	256	(0.01%)
Parkinson's	264	(0.02%)	414	(0.02%)	678	(0.02%)
Hepatic cirrhosis	122	(0.01%)	154	(0.01%)	276	(0.01%)
Other known cause	2048	(0.16%)	3547	(0.21%)	5595	(0.19%)
Unknown cause	683	(0.05%)	1379	(0.08%)	2062	(0.07%)
Total other cause deaths	8189	(0.65%)	13230	(0.78%)	21419	(0.72%)

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[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 Cohort participants and discovered deaths among non-Extension Study 2010-2020 participants that occurred during Extension Study 2010-2020.

Table 3.1
Verified Outcomes (Annualized Percentages) by <u>Age at Enrollment</u> for <u>MRC Super Cohort Participants</u>[1]

Data as of: March 31, 2018; Events through March 31, 2018

Outcomes	Total	Age at Enrollment			
		50-54	55-59	60-69	70-79
Number randomized	44174	6788	9352	19418	8616
Mean follow-up (months)	173.0	183.7	184.6	174.2	149.5
Cardiovascular					
CHD[2]	3399 (0.53%)	228 (0.22%)	424 (0.29%)	1596 (0.57%)	1151 (1.07%)
CHD death[3]	1444 (0.23%)	55 (0.05%)	132 (0.09%)	619 (0.22%)	638 (0.59%)
Clinical MI	2355 (0.37%)	182 (0.18%)	326 (0.23%)	1149 (0.41%)	698 (0.65%)
Angina[4]	1625 (0.47%)	114 (0.20%)	226 (0.30%)	785 (0.52%)	500 (0.76%)
CABG/PTCA	2958 (0.46%)	235 (0.23%)	485 (0.34%)	1517 (0.54%)	721 (0.67%)
Carotid artery disease	514 (0.08%)	23 (0.02%)	80 (0.06%)	282 (0.10%)	129 (0.12%)
Congestive heart failure, WHI[4]	1246 (0.36%)	84 (0.15%)	145 (0.19%)	531 (0.35%)	486 (0.74%)
Heart failure, UNC[5]	2781 (0.44%)	174 (0.17%)	292 (0.20%)	1313 (0.47%)	1002 (0.95%)
Stroke	2685 (0.42%)	172 (0.17%)	320 (0.22%)	1296 (0.46%)	897 (0.84%)
PVD	656 (0.10%)	42 (0.04%)	97 (0.07%)	341 (0.12%)	176 (0.16%)
DVT	1081 (0.17%)	95 (0.09%)	186 (0.13%)	515 (0.18%)	285 (0.27%)
Pulmonary embolism	861 (0.14%)	83 (0.08%)	149 (0.10%)	420 (0.15%)	209 (0.19%)
DVT/PE	1550 (0.24%)	132 (0.13%)	264 (0.18%)	757 (0.27%)	397 (0.37%)
Coronary disease[6]	7233 (1.14%)	540 (0.52%)	1000 (0.70%)	3428 (1.22%)	2265 (2.11%)
Aortic aneurysm[7]	57 (0.04%)	4 (0.02%)	7 (0.02%)	36 (0.06%)	10 (0.06%)
Valvular heart disease[7]	394 (0.29%)	25 (0.10%)	53 (0.15%)	218 (0.35%)	98 (0.59%)
Total cardiovascular disease[8]	9985 (1.57%)	721 (0.69%)	1379 (0.96%)	4745 (1.68%)	3140 (2.92%)
Cancer					
Breast cancer	2867 (0.45%)	426 (0.41%)	650 (0.45%)	1304 (0.46%)	487 (0.45%)
Invasive breast cancer	2349 (0.37%)	329 (0.32%)	532 (0.37%)	1060 (0.38%)	428 (0.40%)
Non-invasive breast cancer	572 (0.09%)	103 (0.10%)	128 (0.09%)	274 (0.10%)	67 (0.06%)
Ovarian cancer	266 (0.04%)	24 (0.02%)	54 (0.04%)	137 (0.05%)	51 (0.05%)
Endometrial cancer[9]	320 (0.09%)	50 (0.09%)	85 (0.10%)	136 (0.08%)	49 (0.08%)
Colorectal cancer	909 (0.14%)	82 (0.08%)	146 (0.10%)	441 (0.16%)	240 (0.22%)
Other cancer[10]	3984 (0.63%)	372 (0.36%)	705 (0.49%)	1956 (0.69%)	951 (0.89%)
Total cancer	7772 (1.22%)	896 (0.86%)	1543 (1.07%)	3681 (1.31%)	1652 (1.54%)
Fractures					
Hip fracture	1454 (0.23%)	46 (0.04%)	117 (0.08%)	639 (0.23%)	652 (0.61%)
Deaths					
Cardiovascular deaths	3146 (0.49%)	124 (0.12%)	284 (0.20%)	1339 (0.47%)	1399 (1.30%)
Cancer deaths	2922 (0.46%)	224 (0.22%)	449 (0.31%)	1431 (0.51%)	818 (0.76%)
Other known cause	2855 (0.45%)	143 (0.14%)	289 (0.20%)	1292 (0.46%)	1131 (1.05%)
Unknown cause	82 (0.01%)	9 (0.01%)	12 (0.01%)	39 (0.01%)	22 (0.02%)
Not yet adjudicated	403 (0.06%)	21 (0.02%)	44 (0.03%)	233 (0.08%)	105 (0.10%)
Total death	9408 (1.48%)	521 (0.50%)	1078 (0.75%)	4334 (1.54%)	3475 (3.24%)
Death plus post-WHI deaths	14888 (1.86%)	795 (0.59%)	1650 (0.91%)	6720 (1.92%)	5723 (4.28%)

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

Table 3.2
Verified Outcomes (Annualized Percentages) by <u>Race/Ethnicity</u> for <u>MRC Super Cohort Participants</u>[1]

Data as of: March 31, 2018; Events through March 31, 2018

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)	165.6		167.4		159.1		150.3		189.1		173.9	
Cardiovascular												
CHD[2]	11	(0.61%)	28	(0.38%)	966	(0.50%)	217	(0.27%)	2145	(0.62%)	32	(0.57%)
CHD death[3]	7	(0.39%)	10	(0.14%)	497	(0.26%)	71	(0.09%)	851	(0.25%)	8	(0.14%)
Clinical MI	6	(0.33%)	22	(0.30%)	599	(0.31%)	168	(0.21%)	1534	(0.44%)	26	(0.47%)
Angina[4]	7	(0.69%)	14	(0.34%)	548	(0.48%)	160	(0.33%)	884	(0.49%)	12	(0.40%)
CABG/PTCA	10	(0.56%)	23	(0.31%)	737	(0.38%)	264	(0.33%)	1894	(0.55%)	30	(0.54%)
Carotid artery disease	1	(0.06%)	4	(0.05%)	96	(0.05%)	22	(0.03%)	388	(0.11%)	3	(0.05%)
Congestive heart failure, WHI[4]	3	(0.30%)	9	(0.22%)	477	(0.42%)	91	(0.19%)	655	(0.36%)	11	(0.37%)
Heart failure, UNC[5]	10	(0.56%)	21	(0.29%)	770	(0.40%)	148	(0.18%)	1810	(0.53%)	22	(0.39%)
Stroke	13	(0.72%)	21	(0.29%)	824	(0.43%)	189	(0.23%)	1613	(0.46%)	25	(0.45%)
PVD	3	(0.17%)	7	(0.10%)	235	(0.12%)	27	(0.03%)	380	(0.11%)	4	(0.07%)
DVT	5	(0.28%)	4	(0.05%)	207	(0.11%)	37	(0.05%)	822	(0.24%)	6	(0.11%)
Pulmonary embolism	4	(0.22%)	2	(0.03%)	185	(0.10%)	20	(0.02%)	639	(0.18%)	11	(0.20%)
DVT/PE	8	(0.45%)	4	(0.05%)	317	(0.16%)	49	(0.06%)	1158	(0.33%)	14	(0.25%)
Coronary disease[6]	24	(1.34%)	59	(0.80%)	2148	(1.11%)	547	(0.67%)	4392	(1.26%)	63	(1.13%)
Aortic aneurysm[7]	0	(0.00%)	0	(0.00%)	18	(0.05%)	3	(0.02%)	36	(0.04%)	0	(0.00%)
Valvular heart disease[7]	1	(0.27%)	3	(0.20%)	52	(0.14%)	28	(0.18%)	305	(0.38%)	5	(0.41%)
Total cardiovascular disease[8]	33	(1.84%)	83	(1.13%)	3018	(1.56%)	750	(0.92%)	6020	(1.73%)	81	(1.45%)
Cancer												
Breast cancer	8	(0.45%)	36	(0.49%)	920	(0.47%)	305	(0.38%)	1575	(0.45%)	23	(0.41%)
Invasive breast cancer	7	(0.39%)	28	(0.38%)	742	(0.38%)	248	(0.31%)	1305	(0.38%)	19	(0.34%)
Non-invasive breast cancer	1	(0.06%)	9	(0.12%)	200	(0.10%)	63	(0.08%)	294	(0.08%)	5	(0.09%)
Ovarian cancer	1	(0.06%)	3	(0.04%)	71	(0.04%)	37	(0.05%)	150	(0.04%)	4	(0.07%)
Endometrial cancer[9]	1	(0.14%)	2	(0.04%)	89	(0.10%)	29	(0.06%)	197	(0.09%)	2	(0.06%)
Colorectal cancer	1	(0.06%)	17	(0.23%)	283	(0.15%)	76	(0.09%)	523	(0.15%)	9	(0.16%)
Other cancer[10]	13	(0.72%)	47	(0.64%)	993	(0.51%)	335	(0.41%)	2562	(0.74%)	34	(0.61%)
Total cancer	23	(1.28%)	100	(1.36%)	2199	(1.13%)	734	(0.90%)	4648	(1.34%)	68	(1.22%)
Fractures												
Hip fracture	7	(0.39%)	10	(0.14%)	136	(0.07%)	70	(0.09%)	1220	(0.35%)	11	(0.20%)
Deaths												
Cardiovascular deaths	13	(0.72%)	18	(0.24%)	1015	(0.52%)	172	(0.21%)	1911	(0.55%)	17	(0.30%)
Cancer deaths	10	(0.56%)	36	(0.49%)	851	(0.44%)	264	(0.33%)	1735	(0.50%)	26	(0.47%)
Other known cause	12	(0.67%)	27	(0.37%)	717	(0.37%)	217	(0.27%)	1859	(0.54%)	23	(0.41%)
Unknown cause	0	(0.00%)	1	(0.01%)	29	(0.01%)	9	(0.01%)	40	(0.01%)	3	(0.05%)
Not yet adjudicated	2	(0.11%)	3	(0.04%)	107	(0.06%)	21	(0.03%)	266	(0.08%)	4	(0.07%)
Total Death	37	(2.06%)	85	(1.16%)	2719	(1.40%)	683	(0.84%)	5811	(1.67%)	73	(1.31%)
Death plus post-WHI deaths	46	(1.98%)	151	(1.58%)	4845	(1.85%)	1410	(1.17%)	8314	(2.08%)	122	(1.75%)

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[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS.

[2] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Studies 2005-2020.

[3] "CHD death" includes definite and possible CHD death.

[4] Angina and CHF are not verified outcomes in the WHI Extension Studies 2005-2020. Reported statistics represent experience during the original program.

[5] Definite or possible decompensated heart failure adjudicated by UNC.

[6] "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.

[7] Aortic aneurysm and valvular heart disease are new adjudicated outcomes during the WHI Extension Study 2010-2020.

[8] Total CVD does not include aortic aneurysm or valvular heart disease.

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

[10] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.

Table 3.3
Verified Outcomes (Annualized Percentages)[1] by <u>Age at Diagnosis</u> for <u>MRC Super Cohort Participants</u>[2]

Data as of: March 31, 2018; Events between January 1, 2000 and December 31, 2016

Outcomes	Age at Diagnosis							
	50-59	**60-64**	**65-69**	**70-74**	**75-79**	**80-84**	**85-89**	**90-102**
Number of participants[3]	8898	18159	24973	29055	26552	18293	9352	3133
Mean follow-up (months)	32.0	39.0	44.4	45.4	44.5	43.2	38.2	32.6
Cancer								
Breast cancer	95 (0.40%)	269 (0.46%)	427 (0.46%)	589 (0.54%)	482 (0.49%)	311 (0.47%)	109 (0.37%)	27 (0.32%)
Invasive breast cancer	73 (0.31%)	211 (0.36%)	314 (0.34%)	493 (0.45%)	405 (0.41%)	270 (0.41%)	105 (0.35%)	27 (0.32%)
Non-invasive breast	22 (0.09%)	62 (0.11%)	114 (0.12%)	111 (0.10%)	91 (0.09%)	52 (0.08%)	8 (0.03%)	1 (0.01%)
Ovarian cancer	5 (0.02%)	15 (0.03%)	43 (0.05%)	51 (0.05%)	46 (0.05%)	41 (0.06%)	13 (0.04%)	5 (0.06%)
Endometrial cancer[4]	3 (0.01%)	33 (0.06%)	69 (0.07%)	72 (0.07%)	48 (0.05%)	30 (0.05%)	14 (0.05%)	2 (0.02%)
Colorectal cancer	10 (0.04%)	57 (0.10%)	117 (0.13%)	153 (0.14%)	163 (0.17%)	98 (0.15%)	62 (0.21%)	28 (0.33%)
Leukemia	1 (<0.01%)	13 (0.02%)	24 (0.03%)	50 (0.05%)	41 (0.04%)	52 (0.08%)	23 (0.08%)	9 (0.11%)
Lung cancer	18 (0.08%)	67 (0.11%)	122 (0.13%)	215 (0.20%)	238 (0.24%)	158 (0.24%)	76 (0.25%)	26 (0.31%)
Non-Hodgkin's lymphoma	3 (0.01%)	14 (0.02%)	43 (0.05%)	77 (0.07%)	76 (0.08%)	68 (0.10%)	35 (0.12%)	11 (0.13%)
Melanoma of the skin	10 (0.04%)	30 (0.05%)	43 (0.05%)	64 (0.06%)	71 (0.07%)	47 (0.07%)	34 (0.11%)	8 (0.09%)
Pancreas cancer	5 (0.02%)	10 (0.02%)	35 (0.04%)	57 (0.05%)	62 (0.06%)	52 (0.08%)	33 (0.11%)	14 (0.16%)
Total cancer	167 (0.70%)	595 (1.01%)	1055 (1.14%)	1492 (1.36%)	1410 (1.43%)	972 (1.48%)	446 (1.50%)	150 (1.76%)
Cardiovascular								
CHD[5]	35 (0.15%)	132 (0.22%)	329 (0.36%)	506 (0.46%)	639 (0.65%)	595 (0.90%)	412 (1.38%)	206 (2.42%)
Clinical MI	25 (0.11%)	98 (0.17%)	249 (0.27%)	390 (0.35%)	462 (0.47%)	400 (0.61%)	235 (0.79%)	82 (0.96%)
CABG/PTCA	48 (0.20%)	180 (0.31%)	418 (0.45%)	572 (0.52%)	604 (0.61%)	420 (0.64%)	135 (0.45%)	22 (0.26%)
Stroke	26 (0.11%)	101 (0.17%)	214 (0.23%)	396 (0.36%)	525 (0.53%)	559 (0.85%)	318 (1.07%)	138 (1.62%)
Total cardiovascular[6]	157 (0.66%)	497 (0.84%)	1046 (1.13%)	1543 (1.40%)	1805 (1.83%)	1590 (2.41%)	883 (2.96%)	410 (4.82%)
Deaths								
Total death	84 (0.35%)	315 (0.53%)	673 (0.73%)	1152 (1.05%)	1595 (1.62%)	1836 (2.79%)	1534 (5.15%)	984 (11.57%)
Death plus post-WHI deaths	88 (0.37%)	372 (0.63%)	906 (0.98%)	1677 (1.53%)	2542 (2.58%)	3119 (4.74%)	2936 (9.85%)	2007 (23.59%)

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[1] Annualized percentages calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.

[2] The MRC Super Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS.

[3] Number of participants with any follow-up time in the age interval.

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

[5] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the OS or in in the WHI Extension Study 2005-2010.

[6] Total cardiovascular disease includes CHD, angina, CABG/PTCA, carotid artery disease, WHI CHF, UNC HF, stroke, PVD and CVD death. Angina and WHI CHF are not verified outcomes in the WHI Extension Studies 2005-2020.

Table 3.4
Verified Outcomes (Annualized Percentages) by <u>Age at Enrollment</u> for <u>SRC Super Cohort Participants</u>[1]
Data as of: March 31, 2018; Events through September 30, 2010 and March 31, 2018

	Total		50-54		55-59		60-69		70-79	
						Age at Enrollment				
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[2]										
CHD[3]	5434	(0.39%)	201	(0.11%)	489	(0.17%)	2362	(0.37%)	2382	(0.83%)
CHD death[4]	1891	(0.14%)	49	(0.03%)	104	(0.04%)	693	(0.11%)	1045	(0.36%)
Clinical MI	4044	(0.29%)	159	(0.08%)	398	(0.14%)	1834	(0.29%)	1653	(0.57%)
Angina[5]	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[5]	2797	(0.29%)	78	(0.06%)	201	(0.11%)	1096	(0.26%)	1422	(0.68%)
Stroke	4255	(0.30%)	124	(0.06%)	319	(0.11%)	1856	(0.29%)	1956	(0.68%)
PVD	984	(0.07%)	24	(0.01%)	88	(0.03%)	460	(0.07%)	412	(0.14%)
Coronary disease[6]	11771	(0.84%)	455	(0.24%)	1244	(0.43%)	5456	(0.86%)	4616	(1.60%)
Total cardiovascular disease	16773	(1.20%)	626	(0.33%)	1662	(0.58%)	7667	(1.21%)	6818	(2.36%)
Fractures[2]										
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)	188.2		213.9		209.0		189.8		153.8	
Cancer										
Breast cancer	10211	(0.55%)	1330	(0.50%)	2155	(0.55%)	4753	(0.57%)	1973	(0.57%)
Invasive breast cancer	8516	(0.46%)	1059	(0.40%)	1785	(0.45%)	3982	(0.47%)	1690	(0.49%)
Non-invasive breast cancer	1833	(0.10%)	291	(0.11%)	398	(0.10%)	839	(0.10%)	305	(0.09%)
Ovarian cancer	971	(0.05%)	118	(0.04%)	184	(0.05%)	457	(0.05%)	212	(0.06%)
Endometrial cancer[7]	1461	(0.13%)	161	(0.10%)	325	(0.13%)	678	(0.14%)	297	(0.15%)
Colorectal cancer	2308	(0.13%)	131	(0.05%)	295	(0.07%)	1141	(0.14%)	741	(0.21%)
Other cancer[8]	12692	(0.69%)	1165	(0.44%)	2129	(0.54%)	6220	(0.74%)	3178	(0.92%)
Total cancer	25348	(1.37%)	2690	(1.02%)	4687	(1.19%)	12062	(1.43%)	5909	(1.70%)
Deaths										
Cardiovascular deaths	7951	(0.43%)	163	(0.06%)	456	(0.12%)	3134	(0.37%)	4198	(1.21%)
Cancer deaths	8557	(0.46%)	537	(0.20%)	1143	(0.29%)	4161	(0.49%)	2716	(0.78%)
Other known cause	8577	(0.46%)	253	(0.10%)	659	(0.17%)	3741	(0.44%)	3924	(1.13%)
Unknown cause	1738	(0.09%)	55	(0.02%)	164	(0.04%)	909	(0.11%)	610	(0.18%)
Total death	26823	(1.45%)	1008	(0.38%)	2422	(0.61%)	11945	(1.42%)	11448	(3.30%)
Death plus post-WHI deaths[9]	39989	(1.86%)	1348	(0.44%)	3241	(0.72%)	17182	(1.75%)	18218	(4.34%)

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[1] The SRC Super Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

[2] Cardiovascular diseases and hip fracture are not adjudicated for SRC Super Cohort participants during the WHI Extension Study 2010-2020. Reported statistics represent experience during the original program and the Extension Study 2005-2010.

[3] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Study 2005-2010.

[4] "CHD death" includes definite and possible CHD death.

[5] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.

[6] "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.

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

[8] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.

[9] 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 3.5
Verified Outcomes (Annualized Percentages) by <u>Race/Ethnicity</u> for <u>SRC Super Cohort Participants</u>[1]
Data as of: March 31, 2018; Events through September 30, 2010 and March 31, 2018

	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[2]				
CHD[3]	26 (0.43%)	87 (0.22%)	5240 (0.39%)	81 (0.40%)
CHD death[4]	13 (0.21%)	30 (0.08%)	1813 (0.14%)	35 (0.17%)
Clinical MI	16 (0.26%)	66 (0.17%)	3906 (0.29%)	56 (0.27%)
Angina[5]	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[5]	18 (0.41%)	30 (0.11%)	2702 (0.30%)	47 (0.32%)
Stroke	17 (0.28%)	101 (0.26%)	4061 (0.30%)	76 (0.37%)
PVD	6 (0.10%)	8 (0.02%)	951 (0.07%)	19 (0.09%)
Coronary disease[6]	67 (1.10%)	178 (0.46%)	11356 (0.85%)	170 (0.83%)
Total cardiovascular disease	89 (1.46%)	291 (0.75%)	16129 (1.21%)	264 (1.29%)
Fractures[2]				
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)	157.2	162.1	189.6	166.7
Cancer				
Breast cancer	32 (0.42%)	241 (0.49%)	9814 (0.56%)	124 (0.48%)
Invasive breast cancer	27 (0.35%)	201 (0.41%)	8186 (0.46%)	102 (0.39%)
Non-invasive breast cancer	6 (0.08%)	43 (0.09%)	1761 (0.10%)	23 (0.09%)
Ovarian cancer	2 (0.03%)	14 (0.03%)	946 (0.05%)	9 (0.03%)
Endometrial cancer[7]	1 (0.03%)	23 (0.07%)	1413 (0.13%)	24 (0.16%)
Colorectal cancer	10 (0.13%)	43 (0.09%)	2222 (0.13%)	33 (0.13%)
Other cancer[8]	41 (0.54%)	212 (0.43%)	12269 (0.70%)	170 (0.65%)
Total cancer	82 (1.07%)	495 (1.00%)	24443 (1.39%)	328 (1.26%)
Deaths				
Cardiovascular deaths	35 (0.46%)	137 (0.28%)	7656 (0.43%)	123 (0.47%)
Cancer deaths	28 (0.37%)	160 (0.32%)	8252 (0.47%)	117 (0.45%)
Other known cause	49 (0.64%)	112 (0.23%)	8310 (0.47%)	106 (0.41%)
Unknown cause	4 (0.05%)	23 (0.05%)	1694 (0.10%)	17 (0.07%)
Total death	116 (1.52%)	432 (0.87%)	25912 (1.47%)	363 (1.39%)
Death plus post-WHI deaths[9]	209 (2.06%)	880 (1.29%)	38250 (1.87%)	650 (1.93%)

[1] The SRC Super Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

[2] Cardiovascular diseases and hip fracture are not adjudicated for SRC Super Cohort participants during the WHI Extension Study 2010-2020. Reported statistics represent experience during the original program and the Extension Study 2005-2010.

[3] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the WHI Extension Study 2005-2010.

[4] "CHD death" includes definite and possible CHD death.

[5] Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010. Reported statistics represent experience during the original program.

[6] "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.

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

[8] Only one report of "other cancer" is counted per woman; however, the first of each type is adjudicated. Excludes non-melanoma skin cancer.

[9] 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 3.6
Verified Primary and Other Cancers (Annualized Percentages): <u>MRC and SRC Super Cohort Participants</u>

Data as of: March 31, 2018; Events through March 31, 2018

	MRC Super Cohort[1]		SRC Super Cohort[2]	
Number of participants	44174		117634	
Mean follow-up (months)	173.0		188.2	
Overall cancer	7772	(1.22%)	25348	(1.37%)
Primary cancer				
Breast cancer	2867	(0.45%)	10211	(0.55%)
Invasive breast cancer	2349	(0.37%)	8516	(0.46%)
Non-invasive breast cancer	572	(0.09%)	1833	(0.10%)
Ovarian cancer	266	(0.04%)	971	(0.05%)
Endometrial cancer[3]	320	(0.09%)	1461	(0.13%)
Colorectal cancer	909	(0.14%)	2308	(0.13%)
Other cancer				
Accessory sinus	2	(<0.01%)	11	(<0.01%)
Adrenal gland	4	(<0.01%)	12	(<0.01%)
Anus	28	(<0.01%)	91	(<0.01%)
Appendix	12	(<0.01%)	30	(<0.01%)
Base of tongue	8	(<0.01%)	24	(<0.01%)
Biliary tract, parts of (other/unspecified)	57	(0.01%)	137	(0.01%)
Bladder	238	(0.04%)	748	(0.04%)
Bones/joints/articular cartilage (limbs)	2	(<0.01%)	11	(<0.01%)
Bones/joints/articular cartilage (other)	8	(<0.01%)	18	(<0.01%)
Brain	67	(0.01%)	292	(0.02%)
Cervix	41	(0.01%)	84	(<0.01%)
Central Nervous System (excludes brain)	1	(<0.01%)	3	(<0.01%)
Connective/subcutaneous/soft tissues	42	(0.01%)	137	(0.01%)
Endocrine glands, related structures	0	(0.00%)	4	(<0.01%)
Esophagus	47	(0.01%)	126	(0.01%)
Eye and adnexa	24	(<0.01%)	59	(<0.01%)
Gallbladder	33	(0.01%)	73	(<0.01%)
Genital organs	71	(0.01%)	255	(0.01%)
Gum	5	(<0.01%)	37	(<0.01%)
Heart	4	(<0.01%)	30	(<0.01%)
Kidney	191	(0.03%)	529	(0.03%)
Larynx	21	(<0.01%)	32	(<0.01%)
Leukemia	244	(0.04%)	827	(0.04%)
Liver	90	(0.01%)	207	(0.01%)
Lung	1081	(0.17%)	2855	(0.15%)
Lymph nodes	1	(<0.01%)	2	(<0.01%)
Lymphoma, Hodgkins	22	(<0.01%)	52	(<0.01%)
Lymphoma, non-Hodgkins	366	(0.06%)	1372	(0.07%)
Melanoma of the skin	359	(0.06%)	2071	(0.11%)
Multiple myeloma	193	(0.03%)	414	(0.02%)
Mycosis fungoides	7	(<0.01%)	19	(<0.01%)
Oral (mouth)	6	(<0.01%)	30	(<0.01%)
Palate	7	(<0.01%)	25	(<0.01%)
Pancreas	312	(0.05%)	876	(0.05%)
Parotid gland (Stensen's duct)	13	(<0.01%)	45	(<0.01%)

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[1] The MRC Super Cohort includes all WHI Hormone Trial participants and adll Black/African American and Hispanic/Latina participants from the CT and OS.

[2] The SRC Super Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

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

Table 3.6 (continued)
Verified Primary and Other Cancers (Annualized Percentages): <u>MRC and SRC Super Cohort Participants</u>

Data as of: March 31, 2018; Events through March 31, 2018

	MRC Super Cohort[1]		SRC Super Cohort[2]	
Number of participants	44174		117634	
Mean follow-up (months)	173.0		188.2	
Peripheral nerves and autonomic nervous system	0	(0.00%)	2	(<0.01%)
Peritoneum	43	(0.01%)	138	(0.01%)
Pyriform sinus	0	(0.00%)	2	(<0.01%)
Renal pelvis	30	(<0.01%)	87	(<0.01%)
Respiratory system, intrathoracic, other	0	(0.00%)	3	(<0.01%)
Salivary glands, major (other/unspecified)	3	(<0.01%)	15	(<0.01%)
Stomach	95	(0.01%)	197	(0.01%)
Thyroid	101	(0.02%)	389	(0.02%)
Tongue, part of (other/unspecified)	15	(<0.01%)	68	(<0.01%)
Ureter	14	(<0.01%)	59	(<0.01%)
Urinary organs (other/unspecified)	9	(<0.01%)	25	(<0.01%)
Uterus, not otherwise specified[3]	28	(0.01%)	86	(0.01%)
Other/unknown site of cancer	199	(0.03%)	594	(0.03%)
Other/unknown cancers reported on death form	104	(0.02%)	378	(0.02%)

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[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS.
[2] The SRC Super Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.
[3] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial and uterine cancer.

Table 3.7
Verified Outcomes (Annualized Percentages)[1] by <u>Age at Diagnosis</u> for <u>CT and OS Participants</u>

Data as of: March 31, 2018; Events Between January 1, 2000 and December 31, 2016 or January 1, 2000 and September 30, 2010

	Age at Diagnosis							
	50-59	**60-64**	**65-69**	**70-74**	**75-79**	**80-84**	**85-89**	**90-102**
Cancer and Death Outcomes Between 1/1/2000 and 12/31/2016								
Number of participants[2]	28496	62321	91039	112422	104947	72996	37306	11762
Mean follow-up (months)	30.9	39.5	45.2	45.3	44.4	43.2	37.3	31.0
Breast cancer	359 (0.49%)	1072 (0.52%)	1905 (0.56%)	2434 (0.57%)	2249 (0.58%)	1366 (0.52%)	507 (0.44%)	105 (0.35%)
Invasive breast cancer	281 (0.38%)	862 (0.42%)	1510 (0.44%)	2013 (0.47%)	1897 (0.49%)	1167 (0.44%)	472 (0.41%)	99 (0.33%)
Non-invasive breast	80 (0.11%)	222 (0.11%)	412 (0.12%)	464 (0.11%)	401 (0.10%)	231 (0.09%)	48 (0.04%)	8 (0.03%)
Ovarian cancer	26 (0.04%)	78 (0.04%)	182 (0.05%)	232 (0.05%)	204 (0.05%)	146 (0.06%)	75 (0.06%)	19 (0.06%)
Endometrial cancer[3]	32 (0.08%)	144 (0.12%)	293 (0.14%)	344 (0.14%)	305 (0.13%)	186 (0.12%)	60 (0.09%)	15 (0.09%)
Colorectal cancer	35 (0.05%)	156 (0.08%)	337 (0.10%)	520 (0.12%)	583 (0.15%)	478 (0.18%)	263 (0.23%)	85 (0.28%)
Leukemia	6 (0.01%)	47 (0.02%)	136 (0.04%)	188 (0.04%)	212 (0.05%)	180 (0.07%)	110 (0.09%)	35 (0.12%)
Lung cancer	33 (0.04%)	177 (0.09%)	401 (0.12%)	723 (0.17%)	823 (0.21%)	604 (0.23%)	288 (0.25%)	83 (0.27%)
Non-Hodgkin's lymphoma	18 (0.02%)	76 (0.04%)	201 (0.06%)	339 (0.08%)	353 (0.09%)	270 (0.10%)	161 (0.14%)	43 (0.14%)
Melanoma of the skin	49 (0.07%)	164 (0.08%)	317 (0.09%)	453 (0.11%)	481 (0.12%)	297 (0.11%)	155 (0.13%)	33 (0.11%)
Pancreas cancer	10 (0.01%)	44 (0.02%)	103 (0.03%)	183 (0.04%)	229 (0.06%)	231 (0.09%)	132 (0.11%)	42 (0.14%)
Total cancer	644 (0.88%)	2184 (1.06%)	4236 (1.23%)	5980 (1.41%)	5946 (1.53%)	4174 (1.59%)	1902 (1.64%)	509 (1.67%)
Total death	215 (0.29%)	877 (0.43%)	1942 (0.57%)	3729 (0.88%)	5661 (1.46%)	6704 (2.55%)	5793 (4.99%)	3278 (10.78%)
Death plus post-WHI deaths	221 (0.30%)	999 (0.49%)	2441 (0.71%)	5000 (1.18%)	8146 (2.10%)	10826 (4.12%)	10814 (9.32%)	6689 (21.99%)
Cardiovascular Outcomes Between 1/1/2000 and 9/30/2010								
Number of participants[2]	22435	50703	75665	80683	65949	40706	15580	2664
Mean follow-up (months)	31.1	41.6	41.9	40.6	40.8	38.3	31.0	17.6
CHD[4]	35 (0.06%)	131 (0.07%)	307 (0.12%)	396 (0.14%)	458 (0.20%)	379 (0.29%)	166 (0.41%)	28 (0.72%)
Clinical MI	25 (0.04%)	97 (0.06%)	231 (0.09%)	298 (0.11%)	326 (0.15%)	248 (0.19%)	95 (0.24%)	11 (0.28%)
CABG/PTCA	48 (0.08%)	178 (0.10%)	395 (0.15%)	479 (0.18%)	465 (0.21%)	288 (0.22%)	58 (0.14%)	0 (0.00%)
Stroke	26 (0.04%)	100 (0.06%)	191 (0.07%)	303 (0.11%)	364 (0.16%)	315 (0.24%)	124 (0.31%)	22 (0.56%)
Total cardiovascular[5]	157 (0.27%)	493 (0.28%)	980 (0.37%)	1253 (0.46%)	1342 (0.60%)	999 (0.77%)	344 (0.86%)	58 (1.48%)

[1] Annualized percentages calculated as the number with an event in the age interval divided by the total person years of all participants with time in the interval.
[2] Number of participants with any follow-up time in the age interval.
[3] Only women without a baseline hysterectomy are used to compute the annual rates of endometrial cancer.
[4] "CHD" includes clinical MI, evolving Q-wave MI, and CHD death; Q-wave MI is not collected in the OS or in the WHI Extension Study 2005-2010.
[5] Total cardiovascular disease includes CHD, angina, CABG/PTCA, carotid artery disease, CHF, stroke, PVD and CVD death. Angina and CHF are not verified outcomes in the WHI Extension Study 2005-2010.

Table 3.8
Verified Primary and Other Cancers (Annualized Percentages): <u>CT and OS Participants</u>

Data as of: March 31, 2018; Events through March 31, 2018

	CT	OS	Total
Number of participants	68132	93676	161808
Mean follow-up (months)	192.1	178.2	184.1
Overall cancer	14170 (1.30%)	18950 (1.36%)	33120 (1.33%)
Primary cancer			
Breast cancer	5455 (0.50%)	7623 (0.55%)	13078 (0.53%)
Invasive breast cancer	4494 (0.41%)	6371 (0.46%)	10865 (0.44%)
Non-invasive breast cancer	1054 (0.10%)	1351 (0.10%)	2405 (0.10%)
Ovarian cancer	492 (0.05%)	745 (0.05%)	1237 (0.05%)
Endometrial cancer[1]	747 (0.12%)	1034 (0.13%)	1781 (0.12%)
Colorectal cancer	1471 (0.13%)	1746 (0.13%)	3217 (0.13%)
Other cancer			
Accessory sinus	5 (<0.01%)	8 (<0.01%)	13 (<0.01%)
Adrenal gland	6 (<0.01%)	10 (<0.01%)	16 (<0.01%)
Anus	51 (<0.01%)	68 (<0.01%)	119 (<0.01%)
Appendix	20 (<0.01%)	22 (<0.01%)	42 (<0.01%)
Base of tongue	15 (<0.01%)	17 (<0.01%)	32 (<0.01%)
Biliary tract, parts of (other/unspecified)	98 (0.01%)	96 (0.01%)	194 (0.01%)
Bladder	451 (0.04%)	535 (0.04%)	986 (0.04%)
Bones/joints/articular cartilage (limbs)	6 (<0.01%)	7 (<0.01%)	13 (<0.01%)
Bones/joints/articular cartilage (other)	13 (<0.01%)	13 (<0.01%)	26 (<0.01%)
Brain	160 (0.01%)	199 (0.01%)	359 (0.01%)
Cervix	62 (0.01%)	63 (<0.01%)	125 (0.01%)
Central Nervous System (excludes brain)	1 (<0.01%)	3 (<0.01%)	4 (<0.01%)
Connective/subcutaneous/soft tissues	82 (0.01%)	97 (0.01%)	179 (0.01%)
Endocrine glands, related structures	1 (<0.01%)	3 (<0.01%)	4 (<0.01%)
Esophagus	79 (0.01%)	94 (0.01%)	173 (0.01%)
Eye and adnexa	48 (<0.01%)	35 (<0.01%)	83 (<0.01%)
Gallbladder	66 (0.01%)	40 (<0.01%)	106 (<0.01%)
Genital organs	137 (0.01%)	189 (0.01%)	326 (0.01%)
Gum	19 (<0.01%)	23 (<0.01%)	42 (<0.01%)
Heart	9 (<0.01%)	25 (<0.01%)	34 (<0.01%)
Kidney	341 (0.03%)	379 (0.03%)	720 (0.03%)
Larynx	28 (<0.01%)	25 (<0.01%)	53 (<0.01%)
Leukemia	466 (0.04%)	605 (0.04%)	1071 (0.04%)
Liver	123 (0.01%)	174 (0.01%)	297 (0.01%)
Lung	1692 (0.16%)	2244 (0.16%)	3936 (0.16%)
Lymph nodes	2 (<0.01%)	1 (<0.01%)	3 (<0.01%)
Lymphoma, Hodgkins	27 (<0.01%)	47 (<0.01%)	74 (<0.01%)
Lymphoma, non-Hodgkins	714 (0.07%)	1024 (0.07%)	1738 (0.07%)
Melanoma of the skin	1054 (0.10%)	1376 (0.10%)	2430 (0.10%)
Multiple myeloma	274 (0.03%)	333 (0.02%)	607 (0.02%)
Mycosis fungoides	10 (<0.01%)	16 (<0.01%)	26 (<0.01%)
Oral (mouth)	20 (<0.01%)	16 (<0.01%)	36 (<0.01%)
Palate	13 (<0.01%)	19 (<0.01%)	32 (<0.01%)
Pancreas	526 (0.05%)	662 (0.05%)	1188 (0.05%)
Parotid gland (Stensen's duct)	23 (<0.01%)	35 (<0.01%)	58 (<0.01%)

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

Table 3.8 (continued)
Verified Primary and Other Cancers (Annualized Percentages): <u>CT and OS Participants</u>

Data as of: March 31, 2018; Events through March 31, 2018

	CT	OS	Total
Number of participants	68132	93676	161808
Mean follow-up (months)	192.1	178.2	184.1
Peripheral nerves and autonomic nervous system	1 (<0.01%)	1 (<0.01%)	2 (<0.01%)
Peritoneum	70 (0.01%)	111 (0.01%)	181 (0.01%)
Pyriform sinus	0 (0.00%)	2 (<0.01%)	2 (<0.01%)
Renal pelvis	51 (<0.01%)	66 (<0.01%)	117 (<0.01%)
Respiratory system, intrathoracic, other	1 (<0.01%)	2 (<0.01%)	3 (<0.01%)
Salivary glands, major (other/unspecified)	5 (<0.01%)	13 (<0.01%)	18 (<0.01%)
Stomach	124 (0.01%)	168 (0.01%)	292 (0.01%)
Thyroid	208 (0.02%)	282 (0.02%)	490 (0.02%)
Tongue, part of (other/unspecified)	39 (<0.01%)	44 (<0.01%)	83 (<0.01%)
Ureter	34 (<0.01%)	39 (<0.01%)	73 (<0.01%)
Urinary organs (other/unspecified)	14 (<0.01%)	20 (<0.01%)	34 (<0.01%)
Uterus, not otherwise specified[1]	48 (0.01%)	66 (0.01%)	114 (0.01%)
Other/unknown site of cancer	338 (0.03%)	455 (0.03%)	793 (0.03%)
Other/unknown cancers reported on death form	162 (0.01%)	320 (0.02%)	482 (0.02%)

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

Table 3.9
Verified Primary and Other Cancers (Annualized Percentages) by <u>Race/Ethnicity</u> for <u>CT and OS Participants</u>

Data as of: March 31, 2018; Events through March 31, 2018

	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 (months)	158.8		162.8		159.1		150.3		189.5		167.9	
Overall cancer	105	(1.11%)	595	(1.05%)	2199	(1.13%)	734	(0.90%)	29091	(1.38%)	396	(1.25%)
Primary cancer												
Breast cancer	40	(0.42%)	277	(0.49%)	920	(0.47%)	305	(0.38%)	11389	(0.54%)	147	(0.46%)
Invasive breast cancer	34	(0.36%)	229	(0.40%)	742	(0.38%)	248	(0.31%)	9491	(0.45%)	121	(0.38%)
Non-invasive breast cancer	7	(0.07%)	52	(0.09%)	200	(0.10%)	63	(0.08%)	2055	(0.10%)	28	(0.09%)
Ovarian cancer	3	(0.03%)	17	(0.03%)	71	(0.04%)	37	(0.05%)	1096	(0.05%)	13	(0.04%)
Endometrial cancer[1]	2	(0.05%)	25	(0.07%)	89	(0.10%)	29	(0.06%)	1610	(0.13%)	26	(0.14%)
Colorectal cancer	11	(0.12%)	60	(0.11%)	283	(0.15%)	76	(0.09%)	2745	(0.13%)	42	(0.13%)
Other cancer												
Accessory sinus	0	(0.00%)	0	(0.00%)	1	(<0.01%)	0	(0.00%)	12	(<0.01%)	0	(0.00%)
Adrenal gland	0	(0.00%)	0	(0.00%)	2	(<0.01%)	1	(<0.01%)	13	(<0.01%)	0	(0.00%)
Anus	1	(0.01%)	2	(<0.01%)	8	(<0.01%)	6	(0.01%)	101	(<0.01%)	1	(<0.01%)
Appendix	0	(0.00%)	0	(0.00%)	4	(<0.01%)	3	(<0.01%)	34	(<0.01%)	1	(<0.01%)
Base of Tongue	0	(0.00%)	0	(0.00%)	0	(0.00%)	1	(<0.01%)	31	(<0.01%)	0	(0.00%)
Biliary tract, parts of (other/unspecified)	2	(0.02%)	2	(<0.01%)	12	(0.01%)	12	(0.01%)	164	(0.01%)	2	(0.01%)
Bladder	2	(0.02%)	10	(0.02%)	55	(0.03%)	14	(0.02%)	897	(0.04%)	8	(0.03%)
Bones/joints/articular cartilage (limbs)	0	(0.00%)	1	(<0.01%)	0	(0.00%)	0	(0.00%)	11	(<0.01%)	1	(<0.01%)
Bones/joints/articular cartilage (other)	0	(0.00%)	0	(0.00%)	2	(<0.01%)	0	(0.00%)	23	(<0.01%)	1	(<0.01%)
Brain	1	(0.01%)	3	(0.01%)	13	(0.01%)	5	(0.01%)	335	(0.02%)	2	(0.01%)
Cervix	0	(0.00%)	2	(<0.01%)	18	(0.01%)	5	(0.01%)	97	(<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%)	5	(0.01%)	7	(<0.01%)	4	(<0.01%)	162	(0.01%)	1	(<0.01%)
Endocrine glands, related structures	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	4	(<0.01%)	0	(0.00%)
Esophagus	1	(0.01%)	0	(0.00%)	9	(<0.01%)	2	(<0.01%)	158	(0.01%)	3	(0.01%)
Eye and adnexa	0	(0.00%)	0	(0.00%)	0	(0.00%)	3	(<0.01%)	79	(<0.01%)	1	(<0.01%)
Gallbladder	0	(0.00%)	1	(<0.01%)	7	(<0.01%)	5	(0.01%)	93	(<0.01%)	0	(0.00%)
Genital organs	0	(0.00%)	4	(0.01%)	14	(0.01%)	13	(0.02%)	293	(0.01%)	2	(0.01%)
Gum	0	(0.00%)	1	(<0.01%)	1	(<0.01%)	1	(<0.01%)	39	(<0.01%)	0	(0.00%)
Heart	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	34	(<0.01%)	0	(0.00%)
Kidney	7	(0.07%)	15	(0.03%)	57	(0.03%)	21	(0.03%)	611	(0.03%)	9	(0.03%)

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

Table 3.9 (continued)
Verified Primary and Other Cancers (Annualized Percentages) by <u>Race/Ethnicity</u>: <u>CT and OS Participants</u>

Data as of: March 31, 2018; Events through March 31, 2018

	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 (months)	158.8		162.8		159.1		150.3		189.5		167.9	
Larynx	0	(0.00%)	0	(0.00%)	6	(<0.01%)	0	(0.00%)	47	(<0.01%)	0	(0.00%)
Leukemia	0	(0.00%)	16	(0.03%)	62	(0.03%)	15	(0.02%)	968	(0.05%)	10	(0.03%)
Liver	3	(0.03%)	16	(0.03%)	23	(0.01%)	18	(0.02%)	232	(0.01%)	5	(0.02%)
Lung	16	(0.17%)	57	(0.10%)	254	(0.13%)	59	(0.07%)	3492	(0.17%)	58	(0.18%)
Lymph nodes	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	3	(<0.01%)	0	(0.00%)
Lymphoma, Hodgkins	0	(0.00%)	1	(<0.01%)	4	(<0.01%)	5	(0.01%)	63	(<0.01%)	1	(<0.01%)
Lymphoma, non-Hodgkins	5	(0.05%)	31	(0.05%)	69	(0.04%)	45	(0.06%)	1566	(0.07%)	22	(0.07%)
Melanoma of the skin	4	(0.04%)	7	(0.01%)	8	(<0.01%)	15	(0.02%)	2377	(0.11%)	19	(0.06%)
Multiple myeloma	3	(0.03%)	1	(<0.01%)	81	(0.04%)	19	(0.02%)	496	(0.02%)	7	(0.02%)
Mycosis fungoides	0	(0.00%)	0	(0.00%)	3	(<0.01%)	0	(0.00%)	23	(<0.01%)	0	(0.00%)
Oral (mouth)	0	(0.00%)	0	(0.00%)	2	(<0.01%)	1	(<0.01%)	33	(<0.01%)	0	(0.00%)
Palate	0	(0.00%)	1	(<0.01%)	1	(<0.01%)	0	(0.00%)	30	(<0.01%)	0	(0.00%)
Pancreas	4	(0.04%)	33	(0.06%)	98	(0.05%)	28	(0.03%)	1007	(0.05%)	18	(0.06%)
Parotid gland (Stensen's duct)	0	(0.00%)	2	(<0.01%)	7	(<0.01%)	1	(<0.01%)	48	(<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%)
Peritoneum	1	(0.01%)	3	(0.01%)	10	(0.01%)	7	(0.01%)	157	(0.01%)	3	(0.01%)
Pyriform sinus	0	(0.00%)	0	(0.00%)	0	(0.00%)	0	(0.00%)	2	(<0.01%)	0	(0.00%)
Renal Pelvis	1	(0.01%)	2	(<0.01%)	7	(<0.01%)	1	(<0.01%)	104	(<0.01%)	2	(0.01%)
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%)	18	(<0.01%)	0	(0.00%)
Stomach	1	(0.01%)	15	(0.03%)	43	(0.02%)	8	(0.01%)	221	(0.01%)	4	(0.01%)
Thyroid	1	(0.01%)	10	(0.02%)	34	(0.02%)	10	(0.01%)	428	(0.02%)	7	(0.02%)
Tongue, part of (other/unspecified)	0	(0.00%)	2	(<0.01%)	2	(<0.01%)	0	(0.00%)	77	(<0.01%)	2	(0.01%)
Ureter	1	(0.01%)	3	(0.01%)	0	(0.00%)	1	(<0.01%)	67	(<0.01%)	1	(<0.01%)
Urinary organs (other/unspecified)	1	(0.01%)	1	(<0.01%)	4	(<0.01%)	1	(<0.01%)	27	(<0.01%)	0	(0.00%)
Uterus, not otherwise specified[1]	0	(0.00%)	2	(0.01%)	13	(0.02%)	4	(0.01%)	91	(0.01%)	4	(0.02%)
Other/unknown site of cancer	2	(0.02%)	12	(0.02%)	53	(0.03%)	17	(0.02%)	699	(0.03%)	10	(0.03%)
Other/unknown cancers reported on death form	2	(0.02%)	10	(0.02%)	45	(0.02%)	14	(0.02%)	405	(0.02%)	6	(0.02%)

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

Table 4.1
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by <u>Age at Enrollment</u> and <u>Race/Ethnicity</u> for <u>MRC Super Cohort Participants</u>[1] Who Did Not Report a Prevalent Condition at Baseline

Data as of: March 31, 2018; Events through March 31, 2018

Outcome	Total	Age at Enrollment			
		50-54	55-59	60-69	70-79
Number randomized	44174	6788	9352	19418	8616
Mean follow-up (months)	172.8	183.3	184.3	174.0	149.3
Angina[2]	3236 (0.54%)	399 (0.40%)	580 (0.42%)	1570 (0.59%)	687 (0.70%)
Diabetes (treated)	7618 (1.27%)	1331 (1.34%)	1743 (1.29%)	3437 (1.31%)	1107 (1.10%)
Hysterectomy	1777 (0.49%)	282 (0.51%)	450 (0.52%)	798 (0.49%)	247 (0.41%)
Osteoarthritis[3]	13289 (3.35%)	2281 (2.95%)	3051 (3.10%)	5823 (3.50%)	2134 (3.92%)
Intestinal polyps	10516 (1.78%)	1699 (1.70%)	2475 (1.82%)	4817 (1.85%)	1525 (1.61%)
Lupus	795 (0.13%)	128 (0.12%)	174 (0.12%)	365 (0.13%)	128 (0.12%)
Hypertension treated w/pills	16216 (3.78%)	2635 (3.30%)	3594 (3.48%)	7112 (3.90%)	2875 (4.47%)
COPD[4]	2236 (0.85%)	301 (0.69%)	528 (0.90%)	1111 (0.97%)	296 (0.68%)
Macular degeneration [5]	4486 (1.04%)	354 (0.49%)	735 (0.75%)	2249 (1.18%)	1148 (1.64%)
Alzheimer's disease[5]	3944 (0.91%)	215 (0.30%)	451 (0.46%)	1993 (1.05%)	1285 (1.84%)
Parkinson's disease[5]	560 (0.13%)	54 (0.07%)	103 (0.10%)	298 (0.16%)	105 (0.15%)

Outcomes	Race/Ethnicity					
	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)	165.6	167.4	158.6	149.9	189.1	173.8
Angina[2]	16 (0.97%)	22 (0.32%)	992 (0.55%)	340 (0.44%)	1832 (0.55%)	34 (0.64%)
Diabetes (treated)	25 (1.56%)	91 (1.32%)	2845 (1.64%)	1110 (1.46%)	3473 (1.04%)	74 (1.43%)
Hysterectomy	4 (0.55%)	12 (0.23%)	411 (0.48%)	267 (0.59%)	1067 (0.48%)	16 (0.46%)
Osteoarthritis[3]	48 (3.92%)	173 (3.28%)	3971 (3.46%)	2011 (3.72%)	6960 (3.20%)	126 (3.45%)
Intestinal polyps	32 (1.92%)	106 (1.61%)	3497 (1.96%)	1290 (1.69%)	5507 (1.71%)	84 (1.65%)
Lupus	3 (0.17%)	6 (0.08%)	287 (0.15%)	131 (0.16%)	364 (0.11%)	4 (0.07%)
Hypertension treated w/pills	58 (4.47%)	189 (3.64%)	4369 (4.46%)	2325 (3.78%)	9142 (3.52%)	133 (3.46%)
COPD[4]	10 (1.44%)	13 (0.40%)	549 (0.63%)	211 (0.53%)	1436 (1.10%)	17 (0.76%)
Macular degeneration[5]	13 (1.01%)	34 (0.71%)	800 (0.57%)	469 (0.75%)	3135 (1.44%)	35 (0.93%)
Alzheimer's disease[5]	11 (0.86%)	36 (0.75%)	967 (0.69%)	408 (0.65%)	2497 (1.14%)	25 (0.66%)
Parkinson's disease[5]	2 (0.16%)	7 (0.15%)	142 (0.10%)	60 (0.10%)	345 (0.16%)	4 (0.11%)

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[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS.
[2] 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.
[3] This outcome has 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.
[4] Data only collected during the WHI Extension Study 2010-2020.
[5] Data only collected during the WHI Extension Studies 2005-2020.

Table 4.2
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by <u>Age at Enrollment</u> and <u>Race/Ethnicity</u> for <u>SRC Super Cohort Participants</u>[1] Who Did Not Report a Prevalent Condition at Baseline

Data as of: March 31, 2018; Events through March 31, 2018

Outcome	Total	Age at Enrollment			
		50-54	55-59	60-69	70-79
Number randomized	117634	14781	22638	53171	27044
Mean follow-up (months)	188.0	213.7	208.8	189.5	153.5
DVT	3913 (0.22%)	328 (0.13%)	603 (0.16%)	1950 (0.24%)	1032 (0.31%)
Pulmonary embolism[2]	2450 (0.13%)	213 (0.08%)	420 (0.11%)	1250 (0.15%)	567 (0.17%)
Diabetes (treated)	15659 (0.87%)	2081 (0.80%)	3267 (0.85%)	7416 (0.91%)	2895 (0.87%)
Hysterectomy	6587 (0.60%)	1021 (0.63%)	1589 (0.63%)	3018 (0.62%)	959 (0.49%)
Osteoarthritis[3]	36588 (3.35%)	5593 (2.91%)	8182 (3.12%)	16449 (3.48%)	6364 (3.83%)
Intestinal polyps	29529 (1.75%)	4462 (1.77%)	6829 (1.84%)	13497 (1.78%)	4741 (1.58%)
Lupus	1887 (0.10%)	242 (0.09%)	390 (0.10%)	874 (0.10%)	381 (0.11%)
Pills for hypertension	44295 (3.23%)	5557 (2.48%)	8991 (2.84%)	20525 (3.39%)	9222 (4.12%)
COPD[4]	6420 (0.90%)	720 (0.74%)	1328 (0.91%)	3414 (1.07%)	958 (0.70%)
Macular degeneration[5]	15740 (1.29%)	1079 (0.63%)	2254 (0.88%)	8058 (1.45%)	4349 (1.91%)
Alzheimer's disease[5]	11119 (0.91%)	432 (0.25%)	1120 (0.44%)	5747 (1.04%)	3820 (1.67%)
Parkinson's disease[5]	2031 (0.17%)	131 (0.08%)	344 (0.13%)	1148 (0.21%)	408 (0.18%)

Outcomes	Race/Ethnicity			
	American Indian/ Alaskan Native	Asian/Pacific Islander	White	Unknown
Number randomized	583	3663	111511	1877
Mean follow-up (months)	156.8	161.5	189.4	166.3
DVT	11 (0.15%)	34 (0.07%)	3816 (0.23%)	52 (0.21%)
Pulmonary embolism[2]	9 (0.12%)	17 (0.03%)	2400 (0.14%)	24 (0.09%)
Diabetes (treated)	106 (1.55%)	522 (1.11%)	14746 (0.86%)	285 (1.14%)
Hysterectomy	15 (0.41%)	120 (0.38%)	6364 (0.61%)	88 (0.57%)
Osteoarthritis[3]	148 (3.51%)	1146 (3.24%)	34716 (3.35%)	578 (3.59%)
Intestinal polyps	123 (1.77%)	749 (1.68%)	28232 (1.76%)	425 (1.81%)
Lupus	15 (0.20%)	40 (0.08%)	1800 (0.10%)	32 (0.12%)
Pills for hypertension	185 (3.72%)	1180 (3.39%)	42263 (3.22%)	667 (3.61%)
COPD[4]	30 (0.90%)	85 (0.37%)	6226 (0.92%)	79 (0.71%)
Macular degeneration[5]	50 (0.86%)	236 (0.62%)	15276 (1.32%)	178 (0.95%)
Alzheimer's disease[5]	41 (0.71%)	194 (0.51%)	10725 (0.92%)	159 (0.85%)
Parkinson's disease[5]	7 (0.12%)	31 (0.08%)	1960 (0.17%)	33 (0.18%)

[1] The SRC Super Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.
[2] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.
[3] This outcome has 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.
[4] Data only collected during the WHI Extension Study 2010-2020.
[5] Data only collected during the WHI Extension Studies 2005-2020.

Table 4.3
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by <u>Age at Enrollment</u> and <u>Race/Ethnicity</u> for <u>CT Participants</u> Who Did Not Report a Prevalent Condition at Baseline

Data as of: March 31, 2018; Events through March 31, 2018

Outcome	Total	Age at Enrollment			
		50-54	55-59	60-69	70-79
Number randomized	68132	9188	14661	31389	12894
Mean follow-up (months)	192.1	210.1	206.8	192.5	161.3
Hospitalizations					
Ever	50688 (4.65%)	5648 (3.51%)	9948 (3.94%)	24332 (4.83%)	10760 (6.21%)
Two or more	38121 (3.50%)	3771 (2.34%)	7055 (2.79%)	18747 (3.72%)	8548 (4.93%)
Other					
DVT	2686 (0.25%)	216 (0.14%)	481 (0.20%)	1340 (0.27%)	649 (0.39%)
Pulmonary embolism[1]	1612 (0.15%)	149 (0.09%)	294 (0.12%)	831 (0.17%)	338 (0.20%)
Diabetes (treated)	11289 (1.08%)	1691 (1.08%)	2576 (1.06%)	5330 (1.10%)	1692 (1.02%)
Gallbladder disease[2,3]	5248 (1.15%)	746 (1.07%)	1195 (1.15%)	2463 (1.21%)	844 (1.05%)
Hysterectomy	3536 (0.55%)	536 (0.57%)	909 (0.57%)	1643 (0.56%)	448 (0.46%)
Glaucoma[3]	7565 (1.78%)	744 (1.19%)	1457 (1.53%)	3662 (1.92%)	1702 (2.24%)
Osteoporosis[3]	14697 (3.53%)	1451 (2.32%)	2635 (2.80%)	7142 (3.83%)	3469 (4.72%)
Osteoarthritis[4]	22700 (3.35%)	3619 (2.98%)	5461 (3.13%)	10296 (3.49%)	3324 (3.83%)
Rheumatoid arthritis[3]	4010 (0.76%)	538 (0.70%)	866 (0.74%)	1822 (0.77%)	784 (0.84%)
Intestinal polyps	18033 (1.78%)	2756 (1.77%)	4409 (1.83%)	8445 (1.82%)	2423 (1.58%)
Lupus	1134 (0.10%)	154 (0.10%)	264 (0.10%)	535 (0.11%)	181 (0.10%)
Kidney stones[3,4]	1877 (0.50%)	241 (0.46%)	379 (0.47%)	898 (0.53%)	359 (0.51%)
Cataracts[3,4]	21571 (6.44%)	1468 (2.79%)	3731 (4.62%)	11650 (7.63%)	4722 (9.66%)
Hypertension treated w/pills	27013 (3.45%)	3724 (2.84%)	6086 (3.13%)	12603 (3.62%)	4600 (4.25%)
COPD[5]	3996 (0.97%)	458 (0.77%)	929 (0.99%)	2116 (1.12%)	493 (0.75%)
Macular degeneration[6]	8778 (1.27%)	602 (0.59%)	1402 (0.88%)	4638 (1.45%)	2136 (2.00%)
Alzheimer's disease[6]	6716 (0.97%)	292 (0.29%)	768 (0.48%)	3540 (1.11%)	2116 (1.98%)
Parkinson's disease[6]	1071 (0.16%)	79 (0.08%)	217 (0.14%)	595 (0.19%)	180 (0.17%)

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[1] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.

[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 4.3 (continued)
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by <u>Age at Enrollment</u> and
<u>Race/Ethnicity</u> for <u>CT Participants</u> Who Did Not Report a Prevalent Condition at Baseline

Data as of: March 31, 2018; Events through March 31, 2018

Outcomes	American 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)	171.8	183.0	175.1	163.7	196.3	177.0
Hospitalizations						
Ever	203 (4.86%)	875 (3.78%)	4825 (4.73%)	1646 (4.20%)	42487 (4.68%)	652 (4.71%)
Two or more	156 (3.73%)	539 (2.33%)	3420 (3.36%)	1034 (2.64%)	32522 (3.58%)	450 (3.25%)
Other						
DVT	10 (0.25%)	18 (0.08%)	273 (0.27%)	59 (0.15%)	2302 (0.26%)	24 (0.18%)
Pulmonary embolism[1]	7 (0.17%)	7 (0.03%)	156 (0.15%)	24 (0.06%)	1402 (0.16%)	16 (0.12%)
Diabetes (treated)	53 (1.38%)	290 (1.32%)	1570 (1.72%)	578 (1.56%)	8629 (0.98%)	169 (1.29%)
Gallbladder disease[2,3]	22 (1.31%)	86 (0.81%)	420 (0.85%)	243 (1.45%)	4403 (1.18%)	74 (1.20%)
Hysterectomy	8 (0.44%)	52 (0.35%)	238 (0.53%)	126 (0.57%)	3078 (0.56%)	34 (0.42%)
Glaucoma[3]	40 (2.23%)	153 (1.68%)	1005 (2.38%)	338 (1.91%)	5930 (1.70%)	99 (1.80%)
Osteoporosis[3]	66 (3.67%)	389 (4.32%)	909 (2.08%)	639 (3.75%)	12485 (3.67%)	209 (3.82%)
Osteoarthritis[4]	98 (3.84%)	532 (3.15%)	2084 (3.38%)	989 (3.67%)	18676 (3.33%)	321 (3.64%)
Rheumatoid arthritis[3]	32 (1.55%)	74 (0.66%)	682 (1.33%)	357 (1.70%)	2788 (0.65%)	77 (1.13%)
Intestinal polyps	81 (2.09%)	365 (1.73%)	1892 (1.99%)	630 (1.68%)	14826 (1.76%)	239 (1.88%)
Lupus	8 (0.19%)	19 (0.08%)	144 (0.14%)	57 (0.15%)	891 (0.10%)	15 (0.11%)
Kidney stones[3,4]	15 (0.98%)	47 (0.58%)	190 (0.50%)	100 (0.64%)	1501 (0.49%)	24 (0.48%)
Cataracts[3,4]	92 (6.44%)	428 (5.87%)	2002 (5.76%)	828 (5.57%)	17928 (6.59%)	293 (6.54%)
Hypertension treated w/pills	106 (3.78%)	562 (3.51%)	2265 (4.35%)	1147 (3.88%)	22604 (3.36%)	329 (3.45%)
COPD[5]	20 (1.21%)	46 (0.48%)	299 (0.72%)	113 (0.64%)	3472 (1.03%)	46 (0.81%)
Macular degeneration[6]	30 (1.03%)	114 (0.75%)	429 (0.65%)	225 (0.84%)	7899 (1.39%)	81 (0.87%)
Alzheimer's disease[6]	22 (0.76%)	104 (0.68%)	557 (0.84%)	224 (0.84%)	5741 (1.01%)	68 (0.73%)
Parkinson's disease[6]	3 (0.10%)	20 (0.13%)	66 (0.10%)	30 (0.11%)	937 (0.16%)	15 (0.16%)

Header spanning columns: **Race/Ethnicity**

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[1] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.

[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 4.4
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by <u>Age at Enrollment</u> and <u>Race/Ethnicity</u> for <u>OS Participants</u> Who Did Not Report a Prevalent Condition at Baseline

Data as of: March 31, 2018; Events through March 31, 2018

Outcome	Total	Age at Enrollment			
		50-54	55-59	60-69	70-79
Number enrolled	93676	12381	17329	41200	22766
Mean follow-up (months)	177.9	199.7	197.4	179.9	147.4
Hospitalizations					
Ever	65393 (4.71%)	6966 (3.38%)	11006 (3.86%)	29871 (4.83%)	17550 (6.28%)
Two or more	47259 (3.40%)	4502 (2.19%)	7593 (2.66%)	22055 (3.57%)	13109 (4.69%)
Other					
DVT	2837 (0.21%)	262 (0.13%)	421 (0.15%)	1367 (0.23%)	787 (0.29%)
Pulmonary embolism[1]	1753 (0.13%)	175 (0.09%)	301 (0.11%)	854 (0.14%)	423 (0.15%)
Diabetes (treated)	11988 (0.89%)	1721 (0.85%)	2434 (0.88%)	5523 (0.92%)	2310 (0.86%)
Gallbladder disease[2,3]	5673 (0.95%)	834 (0.96%)	1148 (0.98%)	2543 (0.99%)	1148 (0.85%)
Hysterectomy	4828 (0.35%)	767 (0.37%)	1130 (0.40%)	2173 (0.35%)	758 (0.27%)
Glaucoma[3]	8483 (1.87%)	845 (1.33%)	1372 (1.59%)	3899 (1.99%)	2367 (2.19%)
Osteoporosis[3]	20720 (4.75%)	2100 (3.35%)	3378 (4.00%)	9524 (5.07%)	5718 (5.63%)
Osteoarthritis[4]	27177 (3.32%)	4255 (2.85%)	5772 (3.08%)	11976 (3.46%)	5174 (3.84%)
Rheumatoid arthritis[3]	4588 (0.68%)	636 (0.67%)	883 (0.68%)	1888 (0.65%)	1181 (0.76%)
Intestinal polyps	22012 (1.75%)	3405 (1.73%)	4895 (1.83%)	9869 (1.78%)	3843 (1.59%)
Lupus	1548 (0.11%)	216 (0.11%)	300 (0.11%)	704 (0.11%)	328 (0.12%)
Kidney stones[3,4]	2317 (0.57%)	292 (0.55%)	433 (0.59%)	994 (0.57%)	598 (0.60%)
Cataracts[3,4]	27103 (7.93%)	1726 (3.21%)	4088 (5.63%)	14045 (9.25%)	7244 (11.34%
Hypertension treated w/pills	33498 (3.29%)	4468 (2.59%)	6499 (2.88%)	15034 (3.43%)	7497 (4.16%)
COPD[5]	4660 (0.83%)	563 (0.69%)	927 (0.83%)	2409 (0.98%)	761 (0.67%)
Macular degeneration[6]	11448 (1.18%)	831 (0.58%)	1587 (0.81%)	5669 (1.33%)	3361 (1.75%)
Alzheimer's disease[6]	8347 (0.86%)	355 (0.25%)	803 (0.41%)	4200 (0.98%)	2989 (1.56%)
Parkinson's disease[6]	1520 (0.16%)	106 (0.07%)	230 (0.12%)	851 (0.20%)	333 (0.17%)

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[1] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.
[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 4.4 (continued)
Counts (Annualized Percentages) of Participants with Self-Reported Outcomes by <u>Age at Enrollment</u> and <u>Race/Ethnicity</u> for <u>OS Participants</u> Who Did Not Report a Prevalent Condition at Baseline

Data as of: March 31, 2018; Events through March 31, 2018

Outcomes	American Indian/ Alaskan Native	Asian/Pacific Islander	Black/African American	Hispanic/ Latina	White	Unknown
			Race/Ethnicity			
Number enrolled	421	2671	7635	3609	78016	1324
Mean follow-up (months)	149.2	150.4	143.6	138.8	184.4	160.9
Hospitalizations						
Ever	278 (5.31%)	1204 (3.60%)	4603 (5.04%)	1768 (4.23%)	56707 (4.73%)	833 (4.69%)
Two or more	196 (3.75%)	681 (2.03%)	2942 (3.22%)	1048 (2.51%)	41798 (3.49%)	594 (3.35%)
Other						
DVT	9 (0.18%)	24 (0.07%)	208 (0.24%)	57 (0.14%)	2501 (0.22%)	38 (0.22%)
Pulmonary embolism[1]	6 (0.12%)	13 (0.04%)	111 (0.12%)	22 (0.05%)	1586 (0.13%)	15 (0.09%)
Diabetes (treated)	78 (1.69%)	323 (1.01%)	1275 (1.56%)	532 (1.35%)	9590 (0.82%)	190 (1.12%)
Gallbladder disease[2,3]	31 (1.32%)	81 (0.46%)	374 (0.78%)	231 (1.19%)	4879 (0.98%)	77 (0.95%)
Hysterectomy	11 (0.21%)	80 (0.24%)	173 (0.19%)	141 (0.34%)	4353 (0.36%)	70 (0.39%)
Glaucoma[3]	45 (2.31%)	253 (1.85%)	991 (2.72%)	309 (1.79%)	6763 (1.78%)	122 (1.89%)
Osteoporosis[3]	90 (4.59%)	626 (4.78%)	1073 (2.84%)	737 (4.41%)	17871 (4.95%)	323 (5.25%)
Osteoarthritis[4]	98 (3.37%)	787 (3.31%)	1887 (3.53%)	1022 (3.74%)	23000 (3.29%)	383 (3.49%)
Rheumatoid arthritis[3]	38 (1.39%)	98 (0.53%)	662 (1.34%)	383 (1.66%)	3320 (0.59%)	87 (0.96%)
Intestinal polyps	74 (1.56%)	490 (1.64%)	1605 (1.92%)	660 (1.69%)	18913 (1.74%)	270 (1.70%)
Lupus	10 (0.19%)	27 (0.08%)	143 (0.16%)	74 (0.18%)	1273 (0.11%)	21 (0.12%)
Kidney stones[3,4]	17 (0.96%)	40 (0.32%)	263 (0.77%)	125 (0.80%)	1828 (0.55%)	44 (0.76%)
Cataracts[3,4]	102 (6.76%)	683 (6.71%)	1937 (6.61%)	894 (6.21%)	23094 (8.18%)	393 (8.19%)
Hypertension treated w/pills	137 (3.96%)	807 (3.37%)	2104 (4.58%)	1178 (3.69%)	28801 (3.20%)	471 (3.67%)
COPD[5]	20 (0.84%)	52 (0.31%)	250 (0.55%)	98 (0.44%)	4190 (0.90%)	50 (0.64%)
Macular degeneration[6]	33 (0.79%)	156 (0.57%)	371 (0.49%)	244 (0.67%)	10512 (1.30%)	132 (1.00%)
Alzheimer's disease[6]	30 (0.72%)	126 (0.46%)	410 (0.55%)	184 (0.51%)	7481 (0.92%)	116 (0.88%)
Parkinson's disease[6]	6 (0.14%)	18 (0.07%)	76 (0.10%)	30 (0.08%)	1368 (0.17%)	22 (0.17%)

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[1] During the main WHI Study and the WHI Extension Study 2005-2010, pulmonary embolism includes only inpatient self-reports. During WHI Extension Study 2010-2020, pulmonary embolism includes both inpatient and outpatient self-reports.
[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 4.5
Self Reported Fractures (Annualized Percentages): <u>MRC and SRC Super Cohort Participants</u>

Data as of: March 31, 2018; Events through March 31, 2018

	MRC Super Cohort[1]	SRC Super Cohort[2]
Number of participants	44174	117634
Mean follow-up (months)	173.0	188.2
Elbow	636 (0.10%)	2204 (0.12%)
Foot	1891 (0.30%)	6960 (0.38%)
Hand	584 (0.09%)	1890 (0.10%)
Hip	1633 (0.26%)	5864 (0.32%)
Knee	1033 (0.16%)	3014 (0.16%)
Lower arm	3072 (0.48%)	9943 (0.54%)
Lower leg	2309 (0.36%)	7315 (0.40%)
Pelvis	728 (0.11%)	3292 (0.18%)
Tailbone	266 (0.04%)	1097 (0.06%)
Upper arm	1804 (0.28%)	5850 (0.32%)
Upper leg	646 (0.10%)	2533 (0.14%)
Spine	1858 (0.29%)	7782 (0.42%)
Other	6677 (1.05%)	23239 (1.26%)
Any fracture	14826 (2.33%)	49518 (2.68%)

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[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS.
[2] The SRC Super Cohort includes all White, American Indian/Alaskan Native, Asian/Pacific Islander, and Unknown Race/Ethnicity participants from the Dietary Modification Trial (not also in the Hormone Trial) and the Observational Study.

Table 4.6
Self Reported Fractures (Annualized Percentages): <u>CT and OS Participants</u>

Data as of: March 31, 2018; Events through March 31, 2018

	CT		OS		Total	
Number of participants	68132		93676		161808	
Mean follow-up (months)	192.1		178.2		184.1	
Elbow	1213	(0.11%)	1627	(0.12%)	2840	(0.11%)
Foot	3877	(0.36%)	4974	(0.36%)	8851	(0.36%)
Hand	1141	(0.10%)	1333	(0.10%)	2474	(0.10%)
Hip	3152	(0.29%)	4345	(0.31%)	7497	(0.30%)
Knee	1737	(0.16%)	2310	(0.17%)	4047	(0.16%)
Lower arm	5721	(0.52%)	7294	(0.52%)	13015	(0.52%)
Lower leg	4315	(0.40%)	5309	(0.38%)	9624	(0.39%)
Pelvis	1584	(0.15%)	2436	(0.18%)	4020	(0.16%)
Tailbone	555	(0.05%)	808	(0.06%)	1363	(0.05%)
Upper arm	3434	(0.31%)	4220	(0.30%)	7654	(0.31%)
Upper leg	1341	(0.12%)	1838	(0.13%)	3179	(0.13%)
Spine	3989	(0.37%)	5651	(0.41%)	9640	(0.39%)
Other	12630	(1.16%)	17286	(1.24%)	29916	(1.21%)
Any fracture	27599	(2.53%)	36745	(2.64%)	64344	(2.59%)

Table 5.1
Agreement of the Central Adjudications with Self-Reports for Outcomes Reported in Extension Study 2010-2020

Data as of: March 31, 2018

	Participants with a self-report[1]	Closed		Confirmed		Denied – related outcome found[2]		Denied – unrelated outcome found		Denied – no outcome found	
		N	%	N	(%)[3]	N	(%)[3]	N	(%)[3]	N	(%)[3]
Cardiovascular											
Clinical MI	597	531	89%	338	(64%)	97	(18%)	14	(3%)	82	(15%)
CABG	200	182	91%	128	(70%)	29	(16%)	0	(0%)	25	(14%)
PTCA	612	561	92%	379	(68%)	73	(13%)	3	(1%)	106	(19%)
Carotid artery disease	180	167	93%	95	(57%)	36	(22%)	0	(0%)	36	(22%)
Stroke	1187	1009	85%	675	(67%)	128	(13%)	19	(2%)	187	(19%)
PVD	382	248	65%	97	(39%)	65	(26%)	4	(2%)	82	(33%)
DVT	690	584	85%	325	(56%)	103	(18%)	7	(1%)	149	(26%)
Pulmonary embolism	348	320	92%	270	(84%)	22	(7%)	7	(2%)	21	(7%)
Valvular heart disease	383	343	90%	253	(74%)	46	(13%)	0	(0%)	44	(13%)
Cancers											
Breast cancer	2887	2731	95%	2665	(98%)	6	(<1%)	0	(0%)	60	(2%)
Ovarian cancer	336	305	91%	199	(65%)	65	(21%)	0	(0%)	41	(13%)
Endometrial cancer	458	427	93%	332	(78%)	71	(17%)	1	(<1%)	23	(5%)
Cervical cancer	67	62	93%	16	(26%)	15	(24%)	1	(2%)	30	(48%)
Colorectal cancer	818	746	91%	628	(84%)	54	(7%)	5	(1%)	59	(8%)
Bladder/urinary tract cancer	355	326	92%	283	(87%)	20	(6%)	1	(<1%)	22	(7%)
Brain cancer	150	114	76%	41	(36%)	14	(12%)	8	(7%)	51	(45%)
Esophagus cancer	68	58	85%	35	(60%)	8	(14%)	1	(2%)	14	(24%)
Gallbladder/bile duct cancer	77	70	91%	27	(39%)	30	(43%)	1	(1%)	12	(17%)
Kidney cancer	292	263	90%	157	(60%)	54	(21%)	3	(1%)	49	(19%)
Leukemia	300	261	87%	201	(77%)	21	(8%)	1	(<1%)	38	(15%)
Liver cancer	274	214	78%	44	(21%)	40	(19%)	13	(6%)	117	(55%)
Lung cancer	1163	1017	87%	846	(83%)	46	(5%)	5	(<1%)	120	(12%)
Hodgkin's lymphoma	49	41	84%	8	(20%)	22	(54%)	0	(0%)	11	(27%)
Non-Hodgkin's lymphoma	383	346	90%	298	(86%)	28	(8%)	0	(0%)	20	(6%)
Melanoma	1406	1106	79%	844	(76%)	37	(3%)	3	(<1%)	222	(20%)
Multiple myeloma	177	162	92%	138	(85%)	7	(4%)	5	(3%)	12	(7%)
Pancreas cancer	380	333	88%	273	(82%)	25	(8%)	4	(1%)	31	(9%)
Stomach cancer	134	110	82%	42	(38%)	32	(29%)	1	(1%)	35	(32%)

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

Data as of: March 31, 2018

	Participants with a self-report[1]	Closed		Confirmed		Denied – related outcome found[2]		Denied – unrelated outcome found		Denied – no outcome found	
		N	%	N	(%)[3]	N	(%)[3]	N	(%)[3]	N	(%)[3]
Thyroid cancer	152	140	92%	111	(79%)	5	(4%)	0	(0%)	24	(17%)
Other genital organ cancer[4]	118	103	87%	12	(12%)	73	(71%)	0	(0%)	18	(17%)
Other cancer[5]	840	671	80%	314	(47%)	150	(22%)	9	(1%)	198	(30%)
Fractures											
Hip fracture	631	525	83%	449	(86%)	0	(0%)	10	(2%)	66	(13%)
Upper leg fracture[6]	318	270	85%	0	(0%)	119	(44%)	20	(7%)	131	(49%)

[1] Excludes duplicates and pcrior 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] Does not include cancer of the ovary, endometrium, or cervix.
[5] Any cancer other than those listed above, excluding non-melanoma skin cancer.
[6] Upper leg fractures are only investigated for possible occurrence of hip fracture.

Table 5.2
Agreement of the UNC Heart Failure (HF) Adjudications with Self-Reports among <u>MRC Super Cohort Participants</u>[1]

Data as of: March 31, 2018

	Potential Case[2]	Case Eligible for UNC[3]		Case Processed by UNC[3]		Case Confirmed[4]		Case Denied		Case Unclassifiable	
		N	%	N	(%)[5]	N	(%)[6]	N	(%)[6]	N	(%)[6]
Overall	7880	7266	92%	7134	(98%)	5776	(81%)	937	(13%)	420	(6%)
By Self Report											
Self-reported HF	3677	3102	84%	3006	(97%)	2632	(88%)	290	(10%)	84	(3%)
No HF self-report	4203	4164	99%	4128	(99%)	3144	(76%)	647	(16%)	336	(8%)

[1] The MRC Super Cohort includes all WHI Hormone Trial participants and all Black/African American and Hispanic/Latina participants from the CT and OS.
[2] Includes all self-reported or discovered heart failure cases and a portion of self reported angina or other heart condition cases with 2 or more essential documents among MRC Super Cohort participants.
[3] Cases are eligible if they self-reported HF, or if not, were forwarded by another outcomes committee for possible HF; cases are sent to and processed by UNC when all required records have been received.
[4] Diagnosis was either definite or probable decompensated heart failure, or chronic stable heart failure.
[5] Percentages are relative to "Case Eligible for UNC".
[6] Percentages are relative to "Case Processed by UNC".

Table 5.3
Source of Outcomes Confirmed by Central Adjudication for Self-Reported Outcomes in Extension Study 2010-2020

Data as of: March 31, 2018

		Reason for central investigation					
	Centrally confirmed **N**	**Self-report same outcome**		**Self-report related outcome[1]**		**Self-report unrelated outcome[2]**	
		N	**%**	**N**	**%**	**N**	**%**
Cardiovascular							
Clinical MI	653	333	51%	238	36%	82	13%
CABG	140	128	91%	11	8%	1	1%
PTCA	423	379	90%	36	9%	8	2%
Carotid artery disease	85	71	84%	9	11%	5	6%
Stroke	759	677	89%	26	3%	56	7%
PVD	153	99	65%	45	29%	9	6%
DVT	433	325	75%	56	13%	52	12%
Pulmonary embolism	343	263	77%	45	13%	35	10%
Valvular heart disease	394	233	59%	128	32%	33	8%
Cancers							
Breast cancer	2693	2666	99%	17	1%	10	<1%
Ovarian cancer	209	199	95%	8	4%	2	1%
Endometrial cancer	365	332	91%	29	8%	4	1%
Cervical cancer	19	16	84%	2	11%	1	5%
Colorectal cancer	654	623	95%	21	3%	10	2%
Bladder/urinary tract cancer[3]	357	283	79%	69	19%	5	1%
Brain cancer	41	41	100%	0	0%	0	0%
Esophagus cancer	37	36	97%	1	3%	0	0%
Gallbladder/bile duct cancer	66	27	41%	39	59%	0	0%
Kidney cancer	167	160	96%	4	2%	3	2%
Leukemia	242	201	83%	32	13%	9	4%
Liver cancer	54	44	81%	9	17%	1	2%
Lung cancer	893	849	95%	28	3%	16	2%
Hodgkin's lymphoma	11	8	73%	3	27%	0	0%
Non-Hodgkin's lymphoma	410	298	73%	107	26%	5	1%
Melanoma	858	846	99%	11	1%	1	<1%
Multiple myeloma	159	138	87%	19	12%	2	1%
Pancreas cancer	286	274	96%	8	3%	4	1%
Stomach cancer	56	42	75%	10	18%	4	7%
Thyroid cancer	112	111	99%	1	1%	0	0%
Other genital organ cancer[4]	112	12	11%	100	89%	0	0%
Fractures							
Hip fracture	571	449	79%	106	19%	16	3%

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[1] All cardiovascular outcomes are considered related, all cancers are considered related and all fractures are considered related.
[2] Includes self-report of hospitalizations.
[3] Cancers of the urinary tract include renal pelvis, ureter and urinary organs (NOS).
[4] Does not include cancers of the ovary, endometrium or cervix; includes cancers of the vulva, vagina, uterus (NOS) and genital organs (NOS).

Table 6.1
Consent Status for <u>Long Life Study Participants</u>[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	723	(9.2%)
70-79	3052	(38.8%)
80-89	3688	(46.8%)
≥90	412	(5.2%)
Race/ethnicity		
White	3910	(49.7%)
Black	2651	(33.7%)
Hispanic	1314	(16.7%)
Blood draw	7475	(94.9%)[4]

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[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 6.2
Verified Outcomes (Annualized Percentages)
After Long Life Study (LLS) Blood Draw by Age at Visit for LLS Participants

Data as of: March 31, 2018; Events through March 31, 2018

Outcomes	Total	Age at Visit			
		63-69	70-79	80-89	≥ 90
Number enrolled	7875	723	3052	3688	412
Mean follow-up (months) after LLS visit	54.4	56.4	56.7	52.8	47.5
Cardiovascular					
CHD[1]	277 (0.78%)	12 (0.35%)	56 (0.39%)	177 (1.09%)	32 (1.96%)
CHD death[2]	153 (0.43%)	3 (0.09%)	23 (0.16%)	101 (0.62%)	26 (1.60%)
Clinical MI	188 (0.53%)	10 (0.29%)	43 (0.30%)	118 (0.73%)	17 (1.04%)
CABG/PTCA	137 (0.38%)	9 (0.26%)	46 (0.32%)	77 (0.47%)	5 (0.31%)
Carotid artery disease	19 (0.05%)	0 (0.00%)	6 (0.04%)	12 (0.07%)	1 (0.06%)
Heart failure, UNC[3]	302 (0.85%)	6 (0.18%)	64 (0.44%)	201 (1.24%)	31 (1.90%)
Stroke	240 (0.67%)	9 (0.26%)	63 (0.44%)	145 (0.89%)	23 (1.41%)
PVD	44 (0.12%)	1 (0.03%)	8 (0.06%)	31 (0.19%)	4 (0.25%)
DVT	140 (0.39%)	8 (0.24%)	45 (0.31%)	77 (0.47%)	10 (0.61%)
Pulmonary embolism	109 (0.31%)	6 (0.18%)	38 (0.26%)	59 (0.36%)	6 (0.37%)
Coronary disease[4]	445 (1.25%)	17 (0.50%)	102 (0.71%)	283 (1.74%)	43 (2.64%)
DVT/PE	201 (0.56%)	12 (0.35%)	69 (0.48%)	108 (0.67%)	12 (0.74%)
Aortic aneurysm	13 (0.04%)	1 (0.03%)	4 (0.03%)	7 (0.04%)	1 (0.06%)
Valvular heart disease	109 (0.31%)	2 (0.06%)	19 (0.13%)	75 (0.46%)	13 (0.80%)
Total cardiovascular disease[5]	680 (1.91%)	24 (0.71%)	163 (1.13%)	426 (2.63%)	67 (4.11%)
Cancer					
Breast cancer	142 (0.40%)	15 (0.44%)	75 (0.52%)	50 (0.31%)	2 (0.12%)
Invasive breast cancer	125 (0.35%)	10 (0.29%)	67 (0.46%)	45 (0.28%)	3 (0.18%)
Non-invasive breast cancer	22 (0.06%)	6 (0.18%)	11 (0.08%)	5 (0.03%)	0 (0.00%)
Ovarian cancer	20 (0.06%)	0 (0.00%)	9 (0.06%)	10 (0.06%)	1 (0.06%)
Endometrial cancer[6]	11 (0.03%)	0 (0.00%)	5 (0.03%)	6 (0.04%)	0 (0.00%)
Colorectal cancer	54 (0.15%)	2 (0.06%)	14 (0.10%)	36 (0.22%)	2 (0.12%)
Other cancer[7]	303 (0.85%)	17 (0.50%)	101 (0.70%)	169 (1.04%)	16 (0.98%)
Total cancer	474 (1.33%)	34 (1.00%)	185 (1.28%)	237 (1.46%)	18 (1.10%)
Fractures					
Hip fracture	196 (0.55%)	1 (0.03%)	27 (0.19%)	138 (0.85%)	30 (1.84%)
Deaths					
Cardiovascular deaths	389 (1.09%)	8 (0.24%)	53 (0.37%)	260 (1.60%)	68 (4.17%)
Cancer deaths	231 (0.65%)	9 (0.26%)	57 (0.40%)	149 (0.92%)	16 (0.98%)
Other known cause	362 (1.01%)	5 (0.15%)	54 (0.37%)	248 (1.53%)	55 (3.38%)
Unknown cause	12 (0.03%)	3 (0.09%)	0 (0.00%)	4 (0.02%)	5 (0.31%)
Not yet adjudicated	160 (0.45%)	2 (0.06%)	30 (0.21%)	103 (0.63%)	25 (1.53%)
Total death	1154 (3.23%)	27 (0.79%)	194 (1.35%)	764 (4.71%)	169 (10.37%

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[1] CHD includes clinical MI and CHD death.
[2] CHD death includes definite and possible CHD death.
[3] Definite or possible decompensated heart failure adjudicated by UNC.
[4] Coronary disease includes clinical MI, CHD death, UNC heart failure and CABG/PTCA.
[5] Total CVD does not include aortic aneurysm or valvular heart disease.
[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.

Table 6.3
Verified Outcomes (Annualized Percentages)
After Long Life Study (LLS) Blood Draw by Race/Ethnicity for LLS Participants

Data as of: March 31, 2018; Events through March 31, 2018

Outcomes	Race/Ethnicity		
	Black/African American	**Hispanic/Latina**	**White**
Number enrolled	2651	1314	3910
Mean follow-up (months) after LLS visit	54.5	57.2	53.3
Cardiovascular			
CHD[1]	58 (0.48%)	27 (0.43%)	192 (1.10%)
CHD death[2]	31 (0.26%)	7 (0.11%)	115 (0.66%)
Clinical MI	38 (0.32%)	23 (0.37%)	127 (0.73%)
CABG/PTCA	31 (0.26%)	14 (0.22%)	92 (0.53%)
Carotid artery disease	7 (0.06%)	0 (0.00%)	12 (0.07%)
Heart failure, UNC[3]	71 (0.59%)	21 (0.34%)	210 (1.21%)
Stroke	69 (0.57%)	28 (0.45%)	143 (0.82%)
PVD	14 (0.12%)	3 (0.05%)	27 (0.16%)
DVT	51 (0.42%)	13 (0.21%)	76 (0.44%)
Pulmonary embolism	45 (0.37%)	8 (0.13%)	56 (0.32%)
Coronary disease[4]	99 (0.82%)	37 (0.59%)	309 (1.78%)
DVT/PE	79 (0.66%)	19 (0.30%)	103 (0.59%)
Aortic aneurysm	7 (0.06%)	0 (0.00%)	6 (0.03%)
Valvular heart disease	8 (0.07%)	11 (0.18%)	90 (0.52%)
Total cardiovascular disease[5]	168 (1.40%)	67 (1.07%)	445 (2.56%)
Cancer			
Breast cancer	57 (0.47%)	25 (0.40%)	60 (0.35%)
Invasive breast cancer	48 (0.40%)	23 (0.37%)	54 (0.31%)
Non-invasive breast cancer	12 (0.10%)	3 (0.05%)	7 (0.04%)
Ovarian cancer	5 (0.04%)	4 (0.06%)	11 (0.06%)
Endometrial cancer[6]	3 (0.02%)	2 (0.03%)	6 (0.03%)
Colorectal cancer	11 (0.09%)	4 (0.06%)	39 (0.22%)
Other cancer[7]	84 (0.70%)	43 (0.69%)	176 (1.01%)
Total cancer	149 (1.24%)	73 (1.17%)	252 (1.45%)
Fractures			
Hip fracture	18 (0.15%)	12 (0.19%)	166 (0.95%)
Deaths			
Cardiovascular deaths	81 (0.67%)	21 (0.34%)	287 (1.65%)
Cancer deaths	64 (0.53%)	22 (0.35%)	145 (0.83%)
Other known cause	63 (0.52%)	32 (0.51%)	267 (1.54%)
Unknown cause	7 (0.06%)	0 (0.00%)	5 (0.03%)
Not yet adjudicated	43 (0.36%)	13 (0.21%)	104 (0.60%)
Total death	258 (2.14%)	88 (1.41%)	808 (4.65%)

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[1] CHD includes clinical MI and CHD death.
[2] CHD death includes definite and possible CHD death.
[3] Definite or possible decompensated heart failure adjudicated by UNC
[4] Coronary disease includes clinical MI, CHD death, UNC heart failure and CABG/PTCA.
[5] Total CVD does not include aortic aneurysm or valvular heart disease.
[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.

Table 6.4
Self-Reported Outcomes (Annualized Percentages) After Long Life Study (LLS) Blood Draw
by Age at Visit and Race/Ethnicity for LLS Participants Who Did Not Report a Prevalent Condition at Baseline

Data as of: March 31, 2018; Events through March 31, 2018

Outcome	Total	Age at Visit			
		63-69	70-79	80-89	≥ 90
Number randomized	7875	723	3052	3688	412
Mean follow-up (months) after LLS visit	54.4	56.4	56.7	52.8	47.5
Angina	373 (1.05%)	23 (0.68%)	120 (0.83%)	209 (1.29%)	21 (1.29%)
Diabetes (treated)	480 (1.35%)	42 (1.24%)	214 (1.48%)	209 (1.29%)	15 (0.92%)
Hysterectomy	74 (0.21%)	10 (0.29%)	42 (0.29%)	22 (0.14%)	0 (0.00%)
Osteoarthritis	636 (1.78%)	66 (1.94%)	276 (1.91%)	260 (1.60%)	34 (2.09%)
Intestinal polyps	390 (1.09%)	63 (1.85%)	222 (1.54%)	102 (0.63%)	3 (0.18%)
Lupus	29 (0.08%)	3 (0.09%)	14 (0.10%)	11 (0.07%)	1 (0.06%)
Pills for hypertension	440 (1.23%)	54 (1.59%)	160 (1.11%)	205 (1.26%)	21 (1.29%)
COPD	577 (1.62%)	38 (1.12%)	217 (1.50%)	302 (1.86%)	20 (1.23%)
Macular degeneration	826 (2.32%)	31 (0.91%)	233 (1.62%)	500 (3.08%)	62 (3.80%)
Alzheimer's disease	753 (2.11%)	19 (0.56%)	165 (1.14%)	492 (3.03%)	77 (4.73%)
Parkinson's disease	78 (0.22%)	5 (0.15%)	32 (0.22%)	38 (0.23%)	3 (0.18%)

Outcome	Race/Ethnicity		
	Black/African American	Hispanic/Latina	White
Number randomized	2651	1314	3910
Mean follow-up (months) after LLS visit	54.5	57.2	53.3
Angina	120 (1.00%)	51 (0.81%)	202 (1.16%)
Diabetes (treated)	171 (1.42%)	80 (1.28%)	229 (1.32%)
Hysterectomy	26 (0.22%)	15 (0.24%)	33 (0.19%)
Osteoarthritis	223 (1.85%)	103 (1.65%)	310 (1.78%)
Intestinal polyps	163 (1.35%)	95 (1.52%)	132 (0.76%)
Lupus	7 (0.06%)	8 (0.13%)	14 (0.08%)
Pills for hypertension	91 (0.76%)	91 (1.45%)	258 (1.48%)
COPD	181 (1.50%)	85 (1.36%)	311 (1.79%)
Macular degeneration	179 (1.49%)	122 (1.95%)	525 (3.02%)
Alzheimer's disease	167 (1.39%)	91 (1.45%)	495 (2.85%)
Parkinson's disease	27 (0.22%)	13 (0.21%)	38 (0.22%)

Table 7.1
WHI Manuscript Stages

Stage #	Definition	Number
12*	Published	1663
11	In press / accepted by journal	13
10	Submitted to journal	33
9	Final manuscript approved by P&P Committee	203
8	Final manuscript submitted to P&P Committee	35
7	Draft manuscript	24
6	Analysis completed	33
5	Analysis in progress	53
4	Analysis proposed	6
2 & 3	Approved proposal	1036
Total		**3099**

*Only Stage 12 papers published between March 2017 and March 2018 are included in Table 7.2

Table 7.2
Publications March 2017 - March 2018

MS#	Title	Authors	Focus	Reference	Study #
640	Mammographic density change with estrogen and progestin therapy and breast cancer risk	Byrne, Ursin, Martin, Peck, Cole, Zeng, Kim, Yaffe, Boyd, Heiss, McTiernan, Chlebowski, Lane, Manson, Wactawski-Wende	OS	J Natl Cancer Inst. 2017 Sep 1;109(9). doi: 10.1093/jnci/djx001	AS178
1009	Fifteen genetic loci associated with the electrocardiographic P wave	Christophersen, Magnani, Yin, Arking, Niemeijer, Lubitz, Avery, Duan, Felix, Bis, North, Reiner, Tinker, Limacher, Whitsel	Gen	Circ Cardiovasc Genet. 2017 Aug;10(4). pii: e001667. doi: 10.1161/CIRCGENETICS.116.001667	AS264, M5
1042	Cognitive function and changes in cognitive function as predictors of incident cardiovascular disease: The Women's Health Initiative Memory Study	Leng, Espeland, Manson, Stefanick, Gower, Hayden, Limacher, Vaughan, Robinson, Wallace, Wassertheil-Smoller, Yaffe, Shumaker	WHIMS	J Gerontol A Biol Sci Med Sci. 2017 Jul 25. doi: 10.1093/gerona/glx138. [Epub ahead of print]	AS39
1110	The associations of atrial fibrillation with the risks of incident invasive breast and colorectal cancer	Wassertheil-Smoller, McGinn, Martin, Rodriguez, Stefanick, Perez	Gen	Am J Epidemiol. 2017 Mar 1;185(5):372-384. doi: 10.1093/aje/kww185	
1137	Menopausal hormone therapy and long-term all-cause and cause-specific mortality: The Women's Health Initiative randomized trials	Manson, Aragaki, Rossouw, Anderson, Prentice, LaCroix, Chlebowski, Howard, Thomson, Margolis, Lewis, Stefanick, Jackson, Johnson, Martin, Shumaker, et al.	CT	JAMA. 2017 Sep 12;318(10):927-938. doi: 10.1001/jama.2017.11217	
1175	Leukocyte telomere length, genetic variants at the TERT gene region and risk of pancreatic cancer	Bao, Prescott, Yuan, Zhang, Kraft, Babic, Morales-Oyarvide, Qian, Buring, Cochrane, Gaziano, Giovannucci, Manson, Ng, Ogino, Rohan, et al.	OS	Gut. 2017 Jun;66(6):1116-1122. doi: 10.1136/gutjnl-2016-312510. Epub 2016 Oct 21.	AS214
1219	Genetic variants in sex hormone pathways and the risk of type 2 diabetes among African-American, Hispanic-American, and European-American postmenopausal women in the United States	Goto, Chen, Chan, Lee, Nelson, Crenshaw, Bookman, Margolis, Sale, Reiner, Liu	Gen	J Diabetes. 2018 Feb 8. doi: 10.1111/1753-0407.12648. [Epub ahead of print]	M13, M5
1260	Erythrocyte omega-3 fatty acids are inversely associated with incident dementia: Secondary analyses of longitudinal data from the Women's Health Initiative Memory Study (WHIMS)	Ammann, Pottala, Robinson, Espeland, Harris	CT	Prostaglandins Leukot Essent Fatty Acids. 2017 Jun;121:68-75. doi: 10.1016/j.plefa.2017.06.006. Epub 2017 Jun 15.	AS39, BAA19

Table 7.2
Publications March 2017 - March 2018

MS#	Title	Authors	Focus	Reference	Study #
1301	Low-fat dietary pattern and cardiovascular disease: results from the Women's Health Initiative randomized controlled trial	Prentice, Aragaki, Van Horn, Thomson, Beresford, Robinson, Snetselaar, Anderson, Manson, Allison, Rossouw, Howard	CT	Am J Clin Nutr. 2017 May 17. pii: ajcn153270. doi: 10.3945/ajcn.117.153270. [Epub ahead of print]	
1489	Long-term oral bisphosphonate therapy and fractures in older women: The Women's Health Initiative	Drieling, LaCroix, Beresford, Boudreau, Kooperberg, Chlebowski, Ko, Heckbert	Gen	J Am Geriatr Soc. 2017 May 29. doi: 10.1111/jgs.14911. [Epub ahead of print]	
1610	Fine-mapping of QT regions in global populations refines previously identified QT loci and identifies signals unique to African and Hispanic descent populations	Avery, Wassel, Richard, Highland, Bien (Rosse), Zubair, Soliman, Fornage, Bielinski, Tao, Whitsel, Peters, Kooperberg, North	Gen	Heart Rhythm. 2017 Apr;14(4):572-580. doi: 10.1016/j.hrthm.2016.12.021. Epub 2016 Dec 14.	M6
1620	Optimism, pessimism, cynical hostility, and biomarkers of metabolic function in the Women's Health Initiative	Tindle, Duncan, Liu, Kuller, Woods, Rapp, Kroenke, Coday, Loucks, LaMonte, Progovac, Salmoirago-Blotcher, Walitt, You, Freiberg	OS	J Diabetes. 2017 Jul 13. doi: 10.1111/1753-0407.12584. [Epub ahead of print]	AS238, AS254
1633	Genome-wide association study of susceptibility to particulate matter-associated QT prolongation	Gondalia, Avery, Napier, Mendez Giraldez, Stewart, Sitlani, Li, Wilhelmsen, Duan, Roach, North, Reiner, Zhang, Tinker, Yanosky, Liao, et al.	Gen	Environ Health Perspect. 2017 Jun 8;125(6):067002. doi: 10.1289/EHP347	AS264, M5
1647	The influence of physical activity and sedentary behavior on living to age 85 years without disease and disability in older women	Rillamas-Sun, LaMonte, Evenson, Thomson, Beresford, Coday, Manini, Li, LaCroix	Gen	J Gerontol A Biol Sci Med Sci. 2017 Nov 20. doi: 10.1093/gerona/glx222. [Epub ahead of print]	
1729	Effects of oral conjugated equine estrogens with or without medroxyprogesterone acetate on incident hypertension in the Women's Health Initiative hormone therapy trials	Swica, Warren, Manson, Aragaki, Bassuk, Shimbo, Kaunitz, Rossouw, Stefanick, Womack	CT	Menopause. 2018 Jan 29. doi: 10.1097/GME.0000000000001067. [Epub ahead of print]	
1738	Understanding the relation between socioeconomic position and inflammation in post-menopausal women: education, income and occupational prestige	Pedersen, Budtz-Jorgensen, De Roos, Garcia, Lund, Hulvej Rod, Kroenke, Chang, Liu, Michael	OS	Eur J Public Health. 2017 Dec 1;27(6):1074-1079. doi: 10.1093/eurpub/ckx070.	AS126, AS132

Table 7.2
Publications March 2017 - March 2018

MS#	Title	Authors	Focus	Reference	Study #
1750	An analysis of the association between statin use and risk of endometrial and ovarian cancers in the Women's Health Initiative	Desai, Wallace, Anderson, Howard, Ray, Wu, Safford, Martin, Rohan, Manson, Simon	Gen	Gynecol Oncol. 2018 Mar;148(3):540-546. doi: 10.1016/j.ygyno.2018.01.006. Epub 2018 Feb 13.	
1811	Periodontal disease history and incident cancer risk among postmenopausal women: results from the Women's Health Initiative Observational cohort	Nwizu, Marshall, Moysich, Genco, Hovey, Mai, LaMonte, Freudenheim, Wactawski-Wende	OS	Cancer Epidemiol Biomarkers Prev. 2017 Aug;26(8):1255-1265. doi: 10.1158/1055-9965.EPI-17-0212	AS15
1814	The effect of genetic variants on the relationship between statins and breast cancer in postmenopausal women in the Women's Health Initiative observational study	Bock, Jay, Dyson, Beebe-Dimmer, Cote, Hou, Howard, Desai, Purrington, Prentice, Simon	Gen	Breast Cancer Res Treat. 2017 Oct 24. doi: 10.1007/s10549-017-4521-0. [Epub ahead of print]	M3
1846	History of periodontitis diagnosis and edentulism as predictors of cardiovascular disease, stroke, and mortality in postmenopausal women	LaMonte, Genco, Hovey, Wallace, Freudenheim, Michaud, Mai, Tinker, Salazar, Andrews, Li, Eaton, Martin, Wactawski-Wende	OS	J Am Heart Assoc. 2017 Mar 29;6(4). pii: e004518. doi: 10.1161/JAHA.116.004518	AS15
1859	HLA-shared epitope, inflammation, mortality, CVD and malignancy among postmenopausal women with and without rheumatoid arthritis in the Women's Health Initiative	Talabi, Mackey, Kuller, Dorman, Deane, Robinson, Walitt, Chang, Liu, Moreland	Gen	Am J Epidemiol. 2017 Apr 28. doi: 10.1093/aje/kwx087. [Epub ahead of print]	BAA20
1889	Interaction between nonsteroidal anti-inflammatory drugs and low-fat dietary intervention on colorectal cancer incidence; the Women's Health Initiative (WHI) Dietary Modification Trial	Kato, Lane, Womack, Bock, Hou, Lin, Wu, Beebe-Dimmer, Simon	CT	J Am Coll Nutr. 2017 Aug;36(6):462-469. doi: 10.1080/07315724.2017.1321505. Epub 2017 Jul 6	
1927	Pharmacogenomics study of thiazide diuretics and QT interval in multi-ethnic populations: the cohorts for heart and aging research in genomic epidemiology	Seyerle, Sitlani, Noordam, Gogarten, Li, Li, Evans, Sun, Laaksonen, Isaacs, Reiner, Whitsel, Avery	Gen	Pharmacogenomics J. 2017 Jul 18. doi: 10.1038/tpj.2017.10. [Epub ahead of print]	M13, M5, W63, W68
1928	Artificially sweetened beverages, sugar-sweetened beverages, plain water, and incident diabetes mellitus in postmenopausal women: the prospective Women's Health Initiative observational study	Huang, Quddus, Stinson, Shikany, Howard, Kutob, Lu, Manson, Eaton	OS	Am J Clin Nutr. 2017 Jun 28. pii: ajcn145391. doi: 10.3945/ajcn.116.145391. [Epub ahead of print]	

Table 7.2
Publications March 2017 - March 2018

MS#	Title	Authors	Focus	Reference	Study #
1946	Chocolate intake and diabetes risk in postmenopausal American women	Greenberg, Manson, Tinker, Neuhouser, Garcia, Vitolins, Phillips	OS	Eur J Clin Nutr. 2017 Apr 12. doi: 10.1038/ejcn.2017.36. [Epub ahead of print]	
1980	Vasomotor symptoms and the risk of incident venous thrombosis in postmenopausal women	Harrington, Blondon, Cushman, Kaunitz, Allison, Wang, Sullivan, Woods, LaCroix, Heckbert, McKnight, Rossouw, Smith	CT	J Thromb Haemost. 2018 Mar 5. doi: 10.1111/jth.13993. [Epub ahead of print]	
2008	Transethnic insight into the genetics of glycaemic traits: fine-mapping results from the Population Architecture using Genomics and Epidemiology (PAGE) consortium	Bien (Rosse), Auer, Harrison, Qu, Connolly, Greenside, Chen, Berndt, Bezieau, Kang, Huyghe, Banbury, Newcomb, Potter, White, Carlson, et al.	Gen	Diabetologia. 2017 Dec;60(12):2384-2398. doi: 10.1007/s00125-017-4405-1. Epub 2017 Sep 13.	M6
2023	Osteoporosis in the Women's Health Initiative: another treatment gap?	Sattari, Cauley, Garvan, Johnson, LaMonte, Li, Limacher, Manini, Sarto, Sullivan, Wactawski-Wende, Beyth	Gen	Am J Med. 2017 Mar 30. pii: S0002-9343(17)30322-4. doi: 10.1016/j.amjmed.2017.02.042. [Epub ahead of print]	
2029	Relations of sex hormone levels to leukocyte telomere length in black, hispanic, and asian/Pacific Islander postmenopausal women	Song, Cho, Brennan, Chen, Song, Manson, Hevener, You, Butch, Liu	OS	J Diabetes. 2017 Jun 13. doi: 10.1111/1753-0407.12577. [Epub ahead of print]	AS238, AS254
2041	Gene-hormone therapy interaction and fracture risk in postmenopausal women	Wang, Wactawski-Wende, Sucheston, Preus, Hovey, Nie, Jackson, Handelman, Nassir, Crandall, Ochs-Balcom	Gen	J Clin Endocrinol Metab. 2017 Mar 6. doi: 10.1210/jc.2016-2936. [Epub ahead of print]	W63
2048	The cross-sectional association between vasomotor symptoms and hemostatic parameter levels in postmenopausal women	Harrington, Blondon, Cushman, Kaunitz, Rossouw, Allison, Martin, Johnson, Rosing, Woods, LaCroix, Heckbert, McKnight, Smith	CT	Menopause. 2017 Apr;24(4):360-370. doi: 10.1097/GME.0000000000000777.	W6
2064	A genome-wide interaction analysis of tricyclic/tetracyclic antidepressants and RR and QT intervals: a pharmacogenomics study from the Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) consortium	Noordam, Sitlani, Avery, Stewart, Gogarten, Wiggins, Trompet, Warren, Sun, Evans, Reiner, Thornton, Whitsel	CT	J Med Genet. 2017 May;54(5):313-323. doi: 10.1136/jmedgenet-2016-104112. Epub 2016 Dec 30.	AS405, M13, M5, W63, W68

Table 7.2
Publications March 2017 - March 2018

MS#	Title	Authors	Focus	Reference	Study #
2096	Changes in the inflammatory potential of diet over time and risk of colorectal cancer in postmenopausal women	Tabung, Steck, Ma, Liese, Zhang, Lane, Ho, Hou, Snetselaar, Ockene, Hebert	Gen	Am J Epidemiol. 2017 May 9. doi: 10.1093/aje/kwx115. [Epub ahead of print]	
2126	Association of cataract surgery with mortality in older women: findings from the Women's Health Initiative	Tseng, Chlebowski, Yu, Cauley, Li, Thomas, Virnig, Coleman	Gen	JAMA Ophthalmol. 2018 Jan 1;136(1):3-10. doi: 10.1001/jamaophthalmol.2017.4512. Epub 2017 Oct 26	W35
2158	Oral bisphosphonate use and lung cancer incidence among postmenopausal women	Tao, Chen, Freudenheim, Cauley, Johnson, Mai, Sarto, Wakelee, Boffetta, Wactawski-Wende	Gen	Ann Oncol. 2018 Mar 29. doi: 10.1093/annonc/mdy097. [Epub ahead of print]	
2168	Associations between ACE-inhibitors, angiotensin receptor blockers and lean body mass in community dwelling older women	Bea, Wassertheil-Smoller, Wertheim, Klimentidis, Chen, Zaslavsky, Manini, Womack, Kroenke, LaCroix, Thomson	Gen	J Aging Res. 2018 Feb 19;2018:8491092. doi: 10.1155/2018/8491092. eCollection 2018.	
2196	Dietary inflammatory index, bone mineral density and risk of fracture in postmenopausal women: results from the Women's Health Initiative	Orchard, Yildiz, Steck, Hebert, Ma, Cauley, Li, Mossavar-Rahmani, Johnson, Sattari, LeBoff, Wactawski-Wende, Jackson	Gen	J Bone Miner Res. 2017 May;32(5):1136-1146. doi: 10.1002/jbmr.3070. Epub 2017 Feb 21.	
2227	Calcium plus vitamin D supplementation and lung cancer incidence among postmenopausal women in the Women's Health Initiative	Tao, Dai, Chen, Freudenheim, Rohan, Wakelee, Datta, Wactawski-Wende	Gen	Lung Cancer. 2017 Aug;110:42-47. doi: 10.1016/j.lungcan.2017.06.002. Epub 2017 Jun 8	
2245	Use of calcium channel blockers and breast cancer risk in the Women's Health Initiative	Brasky, Krok-Schoen, Liu, Chlebowski, Freudenheim, Lavasani, Margolis, Qi, Reding, Shields, Simon, Wactawski-Wende, Wang, Womack, Manson	Gen	Cancer Epidemiol Biomarkers Prev. 2017 Aug;26(8):1345-1348. doi: 10.1158/1055-9965.EPI-17-0096	
2257	Enrichment of colorectal cancer associations in functional regions: Insight for using epigenomics data in the analysis of whole genome sequence-imputed GWAS data	Bien (Rosse), Auer, Harrison, Qu, Connolly, Greenside, Chen, Berndt, Bezieau, Kang, Huyghe, Banbury, Newcomb, Potter, White, Carlson, et al.	Gen	PLoS One. 2017 Nov 21;12(11):e0186518. doi: 10.1371/journal.pone.0186518. eCollection 2017.	AS224

Table 7.2
Publications March 2017 - March 2018

MS#	Title	Authors	Focus	Reference	Study #
2272	Social relationships, inflammation markers, and breast cancer incidence in the Women's Health Initiative	Busch, Whitsel, Kroenke, Yang	Gen	Breast. June 2018; 39: 63-69. doi: 10.1016/j.breast.2018.03.013. Epub 2018 March 31.	W54, W58
2277	Predictors of vasomotor symptoms among breast cancer survivors	Reeves, Pennell, Foraker, Crandall, Stefanick, Paskett	Gen	J Cancer Surviv. 2018 Feb 9. doi: 10.1007/s11764-018-0677-9. [Epub ahead of print]	AS223, AS370
2294	Serum 25-hydroxyvitamin D concentrations and lung cancer risk in never-smoking postmenopausal women	Cheng, Song, Beresford, Ho, Johnson, Datta, Chlebowski, Wactawski-Wende, Qi, Neuhouser	Gen	Cancer Causes Control. 2017 Sep 12. doi: 10.1007/s10552-017-0956-1. [Epub ahead of print]	AS327
2296	On estimation of time-dependent population attributable fraction from population-based case-control studies	Zhao, Chen, Hsu	Gen	Biometrics. 2017 Sep;73(3):866-875. doi: 10.1111/biom.12648. Epub 2017 Jan 18.	AS224
2302	Negative affect is associated with higher risk of incident cognitive impairment in nondepressed postmenopausal women	Korthauer, Goveas, Espeland, Shumaker, Garcia, Tindle, Salmoirago-Blotcher, Sink, Vaughan, Rapp, Resnick, Driscoll	CT	J Gerontol A Biol Sci Med Sci. 2017 Sep 19. doi: 10.1093/gerona/glx175. [Epub ahead of print]	
2304	Associations of biomarker-calibrated sodium and potassium intake and cardiovascular disease risk among postmenopausal women	Prentice, Huang, Neuhouser, Manson, Mossavar-Rahmani, Thomas, Tinker, Allison, Johnson, Wassertheil-Smoller, Seth, Rossouw, Shikany, Carbone, Martin, Stefanick, et al.	Gen	Am J Epidemiol. 2017 Jun 14. doi: 10.1093/aje/kwx238. [Epub ahead of print]	AS272, AS498
2307	Branched-chain amino acid, meat intake and risk of type 2 diabetes in the Women's Health Initiative	Isanejad, LaCroix, Thomson, Tinker, Larson, Qi, Qi, Cooper-DeHoff, Phillips, Prentice, Beasley	Gen	Br J Nutr. 2017 Jun;117(11):1523-1530. doi: 10.1017/S0007114517001568	AS340
2315	Post-stroke cancer risk among post-menopausal women: The Women's Health Initiative	Sealy-Jefferson, Cote, Chlebowski, Rexrode, Simon	Gen	Womens Health Issues. 2017 Nov 30. pii: S1049-3867(17)30147-0. doi: 10.1016/j.whi.2017.10.012. [Epub ahead of print]	

Table 7.2
Publications March 2017 - March 2018

MS#	Title	Authors	Focus	Reference	Study #
2362	Admixture mapping of pelvic organ prolapse in African Americans from the Women's Health Initiative Hormone Therapy trial	Giri, Hartmann, Aldrich, Ward, Wu, Park, Graff, Qi, Nassir, Wallace, O'Sullivan, North, Velez Edwards, Edwards	CT	PLoS One. 2017 Jun 5;12(6):e0178839. doi: 10.1371/journal.pone.0178839. eCollection 2017	M5
2381	GWAS of epigenetic ageing rates in blood reveals a critical role for TERT	Lu, Xue, Salfati, Ferrucci, Levy, Joehanes, Murabito, Kiel, Tsai, Yet, Assimes, Reiner, Whitsel	Gen	Nat Commun. 2018 Jan 26;9(1):387. doi: 10.1038/s41467-017-02697-5.	BAA23
2382	Leukocyte telomere length, T cell composition and DNA methylation age	Chen, Carty, Kimura, Kark, Chen, Li, Zhang, Kooperberg, Levy, Assimes, Absher, Horvath, Reiner, Aviv	Gen	Aging (Albany NY). 2017 Sep 20. doi: 10.18632/aging.101293. [Epub ahead of print]	BAA23, BAA25
2413	Association between post-cancer diagnosis dietary inflammatory potential and mortality among invasive breast cancer survivors in the Women's Health Initiative	Zheng, Tabung, Zhang, Liese, Shivappa, Ockene, Caan, Kroenke, Hebert, Steck	OS	Cancer Epidemiol Biomarkers Prev. 2018 Jan 22. pii: cebp.0569.2017. doi: 10.1158/1055-9965.EPI-17-0569. [Epub ahead of print]	
2423	Optimism predicts sustained vigorous physical activity in postmenopausal women	Progovac, Donohue, Matthews, Chang, Habermann, Kuller, Saquib, LaMonte, Salmoirago-Blotcher, Zaslavsky, Tindle	Gen	Prev Med Rep. 2017 Oct 16;8:286-293. doi: 10.1016/j.pmedr.2017.10.008. eCollection 2017 Dec	
2443	Cardiovascular disease and mortality after breast cancer in postmenopausal women: Results from the Women's Health Initiative	Park, Chang, Bender, Conley, Chlebowski, van Londen, Foraker, Wassertheil-Smoller, Stefanick, Kuller	Gen	PLoS One. 2017 Sep 21;12(9):e0184174. doi: 10.1371/journal.pone.0184174. eCollection 2017	
2447	Relation of dietary carbohydrates intake to circulating sex hormone-binding globulin levels in postmenopausal women	Huang, Liu, Lin, Goto, Song, Tinker, Chan, Liu	Gen	J Diabetes. 2017 Mar 17. doi: 10.1111/1753-0407.12550. [Epub ahead of print]	AS110, AS167, AS238, AS90, BAA21, BAA7, BAA9, W10, W18, W40, W5, W9

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2453	Inherited variation in circadian rhythm genes and risks of prostate cancer and three other cancer sites in combined cancer consortia	Gu, Zhang, Hyland, Berndt, Gapstur, Wheeler, Amos, Bezieau, Bickeboller, Brenner, Harrison, Qu, Rossing	Gen	Int J Cancer. 2017 Nov 1;141(9):1794-1802. doi: 10.1002/ijc.30883. Epub 2017 Jul 29.	AS224
2466	GWAS of the electrocardiographic QT interval in Hispanics/Latinos generalizes previously identified loci and identifies population-specific signals	Mendez Giraldez, Gogarten, Below, Yao, Seyerle, Highland, Kooperberg, Soliman, Rotter, Kerr, Ryckman, Taylor, Petty, Shah, Conomos, Sotoodehnia, et al.	CT	Sci Rep. 2017 Dec 6;7(1):17075. doi: 10.1038/s41598-017-17136-0	AS264, M5
2467	Genome-wide association study of PR interval in Hispanic/Latinos identifies novel locus at ID2	Seyerle, Lin, Gogarten, Stilp, Mendez Giraldez, Soliman, Baldassari, Graff, Heckbert, Kerr, Kooperberg, Rodriguez, Guo, Yao, Sotoodehnia, Taylor, et al.	OS	Heart. 2017 Nov 10. pii: heartjnl-2017-312045. doi: 10.1136/heartjnl-2017-312045. [Epub ahead of print]	AS264
2490	Comparison of clinical outcomes among users of oral and transdermal estrogen therapy in the Women's Health Initiative Observational Study	Crandall, Hovey, Andrews, Cauley, Stefanick, Shufelt, Prentice, Kaunitz, Eaton, Wactawski-Wende, Manson	OS	Menopause. 2017 Jul 10. doi: 10.1097/GME.0000000000000899. [Epub ahead of print]	
2491	Breast cancer, endometrial cancer, and cardiovascular events in participants who used vaginal estrogen in the WHI Observational Study	Crandall, Hovey, Andrews, Chlebowski, Stefanick, Lane, Shifren, Chen, Kaunitz, Cauley, Manson	OS	Menopause. 2017 Aug 14. doi: 10.1097/GME.0000000000000956. [Epub ahead of print]	
2500	Melanoma risk prediction using a multi-locus genetic risk score in the Women's Health Initiative cohort	Cho, Ransohoff, Yang, Hedlin, Assimes, Han, Stefanick, Tang, Sarin	OS	J Am Acad Dermatol. 2018 Feb 27. pii: S0190-9622(18)30337-2. doi: 10.1016/j.jaad.2018.02.052. [Epub ahead of print]	
2510	Genome-wide association study of heart rate and its variability in Hispanic/Latino cohorts	Kerr, Avery, Lin, Raffield, Zhang, Browning, Browning, Conomos, Gogarten, Laurie, Sofer, Thornton, Hohensee, Jackson, Kooperberg, Li, et al.	CT	Heart Rhythm. 2017 Nov;14(11):1675-1684. doi: 10.1016/j.hrthm.2017.06.018. Epub 2017 Jun 10	AS224, AS264, BAA3, M13, M5
2524	Sleep quality, duration, and breast cancer aggressiveness	Soucise, Vaughn, Thompson, Millen, Freudenheim, Wactawski-Wende, Phipps, Hale, Qi, Ochs-Balcom	Gen	Breast Cancer Res Treat. 2017 Apr 17. doi: 10.1007/s10549-017-4245-1. [Epub ahead of print]	M13, W63

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2527	Associations of parity, breastfeeding, and fractures in the Women's Health Observational Study	Crandall, Liu, Cauley, Newcomb, Manson, Vitolins, Jacobson, Ryckman, Stefanick	OS	Obstet Gynecol. 2017 Jun 6. doi: 10.1097/AOG.000000000000 2096. [Epub ahead of print]	
2531	Discovery of novel heart rate-associated loci using the Exome Chip	Van den berg, Warren, Cabrera, Verweij, Mifsud, Haessler, Bihlmeyer, Fu, Weiss, Lin, Yao, Grarup, Li-Gao, Liu, Kooperberg, Brody, et al.	CT	Hum Mol Genet. 2017 Apr 3. doi: 10.1093/hmg/ddx113. [Epub ahead of print]	AS224, BAA14, BAA18, M13, M24, W63
2542	Both light intensity and moderate-to-vigorous physical activity measured by accelerometry are favorably associated with cardiometabolic risk factors in older women: The Objective Physical Activity and Cardiovascular Health (OPACH) Study	LaMonte, Lewis, Buchner, Evenson, Rillamas-Sun, Di, Lee, Bellettiere, Stefanick, Eaton, Howard, Bird, LaCroix	Gen	J Am Heart Assoc. 2017 Oct 17;6(10). pii: e007064. doi: 10.1161/JAHA.117.007064	AS286
2562	Reproductive factors and incidence of heart failure hospitalization in the Women's Health Initiative	Hall, Nah, Howard, Lewis, Allison, Sarto, Waring, Jacobson, Manson, Klein, Parikh	Gen	J Am Coll Cardiol. 2017 May 23;69(20):2517-2526. doi: 10.1016/j.jacc.2017.03.557	
2574	Low-fat dietary pattern and pancreatic cancer risk in the Women's Health Initiative dietary modification randomized controlled trial	Jiao, Chen, White, Tinker, Chlebowski, Van Horn, Richardson, Lane, Sangi-Haghpeykar, El-Serag	CT	J Natl Cancer Inst. 2018 Jan 1;110(1). doi: 10.1093/jnci/djx117	AS362
2582	Chronic use of aspirin and total white matter lesion volume: Results from the Women's Health Initiative Memory Study of Magnetic Resonance Imaging Study	Holcombe, Ammann, Espeland, Kelley, Manson, Wallace, Robinson	WHIMS	J Stroke Cerebrovasc Dis. 2017 May 24. pii: S1052-3057(17)30208-2. doi: 10.1016/j.jstrokecerebrovasdi s.2017.04.034. [Epub ahead of print]	AS183
2588	An analysis of the association between statin use and risk of endometrial and ovarian cancers in the Women's Health Initiative	Desai, Wallace, Anderson, Howard, Wu, Safford, Martin, Rohan, Manson, Simon		Gynecol Oncol. 2018 Mar;148(3):540-546. doi: 10.1016/j.ygyno.2018.01.006. Epub 2018 Feb 13.	
2608	Rare coding variants pinpoint genes that control human hematological traits	Mousas, Ntritsos, Chen, Song, Huffman, Tzoulaki, Elliott, Psaty, Auer, Johnson, Evangelou, Lettre, Reiner	Gen	PLoS Genet. 2017 Aug 7;13(8):e1006925. doi: 10.1371/journal.pgen.100692 5. eCollection 2017 Aug.	

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MS#	Title	Authors	Focus	Reference	Study #
2609	Genetic analysis of mitochondrial ribosomal proteins and cognitive aging in postemenopausal women	Mozhui, Snively, Rapp, Wallace, Williams, Johnson	CT	Front Genet. 2017 Sep 21;8:127. doi: 10.3389/fgene.2017.00127. eCollection 2017	
2613	Age of menopause and fracture risk in postmenopausal women randomized to calcium + vitamin D, hormone therapy, or the combination: results from the Women's Health Initiative Clinical Trials	Sullivan, Nathan, Howard, Lehman, Thomson	CT	Menopause. 2017 Apr;24(4):371-378. doi: 10.1097/GME.00000000000 00775.	
2616	Effect of depression before breast cancer diagnosis on mortality among postmenopausal women	Liang, Margolis, Hendryx, Reeves, Wassertheil-Smoller, Weitlauf, Danhauer, Chlebowski, Caan, Qi, Lane, Lavasani, Luo	OS	Cancer. 2017 Apr 7. doi: 10.1002/cncr.30688. [Epub ahead of print]	
2625	Sleep duration and risk of liver cancer in postmenopausal women: The Women's Health Initiative study	Royse, El-Serag, Chen, White, Hale, Sangi-Haghpeykar, Jiao	OS	J Womens Health (Larchmt). 2017 Sep 21. [Epub ahead of print]	
2626	Smoking habits and body weight over the adult lifespan in postmenopausal women	Kabat, Heo, Allison, Johnson, Ho, Tindle, Asao, LaMonte, Giovino, Rohan	Gen	Am J Prev Med. 2017 Mar;52(3):e77-e84. doi: 10.1016/j.amepre.2016.10.02 0. Epub 2016 Dec 6.	
2631	Genome-wide association study identifies multiple risk loci for renal cell carcinoma	Scelo, Purdue, Brown, Johansson, Wang, Eckel-Passow, Ye, Hofmann, Choi, Foll, Peters, White, Anderson, Johnson, Luo, Chanock, et al.	Gen	Nat Commun. 2017 Jun 9;8:15724. doi: 10.1038/ncomms15724.	M9
2635	Work characteristics associated with physical functioning in women	Palumbo, De Roos, Cannuscio, Robinson, Mossey, Weitlauf, Garcia, Wallace, Michael	OS	Int J Environ Res Public Health. 2017 Apr 15;14(4). pii: E424. doi: 10.3390/ijerph14040424	AS126
2641	Genetic variation at 16q24.2 is associated with small vessel stroke	Traylor, Malik, Nalls, Cotlarciuc, Radmanesh, Thorleifsson, Hanscombe, Langefeld, Saleheen, Rost, Rexrode, Wassertheil-Smoller	OS	Ann Neurol. 2017 Mar;81(3):383-394. doi: 10.1002/ana.24840.	M16

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MS#	Title	Authors	Focus	Reference	Study #
2644	Bioavailable insulin-like growth factor-I as mediator of racial disparity in obesity-relevant breast and colorectal cancer risk among postmenopausal women	Jung, Barrington, Lane, Chen, Chlebowski, Corbie-Smith, Hou, Zhang, Paek, Crandall	OS	Menopause. 2017 Mar;24(3):288-298. doi: 10.1097/GME.0000000000000753.	
2645	Coronary artery calcification (CAC) and post-trial cardiovascular events and mortality within the Women's Health Initiative (WHI) estrogen-alone trial	Poornima, Mackey, Allison, Manson, Carr, LaMonte, Chang, Kuller	CT	J Am Heart Assoc. 2017 Oct 27;6(11). pii: e006887. doi: 10.1161/JAHA.117.006887	W25
2679	Interaction of insulin-like growth factor-I and insulin resistance–related genetic variants with obesity and lifestyle factors on postmenopausal breast cancer risk	Jung, Ho, Rohan, Strickler, Bea, Papp, Sobel, Zhang, Crandall	OS	Breast Cancer Res Treat. 2017 May 6. doi: 10.1007/s10549-017-4272-y. [Epub ahead of print]	AS129, AS152
2684	A longitudinal study of DNA methylation as a potential mediator of age-related diabetes risk	Grant, Jafari, Hou, Li, Stewart, Zhang, Lamichhane, Manson, Baccarelli, Whitsel, Conneely	CT	Geroscience. 2017 Nov 20. doi: 10.1007/s11357-017-0001-z. [Epub ahead of print]	AS315, AS534
2691	Family history of prostate and colorectal cancer and risk of colorectal cancer in the Women's health initiative	Beebe-Dimmer, Yee, Paskett, Schwartz, Lane, Palmer, Bock, Nassir, Simon	OS	BMC Cancer. 2017 Dec 13;17(1):848. doi: 10.1186/s12885-017-3873-5	
2702	Association of physical activity and sitting time with incident colorectal cancer in postmenopausal women	Gorczyca (Gabbard), Eaton, LaMonte, Garcia, Johnston, He, Bidulescu, Goodman, Groessl, Lane, Stefanick, Newcomb, Mouton, Chomistek	OS	Eur J Cancer Prev. 2017 May 19. doi: 10.1097/CEJ.0000000000000351. [Epub ahead of print]	
2710	Heritability Estimation using a Regularized Regression Approach (HERRA): Applicable to continuous, dichotomous or age-at-onset outcome	Gorfine, Berndt, Chang-Claude, Hoffmeister, Le Marchand, Potter, Slattery, Keret, Peters, Hsu		PLoS One. 2017 Aug 16;12(8):e0181269. doi: 10.1371/journal.pone.0181269. eCollection 2017	AS224
2718	Association between dietary energy density and obesity-associated cancer: Results from the Women's Health Initiative	Thomson, Crane, Garcia, Wertheim, Hingle, Snetselaar, Datta, Rohan, LeBlanc, Chlebowski, Qi	Gen	J Acad Nutr Diet. 2017 Aug 8. pii: S2212-2672(17)30624-X. doi: 10.1016/j.jand.2017.06.010. [Epub ahead of print]	

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MS#	Title	Authors	Focus	Reference	Study #
2719	Low-fat dietary pattern and breast cancer mortality in the Women's Health Initiative (WHI) Randomized Controlled Trial	Chlebowski, Aragaki, Anderson, Thomson, Manson, Simon, Howard, Rohan, Snetselaar, Lane, Barrington, Vitolins, Womack, Qi, Hou, Thomas, et al.	CT	J Clin Oncol. 2017 Jun 27:JCO2016720326. doi: 10.1200/JCO.2016.72.0326. [Epub ahead of print]	
2722	Change in physical activity and sitting time after myocardial infarction and mortality among postmenopausal women in the Women's Health Initiative-Observational Study	Gorczyca (Gabbard), Eaton, LaMonte, Manson, Johnston, Bidulescu, Waring, Manini, Martin, Stefanick, He, Chomistek	OS	J Am Heart Assoc. 2017 May 15;6(5). pii: e005354. doi: 10.1161/JAHA.116.005354.	
2729	The association between an inflammatory diet and global cognitive function and incident dementia in older women: The Women's Health Initiative Memory Study (WHIMS)	Hayden, Beavers, Steck, Hebert, Tabung, Shivappa, Casanova, Manson, Padula, Salmoirago-Blotcher, Snetselaar, Zaslavsky, Rapp	WHIMS	Alzheimers Dement. 2017 May 19. pii: S1552-5260(17)30185-1. doi: 10.1016/j.jalz.2017.04.004. [Epub ahead of print]	AS244, AS39
2743	Vasomotor symptom characteristics: are they risk factors for incident diabetes?	Gray, Katon, LeBlanc, Woods, Bastian, Reiber, Weitlauf, Nelson, LaCroix	Gen	Menopause. 2017 Dec 4. doi: 10.1097/GME.000000000000 1033. [Epub ahead of print]	
2744	36-Item Short Form Survey (SF-36) Versus Gait Speed As Predictor of Preclinical Mobility Disability in Older Women: The Women's Health Initiative	Laddu-Patel, Wertheim, Garcia, Woods, LaMonte, Chen, Anton-Culver, Zaslavsky, Cauley, Chlebowski, Manson, Thomson, Stefanick	CT	J Am Geriatr Soc. 2018 Feb 10. doi: 10.1111/jgs.15273. [Epub ahead of print]	
2756	Metabolic predictors of incident coronary heart disease in women	Paynter, Balasubramanian, Gopal, Gulliani, Tinker, Deik, Bullock, Pierce, Scott, Wang, Martinez Gonzalez, Estruch, Manson, Cook, Albert, Clish, et al.	OS	Circulation. 2018 Feb 20;137(8):841-853. doi: 10.1161/CIRCULATIONAH A.117.029468.	BAA24
2760	Long-term exposure to residential ambient fine and coarse particulate matter and incident hypertension in post-menopausal women	Honda, Eliot, Eaton, Whitsel, Stewart, Mu, Suh, Szpiro, Kaufman, Vedal, Wellenius	CT	Environ Int. 2017 May 15;105:79-85. doi: 10.1016/j.envint.2017.05.009. [Epub ahead of print]	AS251
2763	Sitting, physical activity, and serum oestrogen metabolism in postmenopausal women: the Women's Health Initiative Observational Study	Oh, Arem, Matthews, Wentzensen, Reding, Brinton, Anderson, Coburn, Cauley, Chen, Goodman, Pfeiffer, Falk, Xu, Trabert	OS	Br J Cancer. 2017 Sep 26;117(7):1070-1078. doi: 10.1038/bjc.2017.268. Epub 2017 Aug 17.	AS297

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MS#	Title	Authors	Focus	Reference	Study #
2765	Anthropometric measures and serum estrogen metabolism in postmenopausal women: the Women's Health Initiative Observational Study	Oh, Coburn, Matthews, Falk, LeBlanc, Wactawski-Wende, Sampson, Pfeiffer, Brinton, Wentzensen, Anderson, Manson, Chen, Zaslavsky, Xu, Trabert, et al.	OS	Breast Cancer Res. 2017 Mar 11;19(1):28. doi: 10.1186/s13058-017-0810-0	AS297
2767	Association of family history and survival in patients with colorectal cancer: a pooled analysis of eight epidemiologic studies	Chong, Banbury, Phipps, Hua, Kocarnik, Peters, Berndt, Huang, Potter, Slattery, White, Campbell, Harrison, Newcomb, Chan	Gen	Cancer Med. 2018 Mar 26. doi: 10.1002/cam4.1470. [Epub ahead of print]	AS224
2773	White blood cell count and total and cause-specific mortality in the Women's Health Initiative	Kabat, Kim, Manson, Lessin, Wassertheil-Smoller, Rohan	Gen	Am J Epidemiol. 2017 Mar 22:1-10. doi: 10.1093/aje/kww226. [Epub ahead of print]	
2782	Pooled analysis of cigarette smoking and invasive breast cancer risk in 14 cohort studies	Gaudet, Carter, Brinton, Falk, Gram, Luo, Milne, Nyante, Weiderpass, Freeman, Margolis	Gen	Int J Epidemiol. 2017 Jun 1;46(3):881-893. doi: 10.1093/ije/dyw288.	
2783	Risk of diabetes after hysterectomy with or without oophorectomy in postmenopausal women	Luo, Manson, Urrutia, Hendryx, LeBlanc, Margolis	OS	Am J Epidemiol. 2017 Mar 6:1-9. doi: 10.1093/aje/kwx023. [Epub ahead of print]	
2795	Evaluation of the 24-hour recall as a reference instrument for calibrating other self-report instruments in nutritional cohort studies: evidence from the Validation Studies Pooling Project	Freedman, Commins, Willett, Tinker, Spiegelman, Rhodes, Potischman, Neuhouser, Moshfegh, Kipnis, Baer, Arab, Prentice, Subar	CT	Am J Epidemiol. 2017 Jul 1;186(1):73-82. doi: 10.1093/aje/kwx039	AS289
2801	Evaluation of diet pattern and weight gain in postmenopausal women enrolled in the Women's Health Initiative Observational Study	Ford, Chang, Vitolins, Fenton, Howard, Rhee, Stefanick, Chen, Snetselaar, Urrutia, Frazier-Wood	OS	Br J Nutr. 2017 May 16:1-10. doi: 10.1017/S0007114517000952. [Epub ahead of print]	AS100
2803	Impact of hormone therapy on Medicare spending in the Women's Health Initiative Randomized Clinical Trials	Baras Shreibati, Manson, Margolis, Chlebowski, Stefanick, Hlatky	Gen	Am Heart J. 2018 Apr;198:108-114. doi: 10.1016/j.ahj.2017.12.016. Epub 2017 Dec 27.	W35

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2818	Higher lipophilic index indicates higher risk of coronary heart disease in postmenopausal women	Liu, Lichtenstein, Matthan, Howe, Allison, Howard, Martin, Valdiviezo, Manson, Liu, Eaton	OS	Lipids. 2017 Aug;52(8):687-702. doi: 10.1007/s11745-017-4276-8. Epub 2017 Jul 8	
2822	Risk of fracture in women with sarcopenia, low bone mass, or both	Harris, Chang, Beavers, Laddu-Patel, Bea, Johnson, LeBoff, Womack, Wallace, Li, Crandall, Cauley	Gen	J Am Geriatr Soc. 2017 Sep 27. doi: 10.1111/jgs.15050. [Epub ahead of print]	
2830	Relationship between physical activity, body mass index, and risk of heart failure	Pandey, LaMonte, Klein, Ayers, Psaty, Eaton, Allen, de Lemos, Carnethon, Greenland, Berry	OS	J Am Coll Cardiol. 2017 Mar 7;69(9):1129-1142. doi: 10.1016/j.jacc.2016.11.081	
2837	The association of the C-reactive protein inflammatory biomarker with breast cancer incidence and mortality in the Women's Health Initiative	Nelson, Brasky, Patterson, Laughlin, Kritz-Silverstein, Edwards, Lane, Rohan, Ho, Manson, LaCroix	Gen	Cancer Epidemiol Biomarkers Prev. 2017 Mar 14. pii: cebp.1005.2016. doi: 10.1158/1055-9965.EPI-16-1005. [Epub ahead of print]	
2839	A prospective study of soluble receptor for advanced glycation end products and adipokines in association with pancreatic cancer in postmenopausal women	White, Hoogeveen, Chen, Richardson, Ravishankar, Tinker, Rohan, Whitsel, El-Serag, Jiao	Gen	Cancer Med. 2018 Mar 23. doi: 10.1002/cam4.1426. [Epub ahead of print]	AS362, M5
2854	Quantifying the genetic correlation between multiple cancer types	Lindstrom, Finucane, Bulik-Sullivan, Schumacher, Amos, Hung, Rand, Gruber, Conti, Permuth, Hsu, Kraft		Cancer Epidemiol Biomarkers Prev. 2017 Sep;26(9):1427-1435. doi: 10.1158/1055-9965.EPI-17-0211. Epub 2017 Jun 21.	AS224, M4
2855	Cardiometabolic risk factors and survival after breast cancer in the Women's Health Initiative	Simon, Beebe-Dimmer, Hastert, Manson, Cespedes, Neuhouser, Ho, Freudenheim, Strickler, Ruterbusch, Barac, Chlebowski, Caan	Gen	Cancer. 2018 Jan 16. doi: 10.1002/cncr.31230. [Epub ahead of print]	
2858	Clinical trials targeting aging and age-related multimorbity	Espeland, Crimmins, Grossardt, Crandall, Gelfond, Harris, Kritchevsky, Manson, Robinson, Rocca, Temprosa, Thomas, Wallace, Barzilai	OS	J Gerontol A Biol Sci Med Sci. 2017 Mar 1;72(3):355-361. doi: 10.1093/gerona/glw220.	

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2862	Risk of cardiovascular disease among women with endometrial cancer compared to cancer-free women in the Women's Health Initiative	Felix, Lehman, Foraker, Naughton, Bower, Kuller, Sarto, Stefanick, Van Horn, Jackson, Paskett	Gen	Cancer Epidemiol. 2017 Oct 16;51:62-67. doi: 10.1016/j.canep.2017.10.009. [Epub ahead of print]	W35
2892	Methodological considerations for disentangling a risk factor's influence on disease incidence versus post-diagnosis survival: the example of obesity and breast and colorectal cancer mortality in the Women's Health Initiative	Cespedes, Prentice, Aragaki, Neuhouser, Banack, Kroenke, Ho, Zaslavsky, Strickler, Cheng, Chlebowski, Saquib, Nassir, Anderson, Caan	Gen	Int J Cancer. 2017 Aug 18. doi: 10.1002/ijc.30931. [Epub ahead of print]	
2917	Family history of cancer and risk of biliary tract cancers: results from the Biliary Tract Cancers Pooling Project	Van Dyke, Langhamer, Zhu, Pfeiffer, Albanes, Andreotti, Beane-Freeman, Chan, Freedman, Gapstur, Koshiol, Wild, Liao, Milne, Neuhouser, et al.	Gen	Cancer Epidemiol Biomarkers Prev. 2018 Jan 16. pii: cebp.1003.2017. doi: 10.1158/1055-9965.EPI-17-1003. [Epub ahead of print]	
2966	Accelerometer-measured moderate to vigorous physical activity and incidence rates of falls in older women	Buchner, Rillamas-Sun, Di, LaMonte, Marshall, Hunt, Zhang, Rosenberg, Lee, Evenson, Herring, Lewis, Stefanick, LaCroix	Gen	J Am Geriatr Soc. 2017 Jul 29. doi: 10.1111/jgs.14960. [Epub ahead of print]	AS286
2976	Biomarker-calibrated nutrient intake and healthy diet index associations with mortality risks among older and frail women from the Women's Health Initiative	Zaslavsky, Zelber-Sagi, Hebert, Steck, Shivappa, Tabung, Wirth, Bu, Shikany, Orchard, Wallace, Snetselaar, Tinker	OS	Am J Clin Nutr. 2017 Apr 19. pii: ajcn151530. doi: 10.3945/ajcn.116.151530. [Epub ahead of print]	
2994	Leisure-time physical activity and leukocyte telomere length among older women	Shadyab, LaMonte, Kooperberg, Reiner, Carty, Manini, Hou, Di, Macera, Gallo, Shaffer, Jain, LaCroix	Gen	Exp Gerontol. 2017 May 25. pii: S0531-5565(16)30468-5. doi: 10.1016/j.exger.2017.05.019. [Epub ahead of print]	BAA25
3004	Reproductive factors, exogenous hormone use, and risk of pancreatic cancer in postmenopausal women	Kabat, Kamensky, Rohan	Gen	Cancer Epidemiol. 2017 May 15;49:1-7. doi: 10.1016/j.canep.2017.05.002. [Epub ahead of print]	
3036	Lupus-related single nucleotide polymorphisms and risk of diffuse large B-cell lymphoma	Bernatsky, Velasquez Garcia, Spinelli, Gaffney, Smedby, Ramsey-Goldman, Wang, Adami, Albanes, Angelucci, Jackson, North, Tinker	Gen	Lupus Sci Med. 2017 Nov 12;4(1):e000187. doi: 10.1136/lupus-2016-000187. eCollection 2017.	AS301

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MS#	Title	Authors	Focus	Reference	Study #
3039	Discovery and fine-mapping of adiposity loci using high density imputation of genome-wide association studies in individuals of African ancestry: African Ancestry Anthropometry Genetics Consortium	Ng, Graff, Lu, Justice, Mudgal, Liu, Young, Yanek, Feitosa, Wojczynski, North	Gen	PLoS Genet. 2017 Apr 21;13(4):e1006719. doi: 10.1371/journal.pgen.1006719. eCollection 2017 Apr	M5
3040	Circulating folate, vitamin B6 and methionine in relation to lung cancer risk in the Lung Cancer Cohort Consortium (LC3)	Fanidi, Muller, Yuan, Stevens, Weinstein, Albanes, Prentice, Thomson, Pettinger, Cai, Johansson	Gen	J Natl Cancer Inst. 2018 Jan 1;110(1). doi: 10.1093/jnci/djx119	AS509
3053	Alcohol and oestrogen metabolites in postmenopausal women in the Women's Health Initiative Observational Study	Playdon, Coburn, Moore, Brinton, Wentzensen, Anderson, Wallace, Falk, Pfeiffer, Xu, Trabert	OS	Br J Cancer. 2018 Feb 6;118(3):448-457. doi: 10.1038/bjc.2017.419. Epub 2017 Dec 12.	AS297
3055	Identification of ten variants associated with risk of estrogen-receptor-negative breast cancer	Milne, Kuchenbaecker, Michailidou, Beesley, Kar, Lindstrom, Hui, Lemacon, Soucy, Dennis, Anton-Culver, Auer, Malone, Prentice	Gen	Nat Genet. 2017 Dec;49(12):1767-1778. doi: 10.1038/ng.3785. Epub 2017 Oct 23.	M18
3067	Sedentary time and postmenopausal breast cancer incidence	Nomura, Dash, Sheppard, Bowen, Allison, Barrington, Chlebowski, Coday, Hou, Howard, LaMonte, Manson, Neuhouser, Paskett, Sattari, Stefanick, et al.	Gen	Cancer Causes Control. 2017 Oct 3. doi: 10.1007/s10552-017-0968-x. [Epub ahead of print]	
3072	Accelerometer-measured physical activity and mortality in women aged 63 to 99	LaMonte, Buchner, Rillamas-Sun, Di, Evenson, Bellettiere, Lewis, Lee, Tinker, Seguin, Zaslavsky, Eaton, Stefanick, LaCroix	OS	J Am Geriatr Soc. 2017 Nov 16. doi: 10.1111/jgs.15201. [Epub ahead of print]	AS286
3073	Dietary long-chain fatty acids and carbohydrate biomarker evaluation in a controlled feeding study in participants from the Women's Health Initiative cohort	Song, Huang, Neuhouser, Tinker, Vitolins, Prentice, Lampe	Gen	Am J Clin Nutr. 2017 Apr 26. pii: ajcn153072. doi: 10.3945/ajcn.117.153072. [Epub ahead of print]	AS498
3091	Time to clinically relevant fracture risk scores in postmenopausal women	Gourlay, Overman, Fine, Crandall, Robbins, Schousboe, Ensrud, LeBlanc, Gass, Johnson, Womack, LaCroix, Women's Health Initiative Investigators	Gen	Am J Med. 2017 Mar 8. pii: S0002-9343(17)30218-8. doi: 10.1016/j.amjmed.2017.02.012	

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MS#	Title	Authors	Focus	Reference	Study #
3092	Associations between self-reported physical activity and physical performance measures over time in postmenopausal women: The Women's Health Initiative	Laddu-Patel, Wertheim, Garcia, Brunner, Groessl, Shadyab, Going, LaMonte, Cannell, LeBoff, Cauley, Thomson, Stefanick	CT	J Am Geriatr Soc. 2017 Jul 4. doi: 10.1111/jgs.14991. [Epub ahead of print]	
3106	A low-fat dietary pattern and diabetes: a secondary analysis from the Women's Health Initiative Dietary Modification Trial	Howard, Aragaki, Tinker, Allison, Hingle, Johnson, Manson, Shadyab, Shikany, Snetselaar, Thomson, Zaslavsky, Prentice	CT	Diabetes Care. 2018 Apr;41(4):680-687. doi: 10.2337/dc17-0534. Epub 2017 Dec 27	
3108	Association of 100% fruit juice consumption and 3-year weight change among postmenopausal women in the in the Women's Health Initiative	Auerbach, Littman, Krieger, Young, Larson, Tinker, Neuhouser	Gen	Prev Med. 2018 Jan 9. pii: S0091-7435(18)30004-5. doi: 10.1016/j.ypmed.2018.01.004 . [Epub ahead of print]	
3109	Associations of 100% fruit juice versus whole fruit with hypertension and diabetes risk in postmenopausal women: Results from the Women's Health Initiative	Auerbach, Littman, Tinker, Larson, Krieger, Young, Neuhouser	Gen	Prev Med. 2017 Sep 6. pii: S0091-7435(17)30315-8. doi: 10.1016/j.ypmed.2017.08.031 . [Epub ahead of print]	
3117	Serum glucose and insulin and risk of cancers of the breast, endometrium, and ovary in postmenopausal women	Kabat, Kim, Lane, Zaslavsky, Ho, Luo, Nicholson, Chlebowski, Barrington, Vitolins, Lin, Liu, Rohan	Gen	Eur J Cancer Prev. 2018 Feb 12. doi: 10.1097/CEJ.0000000000000 435. [Epub ahead of print]	
3118	Serum lipids and risk of obesity-related cancers in postmenopausal women	Kabat, Kim, Chlebowski, Vitolins, Wassertheil-Smoller, Rohan	Gen	Cancer Causes Control. 2017 Dec 2. doi: 10.1007/s10552-017-0991-y. [Epub ahead of print]	
3120	Association of accelerometer-measured physical activity with leukocyte telomere length among older women	Shadyab, LaMonte, Kooperberg, Reiner, Carty, Manini, Hou, Di, LaCroix	Gen	J Gerontol A Biol Sci Med Sci. 2017 Mar 9. doi: 10.1093/gerona/glx037. [Epub ahead of print]	BAA23
3139	General and abdominal obesity as risk factors for late-life mobility limitation after total knee or hip replacement for osteoarthritis among women	Shadyab, Li, Eaton, LaCroix	Gen	Arthritis Care Res (Hoboken). 2017 Oct 3. doi: 10.1002/acr.23438. [Epub ahead of print]	W35

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MS#	Title	Authors	Focus	Reference	Study #
3140	Case-only approach to identifying markers predicting treatment effects on the relative risk scale	Dai, Liang, LeBlanc, Prentice, Janes	N/A	Biometrics. 2017 Sep 28. doi: 10.1111/biom.12789. [Epub ahead of print]	BAA2
3146	Genetic variants and traits related to insulin-like growth factor-I and insulin resistance and their interaction with lifestyles on postmenopausal colorectal cancer risk	Jung, Rohan, Strickler, Bea, Zhang, Ho, Crandall	OS	PLoS One. 2017 Oct 12;12(10):e0186296. doi: 10.1371/journal.pone.018629 6. eCollection 2017	AS129, AS152
3147	Pre-diagnostic plasma urate and the risk of amyotrophic lateral sclerosis	O'Reilly, Bjornevik, Schwarzschild, McCullough, Kolonel, Le Marchand, Manson, Ascherio	Gen	Amyotroph Lateral Scler Frontotemporal Degener. 2018 May;19(3-4):194-200. doi: 10.1080/21678421.2017.141 8005. Epub 2017 Dec 26.	AS402
3150	Incidence of hematologic malignancy and cause-specific mortality in the Women's Health Initiative randomized controlled trial of calcium and vitamin D supplementation	Ammann, Drake, Harraldson, Wallace, Johnson, Desai, Lin, Link	CT	Cancer. 2017 Jun 27. doi: 10.1002/cncr.30858. [Epub ahead of print]	
3155	Benign breast disease and risk of thyroid cancer	Luo, Hendryx, Nassir, Cheng, Lane, Margolis	Gen	Cancer Causes Control. 2017 Sep;28(9):913-920. doi: 10.1007/s10552-017-0918-7. Epub 2017 Jul 6.	
3172	Trans-ethnic fine-mapping of genetic loci for body mass index in the diverse ancestral populations of the Population Architecture using Genomics and Epidemiology (PAGE) Study reveals evidence for multiple signals at established loci	Fernández-Rhodes, Gong, Haessler, Franceschini, Graff, Nishimura, Wang, Highland, Yoneyama, Bush, Lewis, Assimes, Prentice, Kuller, Manson, Kooperberg, et al.	Gen	Hum Genet. 2017 Jun;136(6):771-800. doi: 10.1007/s00439-017-1787-6. Epub 2017 Apr 8	M6
3217	Circulating concentrations of biomarkers and metabolites related to vitamin status, one-carbon and the kynurenine pathways in US, Nordic, Asian, and Australian populations	Midttun, Theofylaktopoulo, McCann, Fanidi, Muller, Meyer, Ulvik, Zheng, Shu, Xiang, Thomson, Prentice, Pettinger	Gen	Am J Clin Nutr. 2017 Apr 19. pii: ajcn151241. doi: 10.3945/ajcn.116.151241. [Epub ahead of print]	AS294
3219	Genome-wide association of blood pressure traits by Hispanic/Latino background: the Hispanic Community Health Study/Study of Latinos	Sofer, Wong, Hartwig, Taylor, Warren, Evangelou, Cabrera, Levy, Kramer, Lange, Horta, Kerr, Reiner, Franceschini	Gen	Sci Rep. 2017 Sep 4;7(1):10348. doi: 10.1038/s41598-017-09019-1	M13, M5, W63

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3253	Metabolic obesity phenotypes and risk of breast cancer in postmenopausal women	Kabat, Kim, Lee, Ho, Going, Beebe-Dimmer, Manson, Chlebowski, Rohan	Gen	Cancer Epidemiol Biomarkers Prev. 2017 Sep 22. pii: cebp.0495.2017. doi: 10.1158/1055-9965.EPI-17-0495. [Epub ahead of print]	
3254	Metabolic obesity phenotypes and risk of colorectal cancer in postmenopausal women	Kabat, Kim, Stefanick, Ho, Lane, Odegaard, Simon, Bea, Luo, Wassertheil-Smoller, Rohan	Gen	Int J Cancer. 2018 Feb 27. doi: 10.1002/ijc.31345. [Epub ahead of print]	
3263	Comparison of the simplified sWHI and the standard CHS frailty phenotypes for prediction of mortality, incident falls, and hip fractures in older women	Zaslavsky, Zelber-Sagi, LaCroix, Brunner, Wallace, Cochrane, Woods	CT	J Gerontol A Biol Sci Med Sci. 2017 May 13. doi: 10.1093/gerona/glx080. [Epub ahead of print]	
3295	Is BMI a valid measure of obesity in postmenopausal women?	Banack, Wactawski-Wende, Hovey, Stokes	OS	Menopause. 2018 Mar;25(3):307-313. doi: 10.1097/GME.0000000000000989. Epub 2017 Nov 13.	AS15
3320	Impaired functional vitamin B6 status is associated with increased risk of lung cancer	Theofylaktopoulo, Midttun, Ueland, Meyer, Fanidi, Zheng, Shu, Xiang, Prentice, Pettinger, Thomson	Gen	Int J Cancer. 2018 Jun 15;142(12):2425-2434. doi: 10.1002/ijc.31215. Epub 2018 Jan 4.	AS294
3324	New blood pressure-associated loci identified in meta-analyses of 475,000 individuals	Kraja, Cook, Warren, Surendran, Liu, Evangelou, Manning, Grarup, Drenos, Sim	Gen	Circ Cardiovasc Genet. 2017 Oct;10(5). pii: e001778. doi: 10.1161/CIRCGENETICS.117.001778	AS224, BAA14, M13, W63
3327	Genetic variants related to longer telomere length are associated with increased risk of renal cell carcinoma	Machiela, Hofmann, Carreras-Torres, Brown, Johansson, Wang, Foll, Li, Rothman, Savage, Peters, White, Anderson, Johnson, Luo, Purdue, et al.	Gen	Eur Urol. 2017 Nov;72(5):747-754. doi: 10.1016/j.eururo.2017.07.015. Epub 2017 Aug 7.	M9
3336	Sexual activity and vaginal symptoms in the postintervention phase of the Women's Health Initiative Hormone Therapy Trials	Gass, Larson, Cochrane, Manson, Lane, Barnabei, Ockene, Stefanick, Mouton	CT	Menopause. 2017 Nov 6. doi: 10.1097/GME.0000000000000994. [Epub ahead of print]	

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3355	Polygenic risk for depression increases risk of ischemic stroke: from the Stroke Genetics Network Study	Wassertheil-Smoller, Qi, Dave, Mitchell, Smoller, Jackson, Leira, Liu, Park	OS	Stroke. 2018 Mar;49(3):543-548. doi: 10.1161/STROKEAHA.117.018857. Epub 2018 Feb 8.	M16
3365	The combined association of modifiable risk factors with breast cancer risk in the Women's Health Initiative	Arthur, Wassertheil-Smoller, Manson, Luo, Snetselaar, Hastert, Caan, Qi, Rohan	Gen	Cancer Prev Res (Phila). 2018 Feb 26. pii: canprevres.0347.2017. doi: 10.1158/1940-6207.CAPR-17-0347. [Epub ahead of print]	
3392	The Women's Health Initiative (WHI) Life and Longevity after Cancer (LILAC) Study: description and baseline characteristics of participants	Paskett, Caan, Johnson, Bernardo, Young, Pennell, Ray, Kroenke, Porter, Anderson	Gen	Cancer Epidemiol Biomarkers Prev. 2018 Feb;27(2):125-137. doi: 10.1158/1055-9965.EPI-17-0581. Epub 2018 Jan 29.	AS370
3462	Emerging common strategies to reduce breast and endometrial cancer risk	Pan, Luo, Haque, Anderson, Chlebowski	N/A	Med J Obstet Gynecol 5(3): 1105	