

Data as of September 17th, 2012

Aim 1: Breast Cancer Cases with ANA data in possible RA cases previously included in BAA 20.

The phase 1 selection pool includes all breast cancers whom had ANA assay data from BAA 20.

Table 1. Original BAA 20 ANA Test Results

ANA Assay Group	Total N	Breast Cancer Events
0 (Negative)	8450	501
1 (Positive)	509	28
2 (Positive)	585	26
3 (Positive)	411	20

From the original sample, exclusions were applied to reach the final set for matching.

Table 2. Aim 1.1 Exclusion Criteria

Exclusion Criteria	ANA Group	
	Negative (0)	Positive (1-3)
Original Sample	501	74
Exclude all participants w/ missing hormone data	500	74
Exclude all participants w/ missing parity data	499	74
Exclude all participants w/ hx of breast cancer	444	66
Exclude all participants w/ inadequate serum volume (< 200 uL)	429	64
Exclude all participants w/ hx of any cancer (ANA Negative Only)	399	64
Exclude all participants w/ unknown ER/PR Assay (ANA Negative Only)	328	64
Subsets of Final Numbers (328 negative, 64 positive)		
- Subset of those breast cancer cases that occur after a RA event / self-report RA at baseline	291	52
- Subset of Participants who also reported lupus at any time	9	8
- Subset of participants who reported RA on baseline only	139	22

A total of 64 ANA positive and 328 ANA negative breast cancer participants were put into the matching process. 64 ANA positive cases were successfully matched with 1 ANA negative case each, matching on age (+/- 2 years) and time from WHI baseline to breast cancer event (+/- 1 year). Matching variables were selected based on criteria to minimize an overall distance measure (Bergstralh EJ, Kosanke JL. Computerized matching of cases to controls. Technical Report #56, Department of Health Sciences

Research, Mayo Clinic, Rochester, MN. April 1995). Matching was weighted to equate a difference of 1 year in age to a difference in 30 days in time from baseline to breast cancer event.

Specific matching summaries are given in the tables below. Each row summarizes the matching performance for a specific variable or overall summary. For example, the mean absolute difference in time from baseline to breast cancer between ANA positive and ANA negative cases is 60 days.

Table 3. Aim 1.1 Matching Results

Matching Factor	Sum (weighted) of Absolute Differences	ANA Positive	ANA Negative
	<i>Mean (min, max)</i>	<i>Mean</i>	<i>Mean</i>
Overall	93.0 (2.0, 318.0)	-	-
Age	0.9 (0.0, 2.0)	63.5	63.5
Time to Breast Cancer	65.8 (2.0, 264.0)	2220.9	2227.9

Total Aim 1.1 Participants: 128

Aim 2: Match ANA+ Breast Cancer Cases to ANA+ and ANA- participants w/ no breast cancer

Table 4. Aim 1.2 Exclusion Criteria

Exclusion Criteria	ANA Positive		ANA Negative
	Breast Cancer Cases	Breast Cancer Controls	Breast Cancer Controls
Original Sample	74	1431	7949
Exclude all participants w/ missing hormone data	74	1428	7940
Exclude all participants w/ missing parity data	74	1415	7884
Exclude all participants w/ hx of breast cancer	66	1359	7594
Exclude all participants w/ inadequate serum volume (< 200 uL)	64	1317	7409
Exclude all participants w/ hx of any cancer (controls only)	64	1207	6796
Exclude all participants w/ any cancer during follow-up (controls only)	64	1102	6231
Subsets of Final Numbers (64 cases, 1102 Positive controls, 6231 Negative controls)			
- Subset of Participants who also reported lupus at any time	8	143	417
- Subset of participants who reported RA on baseline only	22	433	2448

A total of 64 ANA positive breast cancer cases and 1102 ANA positive breast cancer controls were put into the matching process. 64 ANA positive breast cancer cases were successfully matched with 64 ANA positive breast cancer controls, matching on ANA level (exact) and age (+/- 1 year). Matching for this

aim was done in a time forward manner to ensure that each control had at least as much control time as its matched case. For example, a case diagnosed with breast cancer two years after randomization would be matched with a control with at least two years of follow-up.

Table 5. Aim 1.2 (ANA positive breast cancer controls) Matching Results

Matching Factor	Sum (weighted) of Absolute Differences	ANA Positive	ANA Negative
	<i>Mean (min, max)</i>	<i>Mean</i>	<i>Mean</i>
Overall	0.0 (0.0, 0.0)	-	-
Age	0.0 (0.0, 0.0)	63.5	63.5
ANA Level	0.0 (0.0, 0.0)	%	%
1		35.9	35.9
2		34.4	34.4
3		29.7	29.7

The average control time was 6.1 years for cases and 13.0 years for controls.

A total of 64 ANA positive breast cancer cases and 6231 ANA negative breast cancer controls were put into the matching process. 64 ANA positive breast cancer cases were successfully matched with 64 ANA negative breast cancer controls, matching on age (+/- 1 year). Matching for this aim was done in a time forward manner to ensure that each control had at least as much control time as its matched case. For example, a case diagnosed with breast cancer two years after randomization would be matched with a control with at least two years of follow-up.

Table 5. Aim 1.2 (ANA negative breast cancer controls) Matching Results

Matching Factor	Sum (weighted) of Absolute Differences	ANA Positive	ANA Negative
	<i>Mean (min, max)</i>	<i>Mean</i>	<i>Mean</i>
Overall	0.0 (0.0, 0.0)	-	-
Age	0.0 (0.0, 0.0)	63.5	63.5

The average control time was 6.1 years for cases and 13.1 years for controls.

Total Aim 1.2 Participants: 192 (128 new)

Aim 2: Breast cancer cases and controls with lupus not included in BAA 20 sample.

The phase 1 selection pool includes all breast cancers whom had ANA assay data from BAA 20.

Table 6. Non-BAA 20 Sample Lupus Participants

Lupus Participants	Total N	Breast Cancer Events
No Lupus	139760	9610
Lupus at both baseline and follow-up	109	4
Lupus at baseline only	483	32
Lupus as follow-up only	1699	127

From the original sample, exclusions were applied to reach the final set for matching.

Table 7. Aim 2.1 Exclusion Criteria

Exclusion Criteria	Lupus Participants	
	Breast Cancer Cases	Breast Cancer Controls
Original Sample	163	2291
Exclude all participants w/ missing hormone data	163	2291
Exclude all participants w/ missing parity data	161	2280
Exclude all participants w/ hx of breast cancer	149	2202
Exclude all participants w/ inadequate serum volume (< 350 uL)	144	2140
Exclude all participants w/ any hx of cancer	131	1987
Exclude all participants w/ any follow-up cancer (controls only)	131	1815
Exclude all participants w/ breast cancer prior to lupus (cases only)	82	1815
Subsets of Final Numbers (82 cases, 1815 controls)		
- Subset of Participants who also reported RA at any time	9	206

From the 82 eligible cases, a random sample of 50 cases was selected for matching. A total of 50 SLE breast cancer cases and 1815 SLE breast cancer controls were put into the matching process. 50 cases were successfully matched with 50 controls, matching on age (+/- 1 year). Matching for this aim was done in a time forward manner to ensure that each control had at least as much control time as its matched case. For example, a case diagnosed with breast cancer two years after randomization would be matched with a control with at least two years of follow-up.

Table 8. Aim 2.1 Matching Results

Matching Factor	Sum (weighted) of Absolute Differences	ANA Positive	ANA Negative
	<i>Mean (min, max)</i>	<i>Mean</i>	<i>Mean</i>
Overall	0.0 (0.0, 0.0)	-	-
Age	0.0 (0.0, 0.0)	62.4	62.4

The average control time was 8.3 years for cases and 14.2 years for controls.

Total Aim 2.1 Participants: 100 (100 new)

Total Participants in all aims: 356