

Web Table 1. Breast Cancer Risk Factors for Postmenopausal Women in the Nurses' Health Study at Start of Follow-up<sup>a</sup> (N=112,951) including % missing person-time

Breast Cancer Risk Factors	Frequency, %	% Missing
<b><i>Non-modifiable risk factors</i></b>		
Age, years (SD)	47.5(6.9) <sup>b</sup>	0.0
Age at menarche		0.8
- ≤ 12 years	48.6	
- 13 years	30.7	
- ≥ 14 years	20.8	
BMI at 18 categories		0.1
- <19.0	17.0	
- 19.0 -20.9	33.6	
- 21.0- 22.9	29.4	
- ≥23.0	20.0	
Height ≥64 inches	64.7	0.1
Parity/Age at 1st birth		2.2
- Nulliparous	6.0	
- ≥ 1 child & age at first birth <25 years	38.2	
- 1-4 children & age at first birth ≥ 25 & <30 years	30.9	
- 1-4 children & age at first birth ≥ 30 years	9.4	
- >4 children	15.4	
Benign breast disease history	42.0	0.0
Family history of breast cancer	12.5	0.0
Age of menopause		4.1
-<45 years	28.2	
-45-<52 years	44.1	
-52+ years	27.7	

**Modifiable risk factors**

Total Breast Feeding Duration (months) Among Parous Women		13.3
- None	40.6	
- Ever	59.5	
Weight change since age 18		11.7
- weight loss to < 2.0 kg weight gain	17.7	
- 2.1-5.0 kg weight gain	10.2	
- 5.1-10.0 kg weight gain	17.1	
- 10.1-20.0 kg weight gain	28.6	
- 20.1+ kg weight gain	26.4	
Menopausal hormone therapy use		17.1
- Never and past user	66.1	
- Current user	33.9	
Alcohol consumption		10.9
- None	23.8	
- <5.0 gm/day	42.6	
- 5.0-15.0 gm/day	21.6	
- 15.0+ gm/day	12.0	
Physical Activity METs/wk, cumulative average		11.8
- 1 <sup>st</sup> quartile	24.2	
- 2 <sup>nd</sup> quartile	24.9	
- 3 <sup>rd</sup> quartile	25.5	
- 4 <sup>th</sup> quartile	25.4	

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Abbreviations: Physical Activity METs/wk: metabolic equivalent task hours per week

Web Table 2. Population Attributable Risk (PAR) Percent for 4-variable, 3-variable, and 2-variable Combinations of Risk Factors in Postmenopausal Women, Nurses' Health Study 1980-2010

<b>Risk Factors</b>	<b><u>Invasive Breast Cancer</u></b>		<b><u>ER-positive</u></b>		<b><u>ER-negative</u></b>	
	<b><u>PAR%</u></b>	<b>95% CI</b>	<b><u>PAR%</u></b>	<b>95% CI</b>	<b><u>PAR%</u></b>	<b>95% CI</b>
	8,421		5,376		1,270	
	2,424,778		2,421,194		2,416,662	
<b>4-variable Combination of Modifiable Factors at Menopause</b>						
WTC, alcohol, physical activity, breast feeding <sup>a</sup>	27.2	15.1, 38.5	31.3	16.9, 44.5	22.5	-0.04, 45.9
WTC, alcohol, physical activity, MHT	33.5	22.5, 43.6	39.7	27.0, 51.0	26.1	1.0, 48.2
WTC, alcohol, breast feeding <sup>a</sup> , MHT	32.4	23.1, 41.0	37.9	27.0, 47.7	26.9	1.1, 49.3
WTC, physical activity, breast feeding <sup>a</sup> , MHT	30.4	21.3, 39.1	35.1	24.4, 45.1	20.1	-0.1, 38.8
Alcohol, physical activity, breast feeding <sup>a</sup> , MHT	19.4	9.7, 28.8	20.6	8.7, 31.9	19.2	0.1, 36.9
<b>3-variable Combination of Modifiable Factors at Menopause</b>						
WTC, alcohol, physical activity	26.0	14.8, 36.6	31.3	18.1, 43.5	20.6	-0.03, 42.3
WTC, alcohol, breast feeding <sup>a</sup>	24.8	15.5, 33.6	29.3	18.2, 39.7	21.4	-0.03, 43.5
WTC, physical activity, breast feeding <sup>a</sup>	22.6	13.5, 31.3	26.1	15.1, 36.5	14.1	-4.1, 31.4
Alcohol, physical activity, breast feeding <sup>a</sup>	10.4	0.9, 19.8	9.7	-2.2, 21.4	13.1	-3.8, 29.3
WTC, alcohol, MHT	31.2	22.9, 39.2	37.9	28.2, 46.8	25.1	1.7, 45.9

WTC, physical activity, MHT	29.3	21.1, 37.1	35.1	25.6, 44.0	18.2	0.8, 34.5
WTC, breast feeding <sup>a</sup> , MHT	28.1	21.7, 34.3	33.2	25.5, 40.5	19.0	0.8, 36.0
Alcohol, breast feeding <sup>a</sup> , MHT	16.7	10.2, 23.0	18.2	10.3, 25.9	18.1	1.1, 34.0
Alcohol, MHT, physical activity	18.1	9.1, 26.8	20.6	9.8, 31.0	17.2	1.1, 32.4
Breast feeding <sup>a</sup> , MHT, physical activity	14.5	7.2, 21.6	14.8	5.9, 23.4	10.5	-0.6, 21.3
<b>2-variable Combination of Modifiable Factors at Menopause</b>						
Alcohol, physical activity	9.0	0.5, 17.3	9.7	-0.7, 19.9	11.0	-2.9, 24.5
WTC, alcohol	23.5	15.2, 31.6	29.3	19.4, 38.6	19.5	-2.8, 39.9
Alcohol, breast feeding <sup>a</sup>	7.4	1.5, 13.3	7.0	-0.4, 14.3	11.9	-2.8, 26.1
Physical activity, breast feeding <sup>a</sup>	4.9	-0.7, 10.4	2.9	-4.0, 9.9	3.7	-3.6, 11.0
WTC, physical activity	21.3	13.2, 29.2	26.1	16.4, 35.3	12.0	-3.5, 26.9
WTC, breast feeding <sup>a</sup>	28.7	18.7, 38.2	23.9	16.4, 31.1	12.9	-3.3, 28.4
MHT, physical activity	13.1	7.4, 18.6	14.8	8.0, 21.4	8.3	1.2, 15.3
MHT, WTC	26.9	20.4, 33.3	33.2	25.3, 40.6	17.0	-1.4, 34.3
MHT, alcohol	15.3	9.4, 21.1	18.2	11.0, 25.2	16.1	0.4, 31.0

<sup>a</sup> Nulliparous women are considered to have no breast feeding

Abbreviations: WTC: Weight change since age 18; MHT: Menopausal hormone therapy

Web Table 3. Estimated Incident Rates for Combinations of Risk Factors in Postmenopausal Women, Nurses' Health Study 1980-2010

	<b><u>Incidence Rates<sup>a</sup></u></b>	<b><u>95% CI</u></b>
	8,421 <sup>b</sup>	
	2,424,778 <sup>c</sup>	
Overall incidence rate for all variables set to observed mean	324	315, 333 <sup>d</sup>
<b>Full Models—Where the risk factors are set to lowest risk category</b>		
Full Model : age, age at menarche, age at first birth/parity, age at menopause, height, family history, BMI at age 18, history of benign breast diseases, weight change since age 18, alcohol consumption, physical activity, breast feeding, and menopausal hormone therapy	41	30, 56
Full model without age	108	96, 122
<b>5-way Combination of Factors Modifiable at Menopause</b>		
WTC, alcohol, physical activity, breast feeding and menopausal hormone therapy (MHT)	210	191, 230
<b>4-way Combination of Factors Modifiable at Menopause</b>		
WTC, alcohol, physical activity, breast feeding	234	214, 255
WTC, alcohol, physical activity, MHT	213	195, 233
WTC, alcohol, breast feeding, MHT	217	200, 236
WTC, physical activity, breast feeding, MHT	223	206, 242
Alcohol, physical activity, breast feeding, MHT	259	241, 278
<b>3-way Combination of Factors Modifiable at Menopause</b>		
WTC, alcohol, physical activity	238	218, 259
WTC, alcohol, breast feeding	242	224, 262
WTC, physical activity, breast feeding	249	231, 269
Alcohol, physical activity, breast feeding	289	270, 309

WTC, alcohol, MHT	221	204, 239
WTC, physical activity, MHT	227	210, 245
WTC, breast feeding, MHT	231	216, 248
Alcohol, breast feeding, MHT	268	253, 284
Alcohol, MHT, physical activity	263	246, 282
Breast feeding, MHT, physical activity	276	261, 292
<b>2-way Combination of Factors Modifiable at Menopause</b>		
Alcohol, physical activity	294	275, 314
WTC, alcohol	246	228, 266
Alcohol, breast feeding	299	283, 316
Physical activity, breast feeding	308	292, 324
WTC, physical activity	253	235, 273
WTC, breast feeding	258	241, 276
MHT, physical activity	281	266, 296
MHT, WTC	235	220, 252
MHT, alcohol	273	259, 288
<b>Individual Factors Not Modifiable at Menopause</b>		
Age	112	91, 165
Age at Menarche	297	282, 313
BMI at age 18	290	274, 306
Height >=64"	304	292, 317
Age at first birth/parity	292	282, 303
BBD	282	272, 292
Family history of breast cancer	308	299, 317
Age at menopause	292	280, 305
<b>Individual Factors Modifiable at Menopause</b>		

Breast feeding	319	308, 330
Weight change since age 18	262	246, 280
MHT	291	281, 301
Alcohol	304	289, 320
Physical activity	313	298, 328

<sup>a</sup> per 100,000 person years

<sup>b</sup> Number of cases

<sup>c</sup> Number of person years

<sup>d</sup> Incidence with all variables set to observed mean

Abbreviations: WTC: Weight change since age 18; BBD: Benign breast disease; MHT: Menopausal hormone therapy