

Supplementary Online Content

Liang Z, Ma H, Song Q, et al. Joint associations of actual age and genetically determined age at menarche with risk of mortality. *JAMA Netw Open*. 2021;4(6):e2115297.

doi:10.1001/jamanetworkopen.2021.15297

eTable. Characteristics of Genetic Variants Associated With Age at Menarche in the UK Biobank

eFigure 1. Multivariate Adjusted Hazard Ratio (95% CI) for Mortality Associated With Women's Genetically Determined Age at Menarche

eFigure 2. Multivariate Adjusted Hazard Ratio (95% CI) for Mortality Associated With White Women's Actual Age at Menarche

eFigure 3. Multivariate Adjusted Hazard Ratio (95% CI) for Mortality Associated With White Women's Genetically Determined Age at Menarche

eFigure 4. Interaction Between Actual and Genetically Determined Age at Menarche on Mortality in White Women

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable. Characteristics of Genetic Variants Associated With Age at Menarche in the UK Biobank

| SNP | CHR | POS | REF | A2 | EAF | Beta | SE | P value |
|-------------|-----|-----------|-----|----|----------|----------|----------|----------|
| rs1032728 | 1 | 41679566 | A | T | 0.880491 | 0.037295 | 0.007282 | 3.91E-08 |
| rs10874340 | 1 | 83259080 | G | T | 0.507511 | -0.02724 | 0.00465 | 1.71E-09 |
| rs10913213 | 1 | 176563260 | C | G | 0.659481 | 0.026534 | 0.004915 | 2.68E-09 |
| rs11165924 | 1 | 98375448 | A | G | 0.666275 | 0.025413 | 0.004959 | 3.77E-09 |
| rs11209943 | 1 | 72750500 | A | G | 0.400589 | 0.040395 | 0.004744 | 1.01E-21 |
| rs113184243 | 1 | 27064382 | G | T | 0.919543 | 0.045224 | 0.008536 | 4.62E-08 |
| rs12040029 | 1 | 213451958 | C | T | 0.878842 | 0.044123 | 0.007455 | 1.34E-09 |
| rs17449243 | 1 | 21174429 | T | C | 0.861235 | -0.02898 | 0.006724 | 2.28E-08 |
| rs1973284 | 1 | 243856681 | A | G | 0.31178 | -0.0315 | 0.005026 | 6.70E-11 |
| rs2194899 | 1 | 165410785 | A | G | 0.364434 | -0.06148 | 0.004872 | 6.38E-44 |
| rs2343506 | 1 | 162892924 | A | C | 0.399282 | -0.02927 | 0.004783 | 2.16E-10 |
| rs2697963 | 1 | 14150740 | G | T | 0.156716 | 0.05142 | 0.006416 | 1.65E-18 |
| rs2809969 | 1 | 199802016 | T | C | 0.468431 | 0.033243 | 0.00468 | 6.44E-14 |
| rs301803 | 1 | 8498680 | A | T | 0.656024 | -0.02629 | 0.004914 | 1.11E-11 |
| rs35011283 | 1 | 42766283 | C | T | 0.905986 | 0.04648 | 0.008039 | 2.09E-08 |
| rs4133019 | 1 | 102508093 | A | C | 0.462361 | 0.035643 | 0.004681 | 2.40E-15 |
| rs4360524 | 1 | 151099557 | A | G | 0.300504 | -0.02845 | 0.005063 | 9.33E-09 |
| rs4660257 | 1 | 44148168 | T | C | 0.70099 | 0.042062 | 0.005079 | 9.12E-20 |
| rs4889 | 1 | 204159787 | G | C | 0.753544 | 0.035826 | 0.005398 | 1.91E-13 |
| rs506589 | 1 | 177894287 | T | C | 0.79182 | 0.068496 | 0.005732 | 1.47E-39 |
| rs61779781 | 1 | 65934354 | T | C | 0.57196 | -0.03549 | 0.004696 | 7.41E-14 |
| rs643428 | 1 | 54728858 | C | T | 0.390953 | 0.02493 | 0.004789 | 1.17E-08 |
| rs66461782 | 1 | 71533287 | A | T | 0.729516 | -0.02674 | 0.005242 | 2.32E-09 |
| rs7553348 | 1 | 75005067 | G | A | 0.43822 | -0.05758 | 0.004695 | 3.16E-39 |
| rs10170108 | 2 | 137449956 | G | A | 0.436408 | 0.030418 | 0.004682 | 3.21E-13 |

| | | | | | | | | |
|-------------|---|-----------|---|---|----------|----------|----------|----------|
| rs11125803 | 2 | 25052177 | C | T | 0.259776 | -0.03295 | 0.005318 | 6.78E-11 |
| rs112753638 | 2 | 203199219 | C | T | 0.884793 | 0.046551 | 0.007276 | 1.01E-13 |
| rs113467400 | 2 | 11720299 | C | T | 0.912031 | 0.046655 | 0.008257 | 1.86E-08 |
| rs11893331 | 2 | 56577406 | A | G | 0.830787 | -0.07449 | 0.006202 | 4.46E-37 |
| rs12476703 | 2 | 200119263 | T | G | 0.40376 | -0.04027 | 0.004735 | 4.92E-18 |
| rs142058842 | 2 | 156621725 | C | G | 0.834142 | -0.07287 | 0.006245 | 3.14E-38 |
| rs1518086 | 2 | 199625393 | G | A | 0.357731 | -0.05732 | 0.004872 | 3.80E-37 |
| rs1526070 | 2 | 199783596 | G | A | 0.507079 | 0.036742 | 0.004659 | 1.98E-14 |
| rs16841741 | 2 | 209637598 | A | G | 0.889663 | -0.05602 | 0.007409 | 3.50E-15 |
| rs1861072 | 2 | 210851634 | T | C | 0.599491 | 0.025176 | 0.004754 | 2.39E-08 |
| rs2060199 | 2 | 166196681 | T | A | 0.446395 | 0.022891 | 0.004668 | 9.87E-09 |
| rs2539679 | 2 | 59856713 | T | C | 0.187506 | -0.04218 | 0.005959 | 1.48E-13 |
| rs2679894 | 2 | 105870779 | A | G | 0.421922 | 0.05615 | 0.004725 | 4.79E-32 |
| rs3136247 | 2 | 48013099 | A | G | 0.806304 | -0.04133 | 0.005888 | 1.92E-12 |
| rs338070 | 2 | 45175289 | C | G | 0.418424 | -0.02261 | 0.004763 | 1.88E-08 |
| rs4353638 | 2 | 61499019 | A | G | 0.846216 | 0.053703 | 0.006437 | 1.59E-18 |
| rs4664602 | 2 | 153542585 | C | T | 0.172512 | 0.051105 | 0.006148 | 1.26E-19 |
| rs5017302 | 2 | 631069 | G | A | 0.174849 | 0.073479 | 0.006172 | 6.13E-38 |
| rs56277911 | 2 | 10397352 | C | T | 0.902348 | -0.04221 | 0.007843 | 3.05E-08 |
| rs566465 | 2 | 169705104 | A | T | 0.532495 | -0.02252 | 0.004651 | 2.10E-08 |
| rs57171084 | 2 | 69693747 | T | C | 0.817177 | 0.030978 | 0.006022 | 2.95E-08 |
| rs59072247 | 2 | 73536689 | C | T | 0.970496 | -0.1036 | 0.013828 | 3.68E-16 |
| rs62106258 | 2 | 417167 | T | C | 0.951215 | -0.13128 | 0.010779 | 1.68E-40 |
| rs62178545 | 2 | 157580792 | G | A | 0.680358 | -0.02476 | 0.005008 | 2.33E-08 |
| rs6429912 | 2 | 142347455 | A | G | 0.562032 | 0.038014 | 0.004694 | 1.03E-17 |
| rs6719214 | 2 | 100607421 | T | C | 0.851955 | 0.034508 | 0.00654 | 1.07E-08 |
| rs6735626 | 2 | 213403972 | G | A | 0.560183 | -0.02404 | 0.004689 | 1.25E-08 |

| | | | | | | | | |
|-------------|---|-----------|---|---|----------|----------|----------|----------|
| rs72892124 | 2 | 157134497 | A | G | 0.933222 | 0.070552 | 0.009311 | 1.94E-16 |
| rs842545 | 2 | 184261573 | T | C | 0.198693 | 0.032146 | 0.005844 | 9.96E-13 |
| rs13064915 | 3 | 137121243 | T | C | 0.67711 | -0.02531 | 0.005002 | 4.03E-08 |
| rs13322435 | 3 | 156795468 | A | G | 0.598365 | 0.035167 | 0.004782 | 1.54E-15 |
| rs141829833 | 3 | 51776104 | C | T | 0.976655 | -0.15387 | 0.015682 | 3.72E-25 |
| rs1452201 | 3 | 187349009 | C | T | 0.449615 | 0.025087 | 0.004705 | 2.90E-08 |
| rs16860342 | 3 | 185652947 | C | T | 0.572984 | -0.03658 | 0.004713 | 6.53E-17 |
| rs1984870 | 3 | 24715135 | G | T | 0.536663 | -0.03777 | 0.004714 | 1.64E-15 |
| rs2067082 | 3 | 38438182 | G | C | 0.440326 | 0.026304 | 0.004699 | 3.90E-08 |
| rs28672845 | 3 | 88270627 | A | C | 0.160511 | 0.042323 | 0.006326 | 2.10E-14 |
| rs35999162 | 3 | 49597230 | C | G | 0.692155 | 0.034497 | 0.005048 | 1.70E-13 |
| rs3849531 | 3 | 128058617 | A | T | 0.732993 | -0.04131 | 0.00527 | 1.09E-18 |
| rs6439371 | 3 | 132610752 | G | A | 0.350882 | 0.031114 | 0.004889 | 2.04E-12 |
| rs7433864 | 3 | 117593483 | C | A | 0.495818 | -0.05354 | 0.004662 | 1.84E-33 |
| rs75412999 | 3 | 29625116 | T | C | 0.941049 | 0.048165 | 0.010007 | 3.03E-08 |
| rs7639267 | 3 | 52568805 | G | T | 0.441738 | -0.03278 | 0.00469 | 1.95E-15 |
| rs7643617 | 3 | 114753078 | A | C | 0.903253 | 0.048555 | 0.007893 | 1.82E-11 |
| rs7652234 | 3 | 24190459 | C | G | 0.959579 | -0.07859 | 0.011967 | 1.44E-12 |
| rs815715 | 3 | 61264084 | C | G | 0.573577 | -0.02692 | 0.004732 | 6.87E-10 |
| rs865809 | 3 | 183997735 | A | G | 0.229792 | -0.03746 | 0.005556 | 5.33E-12 |
| rs9681954 | 3 | 86892364 | T | C | 0.384126 | -0.04701 | 0.004792 | 2.37E-25 |
| rs9756797 | 3 | 18427477 | G | A | 0.594217 | 0.029108 | 0.004755 | 2.33E-10 |
| rs9849338 | 3 | 172126476 | C | A | 0.63732 | 0.028918 | 0.004881 | 1.10E-10 |
| rs10857036 | 4 | 115996673 | T | C | 0.43743 | -0.02429 | 0.004728 | 5.62E-09 |
| rs10938397 | 4 | 45182527 | A | G | 0.567437 | 0.043732 | 0.004721 | 7.05E-22 |
| rs115260227 | 4 | 104774698 | A | G | 0.987966 | -0.24537 | 0.022321 | 7.39E-32 |
| rs1347901 | 4 | 44518235 | T | C | 0.345299 | 0.028584 | 0.004902 | 1.85E-09 |

| | | | | | | | | |
|-------------|---|-----------|---|---|----------|----------|----------|----------|
| rs1351623 | 4 | 104587977 | C | T | 0.834417 | -0.04972 | 0.006289 | 1.77E-21 |
| rs143875052 | 4 | 106150555 | C | T | 0.878099 | 0.048452 | 0.007133 | 4.81E-14 |
| rs17464835 | 4 | 132764481 | G | A | 0.799123 | -0.03446 | 0.005809 | 5.74E-11 |
| rs2391504 | 4 | 130731072 | A | G | 0.324523 | -0.02455 | 0.004984 | 3.36E-08 |
| rs2798224 | 4 | 3267668 | G | A | 0.42909 | -0.02943 | 0.004715 | 1.04E-10 |
| rs28535294 | 4 | 66470543 | G | A | 0.676403 | 0.025219 | 0.004986 | 3.89E-08 |
| rs34811474 | 4 | 25408838 | G | A | 0.768652 | -0.03026 | 0.005526 | 4.65E-08 |
| rs6844340 | 4 | 104267254 | G | T | 0.710663 | -0.02464 | 0.005151 | 3.97E-08 |
| rs7438414 | 4 | 95265822 | T | C | 0.381602 | 0.040686 | 0.004832 | 7.44E-19 |
| rs9991479 | 4 | 28794872 | T | C | 0.269838 | -0.03778 | 0.005257 | 9.00E-15 |
| rs10060622 | 5 | 87929869 | T | C | 0.723296 | 0.025092 | 0.005227 | 2.35E-08 |
| rs10063744 | 5 | 95649772 | C | G | 0.715382 | -0.03009 | 0.00519 | 2.31E-11 |
| rs10941225 | 5 | 34961480 | T | A | 0.554294 | -0.0268 | 0.004704 | 2.81E-08 |
| rs114489117 | 5 | 92948485 | T | A | 0.892957 | 0.038421 | 0.007561 | 1.35E-08 |
| rs11738611 | 5 | 156772974 | C | A | 0.788536 | -0.03222 | 0.005701 | 1.74E-09 |
| rs12374521 | 5 | 147836880 | C | T | 0.456322 | 0.022733 | 0.004683 | 2.70E-08 |
| rs12656569 | 5 | 168738591 | A | C | 0.203085 | 0.030974 | 0.0058 | 1.59E-08 |
| rs13179411 | 5 | 133900513 | G | T | 0.849694 | -0.07693 | 0.006532 | 1.36E-34 |
| rs141344917 | 5 | 111134797 | G | A | 0.936936 | 0.086994 | 0.009794 | 2.21E-17 |
| rs1618689 | 5 | 110606055 | C | G | 0.276541 | -0.0281 | 0.005212 | 2.50E-09 |
| rs247520 | 5 | 110876057 | T | C | 0.771991 | 0.035633 | 0.005624 | 2.67E-13 |
| rs2861809 | 5 | 165893943 | G | A | 0.560482 | 0.026535 | 0.004717 | 4.31E-08 |
| rs298088 | 5 | 58994526 | A | G | 0.268922 | 0.026111 | 0.005256 | 2.63E-09 |
| rs35375873 | 5 | 43190647 | G | C | 0.887257 | -0.04887 | 0.007447 | 2.17E-13 |
| rs56289631 | 5 | 137018758 | G | A | 0.771099 | -0.03051 | 0.005561 | 7.68E-12 |
| rs7727787 | 5 | 180653039 | G | A | 0.865541 | 0.043157 | 0.006841 | 6.87E-12 |
| rs77470973 | 5 | 52686921 | T | C | 0.706 | 0.032387 | 0.005154 | 1.31E-10 |

| | | | | | | | | |
|-------------|---|-----------|---|---|----------|----------|----------|-----------|
| rs80170948 | 5 | 64020316 | T | G | 0.957123 | -0.07366 | 0.012033 | 3.17E-10 |
| rs9312937 | 5 | 16836005 | T | C | 0.516772 | -0.02626 | 0.004727 | 1.93E-09 |
| rs12193842 | 6 | 84322158 | A | C | 0.668071 | -0.03259 | 0.004948 | 2.70E-10 |
| rs12206564 | 6 | 100987009 | T | C | 0.505029 | 0.044509 | 0.004661 | 1.70E-26 |
| rs13199764 | 6 | 100744134 | T | C | 0.77315 | 0.036372 | 0.005554 | 3.20E-14 |
| rs145812241 | 6 | 105118744 | C | T | 0.982578 | 0.096512 | 0.018432 | 4.36E-08 |
| rs1844594 | 6 | 126788107 | G | A | 0.544801 | 0.049163 | 0.004681 | 4.95E-27 |
| rs1933801 | 6 | 105365725 | C | T | 0.320792 | 0.141884 | 0.004989 | 7.55E-203 |
| rs2206271 | 6 | 50786008 | T | A | 0.708338 | 0.036701 | 0.005137 | 8.73E-12 |
| rs2254479 | 6 | 41831143 | G | A | 0.449713 | 0.034271 | 0.004676 | 3.92E-15 |
| rs2764261 | 6 | 108927842 | A | G | 0.372206 | 0.032233 | 0.004822 | 2.85E-13 |
| rs34399458 | 6 | 56848842 | C | T | 0.827336 | 0.050007 | 0.006151 | 4.58E-19 |
| rs34613202 | 6 | 77710316 | G | C | 0.796159 | 0.060461 | 0.005781 | 1.36E-25 |
| rs3828755 | 6 | 43115220 | A | G | 0.51236 | 0.024693 | 0.004683 | 1.45E-09 |
| rs62415601 | 6 | 76432116 | A | C | 0.624687 | -0.03073 | 0.004817 | 9.49E-12 |
| rs6456198 | 6 | 170622922 | C | G | 0.857828 | -0.0334 | 0.006669 | 1.43E-08 |
| rs6917291 | 6 | 77160813 | C | T | 0.693762 | 0.028725 | 0.005054 | 7.02E-11 |
| rs7452200 | 6 | 54663168 | C | T | 0.530352 | -0.03464 | 0.004665 | 2.75E-16 |
| rs7746459 | 6 | 105071380 | T | A | 0.870494 | -0.04196 | 0.006947 | 3.15E-10 |
| rs7749175 | 6 | 98770345 | C | T | 0.537083 | -0.02586 | 0.004682 | 3.02E-08 |
| rs78928932 | 6 | 136228617 | T | C | 0.923173 | -0.06085 | 0.009178 | 3.27E-08 |
| rs9295482 | 6 | 20761234 | A | C | 0.661089 | -0.02565 | 0.004934 | 2.07E-08 |
| rs9321106 | 6 | 128355316 | A | G | 0.816907 | -0.03333 | 0.006092 | 2.16E-09 |
| rs9321659 | 6 | 100116092 | G | A | 0.866458 | -0.06434 | 0.006857 | 3.91E-23 |
| rs9397414 | 6 | 151806283 | A | G | 0.686425 | 0.039452 | 0.00503 | 1.64E-16 |
| rs10226266 | 7 | 32941119 | A | G | 0.413962 | -0.02456 | 0.00477 | 1.06E-08 |
| rs113766063 | 7 | 129989450 | G | A | 0.984646 | 0.118061 | 0.019261 | 3.19E-08 |

| | | | | | | | | |
|-------------|---|-----------|---|---|----------|----------|----------|----------|
| rs113772882 | 7 | 1642196 | G | T | 0.695245 | 0.033845 | 0.005145 | 1.63E-10 |
| rs11556924 | 7 | 129663496 | C | T | 0.610016 | -0.02634 | 0.004788 | 1.93E-09 |
| rs13233438 | 7 | 132690684 | G | C | 0.570988 | -0.02627 | 0.004717 | 2.60E-09 |
| rs13233916 | 7 | 138874416 | C | G | 0.91002 | -0.04282 | 0.008149 | 1.88E-10 |
| rs1860826 | 7 | 2112506 | G | A | 0.642469 | -0.02526 | 0.004892 | 2.51E-09 |
| rs1899692 | 7 | 121978066 | G | C | 0.825541 | -0.03531 | 0.006157 | 1.63E-09 |
| rs35005436 | 7 | 74134911 | T | C | 0.840152 | 0.053973 | 0.006393 | 6.47E-22 |
| rs35775580 | 7 | 130420740 | A | G | 0.952672 | -0.06895 | 0.010978 | 2.28E-12 |
| rs4141153 | 7 | 41467946 | A | G | 0.803151 | -0.06207 | 0.005868 | 1.13E-31 |
| rs56283944 | 7 | 157983840 | G | A | 0.66133 | -0.02805 | 0.004928 | 7.59E-09 |
| rs62468583 | 7 | 78163424 | A | T | 0.883035 | 0.03363 | 0.007331 | 4.08E-08 |
| rs794358 | 7 | 75195089 | G | A | 0.558162 | -0.02479 | 0.004866 | 5.32E-10 |
| rs9640621 | 7 | 94094153 | C | T | 0.412834 | -0.02462 | 0.004747 | 1.69E-08 |
| rs999885 | 7 | 99701176 | G | A | 0.486231 | -0.02628 | 0.004672 | 4.25E-09 |
| rs11988076 | 8 | 53128629 | A | G | 0.834561 | -0.03077 | 0.006282 | 2.86E-08 |
| rs12550650 | 8 | 4550990 | C | T | 0.549712 | -0.04122 | 0.004702 | 2.80E-20 |
| rs16939126 | 8 | 76572453 | T | C | 0.839748 | 0.033348 | 0.00638 | 4.98E-10 |
| rs17053711 | 8 | 25311269 | G | A | 0.737752 | -0.03009 | 0.0053 | 3.97E-09 |
| rs2688326 | 8 | 3767623 | C | T | 0.304727 | 0.036474 | 0.005091 | 8.77E-16 |
| rs28624558 | 8 | 57802716 | G | T | 0.619601 | 0.025754 | 0.004844 | 1.40E-08 |
| rs2953511 | 8 | 87340870 | G | A | 0.748459 | 0.03226 | 0.005377 | 4.78E-12 |
| rs3133974 | 8 | 94746698 | G | T | 0.712796 | 0.031053 | 0.005167 | 6.85E-09 |
| rs34726119 | 8 | 54026145 | C | T | 0.777998 | -0.04029 | 0.005619 | 8.33E-15 |
| rs34746747 | 8 | 78639613 | T | A | 0.682145 | -0.033 | 0.005041 | 6.34E-12 |
| rs349356 | 8 | 73453946 | G | T | 0.297412 | -0.02833 | 0.005121 | 1.96E-09 |
| rs4266671 | 8 | 4829193 | A | G | 0.624278 | 0.038842 | 0.004833 | 2.02E-18 |
| rs62507083 | 8 | 53842780 | G | T | 0.879459 | 0.045369 | 0.007174 | 5.80E-11 |

| | | | | | | | | |
|------------|---|-----------|---|---|----------|----------|----------|-----------|
| rs62520182 | 8 | 140646051 | C | T | 0.849681 | -0.05465 | 0.006669 | 2.25E-19 |
| rs7007681 | 8 | 77695544 | G | A | 0.849867 | 0.034974 | 0.006541 | 4.35E-08 |
| rs7846385 | 8 | 78160179 | T | C | 0.715429 | 0.041881 | 0.005163 | 1.69E-19 |
| rs10780649 | 9 | 86703561 | T | G | 0.478397 | 0.047846 | 0.004679 | 1.13E-24 |
| rs10810071 | 9 | 13992263 | C | T | 0.747968 | 0.03247 | 0.005399 | 3.14E-09 |
| rs10820310 | 9 | 105686085 | A | G | 0.72726 | 0.027473 | 0.005232 | 1.33E-08 |
| rs10867332 | 9 | 81651533 | G | C | 0.806381 | -0.03036 | 0.005921 | 2.08E-08 |
| rs10908948 | 9 | 92507497 | G | A | 0.566141 | 0.023907 | 0.004714 | 3.34E-08 |
| rs10960303 | 9 | 11839805 | C | A | 0.745819 | 0.038027 | 0.005349 | 2.66E-15 |
| rs10978430 | 9 | 108916009 | C | T | 0.686393 | 0.101248 | 0.005032 | 1.48E-104 |
| rs10984237 | 9 | 121568540 | T | G | 0.764405 | -0.0338 | 0.005507 | 2.44E-11 |
| rs11145656 | 9 | 80639295 | C | T | 0.534204 | 0.028286 | 0.004681 | 6.74E-11 |
| rs11534296 | 9 | 83282402 | G | A | 0.739187 | 0.044252 | 0.005304 | 3.82E-17 |
| rs1322148 | 9 | 10251492 | A | T | 0.297575 | -0.02464 | 0.005092 | 2.10E-08 |
| rs1329767 | 9 | 73798371 | C | A | 0.64319 | 0.037423 | 0.00487 | 8.65E-15 |
| rs1888072 | 9 | 92205987 | T | C | 0.494866 | 0.035326 | 0.004692 | 5.08E-19 |
| rs2152261 | 9 | 11353512 | C | A | 0.93244 | -0.06354 | 0.009338 | 2.43E-13 |
| rs2267958 | 9 | 131015279 | G | A | 0.487369 | -0.02463 | 0.004764 | 1.92E-08 |
| rs2297605 | 9 | 127255448 | G | A | 0.538812 | -0.03965 | 0.004732 | 8.21E-19 |
| rs2604264 | 9 | 76904587 | C | G | 0.263876 | 0.045274 | 0.005296 | 5.07E-19 |
| rs35436838 | 9 | 77273910 | T | G | 0.952616 | -0.06391 | 0.011056 | 1.01E-10 |
| rs480263 | 9 | 1709382 | T | G | 0.353285 | 0.027693 | 0.004869 | 3.01E-11 |
| rs57314245 | 9 | 111813832 | G | A | 0.702617 | 0.036167 | 0.005101 | 1.99E-14 |
| rs58029167 | 9 | 5850375 | A | G | 0.726791 | -0.02328 | 0.005243 | 4.61E-08 |
| rs62539060 | 9 | 75913958 | C | T | 0.933308 | -0.06573 | 0.009333 | 7.97E-15 |
| rs7028185 | 9 | 120659608 | A | G | 0.332896 | -0.02822 | 0.004963 | 3.34E-08 |
| rs7048022 | 9 | 109609554 | C | T | 0.561745 | -0.02899 | 0.004708 | 5.68E-13 |

| | | | | | | | | |
|------------|----|-----------|---|---|----------|----------|----------|----------|
| rs7852169 | 9 | 114318394 | C | G | 0.917578 | -0.10751 | 0.008484 | 5.26E-42 |
| rs913588 | 9 | 7174673 | G | A | 0.479987 | 0.038296 | 0.004661 | 9.51E-20 |
| rs10740399 | 10 | 74060201 | A | G | 0.671361 | 0.025553 | 0.004964 | 1.88E-09 |
| rs10786610 | 10 | 102640663 | G | C | 0.346465 | 0.027077 | 0.004952 | 7.32E-10 |
| rs1172955 | 10 | 97877320 | T | A | 0.287036 | 0.058589 | 0.005159 | 4.38E-33 |
| rs1874984 | 10 | 1731871 | G | C | 0.509899 | -0.04676 | 0.004668 | 3.53E-22 |
| rs2532718 | 10 | 117480864 | C | T | 0.580447 | -0.02987 | 0.004736 | 6.04E-11 |
| rs2919290 | 10 | 126738533 | T | A | 0.510466 | 0.022217 | 0.004688 | 1.41E-08 |
| rs4021186 | 10 | 126761837 | C | A | 0.415849 | 0.025585 | 0.004995 | 3.16E-08 |
| rs67221163 | 10 | 134297909 | C | G | 0.555329 | -0.02392 | 0.004711 | 3.39E-08 |
| rs7073746 | 10 | 64904071 | A | G | 0.529036 | -0.02442 | 0.004682 | 6.91E-10 |
| rs7077302 | 10 | 123676662 | C | G | 0.081186 | 0.049553 | 0.008551 | 1.46E-10 |
| rs9423024 | 10 | 126862256 | C | A | 0.501048 | -0.03855 | 0.004682 | 2.11E-18 |
| rs1045590 | 11 | 77376806 | C | A | 0.802758 | -0.033 | 0.005876 | 9.96E-09 |
| rs10895141 | 11 | 101436741 | A | C | 0.329966 | -0.04651 | 0.00497 | 7.19E-23 |
| rs11030282 | 11 | 28361800 | C | A | 0.8401 | -0.04762 | 0.006367 | 1.65E-14 |
| rs11031006 | 11 | 30226528 | G | A | 0.856699 | -0.04742 | 0.006677 | 2.62E-15 |
| rs11039266 | 11 | 47532395 | T | G | 0.72191 | -0.04094 | 0.00523 | 8.67E-18 |
| rs11605776 | 11 | 13318524 | C | A | 0.287447 | 0.054298 | 0.005161 | 3.25E-31 |
| rs11823251 | 11 | 84752914 | C | G | 0.739537 | -0.0276 | 0.005324 | 7.14E-09 |
| rs12360772 | 11 | 1899962 | G | A | 0.812042 | 0.037599 | 0.006001 | 3.62E-11 |
| rs16917237 | 11 | 27702383 | G | T | 0.797747 | -0.04393 | 0.005804 | 3.22E-16 |
| rs16937956 | 11 | 8404501 | A | G | 0.651739 | -0.04554 | 0.004915 | 7.67E-24 |
| rs17854357 | 11 | 65601560 | G | C | 0.833952 | 0.033369 | 0.006253 | 5.57E-09 |
| rs2256464 | 11 | 77917305 | C | A | 0.844801 | -0.03854 | 0.006448 | 9.76E-12 |
| rs4073513 | 11 | 46071253 | A | G | 0.289468 | -0.03126 | 0.00513 | 3.84E-12 |
| rs4752978 | 11 | 47324862 | G | A | 0.824572 | -0.0313 | 0.006161 | 2.82E-08 |

| | | | | | | | | |
|-------------|----|-----------|---|---|----------|----------|----------|----------|
| rs4755720 | 11 | 43628749 | C | T | 0.392516 | -0.03682 | 0.004795 | 7.42E-17 |
| rs545075 | 11 | 94071678 | G | C | 0.051912 | -0.06602 | 0.010503 | 3.44E-11 |
| rs568442 | 11 | 55309822 | G | A | 0.672087 | 0.030005 | 0.005477 | 1.28E-11 |
| rs61371450 | 11 | 16786905 | G | A | 0.824175 | 0.044769 | 0.006141 | 4.70E-15 |
| rs7102513 | 11 | 86717987 | T | C | 0.218879 | -0.03269 | 0.005746 | 1.82E-09 |
| rs7115813 | 11 | 122832074 | A | G | 0.447345 | -0.06645 | 0.0047 | 8.61E-51 |
| rs72992070 | 11 | 115024690 | A | C | 0.740631 | -0.03622 | 0.005313 | 1.25E-12 |
| rs7942122 | 11 | 122729107 | T | C | 0.851557 | -0.04367 | 0.006579 | 1.34E-10 |
| rs7943688 | 11 | 45446724 | G | T | 0.694729 | -0.02999 | 0.005072 | 4.61E-10 |
| rs7949608 | 11 | 63595925 | A | G | 0.426871 | 0.024416 | 0.004708 | 2.74E-09 |
| rs9795476 | 11 | 235894 | T | G | 0.246141 | 0.027222 | 0.005419 | 2.16E-09 |
| rs1054442 | 12 | 49389320 | A | C | 0.625149 | 0.034126 | 0.004826 | 1.15E-15 |
| rs10860153 | 12 | 97541532 | A | G | 0.665575 | 0.03418 | 0.004982 | 4.22E-11 |
| rs10861880 | 12 | 108611474 | T | C | 0.498061 | 0.024106 | 0.004667 | 1.59E-08 |
| rs10870546 | 12 | 133054609 | A | G | 0.278728 | 0.028107 | 0.005227 | 3.68E-08 |
| rs10902475 | 12 | 132410245 | C | A | 0.261352 | -0.02801 | 0.005324 | 2.49E-09 |
| rs11047447 | 12 | 24601048 | A | G | 0.663084 | -0.03343 | 0.004935 | 5.18E-12 |
| rs112335739 | 12 | 47844662 | C | T | 0.894656 | -0.04664 | 0.007597 | 3.43E-10 |
| rs1131017 | 12 | 56435929 | C | G | 0.429859 | 0.020686 | 0.004716 | 4.60E-08 |
| rs141773786 | 12 | 57475601 | A | G | 0.894062 | -0.04406 | 0.007621 | 1.30E-08 |
| rs71135337 | 12 | 121404155 | A | C | 0.408868 | -0.02561 | 0.004755 | 2.01E-09 |
| rs76369685 | 12 | 97850590 | G | A | 0.939703 | -0.04957 | 0.009846 | 5.39E-09 |
| rs76439972 | 12 | 92456577 | C | T | 0.927974 | -0.04592 | 0.009079 | 3.78E-08 |
| rs7973253 | 12 | 109878115 | A | G | 0.634964 | -0.02413 | 0.004851 | 2.48E-08 |
| rs11619721 | 13 | 112082513 | G | T | 0.908412 | 0.04864 | 0.008192 | 1.83E-09 |
| rs12019957 | 13 | 97968001 | T | C | 0.820945 | 0.036648 | 0.006125 | 1.15E-08 |
| rs1327942 | 13 | 59833110 | T | A | 0.569544 | 0.024998 | 0.004756 | 6.47E-09 |

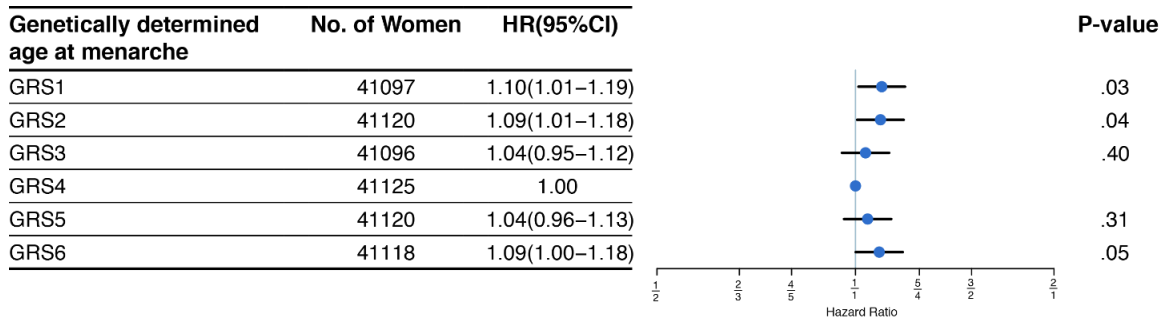
| | | | | | | | | |
|-------------|----|-----------|---|---|----------|----------|----------|----------|
| rs1933437 | 13 | 28624294 | G | A | 0.372456 | -0.03104 | 0.004836 | 1.10E-09 |
| rs3829388 | 13 | 61984781 | T | C | 0.688573 | -0.03062 | 0.00506 | 2.28E-10 |
| rs7329599 | 13 | 74561706 | C | T | 0.236199 | -0.03612 | 0.005508 | 4.70E-12 |
| rs7992832 | 13 | 28013501 | C | T | 0.723019 | -0.02651 | 0.005235 | 1.17E-09 |
| rs7995668 | 13 | 74705179 | A | C | 0.88474 | 0.045472 | 0.007392 | 3.15E-10 |
| rs803821 | 13 | 71559009 | T | C | 0.6623 | -0.02887 | 0.004966 | 1.72E-10 |
| rs9517913 | 13 | 100564508 | G | A | 0.576687 | -0.03227 | 0.004767 | 2.78E-11 |
| rs9554311 | 13 | 28867268 | C | T | 0.333263 | -0.03089 | 0.004973 | 2.42E-10 |
| rs9560114 | 13 | 112187882 | A | T | 0.734347 | -0.03449 | 0.005328 | 1.46E-09 |
| rs9568125 | 13 | 49476315 | C | T | 0.845314 | -0.04165 | 0.006464 | 2.52E-12 |
| rs9603605 | 13 | 40308307 | T | C | 0.651204 | -0.03394 | 0.004922 | 3.11E-14 |
| rs10136330 | 14 | 30514335 | C | T | 0.960474 | 0.074198 | 0.012034 | 1.08E-11 |
| rs10150590 | 14 | 40925881 | A | C | 0.399701 | -0.02676 | 0.00479 | 4.73E-08 |
| rs12433775 | 14 | 37003838 | C | T | 0.932559 | 0.053576 | 0.009352 | 3.99E-08 |
| rs12879819 | 14 | 78424783 | C | T | 0.48312 | 0.028454 | 0.004704 | 8.86E-11 |
| rs1555406 | 14 | 101204235 | C | T | 0.882778 | 0.043147 | 0.007283 | 3.39E-10 |
| rs4365199 | 14 | 60994213 | T | G | 0.302052 | 0.051017 | 0.005086 | 7.25E-26 |
| rs55658396 | 14 | 97773547 | G | T | 0.948503 | 0.068902 | 0.010737 | 4.29E-11 |
| rs6575806 | 14 | 101353211 | C | A | 0.277078 | 0.033021 | 0.005493 | 5.28E-10 |
| rs7161194 | 14 | 101529005 | A | G | 0.335344 | -0.03532 | 0.005174 | 5.50E-13 |
| rs78352137 | 14 | 100920416 | T | C | 0.888888 | 0.081251 | 0.007439 | 7.07E-30 |
| rs8007087 | 14 | 93918885 | C | T | 0.312252 | 0.03375 | 0.005051 | 3.32E-13 |
| rs11071027 | 15 | 54364761 | A | C | 0.378892 | 0.024665 | 0.00483 | 1.13E-08 |
| rs111491984 | 15 | 82488239 | A | T | 0.734708 | -0.03139 | 0.005297 | 3.22E-10 |
| rs112036939 | 15 | 41247859 | A | T | 0.968691 | -0.07021 | 0.013415 | 1.01E-08 |
| rs13835 | 15 | 89056040 | C | A | 0.575867 | 0.046994 | 0.004733 | 2.20E-28 |
| rs3743266 | 15 | 60781513 | T | C | 0.665848 | 0.046669 | 0.004968 | 1.27E-23 |

| | | | | | | | | |
|-------------|----|----------|---|---|----------|----------|----------|----------|
| rs3784710 | 15 | 68072458 | T | C | 0.773089 | -0.04154 | 0.005588 | 7.25E-17 |
| rs4243084 | 15 | 78911672 | G | C | 0.664572 | 0.025925 | 0.00495 | 2.99E-08 |
| rs561821 | 15 | 41427864 | C | T | 0.622596 | 0.034918 | 0.004828 | 2.30E-16 |
| rs5742915 | 15 | 74336633 | T | C | 0.536826 | -0.03577 | 0.00469 | 6.43E-17 |
| rs62009090 | 15 | 77837055 | T | G | 0.299785 | 0.02815 | 0.00511 | 7.43E-10 |
| rs62023121 | 15 | 93459453 | C | T | 0.844932 | 0.040194 | 0.006478 | 6.03E-11 |
| rs6576457 | 15 | 23809876 | G | A | 0.695317 | 0.046299 | 0.005093 | 8.38E-20 |
| rs72741332 | 15 | 64744790 | T | C | 0.936768 | 0.0542 | 0.009604 | 1.47E-09 |
| rs72767997 | 15 | 99288741 | T | C | 0.971707 | -0.07762 | 0.014317 | 2.23E-10 |
| rs75389281 | 15 | 24159672 | G | C | 0.893199 | 0.052439 | 0.007577 | 1.08E-11 |
| rs8032760 | 15 | 47994054 | T | C | 0.518293 | -0.02317 | 0.004697 | 9.11E-09 |
| rs112927956 | 16 | 24724001 | C | T | 0.958434 | -0.07314 | 0.011836 | 1.31E-09 |
| rs114285994 | 16 | 19935763 | G | A | 0.861412 | -0.0543 | 0.006772 | 2.32E-18 |
| rs11642015 | 16 | 53802494 | C | T | 0.599682 | 0.07438 | 0.004765 | 3.73E-58 |
| rs12926791 | 16 | 69849546 | C | G | 0.583121 | -0.05799 | 0.004749 | 3.15E-37 |
| rs12933772 | 16 | 6560430 | C | G | 0.682819 | 0.024958 | 0.005034 | 9.88E-09 |
| rs1362376 | 16 | 52291939 | T | C | 0.809413 | 0.046476 | 0.005947 | 1.09E-16 |
| rs139309976 | 16 | 70785409 | G | A | 0.987501 | -0.10804 | 0.021091 | 4.51E-08 |
| rs1704528 | 16 | 14388750 | T | C | 0.668758 | -0.05341 | 0.004978 | 2.85E-33 |
| rs4786084 | 16 | 6172773 | G | A | 0.408427 | -0.02616 | 0.004766 | 3.59E-09 |
| rs57149692 | 16 | 30142021 | G | C | 0.603425 | -0.03211 | 0.004789 | 7.97E-13 |
| rs7199766 | 16 | 3637429 | G | A | 0.794635 | 0.026428 | 0.005785 | 2.14E-08 |
| rs9652589 | 16 | 20370816 | C | T | 0.484841 | -0.02713 | 0.004667 | 2.09E-10 |
| rs12603280 | 17 | 6034754 | G | A | 0.755533 | 0.034621 | 0.005484 | 1.92E-12 |
| rs12603355 | 17 | 7733037 | C | T | 0.706918 | -0.02711 | 0.00513 | 1.85E-10 |
| rs1285245 | 17 | 77796889 | G | C | 0.624265 | 0.028008 | 0.004832 | 1.40E-09 |
| rs17817628 | 17 | 53174727 | A | G | 0.713172 | 0.041658 | 0.005176 | 6.16E-18 |

| | | | | | | | | |
|------------|----|----------|---|---|----------|----------|----------|----------|
| rs17817995 | 17 | 53412594 | G | C | 0.680411 | -0.02855 | 0.005063 | 6.14E-10 |
| rs241036 | 17 | 43731719 | A | C | 0.773222 | -0.03689 | 0.005593 | 2.15E-13 |
| rs2725405 | 17 | 79220224 | G | C | 0.558213 | 0.033323 | 0.00472 | 2.97E-12 |
| rs34768269 | 17 | 77952751 | T | C | 0.807363 | 0.033363 | 0.005932 | 6.76E-10 |
| rs58418838 | 17 | 78700955 | C | T | 0.650993 | 0.028163 | 0.004899 | 7.23E-10 |
| rs9635759 | 17 | 49613785 | G | A | 0.696577 | -0.07127 | 0.005186 | 1.63E-48 |
| rs12607857 | 18 | 53213326 | G | A | 0.921703 | -0.05258 | 0.008713 | 2.57E-10 |
| rs12607903 | 18 | 3817134 | C | T | 0.278956 | 0.050975 | 0.005227 | 1.09E-26 |
| rs2668767 | 18 | 44785302 | T | C | 0.429567 | -0.05407 | 0.004733 | 4.89E-36 |
| rs72661148 | 18 | 45371695 | A | G | 0.955476 | -0.06197 | 0.011354 | 4.94E-08 |
| rs8087694 | 18 | 62339300 | G | C | 0.194886 | -0.03079 | 0.005923 | 1.50E-08 |
| rs9945304 | 18 | 31703064 | C | G | 0.419982 | 0.027377 | 0.004747 | 9.71E-10 |
| rs9957921 | 18 | 57891072 | G | C | 0.928744 | -0.04799 | 0.009134 | 4.85E-09 |
| rs10401175 | 19 | 18230274 | C | A | 0.460306 | -0.02713 | 0.004694 | 1.85E-09 |
| rs12462111 | 19 | 49171306 | C | T | 0.535825 | -0.03215 | 0.004764 | 1.93E-10 |
| rs16992771 | 19 | 5046070 | C | T | 0.657339 | -0.03005 | 0.004926 | 1.25E-11 |
| rs2003476 | 19 | 18806668 | T | C | 0.592968 | -0.03035 | 0.004778 | 2.78E-11 |
| rs3115524 | 19 | 13021359 | G | A | 0.383182 | 0.024562 | 0.004805 | 2.34E-08 |
| rs35917007 | 19 | 1849147 | A | G | 0.465238 | -0.04276 | 0.004673 | 1.39E-23 |
| rs3810291 | 19 | 47569003 | G | A | 0.321917 | 0.041086 | 0.005005 | 1.81E-19 |
| rs484353 | 19 | 7891767 | G | A | 0.444892 | -0.03043 | 0.004712 | 2.52E-11 |
| rs55939240 | 19 | 36185103 | A | G | 0.530244 | -0.0342 | 0.004685 | 1.54E-13 |
| rs61744130 | 19 | 54080067 | T | C | 0.951292 | 0.063238 | 0.010849 | 4.55E-09 |
| rs8112411 | 19 | 9991735 | G | A | 0.374216 | -0.05243 | 0.004827 | 2.23E-31 |
| rs882609 | 19 | 58991479 | G | A | 0.545218 | -0.02307 | 0.004705 | 2.83E-09 |
| rs2425670 | 20 | 43521729 | G | A | 0.436337 | -0.02384 | 0.004721 | 2.49E-08 |
| rs35255016 | 20 | 37294739 | C | T | 0.760695 | -0.03524 | 0.005487 | 5.80E-13 |

| | | | | | | | | |
|------------|----|----------|---|---|----------|----------|----------|----------|
| rs3746619 | 20 | 54823805 | C | A | 0.91676 | -0.05261 | 0.008456 | 8.26E-11 |
| rs3828002 | 20 | 19702049 | G | A | 0.452428 | -0.03 | 0.004744 | 5.49E-11 |
| rs6010651 | 20 | 62418243 | A | C | 0.619292 | -0.02799 | 0.004843 | 8.41E-09 |
| rs6039251 | 20 | 8729496 | T | C | 0.632004 | -0.02459 | 0.004844 | 1.17E-08 |
| rs6045400 | 20 | 18421988 | A | G | 0.202791 | 0.035035 | 0.005829 | 2.95E-11 |
| rs6046818 | 20 | 20346178 | T | C | 0.845187 | 0.038289 | 0.006497 | 9.75E-10 |
| rs6066454 | 20 | 46364282 | C | T | 0.633005 | -0.02611 | 0.004875 | 4.99E-08 |
| rs6087709 | 20 | 34017944 | C | G | 0.710235 | 0.026524 | 0.005169 | 9.44E-09 |
| rs6136033 | 20 | 17208504 | A | C | 0.425193 | 0.027926 | 0.004792 | 1.19E-08 |
| rs7273470 | 20 | 33456921 | G | C | 0.759889 | -0.03461 | 0.005482 | 1.37E-12 |
| rs73898513 | 20 | 15806210 | C | T | 0.876222 | 0.038639 | 0.007223 | 2.83E-08 |
| rs852033 | 20 | 17085493 | A | C | 0.2467 | -0.04201 | 0.005431 | 2.56E-16 |
| rs35184820 | 21 | 35320941 | T | G | 0.492016 | 0.031847 | 0.004691 | 1.69E-11 |
| rs4818008 | 21 | 40611442 | T | A | 0.645349 | 0.050239 | 0.004898 | 3.00E-27 |
| rs73204208 | 21 | 37791466 | T | G | 0.870359 | -0.04829 | 0.007004 | 3.38E-13 |
| rs12167144 | 22 | 31298208 | A | C | 0.715331 | 0.032565 | 0.00519 | 1.87E-12 |
| rs5756052 | 22 | 22268759 | A | G | 0.519146 | 0.025152 | 0.004705 | 1.01E-10 |
| rs9616551 | 22 | 49680429 | A | G | 0.19899 | 0.032652 | 0.005896 | 5.63E-10 |

eFigure 1. Multivariate Adjusted Hazard Ratio (95% CI) for Mortality Associated With Women’s Genetically Determined Age at Menarche
 Analyses are adjusted for age, race, Townsend deprivation index, smoking status, alcohol status, physical activity, menopause status, parity, BMI, healthy diet score, birth weight, assessment center, history of cancer, diabetes, CVD, hypertension and high cholesterol, the first 5 genetic principal components and genotyping array.

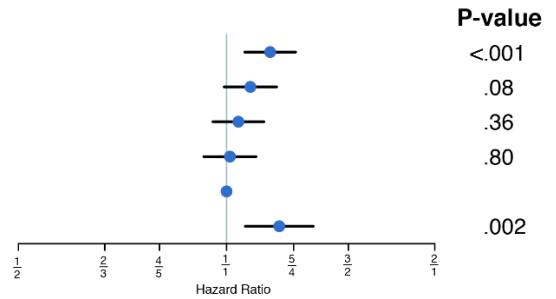


eFigure 2. Multivariate Adjusted Hazard Ratio (95% CI) for Mortality Associated With White Women’s Actual Age at Menarche

Analyses are adjusted for age, Townsend deprivation index, smoking status, alcohol status, physical activity, menopause status, parity, BMI, healthy diet score, birth weight, assessment center, history of cancer, diabetes, CVD, hypertension and high cholesterol.

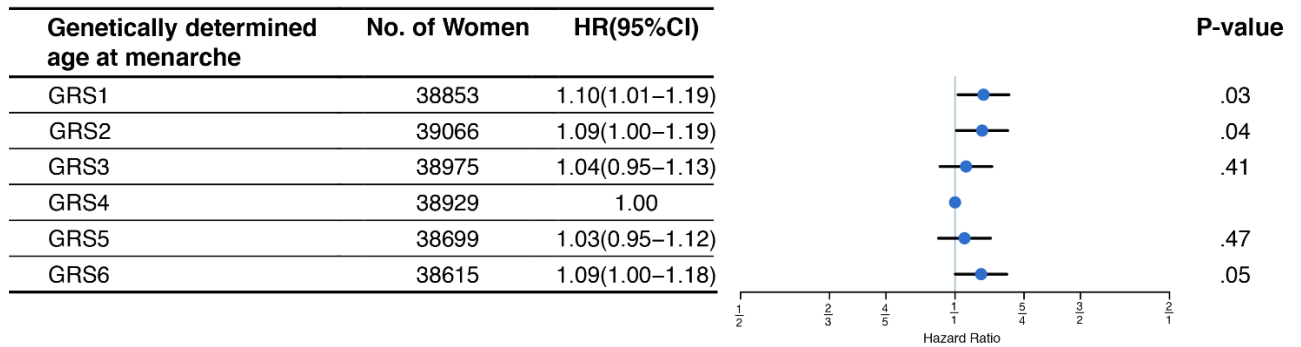
White women

| Actual age at menarche | No. of Women | HR(95%CI) |
|------------------------|--------------|-----------------|
| <12 | 50445 | 1.16(1.06–1.26) |
| 12 | 47418 | 1.08(0.99–1.18) |
| 13 | 61201 | 1.04(0.96–1.13) |
| 14 | 49616 | 1.01(0.93–1.10) |
| 15 | 27355 | 1.00 |
| ≥16 | 14091 | 1.19(1.06–1.33) |



eFigure 3. Multivariate Adjusted Hazard Ratio (95% CI) for Mortality Associated With White Women’s Genetically Determined Age at Menarche
 Analyses are adjusted for age, Townsend deprivation index, smoking status, alcohol status, physical activity, menopause status, parity, BMI, healthy diet score, birth weight, assessment center, history of cancer, diabetes, CVD, hypertension and high cholesterol, the first 5 genetic principal components and genotyping array.

White women



eFigure 4. Interaction Between Actual and Genetically Determined Age at Menarche on Mortality in White Women
 Analyses are adjusted for age, Townsend deprivation index, smoking status, alcohol status, physical activity, menopause status, parity, BMI, healthy diet score, birth weight, assessment center, history of cancer, diabetes, CVD, hypertension and high cholesterol, the first 5 genetic principal components and genotyping array.

