

Supplemental materials

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e-Table 1. Single-nucleotide polymorphisms used to build the genetic risk score for asthma.

					Yi Han et al, 2020, PMID 32296059		
	SNP	CHR	BP	EA	Beta	SE	P
1	rs734999	1p36.32	2,513,216	C	0.04	0.0060	4.0E-11
2	rs301819	1p36.23	8,501,786	G	0.05	0.0061	1.2E-13
3	rs6687430	1p36.22	10,633,245	A	0.04	0.0060	7.2E-11
4	rs2230624	1p36.22	12,175,658	G	0.18	0.0253	4.3E-12
5	rs1293202	1p36.11	25,263,997	G	0.06	0.0092	1.6E-11
6	rs11577318	1p36.11	26,601,570	G	0.03	0.0077	4.8E-05
7	rs2228552	1p35.2	32,165,495	T	0.03	0.0062	3.4E-08
8	rs648973	1p34.3	36,518,627	A	0.08	0.0273	4.6E-03
9	rs7542867	1p22.1	93,076,518	A	0.03	0.0062	2.5E-06
10	rs71580314	1q21.3	150,507,691	A	0.04	0.0060	1.6E-09
11	rs61816761	1q21.3	152,285,861	A	0.29	0.0219	3.5E-39
12	rs4129267	1q21.3	154,426,264	T	0.04	0.0061	1.4E-11
13	rs3027001	1q23.2	159,169,463	C	0.04	0.0071	5.5E-08
14	rs2070901	1q23.3	161,185,058	T	0.05	0.0067	3.6E-12
15	rs1214598	1q24.2	167,426,424	G	0.06	0.0062	2.9E-21
16	rs10912564	1q25.1	173,170,618	T	0.05	0.0065	1.5E-14
17	rs17669032	1q31.3	198,653,174	A	0.07	0.0099	8.6E-13
18	rs7555556	1q32.1	203,090,976	C	0.04	0.0064	3.0E-11
19	rs4127124	1q32.1	206,624,362	A	0.04	0.0060	4.6E-09
20	rs906364	1q32.3	212,858,748	C	0.04	0.0078	1.4E-07
21	rs697852	1q42.12	226,914,734	A	0.05	0.0079	1.5E-09
22	rs10178845	2p25.1	8,443,803	G	0.07	0.0066	1.7E-24

23	rs72787718	2p23.1	30,474,351	A	0.04	0.0071	3.2E-08
24	rs68110799	2p16.1	60,945,555	A	0.04	0.0069	8.9E-08
25	rs13421997	2p14	64,946,639	G	0.03	0.0068	8.0E-07
26	rs35548551	2p13.2	72,039,714	T	0.05	0.0092	4.4E-07
27	rs3771180	2q12.1	102,953,617	G	0.17	0.0086	2.1E-92
28	rs13405741	2q13	111,913,056	C	0.05	0.0102	2.4E-07
29	rs2723197	2q13	113,689,747	G	0.03	0.0061	2.4E-06
30	rs7425446	2q22.2	143,777,498	A	0.04	0.0076	2.2E-08
31	rs6741949	2q24.2	162,910,223	G	0.03	0.0061	1.0E-08
32	rs2595389	2q32.1	187,534,183	T	0.03	0.0060	1.0E-05
33	rs2164068	2q33.1	198,943,852	T	0.03	0.0060	5.4E-08
34	rs13383994	2q36.1	224,667,692	A	0.03	0.0061	5.3E-06
35	rs7423358	2q36.3	228,704,721	C	0.05	0.0070	2.2E-12
36	rs9247	2q37.1	234,113,301	C	0.03	0.0076	5.9E-04
37	rs34290285	2q37.3	242,698,640	G	0.12	0.0068	1.7E-70
38	rs334782	3p26.2	3,148,458	C	0.03	0.0062	1.7E-05
39	rs13101202	3p25.2	12,699,361	C	0.05	0.0080	2.1E-09
40	rs2014490	3p24.3	16,972,211	G	0.04	0.0063	9.2E-10
41	rs2036226	3p24.3	23,597,986	T	0.03	0.0061	7.5E-08
42	rs35570272	3p22.3	33,047,662	T	0.06	0.0062	1.5E-21
43	rs73072483	3p21.2	50,771,624	G	0.05	0.0090	1.4E-07
44	rs9813229	3p14.3	56,741,585	A	0.03	0.0062	1.4E-07
45	rs7372960	3p13	71,254,751	T	0.04	0.0070	1.4E-07
46	rs61192126	3p13	72,394,852	T	0.04	0.0066	6.9E-10
47	rs55749605	3q12.3	101,232,093	A	0.03	0.0062	3.2E-05

48	rs7622814	3q13.2	112,650,431	T	0.03	0.0060	9.8E-09
49	rs9877891	3q13.33	119,260,866	C	0.04	0.0078	2.7E-08
50	rs10049074	3q13.33	121,702,325	T	0.03	0.0060	6.9E-08
51	rs2811518	3q21.3	128,013,645	A	0.05	0.0092	1.1E-08
52	rs13077048	3q23	141,106,954	T	0.04	0.0061	2.5E-10
53	rs17485347	3q26.2	169,127,519	C	0.03	0.0069	2.3E-06
54	rs7626218	3q26.32	176,852,038	A	0.05	0.0061	4.5E-15
55	rs13099273	3q28	188,133,518	A	0.06	0.0061	2.5E-22
56	rs7636495	3q29	196,367,936	G	0.06	0.0079	1.4E-12
57	rs9291151	4p16.2	4,775,137	T	0.03	0.0061	6.0E-07
58	rs5743618	4p14	38,798,648	C	0.10	0.0073	6.8E-43
59	rs73242688	4q12	58,236,911	C	0.08	0.0209	1.1E-04
60	rs227361	4q24	103,586,977	T	0.03	0.0060	8.4E-07
61	rs34712979	4q24	106,819,053	A	0.04	0.0070	3.5E-07
62	rs4145717	4q27	123,316,076	T	0.07	0.0064	3.9E-24
63	rs111379736	4q31.21	143,763,739	A	0.02	0.0065	3.7E-03
64	rs6842889	4q31.21	145,479,880	T	0.03	0.0062	3.0E-06
65	rs7734081	5p15.32	6,126,715	C	0.02	0.0060	1.8E-03
66	rs16903574	5p15.2	14,610,309	G	0.10	0.0118	4.5E-16
67	rs12697352	5p13.2	35,837,234	G	0.06	0.0064	2.2E-18
68	rs7725052	5p13.1	40,487,270	T	0.03	0.0061	1.9E-05
69	rs1501641	5q12.1	59,188,105	A	0.02	0.0062	7.3E-04
70	rs10040192	5q13.2	71,695,880	C	0.03	0.0061	3.2E-08
71	rs1837253	5q22.1	110,401,872	C	0.11	0.0068	2.7E-57
72	rs3813308	5q23.1	118,690,781	G	0.04	0.0060	3.9E-11

73	rs11950815	5q31.1	130,955,487	G	0.04	0.0063	8.6E-12
74	rs848	5q31.1	131,996,500	A	0.10	0.0076	1.1E-39
75	rs62379371	5q31.1	133,439,274	G	0.08	0.0142	6.5E-09
76	rs10875596	5q31.3	141,495,715	C	0.05	0.0062	6.6E-16
77	rs11746314	5q33.3	156,752,957	G	0.09	0.0130	4.2E-11
78	rs61665417	5q34	159,918,335	C	0.04	0.0067	2.1E-11
79	rs56297224	5q35.3	176,815,880	A	0.04	0.0069	2.4E-08
80	rs12196306	6p25.3	249,788	G	0.04	0.0077	1.1E-06
81	rs3777755	6p24.1	12,159,699	C	0.03	0.0065	2.1E-07
82	rs13203384	6p22.3	19,341,301	A	0.04	0.0074	1.8E-06
83	rs952579	6p22.3	21,884,440	A	0.05	0.0086	2.4E-09
84	rs766406	6p22.2	26,319,588	T	0.04	0.0063	7.8E-09
85	rs1233578	6p22.1	28,712,247	G	0.05	0.0078	3.7E-12
86	rs9272346	6p21.32	32,604,372	A	0.15	0.0061	1.4E-127
87	rs411919	6p21.32	33,194,477	G	0.04	0.0068	4.1E-11
88	rs9394288	6p21.31	35,222,010	T	0.05	0.0076	2.3E-09
89	rs6902766	6p12.3	51,370,323	T	0.04	0.0093	1.4E-04
90	rs1504215	6q15	91,006,227	G	0.08	0.0064	1.3E-35
91	rs9372120	6q21	106,667,535	G	0.03	0.0075	5.1E-06
92	rs11759732	6q21	109,370,006	A	0.05	0.0084	1.9E-08
93	rs813915	6q22.33	128,287,313	T	0.06	0.0070	3.6E-17
94	rs4526212	6q23.3	135,804,631	A	0.04	0.0062	6.5E-11
95	rs17264332	6q23.3	138,005,515	A	0.05	0.0073	6.4E-11
96	rs13190880	6q24.2	143,222,770	T	0.06	0.0104	8.5E-08
97	rs431362	6q25.1	149,787,378	A	0.04	0.0063	1.5E-08

98	rs4599658	6q25.2	155,074,505	G	0.03	0.0061	1.8E-08
99	rs895990	6q25.3	156,434,876	G	0.02	0.0061	1.2E-03
100	rs62438869	6q27	167,400,917	A	0.04	0.0090	3.9E-06
101	rs73033536	7p22.2	3,149,883	T	0.07	0.0106	8.1E-11
102	rs10244416	7p21.1	20,575,751	C	0.06	0.0060	8.4E-21
103	rs1800797	7p15.3	22,766,221	G	0.04	0.0062	1.1E-11
104	rs917117	7p15.1	28,176,305	A	0.07	0.0074	1.9E-22
105	rs9886239	7p12.2	50,336,551	A	0.03	0.0063	5.9E-06
106	rs2190097	7q11.23	77,038,945	C	0.04	0.0071	3.2E-08
107	rs10258293	7q22.3	105,662,690	C	0.02	0.0081	7.9E-03
108	rs35113952	8p23.3	1,789,817	T	0.02	0.0066	8.7E-03
109	rs7014953	8p23.1	8,168,413	A	0.03	0.0062	2.3E-07
110	rs4739738	8q21.13	81,291,645	G	0.07	0.0062	2.2E-32
111	rs12548612	8q23.3	117,349,990	C	0.03	0.0095	4.2E-03
112	rs13277355	8q24.21	128,777,719	A	0.05	0.0067	1.3E-14
113	rs34173062	8q24.3	145,158,607	A	0.09	0.0125	1.3E-12
114	rs992969	9p24.1	6,209,697	A	0.13	0.0069	1.9E-78
115	rs10960423	9p23	11,991,732	A	0.09	0.0268	5.9E-04
116	rs274945	9p21.3	23,585,741	A	0.03	0.0060	1.2E-08
117	rs10738765	9p21.2	27,259,224	C	0.03	0.0078	5.2E-04
118	rs1537504	9q22.33	101,829,542	A	0.04	0.0071	1.5E-07
119	rs4978607	9q32	117,508,437	C	0.05	0.0092	2.3E-08
120	rs1930781	9q33.2	123,687,834	G	0.04	0.0063	7.9E-09
121	rs10986311	9q33.3	127,071,493	C	0.03	0.0062	2.7E-08
122	rs11539209	9q34.11	131,483,551	T	0.07	0.0110	9.7E-11

123	rs782134971	9q34.2	136,139,907	G	0.03	0.0069	1.5E-05
124	rs117137535	9q34.3	140,500,443	A	0.12	0.0205	3.9E-09
125	rs4749894	10p15.1	6,058,323	A	0.06	0.0071	9.1E-16
126	rs2197415	10p14	9,062,856	G	0.10	0.0061	5.9E-60
127	rs9284092	10p11.23	30,801,718	G	0.03	0.0068	8.5E-06
128	rs12769745	10q11.21	43,749,700	A	0.03	0.0067	1.5E-06
129	rs2893907	10q21.2	64,382,359	C	0.03	0.0061	2.9E-08
130	rs1134777	10q22.2	75,538,651	C	0.04	0.0068	2.3E-07
131	rs113092121	10q23.33	94,384,514	TTCTC	0.04	0.0061	5.9E-12
132	rs12764214	10q24.2	100,072,209	C	0.01	0.0063	2.5E-02
133	rs11191385	10q24.32	104,513,049	G	0.03	0.0065	3.2E-05
134	rs12788104	11p15.5	1,123,739	G	0.05	0.0065	3.2E-15
135	rs11042902	11p15.4	10,655,623	T	0.04	0.0066	3.8E-09
136	rs7130870	11p13	36,344,202	C	0.04	0.0064	9.0E-09
137	rs714417	11p11.2	45,247,176	C	0.04	0.0065	7.5E-08
138	rs174551	11q12.2	61,573,684	T	0.05	0.0064	1.0E-13
139	rs479844	11q13.1	65,551,957	G	0.05	0.0060	1.0E-18
140	rs7936323	11q13.5	76,293,758	A	0.11	0.0060	5.9E-74
141	rs56324483	11q21	95,424,511	G	0.04	0.0090	4.6E-05
142	rs1784776	11q23.1	111,472,392	T	0.04	0.0066	1.5E-10
143	rs12365699	11q23.3	118,743,286	G	0.07	0.0081	1.7E-17
144	rs55836957	11q24.3	128,168,631	C	0.05	0.0073	1.1E-11
145	rs56389811	12q13.11	48,205,358	C	0.04	0.0071	5.8E-09
146	rs3759129	12q13.12	50,354,437	C	0.04	0.0076	3.0E-06
147	rs1689510	12q13.2	56,396,768	C	0.07	0.0064	2.8E-27

148	rs167769	12q13.3	57,503,775	T	0.07	0.0062	8.6E-31
149	rs1051334	12q21.1	71,523,134	A	0.04	0.0061	3.4E-09
150	rs150449584	12q21.31	85,793,022	C	0.10	0.0251	1.1E-04
151	rs12303699	12q22	94,582,336	A	0.04	0.0062	1.9E-09
152	rs653178	12q24.12	112,007,756	T	0.03	0.0061	9.1E-08
153	rs625228	12q24.31	121,278,266	A	0.04	0.0060	9.5E-11
154	rs7132277	12q24.31	123,593,382	C	0.04	0.0077	1.1E-06
155	rs7323267	13q14.11	41,204,015	C	0.03	0.0075	4.8E-04
156	rs61960013	13q14.11	44,490,181	G	0.04	0.0074	7.0E-09
157	rs981625	13q22.1	74,039,935	G	0.08	0.0124	7.5E-10
158	rs7987173	13q32.3	100,073,342	C	0.05	0.0061	3.5E-16
159	rs10162476	14q13.1	34,144,433	G	0.02	0.0061	1.2E-04
160	rs34332679	14q13.2	35,881,966	GA	0.04	0.0063	9.9E-11
161	rs34307686	14q13.3	37,651,998	CTG	0.02	0.0068	2.2E-03
162	rs3751289	14q23.1	61,983,943	G	0.04	0.0073	9.8E-08
163	rs911263	14q24.1	68,753,593	C	0.05	0.0067	9.2E-16
164	rs888414	14q24.3	75,104,905	A	0.02	0.0062	9.7E-05
165	rs10131197	14q32.12	93,015,394	G	0.04	0.0064	2.6E-10
166	rs59457020	14q32.31	103,190,843	G	0.05	0.0092	4.5E-09
167	rs1942	15q15.1	41,774,423	G	0.04	0.0060	3.7E-11
168	rs11071559	15q22.2	61,069,988	C	0.09	0.0087	2.4E-27
169	rs17293632	15q22.33	67,442,596	T	0.11	0.0071	5.7E-57
170	rs11259930	15q25.2	84,577,350	A	0.03	0.0061	8.5E-09
171	rs8029440	15q26.1	91,409,514	G	0.03	0.0063	8.8E-07
172	rs11645975	16p13.3	3,749,397	G	0.03	0.0069	3.5E-05

173	rs12935657	16p13.13	11,219,041	G	0.09	0.0070	3.8E-41
174	rs3024655	16p12.1	27,369,502	G	0.12	0.0122	1.4E-21
175	rs2066844	16q12.1	50,745,926	T	0.09	0.0145	3.2E-09
176	rs223819	16q13	57,394,862	T	0.05	0.0112	2.3E-06
177	rs71368508	17p13.2	4,521,473	C	0.13	0.0213	6.8E-10
178	rs72842819	17p13.1	7,328,821	C	0.06	0.0094	3.2E-09
179	rs750065349	17p12	12,193,443	GC	0.04	0.0060	8.6E-10
180	rs2305479	17q12	38,062,217	C	0.11	0.0060	2.9E-69
181	rs2006141	17q21.2	40,679,718	T	0.04	0.0067	8.2E-08
182	rs7224548	17q21.31	43,337,136	G	0.05	0.0066	1.1E-13
183	rs72833417	17q21.32	45,873,049	T	0.06	0.0093	3.3E-12
184	rs17637472	17q21.33	47,461,433	A	0.06	0.0063	7.7E-20
185	rs1991401	17q23.3	62,502,435	A	0.04	0.0065	1.1E-08
186	rs111365807	17q25.1	73,825,463	C	0.05	0.0093	1.2E-07
187	rs76848919	17q25.3	76,352,554	C	0.04	0.0075	5.6E-09
188	rs12956924	18q21.1	46,451,146	A	0.04	0.0065	3.7E-08
189	rs12453988	18q21.2	48,581,918	T	0.03	0.0062	1.7E-07
190	rs3730775	18q21.2	51,813,966	T	0.04	0.0061	3.3E-10
191	rs3826620	18q21.33	60,021,504	G	0.04	0.0066	1.3E-09
192	rs12964116	18q21.33	61,442,619	G	0.10	0.0160	2.6E-09
193	rs10853952	19p13.3	1,163,934	T	0.03	0.0065	1.4E-06
194	rs117552144	19p13.3	3,136,091	T	0.09	0.0130	3.6E-11
195	rs10420217	19p13.3	4,355,871	C	0.04	0.0067	2.0E-08
196	rs755023315	19p13.3	6,579,029	G	0.04	0.0068	2.7E-09
197	rs10416530	19p13.2	9,129,660	C	0.04	0.0064	6.0E-11

198	rs34006614	19p13.11	16,442,782	T	0.03	0.0064	1.1E-07
199	rs118013485	19q13.11	33,726,577	G	0.14	0.0123	3.3E-29
200	rs143432496	19q13.32	45,252,714	A	0.05	0.0068	2.3E-11
201	rs8103278	19q13.32	46,370,381	G	0.04	0.0063	1.2E-08
202	rs11670020	19q13.41	52,314,161	G	0.04	0.0086	1.7E-06
203	rs8125525	20q13.12	45,681,788	C	0.04	0.0069	1.7E-07
204	rs6021270	20q13.2	50,141,264	T	0.07	0.0125	1.0E-08
205	rs2766667	20q13.2	52,172,404	T	0.05	0.0069	1.9E-11
206	rs6011033	20q13.33	62,322,699	G	0.05	0.0071	9.7E-13
207	rs1736147	21q21.1	16,813,053	G	0.03	0.0061	1.1E-07
208	rs2242900	21q22.12	36,453,837	G	0.07	0.0087	1.1E-15
209	rs34846236	21q22.2	41,049,344	G	0.03	0.0061	5.3E-06
210	rs12626388	21q22.3	43,856,593	T	0.04	0.0085	2.4E-06
211	rs228953	22q12.3	37,531,436	G	0.03	0.0061	8.1E-06
212	rs201267172	22q13.2	41,918,653	G	0.05	0.0076	1.3E-12

Abbreviations: SNPs, Single-nucleotide Polymorphisms; CHR, Chromosome; EA, Effect Allele; SE, Standard Error.

e-Table 2. Baseline characteristics per health lifestyle category and genetic risk group of adult-onset asthma.

	Low genetic risk			Intermediate genetic risk			Poor genetic risk		
	Ideal lifestyle	Intermediate lifestyle	Poor lifestyle	Ideal lifestyle	Intermediate lifestyle	Poor lifestyle	Ideal lifestyle	Intermediate lifestyle	Poor lifestyle
	Mean±SD or No. (%)	Mean±SD or No. (%)	Mean±SD or No. (%)	Mean±SD or No. (%)	Mean±SD or No. (%)	Mean±SD or No. (%)	Mean±SD or No. (%)	Mean±SD or No. (%)	Mean±SD or No. (%)
Age (year)	56.30±8.09	56.68±8.01	54.77±7.90	56.32±8.15	56.74±8.02	54.55±7.75	56.46±8.08	56.81±7.97	54.99±7.64
Age category (years)									
<50	7748(24.3)	17096(22.6)	488(30.0)	7883(24.7)	16851(22.4)	513(29.5)	7527(23.7)	16500(21.9)	478(26.3)
50-59	10575(33.2)	25197(33.3)	599(36.9)	10377(32.5)	25032(33.2)	673(38.7)	10540(33.2)	25405(33.7)	740(40.7)
>60	13527(42.5)	33263(44.0)	538(33.1)	13692(42.9)	33457(44.4)	552(31.8)	13717(43.2)	33556(44.5)	600(33.0)
Sex									
Female	21049(66.1)	34983(46.3)	634(39.0)	20949(65.6)	34975(46.4)	673(38.7)	20901(65.8)	34939(46.3)	701(38.6)
Male	10801(33.9)	40573(53.7)	991(61.0)	11003(34.4)	40365(53.6)	1065(61.3)	10883(34.2)	40522(53.7)	1117(61.4)
Alcohol status									
Never	1279(4.0)	1826(2.4)	52(3.2)	1217(3.8)	1924(2.6)	53(3.0)	1234(3.9)	1905(2.5)	53(2.9)
Previous	852(2.7)	2467(3.3)	88(5.4)	888(2.8)	2505(3.3)	116(6.7)	908(2.9)	2493(3.3)	122(6.7)
Current	29710(93.3)	71216(94.3)	1483(91.3)	29835(93.4)	70869(94.1)	1569(90.3)	29628(93.2)	71030(94.1)	1642(90.3)
Unkown	9(0.0)	47(0.1)	2(0.1)	12(0.0)	42(0.1)	0(0.0)	14(0.0)	33(0.0)	1(0.1)
Average Total Household Income Before Tax									
Less than 18,000	4874(15.3)	14315(18.9)	478(29.4)	4827(15.1)	14446(19.2)	506(29.1)	4968(15.6)	14415(19.1)	546(30.0)
18,000 to 30,999	6798(21.3)	17043(22.6)	347(21.4)	6997(21.9)	16864(22.4)	347(20.0)	6988(22.0)	17223(22.8)	369(20.3)
31,000 to 51,999	7519(23.6)	18155(24.0)	356(21.9)	7586(23.7)	18229(24.2)	380(21.9)	7555(23.8)	17942(23.8)	384(21.1)
52,000 to 100,000	6816(21.4)	14301(18.9)	223(13.7)	6679(20.9)	14232(18.9)	265(15.2)	6441(20.3)	14126(18.7)	240(13.2)
Greater than 100,000	2129(6.7)	3700(4.9)	34(2.1)	2044(6.4)	3566(4.7)	45(2.6)	2073(6.5)	3672(4.9)	53(2.9)

Unknow	3714(11.7)	8042(10.6)	187(11.5)	3819(12.0)	8003(10.6)	195(11.2)	3759(11.8)	8083(10.7)	226(12.4)
Education									
College or University Degree	13641(42.8)	23940(31.7)	309(19.0)	13659(42.7)	23742(31.5)	296(17.0)	13405(42.2)	23287(30.9)	327(18.0)
Professional Qualifications	3128(9.8)	9267(12.3)	202(12.4)	3043(9.5)	9462(12.6)	224(12.9)	3083(9.7)	9293(12.3)	235(12.9)
A Levels/AS Levels or Equivalent	3897(12.2)	8792(11.6)	145(8.9)	3973(12.4)	8699(11.5)	181(10.4)	3955(12.4)	8713(11.5)	187(10.3)
O Levels/GCSEs or Equivalent	7775(24.4)	20821(27.6)	532(32.7)	7688(24.1)	20603(27.3)	566(32.6)	7754(24.4)	21266(28.2)	594(32.7)
None of the above	3409(10.7)	12736(16.9)	437(26.9)	3589(11.2)	12834(17.0)	471(27.1)	3587(11.3)	12902(17.1)	475(26.1)
BMI (kg/m ²)	24.42±3.67	28.25±4.37	32.13±5.23	24.44±3.64	28.26±4.42	32.21±5.32	24.42±3.68	28.21±4.38	32.52±5.55

Abbreviations: SD, Standard Deviation; BMI, Body Mass Index.

e-Table 3. Risk of incident adult-onset asthma associated with genetic risk and health lifestyle by sex.

	Female				Male			
	No. of asthma cases/person-years	IR (Per 1000 Person-years)	HR (95% CI)	<i>P</i>	No. of asthma cases/person-years	IR (Per 1000 Person-years)	HR (95% CI)	<i>P</i>
Low Genetic Risk								
Ideal Lifestyle	235/249475	0.94	Ref.		86/128141	0.67	Ref.	
Intermediate Lifestyle	672/412356	1.63	1.69 (1.46-1.96)	<.001	568/480045	1.18	1.72 (1.37-2.15)	<.001
Poor Lifestyle	21/7468	2.81	2.90 (1.85-4.53)	<.001	35/11696	2.99	4.23 (2.85-6.27)	<.001
Intermediate Genetic Risk								
Ideal Lifestyle	331/247571	1.34	1.41 (1.19-1.67)	<.001	130/130149	1.00	1.48 (1.13-1.94)	0.005
Intermediate Lifestyle	804/411372	1.95	2.02 (1.75-2.34)	<.001	710/476640	1.49	2.16 (1.72-2.70)	<.001
Poor Lifestyle	21/7947	2.64	2.72 (1.74-4.25)	<.001	25/12641	1.98	2.83 (1.81-4.42)	<.001
High Genetic Risk								
Ideal Lifestyle	434/246039	1.76	1.86 (1.59-2.18)	<.001	180/128282	1.40	2.08 (1.61-2.68)	<.001
Intermediate Lifestyle	974/409836	2.38	2.45 (2.12-2.83)	<.001	943/476651	1.98	2.86 (2.29-3.57)	<.001
Poor Lifestyle	31/8209	3.78	3.80 (2.61-5.53)	<.001	38/13164	2.89	4.11 (2.80-6.02)	<.001

Adjusted by age, education, Townsend Index, alcohol status, region, relatedness, number of alleles included in the polygenic risk score, and first 20 principal components of ancestry.

Abbreviations: IR, Incidence Rate; HR, Hazard Ratio; CI, Confidence Interval.

e-Table 4. Risk of incident adult-onset asthma associated with genetic risk and health lifestyle in different age categories.

Lifestyle	<50 years old			50-59 years old			>60 years old		
	No. of asthma cases/person-years	HR (95% CI)	<i>P</i>	No. of asthma cases/person-years	HR (95% CI)	<i>P</i>	No. of asthma cases/person-years	HR (95% CI)	<i>P</i>
Low Genetic Risk									
Ideal Lifestyle	63/92499	Ref.		88/125648	Ref.		170/159469	Ref.	
Intermediate Lifestyle	206/203158	1.54 (1.16-2.04)	0.003	370/298904	1.80 (1.43-2.27)	<.001	664/390339	1.64 (1.39-1.95)	<.001
Poor Lifestyle	11/5817	2.76 (1.45-5.24)	0.002	17/7129	3.30 (1.96-5.56)	<.001	28/6218	4.23 (2.83-6.32)	<.001
Intermediate Genetic Risk									
Ideal Lifestyle	94/93644	1.47 (1.07-2.02)	0.018	130/123074	1.49 (1.14-1.96)	0.004	237/161002	1.38 (1.13-1.68)	0.001
Intermediate Lifestyle	270/199680	2.04 (1.55-2.69)	<.001	461/296239	2.26 (1.80-2.84)	<.001	783/392093	1.93 (1.63-2.28)	<.001
Poor Lifestyle	12/6093	2.95 (1.59-5.49)	0.001	17/7997	2.94 (1.75-4.96)	<.001	17/6498	2.48 (1.51-4.09)	<.001
High Genetic Risk									
Ideal Lifestyle	137/89119	2.24 (1.66-3.02)	<.001	189/124605	2.16 (1.67-2.78)	<.001	288/160597	1.68 (1.39-2.02)	<.001
Intermediate Lifestyle	380/194990	2.95 (2.26-3.86)	<.001	588/299938	2.84 (2.27-3.56)	<.001	949/391559	2.33 (1.98-2.75)	<.001
Poor Lifestyle	16/5652	4.20 (2.42-7.28)	<.001	32/8701	5.03 (3.35-7.56)	<.001	21/7020	2.82 (1.79-4.45)	<.001

Adjusted by sex, education, Townsend Index, alcohol status, region, relatedness, number of alleles included in the polygenic risk score, and first 20 principal components of ancestry.

Abbreviations: HR, Hazard Ratio; CI, Confidence Interval.

e-Table 5. Total participants and incident adult-onset asthma cases in each genetic and health lifestyle category.

Lifestyle Factor	Genetic Risk	Lifestyle Factor category	Total No. of participants	No. of asthma events (%)	Person-years at risk	Incidence rate (Per 1000 person-years)
BMI	Low	Ideal	37291	360(1.00)	442055	0.81
		Intermediate	47142	664(1.40)	557826	1.19
		Poor	24598	593(2.40)	289300	2.05
	Intermediate	Ideal	37375	535(1.40)	441981	1.21
		Intermediate	46906	814(1.70)	553708	1.47
		Poor	24749	672(2.70)	290631	2.31
	High	Ideal	37622	721(1.90)	443166	1.63
		Intermediate	47091	1096(2.30)	554161	1.98
		Poor	24350	783(3.20)	284854	2.75
Smoking	Low	Ideal	58902	742(1.30)	697653	1.06
		Intermediate	38968	675(1.70)	459275	1.47
		Poor	11161	200(1.80)	132253	1.51
	Intermediate	Ideal	58998	975(1.70)	697082	1.40
		Intermediate	38741	791(2.00)	455728	1.74
		Poor	11291	255(2.30)	133510	1.91
	High	Ideal	58957	1316(2.20)	693900	1.90
		Intermediate	39032	971(2.50)	457979	2.12
		Poor	11074	313(2.80)	130302	2.40
Physical activity	Low	Ideal	88074	1212(1.40)	1041268	1.16
		Intermediate	6421	101(1.60)	75965	1.33
		Poor	14536	304(2.10)	171948	1.77
	Intermediate	Ideal	88145	1581(1.80)	1039400	1.52

		Intermediate	6318	118(1.90)	74519	1.58
		Poor	14567	322(2.20)	172401	1.87
	High	Ideal	87588	2004(2.30)	1029224	1.95
		Intermediate	6575	154(2.30)	77430	1.99
		Poor	14900	442(3.00)	175527	2.52
Diet	Low	Ideal	29939	415(1.40)	354424	1.17
		Intermediate	70306	1049(1.50)	830885	1.26
		Poor	8786	153(1.70)	103872	1.47
	Intermediate	Ideal	29572	535(1.81)	348993	1.53
		Intermediate	70340	1313(1.87)	829301	1.58
		Poor	9118	173(1.90)	108026	1.60
	High	Ideal	29618	662(2.24)	348567	1.90
		Intermediate	70250	1709(2.43)	825216	2.07
		Poor	9195	229(2.49)	108398	2.11
Health lifestyle	Low	Ideal	31850	321(1.01)	377616	0.85
		Intermediate	75556	1240(1.64)	892401	1.39
		Poor	1625	56(3.45)	19164	2.92
	Intermediate	Ideal	31952	461(1.44)	377720	1.22
		Intermediate	75340	1514(2.01)	888012	1.70
		Poor	1738	46(2.65)	20588	2.23
	High	Ideal	31784	614(1.93)	374321	1.64
		Intermediate	75461	1917(2.54)	886487	2.16
		Poor	1818	69(3.80)	21373	3.23

Abbreviations: BMI, Body Mass Index.

e-Table 6. Risk of incident adult-onset asthma according to lifestyle factor based on different genetic risk group.

		Low Genetic Risk		Intermediate Genetic Risk		High Genetic Risk	
		HR (95% CI)	<i>P</i>	HR (95% CI)	<i>P</i>	HR (95% CI)	<i>P</i>
BMI	Ideal	Ref.		Ref.		Ref.	
	Intermediate	1.50 (1.31-1.70)	<.001	1.24 (1.11-1.39)	<.001	1.24 (1.13-1.37)	<.001
	Poor	2.49 (2.18-2.85)	<.001	1.90 (1.70-2.13)	<.001	1.68 (1.52-1.86)	<.001
		<i>P</i> _{trend} <.001		<i>P</i> _{trend} <.001		<i>P</i> _{trend} <.001	
Smoking	Ideal	Ref.		Ref.		Ref.	
	Intermediate	1.31 (1.18-1.46)	<.001	1.20 (1.09-1.32)	<.001	1.09 (1.00-1.19)	0.039
	Poor	1.40 (1.19-1.64)	<.001	1.36 (1.18-1.57)	<.001	1.24 (1.10-1.41)	0.001
		<i>P</i> _{trend} <.001		<i>P</i> _{trend} <.001		<i>P</i> _{trend} =0.002	
Physical Activity	Ideal	Ref.		Ref.		Ref.	
	Intermediate	1.19 (0.97-1.45)	0.099	1.08 (0.89-1.30)	0.440	1.04 (0.88-1.23)	0.616
	Poor	1.50 (1.32-1.70)	<.001	1.21 (1.08-1.37)	0.002	1.27 (1.15-1.41)	<.001
		<i>P</i> _{trend} <.001		<i>P</i> _{trend} =0.006		<i>P</i> _{trend} <.001	
Diet	Ideal	Ref.					
	Intermediate	1.16 (1.03-1.301)	0.012	1.10 (1.00-1.22)	0.055	1.14 (1.04-1.25)	0.005
	Poor	1.44 (1.19-1.74)	<.001	1.18 (0.99-1.40)	0.068	1.19 (1.02-1.39)	0.023
		<i>P</i> _{trend} <.001		<i>P</i> _{trend} =0.086		<i>P</i> _{trend} =0.010	
Lifestyle	Ideal	Ref.		Ref.		Ref.	
	Intermediate	1.68 (1.48-1.90)	<.001	1.44 (1.30-1.60)	<.001	1.34 (1.23-1.47)	<.001
	Poor	3.59 (2.69-4.79)	<.001	1.93 (1.42-2.62)	<.001	1.98 (1.54-2.55)	<.001
		<i>P</i> _{trend} <.001		<i>P</i> _{trend} <.001		<i>P</i> _{trend} <.001	

Adjusted by sex, age, education, Townsend Index, alcohol status and region.

Abbreviations: HR, Hazard Ratio; CI, Confidence Interval; BMI, Body Mass Index.

e-Table 7. Risk of incident adult-onset asthma according to genetic risk based on different health lifestyle.

	Health Lifestyle					
	Ideal		Intermediate		Poor	
Genetic Risk	HR (95% CI)	<i>P</i>	HR (95% CI)	<i>P</i>	HR (95% CI)	<i>P</i>
Low	Ref.		Ref.		Ref.	
Intermediate	1.43 (1.24-1.65)	<.001	1.22 (1.14-1.32)	<.001	0.77 (0.52-1.13)	0.180
High	1.92 (1.68-2.20)	<.001	1.55 (1.44-1.66)	<.001	1.08 (0.76-1.54)	0.657
	$P_{\text{trend}} < .001$		$P_{\text{trend}} < .001$		$P_{\text{trend}} = 0.178$	

Adjusted by sex, age, education, Townsend Index, alcohol status, region, relatedness, number of alleles included in the polygenic risk score, and first 20 principal components of ancestry.

Abbreviations: HR: Hazard Ratio; CI, Confidence Interval.

e-Table 8. Population-attributable fraction per group.

	Groups	PAF (%) (95% CI)	<i>P</i>
Lifestyle	Non-ideal to ideal lifestyle	30.2 (25.9-34.2)	<.001
	Intermediate to ideal lifestyle	29.2 (24.9-33.3)	<.001
	Poor to ideal lifestyle	55.7 (48.3-62.1)	<.001
Genetic Risk	Non-low to low genetic risk	30.0 (26.0-33.8)	<.001
	Intermediate to low genetic risk	20.0 (14.6-25.0)	<.001
	High to low genetic risk	37.8 (33.8-41.5)	<.001

Abbreviations: PAF, Population Attributable Fraction; CI, Confidence Interval.

e-Table 9. Population-attributable fraction of different kinds of lifestyle in different genetic risk level.

Lifestyle	Lifestyle Groups	Low Genetic Risk		Intermediate Genetic Risk		High Genetic Risk	
		PAF (%) (95% CI)	<i>P</i>	PAF (%) (95% CI)	<i>P</i>	PAF (%) (95% CI)	<i>P</i>
BMI	Non-ideal to ideal	44.9 (38.1~51.0)	<.001	31.0 (23.9~37.4)	<.001	27.1 (20.7~33.1)	<.001
	Intermediate to ideal	31.5 (22.1~39.7)	<.001	17.5 (8.1~26.0)	<.001	17.7 (9.6~25.0)	<.001
	Poor to ideal	59.9 (54.4~64.8)	<.001	47.3 (41.0~52.9)	<.001	40.4 (34.1~46.1)	<.001
Smoking	Non-ideal to ideal	27.8 (20.5~34.5)	<.001	20.9 (13.8~27.5)	<.001	12.9 (6.0~19.3)	<.001
	Intermediate to ideal	27.3 (19.3~34.4)	<.001	19.1 (11.2~26.2)	<.001	10.3 (2.6~17.3)	0.009
	Poor to ideal	29.7 (17.9~39.8)	<.001	26.8 (16.1~36.1)	<.001	21.0 (10.8~30.1)	<.001
Physical Activity	Non-ideal to ideal	28.8 (20.4~36.3)	<.001	14.9 (5.5~23.3)	0.003	17.6 (9.8~24.7)	<.001
	Intermediate to ideal	12.5 (-7.0~28.5)	0.193	4.0 (-15.6~20.2)	0.669	2.3 (-14.9~16.9)	0.777
	Poor to ideal	34.2 (25.5~41.9)	<.001	18.9 (8.6~27.9)	<.001	22.9 (14.6~30.3)	<.001
Diet	Non-ideal to ideal	8.8 (-1.9~18.3)	0.103	3.3 (-6.7~12.3)	0.507	8.4 (0.0~16.0)	0.049
	Intermediate to ideal	7.1 (-4.0~17.0)	0.201	3.1 (-7.1~12.3)	0.538	8.1 (-0.4~15.9)	0.061
	Poor to ideal	20.4 (4.3~33.8)	0.015	4.6 (-13.0~19.5)	0.583	10.2 (-4.1~22.6)	0.153
Lifestyle	Non-ideal to ideal	40.0 (32.2~46.8)	<.001	28.7 (21.0~35.7)	<.001	24.8 (17.8~31.3)	<.001
	Intermediate to ideal	38.6 (30.6~45.6)	<.001	28.2 (20.4~35.2)	<.001	24.0 (16.8~30.5)	<.001
	Poor to ideal	70.7 (61.3~77.9)	<.001	45.5 (26.5~59.6)	<.001	49.1 (35.0~60.1)	<.001

Abbreviations: PAF, Population Attributable Fraction; CI, Confidence Interval; BMI, Body Mass Index.

e-Table 10. Sensitivity Analysis.

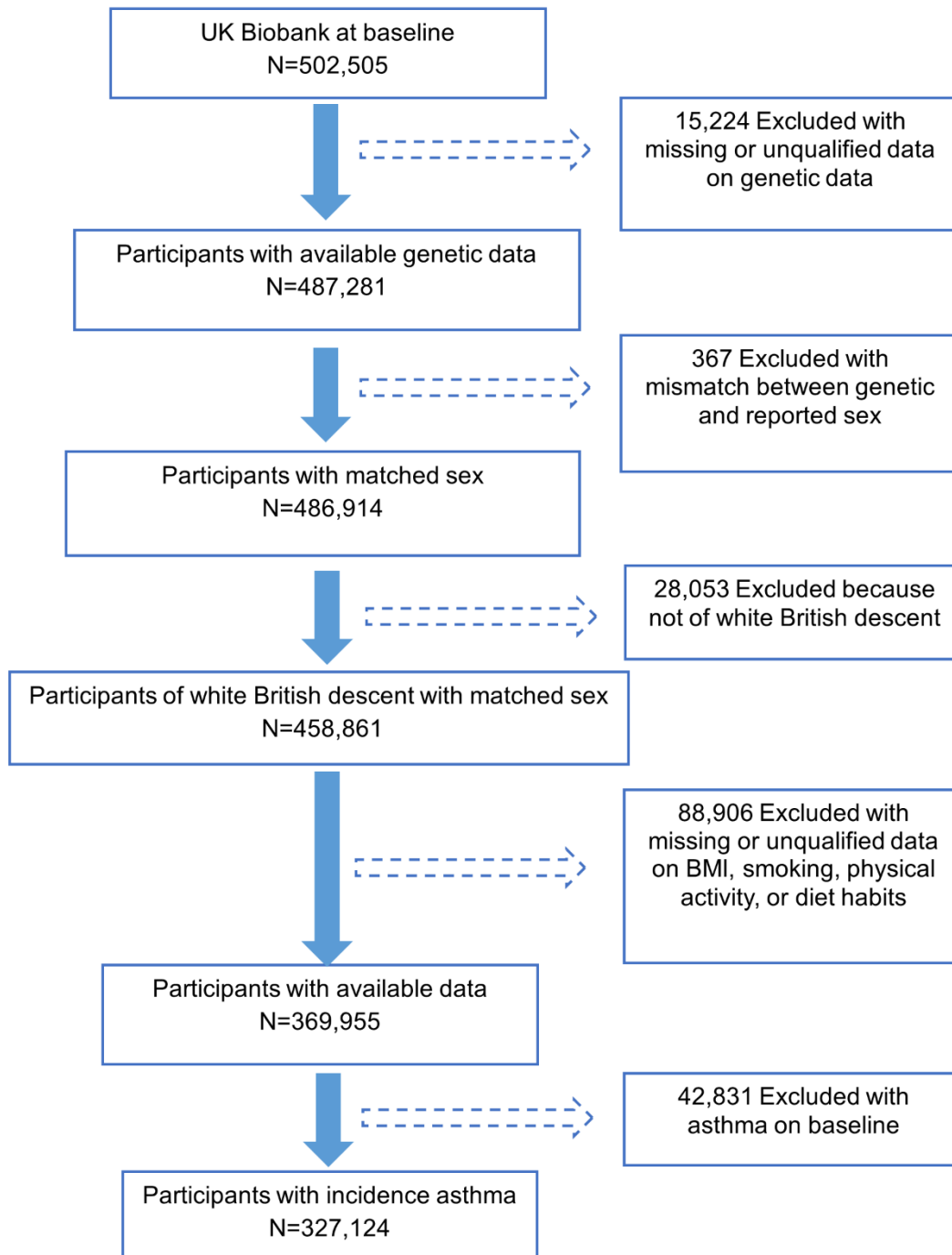
	Mismatched genetic and reported sex ^a					Non-critical missing factors ^b				
	Total No. of participants (n=327,345)	No. of asthma cases/person-years	IR (per 1000 person-years)	HR (95% CI)	<i>P</i>	Total No. of participants (n=327,124)	No. of asthma cases/person-years	IR (per 1000 person-years)	HR (95% CI)	<i>P</i>
Low Genetic Risk										
Ideal Lifestyle	31869	322/377831	0.85	Ref.		31850	321/377616	0.85	Ref.	
Intermediate Lifestyle	75608	1242/893012	1.39	1.67 (1.48-1.89)	<.001	75556	1240/892401	1.39	1.66 (1.46-1.87)	<.001
Poor Lifestyle	1628	57/19193	2.97	3.58 (2.70-4.74)	<.001	1625	56/19164	2.92	3.46 (2.60-4.60)	<.001
Intermediate Genetic Risk										
Ideal Lifestyle	31964	461/377857	1.22	1.43 (1.24-1.64)	<.001	31952	461/377720	1.22	1.43 (1.24-1.65)	<.001
Intermediate Lifestyle	75400	1516/888710	1.71	2.05 (1.81-2.31)	<.001	75340	1514/888012	1.70	2.03 (1.80-2.29)	<.001
Poor Lifestyle	1740	47/20610	2.28	2.77 (2.03-3.76)	<.001	1738	46/20588	2.23	2.66 (1.95-3.62)	<.001
High Genetic Risk										
Ideal Lifestyle	31803	614/374549	1.64	1.91 (1.67-2.19)	<.001	31784	614/374321	1.64	1.92 (1.67-2.19)	<.001
Intermediate Lifestyle	75513	1919/887090	2.16	2.59 (2.30-2.91)	<.001	75461	1917/886487	2.16	2.57 (2.28-2.89)	<.001
Poor Lifestyle	1820	69/21399	3.22	3.85 (2.97-5.00)	<.001	1818	69/21373	3.23	3.79 (2.91-4.92)	<.001

^a Included participants with mismatched genetic and reported sex.

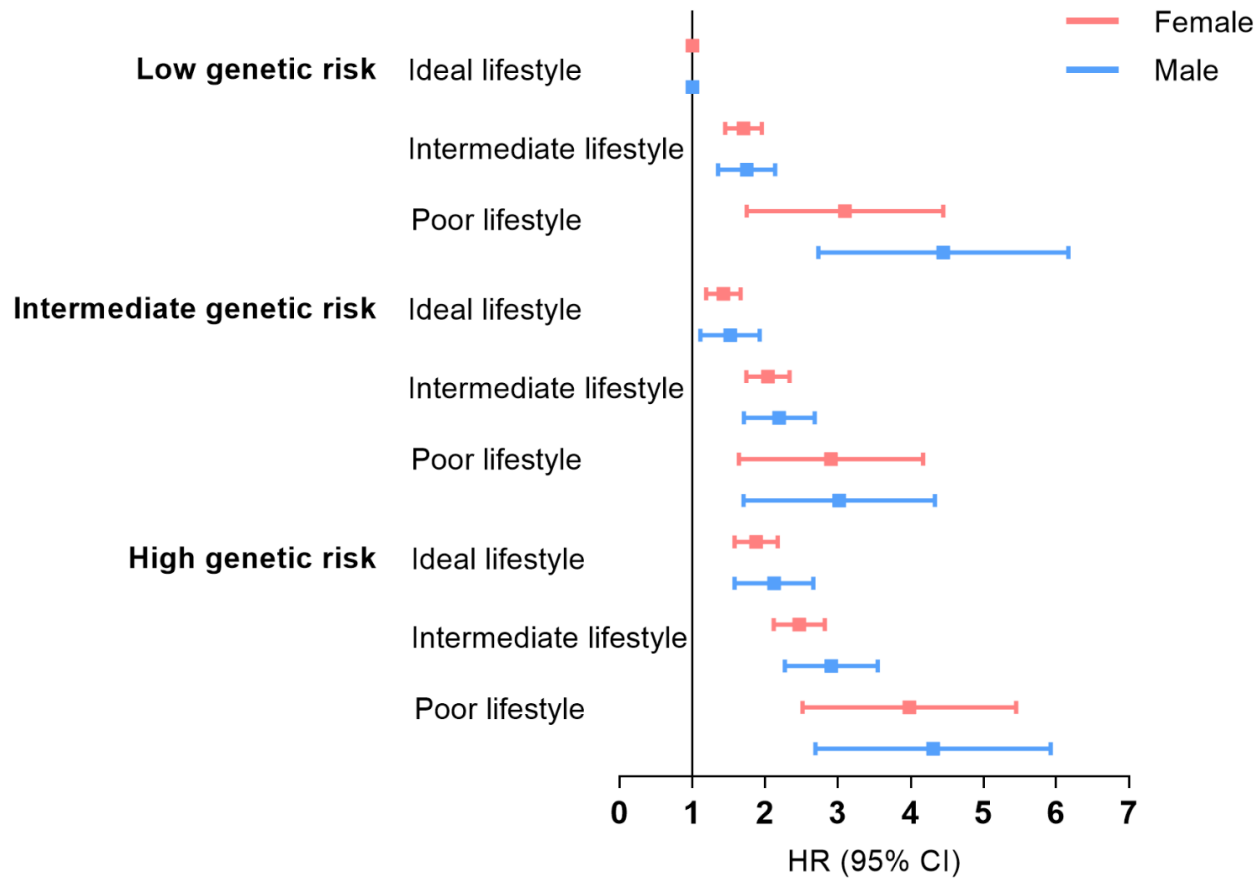
^b Participants with non-critical missing factors after multiple imputation.

Adjusted by age, sex, education, Townsend Index, alcohol status, region, relatedness, number of alleles included in the polygenic risk score, and first 20 principal components of ancestry.

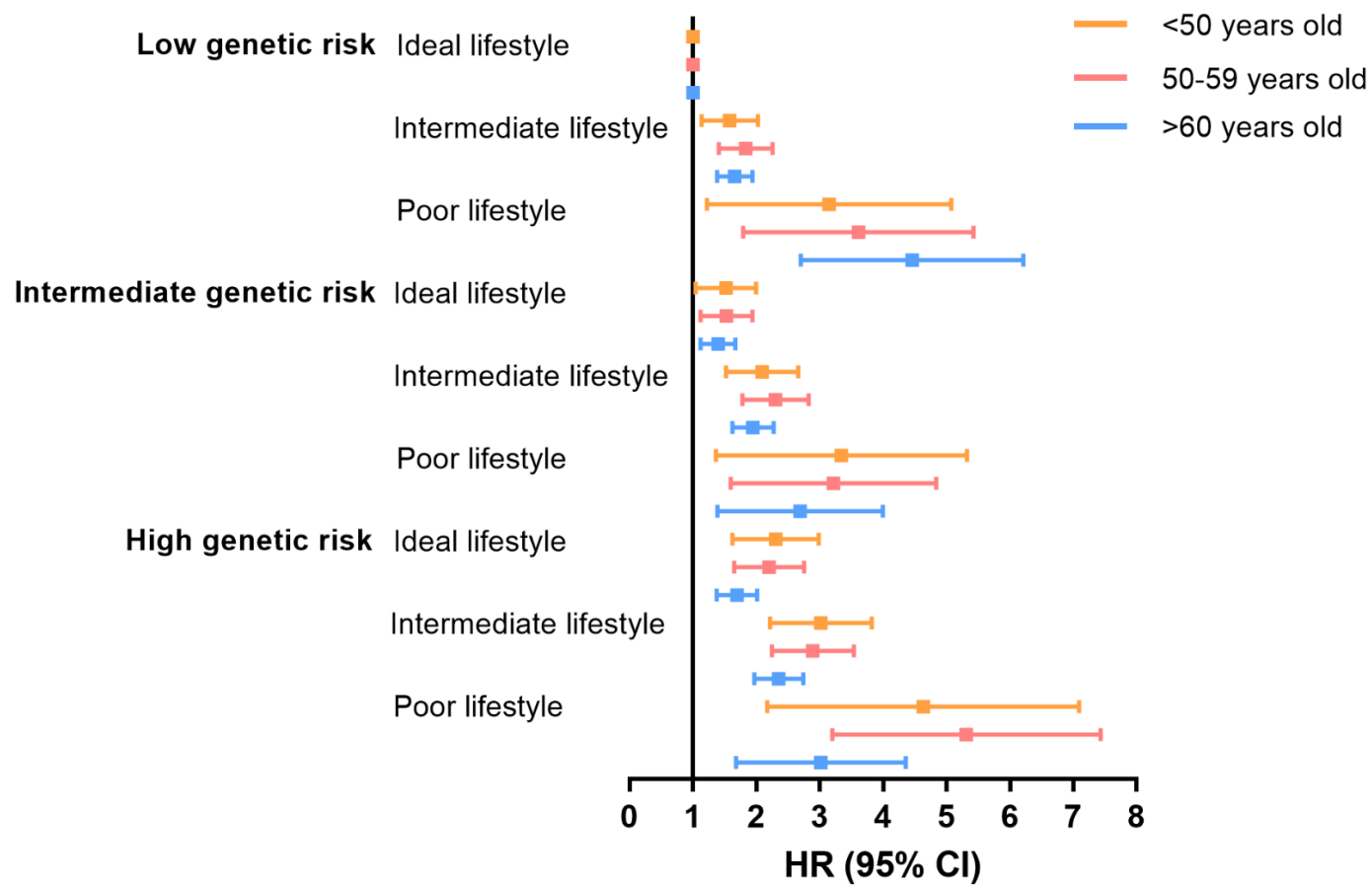
Abbreviations: HR, Hazard Ratio; CI, Confidence Interval; IR, Incidence Rate.



e-Figure 1. Flow diagram of eligible population from the UK Biobank Study.



e-Figure 2. Risk of Incident asthma associated with Genetic Risk and Health Lifestyle Categorized by Sex. Adjusted by age, education, Townsend Index, alcohol status, region, relatedness, number of alleles included in the polygenic risk score, and first 20 principal components of ancestry. Abbreviations: HR, Hazard Ratio; CI, Confidence Interval.



e-Figure 3. Risk of Incident asthma associated with Genetic Risk and Health Lifestyle Categorized by Age. Adjusted by sex, education, Townsend Index, alcohol status, region, relatedness, number of alleles included in the polygenic risk score, and first 20 principal components of ancestry. Abbreviations: HR, Hazard Ratio; CI, Confidence Interval.