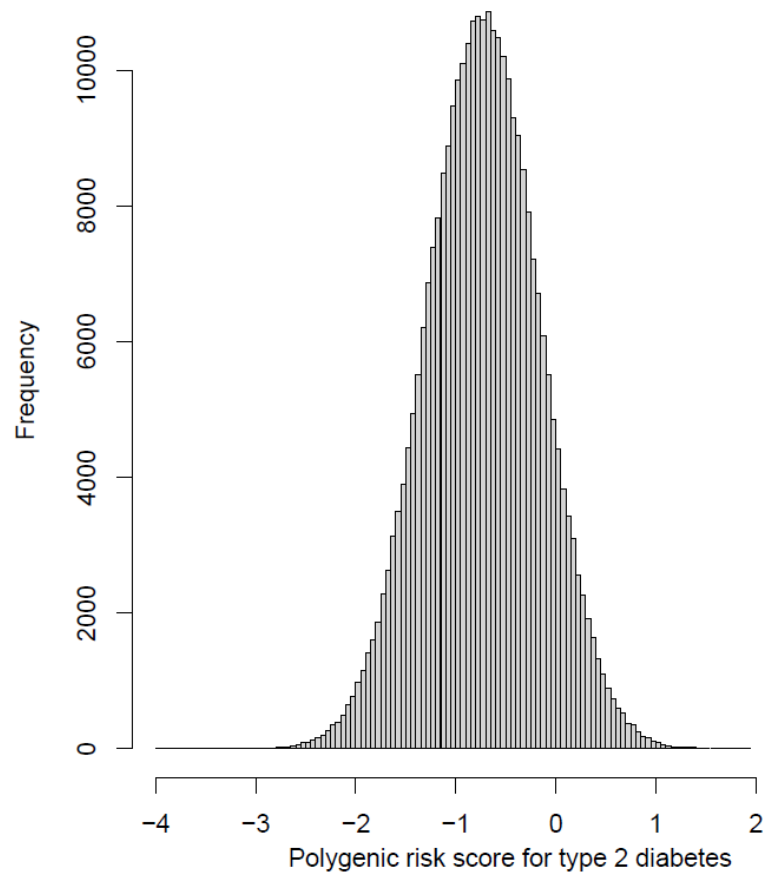


Risk assessment for gastrointestinal diseases via clinical dimension and genome-wide polygenic risk scores of type 2 diabetes: a population-based cohort study

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Supplementary figure 1 Polygenic risk scores of participants

Supplementary table 1 Criteria for participants excluded

Participants excluded	Criteria	How to diagnose
Individuals with GI diseases at baseline	Participants who had GI diseases before they attended the UK Biobank assessment centre.	Hospital inpatient, death registry, primary care data and self-reported data
Individuals with type 1 diabetes at baseline	Participants who had type 1 diabetes before they attended the UK Biobank assessment centre.	Hospital inpatient, death registry, primary care data and self-reported data
Newly onset type 2 diabetes during follow up	Participants who without type 2 diabetes before they attended the UK Biobank assessment centre but had incident type 2 diabetes from the day attending a UK Biobank assessment centre to the date of the last data collection for the practice (March 31, 2021 for England, March 31, 2021 for Scotland, February 28, 2018 for Wales).	Hospital inpatient, death registry, primary care data

Supplementary table 2 Genetic variants associated with type 2 diabetes

Trait	SNP	Chr	Position	Effect allele	Oher allele	EAf	Beta	Se	P
T2DM	rs11583755	1	6672729	C	A	0.3287	0.0369	0.0041	1.31E-19
T2DM	rs7554251	1	11317932	C	T	0.7016	0.0297	0.0045	2.86E-11
T2DM	rs10916780	1	20707153	G	A	0.2476	-0.0342	0.0046	1.58E-13
T2DM	rs9438610	1	26396065	G	A	0.1966	-0.0313	0.0051	6.74E-10
T2DM	rs3753693	1	29060898	C	T	0.549	0.0255	0.004	1.11E-10
T2DM	rs2269247	1	64107284	C	T	0.8094	0.0356	0.0049	3.40E-13
T2DM	rs10889560	1	65989878	C	A	0.8891	-0.0376	0.0063	2.05E-09
T2DM	rs4655617	1	67010654	C	A	0.4786	0.0256	0.004	1.68E-10
T2DM	rs2613499	1	72751552	G	A	0.199	-0.0363	0.0053	1.04E-11
T2DM	rs197374	1	112289983	C	T	0.5929	-0.0224	0.0039	7.76E-09
T2DM	rs2282456	1	118169463	G	A	0.7154	-0.0351	0.0042	7.43E-17
T2DM	rs3020781	1	155269776	G	A	0.3719	0.0294	0.0043	7.29E-12
T2DM	rs7546252	1	172368310	G	A	0.5727	-0.0262	0.0041	2.00E-10
T2DM	rs41304257	1	201849926	G	A	0.2441	-0.0318	0.0047	8.48E-12
T2DM	rs11096542	2	18707873	G	A	0.3756	-0.0254	0.0043	3.03E-09
T2DM	rs72803684	2	26192802	C	T	0.9555	-0.0666	0.0115	6.07E-09
T2DM	rs34506349	2	100598726	G	A	0.9609	0.0665	0.0116	1.04E-08
T2DM	rs10469860	2	105165674	G	A	0.2755	-0.0238	0.0043	3.84E-08
T2DM	rs74677818	2	112823114	C	T	0.8646	-0.0357	0.006	2.88E-09
T2DM	rs6716394	2	146350724	G	A	0.4844	0.0275	0.0037	1.46E-13
T2DM	rs3845843	2	152198598	C	T	0.4918	-0.0264	0.0038	2.39E-12
T2DM	rs13406280	2	166610827	C	T	0.566	0.0269	0.0039	5.66E-12
T2DM	rs12992995	2	175197545	C	A	0.7548	0.0272	0.0048	1.12E-08

T2DM	rs6715901	2	179650954	G	A	0.5728	0.023	0.004	1.17E-08
T2DM	rs6741676	2	181618654	G	A	0.3067	-0.0324	0.0042	6.52E-15
T2DM	rs6714523	2	203235139	G	A	0.8807	-0.0401	0.0061	6.29E-11
T2DM	rs34329895	2	208870017	G	A	0.5376	-0.0255	0.004	1.44E-10
T2DM	rs3828242	2	212274937	G	A	0.2696	-0.0252	0.0043	6.50E-09
T2DM	rs4673712	2	213829721	C	T	0.2897	-0.0269	0.0045	1.65E-09
T2DM	rs3872707	3	9514016	G	A	0.844	-0.037	0.0054	9.76E-12
T2DM	rs924753	3	15706124	G	A	0.4649	0.0263	0.0039	1.15E-11
T2DM	rs1470560	3	35670150	G	A	0.6433	-0.0245	0.004	1.22E-09
T2DM	rs853866	3	71648868	T	A	0.6109	0.0244	0.0044	2.72E-08
T2DM	rs6549112	3	86756871	G	T	0.3328	-0.0268	0.004	1.59E-11
T2DM	rs7645613	3	115063672	C	T	0.3572	0.034	0.0048	1.52E-12
T2DM	rs9857204	3	131750844	G	A	0.7085	-0.0272	0.0043	2.17E-10
T2DM	rs667920	3	136069472	G	T	0.2332	-0.0324	0.0045	5.83E-13
T2DM	rs6766859	3	138055136	C	T	0.3864	0.0275	0.004	8.12E-12
T2DM	rs56243018	3	141101839	C	A	0.046	-0.0833	0.0104	8.89E-16
T2DM	rs28712435	3	149221563	C	T	0.5483	0.0254	0.0039	6.10E-11
T2DM	rs61579137	3	184882015	G	A	0.6599	-0.0309	0.0047	5.05E-11
T2DM	rs9872347	3	195831237	C	T	0.6736	0.0318	0.0042	5.44E-14
T2DM	rs7664347	4	20265535	C	T	0.6601	-0.0234	0.0041	9.52E-09
T2DM	rs6835992	4	76496817	G	A	0.7049	0.0287	0.0044	5.64E-11
T2DM	rs4440243	4	77017680	C	T	0.4217	-0.0246	0.0043	9.95E-09
T2DM	rs17035289	4	106048291	C	T	0.2062	0.0357	0.0048	1.53E-13
T2DM	rs4834232	4	129024273	C	T	0.787	-0.0272	0.0047	9.42E-09
T2DM	rs12505942	4	140906390	C	T	0.3133	-0.0294	0.0042	1.83E-12
T2DM	rs35901985	4	186580062	G	A	0.1853	-0.0332	0.0053	2.60E-10

T2DM	rs114136102	5	36084426	C	T	0.0384	0.0631	0.0114	2.81E-08
T2DM	rs6870983	5	87697533	C	T	0.7415	0.0287	0.0049	6.32E-09
T2DM	rs217256	5	137431501	C	T	0.4926	0.021	0.0037	1.36E-08
T2DM	rs727734	6	15475051	T	A	0.2363	-0.0292	0.0045	6.68E-11
T2DM	rs10806906	6	19751516	C	T	0.4479	0.0223	0.0039	1.01E-08
T2DM	rs75080135	6	33552707	C	A	0.2074	-0.0357	0.0049	2.40E-13
T2DM	rs7758115	6	126061502	G	A	0.4997	-0.0232	0.0039	3.69E-09
T2DM	rs9390022	6	143056556	C	T	0.3361	-0.0306	0.0041	5.00E-14
T2DM	rs7758002	6	153440770	G	T	0.5238	-0.0317	0.0039	4.63E-16
T2DM	rs62452060	7	4683572	G	A	0.8638	-0.0354	0.0059	1.71E-09
T2DM	rs13237518	7	12269593	C	A	0.5207	-0.0283	0.0038	1.99E-13
T2DM	rs38221	7	15926228	C	T	0.764	-0.0286	0.0047	1.51E-09
T2DM	rs583769	7	18331915	G	A	0.7164	-0.0307	0.0043	7.78E-13
T2DM	rs17439448	7	40816653	C	T	0.8842	-0.0393	0.0067	3.74E-09
T2DM	rs12539264	7	48839003	G	A	0.2656	0.029	0.0045	8.57E-11
T2DM	rs73121277	7	50577968	C	T	0.2966	0.026	0.0042	7.40E-10
T2DM	rs13238568	7	74076493	G	A	0.381	0.0248	0.0041	1.72E-09
T2DM	rs6956980	7	89803634	C	T	0.4669	0.0284	0.0038	9.55E-14
T2DM	rs506597	7	100313420	G	A	0.8812	0.041	0.0064	1.51E-10
T2DM	rs12056338	8	12643055	G	T	0.6086	-0.0251	0.004	2.18E-10
T2DM	rs35753840	8	14148990	C	A	0.34	0.0254	0.0042	9.65E-10
T2DM	rs6558173	8	22492103	G	T	0.6556	-0.0245	0.004	7.26E-10
T2DM	rs11998023	8	25871721	G	T	0.1765	0.0324	0.0053	9.00E-10
T2DM	rs3887059	8	57496064	G	A	0.7364	-0.0295	0.0043	5.12E-12
T2DM	rs112515915	8	105662373	G	A	0.0691	-0.0562	0.0085	3.18E-11
T2DM	rs3802219	8	116565365	C	T	0.6082	-0.0357	0.0039	1.07E-19

T2DM	rs1567353	9	1033773	G	C	0.3612	0.0278	0.004	7.06E-12
T2DM	rs7029718	9	23358495	G	A	0.596	-0.0273	0.0039	1.47E-12
T2DM	rs654629	9	85312075	G	C	0.6079	0.0266	0.0039	5.18E-12
T2DM	rs10119430	9	111938268	G	A	0.2209	0.0279	0.0046	1.76E-09
T2DM	rs1431819	9	116943357	G	A	0.7075	0.0294	0.0046	1.99E-10
T2DM	rs10818763	9	125689694	C	T	0.676	0.0358	0.0051	2.41E-12
T2DM	rs379417	9	136890704	G	A	0.6491	-0.0278	0.0042	4.80E-11
T2DM	rs11258422	10	13540869	C	A	0.4091	0.0241	0.0041	3.18E-09
T2DM	rs71495046	10	33997227	C	A	0.121	0.0399	0.0063	1.86E-10
T2DM	rs827237	10	72648336	C	T	0.8128	-0.0294	0.0053	2.53E-08
T2DM	rs945187	10	99091369	G	A	0.4199	0.031	0.0039	8.24E-16
T2DM	rs2482506	10	104563743	G	C	0.2389	-0.0316	0.0045	2.26E-12
T2DM	rs7941510	11	8677063	C	A	0.6493	0.0353	0.0042	1.87E-17
T2DM	rs76789970	11	9856015	C	T	0.8868	-0.0387	0.006	9.24E-11
T2DM	rs174541	11	61565908	C	T	0.3493	-0.0277	0.0041	2.39E-11
T2DM	rs1662185	11	64100776	G	A	0.576	-0.0226	0.0041	3.48E-08
T2DM	rs2513505	11	76230357	C	A	0.4068	-0.024	0.0038	4.10E-10
T2DM	rs7316626	12	6691452	G	A	0.7968	-0.0322	0.0054	3.33E-09
T2DM	rs10844519	12	33410855	G	T	0.4092	0.03	0.0042	1.36E-12
T2DM	rs2730827	12	41863393	C	T	0.5145	-0.0279	0.0038	2.10E-13
T2DM	rs2732469	12	48712932	T	A	0.584	0.0316	0.0042	4.82E-14
T2DM	rs7132908	12	50263148	G	A	0.6431	-0.0297	0.004	7.44E-14
T2DM	rs12422600	12	54429385	G	A	0.6382	0.024	0.004	3.14E-09
T2DM	rs11830241	12	132544643	C	T	0.9008	-0.0411	0.0072	1.17E-08
T2DM	rs314879	13	23309382	C	T	0.2288	0.0364	0.0046	2.84E-15
T2DM	rs4397977	13	41688401	G	A	0.5764	-0.0283	0.0042	1.07E-11

T2DM	rs712315	14	35409701	T	A	0.783	0.0282	0.0051	3.90E-08
T2DM	rs723355	14	47304091	G	A	0.5624	0.0237	0.0039	1.99E-09
T2DM	rs12892257	14	58732748	G	A	0.4862	0.0288	0.005	1.03E-08
T2DM	rs242105	14	69459229	C	A	0.4085	0.039	0.0059	3.58E-11
T2DM	rs12586772	14	74932641	T	A	0.3963	-0.0228	0.0039	6.41E-09
T2DM	rs2056857	14	77300863	C	T	0.5888	0.0256	0.0039	5.16E-11
T2DM	rs112324411	14	101258584	C	T	0.9377	0.0729	0.0103	1.42E-12
T2DM	rs4906272	14	103376031	C	T	0.7332	-0.0299	0.0046	5.21E-11
T2DM	rs149336329	15	52587740	G	T	0.9566	0.0869	0.01	2.86E-18
T2DM	rs9479	15	74328576	G	A	0.5244	0.0271	0.0037	4.00E-13
T2DM	rs59646751	15	99276521	G	T	0.6929	-0.0241	0.0041	3.36E-09
T2DM	rs12918782	16	967241	G	A	0.2568	0.0308	0.0047	4.57E-11
T2DM	rs9927842	16	15153717	C	T	0.7886	-0.0307	0.005	6.97E-10
T2DM	rs11646052	16	85716463	G	A	0.4116	0.026	0.0039	2.66E-11
T2DM	rs11870735	17	481604	C	T	0.824	-0.0314	0.0054	7.58E-09
T2DM	rs366577	17	4854480	C	T	0.4942	0.0222	0.004	4.06E-08
T2DM	rs9913225	17	27570622	G	A	0.3742	0.0262	0.004	5.42E-11
T2DM	rs1109442	17	34862220	C	T	0.4629	0.0218	0.0037	6.11E-09
T2DM	rs11078916	17	37746307	C	T	0.6474	-0.0326	0.0042	1.24E-14
T2DM	rs61736066	17	70645032	G	A	0.881	0.0421	0.0064	4.91E-11
T2DM	rs7224711	17	76772288	C	T	0.5196	0.0307	0.0038	1.23E-15
T2DM	rs303760	18	21083738	C	T	0.6887	-0.0334	0.0044	2.04E-14
T2DM	rs410150	18	40066006	C	T	0.2139	0.0289	0.0048	1.23E-09
T2DM	rs6565922	18	74558999	C	T	0.5752	-0.0279	0.0039	6.18E-13
T2DM	rs10404726	19	18834514	C	T	0.4829	0.0255	0.0042	1.36E-09
T2DM	rs2867570	19	31865946	G	A	0.5716	0.026	0.0039	2.13E-11

T2DM	rs17265513	20	39832628	C	T	0.189	0.0327	0.0055	2.98E-09
T2DM	rs6073143	20	42230695	C	T	0.7327	0.0304	0.0044	4.40E-12
T2DM	rs5762925	22	29369398	C	A	0.3776	0.0267	0.0039	7.74E-12
T2DM	rs12746673	1	16050470	C	A	0.2076	0.0308	0.0049	3.30E-10
T2DM	rs59020573	1	33196120	G	A	0.9075	-0.0503	0.0088	1.32E-08
T2DM	rs12116935	1	36789546	G	A	0.3536	0.0242	0.0043	1.52E-08
T2DM	rs4658234	1	92048779	G	T	0.7716	-0.0295	0.0051	9.11E-09
T2DM	rs10159026	1	96404462	C	T	0.7491	0.0273	0.0046	2.04E-09
T2DM	rs2816177	1	179248952	G	A	0.3994	0.0224	0.0039	6.82E-09
T2DM	rs4129858	1	183004334	G	A	0.4167	0.0223	0.0038	4.38E-09
T2DM	rs1327123	1	184014593	G	C	0.6447	-0.0242	0.0039	6.77E-10
T2DM	rs12128213	1	200197538	G	A	0.4713	-0.0256	0.0042	1.50E-09
T2DM	rs12041243	1	204490470	G	A	0.2426	-0.0293	0.0047	3.26E-10
T2DM	rs77424687	2	37204168	C	T	0.6959	0.0274	0.0046	2.90E-09
T2DM	rs5010712	2	55157914	G	A	0.8124	0.03	0.0051	2.86E-09
T2DM	rs4671799	2	67622243	G	A	0.6669	-0.0262	0.004	5.29E-11
T2DM	rs4832290	2	86707504	C	T	0.7645	-0.0267	0.0049	3.94E-08
T2DM	rs305686	2	163623932	C	T	0.6267	0.0294	0.0053	2.29E-08
T2DM	rs6712905	2	196952010	C	T	0.3181	0.0279	0.0042	2.07E-11
T2DM	rs4482463	2	205375909	C	A	0.2443	0.0316	0.0056	1.82E-08
T2DM	rs1877712	2	219168432	G	A	0.4523	0.0211	0.0039	4.67E-08
T2DM	rs9869477	3	28731810	G	A	0.562	0.0226	0.0038	4.12E-09
T2DM	rs12494424	3	70520917	G	C	0.9582	-0.0656	0.0117	2.34E-08
T2DM	rs73146095	3	88130136	C	T	0.9016	0.0406	0.007	7.91E-09
T2DM	rs978444	3	93981060	G	T	0.4136	0.0229	0.0039	3.52E-09
T2DM	rs11929640	3	113288430	G	A	0.6454	-0.0245	0.0042	8.51E-09

T2DM	rs59489841	3	173710695	C	T	0.7015	0.0235	0.0042	3.15E-08
T2DM	rs34617913	4	44503503	G	A	0.2966	-0.0239	0.0043	2.90E-08
T2DM	rs13107325	4	103188709	C	T	0.9265	-0.0473	0.0086	3.27E-08
T2DM	rs4833687	4	121765788	C	T	0.7415	-0.0267	0.0045	2.76E-09
T2DM	rs2952858	4	130786346	G	A	0.5987	-0.0237	0.0041	1.12E-08
T2DM	rs2125799	4	156697784	C	T	0.3305	0.0244	0.0041	3.57E-09
T2DM	rs6897117	5	54986775	C	T	0.7055	-0.0234	0.0042	1.95E-08
T2DM	rs2662390	5	58132702	C	T	0.7419	-0.0276	0.0048	1.03E-08
T2DM	rs261967	5	95850250	C	A	0.414	0.0235	0.0038	8.05E-10
T2DM	rs144052331	5	122650885	C	T	0.0539	-0.0709	0.0098	3.97E-13
T2DM	rs302395	5	151324600	G	T	0.3221	0.0232	0.0041	1.48E-08
T2DM	rs2913873	5	170683134	G	A	0.1435	-0.0316	0.0056	1.53E-08
T2DM	rs6885157	5	180226516	G	T	0.7828	0.0372	0.0068	4.71E-08
T2DM	rs9358912	6	26211146	G	T	0.6514	0.0249	0.0045	2.28E-08
T2DM	rs9257408	6	28926220	G	C	0.4934	-0.0314	0.0049	1.99E-10
T2DM	rs2394186	6	29816421	G	A	0.2192	-0.0271	0.0048	1.88E-08
T2DM	rs33959228	6	35259397	C	T	0.9785	0.0915	0.0155	3.39E-09
T2DM	rs72846863	6	36911274	G	A	0.8557	0.0335	0.0061	4.63E-08
T2DM	rs2031847	6	41864441	G	C	0.9668	-0.0752	0.0133	1.44E-08
T2DM	rs538801	6	44875762	T	A	0.4302	-0.0211	0.0039	4.72E-08
T2DM	rs9370243	6	53789830	G	T	0.8339	-0.0394	0.0061	1.03E-10
T2DM	rs9449295	6	64163807	C	T	0.5169	0.0216	0.0039	4.03E-08
T2DM	rs35164294	6	130265266	G	T	0.9288	-0.0525	0.0092	1.35E-08
T2DM	rs7742292	6	138864489	C	T	0.4778	0.0261	0.004	5.06E-11
T2DM	rs6978327	7	36742886	C	T	0.4111	-0.0233	0.004	4.79E-09
T2DM	rs3735491	7	45116468	C	A	0.6921	-0.025	0.0043	7.07E-09

T2DM	rs6972291	7	55802063	C	T	0.3457	0.0283	0.0048	2.50E-09
T2DM	rs12669521	7	77047102	G	A	0.2961	-0.0263	0.0044	2.84E-09
T2DM	rs3779272	7	77828991	T	A	0.5782	0.0213	0.0038	1.32E-08
T2DM	rs73184014	7	104516274	G	A	0.2094	-0.0298	0.0052	1.17E-08
T2DM	rs12667919	7	131574608	C	A	0.7087	-0.0256	0.0047	3.62E-08
T2DM	rs4252505	7	142607301	G	A	0.1846	0.0413	0.007	4.52E-09
T2DM	rs1922879	7	147658539	G	A	0.6293	0.023	0.0041	2.11E-08
T2DM	rs243513	7	148429806	G	A	0.71	0.0232	0.0043	4.69E-08
T2DM	rs11994255	8	28095939	C	T	0.7191	-0.0239	0.0043	1.82E-08
T2DM	rs12680217	8	37397803	C	T	0.301	-0.0397	0.0071	2.45E-08
T2DM	rs10101067	8	72407374	G	C	0.9141	-0.0391	0.0069	1.28E-08
T2DM	rs28792187	8	74568099	G	A	0.0729	0.0414	0.0076	4.13E-08
T2DM	rs510062	8	97138738	G	A	0.4036	-0.022	0.0039	1.23E-08
T2DM	rs2679745	8	103876325	G	A	0.8139	0.0278	0.0049	1.90E-08
T2DM	rs4294149	8	135775546	C	T	0.6027	-0.0217	0.0039	2.28E-08
T2DM	rs75619936	9	3249708	G	C	0.1329	0.0314	0.0056	2.42E-08
T2DM	rs73642097	9	14141703	G	A	0.2052	0.0291	0.0049	2.10E-09
T2DM	rs1570247	9	35749014	G	A	0.5982	0.0244	0.0039	2.91E-10
T2DM	rs1885234	9	119252277	G	T	0.3946	0.0244	0.0039	2.68E-10
T2DM	rs6597649	9	133786652	C	T	0.5196	-0.0234	0.0039	2.29E-09
T2DM	rs9411425	9	134868417	G	T	0.3531	0.0236	0.004	4.80E-09
T2DM	rs3122231	10	44027356	C	T	0.6586	0.0271	0.0044	5.80E-10
T2DM	rs146716733	10	63717113	C	T	0.9213	0.0451	0.0079	1.24E-08
T2DM	rs111765639	10	64970928	G	A	0.876	0.0581	0.0084	5.37E-12
T2DM	rs524903	10	100421841	G	A	0.8164	0.0428	0.0067	2.05E-10
T2DM	rs620191	10	103065789	G	T	0.6635	-0.0234	0.0041	1.73E-08

T2DM	rs10787518	10	115821878	T	A	0.4495	0.0292	0.0051	8.76E-09
T2DM	rs7912336	10	118558736	T	A	0.5529	0.0217	0.0038	1.39E-08
T2DM	rs705145	10	125226178	C	A	0.6475	-0.0234	0.0039	3.33E-09
T2DM	rs10766076	11	13340710	T	A	0.7137	0.026	0.0043	1.26E-09
T2DM	rs16907058	11	20952237	G	A	0.941	-0.0461	0.0084	4.55E-08
T2DM	rs10767659	11	27686196	G	T	0.3538	0.026	0.0042	4.56E-10
T2DM	rs10835690	11	30620262	T	A	0.822	-0.029	0.0052	2.46E-08
T2DM	rs7483027	11	58128015	C	T	0.3277	-0.0267	0.0041	5.61E-11
T2DM	rs11236524	11	75464344	C	T	0.2408	0.0363	0.0064	1.13E-08
T2DM	rs7130522	11	95710493	C	A	0.3293	0.0222	0.0041	4.83E-08
T2DM	rs529623	11	117693255	C	T	0.4961	-0.0224	0.0038	4.26E-09
T2DM	rs7127212	11	118953202	C	T	0.6067	-0.0227	0.0041	2.36E-08
T2DM	rs7134150	12	20591332	G	A	0.9011	-0.0443	0.007	2.65E-10
T2DM	rs2408252	12	45868623	C	T	0.5375	-0.0264	0.0043	1.06E-09
T2DM	rs2277339	12	57146069	G	T	0.1427	0.0437	0.0056	6.92E-15
T2DM	rs11173646	12	61250814	T	A	0.7362	-0.0285	0.0047	1.45E-09
T2DM	rs11114650	12	81309262	G	C	0.7758	-0.0447	0.0075	3.27E-09
T2DM	rs12825669	12	106288445	G	A	0.6672	0.0226	0.0041	3.75E-08
T2DM	rs884847	12	117723613	G	A	0.8026	-0.0293	0.005	3.52E-09
T2DM	rs6561273	13	46514492	G	C	0.3995	-0.0303	0.0052	7.52E-09
T2DM	rs9564268	13	66204880	C	T	0.544	-0.0243	0.004	7.67E-10
T2DM	rs61967710	13	97176585	G	A	0.9413	-0.0554	0.0099	2.52E-08
T2DM	rs9560114	13	112187882	T	A	0.2435	-0.0259	0.0047	3.30E-08
T2DM	rs12433335	14	30086481	C	T	0.568	-0.0213	0.0038	1.58E-08
T2DM	rs4902002	14	61229411	G	A	0.3474	0.0246	0.0041	1.37E-09
T2DM	rs11848361	14	94039845	G	A	0.9213	0.0478	0.0085	2.15E-08

T2DM	rs148106383	15	39712286	C	T	0.9747	-0.0928	0.0156	2.71E-09
T2DM	rs2447198	15	43895118	C	T	0.2235	-0.034	0.0055	5.02E-10
T2DM	rs7169799	15	49794020	C	T	0.4477	0.0213	0.0038	3.21E-08
T2DM	rs11858759	15	58676821	G	A	0.7302	0.0236	0.0043	4.26E-08
T2DM	rs1812707	15	84547222	C	T	0.4367	-0.0227	0.0039	5.87E-09
T2DM	rs4777857	15	93925327	G	A	0.4391	0.0255	0.0039	4.81E-11
T2DM	rs111283203	16	56459589	G	C	0.7612	-0.0257	0.0047	3.41E-08
T2DM	rs4788815	16	71634811	T	A	0.6518	0.0231	0.004	7.34E-09
T2DM	rs1075855	16	73098091	G	C	0.2791	0.0263	0.0045	3.53E-09
T2DM	rs4384608	16	87856424	C	T	0.4076	0.0266	0.0043	4.36E-10
T2DM	rs9937296	16	88554480	C	T	0.7708	0.0445	0.007	2.35E-10
T2DM	rs117642733	17	21284910	C	T	0.9584	-0.0762	0.0133	9.45E-09
T2DM	rs372558	17	74418176	G	C	0.4202	-0.0213	0.0039	4.51E-08
T2DM	rs11150745	17	78757626	G	A	0.3173	-0.0312	0.0053	5.17E-09
T2DM	rs9958640	18	4845027	G	A	0.6007	-0.0236	0.0042	2.28E-08
T2DM	rs17747955	18	31582890	C	T	0.4496	0.0224	0.004	1.56E-08
T2DM	rs2032217	18	63426979	G	A	0.6671	-0.0268	0.004	2.70E-11
T2DM	rs4807125	19	1646712	C	T	0.8476	-0.0326	0.0059	2.59E-08
T2DM	rs142385484	19	50016759	C	T	0.8518	0.0336	0.006	1.96E-08
T2DM	rs6137042	20	2100095	G	A	0.697	0.0263	0.0047	2.33E-08
T2DM	rs2240716	22	19969696	C	T	0.7069	-0.0262	0.0042	4.83E-10
T2DM	rs138771	22	35705359	G	A	0.6895	-0.0259	0.0044	3.78E-09
T2DM	rs61779284	1	39855177	G	A	0.7976	-0.0703	0.0048	1.42E-48
T2DM	rs79090772	1	51209148	C	T	0.0971	-0.0728	0.0066	1.30E-28
T2DM	rs1127215	1	117532790	C	T	0.6041	0.0412	0.0039	1.81E-26
T2DM	rs2453051	1	120499573	C	A	0.1522	0.0609	0.0061	1.08E-23

T2DM	rs145904381	1	151017991	C	T	0.0104	-0.1607	0.0221	4.01E-13
T2DM	rs1194592	1	154324384	G	C	0.4687	-0.0242	0.0039	5.02E-10
T2DM	rs539515	1	177889025	C	A	0.2066	0.0358	0.0046	5.40E-15
T2DM	rs11240351	1	205044339	G	A	0.4696	0.0256	0.004	1.12E-10
T2DM	rs61817176	1	206621028	C	A	0.4527	-0.0263	0.004	3.59E-11
T2DM	rs340874	1	214159256	C	T	0.4991	0.0543	0.0039	6.47E-45
T2DM	rs2820446	1	219748818	G	C	0.2993	-0.0407	0.0042	2.29E-22
T2DM	rs348330	1	229672955	G	A	0.4544	0.0497	0.0054	2.81E-20
T2DM	rs10737818	1	235542023	G	A	0.622	0.0352	0.0052	1.97E-11
T2DM	rs10188334	2	653874	C	T	0.8409	0.0544	0.0053	2.47E-24
T2DM	rs28758542	2	16238001	G	A	0.3408	-0.0256	0.0042	1.67E-09
T2DM	rs34845373	2	25635771	G	A	0.2557	-0.0334	0.0048	5.26E-12
T2DM	rs1260326	2	27730940	C	T	0.5805	0.0625	0.0039	2.16E-57
T2DM	rs76675804	2	43611883	C	T	0.0941	-0.1208	0.0074	1.29E-59
T2DM	rs12986742	2	58975143	C	T	0.4727	0.0353	0.0038	5.53E-21
T2DM	rs243018	2	60586707	G	C	0.5038	0.0508	0.0039	1.23E-39
T2DM	rs2723065	2	65279414	G	A	0.3817	-0.0422	0.0039	7.19E-28
T2DM	rs113135335	2	111887754	G	T	0.1038	-0.0533	0.0073	2.10E-13
T2DM	rs9308614	2	121337196	G	A	0.1338	-0.057	0.0058	4.51E-23
T2DM	rs66877183	2	149428856	T	A	0.4255	-0.0501	0.009	3.01E-08
T2DM	rs6710938	2	161333872	C	A	0.228	-0.0342	0.0046	1.64E-13
T2DM	rs10184004	2	165508389	C	T	0.5951	0.0636	0.0041	4.39E-54
T2DM	rs113414093	2	219859171	G	A	0.9459	-0.0724	0.0128	1.68E-08
T2DM	rs2943650	2	227105921	C	T	0.3616	-0.0805	0.0042	1.90E-81
T2DM	rs13415288	2	228971884	C	T	0.3654	0.0262	0.004	9.16E-11
T2DM	rs838720	2	234303281	G	C	0.384	0.034	0.0039	4.31E-18

T2DM	rs17036160	3	12329783	C	T	0.8874	0.1007	0.0065	1.54E-53
T2DM	rs13094957	3	23457080	C	T	0.2196	-0.0637	0.0047	2.35E-42
T2DM	rs6792892	3	49995518	C	T	0.4822	0.0306	0.004	1.36E-14
T2DM	rs62255926	3	53125429	T	A	0.2629	-0.0252	0.0046	4.22E-08
T2DM	rs76263492	3	54828827	G	T	0.9579	-0.0675	0.0114	3.23E-09
T2DM	rs13434089	3	63948566	C	T	0.2034	-0.0607	0.0052	4.45E-31
T2DM	rs66815886	3	64703394	G	T	0.6877	0.04	0.0042	1.03E-21
T2DM	rs9814945	3	72803590	C	T	0.7128	-0.0316	0.0048	3.30E-11
T2DM	rs13059382	3	121961461	G	T	0.7216	0.0356	0.0059	1.40E-09
T2DM	rs11708067	3	123065778	G	A	0.2229	-0.0804	0.005	1.63E-57
T2DM	rs9873519	3	124921457	C	T	0.5288	-0.0373	0.0038	2.53E-22
T2DM	rs2255703	3	129293256	C	T	0.404	-0.0256	0.0039	3.70E-11
T2DM	rs62271373	3	150066540	T	A	0.946	-0.0645	0.0101	1.41E-10
T2DM	rs7633673	3	152084243	G	A	0.5904	0.0306	0.0038	8.21E-16
T2DM	rs13099581	3	168226052	C	T	0.8192	0.0371	0.0058	1.28E-10
T2DM	rs8192675	3	170724883	C	T	0.3167	-0.0452	0.0042	3.85E-27
T2DM	rs2872246	3	183738460	C	A	0.5962	-0.0266	0.004	2.56E-11
T2DM	rs9859406	3	185534482	G	A	0.6476	-0.1117	0.004	2.01E-169
T2DM	rs6777684	3	187741842	G	A	0.6279	0.0548	0.0044	1.54E-35
T2DM	rs73221116	4	720681	G	A	0.9577	-0.0955	0.0106	2.06E-19
T2DM	rs730831	4	1240299	G	T	0.1945	-0.0878	0.0072	4.81E-34
T2DM	rs56337234	4	1784403	C	T	0.4958	0.0426	0.0041	3.10E-25
T2DM	rs362307	4	3241845	C	T	0.9265	-0.048	0.0087	3.26E-08
T2DM	rs10937721	4	6306763	G	C	0.3904	-0.0755	0.0043	7.20E-70
T2DM	rs2169033	4	18044357	C	T	0.34	-0.0325	0.0041	1.42E-15
T2DM	rs10938398	4	45186139	G	A	0.6065	-0.0445	0.0039	1.49E-30

T2DM	rs1996617	4	52798624	C	T	0.3914	0.0289	0.004	6.54E-13
T2DM	rs7674402	4	71835822	G	A	0.7719	-0.0523	0.0064	3.98E-16
T2DM	rs993380	4	83584496	G	A	0.6352	-0.0272	0.0039	3.70E-12
T2DM	rs117233795	4	85297954	C	T	0.9555	0.1426	0.0201	1.44E-12
T2DM	rs9991328	4	89713121	C	T	0.4796	-0.0227	0.0038	2.37E-09
T2DM	rs28408270	4	95114572	G	T	0.4896	0.0239	0.0039	1.07E-09
T2DM	rs7659468	4	103895317	G	T	0.4984	-0.0287	0.0037	1.43E-14
T2DM	rs6813195	4	153520475	C	T	0.6486	0.0463	0.004	7.65E-31
T2DM	rs28819812	4	157652753	C	A	0.6586	0.033	0.0042	2.55E-15
T2DM	rs55691245	4	185716100	G	A	0.8671	0.0561	0.0064	1.77E-18
T2DM	rs4479849	5	44644006	G	A	0.5861	-0.0258	0.0039	2.64E-11
T2DM	rs12187734	5	51763665	C	T	0.5665	0.0287	0.0039	2.18E-13
T2DM	rs4865796	5	53272664	G	A	0.2906	-0.0481	0.0042	5.43E-30
T2DM	rs464605	5	55807370	C	T	0.3465	-0.07	0.0041	8.04E-66
T2DM	rs4976033	5	67714246	G	A	0.4337	0.0251	0.0039	1.00E-10
T2DM	rs34341	5	74934009	T	A	0.5248	0.0403	0.0039	4.93E-25
T2DM	rs7732130	5	76435004	G	A	0.2954	0.0554	0.0047	2.21E-32
T2DM	rs2591392	5	78546293	G	A	0.6247	0.0306	0.0039	1.89E-15
T2DM	rs75432112	5	102586407	G	A	0.9536	-0.1319	0.0104	6.41E-37
T2DM	rs329118	5	133861663	C	T	0.5849	-0.0281	0.0038	2.00E-13
T2DM	rs1650505	5	158029734	G	A	0.7722	-0.0409	0.0045	1.69E-19
T2DM	rs4343858	5	176679407	G	A	0.7216	0.0295	0.0045	5.38E-11
T2DM	rs9379084	6	7231843	G	A	0.843	0.0715	0.0062	5.31E-31
T2DM	rs10440833	6	20688121	T	A	0.7028	-0.1286	0.0041	1.00E-200
T2DM	rs3130931	6	31134888	C	T	0.6765	0.0482	0.0041	2.34E-32
T2DM	rs34247110	6	39282371	G	A	0.5159	-0.0305	0.0038	2.07E-15

T2DM	rs34298980	6	40409243	C	T	0.4713	-0.0354	0.0055	1.17E-10
T2DM	rs9472139	6	43813711	G	C	0.7397	-0.0376	0.0044	1.44E-17
T2DM	rs3798519	6	50788778	C	A	0.2086	0.0474	0.0047	5.60E-24
T2DM	rs16881572	6	51413013	G	A	0.9448	-0.0681	0.011	5.68E-10
T2DM	rs7752666	6	107445266	C	T	0.7047	0.0305	0.0043	1.66E-12
T2DM	rs80196932	6	117996631	C	T	0.1828	-0.0479	0.0053	9.73E-20
T2DM	rs11759026	6	126792095	G	A	0.3164	0.0585	0.0057	1.17E-24
T2DM	rs2608953	6	131926334	C	T	0.7889	-0.0348	0.005	3.33E-12
T2DM	rs2876354	6	137295352	C	T	0.5168	0.0465	0.0038	1.43E-34
T2DM	rs11155073	6	139837128	C	T	0.5159	-0.0275	0.0039	1.41E-12
T2DM	rs501470	6	160770918	G	T	0.4559	-0.032	0.0038	1.62E-17
T2DM	rs4709746	6	164133001	C	T	0.866	0.0565	0.0059	1.52E-21
T2DM	rs10228796	7	15064190	G	C	0.5666	0.0672	0.0038	2.00E-71
T2DM	rs2188848	7	23884697	G	A	0.2109	-0.0325	0.0048	1.17E-11
T2DM	rs860262	7	28194397	C	A	0.5683	0.0747	0.0039	2.92E-82
T2DM	rs917195	7	30728452	C	T	0.7224	0.0424	0.0046	1.49E-20
T2DM	rs730497	7	44223721	G	A	0.8275	-0.0552	0.005	9.31E-29
T2DM	rs6975279	7	69649683	C	A	0.7117	-0.0431	0.0042	4.09E-25
T2DM	rs187653072	7	102976385	C	T	0.0271	0.0967	0.0138	2.22E-12
T2DM	rs6976111	7	117495667	C	A	0.7218	-0.0258	0.0046	1.51E-08
T2DM	rs3996350	7	130427057	G	C	0.5585	0.0347	0.0039	1.18E-18
T2DM	rs60251368	7	140522073	G	A	0.0681	0.0549	0.0078	2.18E-12
T2DM	rs62492368	7	150537635	G	A	0.5958	-0.0311	0.0041	1.54E-14
T2DM	rs6946660	7	156948648	C	T	0.4145	-0.0472	0.0039	3.32E-33
T2DM	rs60384372	8	9974584	G	A	0.4504	-0.0352	0.0042	4.32E-17
T2DM	rs10096633	8	19830921	C	T	0.8211	0.033	0.0054	8.08E-10

T2DM	rs2725370	8	30852826	C	T	0.7126	-0.0319	0.0046	3.30E-12
T2DM	rs13365225	8	36858483	G	A	0.2605	0.0327	0.0046	1.55E-12
T2DM	rs13262861	8	41508577	C	A	0.8326	0.1021	0.0054	8.20E-79
T2DM	rs10808671	8	95967372	G	A	0.5407	-0.0358	0.0038	2.37E-21
T2DM	rs13266634	8	118184783	C	T	0.6814	0.1024	0.0041	4.23E-136
T2DM	rs17772814	8	128711742	G	A	0.917	0.0685	0.0124	3.38E-08
T2DM	rs1561927	8	129568078	C	T	0.31	0.0332	0.0046	4.97E-13
T2DM	rs13268508	8	145525277	C	T	0.6277	-0.0376	0.0041	4.07E-20
T2DM	rs4237150	9	4290085	G	C	0.5708	-0.0433	0.0037	6.98E-31
T2DM	rs10758950	9	8290816	T	A	0.7077	-0.026	0.0045	6.98E-09
T2DM	rs12380322	9	19074538	G	A	0.3922	0.0295	0.004	1.64E-13
T2DM	rs2150999	9	20790622	C	T	0.5367	0.0243	0.0039	5.54E-10
T2DM	rs10811661	9	22134094	C	T	0.2442	-0.1471	0.0048	1.00E-200
T2DM	rs1412234	9	28410683	C	T	0.2864	0.0397	0.0042	4.42E-21
T2DM	rs12001437	9	34074476	C	T	0.4071	0.0301	0.0038	4.38E-15
T2DM	rs67269808	9	81907986	G	A	0.0722	-0.0731	0.0078	1.03E-20
T2DM	rs2796441	9	84308948	G	A	0.5596	0.0609	0.0039	2.92E-55
T2DM	rs10993072	9	96915002	C	T	0.6647	-0.0315	0.0041	2.93E-14
T2DM	rs529565	9	136149500	C	T	0.3648	0.0415	0.0039	8.04E-27
T2DM	rs28642213	9	139248082	G	A	0.7572	0.0822	0.0047	5.71E-68
T2DM	rs11257655	10	12307894	C	T	0.7044	-0.0946	0.0056	1.44E-63
T2DM	rs10998338	10	70382179	G	A	0.5189	-0.0308	0.0039	1.31E-15
T2DM	rs2633311	10	75598099	C	T	0.4972	0.0237	0.004	3.12E-09
T2DM	rs3012060	10	77244336	T	A	0.1852	0.0342	0.0055	5.94E-10
T2DM	rs697239	10	80947438	C	T	0.4453	-0.0587	0.0038	4.77E-54
T2DM	rs36062478	10	89722731	C	T	0.178	0.0389	0.0054	6.78E-13

T2DM	rs1111875	10	94462882	C	T	0.549	0.0928	0.0038	1.44E-128
T2DM	rs1408579	10	101912194	C	T	0.5591	0.0275	0.0042	6.11E-11
T2DM	rs35011184	10	114749734	G	A	0.7797	-0.2508	0.005	1.00E-200
T2DM	rs11199116	10	121660400	C	A	0.1909	0.0306	0.005	1.01E-09
T2DM	rs7071036	10	122930568	C	T	0.1978	-0.051	0.0073	2.00E-12
T2DM	rs2280141	10	124193181	G	T	0.512	-0.0455	0.0048	6.04E-21
T2DM	rs4929965	11	2197286	G	A	0.6147	-0.0676	0.0042	5.07E-57
T2DM	rs2237897	11	2858546	C	T	0.7624	0.2199	0.0068	1.00E-200
T2DM	rs117316450	11	14518419	G	C	0.0183	0.1328	0.0171	9.46E-15
T2DM	rs757110	11	17418477	C	A	0.3704	0.0599	0.0039	4.59E-52
T2DM	rs62618693	11	32956492	C	T	0.9582	0.0819	0.0111	1.41E-13
T2DM	rs2956092	11	34908780	C	T	0.6526	-0.0254	0.004	1.68E-10
T2DM	rs58090211	11	35433712	C	A	0.8433	0.0539	0.0091	3.06E-09
T2DM	rs35251247	11	43878459	G	A	0.7065	-0.0309	0.0042	1.74E-13
T2DM	rs12419690	11	45858584	G	A	0.5115	0.0298	0.004	1.39E-13
T2DM	rs149027146	11	48489360	T	A	0.0602	0.0738	0.0104	1.58E-12
T2DM	rs12789028	11	65326154	G	A	0.8198	-0.0459	0.005	3.90E-20
T2DM	rs10750840	11	68835182	T	A	0.5524	-0.0239	0.0039	5.01E-10
T2DM	rs3918298	11	69463273	G	A	0.8823	0.1038	0.0101	7.95E-25
T2DM	rs11602873	11	72460762	T	A	0.1459	-0.0987	0.0059	1.98E-62
T2DM	rs10830963	11	92708710	G	C	0.3057	0.0731	0.0042	1.29E-66
T2DM	rs10750397	11	128234144	G	A	0.7146	-0.04	0.0042	1.74E-21
T2DM	rs76895963	12	4384844	G	T	0.019	-0.4223	0.0202	1.20E-96
T2DM	rs2066827	12	12871099	G	T	0.289	0.0321	0.0051	2.22E-10
T2DM	rs11048457	12	26463174	G	A	0.3857	0.0385	0.0043	2.20E-19
T2DM	rs3751239	12	27963676	G	C	0.2193	-0.0687	0.0047	1.95E-47

T2DM	rs2257883	12	66216162	G	A	0.7363	-0.071	0.0049	3.86E-47
T2DM	rs10879261	12	71520761	G	T	0.388	0.0341	0.0038	6.81E-19
T2DM	rs11108094	12	95928113	C	A	0.9339	-0.0571	0.0088	1.08E-10
T2DM	rs6538805	12	97849120	C	T	0.4736	-0.0303	0.0039	1.45E-14
T2DM	rs1426371	12	108629780	G	A	0.692	0.0429	0.0045	1.29E-21
T2DM	rs79310463	12	118406696	C	T	0.8257	-0.05	0.0053	7.21E-21
T2DM	rs56348580	12	121432117	G	C	0.7058	0.0507	0.0047	1.48E-27
T2DM	rs10773000	12	123736084	G	T	0.672	0.034	0.0041	5.58E-17
T2DM	rs4930726	12	124428331	C	T	0.334	-0.0353	0.0041	7.53E-18
T2DM	rs11614914	12	133070294	C	T	0.7033	-0.0394	0.0044	2.64E-19
T2DM	rs34584161	13	26776999	G	A	0.2837	-0.0565	0.0044	1.62E-37
T2DM	rs57286125	13	33557644	G	C	0.8324	-0.0609	0.0051	1.83E-33
T2DM	rs9316500	13	51094114	G	T	0.3528	-0.0401	0.0041	1.03E-22
T2DM	rs7991679	13	58691107	T	A	0.7562	0.0274	0.0048	1.12E-08
T2DM	rs11616380	13	80705315	G	T	0.7299	0.0764	0.0043	1.02E-69
T2DM	rs9515905	13	91949562	G	A	0.2606	-0.0472	0.0044	2.06E-27
T2DM	rs9587811	13	109946882	C	A	0.5464	0.0248	0.0038	4.91E-11
T2DM	rs12883788	14	33303540	C	T	0.5887	-0.0327	0.004	2.82E-16
T2DM	rs7147483	14	38804675	C	T	0.3364	-0.0352	0.0041	9.41E-18
T2DM	rs7156625	14	79942647	G	A	0.7662	-0.053	0.0049	5.35E-27
T2DM	rs8010382	14	91963722	G	A	0.4692	0.0266	0.0038	3.02E-12
T2DM	rs56365443	14	103960026	G	A	0.3202	-0.0238	0.0042	1.82E-08
T2DM	rs8043085	15	38828140	G	T	0.6975	-0.0407	0.0042	9.06E-22
T2DM	rs4923864	15	40634717	G	A	0.6905	0.0568	0.0061	1.69E-20
T2DM	rs2289739	15	41801512	G	T	0.6873	-0.0364	0.0055	4.35E-11
T2DM	rs7163757	15	62391608	C	T	0.5556	0.043	0.0038	6.08E-30

T2DM	rs7178762	15	63871292	C	T	0.4889	0.0323	0.0041	1.79E-15
T2DM	rs4776970	15	68080886	T	A	0.4472	-0.0287	0.004	1.05E-12
T2DM	rs6495182	15	75814388	C	T	0.6845	0.0405	0.0042	2.10E-22
T2DM	rs12910361	15	77782335	G	A	0.614	0.0686	0.004	5.19E-65
T2DM	rs893617	15	90381278	C	T	0.2813	0.0537	0.0041	2.13E-38
T2DM	rs2290203	15	91512067	G	A	0.6998	-0.0506	0.0043	2.33E-31
T2DM	rs55857387	16	300388	C	T	0.2537	-0.0441	0.0046	1.74E-21
T2DM	rs8061528	16	3656482	C	T	0.7573	-0.0346	0.0045	2.56E-14
T2DM	rs8056890	16	28897452	G	A	0.6775	-0.0295	0.0042	1.54E-12
T2DM	rs8054556	16	29958216	G	A	0.5699	-0.0317	0.0039	1.85E-16
T2DM	rs1421085	16	53800954	C	T	0.367	0.1182	0.004	1.29E-189
T2DM	rs2216063	16	54387084	G	A	0.1982	-0.0296	0.0054	3.47E-08
T2DM	rs244415	16	69666683	G	A	0.6296	0.0401	0.0041	2.00E-22
T2DM	rs72802365	16	75246035	G	C	0.928	0.1074	0.008	1.10E-40
T2DM	rs56823429	16	81533789	C	A	0.2685	0.0418	0.0045	3.33E-20
T2DM	rs8071043	17	3988451	C	T	0.3318	0.0465	0.0041	5.35E-30
T2DM	rs73239895	17	6953558	C	T	0.914	-0.0869	0.011	3.02E-15
T2DM	rs858519	17	7531965	C	T	0.5049	-0.024	0.004	1.28E-09
T2DM	rs17810376	17	9787845	G	A	0.2974	0.0279	0.0047	2.84E-09
T2DM	rs2297508	17	17715317	G	C	0.5583	-0.0305	0.004	2.39E-14
T2DM	rs2040792	17	29628549	C	A	0.461	0.031	0.0039	1.99E-15
T2DM	rs11651755	17	36099840	C	T	0.4671	0.0663	0.0038	8.61E-67
T2DM	rs676387	17	40706273	C	A	0.6806	-0.0416	0.0041	3.32E-24
T2DM	rs3744347	17	46178674	G	A	0.253	-0.0301	0.0046	4.76E-11
T2DM	rs35895680	17	47060322	C	A	0.7066	0.0499	0.0047	8.41E-27
T2DM	rs4335	17	61565025	G	A	0.4783	0.0304	0.0038	1.06E-15

T2DM	rs57767539	17	62203059	G	A	0.9362	-0.0622	0.0091	7.24E-12
T2DM	rs12603589	17	65825248	C	T	0.3128	0.0421	0.0046	1.06E-19
T2DM	rs7240767	18	7070642	C	T	0.4776	0.034	0.0051	2.05E-11
T2DM	rs7227272	18	36746623	G	A	0.8229	0.0408	0.0056	4.69E-13
T2DM	rs10048404	18	54578482	C	T	0.6597	0.0313	0.0054	6.12E-09
T2DM	rs9319943	18	56879827	C	T	0.2071	-0.0308	0.0048	1.50E-10
T2DM	rs6567160	18	57829135	C	T	0.2362	0.0539	0.0044	7.51E-34
T2DM	rs12454712	18	60845884	C	T	0.4059	-0.0424	0.0039	2.42E-27
T2DM	rs12185519	19	4967739	C	T	0.8081	-0.036	0.0054	2.54E-11
T2DM	rs75253922	19	7240848	C	T	0.1846	0.0402	0.0054	7.72E-14
T2DM	rs2115107	19	7968168	G	A	0.5948	-0.0357	0.0039	2.26E-20
T2DM	rs7246440	19	12505873	G	A	0.6201	0.0299	0.0043	3.72E-12
T2DM	rs9384	19	13010643	G	T	0.6566	0.0404	0.0041	8.36E-23
T2DM	rs58542926	19	19379549	C	T	0.9258	-0.0721	0.0072	1.62E-23
T2DM	rs4805881	19	33896432	C	A	0.6207	-0.0379	0.0039	8.44E-22
T2DM	rs429358	19	45411941	C	T	0.1469	-0.0585	0.0055	1.90E-26
T2DM	rs8107527	19	46158417	G	A	0.6245	-0.0542	0.004	4.23E-41
T2DM	rs10408163	19	47597102	C	T	0.6016	0.0319	0.0043	1.07E-13
T2DM	rs7274134	20	22428284	C	T	0.6695	0.0247	0.0041	2.28E-09
T2DM	rs6059662	20	32675727	G	A	0.6963	0.0369	0.0043	2.07E-17
T2DM	rs12625671	20	42994812	C	T	0.2326	0.0603	0.0055	6.08E-28
T2DM	rs6066138	20	45594711	G	A	0.7376	0.042	0.0047	6.30E-19
T2DM	rs6021276	20	50155386	C	T	0.6262	-0.0283	0.004	2.24E-12
T2DM	rs4809906	20	51033681	G	A	0.6206	0.0345	0.004	5.07E-18
T2DM	rs2252115	20	51620857	G	A	0.4284	-0.0237	0.0039	1.29E-09
T2DM	rs4810145	20	57396495	C	T	0.5221	0.0303	0.0038	1.05E-15

T2DM	rs6011155	20	62450664	C	T	0.4137	-0.0284	0.0039	5.85E-13
T2DM	rs56392746	22	30451688	G	A	0.9169	0.0579	0.0076	3.45E-14
T2DM	rs75307421	22	32203334	G	A	0.9687	-0.0737	0.0132	2.60E-08
T2DM	rs11913442	22	41593581	C	T	0.3799	-0.0245	0.004	8.22E-10
T2DM	rs3747207	22	44324855	G	A	0.7178	-0.0412	0.0044	3.69E-21
T2DM	rs1801645	22	50356850	C	T	0.2778	0.0374	0.0045	4.18E-17


Chr, chromosome; SNP; single nucleotide polymorphism.

Supplementary table 3 Genetic variants associated with BMI, leptin, incretin lipids, liver enzymes and pancreatic enzymes



Supplementary table 3 can be obtained in OSF data respiratory:








https://osf.io/cmjus/?view_only=2d73c0a09b97443db3909fbb2a37c0f7

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 Risk assessment for gastrointestinal diseases vi...	
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Supplementary table 4 Missing rate (%) of covariables

Covariables	Number	Rate (%)
Sex	0	0
Age	0	0
Townsend deprivation index	459	0.12
Education	7544	2.02
Ethnicity	627	0.17
Smoking	623	0.17
Drinking	627	0.17
Physical activity	7826	2.09
Healthy diet	5053	1.35
Body mass index	2149	0.57
C-reactive protein	25161	6.73
INFLA-score	34715	9.28
Proton-pump inhibitor	0	0
Metabolic abnormalities	1323	0.35

Supplementary table 5 ORs and CIs for the association between the PRS of type 2 diabetes and gastrointestinal diseases.

Diseases		Minimally adjusted model OR (95% CI)	P-value	Fully adjusted model OR (95% CI)	P-value
Barrett's esophagus	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	0.94 (0.85, 1.04)	0.208	0.93 (0.85, 1.03)	0.176
	High genetic risk	0.99 (0.88, 1.11)	0.830	0.98 (0.87, 1.10)	0.697
Gastroesophageal reflux disease	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.04 (1.00, 1.07)	0.053	1.03 (0.99, 1.06)	0.148
	High genetic risk	1.05 (1.01, 1.10)	0.026*	1.03 (0.99, 1.08)	0.170
Gastritis and duodenitis	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.04 (1.00, 1.08)	0.044*	1.04 (1.00, 1.08)	0.070
	High genetic risk	1.09 (1.04, 1.14)	<0.001**	1.08 (1.03, 1.13)	0.001**
Celiac disease	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.04 (0.87, 1.23)	0.676	1.05 (0.89, 1.25)	0.562
	High genetic risk	1.19 (0.97, 1.45)	0.099	1.22 (1.00, 1.49)	0.054
Peptic ulcer	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.08 (0.99, 1.17)	0.067	1.07 (0.99, 1.16)	0.108
	High genetic risk	1.10 (0.99, 1.21)	0.065	1.07 (0.97, 1.18)	0.153
Crohn's disease	Low genetic risk	Ref		Ref	

Ulcerative colitis	Intermediate genetic risk	1.10 (0.88, 1.36)	0.405	1.09 (0.88, 1.35)	0.430
	High genetic risk	1.09 (0.84, 1.41)	0.508	1.08 (0.83, 1.40)	0.557
	Low genetic risk	Ref		Ref	
Irritable bowel syndrome	Intermediate genetic risk	0.98 (0.85, 1.13)	0.796	0.98 (0.85, 1.13)	0.773
	High genetic risk	0.92 (0.76, 1.10)	0.348	0.91 (0.76, 1.10)	0.328
	Low genetic risk	Ref		Ref	
Diverticulum	Intermediate genetic risk	1.04 (0.96, 1.12)	0.319	1.04 (0.96, 1.12)	0.329
	High genetic risk	1.04 (0.94, 1.14)	0.441	1.04 (0.94, 1.14)	0.473
	Low genetic risk	Ref		Ref	
Pancreatitis	Intermediate genetic risk	1.05 (1.01, 1.08)	0.006*	1.04 (1.00, 1.07)	0.024*
	High genetic risk	1.03 (0.99, 1.07)	0.133	1.01 (0.97, 1.05)	0.516
	Low genetic risk	Ref		Ref	
Non-alcoholic fatty liver disease	Intermediate genetic risk	1.11 (0.96, 1.28)	0.174	1.09 (0.94, 1.26)	0.258
	High genetic risk	1.09 (0.91, 1.30)	0.354	1.05 (0.88, 1.25)	0.608
	Low genetic risk	Ref		Ref	
Liver cirrhosis	Intermediate genetic risk	1.17 (1.06, 1.29)	0.003**	1.13 (1.02, 1.25)	0.018*
	High genetic risk	1.51 (1.35, 1.70)	<0.001**	1.42 (1.26, 1.59)	<0.001**
	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.12 (0.98, 1.29)	0.101	1.10 (0.96, 1.26)	0.159
	High genetic risk	1.16 (0.99, 1.37)	0.073	1.12 (0.95, 1.32)	0.174
	Low genetic risk	Ref		Ref	

Biliary disease						
	Low genetic risk	Ref		Ref		
	Intermediate genetic risk	1.07 (1.01, 1.13)	0.016*	1.05 (0.99, 1.10)		0.106
	High genetic risk	1.13 (1.06, 1.20)	<0.001**	1.08 (1.01, 1.15)		0.022*
Gastrointestinal tract cancers						
	Low genetic risk	Ref		Ref		
	Intermediate genetic risk	0.99 (0.93, 1.07)	0.877	0.99 (0.92, 1.06)		0.762
	High genetic risk	1.00 (0.92, 1.09)	0.943	0.99 (0.91, 1.08)		0.852
Hepatobiliary and pancreatic cancer						
	Low genetic risk	Ref		Ref		
	Intermediate genetic risk	1.20 (1.04, 1.39)	0.011	1.19 (1.03, 1.38)		0.016
	High genetic risk	1.20 (1.01, 1.42)	0.039	1.17 (0.99, 1.39)		0.069

Minimally adjusted model: logistic models adjusted for age, sex, Townsend deprivation index, education. Fully adjusted model: logistic models adjusted for age, sex, Townsend deprivation index, education, body mass index, smoking status, drinking status, physical activity, and adherence to a healthy diet.

The low genetic risk group was the reference group. PRS, polygenetic risk score.

P<0.05/15 after Bonferroni correction was considered significant. * Indicated the P value<0.05 and >0.05/15 and ** indicated the P value<0.05/15.

Supplementary table 6 ORs and CIs for the association between the PRS of type 2 diabetes and gastrointestinal diseases stratified by status of baseline type 2 diabetes.

Diseases		Participants without type 2 diabetes		Participants with type 2 diabetes	
		OR (95% CI)	P-value	OR (95% CI)	P-value
Barrett's esophagus	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	0.92 (0.83, 1.02)	0.104	1.15 (0.65, 2.00)	0.634
	High genetic risk	0.96 (0.85, 1.09)	0.540	1.04 (0.59, 1.85)	0.889
Gastroesophageal reflux disease	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.03 (0.99, 1.07)	0.130	0.99 (0.79, 1.24)	0.914
	High genetic risk	1.03 (0.98, 1.07)	0.269	1.04 (0.82, 1.31)	0.764
Gastritis and duodenitis	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.02 (0.98, 1.06)	0.286	1.04 (0.84, 1.29)	0.712
	High genetic risk	1.05 (1.00, 1.10)	0.066	0.96 (0.78, 1.20)	0.733
Celiac disease	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.06 (0.89, 1.26)	0.517	0.61 (0.23, 1.62)	0.322
	High genetic risk	1.23 (1.00, 1.52)	0.047*	0.58 (0.21, 1.57)	0.284
Peptic ulcer	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.06 (0.98, 1.16)	0.147	0.81 (0.57, 1.14)	0.227
	High genetic risk	1.06 (0.96, 1.18)	0.258	0.69 (0.48, 0.99)	0.041*
Crohn's disease	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.08 (0.87, 1.34)	0.496	1.48 (0.35, 6.31)	0.600
	High genetic risk	1.04 (0.79, 1.36)	0.797	1.67 (0.39, 7.24)	0.492
Ulcerative colitis	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	0.96 (0.83, 1.11)	0.605	1.94 (0.60, 6.26)	0.270
	High genetic risk	0.91 (0.75, 1.10)	0.320	1.49 (0.45, 4.95)	0.516

Irritable bowel syndrome	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.04 (0.96, 1.12)	0.374	1.27 (0.68, 2.38)	0.460
	High genetic risk	1.03 (0.93, 1.14)	0.547	1.25 (0.66, 2.37)	0.486
Diverticulum	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.04 (1.00, 1.07)	0.040*	0.95 (0.79, 1.15)	0.607
	High genetic risk	1.00 (0.96, 1.04)	0.877	0.93 (0.76, 1.12)	0.435
Pancreatitis	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.07 (0.93, 1.25)	0.346	0.99 (0.51, 1.93)	0.981
	High genetic risk	0.97 (0.80, 1.17)	0.721	1.06 (0.54, 2.08)	0.871
Non-alcoholic fatty liver disease	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.09 (0.98, 1.21)	0.123	0.89 (0.64, 1.24)	0.501
	High genetic risk	1.23 (1.08, 1.40)	0.002**	0.98 (0.70, 1.37)	0.910
Liver cirrhosis	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.08 (0.93, 1.25)	0.302	0.70 (0.47, 1.04)	0.079
	High genetic risk	0.98 (0.81, 1.18)	0.822	0.63 (0.42, 0.95)	0.027*
Biliary disease	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.04 (0.99, 1.10)	0.118	0.86 (0.66, 1.13)	0.286
	High genetic risk	1.08 (1.01, 1.15)	0.029*	0.79 (0.60, 1.05)	0.104
Gastrointestinal tract cancers	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	0.98 (0.92, 1.06)	0.645	0.87 (0.61, 1.23)	0.420
	High genetic risk	0.98 (0.90, 1.07)	0.695	0.77 (0.54, 1.09)	0.142
Hepatobiliary and pancreatic cancers	Low genetic risk	Ref		Ref	
	Intermediate genetic risk	1.13 (0.98, 1.31)	0.101	1.29 (0.72, 2.30)	0.388
	High genetic risk	1.01 (0.84, 1.22)	0.893	1.17 (0.65, 2.12)	0.596

OR and 95% CI was calculated by logistic models adjusted for age, sex, Townsend deprivation index, education, body mass index, smoking status, drinking status, physical activity, and adherence to a healthy diet.

The low genetic risk group was the reference group. PRS, polygenetic risk score.

$P < 0.05/15$ after Bonferroni correction was considered significant. * Indicated the P value < 0.05 and $> 0.05/15$ and ** indicated the P value $< 0.05/15$.

Supplementary table 7 ORs and CIs for the association between PRS of different traits and gastrointestinal diseases.

		Minimally adjusted model		Fully adjusted model		Minimally adjusted model		Fully adjusted model	
		OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P
		Obesity				Leptin			
		BMI				Leptin			
Barretts esophagus	Intermediate genetic risk	1.02 (0.93, 1.12)	0.631	1.02 (0.93, 1.12)	0.625	1.03 (0.94, 1.13)	0.465	1.03 (0.94, 1.13)	0.503
	High genetic risk	1.16 (1.03, 1.29)	0.010	1.16 (1.04, 1.29)	0.010	0.96 (0.85, 1.07)	0.453	0.95 (0.85, 1.07)	0.401
Gastroesophageal reflux disease	Intermediate genetic risk	1.00 (0.97, 1.04)	0.842	1.00 (0.97, 1.04)	0.807	1.01 (0.97, 1.04)	0.668	1.00 (0.97, 1.03)	0.999
	High genetic risk	1.01 (0.97, 1.06)	0.495	1.01 (0.97, 1.06)	0.498	1.01 (0.97, 1.05)	0.586	0.99 (0.95, 1.03)	0.756
Gastritis and duodenitis	Intermediate genetic risk	0.99 (0.95, 1.02)	0.403	0.99 (0.95, 1.02)	0.416	1.03 (1.00, 1.07)	0.079	1.03 (0.99, 1.07)	0.106
	High genetic risk	0.96 (0.92, 1.00)	0.041	0.96 (0.92, 1.00)	0.037	1.01 (0.97, 1.06)	0.569	1.01 (0.96, 1.05)	0.765
Celiac disease	Intermediate genetic risk	1.03 (0.88, 1.21)	0.683	1.04 (0.89, 1.21)	0.660	0.98 (0.84, 1.14)	0.770	0.99 (0.85, 1.15)	0.890
	High genetic risk	1.03 (0.85, 1.24)	0.767	1.03 (0.85, 1.25)	0.733	0.91 (0.75, 1.10)	0.336	0.94 (0.77, 1.13)	0.501
Peptic ulcer	Intermediate genetic risk	1.00 (0.93, 1.07)	0.949	1.00 (0.93, 1.07)	0.931	0.98 (0.91, 1.05)	0.490	0.97 (0.90, 1.04)	0.387
	High genetic risk	1.08 (0.99, 1.18)	0.076	1.08 (0.99, 1.17)	0.092	1.00 (0.92, 1.10)	0.919	0.99 (0.91, 1.08)	0.829
Crohn's disease	Intermediate genetic risk	0.96 (0.79, 1.16)	0.665	0.96 (0.79, 1.16)	0.659	1.15 (0.94, 1.39)	0.173	1.14 (0.94, 1.39)	0.182
	High genetic risk	1.09 (0.87, 1.37)	0.468	1.08 (0.86, 1.36)	0.490	0.98 (0.76, 1.25)	0.851	0.97 (0.76, 1.24)	0.825
Ulcerative colitis	Intermediate genetic risk	0.94 (0.82, 1.07)	0.329	0.93 (0.82, 1.07)	0.315	1.11 (0.96, 1.27)	0.149	1.11 (0.97, 1.27)	0.144
	High genetic risk	0.98 (0.84, 1.16)	0.834	0.98 (0.83, 1.15)	0.784	0.98 (0.82, 1.16)	0.801	0.98 (0.83, 1.17)	0.858
Irritable bowel syndrome	Intermediate genetic risk	1.02 (0.95, 1.09)	0.641	1.02 (0.95, 1.09)	0.636	1.00 (0.93, 1.07)	0.975	1.00 (0.93, 1.07)	0.977
	High genetic risk	1.01 (0.93, 1.11)	0.763	1.01 (0.93, 1.10)	0.782	0.96 (0.88, 1.05)	0.399	0.96 (0.88, 1.05)	0.398
Diverticular disease	Intermediate genetic risk	1.04 (1.01, 1.07)	0.020	1.04 (1.00, 1.07)	0.024	1.02 (0.99, 1.06)	0.116	1.02 (0.99, 1.05)	0.246
	High genetic risk	1.05 (1.01, 1.09)	0.009	1.05 (1.01, 1.09)	0.014	1.01 (0.97, 1.05)	0.698	0.99 (0.96, 1.03)	0.774
Pancreatitis	Intermediate genetic risk	1.25 (1.09, 1.44)	0.001	1.26 (1.09, 1.44)	0.001	0.95 (0.84, 1.08)	0.425	0.93 (0.82, 1.06)	0.296

	High genetic risk	1.32 (1.12, 1.55)	0.001	1.32 (1.12, 1.56)	0.001	0.90 (0.77, 1.06)	0.198	0.87 (0.74, 1.02)	0.079
Non-alcoholic fatty liver disease	Intermediate genetic risk	1.11 (1.02, 1.21)	0.020	1.11 (1.02, 1.21)	0.018	0.92 (0.85, 1.00)	0.042	0.88 (0.81, 0.96)	0.003
	High genetic risk	1.19 (1.07, 1.32)	0.001	1.19 (1.07, 1.32)	0.001	0.86 (0.78, 0.96)	0.005	0.79 (0.71, 0.87)	0.000
Liver cirrhosis	Intermediate genetic risk	1.13 (1.00, 1.28)	0.053	1.13 (1.00, 1.28)	0.054	1.09 (0.97, 1.23)	0.165	1.07 (0.95, 1.21)	0.246
	High genetic risk	1.19 (1.03, 1.38)	0.021	1.19 (1.02, 1.38)	0.024	0.96 (0.83, 1.12)	0.616	0.94 (0.80, 1.09)	0.385
Biliary disease	Intermediate genetic risk	1.11 (1.05, 1.16)	0.000	1.11 (1.06, 1.17)	0.000	1.00 (0.95, 1.05)	0.942	0.98 (0.93, 1.02)	0.335
	High genetic risk	1.18 (1.11, 1.26)	0.000	1.19 (1.12, 1.26)	0.000	0.99 (0.93, 1.05)	0.639	0.93 (0.88, 0.99)	0.025
Gastrointestinal tract cancers	Intermediate genetic risk	1.03 (0.96, 1.10)	0.402	1.01 (0.95, 1.08)	0.737	0.98 (0.92, 1.05)	0.552	0.98 (0.92, 1.04)	0.489
	High genetic risk	1.05 (0.97, 1.13)	0.270	1.01 (0.93, 1.09)	0.834	0.98 (0.90, 1.06)	0.570	0.97 (0.90, 1.05)	0.486
Hepatobiliary and pancreatic cancers	Intermediate genetic risk	1.18 (1.03, 1.34)	0.016	1.14 (1.00, 1.30)	0.050	0.96 (0.85, 1.08)	0.501	0.95 (0.84, 1.08)	0.425
	High genetic risk	1.22 (1.04, 1.42)	0.015	1.14 (0.97, 1.33)	0.106	0.93 (0.79, 1.08)	0.324	0.91 (0.78, 1.06)	0.229
		Incretin				GLP1_2h			
		FastingGLP1							
Barretts esophagus	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	1.29 (0.99, 1.67)	0.058	1.28 (0.99, 1.67)	0.061	1.00 (0.91, 1.11)	0.961	1.00 (0.91, 1.10)	0.972
Gastroesophageal reflux disease	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.96 (0.87, 1.07)	0.490	0.96 (0.86, 1.07)	0.477	1.04 (1.00, 1.07)	0.036	1.04 (1.00, 1.08)	0.032
Gastritis and duodenitis	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.95 (0.85, 1.06)	0.377	0.95 (0.85, 1.06)	0.354	0.96 (0.92, 0.99)	0.018	0.96 (0.92, 0.99)	0.020
Celiac disease	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.69 (0.38, 1.24)	0.215	0.68 (0.38, 1.24)	0.209	0.96 (0.81, 1.14)	0.665	0.96 (0.81, 1.14)	0.655
Peptic ulcer	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.86 (0.67, 1.10)	0.220	0.85 (0.66, 1.09)	0.206	0.90 (0.83, 0.97)	0.009	0.90 (0.83, 0.97)	0.009
Crohn's disease	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.98 (0.52, 1.83)	0.948	0.97 (0.52, 1.82)	0.936	1.15 (0.94, 1.40)	0.175	1.15 (0.94, 1.40)	0.179

Ulcerative colitis	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.67 (0.40, 1.14)	0.140	0.67 (0.39, 1.13)	0.134	1.01 (0.87, 1.16)	0.943	1.00 (0.87, 1.16)	0.960
Irritable bowel syndrome	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.97 (0.77, 1.22)	0.779	0.97 (0.77, 1.22)	0.775	0.97 (0.90, 1.05)	0.486	0.97 (0.90, 1.05)	0.491
Diverticular disease	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.92 (0.84, 1.02)	0.119	0.92 (0.83, 1.02)	0.111	1.03 (1.00, 1.06)	0.088	1.03 (0.99, 1.06)	0.107
Pancreatitis	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.84 (0.53, 1.32)	0.441	0.83 (0.53, 1.31)	0.422	0.91 (0.79, 1.05)	0.186	0.91 (0.79, 1.05)	0.189
Non-alcoholic fatty liver disease	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	1.00 (0.76, 1.31)	0.983	0.98 (0.74, 1.29)	0.872	0.92 (0.84, 1.01)	0.076	0.92 (0.84, 1.01)	0.085
Liver cirrhosis	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	1.08 (0.74, 1.58)	0.675	1.07 (0.74, 1.56)	0.720	1.04 (0.92, 1.19)	0.498	1.04 (0.92, 1.18)	0.519
Biliary disease	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.86 (0.73, 1.02)	0.081	0.86 (0.73, 1.01)	0.070	1.05 (0.99, 1.10)	0.082	1.05 (1.00, 1.10)	0.069
Gastrointestinal tract cancers	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	1.18 (0.97, 1.43)	0.090	1.18 (0.97, 1.43)	0.095	1.06 (0.99, 1.13)	0.112	1.06 (0.99, 1.13)	0.120
Hepatobiliary and pancreatic cancers	Intermediate genetic risk	/	/	/	/	/	/	/	/
	High genetic risk	0.96 (0.64, 1.46)	0.859	0.96 (0.64, 1.45)	0.847	0.91 (0.79, 1.04)	0.177	0.91 (0.79, 1.04)	0.170
Incretin									
Fasting GIP					GIP2h				
Barretts esophagus	Intermediate genetic risk	1.05 (0.97, 1.13)	0.237	1.05 (0.97, 1.13)	0.254	1.03 (0.94, 1.13)	0.521	1.03 (0.94, 1.13)	0.536
	High genetic risk	1.20 (1.04, 1.38)	0.014	1.19 (1.03, 1.37)	0.017	1.07 (0.96, 1.19)	0.242	1.07 (0.96, 1.19)	0.245
Gastroesophageal reflux disease	Intermediate genetic risk	1.01 (0.98, 1.04)	0.441	1.01 (0.98, 1.03)	0.702	1.02 (0.99, 1.05)	0.213	1.02 (0.99, 1.05)	0.277
	High genetic risk	1.00 (0.94, 1.05)	0.886	0.99 (0.94, 1.04)	0.671	1.01 (0.97, 1.05)	0.615	1.01 (0.97, 1.05)	0.793
Gastritis and duodenitis	Intermediate genetic risk	1.03 (1.00, 1.06)	0.063	1.03 (1.00, 1.06)	0.080	1.03 (0.99, 1.06)	0.102	1.03 (0.99, 1.06)	0.121

	High genetic risk	1.06 (1.00, 1.12)	0.052	1.05 (1.00, 1.11)	0.067	1.03 (0.98, 1.07)	0.239	1.02 (0.98, 1.07)	0.267
Celiac disease	Intermediate genetic risk	1.03 (0.90, 1.17)	0.691	1.04 (0.91, 1.18)	0.604	1.03 (0.88, 1.20)	0.726	1.03 (0.88, 1.20)	0.696
	High genetic risk	1.13 (0.88, 1.44)	0.343	1.14 (0.89, 1.45)	0.306	1.05 (0.87, 1.27)	0.610	1.06 (0.88, 1.28)	0.555
Peptic ulcer	Intermediate genetic risk	1.08 (1.01, 1.15)	0.016	1.07 (1.01, 1.14)	0.021	1.08 (1.00, 1.16)	0.046	1.07 (1.00, 1.15)	0.054
	High genetic risk	1.14 (1.02, 1.28)	0.023	1.13 (1.01, 1.27)	0.032	1.05 (0.96, 1.14)	0.296	1.05 (0.96, 1.14)	0.323
Crohn's disease	Intermediate genetic risk	1.12 (0.95, 1.32)	0.178	1.12 (0.95, 1.32)	0.183	1.14 (0.94, 1.39)	0.190	1.14 (0.94, 1.39)	0.192
	High genetic risk	1.21 (0.89, 1.64)	0.225	1.20 (0.88, 1.63)	0.241	1.23 (0.97, 1.55)	0.089	1.23 (0.97, 1.56)	0.087
Ulcerative colitis	Intermediate genetic risk	1.04 (0.92, 1.16)	0.541	1.04 (0.93, 1.16)	0.522	0.93 (0.81, 1.06)	0.257	0.93 (0.81, 1.06)	0.259
	High genetic risk	1.07 (0.86, 1.33)	0.564	1.06 (0.85, 1.32)	0.590	0.97 (0.82, 1.13)	0.666	0.97 (0.83, 1.14)	0.713
Irritable bowel syndrome	Intermediate genetic risk	1.04 (0.97, 1.10)	0.262	1.03 (0.97, 1.10)	0.263	1.07 (0.99, 1.15)	0.072	1.07 (0.99, 1.15)	0.073
	High genetic risk	1.08 (0.96, 1.21)	0.200	1.08 (0.96, 1.21)	0.198	1.07 (0.98, 1.16)	0.154	1.07 (0.98, 1.16)	0.154
Diverticular disease	Intermediate genetic risk	1.02 (1.00, 1.05)	0.109	1.02 (0.99, 1.04)	0.204	1.03 (1.00, 1.06)	0.043	1.03 (1.00, 1.06)	0.055
	High genetic risk	1.05 (1.00, 1.10)	0.055	1.04 (0.99, 1.09)	0.143	1.05 (1.02, 1.09)	0.004	1.05 (1.02, 1.09)	0.005
Pancreatitis	Intermediate genetic risk	1.02 (0.91, 1.14)	0.732	1.01 (0.90, 1.12)	0.897	1.00 (0.88, 1.14)	0.968	1.00 (0.88, 1.13)	0.953
	High genetic risk	1.24 (1.02, 1.51)	0.032	1.22 (1.00, 1.48)	0.052	1.01 (0.86, 1.18)	0.912	1.00 (0.85, 1.17)	0.980
Non-alcoholic fatty liver disease	Intermediate genetic risk	1.07 (0.99, 1.15)	0.071	1.04 (0.97, 1.12)	0.284	0.94 (0.86, 1.02)	0.115	0.92 (0.85, 1.00)	0.064
	High genetic risk	0.91 (0.78, 1.05)	0.209	0.87 (0.75, 1.01)	0.069	0.87 (0.79, 0.97)	0.009	0.85 (0.77, 0.94)	0.002
Liver cirrhosis	Intermediate genetic risk	1.02 (0.92, 1.13)	0.669	1.01 (0.92, 1.12)	0.782	0.95 (0.85, 1.07)	0.431	0.95 (0.84, 1.07)	0.390
	High genetic risk	1.09 (0.90, 1.32)	0.385	1.07 (0.88, 1.29)	0.514	0.98 (0.85, 1.13)	0.769	0.97 (0.84, 1.13)	0.729
Biliary disease	Intermediate genetic risk	1.06 (1.02, 1.11)	0.003	1.05 (1.00, 1.09)	0.036	1.01 (0.96, 1.06)	0.729	1.00 (0.95, 1.05)	0.967
	High genetic risk	1.10 (1.02, 1.19)	0.014	1.08 (1.00, 1.16)	0.063	1.04 (0.98, 1.10)	0.229	1.02 (0.96, 1.08)	0.499
Gastrointestinal tract cancers	Intermediate genetic risk	1.01 (0.96, 1.07)	0.718	1.01 (0.96, 1.07)	0.751	1.02 (0.96, 1.09)	0.508	1.02 (0.96, 1.09)	0.530
	High genetic risk	1.08 (0.97, 1.20)	0.150	1.07 (0.97, 1.19)	0.195	0.99 (0.92, 1.07)	0.824	0.99 (0.92, 1.07)	0.846
Hepatobiliary and pancreatic cancers	Intermediate genetic risk	1.10 (0.99, 1.22)	0.086	1.09 (0.98, 1.22)	0.102	0.92 (0.82, 1.04)	0.196	0.92 (0.82, 1.04)	0.180
	High genetic risk	1.09 (0.88, 1.33)	0.434	1.07 (0.87, 1.32)	0.503	0.84 (0.72, 0.98)	0.024	0.84 (0.72, 0.97)	0.022

		Lipids							
		TG				TC			
Barretts esophagus	Intermediate genetic risk	1.00 (0.91, 1.10)	0.991	1.00 (0.92, 1.10)	0.945	0.95 (0.87, 1.04)	0.304	0.96 (0.87, 1.05)	0.340
	High genetic risk	0.98 (0.88, 1.10)	0.717	0.98 (0.88, 1.10)	0.780	1.02 (0.91, 1.13)	0.789	1.02 (0.92, 1.14)	0.701
Gastroesophageal reflux disease	Intermediate genetic risk	1.00 (0.97, 1.04)	0.823	1.00 (0.97, 1.04)	0.789	0.99 (0.96, 1.02)	0.533	0.99 (0.96, 1.03)	0.710
	High genetic risk	0.98 (0.94, 1.02)	0.224	0.98 (0.94, 1.02)	0.251	0.98 (0.94, 1.02)	0.309	0.99 (0.95, 1.03)	0.535
Gastritis and duodenitis	Intermediate genetic risk	0.98 (0.95, 1.02)	0.272	0.98 (0.95, 1.02)	0.306	1.02 (0.98, 1.05)	0.356	1.02 (0.98, 1.05)	0.303
	High genetic risk	0.96 (0.92, 1.01)	0.088	0.97 (0.93, 1.01)	0.101	0.99 (0.95, 1.03)	0.716	1.00 (0.95, 1.04)	0.845
Celiac disease	Intermediate genetic risk	0.94 (0.81, 1.09)	0.403	0.94 (0.81, 1.09)	0.416	1.09 (0.93, 1.28)	0.275	1.09 (0.93, 1.27)	0.305
	High genetic risk	0.84 (0.70, 1.02)	0.082	0.85 (0.70, 1.02)	0.084	1.02 (0.84, 1.24)	0.835	1.01 (0.83, 1.22)	0.928
Peptic ulcer	Intermediate genetic risk	1.00 (0.93, 1.07)	0.962	1.00 (0.93, 1.07)	0.981	0.97 (0.90, 1.04)	0.326	0.97 (0.90, 1.04)	0.374
	High genetic risk	0.96 (0.88, 1.05)	0.410	0.97 (0.89, 1.06)	0.462	0.98 (0.89, 1.06)	0.578	0.98 (0.90, 1.07)	0.700
Crohn's disease	Intermediate genetic risk	0.95 (0.79, 1.15)	0.597	0.95 (0.79, 1.15)	0.619	1.15 (0.95, 1.41)	0.154	1.16 (0.95, 1.41)	0.144
	High genetic risk	1.00 (0.80, 1.26)	0.989	1.01 (0.80, 1.27)	0.953	1.08 (0.85, 1.37)	0.547	1.08 (0.85, 1.38)	0.514
Ulcerative colitis	Intermediate genetic risk	1.01 (0.88, 1.16)	0.885	1.01 (0.88, 1.16)	0.840	0.99 (0.87, 1.13)	0.876	0.99 (0.87, 1.13)	0.902
	High genetic risk	1.12 (0.95, 1.32)	0.174	1.13 (0.96, 1.33)	0.150	0.97 (0.82, 1.14)	0.719	0.97 (0.83, 1.15)	0.759
Irritable bowel syndrome	Intermediate genetic risk	0.99 (0.92, 1.06)	0.785	0.99 (0.92, 1.06)	0.797	0.97 (0.91, 1.04)	0.415	0.97 (0.91, 1.04)	0.417
	High genetic risk	1.09 (1.00, 1.19)	0.051	1.09 (1.00, 1.19)	0.051	0.97 (0.89, 1.06)	0.514	0.97 (0.89, 1.06)	0.515
Diverticular disease	Intermediate genetic risk	1.02 (0.99, 1.05)	0.303	1.02 (0.99, 1.05)	0.223	0.99 (0.96, 1.02)	0.377	0.99 (0.96, 1.02)	0.590
	High genetic risk	1.03 (0.99, 1.07)	0.093	1.04 (1.00, 1.08)	0.040	0.98 (0.94, 1.02)	0.255	0.99 (0.95, 1.03)	0.572
Pancreatitis	Intermediate genetic risk	0.99 (0.87, 1.12)	0.841	0.99 (0.87, 1.12)	0.880	0.99 (0.87, 1.13)	0.919	1.00 (0.88, 1.14)	0.969
	High genetic risk	0.86 (0.73, 1.01)	0.059	0.86 (0.73, 1.01)	0.071	1.00 (0.86, 1.17)	0.994	1.02 (0.87, 1.19)	0.812
Non-alcoholic fatty liver disease	Intermediate genetic risk	1.04 (0.96, 1.14)	0.327	1.05 (0.96, 1.15)	0.270	1.06 (0.97, 1.15)	0.207	1.07 (0.98, 1.17)	0.116
	High genetic risk	1.09 (0.99, 1.21)	0.094	1.10 (0.99, 1.22)	0.068	1.01 (0.91, 1.13)	0.782	1.04 (0.94, 1.16)	0.436
Liver cirrhosis	Intermediate genetic risk	1.02 (0.91, 1.15)	0.686	1.03 (0.92, 1.16)	0.603	1.08 (0.95, 1.22)	0.227	1.09 (0.96, 1.23)	0.178
	High genetic risk	0.91 (0.79, 1.06)	0.240	0.93 (0.80, 1.08)	0.318	1.07 (0.92, 1.24)	0.392	1.09 (0.94, 1.26)	0.273

Biliary disease	Intermediate genetic risk	0.96 (0.92, 1.01)	0.087	0.96 (0.91, 1.01)	0.085	0.93 (0.88, 0.97)	0.001	0.94 (0.89, 0.98)	0.006
	High genetic risk	0.91 (0.85, 0.96)	0.001	0.91 (0.85, 0.96)	0.001	0.84 (0.79, 0.89)	0.000	0.86 (0.81, 0.91)	0.000
Gastrointestinal tract cancers	Intermediate genetic risk	0.95 (0.89, 1.01)	0.118	0.95 (0.90, 1.02)	0.146	1.05 (0.99, 1.12)	0.129	1.06 (0.99, 1.13)	0.106
	High genetic risk	1.02 (0.94, 1.10)	0.684	1.02 (0.95, 1.11)	0.560	1.03 (0.96, 1.12)	0.407	1.04 (0.96, 1.13)	0.308
Hepatobiliary and pancreatic cancers	Intermediate genetic risk	0.96 (0.85, 1.08)	0.477	0.96 (0.85, 1.08)	0.510	0.93 (0.82, 1.05)	0.218	0.93 (0.82, 1.05)	0.247
	High genetic risk	0.86 (0.74, 1.00)	0.057	0.87 (0.74, 1.01)	0.070	0.83 (0.72, 0.97)	0.021	0.84 (0.72, 0.98)	0.031
Lipids									
LDL-C					HDL-C				
Barretts esophagus	Intermediate genetic risk	0.92 (0.84, 1.00)	0.055	0.92 (0.84, 1.00)	0.063	0.99 (0.90, 1.08)	0.759	0.99 (0.90, 1.08)	0.753
	High genetic risk	0.99 (0.89, 1.11)	0.916	1.00 (0.90, 1.12)	0.986	0.96 (0.86, 1.08)	0.514	0.96 (0.86, 1.07)	0.491
Gastroesophageal reflux disease	Intermediate genetic risk	0.96 (0.93, 1.00)	0.026	0.97 (0.94, 1.00)	0.045	1.00 (0.97, 1.03)	0.993	1.00 (0.97, 1.03)	0.935
	High genetic risk	0.97 (0.93, 1.01)	0.130	0.98 (0.94, 1.02)	0.260	0.98 (0.94, 1.02)	0.389	0.98 (0.94, 1.02)	0.322
Gastritis and duodenitis	Intermediate genetic risk	1.01 (0.97, 1.04)	0.766	1.01 (0.97, 1.04)	0.715	1.01 (0.97, 1.04)	0.637	1.01 (0.97, 1.04)	0.665
	High genetic risk	1.00 (0.96, 1.04)	0.944	1.01 (0.96, 1.05)	0.811	1.02 (0.98, 1.07)	0.255	1.02 (0.98, 1.07)	0.301
Celiac disease	Intermediate genetic risk	1.12 (0.96, 1.31)	0.156	1.12 (0.95, 1.31)	0.173	0.92 (0.79, 1.07)	0.273	0.92 (0.80, 1.07)	0.281
	High genetic risk	1.04 (0.85, 1.26)	0.723	1.03 (0.84, 1.25)	0.801	0.74 (0.61, 0.90)	0.003	0.74 (0.61, 0.90)	0.003
Peptic ulcer	Intermediate genetic risk	0.98 (0.91, 1.05)	0.562	0.98 (0.91, 1.05)	0.612	0.98 (0.91, 1.05)	0.615	0.98 (0.91, 1.05)	0.591
	High genetic risk	0.98 (0.90, 1.07)	0.687	0.99 (0.91, 1.08)	0.818	1.03 (0.94, 1.12)	0.512	1.03 (0.94, 1.12)	0.554
Crohn's disease	Intermediate genetic risk	1.14 (0.94, 1.40)	0.182	1.15 (0.94, 1.40)	0.175	1.04 (0.86, 1.25)	0.708	1.04 (0.86, 1.25)	0.709
	High genetic risk	1.15 (0.91, 1.46)	0.253	1.16 (0.91, 1.47)	0.232	0.88 (0.69, 1.12)	0.312	0.88 (0.69, 1.12)	0.304
Ulcerative colitis	Intermediate genetic risk	0.90 (0.79, 1.03)	0.122	0.90 (0.79, 1.03)	0.125	1.00 (0.87, 1.14)	0.986	1.00 (0.87, 1.14)	0.990
	High genetic risk	1.04 (0.89, 1.22)	0.638	1.04 (0.89, 1.22)	0.595	1.01 (0.86, 1.19)	0.910	1.01 (0.86, 1.19)	0.925
Irritable bowel syndrome	Intermediate genetic risk	0.97 (0.90, 1.04)	0.392	0.97 (0.90, 1.04)	0.386	1.05 (0.97, 1.12)	0.208	1.05 (0.97, 1.12)	0.212
	High genetic risk	0.97 (0.89, 1.06)	0.525	0.97 (0.89, 1.06)	0.523	1.01 (0.93, 1.10)	0.827	1.01 (0.92, 1.10)	0.850
Diverticular disease	Intermediate genetic risk	0.99 (0.96, 1.02)	0.380	0.99 (0.96, 1.02)	0.572	0.98 (0.95, 1.01)	0.277	0.98 (0.95, 1.01)	0.285

Pancreatitis	High genetic risk	0.96 (0.93, 1.00)	0.054	0.98 (0.94, 1.01)	0.180	0.99 (0.95, 1.02)	0.472	0.99 (0.95, 1.02)	0.430	
	Intermediate genetic risk	0.99 (0.87, 1.13)	0.879	1.00 (0.88, 1.14)	0.985	0.85 (0.75, 0.96)	0.010	0.85 (0.75, 0.96)	0.009	
Non-alcoholic fatty liver disease	High genetic risk	0.98 (0.84, 1.15)	0.790	1.00 (0.85, 1.17)	0.979	0.89 (0.77, 1.04)	0.151	0.89 (0.76, 1.03)	0.125	
	Intermediate genetic risk	1.03 (0.95, 1.12)	0.475	1.05 (0.96, 1.14)	0.305	0.97 (0.89, 1.06)	0.483	0.96 (0.88, 1.05)	0.361	
Liver cirrhosis	High genetic risk	1.03 (0.93, 1.14)	0.565	1.06 (0.96, 1.18)	0.251	0.97 (0.87, 1.07)	0.528	0.96 (0.86, 1.06)	0.394	
	Intermediate genetic risk	1.13 (1.00, 1.28)	0.049	1.14 (1.01, 1.29)	0.037	0.96 (0.85, 1.08)	0.516	0.96 (0.85, 1.08)	0.482	
Biliary disease	High genetic risk	1.15 (0.99, 1.34)	0.063	1.17 (1.01, 1.36)	0.034	0.99 (0.86, 1.15)	0.911	0.99 (0.85, 1.14)	0.844	
	Intermediate genetic risk	0.93 (0.88, 0.97)	0.001	0.94 (0.89, 0.98)	0.006	0.97 (0.92, 1.02)	0.198	0.97 (0.92, 1.01)	0.154	
Gastrointestinal tract cancers	High genetic risk	0.83 (0.78, 0.88)	0.000	0.84 (0.80, 0.90)	0.000	1.02 (0.96, 1.08)	0.607	1.01 (0.95, 1.07)	0.766	
	Intermediate genetic risk	1.01 (0.95, 1.08)	0.791	1.01 (0.95, 1.08)	0.724	0.99 (0.93, 1.06)	0.860	0.99 (0.93, 1.06)	0.867	
Hepatobiliary and pancreatic cancers	High genetic risk	0.98 (0.90, 1.06)	0.554	0.98 (0.91, 1.07)	0.695	0.98 (0.90, 1.06)	0.571	0.98 (0.90, 1.06)	0.549	
	Intermediate genetic risk	0.91 (0.81, 1.03)	0.136	0.92 (0.81, 1.03)	0.156	1.08 (0.95, 1.22)	0.244	1.08 (0.95, 1.22)	0.250	
	High genetic risk	0.84 (0.72, 0.98)	0.025	0.85 (0.73, 0.99)	0.036	0.98 (0.84, 1.15)	0.825	0.98 (0.84, 1.15)	0.800	
		Liver enzymes								
		AST				ALT				
Barretts esophagus	Intermediate genetic risk	/		/		1.09 (1.00, 1.20)	0.055	1.10 (1.00, 1.20)	0.049	
	High genetic risk	1.10 (0.57, 2.12)	0.782	1.10 (0.57, 2.13)	0.768	1.03 (0.92, 1.15)	0.622	1.03 (0.92, 1.16)	0.569	
Gastroesophageal reflux disease	Intermediate genetic risk	/		/		0.99 (0.96, 1.02)	0.494	0.99 (0.96, 1.02)	0.508	
	High genetic risk	0.93 (0.72, 1.20)	0.591	0.94 (0.73, 1.21)	0.625	0.99 (0.95, 1.03)	0.538	0.99 (0.95, 1.03)	0.632	
Gastritis and duodenitis	Intermediate genetic risk	/		/		0.99 (0.95, 1.02)	0.457	0.99 (0.95, 1.02)	0.466	
	High genetic risk	1.05 (0.82, 1.35)	0.686	1.06 (0.82, 1.36)	0.658	0.99 (0.95, 1.03)	0.635	0.99 (0.95, 1.03)	0.685	
Celiac disease	Intermediate genetic risk	/		/		1.13 (0.97, 1.33)	0.116	1.14 (0.97, 1.33)	0.115	
	High genetic risk	1.37 (0.51, 3.65)	0.534	1.37 (0.51, 3.66)	0.532	1.05 (0.86, 1.28)	0.622	1.05 (0.86, 1.27)	0.646	
Peptic ulcer	Intermediate genetic risk	/		/		0.95 (0.88, 1.01)	0.120	0.95 (0.88, 1.02)	0.131	
	High genetic risk	1.10 (0.66, 1.84)	0.706	1.11 (0.67, 1.86)	0.677	0.97 (0.89, 1.06)	0.537	0.98 (0.90, 1.07)	0.612	

Crohn's disease	Intermediate genetic risk	/	/	1.03 (0.85, 1.25)	0.735	1.04 (0.86, 1.26)	0.713		
	High genetic risk	1.57 (0.50, 4.88)	0.439	1.59 (0.51, 4.95)	0.424	0.98 (0.77, 1.24)	0.864	0.99 (0.78, 1.25)	0.904
Ulcerative colitis	Intermediate genetic risk	/	/	0.90 (0.79, 1.03)	0.133	0.91 (0.80, 1.04)	0.149		
	High genetic risk	0.52 (0.13, 2.07)	0.350	0.52 (0.13, 2.10)	0.362	0.95 (0.81, 1.12)	0.525	0.96 (0.81, 1.12)	0.581
Irritable bowel syndrome	Intermediate genetic risk	/	/	0.93 (0.87, 1.00)	0.047	0.93 (0.87, 1.00)	0.046		
	High genetic risk	0.61 (0.32, 1.18)	0.140	0.61 (0.32, 1.18)	0.144	1.00 (0.92, 1.09)	0.964	1.00 (0.92, 1.09)	0.959
Diverticular disease	Intermediate genetic risk	/	/	0.96 (0.93, 0.99)	0.007	0.96 (0.94, 0.99)	0.015		
	High genetic risk	1.16 (0.94, 1.44)	0.175	1.18 (0.95, 1.46)	0.138	0.92 (0.89, 0.96)	0.000	0.93 (0.90, 0.96)	0.000
Pancreatitis	Intermediate genetic risk	/	/	0.98 (0.86, 1.11)	0.728	0.98 (0.86, 1.11)	0.765		
	High genetic risk	1.21 (0.50, 2.92)	0.671	1.23 (0.51, 2.97)	0.645	1.00 (0.85, 1.16)	0.954	1.00 (0.86, 1.17)	0.957
Non-alcoholic fatty liver disease	Intermediate genetic risk	/	/	1.40 (1.27, 1.54)	0.000	1.41 (1.28, 1.56)	0.000		
	High genetic risk	1.10 (0.61, 1.99)	0.757	1.13 (0.62, 2.05)	0.698	1.78 (1.60, 1.98)	0.000	1.82 (1.64, 2.03)	0.000
Liver cirrhosis	Intermediate genetic risk	/	/	1.17 (1.03, 1.33)	0.014	1.18 (1.04, 1.34)	0.010		
	High genetic risk	0.62 (0.20, 1.91)	0.402	0.63 (0.20, 1.96)	0.427	1.38 (1.19, 1.60)	0.000	1.40 (1.21, 1.63)	0.000
Biliary disease	Intermediate genetic risk	/	/	1.01 (0.96, 1.06)	0.652	1.01 (0.97, 1.06)	0.590		
	High genetic risk	0.94 (0.65, 1.36)	0.748	0.95 (0.66, 1.38)	0.803	1.00 (0.94, 1.06)	0.931	1.01 (0.95, 1.07)	0.868
Gastrointestinal tract cancers	Intermediate genetic risk	/	/	0.95 (0.89, 1.01)	0.105	0.95 (0.89, 1.01)	0.131		
	High genetic risk	0.80 (0.46, 1.38)	0.421	0.81 (0.47, 1.40)	0.445	0.95 (0.88, 1.03)	0.181	0.95 (0.88, 1.03)	0.243
Hepatobiliary and pancreatic cancers	Intermediate genetic risk	/	/	0.88 (0.78, 0.99)	0.036	0.88 (0.78, 1.00)	0.041		
	High genetic risk	0.24 (0.03, 1.67)	0.149	0.24 (0.03, 1.70)	0.153	1.07 (0.93, 1.24)	0.356	1.08 (0.93, 1.25)	0.306
Liver enzymes									
ALP									
Barretts esophagus	Intermediate genetic risk	1.07 (0.97, 1.17)	0.174	1.07 (0.97, 1.17)	0.166	0.88 (0.80, 0.96)	0.003	0.88 (0.80, 0.96)	0.004
	High genetic risk	1.15 (1.03, 1.28)	0.017	1.15 (1.03, 1.28)	0.014	0.93 (0.83, 1.03)	0.164	0.93 (0.83, 1.03)	0.167
Gastroesophageal reflux disease	Intermediate genetic risk	0.99 (0.96, 1.02)	0.457	0.99 (0.96, 1.02)	0.498	0.98 (0.95, 1.01)	0.195	0.98 (0.95, 1.01)	0.197

	High genetic risk	0.99 (0.95, 1.03)	0.732	1.00 (0.96, 1.04)	0.822	0.99 (0.95, 1.03)	0.531	0.99 (0.95, 1.03)	0.513
Gastritis and duodenitis	Intermediate genetic risk	0.99 (0.96, 1.02)	0.569	0.99 (0.96, 1.02)	0.568	0.98 (0.95, 1.01)	0.230	0.98 (0.95, 1.01)	0.246
	High genetic risk	0.97 (0.93, 1.01)	0.135	0.97 (0.93, 1.01)	0.139	0.99 (0.95, 1.03)	0.547	0.99 (0.95, 1.03)	0.556
Celiac disease	Intermediate genetic risk	0.89 (0.77, 1.04)	0.133	0.89 (0.77, 1.03)	0.123	1.03 (0.89, 1.21)	0.666	1.04 (0.89, 1.21)	0.657
	High genetic risk	0.93 (0.77, 1.12)	0.433	0.92 (0.77, 1.11)	0.401	0.95 (0.79, 1.15)	0.619	0.96 (0.79, 1.16)	0.644
Peptic ulcer	Intermediate genetic risk	1.01 (0.94, 1.08)	0.783	1.01 (0.94, 1.09)	0.763	0.99 (0.92, 1.07)	0.831	0.99 (0.92, 1.07)	0.852
	High genetic risk	0.98 (0.90, 1.07)	0.712	0.99 (0.90, 1.08)	0.751	1.01 (0.93, 1.11)	0.744	1.02 (0.93, 1.11)	0.734
Crohn's disease	Intermediate genetic risk	0.98 (0.81, 1.18)	0.812	0.98 (0.81, 1.18)	0.816	0.94 (0.78, 1.13)	0.507	0.94 (0.78, 1.13)	0.507
	High genetic risk	0.95 (0.75, 1.20)	0.648	0.95 (0.75, 1.20)	0.668	0.83 (0.65, 1.05)	0.117	0.83 (0.65, 1.05)	0.118
Ulcerative colitis	Intermediate genetic risk	1.01 (0.88, 1.15)	0.904	1.01 (0.88, 1.16)	0.900	1.07 (0.93, 1.23)	0.328	1.07 (0.93, 1.23)	0.328
	High genetic risk	1.07 (0.91, 1.26)	0.430	1.07 (0.91, 1.26)	0.406	1.09 (0.92, 1.29)	0.313	1.09 (0.92, 1.29)	0.309
Irritable bowel syndrome	Intermediate genetic risk	0.98 (0.92, 1.06)	0.652	0.98 (0.92, 1.06)	0.640	0.95 (0.89, 1.02)	0.167	0.95 (0.89, 1.02)	0.171
	High genetic risk	1.02 (0.94, 1.11)	0.646	1.02 (0.94, 1.11)	0.660	0.98 (0.90, 1.06)	0.601	0.98 (0.90, 1.06)	0.606
Diverticular disease	Intermediate genetic risk	1.02 (0.99, 1.05)	0.274	1.02 (0.99, 1.05)	0.213	0.98 (0.95, 1.01)	0.130	0.98 (0.95, 1.01)	0.116
	High genetic risk	0.99 (0.96, 1.03)	0.741	1.00 (0.96, 1.04)	0.978	0.98 (0.94, 1.02)	0.255	0.98 (0.94, 1.02)	0.245
Pancreatitis	Intermediate genetic risk	0.96 (0.85, 1.09)	0.541	0.96 (0.85, 1.10)	0.573	1.00 (0.88, 1.13)	0.947	1.00 (0.88, 1.13)	0.947
	High genetic risk	0.98 (0.84, 1.15)	0.846	0.99 (0.85, 1.16)	0.914	0.96 (0.82, 1.13)	0.633	0.96 (0.82, 1.13)	0.634
Non-alcoholic fatty liver disease	Intermediate genetic risk	1.02 (0.93, 1.11)	0.684	1.02 (0.94, 1.11)	0.626	1.08 (0.99, 1.18)	0.091	1.08 (0.99, 1.18)	0.087
	High genetic risk	1.07 (0.96, 1.18)	0.226	1.08 (0.97, 1.19)	0.164	1.23 (1.11, 1.37)	0.000	1.24 (1.11, 1.37)	0.000
Liver cirrhosis	Intermediate genetic risk	0.98 (0.87, 1.10)	0.723	0.98 (0.87, 1.11)	0.765	1.03 (0.92, 1.17)	0.584	1.04 (0.92, 1.17)	0.576
	High genetic risk	1.03 (0.89, 1.19)	0.653	1.04 (0.90, 1.21)	0.560	1.02 (0.88, 1.19)	0.761	1.03 (0.88, 1.19)	0.743
Biliary disease	Intermediate genetic risk	0.92 (0.88, 0.96)	0.001	0.92 (0.88, 0.97)	0.001	1.07 (1.02, 1.12)	0.009	1.07 (1.02, 1.12)	0.010
	High genetic risk	0.89 (0.84, 0.94)	0.000	0.89 (0.84, 0.95)	0.000	1.13 (1.07, 1.20)	0.000	1.13 (1.07, 1.20)	0.000
Gastrointestinal tract cancers	Intermediate genetic risk	0.98 (0.92, 1.05)	0.600	0.98 (0.92, 1.05)	0.632	1.01 (0.94, 1.07)	0.841	1.01 (0.94, 1.07)	0.835
	High genetic risk	0.97 (0.89, 1.05)	0.421	0.97 (0.90, 1.05)	0.491	1.03 (0.95, 1.11)	0.497	1.03 (0.95, 1.11)	0.488

Hepatobiliary and pancreatic cancers	Intermediate genetic risk	0.89 (0.79, 1.01)	0.063	0.89 (0.79, 1.01)	0.069	1.00 (0.88, 1.13)	0.971	1.00 (0.88, 1.13)	0.979
	High genetic risk	0.85 (0.73, 0.99)	0.039	0.86 (0.74, 1.00)	0.047	1.06 (0.91, 1.23)	0.464	1.06 (0.91, 1.23)	0.454
		Trypsin							
		Trypsin1				Trypsin2			
Barretts esophagus	Intermediate genetic risk	1.01 (0.92, 1.11)	0.800	1.01 (0.92, 1.11)	0.797	0.93 (0.85, 1.01)	0.099	0.93 (0.85, 1.01)	0.094
	High genetic risk	0.93 (0.83, 1.04)	0.225	0.93 (0.83, 1.04)	0.226	0.95 (0.85, 1.06)	0.320	0.94 (0.85, 1.05)	0.308
Gastroesophageal reflux disease	Intermediate genetic risk	1.02 (0.98, 1.05)	0.316	1.02 (0.98, 1.05)	0.327	0.97 (0.94, 1.00)	0.050	0.97 (0.94, 1.00)	0.055
	High genetic risk	1.00 (0.96, 1.04)	0.994	1.00 (0.96, 1.04)	0.949	0.96 (0.93, 1.00)	0.072	0.96 (0.93, 1.00)	0.077
Gastritis and duodenitis	Intermediate genetic risk	1.02 (0.99, 1.06)	0.249	1.02 (0.99, 1.06)	0.253	0.96 (0.92, 0.99)	0.009	0.96 (0.92, 0.99)	0.011
	High genetic risk	1.02 (0.98, 1.07)	0.327	1.02 (0.98, 1.06)	0.356	0.94 (0.90, 0.98)	0.004	0.94 (0.90, 0.98)	0.005
Celiac disease	Intermediate genetic risk	0.99 (0.85, 1.16)	0.944	1.00 (0.86, 1.16)	0.949	0.83 (0.72, 0.97)	0.016	0.83 (0.72, 0.97)	0.017
	High genetic risk	0.86 (0.71, 1.05)	0.138	0.86 (0.71, 1.05)	0.139	0.89 (0.74, 1.07)	0.213	0.89 (0.74, 1.07)	0.218
Peptic ulcer	Intermediate genetic risk	1.02 (0.95, 1.10)	0.507	1.02 (0.95, 1.10)	0.503	0.98 (0.91, 1.05)	0.584	0.98 (0.91, 1.05)	0.592
	High genetic risk	1.08 (0.99, 1.18)	0.085	1.08 (0.99, 1.18)	0.091	0.95 (0.87, 1.04)	0.263	0.95 (0.87, 1.04)	0.273
Crohn's disease	Intermediate genetic risk	1.01 (0.84, 1.23)	0.881	1.02 (0.84, 1.23)	0.876	0.89 (0.74, 1.07)	0.220	0.89 (0.74, 1.07)	0.219
	High genetic risk	0.92 (0.72, 1.16)	0.470	0.92 (0.72, 1.16)	0.470	0.88 (0.70, 1.11)	0.294	0.88 (0.70, 1.11)	0.294
Ulcerative colitis	Intermediate genetic risk	0.97 (0.85, 1.10)	0.603	0.97 (0.85, 1.10)	0.612	0.89 (0.78, 1.01)	0.073	0.89 (0.78, 1.01)	0.071
	High genetic risk	0.94 (0.80, 1.11)	0.480	0.94 (0.80, 1.11)	0.483	0.96 (0.81, 1.12)	0.584	0.96 (0.81, 1.12)	0.576
Irritable bowel syndrome	Intermediate genetic risk	0.96 (0.89, 1.03)	0.219	0.96 (0.89, 1.03)	0.220	0.99 (0.92, 1.06)	0.773	0.99 (0.92, 1.06)	0.800
	High genetic risk	0.99 (0.90, 1.07)	0.741	0.99 (0.90, 1.07)	0.729	1.03 (0.94, 1.12)	0.541	1.03 (0.94, 1.12)	0.519
Diverticular disease	Intermediate genetic risk	0.98 (0.95, 1.01)	0.196	0.98 (0.95, 1.01)	0.210	1.02 (0.99, 1.05)	0.285	1.01 (0.98, 1.04)	0.370
	High genetic risk	1.00 (0.96, 1.04)	0.921	1.00 (0.96, 1.04)	0.950	1.01 (0.97, 1.04)	0.760	1.00 (0.97, 1.04)	0.898
Pancreatitis	Intermediate genetic risk	0.96 (0.85, 1.09)	0.538	0.96 (0.85, 1.09)	0.534	0.86 (0.76, 0.98)	0.018	0.86 (0.76, 0.98)	0.019
	High genetic risk	0.95 (0.81, 1.11)	0.544	0.95 (0.81, 1.11)	0.534	0.95 (0.82, 1.11)	0.547	0.95 (0.82, 1.11)	0.544
Non-alcoholic fatty liver disease	Intermediate genetic risk	1.07 (0.98, 1.16)	0.150	1.07 (0.98, 1.16)	0.154	1.02 (0.94, 1.11)	0.614	1.03 (0.94, 1.12)	0.565

Liver cirrhosis	High genetic risk	1.08 (0.97, 1.20)	0.139	1.08 (0.97, 1.20)	0.146	0.93 (0.84, 1.04)	0.189	0.93 (0.84, 1.04)	0.195
	Intermediate genetic risk	1.03 (0.91, 1.16)	0.636	1.03 (0.91, 1.16)	0.618	0.92 (0.82, 1.03)	0.164	0.92 (0.82, 1.03)	0.153
Biliary disease	High genetic risk	1.04 (0.90, 1.20)	0.612	1.04 (0.90, 1.20)	0.603	0.94 (0.81, 1.08)	0.382	0.94 (0.81, 1.08)	0.365
	Intermediate genetic risk	1.00 (0.96, 1.05)	0.917	1.00 (0.95, 1.05)	0.950	0.94 (0.89, 0.98)	0.008	0.94 (0.90, 0.98)	0.009
Gastrointestinal tract cancers	High genetic risk	0.98 (0.92, 1.03)	0.405	0.97 (0.92, 1.03)	0.373	0.95 (0.90, 1.01)	0.080	0.95 (0.90, 1.01)	0.081
	Intermediate genetic risk	1.01 (0.95, 1.08)	0.790	1.01 (0.95, 1.08)	0.779	1.00 (0.94, 1.07)	0.922	1.00 (0.94, 1.07)	0.981
Hepatobiliary and pancreatic cancers	High genetic risk	0.98 (0.91, 1.06)	0.630	0.98 (0.91, 1.06)	0.627	0.96 (0.89, 1.04)	0.364	0.96 (0.89, 1.04)	0.331
	Intermediate genetic risk	0.98 (0.86, 1.10)	0.707	0.98 (0.87, 1.11)	0.720	0.89 (0.79, 1.01)	0.065	0.89 (0.79, 1.01)	0.060
	High genetic risk	0.85 (0.73, 1.00)	0.044	0.85 (0.73, 1.00)	0.044	0.96 (0.82, 1.11)	0.569	0.96 (0.82, 1.11)	0.553
Trypsin									
Trypsin3									
Barretts esophagus	Intermediate genetic risk	1.01 (0.92, 1.10)	0.862	1.01 (0.92, 1.10)	0.837				
	High genetic risk	0.94 (0.84, 1.06)	0.306	0.94 (0.84, 1.06)	0.316				
Gastroesophageal reflux disease	Intermediate genetic risk	0.98 (0.95, 1.02)	0.352	0.98 (0.95, 1.02)	0.336				
	High genetic risk	1.01 (0.97, 1.05)	0.666	1.01 (0.97, 1.05)	0.757				
Gastritis and duodenitis	Intermediate genetic risk	1.00 (0.96, 1.03)	0.853	1.00 (0.96, 1.03)	0.886				
	High genetic risk	1.00 (0.96, 1.04)	0.914	1.00 (0.96, 1.04)	0.901				
Celiac disease	Intermediate genetic risk	1.09 (0.93, 1.27)	0.303	1.09 (0.93, 1.28)	0.284				
	High genetic risk	1.07 (0.88, 1.29)	0.494	1.07 (0.89, 1.30)	0.459				
Peptic ulcer	Intermediate genetic risk	1.02 (0.95, 1.09)	0.611	1.02 (0.95, 1.10)	0.587				
	High genetic risk	1.06 (0.97, 1.15)	0.226	1.05 (0.97, 1.15)	0.234				
Crohn's disease	Intermediate genetic risk	0.92 (0.76, 1.11)	0.394	0.92 (0.76, 1.12)	0.409				
	High genetic risk	1.03 (0.82, 1.30)	0.789	1.03 (0.82, 1.30)	0.772				
Ulcerative colitis	Intermediate genetic risk	0.94 (0.82, 1.07)	0.333	0.94 (0.83, 1.07)	0.364				
	High genetic risk	0.87 (0.74, 1.03)	0.103	0.88 (0.74, 1.03)	0.116				

Irritable bowel syndrome	Intermediate genetic risk	1.04 (0.96, 1.11)	0.336	1.04 (0.97, 1.11)	0.327
	High genetic risk	1.00 (0.92, 1.09)	0.992	1.00 (0.92, 1.09)	0.997
Diverticular disease	Intermediate genetic risk	1.00 (0.97, 1.03)	0.860	1.00 (0.97, 1.03)	0.923
	High genetic risk	0.96 (0.93, 1.00)	0.042	0.96 (0.93, 1.00)	0.047
Pancreatitis	Intermediate genetic risk	1.08 (0.95, 1.23)	0.267	1.08 (0.95, 1.23)	0.266
	High genetic risk	1.01 (0.86, 1.18)	0.935	1.00 (0.85, 1.18)	0.971
Non-alcoholic fatty liver disease	Intermediate genetic risk	1.12 (1.02, 1.22)	0.012	1.12 (1.02, 1.22)	0.013
	High genetic risk	1.11 (1.00, 1.23)	0.057	1.10 (0.99, 1.22)	0.090
Liver cirrhosis	Intermediate genetic risk	1.08 (0.95, 1.21)	0.242	1.08 (0.96, 1.22)	0.221
	High genetic risk	1.03 (0.89, 1.20)	0.664	1.03 (0.89, 1.20)	0.653
Biliary disease	Intermediate genetic risk	1.02 (0.97, 1.07)	0.363	1.02 (0.97, 1.07)	0.417
	High genetic risk	1.02 (0.96, 1.08)	0.526	1.01 (0.95, 1.07)	0.725
Gastrointestinal tract cancers	Intermediate genetic risk	0.99 (0.93, 1.05)	0.715	0.99 (0.93, 1.06)	0.760
	High genetic risk	1.05 (0.97, 1.14)	0.204	1.05 (0.97, 1.14)	0.189
Hepatobiliary and pancreatic cancers	Intermediate genetic risk	1.07 (0.94, 1.22)	0.290	1.07 (0.94, 1.22)	0.282
	High genetic risk	1.08 (0.93, 1.27)	0.303	1.08 (0.93, 1.26)	0.307

Minimally adjusted model: logistic models adjusted for age, sex, Townsend deprivation index, education. Fully adjusted model: logistic models adjusted for age, sex, Townsend deprivation index, education, body mass index (except for BMI related PRS), smoking status, drinking status, physical activity, and adherence to a healthy diet.

The low genetic risk group was the reference group.

PRS, polygenetic risk score; OR, odd ratio; CI, confidence interval; GLP-1, glucagon-like peptide-1; GIP, glucose-dependent insulinotropic polypeptide; TG, triglyceride; TC total cholesterol; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; GGT gamma-glutamyl transferase; AST aspartate aminotransferase; ALT alanine transaminase; ALP alkaline phosphatase

P<0.05/15 after Bonferroni correction was considered significant. P value with bolded black Indicated <0.05 and >0.05/15 and P value with bolded red indicated <0.05/15.

Supplementary table 8 Adjusted hazard ratios for incident gastrointestinal diseases according to diabetes duration of baseline type 2 diabetes

Disease	Diabetes duration	Cases/Person-years ^a	HR (95% CI)	P-value	P for trend
Barrett's esophagus	0-5 years	103/89015	1.10 (0.90, 1.34)	0.348	0.006
	5-10 years	87/52572	1.46 (1.18, 1.81)	0.001	
	>10 years	52/39420	1.13 (0.86, 1.50)	0.377	
Gastroesophageal reflux disease	0-5 years	701/85917	0.98 (0.91, 1.06)	0.672	<0.001
	5-10 years	494/50291	1.15 (1.05, 1.25)	0.003	
	>10 years	385/37606	1.19 (1.08, 1.32)	0.001	
Gastritis and duodenitis	0-5 years	869/84958	1.51 (1.41, 1.61)	<0.001	<0.001
	5-10 years	611/49904	1.74 (1.61, 1.89)	<0.001	
	>10 years	490/37086	1.84 (1.68, 2.02)	<0.001	
Celiac disease	0-5 years	11/89418	0.64 (0.35, 1.16)	0.138	0.020
	5-10 years	16/52834	1.57 (0.95, 2.59)	0.077	
	>10 years	15/39567	1.92 (1.14, 3.21)	0.013	
Peptic ulcer	0-5 years	233/88344	1.54 (1.34, 1.76)	<0.001	<0.001
	5-10 years	153/52221	1.61 (1.37, 1.90)	<0.001	
	>10 years	131/39080	1.78 (1.49, 2.12)	<0.001	
Crohn's disease	0-5 years	18/89402	1.07 (0.66, 1.72)	0.779	0.028
	5-10 years	14/52863	1.40 (0.82, 2.40)	0.216	
	>10 years	13/39568	1.75 (1.00, 3.05)	0.050	
Ulcerative colitis	0-5 years	35/89339	1.01 (0.72, 1.42)	0.969	0.283
	5-10 years	25/52789	1.20 (0.80, 1.79)	0.377	
	>10 years	19/39548	1.20 (0.76, 1.90)	0.428	

Irritable bowel syndrome	0-5 years	105/88900	1.07 (0.88, 1.30)	0.523	0.079
	5-10 years	70/52518	1.24 (0.98, 1.57)	0.079	
	>10 years	47/39402	1.12 (0.84, 1.50)	0.428	
Diverticulum	0-5 years	1054/83966	1.25 (1.17, 1.33)	<0.001	<0.001
	5-10 years	671/49434	1.27 (1.18, 1.37)	<0.001	
	>10 years	440/37374	1.11 (1.01, 1.22)	0.027	
Pancreatitis	0-5 years	78/89178	1.53 (1.21, 1.93)	<0.001	<0.001
	5-10 years	40/52762	1.24 (0.90, 1.71)	0.182	
	>10 years	41/39519	1.67 (1.22, 2.29)	0.002	
Non-alcoholic fatty liver disease	0-5 years	317/87879	2.52 (2.23, 2.85)	<0.001	<0.001
	5-10 years	197/52024	2.61 (2.25, 3.04)	<0.001	
	>10 years	123/39089	2.17 (1.80, 2.61)	<0.001	
Liver cirrhosis	0-5 years	154/88987	2.91 (2.45, 3.46)	<0.001	<0.001
	5-10 years	112/52549	3.40 (2.79, 4.15)	<0.001	
	>10 years	72/39439	2.84 (2.22, 3.62)	<0.001	
Biliary disease	0-5 years	412/87493	1.15 (1.04, 1.27)	0.008	<0.001
	5-10 years	241/51880	1.10 (0.96, 1.25)	0.159	
	>10 years	241/38662	1.52 (1.33, 1.73)	<0.001	
Gastrointestinal cancers	0-5 years	228/88650	1.26 (1.10, 1.44)	0.001	<0.001
	5-10 years	173/52293	1.50 (1.28, 1.75)	<0.001	
	>10 years	109/39274	1.24 (1.02, 1.50)	0.031	
Hepatobiliary and pancreatic cancers	0-5 years	109/89380	2.37 (1.94, 2.90)	<0.001	<0.001

5-10 years	68/52847	2.28 (1.78, 2.93)	<0.001
>10 years	54/39596	2.34 (1.77, 3.09)	<0.001

^a Excluding individuals with type 2 diabetes without information of duration (n=3602).

Analyses used age-scaled models adjusting for sex, Townsend deprivation index, education, ethnicity, body mass index, smoking status, drinking status, physical activity, and adherence to a healthy diet. The non-type 2 diabetes group was set as the reference. HR-hazard ratio, CI-confidence interval.

Supplementary table 9 Adjusted hazard ratios for incident gastrointestinal diseases according to HbA1c level of baseline type 2 diabetes

Diseases	Baseline HbA1c level	Cases/Person-years ^a	HR (95% CI)	P-value
Barrett's esophagus	<53 mmol/mol	167/129170	1.21 (1.03, 1.42)	0.019
	≥53 mmol/mol	88/76500	1.07 (0.86, 1.33)	0.528
Gastroesophageal reflux disease	<53 mmol/mol	1106/124202	1.08 (1.01, 1.15)	0.017
	≥53 mmol/mol	608/73655	0.98 (0.91, 1.07)	0.700
Gastritis and duodenitis	<53 mmol/mol	1304/123110	1.55 (1.46, 1.64)	<0.001
	≥53 mmol/mol	798/72920	1.59 (1.48, 1.71)	<0.001
Celiac disease	<53 mmol/mol	36/129694	1.38 (0.99, 1.94)	0.060
	≥53 mmol/mol	13/76808	0.90 (0.52, 1.56)	0.696
Peptic ulcer	<53 mmol/mol	335/128308	1.52 (1.35, 1.70)	<0.001
	≥53 mmol/mol	223/75837	1.67 (1.45, 1.92)	<0.001
Crohn's disease	<53 mmol/mol	27/129765	1.12 (0.75, 1.65)	0.585
	≥53 mmol/mol	24/76749	1.62 (1.07, 2.46)	0.024
Ulcerative colitis	<53 mmol/mol	53/129621	1.06 (0.80, 1.40)	0.699
	≥53 mmol/mol	35/76678	1.15 (0.81, 1.61)	0.433
Irritable bowel syndrome	<53 mmol/mol	164/128934	1.14 (0.97, 1.34)	0.105
	≥53 mmol/mol	80/76449	0.97 (0.77, 1.21)	0.778
Diverticulum	<53 mmol/mol	1544/121851	1.24 (1.18, 1.31)	<0.001
	≥53 mmol/mol	796/72752	1.09 (1.01, 1.17)	0.026
Pancreatitis	<53 mmol/mol	104/129474	1.42 (1.16, 1.75)	0.001
	≥53 mmol/mol	72/76608	1.58 (1.24, 2.02)	<0.001
Non-alcoholic fatty liver	<53 mmol/mol	408/127824	2.38 (2.14, 2.66)	<0.001

disease				
	≥53 mmol/mol	288/75563	2.52 (2.22, 2.86)	<0.001
Liver cirrhosis	<53 mmol/mol	200/129218	2.64 (2.26, 3.08)	<0.001
	≥53 mmol/mol	156/76380	3.26 (2.74, 3.89)	<0.001
Biliary disease	<53 mmol/mol	611/126948	1.19 (1.10, 1.30)	<0.001
	≥53 mmol/mol	365/75245	1.15 (1.03, 1.28)	0.010
Gastrointestinal cancers	tract			
	<53 mmol/mol	357/128525	1.33 (1.19, 1.49)	<0.001
	≥53 mmol/mol	183/76332	1.16 (1.00, 1.35)	0.049
Hepatobiliary pancreatic cancers	and			
	<53 mmol/mol	151/129706	2.19 (1.84, 2.61)	<0.001
	≥53 mmol/mol	104/76757	2.61 (2.12, 3.22)	<0.001

^a Excluding individuals with type 2 diabetes without information of baseline HbA1c level (n=1448).

Analyses used age-scaled models adjusting for sex, Townsend deprivation index, education, ethnicity, body mass index, smoking status, drinking status, physical activity, and adherence to a healthy diet. The non-type 2 diabetes group was set as the reference. HR-hazard ratio, CI-confidence interval.

Supplementary table 10 Adjusted hazard ratios for incident gastrointestinal diseases according to use of diabetes medication

Diseases	Diabetes medication use	Cases/Person-years ^a	HR (95% CI)	P-value
Barrett's esophagus	No	105/101196	1.01 (0.79, 1.28)	0.962
	Yes	177/121010	1.33 (1.13, 1.56)	<0.001
Gastroesophageal reflux disease	No	771/97727	1.04 (0.95, 1.13)	0.405
	Yes	1089/116034	1.10 (1.03, 1.17)	0.004
Gastritis and duodenitis	No	878/97157	1.42 (1.31, 1.55)	<0.001
	Yes	1415/114536	1.77 (1.67, 1.88)	<0.001
Celiac disease	No	25/101477	1.02 (0.59, 1.78)	0.935
	Yes	31/121640	1.28 (0.88, 1.87)	0.197
Peptic ulcer	No	225/100610	1.43 (1.22, 1.68)	<0.001
	Yes	372/120017	1.71 (1.53, 1.91)	<0.001
Crohn's disease	No	25/101477	1.12 (0.64, 1.95)	0.697
	Yes	32/121650	1.42 (0.98, 2.05)	0.063
Ulcerative colitis	No	39/101395	0.98 (0.65, 1.48)	0.933
	Yes	55/121541	1.17 (0.89, 1.55)	0.266
Irritable bowel syndrome	No	131/100866	1.20 (0.96, 1.50)	0.102
	Yes	145/120992	1.09 (0.92, 1.29)	0.336
Diverticulum	No	1093/95848	1.23 (1.14, 1.32)	<0.001
	Yes	1424/114482	1.22 (1.15, 1.29)	<0.001
Pancreatitis	No	66/101305	1.13 (0.83, 1.55)	0.437
	Yes	121/121373	1.65 (1.35, 2.01)	<0.001
Non-alcoholic fatty liver	No	307/100169	2.35 (2.03, 2.73)	<0.001

disease					
	Yes	450/119595		2.53 (2.27, 2.82)	<0.001
Liver cirrhosis	No	152/101111		2.80 (2.28, 3.44)	<0.001
	Yes	237/121027		3.17 (2.73, 3.68)	<0.001
Biliary disease	No	440/99405		1.19 (1.06, 1.34)	0.003
	Yes	614/119096		1.22 (1.12, 1.33)	<0.001
Gastrointestinal cancers	tract				
	No	254/100650		1.25 (1.09, 1.42)	0.001
	Yes	331/120671		1.29 (1.14, 1.45)	<0.001
Hepatobiliary pancreatic cancers	and				
	No	97/101468		1.91 (1.54, 2.37)	<0.001
	Yes	174/121629		2.71 (2.28, 3.22)	<0.001

^a Excluding individuals with type 2 diabetes without information of baseline HbA1c level (n=1448).

Analyses used age-scaled models adjusting for sex, Townsend deprivation index, education, ethnicity, body mass index, smoking status, drinking status, physical activity, and adherence to a healthy diet. The non-type 2 diabetes group was set as the reference. HR-hazard ratio, CI-confidence interval.

Supplementary table 11 Adjusted hazard ratios for incident gastrointestinal diseases according to baseline type 2 diabetes stratified by age, sex, body mass index, smoking status, and drinking status

Diseases	Age ≤60 years		Age >60 years		P- interaction	Female		Male		P- interaction
	HR (95% CI)	P-value	HR (95% CI)	P-value		HR (95% CI)	P-value	HR (95% CI)	P-value	
Barrett's esophagus	1.26 (1.03, 1.55)	0.026*	1.18 (1.00, 1.39)	0.049*	0.66	1.20 (0.93, 1.54)	0.166	1.22 (1.05, 1.42)	0.008	0.47
Gastroesophageal reflux disease	1.05 (0.98, 1.13)	0.160	1.06 (1.00, 1.14)	0.068	0.20	0.99 (0.92, 1.07)	0.885	1.13 (1.06, 1.21)	<0.001	0.84
Gastritis and duodenitis	1.57 (1.46, 1.68)	<0.001**	1.58 (1.48, 1.68)	<0.001**	0.75	1.52 (1.42, 1.64)	<0.001	1.64 (1.54, 1.74)	<0.001	0.69
Celiac disease	1.28 (0.86, 1.90)	0.224	1.34 (0.91, 1.98)	0.144	0.81	1.26 (0.83, 1.92)	0.280	1.41 (0.97, 2.05)	0.069	0.67
Peptic ulcer	1.69 (1.46, 1.94)	<0.001**	1.48 (1.31, 1.66)	<0.001**	0.16	1.57 (1.34, 1.84)	<0.001	1.56 (1.40, 1.75)	<0.001	0.68
Crohn's disease	1.48 (1.00, 2.18)	0.050	1.23 (0.81, 1.86)	0.336	0.39	1.46 (0.92, 2.31)	0.110	1.29 (0.90, 1.86)	0.167	0.77
Ulcerative colitis	0.95 (0.68, 1.33)	0.769	1.20 (0.90, 1.61)	0.216	0.43	1.40 (0.98, 1.98)	0.061	0.92 (0.70, 1.22)	0.572	0.13
Irritable bowel syndrome	1.26 (1.07, 1.48)	0.005*	0.99 (0.81, 1.21)	0.929	0.01	1.24 (1.06, 1.45)	0.009	0.99 (0.80, 1.22)	0.933	0.04
Diverticulum	1.05 (0.98, 1.13)	0.157	1.30 (1.23, 1.37)	<0.001**	0.01	1.17 (1.09, 1.26)	<0.001	1.20 (1.14, 1.27)	<0.001	0.94
Pancreatitis	1.37 (1.06, 1.77)	0.015*	1.53 (1.23, 1.89)	<0.001**	0.47	0.97 (0.72, 1.31)	0.841	1.81 (1.49, 2.21)	<0.001	<0.01
Non-alcoholic fatty liver disease	2.56 (2.28, 2.87)	<0.001**	2.43 (2.12, 2.79)	<0.001**	0.61	2.55 (2.22, 2.93)	<0.001	2.44 (2.17, 2.74)	<0.001	0.23
Cirrhosis	3.18 (2.65, 3.82)	<0.001**	2.74 (2.32, 3.23)	<0.001**	0.57	3.50 (2.76, 4.42)	<0.001	2.69 (2.32, 3.11)	<0.001	0.29
Biliary disease	1.13 (1.02, 1.25)	0.015*	1.22 (1.12, 1.34)	<0.001**	0.40	1.02 (0.92, 1.12)	0.709	1.36 (1.24, 1.49)	<0.001	<0.01
Gastrointestinal tract cancers	1.44 (1.24, 1.68)	<0.001**	1.20 (1.08, 1.35)	0.001**	0.02	1.17 (0.98, 1.40)	0.091	1.28 (1.15, 1.42)	<0.001	0.03

Hepatobiliary and pancreatic cancers										
Diseases	Non-obesity		Obesity		P- interaction	Ever smoker		Non smoker		P- interaction
	HR (95% CI)	P-value	HR (95% CI)	P-value		HR (95% CI)	P-value	HR (95% CI)	P-value	
	2.29 (1.77, 2.97)	<0.001**	2.34 (1.98, 2.77)	<0.001**	0.72	2.00 (1.54, 2.60)	<0.001	2.42 (2.04, 2.86)	<0.001	0.06
Barrett's esophagus	1.42 (1.19, 1.68)	<0.001**	1.12 (0.92, 1.35)	0.254	0.01	1.27 (1.08, 1.50)	0.004*	1.09 (0.89, 1.35)	0.409	0.35
Gastroesophageal reflux disease	1.21 (1.12, 1.29)	<0.001**	1.06 (0.99, 1.13)	0.093	<0.01	1.06 (0.99, 1.13)	0.092	1.04 (0.97, 1.12)	0.296	0.92
Gastritis and duodenitis	1.59 (1.49, 1.69)	<0.001**	1.64 (1.54, 1.75)	<0.001**	0.62	1.59 (1.50, 1.69)	<0.001**	1.58 (1.47, 1.69)	<0.001**	0.35
Celiac disease	1.33 (0.94, 1.87)	0.103	0.95 (0.60, 1.51)	0.830	0.15	1.12 (0.75, 1.68)	0.568	1.46 (0.99, 2.15)	0.053	0.64
Peptic ulcer	1.58 (1.39, 1.80)	<0.001**	1.67 (1.47, 1.89)	<0.001**	0.58	1.53 (1.36, 1.72)	<0.001**	1.62 (1.41, 1.86)	<0.001**	0.23
Crohn's disease	1.20 (0.78, 1.86)	0.401	1.47 (1.01, 2.14)	0.045*	0.63	1.29 (0.89, 1.85)	0.175	1.42 (0.90, 2.26)	0.136	0.72
Ulcerative colitis	1.07 (0.79, 1.45)	0.666	1.09 (0.80, 1.49)	0.565	0.91	1.00 (0.75, 1.32)	0.977	1.21 (0.87, 1.70)	0.261	0.38
Irritable bowel syndrome	0.96 (0.79, 1.17)	0.683	1.26 (1.07, 1.49)	0.006*	0.07	1.20 (1.01, 1.42)	0.039*	1.04 (0.86, 1.26)	0.665	0.12
Diverticulum	1.31 (1.23, 1.39)	<0.001**	1.22 (1.15, 1.29)	<0.001**	0.01	1.20 (1.14, 1.27)	<0.001**	1.18 (1.10, 1.26)	<0.001**	0.74
Pancreatitis	2.00 (1.58, 2.52)	<0.001**	1.38 (1.11, 1.72)	0.003**	0.01	1.67 (1.36, 2.07)	<0.001**	1.22 (0.94, 1.57)	0.138	0.24
Non-alcoholic fatty liver disease	3.40 (2.95, 3.93)	<0.001**	2.67 (2.40, 2.97)	<0.001**	<0.01	2.31 (2.05, 2.60)	<0.001**	2.68 (2.35, 3.06)	<0.001**	0.02
Liver cirrhosis	2.36 (1.94, 2.88)	<0.001**	3.54 (3.02, 4.15)	<0.001**	<0.01	2.89 (2.47, 3.38)	<0.001**	3.02 (2.48, 3.68)	<0.001**	0.22
Biliary disease	1.61 (1.45, 1.78)	<0.001**	1.26 (1.16, 1.38)	<0.001**	<0.01	1.24 (1.13, 1.36)	<0.001**	1.11 (1.01, 1.23)	0.031*	0.18
Gastrointestinal tract cancers	1.36 (1.20, 1.55)	<0.001**	1.26 (1.12, 1.43)	<0.001**	0.46	1.28 (1.14, 1.43)	<0.001**	1.10 (0.95, 1.28)	0.185	0.72

Hepatobiliary and pancreatic cancers										
	2.29 (1.87, 2.80)	<0.001**	2.40 (1.98, 2.91)	<0.001**	0.75	2.41 (2.02, 2.89)	<0.001**	2.10 (1.67, 2.64)	<0.001**	0.27
Diseases	Current drinker		Non-current drinker		P-interaction	Without PPI use		With PPI use		P-interaction
	HR (95% CI)	P-value	HR (95% CI)	P-value		HR (95% CI)	P-value	HR (95% CI)	P-value	
Barrett's esophagus	1.21 (1.06, 1.39)	0.005	1.13 (0.76, 1.68)	0.548	0.24	1.15 (1.00, 1.33)	0.050	1.14 (0.84, 1.55)	0.406	0.09
Gastroesophageal reflux disease	1.03 (0.98, 1.09)	0.214	1.14 (1.01, 1.29)	0.040*	0.34	1.01 (0.96, 1.07)	0.651	0.93 (0.83, 1.05)	0.236	<0.001
Gastritis and duodenitis	1.60 (1.53, 1.69)	<0.001**	1.49 (1.32, 1.67)	<0.001**	0.04	1.54 (1.46, 1.61)	<0.001**	1.57 (1.39, 1.77)	<0.001**	<0.01
Celiac disease	1.35 (1.01, 1.81)	0.045	1.01 (0.42, 2.40)	0.985	0.32	1.25 (0.93, 1.69)	0.133	1.55 (0.67, 3.62)	0.308	0.70
Peptic ulcer	1.55 (1.40, 1.71)	<0.001**	1.73 (1.37, 2.18)	<0.001**	0.61	1.55 (1.41, 1.71)	<0.001**	1.43 (1.10, 1.85)	0.008*	0.01
Crohn's disease	1.28 (0.94, 1.75)	0.117	1.89 (0.93, 3.86)	0.080	0.51	1.32 (0.98, 1.79)	0.072	1.50 (0.67, 3.36)	0.319	0.78
Ulcerative colitis	1.03 (0.81, 1.31)	0.793	1.47 (0.85, 2.56)	0.169	0.57	1.05 (0.84, 1.33)	0.654	1.18 (0.61, 2.29)	0.614	0.79
Irritable bowel syndrome	1.12 (0.98, 1.29)	0.108	1.09 (0.81, 1.48)	0.566	0.93	1.04 (0.90, 1.19)	0.601	1.24 (0.93, 1.67)	0.145	0.47
Diverticulum	1.18 (1.13, 1.24)	<0.001**	1.24 (1.09, 1.41)	0.001**	0.95	1.18 (1.13, 1.23)	<0.001**	1.09 (0.96, 1.24)	0.169	0.01
Pancreatitis	1.44 (1.20, 1.71)	<0.001**	1.66 (1.09, 2.54)	0.018	0.67	1.37 (1.15, 1.64)	<0.001**	1.62 (1.07, 2.43)	0.022*	0.61
Non-alcoholic fatty liver disease	2.38 (2.16, 2.62)	<0.001**	3.09 (2.47, 3.88)	<0.001**	0.86	2.43 (2.21, 2.67)	<0.001**	2.46 (1.88, 3.21)	<0.001**	0.02
Liver cirrhosis	2.88 (2.53, 3.28)	<0.001**	3.35 (2.33, 4.82)	<0.001**	1.00	2.81 (2.47, 3.21)	<0.001**	3.25 (2.27, 4.65)	<0.001**	0.62
Biliary disease	1.18 (1.10, 1.27)	<0.001**	1.22 (1.03, 1.45)	0.021*	0.19	1.17 (1.09, 1.26)	<0.001**	1.08 (0.89, 1.30)	0.447	0.01
Gastrointestinal	1.33 (1.21, 1.46)	<0.001**	0.99 (0.74, 1.34)	0.961	<0.01	1.28 (1.17, 1.41)	<0.001**	1.25 (0.91, 1.72)	0.160	0.67

tract cancers

Hepatobiliary and
pancreatic

cancers	2.25 (1.93, 2.62)	<0.001**	2.85 (1.92, 4.23)	<0.001**	0.37	2.31 (1.99, 2.68)	<0.001**	2.30 (1.44, 3.67)	<0.001**	0.69
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Analyses used age-scaled models adjusting for sex, Townsend deprivation index, education, ethnicity, body mass index, smoking status, drinking status, physical activity, and adherence to a healthy diet. The non-type 2 diabetes group was set as the reference. HR-hazard ratio, CI-confidence interval.

P<0.05/15 after Bonferroni correction was considered significant. * Indicated the P value<0.05 and >0.05/15 and ** indicated the P value<0.05/15.

Supplementary table 12 Adjusted hazard ratios for incident gastrointestinal diseases according to baseline type 2 diabetes (new definition of type 2 diabetes)

Locations	Diseases	Medical records or self-report + abnormal blood glucose/abnormal HbA1c/use of anti-diabetes drugs		ICD codes use E11 instead of E11-E14	
		HR (95% CI)	P-value	HR (95% CI)	P-value
Esophagus	Barrett's esophagus	1.26 (1.08, 1.46)	0.003	1.19 (1.05, 1.36)	0.007
	Gastroesophageal reflux disease	1.08 (1.02, 1.15)	0.011	1.05 (1.00, 1.10)	0.061
Stomach and bowel	Gastritis and duodenitis	1.73 (1.64, 1.83)	<0.001	1.58 (1.51, 1.65)	<0.001
	Celiac disease	1.24 (0.87, 1.77)	0.238	1.28 (0.96, 1.69)	0.088
	Peptic ulcer	1.69 (1.52, 1.88)	<0.001	1.56 (1.42, 1.71)	<0.001
	Crohn's disease	1.40 (0.99, 1.98)	0.055	1.35 (1.02, 1.80)	0.037
	Ulcerative colitis	1.16 (0.89, 1.50)	0.267	1.08 (0.87, 1.35)	0.479
	Irritable bowel syndrome	1.07 (0.91, 1.26)	0.402	1.12 (0.99, 1.27)	0.068
	Diverticulum	1.22 (1.16, 1.28)	<0.001	1.18 (1.13, 1.24)	<0.001
Pancreas	Pancreatitis	1.64 (1.36, 1.98)	<0.001	1.45 (1.23, 1.71)	<0.001
Liver	Non-alcoholic fatty liver disease	2.45 (2.21, 2.72)	<0.001	2.46 (2.25, 2.69)	<0.001
	Liver cirrhosis	3.10 (2.69, 3.57)	<0.001	2.93 (2.59, 3.31)	<0.001
Gallbladder and biliary	Biliary disease	1.20 (1.11, 1.30)	<0.001	1.18 (1.10, 1.26)	<0.001
Gastrointestinal cancers	Gastrointestinal tract cancers	1.30 (1.17, 1.45)	<0.001	1.27 (1.16, 1.39)	<0.001
	Hepatobiliary and pancreatic cancers	2.59 (2.20, 3.04)	<0.001	2.30 (2.00, 2.65)	<0.001

The new definition of type 2 diabetes (n=12405): ICD code diagnosis plus ≥ 1 the following: abnormal blood glucose, abnormal HbA1c, or use of anti-diabetes drugs at baseline. Analyses used age-scaled models adjusting for sex, Townsend deprivation index, education, ethnicity, body mass index, smoking status, drinking status, physical activity, and adherence to a healthy diet. The non-type 2 diabetes group was set as the reference. HR-hazard ratio, CI-confidence interval.

Supplementary table 13 Adjusted hazard ratios for incident gastrointestinal diseases according to baseline type 2 diabetes in sensitive analyses

Locations	Diseases	Further adjusted for C-reactive protein		Further adjusted for INFLA-score		Further adjusted for proton pump inhibitors	
		HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value
Esophagus	Barrett's esophagus	1.20 (1.05, 1.36)	0.006	1.19 (1.04, 1.35)	0.009	1.13 (1.00, 1.29)	0.059
	Gastroesophageal reflux disease	1.05 (1.00, 1.10)	0.058	1.04 (0.99, 1.10)	0.098	0.99 (0.94, 1.04)	0.578
Stomach and bowel	Gastritis and duodenitis	1.58 (1.51, 1.65)	<0.001	1.57 (1.50, 1.64)	<0.001	1.53 (1.46, 1.60)	<0.001
	Celiac disease	1.30 (0.98, 1.71)	0.068	1.27 (0.96, 1.67)	0.094	1.28 (0.97, 1.69)	0.082
	Peptic ulcer	1.56 (1.43, 1.71)	<0.001	1.54 (1.41, 1.69)	<0.001	1.52 (1.39, 1.66)	<0.001
	Crohn's disease	1.35 (1.01, 1.79)	0.040	1.31 (0.98, 1.74)	0.065	1.32 (0.99, 1.76)	0.056
	Ulcerative colitis	1.08 (0.87, 1.34)	0.510	1.05 (0.85, 1.31)	0.643	1.07 (0.86, 1.32)	0.571
	Irritable bowel syndrome	1.12 (0.99, 1.27)	0.081	1.11 (0.98, 1.26)	0.095	1.07 (0.94, 1.21)	0.305
	Diverticulum	1.19 (1.14, 1.24)	<0.001	1.18 (1.13, 1.23)	<0.001	1.16 (1.12, 1.21)	<0.001
Pancreas	Pancreatitis	1.46 (1.24, 1.71)	<0.001	1.43 (1.22, 1.69)	<0.001	1.41 (1.20, 1.66)	<0.001
Liver	Non-alcoholic fatty liver disease	2.46 (2.25, 2.69)	<0.001	2.44 (2.24, 2.67)	<0.001	2.41 (2.21, 2.64)	<0.001
	Liver cirrhosis	2.93 (2.59, 3.31)	<0.001	2.92 (2.58, 3.30)	<0.001	2.86 (2.53, 3.24)	<0.001
Gallbladder and biliary	Biliary disease	1.18 (1.10, 1.26)	<0.001	1.16 (1.09, 1.24)	<0.001	1.15 (1.08, 1.23)	<0.001
Gastrointestinal cancers	Gastrointestinal tract cancers	1.28 (1.17, 1.40)	<0.001	1.27 (1.16, 1.39)	<0.001	1.29 (1.18, 1.41)	<0.001

	Hepatobiliary and pancreatic cancers	2.32 (2.02, 2.67)	<0.001	2.30 (2.00, 2.64)	<0.001	2.31 (2.00, 2.65)	<0.001
Locations	Diseases	Further adjusted for baseline cardiovascular diseases		Further adjusted for baseline metabolic abnormalities			
		HR (95% CI)	P-value	HR (95% CI)	P-value		
Esophagus	Barrett's esophagus	1.16 (1.02, 1.32)	0.024	1.17 (1.03, 1.33)	0.016		
	Gastroesophageal reflux disease	0.99 (0.95, 1.05)	0.830	1.02 (0.97, 1.07)	0.444		
Stomach and bowel	Gastritis and duodenitis	1.49 (1.42, 1.56)	<0.001	1.53 (1.46, 1.60)	<0.001		
	Celiac disease	1.26 (0.95, 1.67)	0.107	1.26 (0.96, 1.67)	0.102		
	Peptic ulcer	1.44 (1.31, 1.58)	<0.001	1.50 (1.37, 1.64)	<0.001		
	Crohn's disease	1.30 (0.97, 1.73)	0.077	1.32 (0.99, 1.76)	0.056		
	Ulcerative colitis	1.05 (0.84, 1.31)	0.648	1.05 (0.85, 1.31)	0.644		
	Irritable bowel syndrome	1.06 (0.93, 1.20)	0.383	1.10 (0.97, 1.24)	0.150		
	Diverticulum	1.13 (1.09, 1.18)	<0.001	1.16 (1.11, 1.21)	<0.001		
Pancreas	Pancreatitis	1.39 (1.18, 1.64)	<0.001	1.42 (1.21, 1.68)	<0.001		
Liver	Non-alcoholic fatty liver disease	2.26 (2.07, 2.47)	<0.001	2.30 (2.11, 2.51)	<0.001		
	Liver cirrhosis	2.69 (2.37, 3.05)	<0.001	2.80 (2.48, 3.17)	<0.001		
Gallbladder and biliary	Biliary disease	1.15 (1.07, 1.23)	<0.001	1.16 (1.08, 1.24)	<0.001		
Gastrointestinal	Gastrointestinal tract	1.27 (1.16, 1.39)	<0.001	1.28 (1.17, 1.40)	<0.001		

cancers	cancers				
	Hepatobiliary	and			
	pancreatic cancers		2.27 (1.97, 2.62)	<0.001	2.28 (1.98, 2.63) <0.001

Analyses used age-scaled models adjusting for sex, Townsend deprivation index, education, ethnicity, body mass index, smoking status, drinking status, physical activity, and adherence to a healthy diet. The non- type 2 diabetes group was set as the reference. HR-hazard ratio, CI-confidence interval.

Supplementary table 14 Results of step function for analysis of unmet proportional assumption assumptions over different time intervals (0-5, 5-10, 10- follow-up years)

Disease: different time interval group	Fully adjusted	<i>P</i> -value	Further adjusted	<i>P</i> -value	Further adjusted	<i>P</i> -value	Further adjusted	<i>P</i> -value
	model		for C-reactive protein		for INFLA-score		for proton pump inhibitors	
	HR (95% CI)		HR (95% CI)		HR (95% CI)		HR (95% CI)	
Gastritis and duodenitis								
Type 2 diabetes: tgroup=1	1.37 (1.27, 1.48)	<0.001	1.01 (1.01, 1.01)	<0.001	1.01 (1.01, 1.01)	<0.001	2.07 (1.98, 2.17)	<0.001
Type 2 diabetes: tgroup=2	1.67 (1.57, 1.78)	<0.001	1.37 (1.27, 1.48)	<0.001	1.36 (1.27, 1.47)	<0.001	1.32 (1.23, 1.42)	<0.001
Type 2 diabetes: tgroup=3	1.83 (1.64, 2.04)	<0.001	1.67 (1.57, 1.78)	<0.001	1.66 (1.56, 1.77)	<0.001	1.62 (1.52, 1.72)	<0.001
Diverticular disease								
Type 2 diabetes: tgroup=1	1.39 (1.33, 1.45)	<0.001	1.01 (1.00, 1.01)	<0.001	1.01 (1.01, 1.01)	<0.001	1.88 (1.82, 1.93)	<0.001
Type 2 diabetes: tgroup=2	1.42 (1.36, 1.49)	<0.001	1.39 (1.33, 1.45)	<0.001	1.38 (1.32, 1.45)	<0.001	1.35 (1.29, 1.41)	<0.001
Type 2 diabetes: tgroup=3	1.44 (1.37, 1.52)	<0.001	1.42 (1.36, 1.49)	<0.001	1.42 (1.35, 1.48)	<0.001	1.38 (1.32, 1.45)	<0.001
Non-alcoholic fatty liver disease								
Type 2 diabetes: tgroup=1	2.82 (2.43, 3.27)	<0.001	1.02 (1.01, 1.02)	<0.001	1.01 (1.01, 1.02)	<0.001	1.58 (1.40, 1.78)	<0.001
Type 2 diabetes: tgroup=2	2.61 (2.31, 2.95)	<0.001	2.82 (2.43, 3.27)	<0.001	2.80 (2.41, 3.24)	<0.001	2.76 (2.38, 3.20)	<0.001
Type 2 diabetes: tgroup=3	2.22 (1.85, 2.66)	<0.001	2.61 (2.31, 2.95)	<0.001	2.59 (2.29, 2.93)	<0.001	2.56 (2.26, 2.89)	<0.001
Disease: different time interval group	Further adjusted for baseline cardiovascular diseases		Further adjusted for baseline metabolic abnormalities		Medical records or self-report + abnormal blood glucose/abnormal		ICD codes use E11 instead of E11-E14	

					HbA1c/use of anti-diabetes drugs			
	HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value
Gastritis and duodenitis								
Type 2 diabetes: tgroup=1	1.28 (1.24, 1.32)	<0.001	1.22 (1.19, 1.26)	<0.001	1.52 (1.39, 1.66)	<0.001	1.37 (1.27, 1.48)	<0.001
Type 2 diabetes: tgroup=2	1.29 (1.20, 1.39)	<0.001	1.33 (1.23, 1.43)	<0.001	1.80 (1.67, 1.94)	<0.001	1.66 (1.56, 1.77)	<0.001
Type 2 diabetes: tgroup=3	1.57 (1.48, 1.68)	<0.001	1.61 (1.51, 1.72)	<0.001	2.07 (1.82, 2.36)	<0.001	1.82 (1.63, 2.03)	<0.001
Diverticular disease								
Type 2 diabetes: tgroup=1	1.15 (1.13, 1.17)	<0.001	1.11 (1.09, 1.13)	<0.001	1.50 (1.43, 1.58)	<0.001	1.39 (1.33, 1.45)	<0.001
Type 2 diabetes: tgroup=2	1.35 (1.29, 1.41)	<0.001	1.37 (1.31, 1.43)	<0.001	1.55 (1.47, 1.64)	<0.001	1.42 (1.35, 1.49)	<0.001
Type 2 diabetes: tgroup=3	1.38 (1.31, 1.44)	<0.001	1.40 (1.33, 1.46)	<0.001	1.59 (1.49, 1.69)	<0.001	1.44 (1.37, 1.52)	<0.001
Non-alcoholic fatty liver disease								
Type 2 diabetes: tgroup=1	1.51 (1.40, 1.62)	<0.001	2.00 (1.84, 2.18)	<0.001	2.83 (2.38, 3.36)	<0.001	2.82 (2.43, 3.27)	<0.001
Type 2 diabetes: tgroup=2	2.56 (2.20, 2.97)	<0.001	2.64 (2.28, 3.06)	<0.001	2.64 (2.29, 3.05)	<0.001	2.61 (2.31, 2.95)	<0.001
Type 2 diabetes: tgroup=3	2.37 (2.10, 2.68)	<0.001	2.44 (2.16, 2.75)	<0.001	2.14 (1.72, 2.66)	<0.001	2.21 (1.84, 2.65)	<0.001
Disease: different time interval group								
	Age ≤60 years		Age >60 years		Female		Male	
	HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value
Gastritis and duodenitis								
Type 2 diabetes: tgroup=1	1.35 (1.21, 1.52)	<0.001	1.38 (1.25, 1.52)	<0.001	1.40 (1.25, 1.57)	<0.001	1.38 (1.25, 1.52)	<0.001
Type 2 diabetes: tgroup=2	1.71 (1.55, 1.88)	<0.001	1.63 (1.50, 1.77)	<0.001	1.61 (1.45, 1.78)	<0.001	1.72 (1.58, 1.87)	<0.001

Type 2 diabetes: tgroup=3	1.65 (1.40, 1.96)	<0.001	1.97 (1.70, 2.28)	<0.001	1.55 (1.29, 1.86)	<0.001	2.04 (1.77, 2.34)	<0.001
Diverticular disease								
Type 2 diabetes: tgroup=1	1.40 (1.30, 1.49)	<0.001	1.42 (1.34, 1.51)	<0.001	1.36 (1.27, 1.46)	<0.001	1.43 (1.35, 1.51)	<0.001
Type 2 diabetes: tgroup=2	1.41 (1.31, 1.51)	<0.001	1.47 (1.38, 1.56)	<0.001	1.36 (1.26, 1.46)	<0.001	1.48 (1.39, 1.57)	<0.001
Type 2 diabetes: tgroup=3	1.46 (1.36, 1.58)	<0.001	1.44 (1.34, 1.55)	<0.001	1.39 (1.28, 1.51)	<0.001	1.50 (1.40, 1.61)	<0.001
Non-alcoholic fatty liver disease								
Type 2 diabetes: tgroup=1	2.84 (2.33, 3.45)	<0.001	2.82 (2.24, 3.54)	<0.001	3.69 (2.97, 4.59)	<0.001	2.34 (1.91, 2.86)	<0.001
Type 2 diabetes: tgroup=2	2.79 (2.38, 3.28)	<0.001	2.38 (1.96, 2.88)	<0.001	2.39 (1.96, 2.92)	<0.001	2.79 (2.38, 3.26)	<0.001
Type 2 diabetes: tgroup=3	2.24 (1.78, 2.83)	<0.001	2.19 (1.64, 2.92)	<0.001	2.04 (1.53, 2.72)	<0.001	2.40 (1.89, 3.04)	<0.001
Disease: different time interval group								
	Non-obesity		Obesity		Ever smoker		Non smoker	
	HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value
Gastritis and duodenitis								
Type 2 diabetes: tgroup=1	1.35 (1.22, 1.50)	<0.001	1.45 (1.31, 1.61)	<0.001	1.37 (1.24, 1.52)	<0.001	1.39 (1.24, 1.55)	<0.001
Type 2 diabetes: tgroup=2	1.70 (1.56, 1.86)	<0.001	1.71 (1.56, 1.87)	<0.001	1.68 (1.54, 1.83)	<0.001	1.66 (1.51, 1.83)	<0.001
Type 2 diabetes: tgroup=3	1.78 (1.52, 2.09)	<0.001	1.91 (1.63, 2.24)	<0.001	1.89 (1.63, 2.19)	<0.001	1.77 (1.50, 2.08)	<0.001
Diverticular disease								
Type 2 diabetes: tgroup=1	1.36 (1.28, 1.45)	<0.001	1.46 (1.37, 1.56)	<0.001	1.39 (1.31, 1.48)	<0.001	1.40 (1.31, 1.49)	<0.001
Type 2 diabetes: tgroup=2	1.41 (1.32, 1.50)	<0.001	1.48 (1.38, 1.58)	<0.001	1.43 (1.34, 1.53)	<0.001	1.42 (1.32, 1.52)	<0.001
Type 2 diabetes: tgroup=3	1.45 (1.34, 1.57)	<0.001	1.50 (1.39, 1.62)	<0.001	1.44 (1.34, 1.55)	<0.001	1.46 (1.35, 1.57)	<0.001
Non-alcoholic fatty liver disease								
Type 2 diabetes: tgroup=1	4.17 (3.25, 5.35)	<0.001	2.86 (2.38, 3.44)	<0.001	2.54 (2.07, 3.10)	<0.001	3.23 (2.59, 4.01)	<0.001

Type 2 diabetes: tgroup=2	3.38 (2.75, 4.17)	<0.001	3.00 (2.58, 3.49)	<0.001	2.51 (2.13, 2.95)	<0.001	2.76 (2.30, 3.32)	<0.001
Type 2 diabetes: tgroup=3	3.42 (2.55, 4.60)	<0.001	2.31 (1.83, 2.91)	<0.001	2.05 (1.60, 2.64)	<0.001	2.45 (1.89, 3.18)	<0.001
Disease: different time interval group	Current drinker		Non-current drinker		Without PPI use		With PPI use	
	HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value	HR (95% CI)	P-value
Gastritis and duodenitis								
Type 2 diabetes: tgroup=1	1.33 (1.23, 1.44)	<0.001	1.51 (1.27, 1.79)	<0.001	1.30 (1.20, 1.41)	<0.001	1.45 (1.22, 1.74)	<0.001
Type 2 diabetes: tgroup=2	1.74 (1.62, 1.86)	<0.001	1.38 (1.16, 1.64)	<0.001	1.63 (1.52, 1.74)	<0.001	1.73 (1.45, 2.07)	<0.001
Type 2 diabetes: tgroup=3	1.89 (1.68, 2.12)	<0.001	1.67 (1.23, 2.26)	0.001	1.86 (1.66, 2.09)	<0.001	1.37 (0.96, 1.95)	0.079
Diverticular disease								
Type 2 diabetes: tgroup=1	1.41 (1.35, 1.48)	<0.001	1.32 (1.18, 1.48)	<0.001	1.36 (1.30, 1.42)	<0.001	1.41 (1.25, 1.58)	<0.001
Type 2 diabetes: tgroup=2	1.44 (1.36, 1.51)	<0.001	1.37 (1.22, 1.54)	<0.001	1.38 (1.32, 1.46)	<0.001	1.46 (1.29, 1.66)	<0.001
Type 2 diabetes: tgroup=3	1.46 (1.37, 1.54)	<0.001	1.37 (1.20, 1.56)	<0.001	1.40 (1.32, 1.48)	<0.001	1.50 (1.30, 1.73)	<0.001
Non-alcoholic fatty liver disease								
Type 2 diabetes: tgroup=1	2.66 (2.26, 3.12)	<0.001	4.77 (3.19, 7.12)	<0.001	2.80 (2.40, 3.28)	<0.001	2.75 (1.73, 4.35)	<0.001
Type 2 diabetes: tgroup=2	2.55 (2.23, 2.92)	<0.001	2.95 (2.17, 4.01)	<0.001	2.57 (2.25, 2.92)	<0.001	2.56 (1.79, 3.64)	<0.001
Type 2 diabetes: tgroup=3	2.15 (1.77, 2.63)	<0.001	2.73 (1.74, 4.31)	<0.001	2.20 (1.81, 2.66)	<0.001	2.34 (1.32, 4.15)	0.004

Analyses used age-scaled models adjusting for sex, Townsend deprivation index, education, ethnicity, body mass index, smoking status, drinking status, physical activity, and adherence to a healthy diet. The non-type 2 diabetes group was set as the reference. tgroup=1,2,3: calculated the associations between type 2 diabetes and incident gastrointestinal diseases during the first 0-5 years, 5-10 years, more than 10 years after baseline. HR-hazard ratio, CI-confidence interval.