Additional File 1

Additional file 1: Methods

Additional file 1: Methods 1. Assessment of dietary intake for meat.

Touchscreen
Dietary intake was assessed using a touchscreen dietary questionnaire administered to all participants at baseline. The touchscreen questionnaire included 5 questions on meat. These included the following: 'How often do you eat processed meats (such as bacon, ham, sausages, meat pies, kebabs, burgers, chicken nuggets)', 'How often do you eat chicken, turkey or other poultry? (Do not count processed meats)', 'How often do you eat beef? (Do not count processed meats)', 'How often do you eat lamb/mutton? (Do not count processed meats)' and 'How often do you eat pork? (Do not count processed meats such as bacon or ham)'. We converted the responses to each of the five questions on meat into weekly intake equivalents as follows: 0, 0.5, 1, 3, 5.5 and 7 times per week. We then categorized meat intake frequencies into the following groups: total meat (< 3, 3-4, 5-6 and ≥ 7 times per week), which was constructed by summing intake frequencies for all meat types together; unprocessed red and processed meat (0 to 1, 2, 3-4 and ≥ 5 times per week), which was constructed by summing intake frequencies for unprocessed red and processed meat together; unprocessed red meat (< 1, 1, 2-3 and ≥ 4 times per week); processed meat (0,<1,1 and ≥ 2 times per week); and poultry meat (0-1, 2 and ≥ 3 times per week). These categories were determined according to the distribution of the data in order to create approximately equal-sized groups

Oxford WebQ questionnaire
Dietary intake was also assessed through the Oxford WebQ questionnaire, an online 24-hour recall questionnaire that included information on 206 food items that was administered in 2009 (available for a subsample recruited after its introduction), and through email four times between February 2011 and June 2012 to all participants who provided UK Biobank with an email address and agreed to be re-contacted. Participants were asked to select how many portions of each food item they consumed over the previous 24 hours, and we calculated mean grams per/day by multiplying frequencies of consumption by standard portion sizes for each meat type. The following portion sizes were used: unprocessed red meat (beef 120 g, pork 120 g, lamb 120g), processed meat (sausage 30g, crumbed chicken 100g, bacon 46g, ham 23g), and poultry meat (chicken 130g). Similar foods were then grouped together into meat-types, accounting for the different serving size of each meat type, to match the touchscreen dietary questionnaire. To account for variation in daily intake in the diet and better capture usual dietary intake, we averaged daily intakes recorded over a minimum of three WebQ questionnaires. To account for extreme intakes we estimated means from participants with reliable WebQ dietary data (defined as having an estimated daily energy intake between 3349 kJ (800 kcal) and 16 747 kJ (4000 kcal) for men and between 2093 kJ (500 kcal) and 14 654 kJ (3500 kcal) for women)); reliable data were available for around 69 000 participants.

Measurement error correction
We then assigned the mean WebQ intakes in these participants who had completed at least three WebQs to each touchscreen category for each type of meat. Using these means, we calculated a trend variable using the following increments: unprocessed red meat (50 gram (g)/day increase); processed meat (20 g/day); poultry meat (30 g/day); unprocessed red and processed meat (70 g/day); and total meat (100 g/day). These increments were chosen to be close to the average portions of each type of meat consumed in this cohort.

We also assessed measurement error correction by calculating mean g/day intakes of unprocessed red meat for participants who completed the 2012 follow-up touchscreen questionnaire (n=~20,000) and then assigned these mean intakes to the touchscreen dietary questionnaire intake categories defined for all participants. Overall, we found similar estimates using either method. For example, a 50 g/day higher intake of unprocessed red meat was associated with a 16% higher risk of IHD (95 % CI 1.08-1.25) using the main error correction method (3+ WebQs) and 15% higher risk of IHD (1.07-1.22) using the alternative error correction method (follow-up touchscreen questionnaire).

Additional file 1: Methods 2. Assessment of health outcomes.

Disease end points, information on diagnoses or procedures associated with hospital admissions, and causes of death were all coded according to the 9th and 10th revisions of the World Health Organization's International Classification of Diseases (ICD-9 and ICD-10), and the Office of Population Censuses and Surveys classification of surgical operations and procedures (OPCS-4), fourth revision (see Additional file 1: Table 1 for exclusion, diagnosis and procedure codes). Admissions were defined according to the primary diagnosis/and or operation codes recorded during the admission (some of which were first recorded at death).

Additional file 1: Methods 3. Covariates.

Socio demographic

Age

Participants provided information about their age at recruitment which we then categorized into the following age groups: 37-44, 45-49, 50-54, 55-59, 60-64 and ≥ 65 years of age.

Region

Participants completed their baseline assessments in the 22 recruitment centres, which were then grouped into 10 respective regions accordingly: London (recruitment centres: St Bartholomew's Hospital, Hounslow, Croydon) Wales (recruitment centres: Swansea, Wrexham, Cardiff), North-West England (recruitment centres: Stockport, Manchester, Liverpool, Bury), North-East England (recruitment centres: Newcastle, Middlesbrough), Yorkshire (recruitment centres: Leeds, Sheffield), West Midlands (recruitment centres: Stoke, Birmingham) East Midlands (recruitment centre: Nottingham), South-East England (recruitment centres: Oxford, Reading), South-West England (recruitment centre: Bristol), Scotland (recruitment centres: Glasgow, Edinburgh).

Race

Participants were asked about their race at baseline with the question 'What is your ethnic group?' Response options included 'White', 'Mixed', 'Asian or Asian British', 'Black or Black British', 'Chinese', 'Other ethnic group', 'Do not know' or 'Prefer not to answer' and four supporting questions within groups. We then re-categorised race into 4 groups: White (White, British, Irish or any other white background); Asian or Asian British (Asian or Asian British, Chinese, Indian, Pakistani, Bangladeshi or any other Asian background); Black or Black British (Black or Black British, Caribbean, African or any other Black background); Mixed race or Other (any other ethnic groups or mixed race); and unknown (included participants who did not know or preferred not to answer).We also categorized race into 2 groups: White (White, British, Irish or any other white background), Non-white (Asian or Asian British, Chinese, Indian, Pakistani, Bangladeshi or any other Asian background, Black or Black British, Caribbean, African or any other Black background, any other ethnic groups or mixed race); and unknown (included participants who did not know or preferred not to answer) and used this for outcomes with fewer cases.

Townsend deprivation score

Material deprivation was assessed at baseline using the Townsend index score, which was assigned based on the postcode of residence. The index was calculated using four variables that collected information on percentage of unemployment, percentage of overcrowded households, percentage of people with no car ownership and percentage of non-home owners. We then categorised the score into quintiles, ranging from negative values (areas of low material deprivation) to positive scores (areas with high material deprivation) and unknown (for participants with missing information) [1].

Education

For education, participants were asked 'Which of the following qualifications do you have?' at baseline. Response options included: 'College or University degree', 'A levels/AS levels or equivalent', 'O levels/GCSEs or equivalent', 'CSEs or equivalent', 'NVQ or HND or HNC or equivalent', 'Other professional qualifications e.g.: nursing, teaching', 'None of the above' and 'Prefer not to answer'. We then categorised qualification into 3 groups: College or university degree/vocational qualification (including College or University degree, NVQ or HND or HNC or equivalent, and Other professional qualifications e.g.: nursing, teaching); National examination at ages 17-18 (including A levels/AS levels or equivalent'), National examination at age 16 (including O levels/GCSEs or equivalent, and CSEs or equivalent), and unknown (if answered 'None of the above' and 'Prefer not to answer').

Employment

Employment was assessed at baseline with the question 'Which of the following describes your current situation?' Response options included: 'In paid employment or self-employed', 'Retired', 'Looking after home and/or family', 'Unable to work because of sickness or disability', 'Unemployed', 'Doing unpaid or voluntary work', 'Full or part time student', 'None of the above' and 'Prefer not to answer'. We then categorised employment into 3 groups: Paid/self-employment (including participants who reported being in paid employment or self-employed), 'retired' (participants who reported no paid employment); 'not in paid employment' (included those reporting no paid employment e.g. caring responsibilities, being a student, unemployed or inability to work); and unknown (including participants who did not answer, preferred not to answer or who's answers did not fit into the other groups).

Physical measurements

Anthropometric variables

Standing height was measured at baseline according to standard protocol, using the SECA 240 Height Measure. Weight was measured at baseline using the Tanita BC 418 body composition analyser or using standard scales for participants who did not undergo bioimpedence analysis. Body mass index (BMI) was then calculated by dividing weight in kilograms by the square of height in metres and categorised as into sex-specific quintiles as such: Q1 (women: mean 21 kg/m^2, men; mean 23 kg/m^2),Q2 (women: mean 24 kg/m^2, men: mean 26 kg/m^2), Q3 (women: mean 26 kg/m^2, men: mean 27 kg/m^2), Q4 (women: mean 29 kg/m^2,men: mean 29 kg/m^2), Q5 (women: mean 35 kg/m^2, men: mean 34 kg/m^2); and unknown (for participants with missing height and/or weight data).

Lifestyle

Smoking

Participants were asked about their current smoking status at baseline using two questions: 'Do you smoke tobacco now?'(with response options including 'Yes, on most or all days', 'Only occasionally', 'No' and 'Prefer not to answer') and 'In the past, how often have you smoked tobacco?' (with response options including 'Smoked on most or all days', 'Smoked occasionally', 'Just tried once or twice', 'I have never smoked', 'Prefer not to answer'). Participants were also asked about the number of cigarettes they smoked per day with the question 'About how many cigarettes do you smoke on average each day?'(with response options including choosing a number, 'less than one', 'do not know' and 'prefer not to say'). Using the data from these questions, we then categorised smoking status into 5 groups including: 'never smoker', 'former smoker', 'current smoker of less than 15 cigarettes', 'current smoker of more than 15 cigarettes' and 'current smoker of unknown amount of cigarettes' and 'unknown' for participants with missing data.

Physical activity

For physical activity, participants were asked a group of questions at baseline that were taken from the International Physical activity questionnaire (IPAQ) short form [2]. The questions assessed the frequency, duration (only for participants who answered the question on frequency as more than zero), and types of physical activity undertaken. Using the answers to these questions, we calculated Excess metabolic equivalents (METs) (which only include activity above basal metabolic rate [3]) as follows: sum of walking time per week times 2.3, moderate activity per week (3.0 Excess METs), and vigorous activity per week (7.0 excess METs), and zero METs (where the type of activity was missing). Using the excess METs categories, we then calculated total physical activity using 3 groups: 'low' (<10 excess METs per week), 'moderate' (≥10 to <50 excess METs per week), 'high' (≥50 excess METs per week), and 'unknown' (for participants with missing information, or who reported that they were unable to walk).

Alcohol intake

Participants were asked about their weekly and monthly consumption of pints of beer, glasses of red wine, glasses of white wine/champagne, glasses of fortified wine, measures of spirits/liqueurs and glasses of other alcohol at baseline. Additionally, participants were asked more generally how often they drank alcohol with the possible responses including: 'daily or almost daily', 'three or four times a week', 'once or twice a week', 'one to three times a month', 'special occasions only', 'never', and 'prefer not to answer'. We assigned an average of 20 grams of alcohol per serving for a pint of beer and 10 grams of alcohol per serving for all other types of alcohol. We then created a total alcohol intake variable by grouping intakes as follows: 'non-drinker', '< 1 g/day', '1-<10 g/day' '10-<20g/day', '≥20 g/day' and 'unknown'. We categorised participants who reported drinking only on special occasions into the '< 1 g/day' category and those who reported never drinking alcohol into the 'non-drinker' category.

Diet

Fruit and vegetable intake

The touchscreen questionnaire included 29 questions on diet. For fruit, participants were asked 'About how many pieces of fresh fruit would you eat per day? (Count one apple, one banana, 10 grapes etc. as one piece; put `0' if you do not eat any)' at baseline. For vegetables, participants were asked about their consumption of cooked vegetables ('On average, how many heaped tablespoons of cooked vegetables would you eat per day? [Do not include potatoes; put '0' if you do not eat any]') and raw vegetables ['On average, how many heaped tablespoons of salad or raw vegetables would you eat per day? (Include lettuce, tomato in sandwiches; put `0' if you do not eat any]') at baseline. One piece of fruit and two heaped tablespoons of vegetables, respectively were considered as one serving. Accordingly, we categorized participants into the following groups: < 3 servings', '3 to <4 servings', '4 to <6 servings', '≥6 serving per day', and 'unknown'.

Cereal fibre intake
Participants were asked about their frequency of bread and cereal consumption at baseline with the questions 'How many slices of bread do you eat each week' and 'How many bowls of cereal do you eat a week?'. Response options included open ended answers and 'less than one', 'do not know' and 'prefer not to answer'. Participants who responded with ≥1 or more times to either of these questions were also asked for bread: 'What type of bread do you mainly eat?', with response options that included 'White/Brown/Wholemeal or wholegrain', 'Other type of bread', 'Do not know', 'Prefer not to answer' and for cereal: 'What type of cereal do you mainly eat?' with response options that included 'Bran cereal' (e.g. All Bran, Branflakes), 'Biscuit cereal' (e.g. Weetabix), 'Oat cereal' (e.g. Ready Brek, porridge), 'Muesli', 'Other '(e.g. Cornflakes, Frosties), 'Do not know', and 'Prefer not to answer'. Using the responses to these questions, we calculated a fibre score for bread and cereal by multiplying fibre intake frequencies by the fibre content of the type of bread and cereals being consumed (see original publication[4] for additional details). We then categorized fibre intakes from bread and cereal into sex-specific intakes Q1 (women: mean 1.1 g, men: mean 1.3 g), Q2 (women: mean 2.5g, men: mean 2.8g), Q3 (women: mean 3.7g, men: mean 4.3g), Q4(women: mean 5.3 g, men: mean 6.2 g), Q5 (women: mean 8.4g, men: mean 9.9g); and 'unknown' (for participants who did not report cereal or bread intakes or preferred not to answer).

Oily fish intake and non-oily fish intake
Participants were asked about their fish consumption with the questions: How often do you eat oily fish? (e.g. sardines, salmon, mackerel, herring)' and 'How often do you eat other types of fish (e.g. cod, tinned tuna, haddock)'. Response options for these questions included: 'never', 'less than once a week', 'once a week', '2-4 times a week', '5-6 times a week', 'once or more daily', 'do not know' and 'prefer not to answer'. Using the responses to the questions, we categorised intakes into 4 categories for oily fish (0 times/week, <1 time/week, 1 time/week, and ≥2 times/week) and 3 categories for non-oily fish (<1 time/week, 1 time/week, and ≥2 times/week).

Women factors
Parity
For parity, participants were asked 'How many children have you given birth to? (Please include live births only)' at baseline. We then categorised parity into 'nulliparous', 'one to two', 'three or more', and 'unknown' (for participants with missing information or who preferred not to answer).

Hormone replacement therapy (HRT)
Participants were asked about their use of HRT at baseline with the questions 'Have you ever used hormone replacement therapy (HRT)?' (response options included 'yes', 'no', 'don't know', 'prefer not answer'). Participants who indicated that they had used HRT were then also asked 'How old were you when you last used HRT?' and 'How old were you when you first used HRT'. Using the responses to these questions, we then 'unknown' (for those who answered 'do not know', 'prefer not to answer' or who were missing information).

Oral contraceptive pill (OCP)
Participants were asked about their use of OCP at baseline with the questions 'Have you ever taken the contraceptive pill? (include the mini pill)' (response options included 'yes', 'no', 'don't know', 'prefer not answer'). Participants who indicated that they had used HRT were then also asked 'How old were you when you last used the contraceptive pill?' and 'How old were you when you first went on the contraceptive pill. Using the responses to these questions, we then categorised participants into these groups: 'never' (if they replied no to the first question), 'past', 'current', and 'unknown' (for those who answered 'do not know', 'prefer not to answer' or who were missing information).

Menopausal status
Participants were asked about their menopausal status at baseline with the question 'Have you had your menopause (periods stopped)?'. Response options included 'yes', 'no', 'not sure had hysterectomy', 'not sure other reason' or 'prefer not to answer'. For participants who responded with 'not sure had hysterectomy', 'not sure other reason' or 'prefer not to answer', information from other questions on bilateral oophorectomy, use of HRT, and age at recruitment was used to categorise participants. We categorized participants as premenopausal if they reported not having their menopause, were younger than 45 and did not report a bilateral oophorectomy. We categorized participants as postmenopausal if they answered yes to 'Have you had your menopause (periods stopped)?', were over the age of 53, answered yes to the question 'Have you had both ovaries removed?' or reported HRT use. Additionally, we categorized participants as postmenopausal if they reported to not have their menopause but were over the age of 55 at recruitment. We categorised participants as 'unknown' if they reported not having their period but having had a bilateral oophorectomy or having used HRT, or if they had

missing information on menopausal status and could not be reassigned using the additional information as described above.

References

1. Townsend P, Phillimore P, Beattie A. Health and deprivation: inequality and the North. Routledge; 1988.
2. Sjöström M, Ainsworth B, Bauman A, Bull F, Craig C, Sallis J. Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ)–short and long forms. IPAQ core group. 2005.
3. Perez-Cornago A, Key TJ, Allen NE, Fensom GK, Bradbury KE, Martin RM et al. Prospective investigation of risk factors for prostate cancer in the UK Biobank cohort study. British journal of cancer. 2017;117(10):1562-71. doi:10.1038/bjc.2017.312.
4. Bradbury KE, Young HJ, Guo W, Key TJ. Dietary assessment in UK Biobank: an evaluation of the performance of the touchscreen dietary questionnaire. Journal of nutritional science. 2018;7:e6. doi:10.1017/jns.2017.66.

Additional file 1: Tables

Additional file 1: Table 1. Disease outcome definition and exclusion criteria.									
Admission cause	Outcome definition using ICD-10	Relevant procedure code using OPSC-4 definition	Exclusion criteria using ICD-10	Exclusion criteria using OPSC-4	Exclusion criteria using ICD-9	Exclusion criteria using touchscreen	Exclusion criteria using UKB interviews for outcomes[a]	Exclusion criteria using UKB interviews for procedures[b]	Total N/cases[c]
Circulatory disease									
Ischaemic heart diseases	I20, I21, I22, I23, I24, I25		I48, I20, I21, I22, I23, I24, I25, G45, I60, I61, I62, I63, I64, I65, I66, I67, I68, I69		427.31, 427.32, 410, 411, 412, 413, 414, 430, 431, 432, 433, 434, 435, 436, 437, 438	UKB variable 'Has a doctor ever told you that you have the following conditions 6150?' 1) Heart attack 2) angina 3) stroke	1471 atrial fibrillation 1483 atrial flutter 1074 angina 1075 heart attack/myocardial infarction 1081 stroke 1082 transient ischaemic attack1083 subdural haemorrhage/haematoma 1086 subarachnoid haemorrhage		437094/13377
Atrial fibrillation and flutter	I48		I48, I20, I21, I22, I23, I24, I25, G45, I60, I61, I62, I63, I64, I65, I66, I67, I68, I69		427.31, 427.32, 410, 411, 412, 413, 414, 430, 431, 432, 433, 434, 435, 436, 437, 438	UKB variable 'Has a doctor ever told you that you have the following conditions 6150?' 1) Heart attack, 2) angina, 3) stroke	1471 atrial fibrillation 1483 atrial flutter 1074 angina 1075 heart attack/myocardial infarction 1081 stroke 1082 transient ischaemic attack1083 subdural haemorrhage/haematoma 1086 subarachnoid haemorrhage		437094/4813

Cerebrovascular disease	G45 I60 I61 I62 I63 I64 I65 I66 I67 I68 I69		I48, I20, I21, I22, I23, I24, I25, G45, I60, I61, I62, I63, I64, I65, I66, I67, I68, I69		427.31, 427.32, 410, 411, 412, 413, 414, 430, 431, 432, 433, 434, 435, 436, 437, 438	UKB variable 'Has a doctor ever told you that you have the following conditions 6150?' 1) Heart attack2) angina 3) stroke	1471 atrial fibrillation 1483 atrial flutter 1074 angina 1075 heart attack/myocardial infarction 1081 stroke 1082 transient ischaemic attack 1083 subdural haemorrhage/haematoma 1086 subarachnoid haemorrhage		437094/5445
ischaemic stroke	I63		I48, I20, I21, I22, I23, I24, I25, G45, I60, I61, I62, I63, I64, I65, I66, I67, I68, I69		427.31, 427.32, 410, 411, 412, 413, 414, 430, 431, 432, 433, 434, 435, 436, 437, 438	UKB variable 'Has a doctor ever told you that you have the following conditions 6150?' 1) Heart attack 2) angina, 3) stroke	1471 atrial fibrillation 1483 atrial flutter 1074 angina 1075 heart attack/myocardial infarction 1081 stroke 1082 transient ischaemic attack1083 subdural haemorrhage/haematoma 1086 subarachnoid haemorrhage		437094/2396
haemorrhagic stroke	I60 I61		I48, I20, I21, I22, I23, I24, I25, G45, I60, I61, I62, I63, I64, I65, I66, I67, I68, I69		427.31, 427.32, 410, 411, 412, 413, 414, 430, 431, 432, 433, 434, 435, 436, 437, 438	UKB variable 'Has a doctor ever told you that you have the following conditions 6150?' 1) Heart attack2) angina 3) stroke	1471 atrial fibrillation 1483 atrial flutter 1074 angina 1075 heart attack/myocardial infarction 1081 stroke 1082 transient ischaemic attack 1083 subdural haemorrhage/haematoma 1086 subarachnoid haemorrhage		437094/961
Venous thromboembolism	I26, I80, 181, I82		I26, I80, 181, I82		415.1, 451, 452, 453		1068 venous thromboembolic disease 1094 deep venous thrombosis		464439/3839

Varicose veins of lower extremities	I83	L84 L85 L86 L87 L88	I83	L84 L85 L86 L87 L88	454		1494 varicose veins	1479 varicose vein surgery	452437/2670
Haemorrhoids	I84	H51, H52, H53	I84	H51, H52, H53	455		1505 haemorrhoids / piles	1483 haemorrhoidectomy / piles surgery/ banding of piles	455013/8448
Respiratory disease									
pneumonia	J18		J18		480, 481, 482, 483, 484, 485, 486		1398 pneumonia		466395/6563
Digestive disease									
Gastro-oesophageal reflux disease (GERD)	K21		K21		530.11, 530.81		1138 gastro-oesophageal reflux (GERD)		446551/7153
Gastritis and duodenitis	K29		K29		535				457833/11609
Inguinal hernia	K40	T19, T20, T21	K40	T19, T20, T21	550		1513 inguinal hernia	1403 inguinal/femoral hernia repair 1563 inguinal hernia repair 1402 hernia surgery	447643/8146
Non-infective enteritis and colitis	K50, K51, K52		K50, K51, K52		555, 556, 558		1459 colitis/not crohns or ulcerative colitis 1462 crohns disease 1463 ulcerative colitis		460610/6366
Diverticular disease of intestine	K57		K57		562		1458 diverticular disease/diverticulitis		462292/13023

Colon polyps	D12, K63.5	H20.1, H20.2, H20.3, H20.4, H20.5, H20.6, H22.1, H23.1, H25.1, H28.1	D12, K63.5	H20.1, H20.2, H20.3, H20.4, H20.5, H20.6, H22.1, H23.1, H25.1, H28.1	211.3, 211.4		1460 rectal or colon adenoma/polyps	1463 rectal or colon polypectomy	452873/38019
gallbladder disease	K80, K81	J18	K80, K81	J18	574, 575.0, 575.1		1161 gall bladder disease	1455 cholecystectomy/ gall bladder removal	455324/9090
Joint disorder									
Osteoarthritis	M15, M16, M17, M18, M19, M47		M15, M16, M17, M18, M19, M47		715, 721		1465 osteoarthritis		423418/18369
Genitourinary disease									
Kidney stones	N20, N23		N20, N23		592, 788.0		1197 kidney stone/ureter stone/bladder stone	1197percutaneous/open kidney stone surgery/lithotripsy	467673/2499
Urinary tract infection	N39.0		N39.0		599.0		1196 urinary tract infection/kidney infection		467055/5340
Hyperplasia of prostate	N40		N40		600		1516 benign prostatic hypertrophy 1396 enlarged prostate		209137/3613
Female genital prolapse	N81	M51, M52, M53, P22, P23, P24	N81	M51, M52, M53, P22, P23, P24	618		1353 vaginal prolapse/uterine prolapse	1361 vaginal prolapse/ colposuspension	243028/6145
Other diseases									

Uterine fibroids	D25	Q10, Q18, Q074, Q089, Q171, Q092, Q093, Q161, T43	D25	Q10, Q18, Q074, Q089, Q171, Q092, Q093, Q161, T43	218	UKB variable 'Ever had hysterectomy 3591' 1)yes UKB variable 'Ever had menopause 2724' 2) don't know had hysterectomy	1351 uterine fibroids	1509 myomectomy/fibroids removed 1357 hysterectomy 1358 hysterectomy with oophorectomy 1359 hysterectomy with cervical sparing	184246/9411
Iron deficiency anaemia (IDA)	D50		D50		280		1330 iron deficiency anaemia		469192/4833
Diabetes mellitus	E10, E11, E12, E13, E14		E10, E11, E12, E13, E14		250	UKB variable 'Dr. diagnosed diabetes 2443' 1)yes UKB variable 'Taking medications 6177' 3) insulin	1220 diabetes 1221 gestational diabetes 1222 type 1 diabetes 1223 type 2 diabetes		449259/9890
Carpal tunnel syndrome	G56.0	A65.1	G56.0	A65.1	354.0		1541 carpal tunnel syndrome	1501 carpal tunnel surgery	465539/5167
Cataract	H25, H26, Q120	C71, C72, C73, C74, C75	H25, H26, Q120, E10, E11, E13, E14	C71, C72, C73, C74, C75	366, 250	UKB variable 'Have eye problems 6148' 4) Cataract UKB variable 'Dr. diagnosed diabetes 2443' 1)yes	1278 Cataract 1220 diabetes, 1221 gestational diabetes 1222 type 1 diabetes 1223 type 2 diabetes	1435 cataract extraction/lens implant	432180/16432

						UKB variable 'Taking medications 6177' 3) insulin			
Cellulitis	L03		L03		681, 682		1625 cellulitis		470763/3486

[a]Based on ICD-10 definition and UKB variable 20002
[b]Based on OPSC-4 definition and UKB variable 20004
[c] From a maximal analysis sample of n=474 985

Additional file 1: Table 2. Baseline characteristics of participants by total meat intake in UK Biobank (n= 467 384[a]).

Characteristic Mean (SD) or n (%)	<3 times/week N=57 956	3-4 times/week N=119 279	5-6 times/week N=153 677	≥ 7times/week N=136 472
Sociodemographic				
Sex, n (%)				
Women	39 574 (68.3)	72 015 (60.4)	83 791 (54.5)	56 867 (41.7)
Men	18 382 (31.7)	47 264 (39.6)	69 886 (45.5)	79 605 (58.3)
Age (years), mean (SD)	55.5 (8.1)	57.2 (7.9)	56.5 (8.0)	55.7 (8.2)
Age (years), n (%)				
37-44	7 252 (12.5)	10 470 (8.8)	15 445 (10.1)	16 651 (12.2)
45-49	8 316 (14.3)	14 022 (11.8)	20 165 (13.1)	20 647 (15.1)
50-54	9 433 (16.3)	17 199 (14.4)	23 729 (15.4)	21 813 (16.0)
55-59	11 132 (19.2)	22 167 (18.6)	28 017 (18.2)	23 657 (17.3)
60-64	12 829 (22.1)	30 865 (25.9)	37 434 (24.4)	30 427 (22.3)
65- 73	8 994 (15.5)	24 556 (20.6)	28 887 (18.8)	23 277 (17.1)
Race, n (%)				
White	51 849 (89.5)	113 618 (95.3)	147 349 (95.9)	128 388 (94.1)
Asian or Asian British	3 750 (6.5)	2 086 (1.7)	2 053 (1.3)	2 612 (1.9)
Black or Black British	907 (1.6)	1 583 (1.3)	1 976 (1.3)	2 740 (2.0)
Mixed race/Other	1 163 (2.0)	1 643 (1.4)	1 846 (1.2)	2 235 (1.6)
Unknown	287 (0.5)	349 (0.3)	453 (0.3)	497 (0.4)
Townsend deprivation, n (%)				
Most affluent (mean -4.7)	9 319 (16.1)	24 761 (20.8)	32 850 (21.4)	27 393 (20.1)
2 (mean -3.3)	9 955 (17.2)	24 471 (20.5)	32 198 (21.0)	26 995 (19.8)
3 (mean -2.1)	11 110 (19.2)	24 203 (20.3)	31 440 (20.5)	26 942 (19.7)
4 (mean -0.1)	13 288 (22.9)	23 531 (19.7)	29 648 (19.3)	26 863 (19.7)
Most deprived (mean 3.8)	14 214 (24.5)	22 171 (18.6)	27 349 (17.8)	28 101 (20.6)
Unknown	70 (0.1)	142 (0.1)	192 (0.1)	178 (0.1)
Qualification, n (%)				
College/university degree/NVQ	37 607 (64.9)	70 076 (58.7)	90 312 (58.8)	81 269 (59.5)
National examination at ages 17-18	3 153 (5.4)	6 225 (5.2)	8 514 (5.5)	7 717 (5.7)
National examination at age 16	8 167 (14.1)	19 862 (16.7)	26 981 (17.6)	22 751 (16.7)
Other/unknown	9 029 (15.6)	23 116 (19.4)	27 870 (18.1)	24 735 (18.1)
Employment, n (%)				
In paid employment	35 697 (61.6)	66 455 (55.7)	88 950 (57.9)	82 131 (60.2)
Pension	14 504 (25.0)	39 207 (32.9)	47 218 (30.7)	37 278 (27.3)
Not in paid employment	7 020 (12.1)	12 584 (10.6)	16 304 (10.6)	15 832 (11.6)
Unknown	735 (1.3)	1 033 (0.9)	1 205 (0.8)	1 231 (0.9)
Physical measurements				
BMI (kg/m^2), mean (SD)	26.0 (4.6)	27.0 (4.6)	27.6 (4.7)	28.2 (4.9)
BMI (kg/m^2), fifths, n (%)				
Q1 (mean W: 21 kg/m^2, M: 23 kg/m^2)	17 938 (31.0)	26 259 (22.0)	29 161 (19.0)	23 274 (17.1)
Q2 (mean W: 24 kg/m^2, M: 26 kg/m^2)	12 316 (21.3)	24 859 (20.8)	29 904 (19.5)	24 179 (17.7)
Q3 (mean W: 26 kg/m^2, M: 27 kg/m^2)	10 893 (18.8)	24 871 (20.9)	32 382 (21.1)	26 978 (19.8)
Q4 (mean W: 29 kg/m^2, M: 29 kg/m^2)	8 897 (15.4)	22 530 (18.9)	30 528 (19.9)	28 294 (20.7)
Q5 (mean W: 35 kg/m^2, M: 34 kg/m^2)	7 555 (13.0)	20 225 (17.0)	31 047 (20.2)	33 078 (24.2)
Unknown	357 (0.6)	535 (0.4)	655 (0.4)	669 (0.5)
Lifestyle				
Smoking, n (%)				
Never	33 528 (57.9)	66 282 (55.6)	84 640 (55.1)	71 542 (52.4)
Former	18 841 (32.5)	40 968 (34.3)	53 377 (34.7)	47 271 (34.6)
Current <15 cigarettes/day	1 803 (3.1)	3 550 (3.0)	4 393 (2.9)	4 437 (3.3)
Current ≥15 cigarettes/day	1 684 (2.9)	4 237 (3.6)	5 974 (3.9)	7 558 (5.5)
Current, amount unknown	1 857 (3.2)	3 812 (3.2)	4 819 (3.1)	5 223 (3.8)
Unknown	243 (0.4)	430 (0.4)	474 (0.3)	441 (0.3)
Physical activity level, n (%)				
Low <10 excess METs	16 979 (29.3)	37 697 (31.6)	48 730 (31.7)	43 733 (32.0)
Moderate 10-<50 excess METs	29 462 (50.8)	58 785 (49.3)	75 725 (49.3)	64 544 (47.3)
High ≥ 50 excess METs	9 533 (16.4)	18 476 (15.5)	23 774 (15.5)	22 995 (16.8)
Unknown	1 982 (3.4)	4 321 (3.6)	5 448 (3.5)	5 200 (3.8)
Alcohol intake, n (%)				

Non-drinkers	8 166 (14.1)	9 527 (8.0)	9 882 (6.4)	9 200 (6.7)
<1g/d	8 580 (14.8)	14 177 (11.9)	16 375 (10.7)	12 789 (9.4)
1-<10g/d	20 008 (34.5)	40 727 (34.1)	49 509 (32.2)	36 434 (26.7)
10-<20g/d	11 270 (19.4)	26 702 (22.4)	34 931 (22.7)	28 544 (20.9)
20+g/d	9 598 (16.6)	27 546 (23.1)	42 325 (27.5)	48 871 (35.8)
Unknown	334 (0.6)	600 (0.5)	655 (0.4)	634 (0.5)
Diet				
Fruit & vegetable intake (s/day), mean (SD)	5.34 (3.07)	4.71 (2.49)	4.64 (2.47)	4.46 (2.57)
Fruit & vegetable intake categories, n (%)				
<3 servings/day	8 520 (14.7)	21 856 (18.3)	29 475 (19.2)	31 281 (22.9)
3-<4 servings/day	8 422 (14.5)	21 833 (18.3)	28 819 (18.8)	26 781 (19.6)
4-<6 servings/day	19 438 (33.5)	42 463 (35.6)	54 977 (35.8)	45 180 (33.1)
≥6 servings/day	20 303 (35.0)	30 966 (26.0)	37 968 (24.7)	30 689 (22.5)
Unknown	1 273 (2.2)	2 161 (1.8)	2 438 (1.6)	2 541 (1.9)
Cereal fibre intake (g/day), mean (SD)	4.64 (3.07)	4.52 (2.90)	4.52 (2.89)	4.44 (2.96)
Cereal/Bread fibre sex-spec Quintiles, n (%)				
Q1 (mean W: 1.1 g/day, M: 1.3 g/day)	10 703 (18.5)	22 408 (18.8)	28 854 (18.8)	29 608 (21.7)
Q2 (mean W: 2.5 g/day, M: 2.8 g/day)	10 646 (18.4)	23 500 (19.7)	30 808 (20.0)	27 467 (20.1)
Q3 (mean W: 3.7 g/day, M: 4.3 g/day)	10 941 (18.9)	23 566 (19.8)	30 952 (20.1)	26 487 (19.4)
Q4 (mean W: 5.3 g/day, M: 6.2 g/day)	11 769 (20.3)	23 720 (19.9)	30 392 (19.8)	24 854 (18.2)
Q5 (mean W: 8.4 g/day, M: 9.9 g/day)	12 726 (22.0)	23 901 (20.0)	29 894 (19.5)	25 190 (18.5)
Unknown	1 171 (2.0)	2 184 (1.8)	2 777 (1.8)	2 866 (2.1)
Oily fish, n (%)				
0 times/week	13 755 (23.7)	9 379 (7.9)	12 967 (8.4)	15 140 (11.1)
<1 times/week	14 581 (25.2)	39 271 (32.9)	52 082 (33.9)	48 996 (35.9)
1 time/week	16 276 (28.1)	48 097 (40.3)	61 127 (39.8)	50 195 (36.8)
≥2 times/week	13 090 (22.6)	22 077 (18.5)	26 935 (17.5)	21 488 (15.7)
Unknown	254 (0.4)	455 (0.4)	566 (0.4)	653 (0.5)
Non-oily fish, n (%)				
<1 time/week	27 289 (47.1)	39 787 (33.4)	47 472 (30.9)	43 181 (31.6)
1 times/week	20 192 (34.8)	61 857 (51.9)	80 833 (52.6)	68 784 (50.4)
≥2 times/week	10 207 (17.6)	17 298 (14.5)	24 945 (16.2)	24 017 (17.6)
Unknown	268 (0.5)	337 (0.3)	427 (0.3)	490 (0.4)
Unprocessed red meat, n (%)				
<1 times/week	32 914 (56.8)	11 075 (9.3)	2 704 (1.8)	846 (0.6)
1 times/week	24 719 (42.7)	58 492 (49.0)	68 743 (44.7)	32 302 (23.7)
2-3 times/week	323 (0.6)	49 581 (41.6)	72 251 (47.0)	51 458 (37.7)
≥4 times/week	0 (0.0)	131 (0.1)	9 979 (6.5)	51 866 (38.0)
Processed meat, n (%)				
0 times/week	29 598 (51.1)	9 252 (7.8)	3 313 (2.2)	1 518 (1.1)
<1 times/week	24 432 (42.2)	55 459 (46.5)	49 108 (32.0)	13 155 (9.6)
1 times/week	3 926 (6.8)	51 485 (43.2)	58 968 (38.4)	21 970 (16.1)
≥2 times/week	0 (0.0)	3 083 (2.6)	42 288 (27.5)	99 829 (73.1)
Poultry meat, n (%)				
0-1 times/week	42 695 (73.7)	15 014 (12.6)	11 132 (7.2)	5 242 (3.8)
2 times/week	15 261 (26.3)	83 987 (70.4)	47 031 (30.6)	20 963 (15.4)
≥3 times/week	0 (0.0)	20 278 (17.0)	95 514 (62.2)	110 267 (80.8)
Women factors				
Menopausal status, n (%)				
Premenopausal	10 420 (26.3)	14 862 (20.6)	19 701 (23.5)	15 146 (26.6)
Postmenopausal	27 046 (68.3)	53 651 (74.5)	59 389 (70.9)	38 040 (66.9)
Unknown	2 108 (5.3)	3 502 (4.9)	4 701 (5.6)	3 681 (6.5)
Parity, n (%)				
0 births	10 803 (27.3)	13 777 (19.1)	13 677 (16.3)	8 840 (15.5)
1 - 2 births	20 358 (51.4)	41 238 (57.3)	49 381 (58.9)	33 109 (58.2)
≥3 births	8 350 (21.1)	16 935 (23.5)	20 677 (24.7)	14 855 (26.1)
Unknown	63 (0.2)	65 (0.1)	56 (0.1)	63 (0.1)
Hormone replacement therapy use (HRT), n (%)				
Never	26 413 (66.7)	43 236 (60.0)	50 904 (60.8)	35 686 (62.8)
Past	10 716 (27.1)	24 118 (33.5)	27 378 (32.7)	17 421 (30.6)

Current	2 268 (5.7)	4 441 (6.2)	5 276 (6.3)	3 490 (6.1)
Unknown	177 (0.4)	220 (0.3)	233 (0.3)	270 (0.5)
Oral contraceptive pill use (OCT), n (%)				
Never	8 013 (20.2)	13 890 (19.3)	14 590 (17.4)	9 991 (17.6)
Past	30 592 (77.3)	56 729 (78.8)	67 420 (80.5)	45 478 (80.0)
Current	795 (2.0)	1 237 (1.7)	1 588 (1.9)	1 188 (2.1)
Unknown	174 (0.4)	159 (0.2)	193 (0.2)	210 (0.4)

The x^2 test was used to compare the distribution between meat intakes for all categorical variables. Analysis of variance (ANOVA) was used to compare the means between meat intakes. The *P*-heterogeneity between meat intakes was <0.001 for all variables. All dietary data come from the touchscreen questionnaire. [a]See Additional file 1: Fig. 1 BMI: Body mass index HRT: hormone replacement therapy, OCP: oral contraceptive pill use, NVQ: national vocational qualification, s/day: servings/day.

Additional file 1:Table 3. Baseline characteristics of participants by unprocessed red meat intake in UK Biobank (n=468 328[a]).

Characteristic Mean (SD) or n (%)	<1 time/week N=47 718	1 time/week N=184 612	2-3 times/week N=173 879	≥ 4times/week N=62 119
Sociodemographic				
Sex, n (%)				
Women	31 959 (67.0)	103 127 (55.9)	88 309 (50.8)	29 329 (47.2)
Men	15 759 (33.0)	81 485 (44.1)	85 570 (49.2)	32 790 (52.8)
Age (years), mean (SD)	54.7 (8.2)	56.1 (8.1)	56.8 (8.0)	56.7 (8.1)
Age (years), n (%)				
37-44	7 157 (15.0)	20 104 (10.9)	16 533 (9.5)	6 127 (9.9)
45-49	7 787 (16.3)	25 719 (13.9)	21 794 (12.5)	7 983 (12.9)
50-54	7 976 (16.7)	29 324 (15.9)	25 738 (14.8)	9 283 (14.9)
55-59	8 612 (18.0)	33 864 (18.3)	31 706 (18.2)	10 928 (17.6)
60-64	9 681 (20.3)	43 087 (23.3)	43 600 (25.1)	15 412 (24.8)
65- 73	6 505 (13.6)	32 514 (17.6)	34 508 (19.8)	12 386 (19.9)
Race, n (%)				
White	42 270 (88.6)	175 499 (95.1)	166 553 (95.8)	57 560 (92.7)
Asian or Asian British	3 516 (7.4)	3 378 (1.8)	2 366 (1.4)	1 357 (2.2)
Black or Black British	798 (1.7)	2 672 (1.4)	2 154 (1.2)	1 667 (2.7)
Mixed Race/Other	915 (1.9)	2 476 (1.3)	2 269 (1.3)	1 278 (2.1)
Unknown	219 (0.5)	587 (0.3)	537 (0.3)	257 (0.4)
Townsend deprivation, n (%)				
Most affluent (mean -4.7)	7 520 (15.8)	36 902 (20.0)	37 345 (21.5)	12 628 (20.3)
2 (mean -3.3)	8 050 (16.9)	37 187 (20.1)	36 367 (20.9)	12 111 (19.5)
3 (mean -2.1)	9 102 (19.1)	37 438 (20.3)	35 175 (20.2)	12 101 (19.5)
4 (mean -0.1)	10 968 (23.0)	36 955 (20.0)	33 724 (19.4)	11 899 (19.2)
Most deprived (mean 3.8)	12 007 (25.2)	35 900 (19.4)	31 067 (17.9)	13 299 (21.4)
Unknown	71 (0.1)	230 (0.1)	201 (0.1)	81 (0.1)
Qualification, n (%)				
College/university degree/NVQ	29 966 (62.8)	110 523 (59.9)	102 705 (59.1)	36 375 (58.6)
National examination at ages 17-18	2 673 (5.6)	10 112 (5.5)	9 345 (5.4)	3 504 (5.6)
National examination at age 16	7 296 (15.3)	32 161 (17.4)	28 742 (16.5)	9 712 (15.6)
Other/unknown	7 783 (16.3)	31 816 (17.2)	33 087 (19.0)	12 528 (20.2)
Employment, n (%)				
In paid employment	30 053 (63.0)	111 151 (60.2)	98 554 (56.7)	33 842 (54.5)
Pension	10 846 (22.7)	52 387 (28.4)	55 394 (31.9)	19 855 (32.0)
Not in paid employment	6 210 (13.0)	19 486 (10.6)	18 511 (10.6)	7 787 (12.5)
Unknown	609 (1.3)	1 588 (0.9)	1 420 (0.8)	635 (1.0)
Physical measurements				
BMI (kg/m^2), mean (SD)	26.2 (4.8)	27.3 (4.7)	27.7 (4.7)	28.1 (4.9)
BMI (kg/m^2), fifths, n (%)				
Q1 (mean W: 21 kg/m^2, M: 23 kg/m^2)	14 589 (30.6)	39 294 (21.3)	32 330 (18.6)	10 590 (17.0)
Q2 (mean W: 24 kg/m^2, M: 26 kg/m^2)	9 857 (20.7)	37 275 (20.2)	33 284 (19.1)	10 979 (17.7)
Q3 (mean W: 26 kg/m^2, M: 27 kg/m^2)	8 859 (18.6)	37 707 (20.4)	36 374 (20.9)	12 374 (19.9)
Q4 (mean W: 29 kg/m^2, M: 29 kg/m^2)	7 417 (15.5)	35 056 (19.0)	34 953 (20.1)	13 005 (20.9)
Q5 (mean W: 35 kg/m^2, M: 34 kg/m^2)	6 687 (14.0)	34 489 (18.7)	36 145 (20.8)	14 832 (23.9)
Unknown	309 (0.6)	791 (0.4)	793 (0.5)	339 (0.5)
Lifestyle				
Smoking, n (%)				
Never	28 307 (59.3)	102 383 (55.5)	93 739 (53.9)	32 099 (51.7)
Former	15 055 (31.5)	63 155 (34.2)	60 965 (35.1)	21 513 (34.6)
Current <15 cigarettes/day	1 440 (3.0)	5 595 (3.0)	5 056 (2.9)	2 136 (3.4)
Current ≥15 cigarettes/day	1 375 (2.9)	6 900 (3.7)	7 553 (4.3)	3 692 (5.9)
Current, amount unknown	1 353 (2.8)	5 987 (3.2)	5 988 (3.4)	2 424 (3.9)
Unknown	188 (0.4)	592 (0.3)	578 (0.3)	255 (0.4)
Physical activity level, n (%)				
Low <10 excess METs	13 788 (28.9)	58 482 (31.7)	55 205 (31.7)	20 033 (32.2)
Moderate 10-<50 excess METs	23 907 (50.1)	90 807 (49.2)	85 002 (48.9)	29 093 (46.8)
High ≥ 50 excess METs	8 349 (17.5)	28 734 (15.6)	27 350 (15.7)	10 420 (16.8)

Unknown	1 674 (3.5)	6 589 (3.6)	6 322 (3.6)	2 573 (4.1)
Alcohol intake, n (%)				
Non-drinkers	7 795 (16.3)	13 817 (7.5)	10 971 (6.3)	4 427 (7.1)
<1g/d	7 273 (15.2)	22 273 (12.1)	16 572 (9.5)	6 008 (9.7)
1-<10g/d	15 695 (32.9)	62 535 (33.9)	52 016 (29.9)	16 660 (26.8)
10-<20g/d	8 618 (18.1)	40 428 (21.9)	39 594 (22.8)	12 903 (20.8)
20+g/d	8 062 (16.9)	44 602 (24.2)	54 008 (31.1)	21 799 (35.1)
Unknown	275 (0.6)	957 (0.5)	718 (0.4)	322 (0.5)
Diet				
Fruit & vegetable intake (s/day), mean (SD)	5.35 (3.16)	4.68 (2.55)	4.58 (2.45)	4.54 (2.61)
Fruit & vegetable intake categories, n (%)				
<3 servings/day	7 335 (15.4)	36 111 (19.6)	34 381 (19.8)	13 498 (21.7)
3-<4 servings/day	6 863 (14.4)	33 216 (18.0)	33 761 (19.4)	12 119 (19.5)
4-<6 servings/day	15 625 (32.7)	64 178 (34.8)	61 671 (35.5)	20 759 (33.4)
≥6 servings/day	16 835 (35.3)	47 604 (25.8)	41 201 (23.7)	14 466 (23.3)
Unknown	1 060 (2.2)	3 503 (1.9)	2 865 (1.6)	1 277 (2.1)
Cereal fibre intake (g/day), mean (SD)	4.69 (3.13)	4.58 (2.94)	4.48 (2.87)	4.27 (2.92)
Cereal/Bread fibre sex-spec Quintiles, n (%)				
Q1 (mean W: 1.1 g/day, M: 1.3 g/day)	8 815 (18.5)	34 270 (18.6)	34 277 (19.7)	14 469 (23.3)
Q2 (mean W: 2.5 g/day, M: 2.8 g/day)	8 576 (18.0)	36 497 (19.8)	34 796 (20.0)	12 691 (20.4)
Q3 (mean W: 3.7 g/day, M: 4.3 g/day)	8 956 (18.8)	36 439 (19.7)	34 787 (20.0)	11 889 (19.1)
Q4 (mean W: 5.3 g/day, M: 6.2 g/day)	9 581 (20.1)	36 633 (19.8)	33 799 (19.4)	10 820 (17.4)
Q5 (mean W: 8.4 g/day, M: 9.9 g/day)	10 749 (22.5)	37 299 (20.2)	33 000 (19.0)	10 758 (17.3)
Unknown	1 041 (2.2)	3 474 (1.9)	3 220 (1.9)	1 492 (2.4)
Oily fish, n (%)				
0 times/week	14 082 (29.5)	16 868 (9.1)	14 137 (8.1)	6 334 (10.2)
<1 times/week	9 907 (20.8)	63 735 (34.5)	58 601 (33.7)	22 920 (36.9)
1 time/week	12 284 (25.7)	68 398 (37.0)	72 503 (41.7)	22 766 (36.6)
≥2 times/week	11 198 (23.5)	34 830 (18.9)	27 951 (16.1)	9 742 (15.7)
Unknown	247 (0.5)	781 (0.4)	687 (0.4)	357 (0.6)
Non-oily fish, n (%)				
<1 time/week	21 488 (45.0)	63 252 (34.3)	52 348 (30.1)	20 971 (33.8)
1 times/week	15 977 (33.5)	90 337 (48.9)	95 075 (54.7)	30 610 (49.3)
≥2 times/week	10 010 (21.0)	30 394 (16.5)	25 940 (14.9)	10 237 (16.5)
Unknown	243 (0.5)	629 (0.3)	516 (0.3)	301 (0.5)
Processed meat, n (%)				
0 times/week	27 539 (57.7)	9 655 (5.2)	4 917 (2.8)	1 613 (2.6)
<1 times/week	10 547 (22.1)	69 708 (37.8)	47 383 (27.3)	14 594 (23.5)
1 times/week	5 169 (10.8)	53 125 (28.8)	59 962 (34.5)	18 210 (29.3)
≥2 times/week	4 358 (9.1)	51 905 (28.1)	61 452 (35.3)	27 604 (44.4)
Unknown	105 (0.2)	219 (0.1)	165 (0.1)	98 (0.2)
Poultry meat, n (%)				
0-1 times/week	26 990 (56.6)	28 809 (15.6)	12 790 (7.4)	5 617 (9.0)
2 times/week	8 114 (17.0)	67 608 (36.6)	72 906 (41.9)	18 818 (30.3)
≥3 times/week	12 519 (26.2)	88 048 (47.7)	88 069 (50.6)	37 630 (60.6)
Unknown	95 (0.2)	147 (0.1)	114 (0.1)	54 (0.1)
Women factors				
Menopausal status, n (%)				
Premenopausal	9 585 (30.0)	24 862 (24.1)	19 337 (21.9)	6 437 (21.9)
Postmenopausal	20 536 (64.3)	72 369 (70.2)	64 312 (72.8)	21 245 (72.4)
Unknown	1 838 (5.8)	5 896 (5.7)	4 660 (5.3)	1 647 (5.6)
Parity, n (%)				
0 births	8 414 (26.3)	20 625 (20.0)	13 677 (15.5)	4 462 (15.2)
1 - 2 births	16 737 (52.4)	58 384 (56.6)	52 298 (59.2)	16 902 (57.6)
≥3 births	6 752 (21.1)	24 022 (23.3)	22 264 (25.2)	7 929 (27.0)
Unknown	56 (0.2)	96 (0.1)	70 (0.1)	36 (0.1)
Hormone replacement therapy use (HRT), n (%)				
Never	22 097 (69.1)	64 168 (62.2)	52 758 (59.7)	17 500 (59.7)
Past	7 936 (24.8)	32 321 (31.3)	29 707 (33.6)	9 826 (33.5)

Current	1 769 (5.5)	6 308 (6.1)	5 562 (6.3)	1 850 (6.3)
Unknown	157 (0.5)	330 (0.3)	282 (0.3)	153 (0.5)
Oral contraceptive pill use (OCT), n (%)				
Never	6 634 (20.8)	18 496 (17.9)	15 948 (18.1)	5 563 (19.0)
Past	24 415 (76.4)	82 384 (79.9)	70 570 (79.9)	23 143 (78.9)
Current	746 (2.3)	1 994 (1.9)	1 582 (1.8)	490 (1.7)
Unknown	164 (0.5)	253 (0.2)	209 (0.2)	133 (0.5)

The x^2 test was used to compare the distribution between meat intakes for all categorical variables. Analysis of variance (ANOVA) was used to compare the means between meat intakes. The *P*-heterogeneity between meat intakes was <0.001 for all variables. All dietary data come from the touchscreen questionnaire. [a]Additional file 1: Fig. 1 BMI: Body mass index HRT: hormone replacement therapy, OCP: oral contraceptive pill use, NVQ: national vocational qualification, s/day: servings/day.

Additional file 1: Table 4. Baseline characteristics of participants by processed meat intake in UK Biobank (n=472 844[a]).

Characteristic Mean (SD) or n (%)	0 times/week N=44 036	<1 time/week N=143 514	1 time/week N=138 078	≥2 times/week N=147 216
Sociodemographic				
Sex, n (%)				
Women	32 191 (73.1)	96 947 (67.6)	73 134 (53.0)	52 616 (35.7)
Men	11 845 (26.9)	46 567 (32.4)	64 944 (47.0)	94 600 (64.3)
Age (years), mean (SD)	55.7 (8.1)	56.7 (7.9)	56.5 (8.1)	56.0 (8.3)
Age (years), n (%)				
37-44	5 296 (12.0)	13 231 (9.2)	14 388 (10.4)	17 517 (11.9)
45-49	6 238 (14.2)	18 136 (12.6)	18 217 (13.2)	21 335 (14.5)
50-54	7 193 (16.3)	22 146 (15.4)	20 964 (15.2)	22 658 (15.4)
55-59	8 468 (19.2)	27 378 (19.1)	24 740 (17.9)	25 246 (17.1)
60-64	9 911 (22.5)	36 215 (25.2)	33 119 (24.0)	33 455 (22.7)
65- 73	6 930 (15.7)	26 408 (18.4)	26 650 (19.3)	27 005 (18.3)
Race, n (%)				
White	38 207 (86.8)	134 161 (93.5)	132 037 (95.6)	141 080 (95.8)
Asian or Asian British	3 262 (7.4)	3 381 (2.4)	2 139 (1.5)	2 160 (1.5)
Black or Black British	1 153 (2.6)	2 933 (2.0)	1 772 (1.3)	1 763 (1.2)
Mixed race/Other	1 178 (2.7)	2 566 (1.8)	1 675 (1.2)	1 726 (1.2)
Unknown	236 (0.5)	473 (0.3)	455 (0.3)	487 (0.3)
Townsend deprivation, n (%)				
Most affluent (mean -4.7)	7 325 (16.6)	29 721 (20.7)	29 264 (21.2)	28 556 (19.4)
2 (mean -3.3)	7 570 (17.2)	29 409 (20.5)	28 618 (20.7)	28 657 (19.5)
3 (mean -2.1)	8 313 (18.9)	28 886 (20.1)	28 255 (20.5)	29 055 (19.7)
4 (mean -0.1)	9 903 (22.5)	28 470 (19.8)	26 816 (19.4)	29 356 (19.9)
Most deprived (mean 3.8)	10 870 (24.7)	26 854 (18.7)	24 937 (18.1)	31 419 (21.3)
Unknown	55 (0.1)	174 (0.1)	188 (0.1)	173 (0.1)
Qualification, n (%)				
College/university degree/NVQ	28 394 (64.5)	86 829 (60.5)	80 169 (58.1)	85 692 (58.2)
National examination at ages 17-18	2 486 (5.6)	7 999 (5.6)	7 412 (5.4)	7 871 (5.3)
National examination at age 16	6 007 (13.6)	24 635 (17.2)	23 144 (16.8)	24 753 (16.8)
Other/unknown	7 149 (16.2)	24 051 (16.8)	27 353 (19.8)	28 900 (19.6)
Employment, n (%)				
In paid employment	26 487 (60.1)	82 246 (57.3)	79 689 (57.7)	87 204 (59.2)
Pension	11 404 (25.9)	44 697 (31.1)	42 509 (30.8)	41 251 (28.0)
Not in paid employment	5 520 (12.5)	15 261 (10.6)	14 705 (10.6)	17 427 (11.8)
Unknown	625 (1.4)	1 310 (0.9)	1 175 (0.9)	1 334 (0.9)
Physical measurements				
BMI (kg/m^2), mean (SD)	26.0 (4.6)	27.1 (4.7)	27.6 (4.7)	28.1 (4.9)
BMI (kg/m^2), fifths, n (%)				
Q1 (mean W: 21 kg/m^2, M: 23 kg/m^2)	13 687 (31.1)	30 563 (21.3)	26 335 (19.1)	26 985 (18.3)
Q2 (mean W: 24 kg/m^2, M: 26 kg/m^2)	9 260 (21.0)	29 588 (20.6)	26 887 (19.5)	26 394 (17.9)
Q3 (mean W: 26 kg/m^2, M: 27 kg/m^2)	8 258 (18.8)	30 122 (21.0)	28 779 (20.8)	28 955 (19.7)
Q4 (mean W: 29 kg/m^2, M: 29 kg/m^2)	6 830 (15.5)	27 305 (19.0)	27 684 (20.0)	29 555 (20.1)
Q5 (mean W: 35 kg/m^2, M: 34 kg/m^2)	5 695 (12.9)	25 308 (17.6)	27 806 (20.1)	34 555 (23.5)
Unknown	306 (0.7)	628 (0.4)	587 (0.4)	772 (0.5)
Lifestyle				
Smoking, n (%)				
Never	26 093 (59.3)	81 556 (56.8)	75 675 (54.8)	75 486 (51.3)
Former	14 197 (32.2)	48 847 (34.0)	47 708 (34.6)	51 275 (34.8)
Current <15 cigarettes/day	1 291 (2.9)	4 043 (2.8)	4 140 (3.0)	4 945 (3.4)
Current ≥15 cigarettes/day	1 026 (2.3)	4 353 (3.0)	5 316 (3.8)	9 186 (6.2)
Current, amount unknown	1 232 (2.8)	4 242 (3.0)	4 672 (3.4)	5 836 (4.0)
Unknown	197 (0.4)	473 (0.3)	567 (0.4)	488 (0.3)
Physical activity level, n (%)				
Low <10 excess METs	12 161 (27.6)	44 583 (31.1)	44 324 (32.1)	48 113 (32.7)
Moderate 10-<50 excess METs	22 352 (50.8)	71 630 (49.9)	67 254 (48.7)	69 084 (46.9)
High ≥ 50 excess METs	8 017 (18.2)	22 265 (15.5)	21 065 (15.3)	24 042 (16.3)

Unknown	1 506 (3.4)	5 036 (3.5)	5 435 (3.9)	5 977 (4.1)
Alcohol intake, n (%)				
Non-drinkers	7 672 (17.4)	11 249 (7.8)	9 198 (6.7)	9 628 (6.5)
<1g/d	6 622 (15.0)	18 280 (12.7)	14 409 (10.4)	13 710 (9.3)
1-<10g/d	14 607 (33.2)	51 359 (35.8)	43 445 (31.5)	38 747 (26.3)
10-<20g/d	8 196 (18.6)	32 108 (22.4)	31 803 (23.0)	30 091 (20.4)
20+g/d	6 713 (15.2)	29 773 (20.7)	38 557 (27.9)	54 283 (36.9)
Unknown	226 (0.5)	745 (0.5)	666 (0.5)	757 (0.5)
Diet				
Fruit & vegetable intake (s/day), mean (SD)	5.82 (3.28)	4.99 (2.55)	4.53 (2.42)	4.20 (2.45)
Fruit & vegetable intake categories, n (%)				
<3 servings/day	4 577 (10.4)	21 213 (14.8)	27 796 (20.1)	38 779 (26.3)
3-<4 servings/day	5 541 (12.6)	23 960 (16.7)	27 087 (19.6)	29 943 (20.3)
4-<6 servings/day	14 636 (33.2)	52 829 (36.8)	48 874 (35.4)	46 949 (31.9)
≥6 servings/day	18 426 (41.8)	42 933 (29.9)	31 653 (22.9)	27 987 (19.0)
Unknown	856 (1.9)	2 579 (1.8)	2 668 (1.9)	3 558 (2.4)
Cereal fibre intake (g/day), mean (SD)	4.56 (3.08)	4.43 (2.87)	4.52 (2.88)	4.54 (3.00)
Cereal/Bread fibre sex-spec Quintiles, n (%)				
Q1 (mean W: 1.1 g/day, M: 1.3 g/day)	8 343 (18.9)	27 287 (19.0)	26 375 (19.1)	30 920 (21.0)
Q2 (mean W: 2.5 g/day, M: 2.8 g/day)	8 256 (18.7)	28 530 (19.9)	27 193 (19.7)	29 430 (20.0)
Q3 (mean W: 3.7 g/day, M: 4.3 g/day)	8 194 (18.6)	28 373 (19.8)	27 816 (20.1)	28 431 (19.3)
Q4 (mean W: 5.3 g/day, M: 6.2 g/day)	8 722 (19.8)	28 444 (19.8)	27 182 (19.7)	27 043 (18.4)
Q5 (mean W: 8.4 g/day, M: 9.9 g/day)	9 630 (21.9)	28 095 (19.6)	26 613 (19.3)	28 012 (19.0)
Unknown	891 (2.0)	2 785 (1.9)	2 899 (2.1)	3 380 (2.3)
Oily fish, n (%)				
0 times/week	11 758 (26.7)	10 529 (7.3)	12 005 (8.7)	17 780 (12.1)
<1 times/week	7 773 (17.7)	48 392 (33.7)	46 247 (33.5)	53 924 (36.6)
1 time/week	12 431 (28.2)	55 197 (38.5)	56 533 (40.9)	53 225 (36.2)
≥2 times/week	11 896 (27.0)	28 741 (20.0)	22 513 (16.3)	21 324 (14.5)
Unknown	178 (0.4)	655 (0.5)	780 (0.6)	963 (0.7)
Non-oily fish, n (%)				
<1 time/week	19 470 (44.2)	51 756 (36.1)	41 342 (29.9)	46 943 (31.9)
1 times/week	15 168 (34.4)	67 714 (47.2)	75 684 (54.8)	75 395 (51.2)
≥2 times/week	9 167 (20.8)	23 426 (16.3)	20 487 (14.8)	24 141 (16.4)
Unknown	231 (0.5)	618 (0.4)	565 (0.4)	737 (0.5)
Unprocessed red meat, n (%)				
<1 times/week	27 539 (62.5)	10 547 (7.3)	5 169 (3.7)	4 358 (3.0)
1 times/week	9 655 (21.9)	69 708 (48.6)	53 125 (38.5)	51 905 (35.3)
2-3 times/week	4 917 (11.2)	47 383 (33.0)	59 962 (43.4)	61 452 (41.7)
≥4 times/week	1 613 (3.7)	14 594 (10.2)	18 210 (13.2)	27 604 (18.8)
Unknown	312 (0.7)	1 282 (0.9)	1 612 (1.2)	1 897 (1.3)
Poultry meat, n (%)				
0-1 times/week	24 778 (56.3)	21 748 (15.2)	12 657 (9.2)	15 650 (10.6)
2 times/week	7 762 (17.6)	54 281 (37.8)	55 748 (40.4)	51 356 (34.9)
≥3 times/week	11 430 (26.0)	67 327 (46.9)	69 459 (50.3)	79 960 (54.3)
Unknown	66 (0.1)	158 (0.1)	214 (0.2)	250 (0.2)
Women factors				
Menopausal status, n (%)				
Premenopausal	7 975 (24.8)	21 066 (21.7)	17 599 (24.1)	14 011 (26.6)
Postmenopausal	22 551 (70.1)	70 660 (72.9)	51 469 (70.4)	35 383 (67.2)
Unknown	1 665 (5.2)	5 221 (5.4)	4 066 (5.6)	3 222 (6.1)
Parity, n (%)				
0 births	8 050 (25.0)	18 760 (19.4)	11 834 (16.2)	8 886 (16.9)
1 - 2 births	16 759 (52.1)	55 312 (57.1)	43 099 (58.9)	30 270 (57.5)
≥3 births	7 323 (22.7)	22 784 (23.5)	18 141 (24.8)	13 402 (25.5)
Unknown	59 (0.2)	91 (0.1)	60 (0.1)	58 (0.1)
Hormone replacement therapy use (HRT), n (%)				
Never	21 050 (65.4)	58 430 (60.3)	45 142 (61.7)	33 215 (63.1)
Past	9 045 (28.1)	32 022 (33.0)	23 352 (31.9)	16 077 (30.6)

Current	1 922 (6.0)	6 204 (6.4)	4 402 (6.0)	3 062 (5.8)
Unknown	174 (0.5)	291 (0.3)	238 (0.3)	262 (0.5)
Oral contraceptive pill use (OCT), n (%)				
Never	6 984 (21.7)	17 217 (17.8)	13 323 (18.2)	9 800 (18.6)
Past	24 446 (75.9)	77 775 (80.2)	58 257 (79.7)	41 430 (78.7)
Current	596 (1.9)	1 709 (1.8)	1 369 (1.9)	1 170 (2.2)
Unknown	165 (0.5)	246 (0.3)	185 (0.3)	216 (0.4)

The x^2 test was used to compare the distribution between meat intakes for all categorical variables. Analysis of variance (ANOVA) was used to compare the means between meat intakes. The *P*-heterogeneity between meat intakes was <0.001 for all variables. All dietary data come from the touchscreen questionnaire. [a]Additional file 1: Fig. 1 BMI: Body mass index HRT: hormone replacement therapy, OCP: oral contraceptive pill use, NVQ: national vocational qualification, s/day: servings/day.

Additional file 1: Table 5. Baseline characteristics of participants by poultry meat intake in UK Biobank (n=473 011[a]).

Characteristic Mean (SD) or n (%)	0-1 times/week N=75 001	2 times/week N=169 471	≥3 times/week N=228 539
Sociodemographic			
Sex, n (%)			
Women	41 873 (55.8)	88 922 (52.5)	124 248 (54.4)
Men	33 128 (44.2)	80 549 (47.5)	104 291 (45.6)
Age (years), mean (SD)	56.6 (8.1)	57.2 (7.9)	55.5 (8.1)
Age (years), n (%)			
37-44	7 911 (10.5)	14 808 (8.7)	27 780 (12.2)
45-49	9 375 (12.5)	19 664 (11.6)	34 935 (15.3)
50-54	11 125 (14.8)	24 136 (14.2)	37 760 (16.5)
55-59	13 868 (18.5)	31 286 (18.5)	40 704 (17.8)
60-64	17 823 (23.8)	44 002 (26.0)	50 872 (22.3)
65- 73	14 899 (19.9)	35 575 (21.0)	36 488 (16.0)
Race, n (%)			
White	69 345 (92.5)	161 947 (95.6)	214 119 (93.7)
Asian or Asian British	3 216 (4.3)	3 004 (1.8)	4 822 (2.1)
Black or Black British	903 (1.2)	1 872 (1.1)	4 937 (2.2)
Mixed race/Other	1 161 (1.5)	2 108 (1.2)	3 913 (1.7)
Unknown	376 (0.5)	540 (0.3)	748 (0.3)
Townsend deprivation, n (%)			
Most affluent (mean -4.7)	11 931 (15.9)	35 279 (20.8)	47 659 (20.9)
2 (mean -3.3)	13 030 (17.4)	34 600 (20.4)	46 633 (20.4)
3 (mean -2.1)	14 541 (19.4)	34 074 (20.1)	45 904 (20.1)
4 (mean -0.1)	16 874 (22.5)	33 134 (19.6)	44 577 (19.5)
Most deprived (mean 3.8)	18 539 (24.7)	32 214 (19.0)	43 431 (19.0)
Unknown	86 (0.1)	170 (0.1)	335 (0.1)
Qualification, n (%)			
College/university degree/NVQ	46 745 (62.3)	98 309 (58.0)	136 117 (59.6)
National examination at ages 17-18	3 845 (5.1)	8 752 (5.2)	13 188 (5.8)
National examination at age 16	10 302 (13.7)	27 991 (16.5)	40 289 (17.6)
Other/unknown	14 109 (18.8)	34 419 (20.3)	38 945 (17.0)
Employment, n (%)			
In paid employment	42 586 (56.8)	93 617 (55.2)	139 529 (61.1)
Pension	21 966 (29.3)	55 867 (33.0)	62 015 (27.1)
Not in paid employment	9 564 (12.8)	18 407 (10.9)	24 991 (10.9)
Unknown	885 (1.2)	1 580 (0.9)	2 004 (0.9)
Physical measurements			
BMI (kg/m^2), mean (SD)	26.6 (4.8)	27.3 (4.6)	27.8 (4.9)
BMI (kg/m^2), fifths, n (%)			
Q1 (mean W: 21 kg/m^2, M: 23 kg/m^2)	20 962 (27.9)	35 778 (21.1)	40 818 (17.9)
Q2 (mean W: 24 kg/m^2, M: 26 kg/m^2)	15 170 (20.2)	34 053 (20.1)	42 924 (18.8)
Q3 (mean W: 26 kg/m^2, M: 27 kg/m^2)	14 193 (18.9)	35 150 (20.7)	46 822 (20.5)
Q4 (mean W: 29 kg/m^2, M: 29 kg/m^2)	12 272 (16.4)	32 634 (19.3)	46 509 (20.4)
Q5 (mean W: 35 kg/m^2, M: 34 kg/m^2)	11 943 (15.9)	31 026 (18.3)	50 458 (22.1)
Unknown	461 (0.6)	830 (0.5)	1 008 (0.4)
Lifestyle			
Smoking, n (%)			
Never	39 769 (53.0)	91 570 (54.0)	127 684 (55.9)
Former	25 812 (34.4)	58 456 (34.5)	77 743 (34.0)
Current <15 cigarettes/day	2 585 (3.4)	5 268 (3.1)	6 576 (2.9)
Current ≥15 cigarettes/day	3 713 (5.0)	7 630 (4.5)	8 500 (3.7)
Current, amount unknown	2 807 (3.7)	5 880 (3.5)	7 278 (3.2)
Unknown	315 (0.4)	667 (0.4)	758 (0.3)
Physical activity level, n (%)			
Low <10 excess METs	23 397 (31.2)	54 428 (32.1)	71 413 (31.2)
Moderate 10-<50 excess METs	36 614 (48.8)	82 368 (48.6)	111 391 (48.7)
High ≥ 50 excess METs	12 013 (16.0)	26 068 (15.4)	37 327 (16.3)
Unknown	2 977 (4.0)	6 607 (3.9)	8 408 (3.7)

Alcohol intake, n (%)			
Non-drinkers	8 852 (11.8)	12 094 (7.1)	16 938 (7.4)
<1g/d	10 017 (13.4)	18 201 (10.7)	24 810 (10.9)
1-<10g/d	23 625 (31.5)	53 598 (31.6)	70 974 (31.1)
10-<20g/d	14 672 (19.6)	37 461 (22.1)	50 046 (21.9)
20+g/d	17 363 (23.2)	47 266 (27.9)	64 679 (28.3)
Unknown	472 (0.6)	851 (0.5)	1 092 (0.5)
Diet			
Fruit & vegetable intake (s/day), mean (SD)	4.83 (2.97)	4.50 (2.43)	4.78 (2.60)
Fruit & vegetable intake categories, n (%)			
<3 servings/day	15 542 (20.7)	35 581 (21.0)	41 217 (18.0)
3-<4 servings/day	12 371 (16.5)	32 865 (19.4)	41 313 (18.1)
4-<6 servings/day	23 838 (31.8)	58 974 (34.8)	80 526 (35.2)
≥6 servings/day	21 158 (28.2)	38 366 (22.6)	61 577 (26.9)
Unknown	2 092 (2.8)	3 685 (2.2)	3 906 (1.7)
Cereal fibre intake (g/day), mean (SD)	4.64 (3.10)	4.51 (2.91)	4.46 (2.90)
Cereal/Bread fibre sex-spec Quintiles, n (%)			
Q1 (mean W: 1.1 g/day, M: 1.3 g/day)	14 679 (19.6)	33 303 (19.7)	45 002 (19.7)
Q2 (mean W: 2.5 g/day, M: 2.8 g/day)	13 761 (18.3)	33 731 (19.9)	45 931 (20.1)
Q3 (mean W: 3.7 g/day, M: 4.3 g/day)	14 013 (18.7)	33 293 (19.6)	45 550 (19.9)
Q4 (mean W: 5.3 g/day, M: 6.2 g/day)	14 841 (19.8)	32 634 (19.3)	43 905 (19.2)
Q5 (mean W: 8.4 g/day, M: 9.9 g/day)	15 912 (21.2)	32 990 (19.5)	43 469 (19.0)
Unknown	1 795 (2.4)	3 520 (2.1)	4 682 (2.0)
Oily fish, n (%)			
0 times/week	16 673 (22.2)	14 255 (8.4)	21 125 (9.2)
<1 times/week	23 808 (31.7)	58 093 (34.3)	74 457 (32.6)
1 time/week	20 725 (27.6)	69 167 (40.8)	87 560 (38.3)
>2 times/week	13 318 (17.8)	26 970 (15.9)	44 253 (19.4)
Unknown	477 (0.6)	986 (0.6)	1 144 (0.5)
Non-oily fish, n (%)			
<1 time/week	36 374 (48.5)	54 812 (32.3)	68 327 (29.9)
1 times/week	27 120 (36.2)	91 733 (54.1)	115 161 (50.4)
>2 times/week	11 035 (14.7)	22 182 (13.1)	44 042 (19.3)
Unknown	472 (0.6)	744 (0.4)	1 009 (0.4)
Unprocessed red meat, n (%)			
<1 times/week	26 990 (36.0)	8 114 (4.8)	12 519 (5.5)
1 times/week	28 809 (38.4)	67 608 (39.9)	88 048 (38.5)
2-3 times/week	12 790 (17.1)	72 906 (43.0)	88 069 (38.5)
≥4 times/week	5 617 (7.5)	18 818 (11.1)	37 630 (16.5)
unknown/missing	795 (1.1)	2 025 (1.2)	2 273 (1.0)
Processed meat, n (%)			
0 times/week	24 778 (33.0)	7 762 (4.6)	11 430 (5.0)
<1 times/week	21 748 (29.0)	54 281 (32.0)	67 327 (29.5)
1 times/week	12 657 (16.9)	55 748 (32.9)	69 459 (30.4)
≥2 times/week	15 650 (20.9)	51 356 (30.3)	79 960 (35.0)
Unknown	168 (0.2)	324 (0.2)	363 (0.2)
Women factors			
Menopausal status, n (%)			
Premenopausal	10 057 (24.0)	18 215 (20.5)	32 442 (26.1)
Postmenopausal	29 711 (71.0)	66 398 (74.7)	84 027 (67.6)
Unknown	2 105 (5.0)	4 309 (4.8)	7 779 (6.3)
Parity, n (%)			
0 births	11 583 (27.7)	16 043 (18.0)	19 910 (16.0)
1 - 2 births	21 254 (50.8)	51 258 (57.6)	72 991 (58.7)
≥3 births	8 970 (21.4)	21 529 (24.2)	31 236 (25.1)
Unknown	66 (0.2)	92 (0.1)	111 (0.1)
Hormone replacement therapy use (HRT), n (%)			
Never	27 195 (64.9)	53 288 (59.9)	77 466 (62.3)
Past	12 070 (28.8)	29 958 (33.7)	38 493 (31.0)
Current	2 400 (5.7)	5 362 (6.0)	7 835 (6.3)

Unknown	208 (0.5)	314 (0.4)	454 (0.4)
Oral contraceptive pill use (OCT), n (%)			
Never	8 870 (21.2)	17 361 (19.5)	21 152 (17.0)
Past	32 001 (76.4)	69 795 (78.5)	100 198 (80.6)
Current	791 (1.9)	1 535 (1.7)	2 521 (2.0)
Unknown	211 (0.5)	231 (0.3)	377 (0.3)

The x^2 test was used to compare the distribution between meat intakes for all categorical variables. Analysis of variance (ANOVA) was used to compare the means between meat intakes. The *P*-heterogeneity between meat intakes was <0.001 for all variables. All dietary data come from the touchscreen questionnaire. [a]Additional file 1: Fig 1 BMI: Body mass index HRT: hormone replacement therapy, OCP: oral contraceptive pill use, NVQ: national vocational qualification, s/day: servings/day.

Additional file 1: Table 6. Risk of 25 common conditions by total meat intake in UK Biobank.

		Total meat intake (times/week)					
Disease	Model	<3	3 - 4	5 - 6	≥7	per 100g/day increase	p-value
Ischemic heart disease	Mean grams/day	33.43 (43.85)	84.61 (47.04)	99.05 (48.56)	116.02 (53.01)		
	Total n/cases	54185/1239	110065/3158	141542/4308	124612/4401	430404/13106	
	HR (95%-CI), Model 0	1.00 (Ref)	1.04 (0.97-1.11)	1.08 (1.01-1.15)	1.17 (1.10-1.25)	1.23 (1.14-1.33)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.10 (1.03-1.18)	1.15 (1.08-1.23)	1.23 (1.15-1.31)	1.29 (1.20-1.40)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.11 (1.04-1.19)	1.16 (1.09-1.24)	1.23 (1.15-1.32)	1.30 (1.20-1.40)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (1.00-1.14)	1.09 (1.02-1.17)	1.13 (1.06-1.21)	1.17 (1.08-1.26)	0.0001
Atrial Fibrillation and flutter	Mean grams/day	33.41 (43.84)	84.64 (47.04)	99.07 (48.63)	116.03 (52.99)		
	Total n/cases	54185/495	110065/1179	141542/1556	124612/1507	430404/4737	
	HR (95%-CI), Model 0	1.00 (Ref)	0.97 (0.87-1.08)	1.00 (0.91-1.11)	1.07 (0.97-1.19)	1.11 (0.98-1.25)	0.1104
	HR (95%-CI), Model 1	1.00 (Ref)	0.95 (0.85-1.05)	0.97 (0.87-1.07)	1.03 (0.92-1.14)	1.04 (0.92-1.18)	0.4941
	HR (95%-CI), Model 2	1.00 (Ref)	0.97 (0.87-1.08)	0.99 (0.89-1.10)	1.05 (0.94-1.16)	1.07 (0.94-1.21)	0.2993
	HR (95%-CI), Model 3	1.00 (Ref)	0.93 (0.83-1.03)	0.93 (0.83-1.03)	0.95 (0.86-1.06)	0.95 (0.84-1.08)	0.4166
Cerebrovascular	Mean grams/day	33.44 (43.85)	84.65 (47.03)	99.11 (48.61)	115.99 (52.99)		
	Total n/cases	54185/534	110065/1328	141542/1806	124612/1656	430404/5324	
	HR (95%-CI), Model 0	1.00 (Ref)	1.04 (0.94-1.15)	1.12 (1.02-1.23)	1.17 (1.06-1.29)	1.24 (1.10-1.39)	0.0004
	HR (95%-CI), Model 1	1.00 (Ref)	1.05 (0.95-1.17)	1.14 (1.03-1.25)	1.15 (1.04-1.28)	1.21 (1.08-1.37)	0.0014
	HR (95%-CI), Model 2	1.00 (Ref)	1.07 (0.97-1.19)	1.16 (1.05-1.28)	1.17 (1.05-1.29)	1.23 (1.09-1.38)	0.0008
	HR (95%-CI), Model 3	1.00 (Ref)	1.06 (0.95-1.17)	1.13 (1.02-1.25)	1.13 (1.02-1.25)	1.18 (1.04-1.33)	0.0083
Ischaemic stroke	Mean grams/day	33.43 (43.84)	84.64 (47.03)	99.09 (48.60)	116.00 (52.98)		
	Total n/cases	54185/222	110065/570	141542/787	124612/757	430404/2336	
	HR (95%-CI), Model 0	1.00 (Ref)	1.03 (0.88-1.20)	1.12 (0.96-1.30)	1.21 (1.04-1.41)	1.30 (1.08-1.56)	0.0048
	HR (95%-CI), Model 1	1.00 (Ref)	1.06 (0.91-1.24)	1.16 (1.00-1.35)	1.21 (1.04-1.41)	1.29 (1.07-1.55)	0.0062
	HR (95%-CI), Model 2	1.00 (Ref)	1.10 (0.94-1.29)	1.20 (1.03-1.40)	1.24 (1.06-1.45)	1.33 (1.10-1.59)	0.0025
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (0.91-1.25)	1.15 (0.98-1.34)	1.16 (1.00-1.36)	1.22 (1.02-1.47)	0.0321
Haemorrhagic stroke	Mean grams/day	33.43 (43.84)	84.62 (47.02)	99.08 (48.61)	116.00 (52.99)		
	Total n/cases	54185/113	110065/237	141542/322	124612/267	430404/939	
	HR (95%-CI), Model 0	1.00 (Ref)	0.94 (0.75-1.18)	1.04 (0.84-1.29)	1.02 (0.82-1.28)	1.06 (0.81-1.38)	0.6827
	HR (95%-CI), Model 1	1.00 (Ref)	0.96 (0.76-1.20)	1.06 (0.85-1.32)	1.01 (0.81-1.27)	1.05 (0.80-1.38)	0.7087
	HR (95%-CI), Model 2	1.00 (Ref)	0.97 (0.77-1.21)	1.06 (0.85-1.33)	1.01 (0.81-1.27)	1.05 (0.80-1.38)	0.7211
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.78-1.23)	1.09 (0.87-1.36)	1.04 (0.83-1.31)	1.09 (0.83-1.43)	0.5472
Venous thromboembolism	Mean grams/day	33.81 (44.02)	84.73 (47.00)	99.15 (48.71)	116.07 (52.98)		
	Total n/cases	56786/350	116628/966	150259/1284	133382/1147	457055/3747	

	HR (95%-CI), Model 0	1.00 (Ref)	1.18 (1.05-1.34)	1.22 (1.09-1.38)	1.22 (1.08-1.38)	1.27 (1.10-1.46)	0.0009
	HR (95%-CI), Model 1	1.00 (Ref)	1.19 (1.05-1.35)	1.24 (1.10-1.40)	1.23 (1.09-1.39)	1.28 (1.11-1.47)	0.0008
	HR (95%-CI), Model 2	1.00 (Ref)	1.21 (1.07-1.37)	1.26 (1.11-1.42)	1.24 (1.10-1.41)	1.29 (1.12-1.49)	0.0005
	HR (95%-CI), Model 3	1.00 (Ref)	1.14 (1.01-1.29)	1.15 (1.02-1.30)	1.10 (0.97-1.25)	1.11 (0.96-1.28)	0.1478
Varicose veins	Mean grams/day	33.62 (43.86)	84.95 (47.03)	99.37 (48.75)	116.22 (53.12)		
	Total n/cases	55246/325	112957/679	146292/864	130670/765	445165/2633	
	HR (95%-CI), Model 0	1.00 (Ref)	1.02 (0.89-1.16)	1.01 (0.88-1.14)	1.03 (0.90-1.18)	1.03 (0.88-1.20)	0.7037
	HR (95%-CI), Model 1	1.00 (Ref)	1.01 (0.88-1.15)	0.99 (0.87-1.13)	1.01 (0.89-1.16)	1.01 (0.86-1.18)	0.9173
	HR (95%-CI), Model 2	1.00 (Ref)	1.02 (0.89-1.17)	1.01 (0.88-1.15)	1.03 (0.90-1.18)	1.03 (0.88-1.21)	0.6954
	HR (95%-CI), Model 3	1.00 (Ref)	1.00 (0.87-1.15)	0.97 (0.85-1.11)	0.98 (0.86-1.13)	0.97 (0.83-1.14)	0.7313
Haemorrhoids	Mean grams/day	33.68 (43.93)	84.62 (46.89)	99.19 (48.74)	116.14 (53.10)		
	Total n/cases	55675/995	114393/2012	147269/2762	130445/2518	447782/8287	
	HR (95%-CI), Model 0	1.00 (Ref)	0.97 (0.90-1.04)	1.02 (0.95-1.10)	1.03 (0.96-1.11)	1.06 (0.97-1.15)	0.2307
	HR (95%-CI), Model 1	1.00 (Ref)	0.98 (0.91-1.06)	1.03 (0.96-1.11)	1.05 (0.97-1.13)	1.07 (0.98-1.17)	0.1308
	HR (95%-CI), Model 2	1.00 (Ref)	0.99 (0.91-1.07)	1.04 (0.97-1.12)	1.05 (0.98-1.14)	1.08 (0.99-1.19)	0.0871
	HR (95%-CI), Model 3	1.00 (Ref)	0.99 (0.91-1.07)	1.04 (0.97-1.13)	1.06 (0.98-1.14)	1.09 (0.99-1.19)	0.0800
Pneumonia	Mean grams/day	33.71 (44.00)	84.81 (46.92)	99.22 (48.63)	116.02 (53.01)		
	Total n/cases	56982/669	117178/1539	150902/2030	133895/2096	458957/6334	
	HR (95%-CI), Model 0	1.00 (Ref)	0.97 (0.89-1.06)	1.01 (0.93-1.11)	1.19 (1.09-1.30)	1.26 (1.13-1.41)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.02 (0.93-1.11)	1.07 (0.98-1.17)	1.20 (1.09-1.31)	1.27 (1.14-1.41)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.04 (0.94-1.14)	1.09 (1.00-1.19)	1.21 (1.11-1.33)	1.29 (1.15-1.43)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.94-1.13)	1.08 (0.98-1.18)	1.19 (1.08-1.30)	1.25 (1.12-1.39)	0.0001
Gastro-oesophageal reflux disease	Mean grams/day	33.82 (44.15)	84.64 (46.92)	99.13 (48.66)	116.13 (52.99)		
	Total n/cases	55029/841	112249/1776	144261/2328	127988/2058	439527/7003	
	HR (95%-CI), Model 0	1.00 (Ref)	0.99 (0.92-1.08)	1.03 (0.95-1.12)	1.07 (0.98-1.16)	1.09 (0.99-1.20)	0.0886
	HR (95%-CI), Model 1	1.00 (Ref)	1.00 (0.92-1.09)	1.05 (0.97-1.13)	1.08 (0.99-1.17)	1.10 (1.00-1.22)	0.0503
	HR (95%-CI), Model 2	1.00 (Ref)	1.03 (0.94-1.12)	1.07 (0.99-1.16)	1.10 (1.01-1.19)	1.13 (1.02-1.25)	0.0182
	HR (95%-CI), Model 3	1.00 (Ref)	1.01 (0.93-1.10)	1.04 (0.96-1.13)	1.06 (0.98-1.16)	1.08 (0.98-1.20)	0.1134
Gastritis and duodenitis	Mean grams/day	33.66 (43.94)	84.73 (47.03)	99.25 (48.73)	116.05 (53.05)		
	Total n/cases	55990/1431	115129/2934	148158/3626	131386/3354	450663/11345	
	HR (95%-CI), Model 0	1.00 (Ref)	0.97 (0.91-1.03)	0.95 (0.89-1.01)	1.03 (0.97-1.10)	1.02 (0.95-1.10)	0.5859
	HR (95%-CI), Model 1	1.00 (Ref)	1.01 (0.94-1.07)	0.99 (0.93-1.06)	1.06 (0.99-1.13)	1.06 (0.98-1.14)	0.1450
	HR (95%-CI), Model 2	1.00 (Ref)	1.02 (0.96-1.09)	1.01 (0.95-1.08)	1.07 (1.00-1.14)	1.07 (0.99-1.16)	0.0684
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.95-1.09)	1.00 (0.94-1.07)	1.06 (0.99-1.13)	1.06 (0.98-1.14)	0.1613

Inguinal hernia	Mean grams/day	33.66 (44.00)	84.63 (46.84)	99.06 (48.57)	116.26 (53.10)		
	Total n/cases	55414/765	112796/1918	144844/2655	127373/2677	440427/8015	
	HR (95%-CI), Model 0	1.00 (Ref)	0.94 (0.86-1.02)	0.92 (0.85-1.00)	0.87 (0.81-0.95)	0.85 (0.77-0.93)	0.0006
	HR (95%-CI), Model 1	1.00 (Ref)	0.93 (0.85-1.01)	0.91 (0.84-0.99)	0.88 (0.81-0.95)	0.85 (0.77-0.94)	0.0011
	HR (95%-CI), Model 2	1.00 (Ref)	0.93 (0.86-1.02)	0.92 (0.84-1.00)	0.89 (0.82-0.96)	0.86 (0.78-0.95)	0.0031
	HR (95%-CI), Model 3	1.00 (Ref)	0.99 (0.91-1.08)	1.00 (0.92-1.09)	1.00 (0.92-1.09)	1.00 (0.91-1.11)	0.9387
Noninfective enteritis and colitis	Mean grams/day	33.64 (43.94)	84.81 (47.01)	99.14 (48.64)	116.25 (53.07)		
	Total n/cases	56242/804	115728/1568	148973/2008	132337/1851	453280/6231	
	HR (95%-CI), Model 0	1.00 (Ref)	0.92 (0.85-1.01)	0.94 (0.87-1.02)	1.03 (0.95-1.12)	1.04 (0.94-1.15)	0.4799
	HR (95%-CI), Model 1	1.00 (Ref)	0.94 (0.86-1.02)	0.96 (0.88-1.05)	1.04 (0.95-1.13)	1.04 (0.94-1.16)	0.4095
	HR (95%-CI), Model 2	1.00 (Ref)	0.96 (0.88-1.05)	0.98 (0.90-1.07)	1.05 (0.96-1.15)	1.06 (0.96-1.18)	0.2430
	HR (95%-CI), Model 3	1.00 (Ref)	0.95 (0.87-1.04)	0.97 (0.89-1.06)	1.03 (0.95-1.13)	1.04 (0.94-1.15)	0.4690
Diverticular disease	Mean grams/day	33.60 (43.85)	84.67 (47.05)	99.12 (48.75)	116.25 (53.03)		
	Total n/cases	56724/1312	116036/3286	149455/4312	132720/3902	454935/12812	
	HR (95%-CI), Model 0	1.00 (Ref)	1.14 (1.07-1.21)	1.20 (1.12-1.27)	1.28 (1.20-1.37)	1.36 (1.26-1.46)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.11 (1.04-1.18)	1.16 (1.09-1.23)	1.23 (1.15-1.31)	1.29 (1.20-1.40)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.11 (1.04-1.19)	1.16 (1.09-1.24)	1.23 (1.15-1.31)	1.29 (1.20-1.39)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (1.01-1.15)	1.10 (1.03-1.18)	1.15 (1.08-1.22)	1.18 (1.10-1.28)	<0.0001
Colon polyps	Mean grams/day	33.50 (43.92)	84.71 (47.11)	99.26 (48.73)	116.27 (53.05)		
	Total n/cases	55459/4242	113821/9487	146551/12226	129887/11412	445718/37367	
	HR (95%-CI), Model 0	1.00 (Ref)	1.03 (0.99-1.06)	1.04 (1.01-1.08)	1.14 (1.10-1.18)	1.17 (1.12-1.22)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.02 (0.99-1.06)	1.04 (1.00-1.08)	1.12 (1.08-1.16)	1.14 (1.09-1.19)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.03 (0.99-1.07)	1.05 (1.01-1.09)	1.12 (1.08-1.16)	1.15 (1.10-1.20)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.01 (0.98-1.05)	1.02 (0.98-1.06)	1.08 (1.04-1.12)	1.10 (1.05-1.15)	<0.0001
Gallbladder disease	Mean grams/day	33.49 (43.76)	84.68 (47.10)	99.16 (48.73)	116.16 (53.03)		
	Total n/cases	55802/1002	114055/2239	146959/3021	131228/2645	448044/8907	
	HR (95%-CI), Model 0	1.00 (Ref)	1.09 (1.01-1.18)	1.19 (1.11-1.28)	1.28 (1.19-1.38)	1.37 (1.25-1.49)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.10 (1.02-1.19)	1.21 (1.12-1.30)	1.30 (1.21-1.41)	1.40 (1.28-1.53)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.13 (1.05-1.22)	1.24 (1.15-1.33)	1.32 (1.23-1.43)	1.43 (1.31-1.56)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.95-1.11)	1.07 (0.99-1.15)	1.09 (1.01-1.18)	1.12 (1.03-1.23)	0.0117
Osteoarthritis	Mean grams/day	33.19 (43.73)	84.65 (47.06)	99.12 (48.78)	116.06 (52.99)		
	Total n/cases	52411/1950	106121/4783	136830/5994	121524/5336	416886/18063	
	HR (95%-CI), Model 0	1.00 (Ref)	1.10 (1.04-1.16)	1.12 (1.07-1.18)	1.22 (1.15-1.28)	1.26 (1.18-1.34)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.08 (1.03-1.14)	1.10 (1.04-1.16)	1.18 (1.12-1.24)	1.21 (1.14-1.29)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.10 (1.05-1.16)	1.12 (1.06-1.18)	1.20 (1.14-1.27)	1.24 (1.16-1.32)	<0.0001

	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.97-1.08)	0.99 (0.94-1.05)	1.02 (0.97-1.08)	1.02 (0.95-1.08)	0.6017
Kidney stones	Mean grams/day	33.66 (43.89)	84.75 (46.97)	99.10 (48.67)	115.97 (52.92)		
	Total n/cases	57245/258	117599/611	151279/758	134086/812	460209/2439	
	HR (95%-CI), Model 0	1.00 (Ref)	1.08 (0.93-1.25)	0.99 (0.86-1.14)	1.09 (0.94-1.25)	1.07 (0.91-1.27)	0.4110
	HR (95%-CI), Model 1	1.00 (Ref)	1.13 (0.98-1.31)	1.07 (0.92-1.23)	1.18 (1.02-1.36)	1.19 (1.00-1.40)	0.0502
	HR (95%-CI), Model 2	1.00 (Ref)	1.13 (0.97-1.31)	1.06 (0.91-1.22)	1.15 (1.00-1.33)	1.16 (0.97-1.37)	0.1000
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (0.92-1.25)	0.98 (0.85-1.14)	1.05 (0.91-1.21)	1.03 (0.86-1.22)	0.7550
Urinary tract infection	Mean grams/day	33.86 (43.98)	84.81 (46.99)	99.17 (48.75)	116.13 (53.03)		
	Total n/cases	56857/609	117287/1325	151151/1701	134345/1560	459640/5195	
	HR (95%-CI), Model 0	1.00 (Ref)	0.94 (0.86-1.04)	0.96 (0.88-1.06)	1.03 (0.94-1.13)	1.04 (0.93-1.17)	0.5049
	HR (95%-CI), Model 1	1.00 (Ref)	0.99 (0.89-1.09)	1.02 (0.93-1.12)	1.07 (0.97-1.18)	1.09 (0.97-1.22)	0.1408
	HR (95%-CI), Model 2	1.00 (Ref)	1.01 (0.91-1.11)	1.03 (0.94-1.14)	1.08 (0.98-1.19)	1.10 (0.98-1.24)	0.0999
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.88-1.08)	0.99 (0.90-1.09)	1.01 (0.91-1.11)	1.02 (0.90-1.14)	0.8009
Enlarged prostate	Mean grams/day	35.40 (46.61)	89.41 (49.98)	105.29 (51.90)	122.25 (55.44)		
	Total n/cases	17550/308	44943/813	66541/1192	76369/1222	205403/3535	
	HR (95%-CI), Model 0	1.00 (Ref)	0.91 (0.80-1.04)	0.94 (0.83-1.07)	0.90 (0.79-1.02)	0.89 (0.77-1.03)	0.1318
	HR (95%-CI), Model 1	1.00 (Ref)	0.96 (0.84-1.10)	1.02 (0.90-1.16)	0.98 (0.86-1.12)	1.00 (0.86-1.16)	0.9988
	HR (95%-CI), Model 2	1.00 (Ref)	0.97 (0.85-1.11)	1.03 (0.91-1.18)	1.00 (0.88-1.13)	1.02 (0.87-1.18)	0.8350
	HR (95%-CI), Model 3	1.00 (Ref)	0.97 (0.85-1.11)	1.04 (0.91-1.18)	1.00 (0.88-1.14)	1.02 (0.88-1.19)	0.7629
Female genital prolapse	Mean grams/day	32.94 (42.82)	81.75 (44.84)	94.47 (45.67)	108.47 (48.71)		
	Total n/cases	37988/816	68348/1688	79381/2090	53796/1464	239513/6058	
	HR (95%-CI), Model 0	1.00 (Ref)	1.07 (0.99-1.17)	1.17 (1.07-1.26)	1.24 (1.14-1.35)	1.30 (1.18-1.44)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	0.99 (0.91-1.07)	1.04 (0.96-1.13)	1.10 (1.01-1.20)	1.12 (1.01-1.24)	0.0277
	HR (95%-CI), Model 2	1.00 (Ref)	1.01 (0.93-1.10)	1.07 (0.98-1.16)	1.13 (1.04-1.24)	1.16 (1.05-1.29)	0.0046
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.90-1.06)	1.01 (0.93-1.10)	1.06 (0.97-1.16)	1.08 (0.97-1.20)	0.1608
Uterine fibroids	Mean grams/day	31.60 (41.73)	81.20 (45.18)	93.90 (45.43)	108.59 (48.64)		
	Total n/cases	29637/1485	51538/2464	59888/3103	40612/2198	181675/9250	
	HR (95%-CI), Model 0	1.00 (Ref)	1.00 (0.94-1.07)	1.06 (0.99-1.12)	1.08 (1.01-1.15)	1.10 (1.02-1.18)	0.0173
	HR (95%-CI), Model 1	1.00 (Ref)	1.01 (0.95-1.08)	1.08 (1.01-1.15)	1.08 (1.01-1.15)	1.11 (1.02-1.20)	0.0099
	HR (95%-CI), Model 2	1.00 (Ref)	1.02 (0.95-1.09)	1.08 (1.02-1.15)	1.08 (1.01-1.16)	1.12 (1.03-1.21)	0.0064
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.92-1.05)	1.01 (0.95-1.08)	0.99 (0.92-1.06)	1.00 (0.92-1.08)	0.9277
Iron deficiency anaemia	Mean grams/day	33.89 (44.00)	84.81 (46.96)	99.22 (48.74)	116.25 (53.07)		
	Total n/cases	56879/709	117843/1256	151931/1483	135100/1260	461753/4708	
	HR (95%-CI), Model 0	1.00 (Ref)	0.80 (0.73-0.88)	0.76 (0.69-0.83)	0.76 (0.70-0.84)	0.71 (0.63-0.79)	<0.0001

	HR (95%-CI), Model 1	1.00 (Ref)	0.90 (0.82-0.98)	0.87 (0.79-0.95)	0.87 (0.79-0.95)	0.84 (0.75-0.93)	0.0017
	HR (95%-CI), Model 2	1.00 (Ref)	0.94 (0.85-1.03)	0.90 (0.82-0.99)	0.90 (0.82-0.99)	0.87 (0.78-0.98)	0.0184
	HR (95%-CI), Model 3	1.00 (Ref)	0.92 (0.84-1.01)	0.87 (0.80-0.96)	0.86 (0.78-0.94)	0.82 (0.73-0.92)	0.0008
Diabetes	Mean grams/day	33.60 (43.85)	84.52 (47.00)	98.90 (48.57)	115.65 (52.56)		
	Total n/cases	55408/911	113640/2161	145662/3122	127719/3362	442429/9556	
	HR (95%-CI), Model 0	1.00 (Ref)	1.03 (0.95-1.11)	1.16 (1.08-1.25)	1.41 (1.31-1.52)	1.62 (1.47-1.77)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.18 (1.09-1.27)	1.37 (1.27-1.48)	1.59 (1.48-1.72)	1.85 (1.69-2.03)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.20 (1.11-1.30)	1.39 (1.29-1.50)	1.61 (1.49-1.73)	1.86 (1.70-2.04)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.06 (0.98-1.15)	1.14 (1.06-1.23)	1.23 (1.14-1.33)	1.33 (1.21-1.46)	<0.0001
Carpal tunnel syndrome	Mean grams/day	33.62 (43.78)	84.69 (47.01)	99.21 (48.72)	116.09 (52.95)		
	Total n/cases	56857/558	116801/1308	150601/1730	133876/1448	458135/5044	
	HR (95%-CI), Model 0	1.00 (Ref)	1.14 (1.03-1.26)	1.21 (1.10-1.33)	1.24 (1.13-1.37)	1.31 (1.17-1.48)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.16 (1.05-1.28)	1.23 (1.12-1.36)	1.24 (1.12-1.37)	1.31 (1.16-1.47)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.18 (1.07-1.31)	1.26 (1.14-1.39)	1.26 (1.14-1.40)	1.34 (1.19-1.50)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.10 (0.99-1.22)	1.12 (1.02-1.24)	1.08 (0.98-1.20)	1.10 (0.98-1.24)	0.1015
Cataracts	Mean grams/day	33.53 (43.89)	84.52 (47.08)	98.99 (48.61)	115.87 (52.60)		
	Total n/cases	53185/2028	109124/4466	140142/5259	123232/4345	425683/16098	
	HR (95%-CI), Model 0	1.00 (Ref)	0.91 (0.86-0.96)	0.90 (0.85-0.94)	0.93 (0.88-0.98)	0.91 (0.85-0.97)	0.0026
	HR (95%-CI), Model 1	1.00 (Ref)	0.96 (0.91-1.01)	0.95 (0.90-1.00)	0.97 (0.91-1.02)	0.95 (0.90-1.02)	0.1607
	HR (95%-CI), Model 2	1.00 (Ref)	0.97 (0.92-1.02)	0.96 (0.91-1.01)	0.97 (0.92-1.03)	0.96 (0.90-1.03)	0.2396
	HR (95%-CI), Model 3	1.00 (Ref)	0.96 (0.91-1.01)	0.95 (0.90-1.00)	0.95 (0.90-1.01)	0.94 (0.88-1.00)	0.0603
Cellulitis	Mean grams/day	33.78 (43.99)	84.71 (46.95)	99.17 (48.69)	116.04 (53.03)		
	Total n/cases	57543/368	118312/789	152318/1140	135086/1104	463259/3401	
	HR (95%-CI), Model 0	1.00 (Ref)	0.96 (0.85-1.09)	1.07 (0.95-1.20)	1.12 (1.00-1.27)	1.20 (1.03-1.38)	0.0157
	HR (95%-CI), Model 1	1.00 (Ref)	1.00 (0.88-1.14)	1.13 (1.00-1.27)	1.16 (1.03-1.31)	1.24 (1.07-1.43)	0.0040
	HR (95%-CI), Model 2	1.00 (Ref)	1.03 (0.91-1.17)	1.16 (1.02-1.31)	1.18 (1.05-1.34)	1.27 (1.10-1.47)	0.0015
	HR (95%-CI), Model 3	1.00 (Ref)	0.95 (0.83-1.07)	1.02 (0.90-1.15)	0.99 (0.88-1.12)	1.02 (0.88-1.18)	0.8347

Model 0: Stratified for sex, age group and region and adjusted for age (underlying time variable). **Model 1:** Model 0 additionally adjusted for race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18,National examination at age 16, unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current >15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs, 10-<50 excess METs, ≥ 50 excess METs, unknown), alcohol intake (none, < 1 g/day, 1-<10 g, 10-<20 g, ≥20 g/day, unknown), menopausal status (pre-, postmenopausal unknown), hormone-replacement therapy (HRT) (never, past, current, unknown) and oral contraceptive pill intake (OCP) (never, past, current, unknown), and parity (nulliparous, 1-2, 3 or more, unknown). **Model 2:** Model 1 additionally adjusted for total fruit and vegetable intake (<3 servings/day, 3-<4 servings/day, 4-<5 servings/day, ≥6 servings/day, unknown), cereal fibre intake (sex-specific quintiles, unknown), oily fish intake (0 times/week, <1 time/week, 1 time/week, ≥ 2times/week, unknown) and non-oily fish intake (<1 time/week, 1 times/week, ≥ 2 times/week, unknown). **Model 3:** Model 2 additionally adjusted for BMI (sex-specific quintiles, unknown).

Additional file 1: Table 7. Risk of 25 common conditions by unprocessed red and processed meat intake in UK Biobank.

		Unprocessed red and processed meat intake (times/week)					
Disease	Model	≤1	2	3 - 4	≥5	per 70g/day increase	p-value
Ischemic heart disease	Mean grams/day	10.36 (23.38)	48.59 (39.06)	64.49 (42.58)	78.98 (47.41)		
	Total n/cases	41231/890	148286/3845	129352/4156	111845/4229	430714/13120	
	HR (95%-CI), Model 0	1.00 (Ref)	0.99 (0.92-1.07)	1.10 (1.02-1.18)	1.15 (1.07-1.24)	1.23 (1.15-1.32)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.08 (1.00-1.17)	1.18 (1.10-1.27)	1.22 (1.13-1.31)	1.26 (1.17-1.35)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.10 (1.02-1.19)	1.20 (1.11-1.29)	1.23 (1.14-1.33)	1.26 (1.17-1.35)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.04 (0.97-1.13)	1.11 (1.03-1.20)	1.12 (1.04-1.21)	1.15 (1.07-1.23)	0.0001
Atrial Fibrillation and flutter	Mean grams/day	10.38 (23.46)	48.58 (39.06)	64.56 (42.63)	78.96 (47.45)		
	Total n/cases	41231/369	148286/1487	129352/1493	111845/1392	430714/4741	
	HR (95%-CI), Model 0	1.00 (Ref)	0.93 (0.83-1.04)	0.98 (0.88-1.10)	0.97 (0.86-1.09)	1.01 (0.90-1.13)	0.8658
	HR (95%-CI), Model 1	1.00 (Ref)	0.90 (0.80-1.01)	0.94 (0.83-1.05)	0.91 (0.81-1.03)	0.95 (0.85-1.06)	0.3539
	HR (95%-CI), Model 2	1.00 (Ref)	0.93 (0.83-1.05)	0.98 (0.87-1.10)	0.95 (0.84-1.07)	0.99 (0.88-1.11)	0.8155
	HR (95%-CI), Model 3	1.00 (Ref)	0.88 (0.78-0.99)	0.90 (0.80-1.02)	0.86 (0.76-0.97)	0.89 (0.79-0.99)	0.0396
Cerebrovascular	Mean grams/day	10.39 (23.46)	48.58 (39.05)	64.53 (42.62)	78.95 (47.42)		
	Total n/cases	41231/377	148286/1687	129352/1625	111845/1641	430714/5330	
	HR (95%-CI), Model 0	1.00 (Ref)	1.06 (0.95-1.19)	1.11 (1.00-1.25)	1.23 (1.09-1.37)	1.26 (1.13-1.40)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.09 (0.98-1.22)	1.12 (1.00-1.26)	1.20 (1.07-1.35)	1.20 (1.08-1.34)	0.0007
	HR (95%-CI), Model 2	1.00 (Ref)	1.11 (0.99-1.25)	1.14 (1.02-1.29)	1.21 (1.08-1.36)	1.21 (1.09-1.35)	0.0006
	HR (95%-CI), Model 3	1.00 (Ref)	1.09 (0.97-1.23)	1.11 (0.99-1.25)	1.17 (1.04-1.32)	1.17 (1.04-1.30)	0.0063
Ischaemic stroke	Mean grams/day	10.38 (23.45)	48.57 (39.04)	64.53 (42.62)	78.96 (47.42)		
	Total n/cases	41231/153	148286/695	129352/720	111845/770	430714/2338	
	HR (95%-CI), Model 0	1.00 (Ref)	1.04 (0.87-1.24)	1.14 (0.96-1.36)	1.31 (1.10-1.56)	1.41 (1.19-1.66)	0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.09 (0.92-1.30)	1.17 (0.98-1.40)	1.29 (1.08-1.54)	1.34 (1.13-1.58)	0.0006
	HR (95%-CI), Model 2	1.00 (Ref)	1.13 (0.95-1.36)	1.21 (1.01-1.45)	1.32 (1.10-1.58)	1.35 (1.14-1.60)	0.0005
	HR (95%-CI), Model 3	1.00 (Ref)	1.09 (0.91-1.31)	1.15 (0.96-1.38)	1.23 (1.02-1.48)	1.26 (1.06-1.49)	0.0082
Haemorrhagic stroke	Mean grams/day	10.38 (23.45)	48.57 (39.04)	64.54 (42.62)	78.95 (47.43)		
	Total n/cases	41231/80	148286/320	129352/279	111845/260	430714/939	
	HR (95%-CI), Model 0	1.00 (Ref)	1.02 (0.80-1.31)	1.03 (0.80-1.32)	1.11 (0.86-1.43)	1.11 (0.87-1.42)	0.4006
	HR (95%-CI), Model 1	1.00 (Ref)	1.04 (0.81-1.34)	1.03 (0.80-1.33)	1.09 (0.84-1.41)	1.08 (0.84-1.38)	0.5568
	HR (95%-CI), Model 2	1.00 (Ref)	1.07 (0.83-1.37)	1.05 (0.81-1.37)	1.10 (0.85-1.44)	1.09 (0.85-1.40)	0.5081
	HR (95%-CI), Model 3	1.00 (Ref)	1.09 (0.84-1.40)	1.08 (0.83-1.40)	1.13 (0.87-1.48)	1.12 (0.87-1.44)	0.3778
Venous thromboembolism	Mean grams/day	10.51 (23.57)	48.65 (39.05)	64.95 (42.82)	79.21 (47.58)		
	Total n/cases	43170/255	156616/1211	137523/1186	120091/1099	457400/3751	

	HR (95%-CI), Model 0	1.00 (Ref)	1.16 (1.01-1.33)	1.23 (1.07-1.41)	1.24 (1.08-1.42)	1.23 (1.08-1.39)	0.0016
	HR (95%-CI), Model 1	1.00 (Ref)	1.17 (1.02-1.34)	1.23 (1.08-1.42)	1.23 (1.07-1.41)	1.21 (1.07-1.38)	0.0031
	HR (95%-CI), Model 2	1.00 (Ref)	1.19 (1.04-1.37)	1.26 (1.09-1.44)	1.24 (1.08-1.44)	1.22 (1.07-1.38)	0.0030
	HR (95%-CI), Model 3	1.00 (Ref)	1.11 (0.97-1.28)	1.13 (0.99-1.31)	1.10 (0.95-1.27)	1.07 (0.94-1.22)	0.3031
Varicose veins	Mean grams/day	10.50 (23.54)	48.82 (39.17)	64.98 (42.78)	79.41 (47.60)		
	Total n/cases	42006/251	151715/929	134036/794	117747/659	445504/2633	
	HR (95%-CI), Model 0	1.00 (Ref)	1.03 (0.89-1.18)	1.02 (0.88-1.17)	0.97 (0.84-1.13)	0.97 (0.84-1.11)	0.6401
	HR (95%-CI), Model 1	1.00 (Ref)	1.03 (0.89-1.18)	1.01 (0.87-1.17)	0.96 (0.83-1.12)	0.95 (0.83-1.10)	0.4996
	HR (95%-CI), Model 2	1.00 (Ref)	1.05 (0.91-1.21)	1.04 (0.90-1.21)	1.00 (0.86-1.16)	0.99 (0.85-1.14)	0.8623
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.88-1.18)	1.00 (0.86-1.16)	0.95 (0.81-1.11)	0.94 (0.81-1.09)	0.3907
Haemorrhoids	Mean grams/day	10.48 (23.51)	48.71 (39.06)	64.81 (42.69)	79.17 (47.56)		
	Total n/cases	42327/761	153619/2801	134780/2471	117394/2263	448120/8296	
	HR (95%-CI), Model 0	1.00 (Ref)	1.00 (0.93-1.09)	1.00 (0.92-1.08)	1.04 (0.95-1.13)	1.04 (0.96-1.12)	0.4014
	HR (95%-CI), Model 1	1.00 (Ref)	1.03 (0.95-1.11)	1.02 (0.94-1.11)	1.06 (0.98-1.16)	1.06 (0.98-1.15)	0.1580
	HR (95%-CI), Model 2	1.00 (Ref)	1.04 (0.95-1.13)	1.03 (0.95-1.13)	1.08 (0.99-1.17)	1.07 (0.99-1.16)	0.1062
	HR (95%-CI), Model 3	1.00 (Ref)	1.04 (0.95-1.13)	1.03 (0.95-1.13)	1.08 (0.99-1.18)	1.07 (0.99-1.17)	0.0983
Pneumonia	Mean grams/day	10.52 (23.60)	48.78 (39.05)	64.81 (42.67)	79.19 (47.65)		
	Total n/cases	43323/462	157345/1885	138154/1935	120487/2068	459309/6350	
	HR (95%-CI), Model 0	1.00 (Ref)	0.99 (0.89-1.09)	1.11 (1.00-1.23)	1.30 (1.17-1.44)	1.43 (1.29-1.58)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.06 (0.95-1.17)	1.15 (1.03-1.27)	1.28 (1.15-1.42)	1.34 (1.22-1.48)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.09 (0.98-1.21)	1.17 (1.05-1.30)	1.30 (1.17-1.44)	1.35 (1.22-1.49)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.09 (0.98-1.21)	1.16 (1.04-1.29)	1.27 (1.14-1.41)	1.31 (1.18-1.44)	<0.0001
Gastro-oesophageal reflux disease	Mean grams/day	10.40 (23.48)	48.61 (39.10)	64.82 (42.71)	79.20 (47.37)		
	Total n/cases	41762/661	150750/2426	132266/2109	115078/1814	439856/7010	
	HR (95%-CI), Model 0	1.00 (Ref)	0.98 (0.90-1.07)	0.99 (0.90-1.08)	0.98 (0.90-1.08)	0.99 (0.91-1.08)	0.7988
	HR (95%-CI), Model 1	1.00 (Ref)	1.00 (0.92-1.09)	1.00 (0.92-1.10)	1.00 (0.91-1.09)	1.00 (0.92-1.09)	0.9970
	HR (95%-CI), Model 2	1.00 (Ref)	1.02 (0.93-1.12)	1.02 (0.93-1.12)	1.01 (0.92-1.11)	1.01 (0.92-1.10)	0.8705
	HR (95%-CI), Model 3	1.00 (Ref)	1.00 (0.91-1.09)	0.99 (0.90-1.09)	0.98 (0.89-1.08)	0.97 (0.89-1.07)	0.5656
Gastritis and duodenitis	Mean grams/day	10.42 (23.43)	48.75 (39.15)	64.83 (42.76)	79.20 (47.57)		
	Total n/cases	42476/1151	154550/3889	135671/3352	118300/2973	450997/11365	
	HR (95%-CI), Model 0	1.00 (Ref)	0.91 (0.85-0.97)	0.92 (0.86-0.99)	0.95 (0.88-1.02)	0.97 (0.90-1.03)	0.3197
	HR (95%-CI), Model 1	1.00 (Ref)	0.97 (0.91-1.04)	0.97 (0.91-1.04)	0.99 (0.92-1.06)	0.99 (0.93-1.06)	0.8521
	HR (95%-CI), Model 2	1.00 (Ref)	0.99 (0.93-1.06)	0.99 (0.93-1.06)	1.00 (0.93-1.08)	1.00 (0.94-1.08)	0.9380
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.92-1.05)	0.98 (0.92-1.05)	0.99 (0.92-1.06)	0.99 (0.92-1.06)	0.7341

Inguinal hernia	Mean grams/day	10.56 (23.66)	48.71 (38.99)	64.71 (42.64)	79.35 (47.71)		
	Total n/cases	42328/521	152026/2388	132074/2531	114332/2579	440760/8019	
	HR (95%-CI), Model 0	1.00 (Ref)	0.97 (0.88-1.07)	0.91 (0.83-1.01)	0.87 (0.79-0.95)	0.84 (0.77-0.91)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	0.95 (0.86-1.04)	0.90 (0.82-0.99)	0.87 (0.79-0.95)	0.85 (0.78-0.93)	0.0002
	HR (95%-CI), Model 2	1.00 (Ref)	0.95 (0.86-1.05)	0.91 (0.82-1.00)	0.88 (0.80-0.97)	0.86 (0.79-0.94)	0.0010
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.93-1.14)	1.01 (0.92-1.12)	1.01 (0.91-1.11)	0.99 (0.90-1.08)	0.7619
Noninfective enteritis and colitis	Mean grams/day	10.42 (23.50)	48.70 (39.13)	64.86 (42.77)	79.43 (47.74)		
	Total n/cases	42589/599	155326/2108	136439/1865	119262/1663	453616/6235	
	HR (95%-CI), Model 0	1.00 (Ref)	0.95 (0.86-1.04)	0.98 (0.89-1.08)	1.03 (0.94-1.14)	1.06 (0.97-1.16)	0.2096
	HR (95%-CI), Model 1	1.00 (Ref)	0.97 (0.89-1.06)	1.00 (0.91-1.10)	1.04 (0.94-1.14)	1.05 (0.96-1.16)	0.2661
	HR (95%-CI), Model 2	1.00 (Ref)	1.00 (0.91-1.10)	1.03 (0.93-1.13)	1.06 (0.96-1.17)	1.07 (0.98-1.18)	0.1449
	HR (95%-CI), Model 3	1.00 (Ref)	0.99 (0.90-1.09)	1.01 (0.92-1.12)	1.04 (0.94-1.15)	1.05 (0.96-1.16)	0.3036
Diverticular disease	Mean grams/day	10.44 (23.56)	48.71 (39.17)	64.76 (42.76)	79.22 (47.71)		
	Total n/cases	43123/943	155929/4246	136813/3998	119416/3629	455281/12816	
	HR (95%-CI), Model 0	1.00 (Ref)	1.17 (1.09-1.25)	1.28 (1.19-1.38)	1.33 (1.24-1.43)	1.36 (1.27-1.45)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.13 (1.05-1.22)	1.23 (1.15-1.32)	1.27 (1.18-1.37)	1.29 (1.21-1.38)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.14 (1.06-1.23)	1.24 (1.15-1.33)	1.27 (1.18-1.37)	1.28 (1.20-1.37)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.09 (1.02-1.18)	1.17 (1.08-1.25)	1.18 (1.09-1.27)	1.19 (1.11-1.28)	<0.0001
Colon polyps	Mean grams/day	10.46 (23.59)	48.71 (39.14)	64.93 (42.83)	79.40 (47.58)		
	Total n/cases	42076/3108	152858/12436	134197/11349	116917/10507	446048/37400	
	HR (95%-CI), Model 0	1.00 (Ref)	1.04 (1.00-1.08)	1.09 (1.04-1.13)	1.15 (1.11-1.20)	1.17 (1.13-1.22)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.04 (1.00-1.08)	1.07 (1.03-1.12)	1.13 (1.08-1.17)	1.14 (1.10-1.18)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.05 (1.01-1.09)	1.08 (1.04-1.13)	1.13 (1.09-1.18)	1.14 (1.10-1.19)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.99-1.07)	1.05 (1.01-1.10)	1.09 (1.05-1.14)	1.10 (1.06-1.15)	<0.0001
Gallbladder disease	Mean grams/day	10.40 (23.52)	48.62 (39.08)	64.80 (42.80)	79.32 (47.73)		
	Total n/cases	42304/767	152826/3125	134818/2695	118434/2327	448382/8914	
	HR (95%-CI), Model 0	1.00 (Ref)	1.14 (1.05-1.23)	1.19 (1.09-1.29)	1.24 (1.14-1.35)	1.24 (1.15-1.34)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.15 (1.06-1.25)	1.21 (1.11-1.31)	1.27 (1.17-1.39)	1.27 (1.17-1.37)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.18 (1.09-1.28)	1.23 (1.13-1.33)	1.29 (1.18-1.41)	1.27 (1.17-1.38)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.06 (0.97-1.15)	1.04 (0.96-1.13)	1.06 (0.97-1.15)	1.04 (0.96-1.13)	0.3259
Osteoarthritis	Mean grams/day	10.31 (23.69)	48.69 (39.16)	64.59 (42.59)	79.11 (47.60)		
	Total n/cases	39814/1451	142735/6220	125452/5576	109175/4833	417176/18080	
	HR (95%-CI), Model 0	1.00 (Ref)	1.09 (1.03-1.15)	1.14 (1.07-1.21)	1.15 (1.09-1.22)	1.16 (1.09-1.22)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.08 (1.02-1.14)	1.11 (1.05-1.18)	1.12 (1.05-1.19)	1.12 (1.06-1.18)	0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.10 (1.04-1.17)	1.15 (1.08-1.22)	1.15 (1.08-1.23)	1.15 (1.09-1.22)	<0.0001

	HR (95%-CI), Model 3	1.00 (Ref)	1.00 (0.95-1.06)	1.00 (0.94-1.06)	0.97 (0.92-1.04)	0.97 (0.92-1.03)	0.3110
Kidney stones	Mean grams/day	10.49 (23.56)	48.70 (39.08)	64.76 (42.70)	79.18 (47.54)		
	Total n/cases	43491/190	157886/765	138388/772	120794/717	460559/2444	
	HR (95%-CI), Model 0	1.00 (Ref)	1.04 (0.89-1.22)	1.09 (0.93-1.28)	1.06 (0.90-1.25)	1.07 (0.92-1.24)	0.4096
	HR (95%-CI), Model 1	1.00 (Ref)	1.12 (0.95-1.31)	1.19 (1.01-1.39)	1.17 (0.99-1.38)	1.17 (1.00-1.36)	0.0455
	HR (95%-CI), Model 2	1.00 (Ref)	1.11 (0.94-1.31)	1.16 (0.99-1.37)	1.13 (0.96-1.34)	1.13 (0.96-1.32)	0.1324
	HR (95%-CI), Model 3	1.00 (Ref)	1.05 (0.89-1.23)	1.07 (0.91-1.27)	1.03 (0.87-1.22)	1.02 (0.87-1.19)	0.7971
Urinary tract infection	Mean grams/day	10.55 (23.66)	48.80 (39.13)	64.82 (42.71)	79.30 (47.70)		
	Total n/cases	43172/465	157448/1647	138319/1582	121049/1511	459988/5205	
	HR (95%-CI), Model 0	1.00 (Ref)	0.88 (0.80-0.98)	0.96 (0.86-1.06)	1.02 (0.92-1.13)	1.09 (0.98-1.21)	0.1040
	HR (95%-CI), Model 1	1.00 (Ref)	0.95 (0.85-1.05)	1.02 (0.92-1.13)	1.08 (0.97-1.20)	1.13 (1.02-1.26)	0.0215
	HR (95%-CI), Model 2	1.00 (Ref)	0.98 (0.88-1.09)	1.05 (0.94-1.17)	1.10 (0.99-1.23)	1.15 (1.03-1.28)	0.0106
	HR (95%-CI), Model 3	1.00 (Ref)	0.95 (0.85-1.05)	1.00 (0.89-1.11)	1.03 (0.92-1.15)	1.07 (0.96-1.19)	0.2189
Enlarged prostate	Mean grams/day	10.80 (26.01)	53.46 (42.54)	70.13 (44.95)	85.35 (50.06)		
	Total n/cases	12148/201	55481/972	65868/1172	72093/1194	205590/3539	
	HR (95%-CI), Model 0	1.00 (Ref)	0.94 (0.80-1.09)	0.96 (0.83-1.12)	0.88 (0.76-1.02)	0.89 (0.78-1.01)	0.0708
	HR (95%-CI), Model 1	1.00 (Ref)	1.00 (0.86-1.17)	1.05 (0.90-1.23)	0.98 (0.84-1.15)	0.99 (0.86-1.13)	0.8517
	HR (95%-CI), Model 2	1.00 (Ref)	1.02 (0.87-1.19)	1.07 (0.92-1.25)	1.00 (0.86-1.17)	1.00 (0.87-1.15)	0.9732
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.87-1.19)	1.08 (0.92-1.26)	1.01 (0.86-1.18)	1.01 (0.88-1.16)	0.8927
Female genital prolapse	Mean grams/day	10.37 (22.63)	46.03 (36.86)	60.08 (40.13)	70.41 (42.55)		
	Total n/cases	30054/616	96685/2457	67921/1747	44994/1242	239654/6062	
	HR (95%-CI), Model 0	1.00 (Ref)	1.17 (1.07-1.27)	1.17 (1.07-1.29)	1.26 (1.14-1.39)	1.23 (1.12-1.35)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.08 (0.99-1.18)	1.07 (0.97-1.17)	1.14 (1.04-1.26)	1.12 (1.02-1.23)	0.0190
	HR (95%-CI), Model 2	1.00 (Ref)	1.11 (1.02-1.22)	1.10 (1.00-1.21)	1.19 (1.07-1.31)	1.16 (1.05-1.27)	0.0023
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (0.98-1.17)	1.05 (0.95-1.15)	1.12 (1.01-1.23)	1.09 (0.99-1.20)	0.0742
Uterine fibroids	Mean grams/day	9.97 (22.19)	45.58 (36.74)	60.02 (40.04)	70.23 (42.28)		
	Total n/cases	23395/1191	73089/3709	51367/2595	33935/1763	181786/9258	
	HR (95%-CI), Model 0	1.00 (Ref)	1.05 (0.98-1.12)	1.04 (0.97-1.11)	1.07 (0.99-1.15)	1.06 (0.98-1.13)	0.1257
	HR (95%-CI), Model 1	1.00 (Ref)	1.07 (1.00-1.14)	1.06 (0.99-1.14)	1.09 (1.01-1.17)	1.08 (1.00-1.15)	0.0416
	HR (95%-CI), Model 2	1.00 (Ref)	1.08 (1.01-1.16)	1.07 (1.00-1.15)	1.10 (1.02-1.19)	1.08 (1.01-1.16)	0.0299
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.96-1.11)	1.00 (0.93-1.07)	1.00 (0.93-1.09)	0.99 (0.92-1.06)	0.7762
Iron deficiency anaemia	Mean grams/day	10.47 (23.43)	48.75 (39.14)	64.87 (42.72)	79.38 (47.69)		
	Total n/cases	43107/583	158115/1560	139150/1418	121730/1158	462102/4719	
	HR (95%-CI), Model 0	1.00 (Ref)	0.69 (0.63-0.76)	0.73 (0.66-0.81)	0.70 (0.63-0.77)	0.74 (0.66-0.81)	<0.0001

	HR (95%-CI), Model 1	1.00 (Ref)	0.80 (0.73-0.89)	0.86 (0.78-0.95)	0.82 (0.74-0.91)	0.86 (0.78-0.95)	0.0044
	HR (95%-CI), Model 2	1.00 (Ref)	0.85 (0.77-0.94)	0.90 (0.81-1.00)	0.86 (0.77-0.96)	0.90 (0.81-0.99)	0.0384
	HR (95%-CI), Model 3	1.00 (Ref)	0.83 (0.75-0.91)	0.87 (0.78-0.96)	0.82 (0.73-0.91)	0.85 (0.77-0.94)	0.0026
Diabetes	Mean grams/day	10.48 (23.57)	48.47 (38.99)	64.52 (42.60)	78.65 (47.20)		
	Total n/cases	42147/699	152899/2729	132951/2972	114743/3171	442740/9571	
	HR (95%-CI), Model 0	1.00 (Ref)	0.96 (0.89-1.05)	1.15 (1.06-1.25)	1.35 (1.25-1.47)	1.56 (1.43-1.69)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.17 (1.08-1.27)	1.39 (1.28-1.52)	1.60 (1.46-1.74)	1.73 (1.59-1.87)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.21 (1.11-1.31)	1.42 (1.30-1.55)	1.62 (1.48-1.76)	1.73 (1.59-1.88)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.05 (0.96-1.14)	1.15 (1.05-1.26)	1.23 (1.13-1.35)	1.30 (1.20-1.42)	<0.0001
Carpal tunnel syndrome	Mean grams/day	10.42 (23.50)	48.73 (39.11)	64.81 (42.65)	79.27 (47.62)		
	Total n/cases	43183/439	156637/1752	137949/1575	120720/1282	458489/5048	
	HR (95%-CI), Model 0	1.00 (Ref)	1.10 (0.99-1.23)	1.20 (1.08-1.33)	1.19 (1.06-1.32)	1.21 (1.09-1.34)	0.0004
	HR (95%-CI), Model 1	1.00 (Ref)	1.13 (1.02-1.26)	1.22 (1.10-1.36)	1.19 (1.06-1.33)	1.20 (1.08-1.33)	0.0007
	HR (95%-CI), Model 2	1.00 (Ref)	1.16 (1.04-1.29)	1.26 (1.13-1.40)	1.22 (1.09-1.37)	1.23 (1.11-1.37)	0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.06 (0.95-1.18)	1.11 (0.99-1.24)	1.05 (0.93-1.17)	1.05 (0.95-1.17)	0.3492
Cataracts	Mean grams/day	10.46 (23.61)	48.42 (38.96)	64.61 (42.65)	78.74 (47.24)		
	Total n/cases	40484/1520	146968/5644	128122/4764	110397/4185	425971/16113	
	HR (95%-CI), Model 0	1.00 (Ref)	0.88 (0.83-0.93)	0.86 (0.81-0.92)	0.88 (0.83-0.94)	0.90 (0.85-0.95)	0.0002
	HR (95%-CI), Model 1	1.00 (Ref)	0.94 (0.89-1.00)	0.93 (0.88-0.99)	0.94 (0.88-1.00)	0.94 (0.89-1.00)	0.0485
	HR (95%-CI), Model 2	1.00 (Ref)	0.96 (0.90-1.01)	0.94 (0.88-1.00)	0.95 (0.89-1.01)	0.95 (0.89-1.01)	0.0818
	HR (95%-CI), Model 3	1.00 (Ref)	0.95 (0.89-1.00)	0.93 (0.87-0.98)	0.93 (0.87-0.99)	0.93 (0.87-0.99)	0.0154
Cellulitis	Mean grams/day	10.53 (23.61)	48.72 (39.11)	64.81 (42.66)	79.21 (47.66)		
	Total n/cases	43698/287	158859/996	139404/1096	121648/1030	463609/3409	
	HR (95%-CI), Model 0	1.00 (Ref)	0.90 (0.78-1.02)	1.06 (0.93-1.21)	1.08 (0.95-1.24)	1.20 (1.06-1.37)	0.0057
	HR (95%-CI), Model 1	1.00 (Ref)	0.95 (0.83-1.09)	1.11 (0.97-1.27)	1.11 (0.97-1.27)	1.20 (1.05-1.37)	0.0072
	HR (95%-CI), Model 2	1.00 (Ref)	0.98 (0.86-1.12)	1.15 (1.01-1.32)	1.14 (1.00-1.31)	1.23 (1.08-1.41)	0.0020
	HR (95%-CI), Model 3	1.00 (Ref)	0.89 (0.77-1.02)	1.00 (0.87-1.14)	0.95 (0.83-1.09)	1.02 (0.89-1.17)	0.7839

Model 0: Stratified for sex, age group and region and adjusted for age (underlying time variable). **Model 1:** Model 0 additionally adjusted for race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18,National examination at age 16, unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current >15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs, 10-<50 excess METs, ≥ 50 excess METs, unknown), alcohol intake (none, < 1 g/day, 1-<10 g, 10-<20 g, ≥20 g/day, unknown), menopausal status (pre-, postmenopausal unknown), hormone-replacement therapy (HRT) (never, past, current, unknown) and oral contraceptive pill intake (OCP) (never, past, current, unknown), and parity (nulliparous, 1-2, 3 or more, unknown). **Model 2:** Model 1 additionally adjusted for total fruit and vegetable intake (<3 servings/day, 3-<4 servings/day, 4-<5 servings/day, ≥6 servings/day, unknown), cereal fibre intake (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,≥2 times/week, unknown) and non-oily fish intake (<1 time/week, 1 time/week, ≥2 times/week, unknown). **Model 3:** Model 2 additionally adjusted for BMI (sex-specific quintiles, unknown).

Additional file 1: Table 8. Risk of 25 common conditions by unprocessed red meat intake in UK Biobank.

		Unprocessed red meat intake (times/week)					
Disease	Model	<1	1	2- 3	≥4	per 50g/day increase	p-value
Ischemic heart disease	Mean grams/day	6.32 (17.97)	32.51 (33.60)	44.82 (37.43)	54.93 (41.54)		
	Total n/cases	44617/1021	170451/4794	159659/5219	56502/2100	431229/13134	
	HR (95%-CI), Model 0	1.00 (Ref)	1.00 (0.94-1.07)	1.06 (0.99-1.14)	1.16 (1.08-1.26)	1.19 (1.10-1.27)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.08 (1.01-1.16)	1.16 (1.08-1.24)	1.23 (1.14-1.32)	1.25 (1.16-1.34)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.10 (1.03-1.18)	1.18 (1.10-1.26)	1.24 (1.15-1.34)	1.26 (1.17-1.35)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.05 (0.98-1.13)	1.10 (1.02-1.18)	1.15 (1.06-1.24)	1.16 (1.08-1.25)	0.0001
Atrial Fibrillation and flutter	Mean grams/day	6.35 (18.08)	32.52 (33.60)	44.82 (37.45)	55.00 (41.61)		
	Total n/cases	44617/411	170451/1798	159659/1848	56502/688	431229/4745	
	HR (95%-CI), Model 0	1.00 (Ref)	0.94 (0.85-1.05)	0.94 (0.85-1.05)	0.97 (0.85-1.09)	0.97 (0.86-1.09)	0.5826
	HR (95%-CI), Model 1	1.00 (Ref)	0.92 (0.82-1.02)	0.90 (0.81-1.01)	0.92 (0.81-1.04)	0.92 (0.82-1.03)	0.1495
	HR (95%-CI), Model 2	1.00 (Ref)	0.94 (0.84-1.05)	0.93 (0.83-1.04)	0.95 (0.83-1.07)	0.94 (0.84-1.06)	0.3464
	HR (95%-CI), Model 3	1.00 (Ref)	0.89 (0.80-1.00)	0.86 (0.77-0.97)	0.86 (0.76-0.98)	0.86 (0.76-0.97)	0.0125
Cerebrovascular	Mean grams/day	6.36 (18.09)	32.52 (33.60)	44.81 (37.44)	54.97 (41.61)		
	Total n/cases	44617/452	170451/1995	159659/2078	56502/816	431229/5341	
	HR (95%-CI), Model 0	1.00 (Ref)	0.99 (0.89-1.10)	1.02 (0.92-1.13)	1.10 (0.98-1.23)	1.10 (0.99-1.23)	0.0873
	HR (95%-CI), Model 1	1.00 (Ref)	1.01 (0.91-1.12)	1.04 (0.93-1.15)	1.08 (0.96-1.21)	1.08 (0.97-1.21)	0.1589
	HR (95%-CI), Model 2	1.00 (Ref)	1.03 (0.92-1.14)	1.05 (0.95-1.17)	1.09 (0.96-1.22)	1.09 (0.98-1.22)	0.1211
	HR (95%-CI), Model 3	1.00 (Ref)	1.01 (0.91-1.12)	1.03 (0.92-1.14)	1.05 (0.93-1.18)	1.06 (0.94-1.18)	0.3475
Ischaemic stroke	Mean grams/day	6.35 (18.08)	32.51 (33.59)	44.81 (37.43)	54.97 (41.60)		
	Total n/cases	44617/197	170451/858	159659/907	56502/382	431229/2344	
	HR (95%-CI), Model 0	1.00 (Ref)	0.94 (0.80-1.09)	0.96 (0.82-1.12)	1.12 (0.94-1.33)	1.12 (0.94-1.32)	0.1963
	HR (95%-CI), Model 1	1.00 (Ref)	0.98 (0.83-1.14)	1.00 (0.85-1.17)	1.11 (0.93-1.32)	1.10 (0.93-1.31)	0.2446
	HR (95%-CI), Model 2	1.00 (Ref)	1.00 (0.85-1.17)	1.03 (0.87-1.21)	1.12 (0.94-1.34)	1.13 (0.95-1.33)	0.1690
	HR (95%-CI), Model 3	1.00 (Ref)	0.96 (0.82-1.13)	0.97 (0.83-1.14)	1.05 (0.88-1.26)	1.05 (0.89-1.25)	0.5549
Haemorrhagic stroke	Mean grams/day	6.35 (18.08)	32.51 (33.59)	44.82 (37.44)	54.97 (41.61)		
	Total n/cases	44617/93	170451/352	159659/360	56502/136	431229/941	
	HR (95%-CI), Model 0	1.00 (Ref)	0.92 (0.73-1.16)	0.97 (0.77-1.22)	1.03 (0.79-1.35)	1.05 (0.81-1.35)	0.7105
	HR (95%-CI), Model 1	1.00 (Ref)	0.93 (0.74-1.18)	0.98 (0.77-1.23)	1.02 (0.78-1.33)	1.04 (0.80-1.34)	0.7908
	HR (95%-CI), Model 2	1.00 (Ref)	0.95 (0.75-1.20)	1.00 (0.78-1.26)	1.03 (0.79-1.36)	1.06 (0.81-1.37)	0.6775
	HR (95%-CI), Model 3	1.00 (Ref)	0.96 (0.76-1.22)	1.02 (0.80-1.29)	1.06 (0.80-1.39)	1.08 (0.83-1.41)	0.5542
Venous thromboembolism	Mean grams/day	6.45 (18.20)	32.59 (33.66)	45.03 (37.60)	55.18 (41.56)		
	Total n/cases	46743/294	180700/1455	169952/1454	60574/556	457969/3759	

	HR (95%-CI), Model 0	1.00 (Ref)	1.14 (1.00-1.29)	1.13 (1.00-1.28)	1.18 (1.03-1.36)	1.15 (1.01-1.31)	0.0401
	HR (95%-CI), Model 1	1.00 (Ref)	1.15 (1.01-1.30)	1.15 (1.01-1.31)	1.20 (1.04-1.38)	1.17 (1.02-1.33)	0.0213
	HR (95%-CI), Model 2	1.00 (Ref)	1.17 (1.03-1.33)	1.17 (1.03-1.34)	1.21 (1.05-1.40)	1.18 (1.03-1.35)	0.0158
	HR (95%-CI), Model 3	1.00 (Ref)	1.09 (0.96-1.24)	1.07 (0.94-1.22)	1.08 (0.94-1.25)	1.05 (0.92-1.20)	0.4740
Varicose veins	Mean grams/day	6.40 (18.07)	32.72 (33.72)	45.12 (37.69)	55.10 (41.55)		
	Total n/cases	45558/279	175642/1033	165575/977	59295/347	446070/2636	
	HR (95%-CI), Model 0	1.00 (Ref)	0.98 (0.85-1.11)	0.98 (0.86-1.12)	0.97 (0.82-1.13)	0.98 (0.84-1.13)	0.7421
	HR (95%-CI), Model 1	1.00 (Ref)	0.98 (0.85-1.12)	0.98 (0.86-1.12)	0.96 (0.82-1.13)	0.97 (0.83-1.12)	0.6618
	HR (95%-CI), Model 2	1.00 (Ref)	0.99 (0.87-1.14)	1.00 (0.87-1.15)	0.98 (0.83-1.15)	0.99 (0.85-1.15)	0.8885
	HR (95%-CI), Model 3	1.00 (Ref)	0.97 (0.84-1.11)	0.96 (0.84-1.11)	0.94 (0.80-1.10)	0.95 (0.81-1.10)	0.4674
Haemorrhoids	Mean grams/day	6.42 (18.10)	32.60 (33.67)	45.02 (37.63)	54.98 (41.45)		
	Total n/cases	45857/824	177080/3262	166452/3088	59286/1131	448675/8305	
	HR (95%-CI), Model 0	1.00 (Ref)	1.02 (0.94-1.10)	1.02 (0.94-1.10)	1.04 (0.95-1.14)	1.04 (0.96-1.13)	0.3729
	HR (95%-CI), Model 1	1.00 (Ref)	1.04 (0.96-1.12)	1.05 (0.97-1.13)	1.06 (0.97-1.16)	1.06 (0.97-1.15)	0.2002
	HR (95%-CI), Model 2	1.00 (Ref)	1.05 (0.97-1.13)	1.06 (0.98-1.15)	1.07 (0.97-1.17)	1.07 (0.98-1.16)	0.1365
	HR (95%-CI), Model 3	1.00 (Ref)	1.05 (0.97-1.13)	1.06 (0.98-1.15)	1.07 (0.98-1.18)	1.07 (0.98-1.17)	0.1310
Pneumonia	Mean grams/day	6.47 (18.19)	32.66 (33.65)	45.01 (37.62)	55.02 (41.57)		
	Total n/cases	46977/535	181357/2313	170668/2491	60884/1028	459886/6367	
	HR (95%-CI), Model 0	1.00 (Ref)	0.98 (0.89-1.08)	1.05 (0.96-1.16)	1.20 (1.08-1.33)	1.22 (1.10-1.35)	0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.05 (0.96-1.16)	1.13 (1.02-1.24)	1.21 (1.09-1.34)	1.23 (1.11-1.37)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.08 (0.98-1.19)	1.16 (1.05-1.28)	1.23 (1.10-1.37)	1.25 (1.13-1.39)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (0.98-1.18)	1.14 (1.04-1.26)	1.20 (1.08-1.34)	1.22 (1.10-1.35)	0.0001
Gastro-oesophageal reflux disease	Mean grams/day	6.45 (18.24)	32.53 (33.62)	45.04 (37.55)	55.26 (41.37)		
	Total n/cases	45228/728	173733/2749	163329/2596	58101/950	440391/7023	
	HR (95%-CI), Model 0	1.00 (Ref)	0.96 (0.88-1.04)	0.95 (0.88-1.03)	0.98 (0.89-1.08)	0.97 (0.89-1.06)	0.5417
	HR (95%-CI), Model 1	1.00 (Ref)	0.98 (0.90-1.06)	0.98 (0.90-1.06)	1.01 (0.91-1.11)	1.00 (0.91-1.09)	0.9522
	HR (95%-CI), Model 2	1.00 (Ref)	1.00 (0.92-1.09)	1.00 (0.92-1.09)	1.02 (0.92-1.13)	1.02 (0.93-1.12)	0.7319
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.90-1.07)	0.97 (0.89-1.06)	0.99 (0.90-1.10)	0.99 (0.90-1.08)	0.7584
Gastritis and duodenitis	Mean grams/day	6.44 (18.12)	32.65 (33.70)	45.06 (37.61)	54.97 (41.49)		
	Total n/cases	46033/1254	178070/4431	167745/4138	59696/1557	451544/11380	
	HR (95%-CI), Model 0	1.00 (Ref)	0.91 (0.85-0.97)	0.89 (0.84-0.95)	0.93 (0.87-1.01)	0.92 (0.85-0.98)	0.0144
	HR (95%-CI), Model 1	1.00 (Ref)	0.96 (0.90-1.02)	0.95 (0.89-1.02)	0.96 (0.89-1.04)	0.96 (0.89-1.03)	0.2408
	HR (95%-CI), Model 2	1.00 (Ref)	0.98 (0.92-1.05)	0.97 (0.91-1.04)	0.98 (0.91-1.06)	0.97 (0.91-1.05)	0.4848
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.91-1.04)	0.96 (0.90-1.03)	0.97 (0.90-1.05)	0.96 (0.89-1.03)	0.2956

Inguinal hernia	Mean grams/day	6.48 (18.20)	32.53 (33.60)	44.97 (37.60)	55.22 (41.70)		
	Total n/cases	45731/616	174178/3099	163195/3136	58219/1177	441323/8028	
	HR (95%-CI), Model 0	1.00 (Ref)	0.97 (0.89-1.05)	0.91 (0.83-0.99)	0.89 (0.80-0.98)	0.86 (0.79-0.94)	0.0010
	HR (95%-CI), Model 1	1.00 (Ref)	0.95 (0.87-1.03)	0.90 (0.82-0.98)	0.89 (0.81-0.98)	0.87 (0.80-0.95)	0.0031
	HR (95%-CI), Model 2	1.00 (Ref)	0.95 (0.87-1.04)	0.91 (0.83-0.99)	0.90 (0.82-1.00)	0.88 (0.81-0.97)	0.0090
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.93-1.11)	1.00 (0.91-1.09)	1.02 (0.92-1.13)	1.00 (0.91-1.10)	0.9870
Noninfective enteritis and colitis	Mean grams/day	6.42 (18.14)	32.64 (33.69)	45.08 (37.67)	55.27 (41.59)		
	Total n/cases	46183/642	179079/2474	168688/2237	60231/888	454181/6241	
	HR (95%-CI), Model 0	1.00 (Ref)	0.99 (0.91-1.08)	0.95 (0.87-1.04)	1.06 (0.96-1.17)	1.00 (0.91-1.10)	0.9729
	HR (95%-CI), Model 1	1.00 (Ref)	1.02 (0.93-1.11)	0.98 (0.89-1.07)	1.07 (0.96-1.19)	1.02 (0.93-1.13)	0.6710
	HR (95%-CI), Model 2	1.00 (Ref)	1.05 (0.96-1.15)	1.01 (0.92-1.11)	1.09 (0.99-1.22)	1.05 (0.95-1.16)	0.3587
	HR (95%-CI), Model 3	1.00 (Ref)	1.04 (0.95-1.14)	1.00 (0.91-1.09)	1.08 (0.97-1.20)	1.03 (0.93-1.14)	0.5718
Diverticular disease	Mean grams/day	6.48 (18.25)	32.60 (33.72)	44.99 (37.65)	55.00 (41.51)		
	Total n/cases	46748/1040	179901/4853	168996/5016	60198/1920	455843/12829	
	HR (95%-CI), Model 0	1.00 (Ref)	1.15 (1.08-1.23)	1.22 (1.14-1.31)	1.29 (1.20-1.39)	1.30 (1.21-1.39)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.12 (1.05-1.20)	1.19 (1.11-1.27)	1.25 (1.16-1.35)	1.26 (1.17-1.35)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.13 (1.05-1.21)	1.19 (1.11-1.28)	1.25 (1.15-1.35)	1.25 (1.17-1.35)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.09 (1.01-1.16)	1.13 (1.05-1.21)	1.17 (1.08-1.26)	1.17 (1.09-1.26)	<0.0001
Colon polyps	Mean grams/day	6.39 (18.08)	32.59 (33.69)	45.19 (37.72)	55.10 (41.40)		
	Total n/cases	45608/3405	176245/14533	165698/14166	59050/5326	446601/37430	
	HR (95%-CI), Model 0	1.00 (Ref)	1.05 (1.01-1.09)	1.07 (1.03-1.11)	1.14 (1.09-1.19)	1.13 (1.08-1.17)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.05 (1.01-1.09)	1.06 (1.02-1.11)	1.12 (1.07-1.17)	1.11 (1.07-1.16)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.06 (1.02-1.10)	1.07 (1.03-1.12)	1.13 (1.08-1.18)	1.12 (1.07-1.16)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.04 (1.00-1.08)	1.04 (1.00-1.09)	1.09 (1.04-1.14)	1.08 (1.04-1.13)	0.0003
Gallbladder disease	Mean grams/day	6.44 (18.19)	32.58 (33.71)	45.04 (37.63)	55.17 (41.53)		
	Total n/cases	45931/834	176792/3533	166692/3348	59531/1215	448946/8930	
	HR (95%-CI), Model 0	1.00 (Ref)	1.14 (1.06-1.23)	1.16 (1.07-1.25)	1.18 (1.08-1.29)	1.17 (1.08-1.26)	0.0002
	HR (95%-CI), Model 1	1.00 (Ref)	1.16 (1.08-1.25)	1.20 (1.11-1.30)	1.23 (1.12-1.35)	1.23 (1.13-1.33)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.19 (1.10-1.29)	1.23 (1.14-1.34)	1.25 (1.14-1.37)	1.24 (1.14-1.35)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (0.99-1.16)	1.07 (0.98-1.15)	1.05 (0.96-1.15)	1.04 (0.96-1.14)	0.3202
Osteoarthritis	Mean grams/day	6.36 (18.23)	32.57 (33.58)	44.94 (37.67)	55.16 (41.70)		
	Total n/cases	43086/1562	165138/7052	154659/6992	54780/2489	417663/18095	
	HR (95%-CI), Model 0	1.00 (Ref)	1.09 (1.03-1.15)	1.12 (1.06-1.18)	1.14 (1.07-1.21)	1.13 (1.07-1.20)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.08 (1.02-1.14)	1.10 (1.04-1.16)	1.11 (1.04-1.18)	1.10 (1.04-1.17)	0.0013
	HR (95%-CI), Model 2	1.00 (Ref)	1.10 (1.04-1.17)	1.12 (1.06-1.18)	1.13 (1.06-1.20)	1.12 (1.05-1.19)	0.0002

	HR (95%-CI), Model 3	1.00 (Ref)	1.01 (0.95-1.07)	0.98 (0.93-1.04)	0.97 (0.91-1.04)	0.96 (0.90-1.02)	0.1818
Kidney stones	Mean grams/day	6.44 (18.16)	32.59 (33.67)	44.99 (37.59)	55.19 (41.56)		
	Total n/cases	47114/212	181847/983	171146/921	61031/334	461138/2450	
	HR (95%-CI), Model 0	1.00 (Ref)	1.10 (0.95-1.28)	1.05 (0.91-1.23)	1.03 (0.87-1.22)	1.00 (0.85-1.17)	0.9927
	HR (95%-CI), Model 1	1.00 (Ref)	1.18 (1.02-1.37)	1.17 (1.00-1.36)	1.13 (0.95-1.35)	1.11 (0.95-1.30)	0.1872
	HR (95%-CI), Model 2	1.00 (Ref)	1.18 (1.01-1.37)	1.16 (0.99-1.35)	1.11 (0.93-1.32)	1.09 (0.93-1.28)	0.3088
	HR (95%-CI), Model 3	1.00 (Ref)	1.11 (0.96-1.30)	1.08 (0.92-1.26)	1.01 (0.85-1.21)	1.00 (0.85-1.17)	0.9555
Urinary tract infection	Mean grams/day	6.48 (18.26)	32.68 (33.72)	45.04 (37.67)	55.06 (41.47)		
	Total n/cases	46807/499	181637/1915	171045/2000	61062/802	460551/5216	
	HR (95%-CI), Model 0	1.00 (Ref)	0.91 (0.83-1.01)	0.96 (0.87-1.06)	1.04 (0.93-1.17)	1.06 (0.95-1.18)	0.2946
	HR (95%-CI), Model 1	1.00 (Ref)	0.98 (0.89-1.08)	1.05 (0.95-1.16)	1.11 (0.99-1.25)	1.14 (1.02-1.27)	0.0167
	HR (95%-CI), Model 2	1.00 (Ref)	1.01 (0.92-1.12)	1.08 (0.98-1.20)	1.14 (1.01-1.28)	1.17 (1.04-1.30)	0.0062
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.88-1.08)	1.03 (0.93-1.14)	1.07 (0.95-1.20)	1.09 (0.98-1.22)	0.1135
Enlarged prostate	Mean grams/day	7.56 (20.79)	36.26 (36.04)	48.60 (39.82)	59.58 (43.39)		
	Total n/cases	15069/246	77800/1312	81640/1446	31333/544	205842/3548	
	HR (95%-CI), Model 0	1.00 (Ref)	0.94 (0.82-1.08)	0.92 (0.81-1.06)	0.88 (0.76-1.03)	0.89 (0.77-1.02)	0.0919
	HR (95%-CI), Model 1	1.00 (Ref)	1.00 (0.87-1.15)	1.02 (0.89-1.17)	0.98 (0.84-1.14)	0.99 (0.86-1.14)	0.8821
	HR (95%-CI), Model 2	1.00 (Ref)	1.02 (0.89-1.17)	1.04 (0.90-1.19)	1.00 (0.85-1.16)	1.01 (0.88-1.16)	0.9053
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.89-1.17)	1.04 (0.90-1.20)	1.00 (0.86-1.17)	1.01 (0.88-1.17)	0.8493
Female genital prolapse	Mean grams/day	5.97 (16.93)	29.90 (31.60)	41.75 (35.27)	50.59 (39.02)		
	Total n/cases	30661/643	98098/2434	83584/2229	27614/763	239957/6069	
	HR (95%-CI), Model 0	1.00 (Ref)	1.12 (1.03-1.22)	1.17 (1.07-1.28)	1.22 (1.09-1.35)	1.22 (1.11-1.34)	0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.05 (0.96-1.14)	1.06 (0.97-1.16)	1.12 (1.00-1.24)	1.10 (1.00-1.22)	0.0491
	HR (95%-CI), Model 2	1.00 (Ref)	1.08 (0.99-1.18)	1.10 (1.00-1.20)	1.15 (1.03-1.28)	1.14 (1.03-1.26)	0.0105
	HR (95%-CI), Model 3	1.00 (Ref)	1.04 (0.95-1.14)	1.05 (0.96-1.15)	1.09 (0.98-1.21)	1.08 (0.97-1.19)	0.1565
Uterine fibroids	Mean grams/day	5.72 (16.69)	29.63 (31.59)	41.39 (34.90)	50.56 (39.04)		
	Total n/cases	23965/1232	74571/3824	62912/3135	20555/1075	182003/9266	
	HR (95%-CI), Model 0	1.00 (Ref)	1.05 (0.98-1.12)	1.04 (0.97-1.11)	1.09 (1.01-1.19)	1.07 (0.99-1.15)	0.0775
	HR (95%-CI), Model 1	1.00 (Ref)	1.06 (1.00-1.14)	1.07 (1.00-1.14)	1.10 (1.01-1.20)	1.09 (1.01-1.17)	0.0222
	HR (95%-CI), Model 2	1.00 (Ref)	1.08 (1.01-1.15)	1.08 (1.01-1.16)	1.11 (1.02-1.21)	1.10 (1.02-1.19)	0.0130
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.96-1.10)	1.02 (0.95-1.09)	1.03 (0.95-1.13)	1.02 (0.95-1.10)	0.5924
Iron deficiency anaemia	Mean grams/day	6.46 (18.20)	32.64 (33.70)	45.10 (37.65)	55.20 (41.57)		
	Total n/cases	46762/635	182479/1878	172025/1598	61408/617	462674/4728	
	HR (95%-CI), Model 0	1.00 (Ref)	0.73 (0.67-0.80)	0.65 (0.60-0.72)	0.72 (0.65-0.81)	0.66 (0.59-0.73)	<0.0001

	HR (95%-CI), Model 1	1.00 (Ref)	0.84 (0.77-0.92)	0.78 (0.71-0.86)	0.85 (0.76-0.95)	0.80 (0.72-0.89)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	0.88 (0.80-0.97)	0.83 (0.75-0.91)	0.88 (0.79-0.99)	0.84 (0.75-0.94)	0.0015
	HR (95%-CI), Model 3	1.00 (Ref)	0.86 (0.79-0.95)	0.80 (0.72-0.88)	0.85 (0.75-0.95)	0.80 (0.72-0.90)	0.0001
Diabetes	Mean grams/day	6.42 (18.18)	32.40 (33.57)	44.77 (37.54)	54.90 (41.23)		
	Total n/cases	45582/803	175653/3453	164017/3810	58003/1529	443255/9595	
	HR (95%-CI), Model 0	1.00 (Ref)	0.99 (0.91-1.07)	1.11 (1.03-1.20)	1.27 (1.16-1.38)	1.33 (1.23-1.45)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.18 (1.09-1.27)	1.37 (1.26-1.48)	1.45 (1.33-1.58)	1.53 (1.41-1.66)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.21 (1.12-1.31)	1.39 (1.29-1.51)	1.47 (1.34-1.60)	1.54 (1.41-1.67)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.05 (0.97-1.14)	1.15 (1.06-1.24)	1.16 (1.06-1.27)	1.21 (1.11-1.32)	<0.0001
Carpal tunnel syndrome	Mean grams/day	6.42 (18.07)	32.63 (33.66)	45.01 (37.59)	55.28 (41.61)		
	Total n/cases	46826/485	180904/1967	170480/1900	60851/703	459061/5055	
	HR (95%-CI), Model 0	1.00 (Ref)	1.08 (0.97-1.19)	1.12 (1.01-1.23)	1.19 (1.06-1.33)	1.18 (1.06-1.32)	0.0026
	HR (95%-CI), Model 1	1.00 (Ref)	1.10 (1.00-1.22)	1.15 (1.04-1.27)	1.19 (1.06-1.34)	1.20 (1.07-1.33)	0.0013
	HR (95%-CI), Model 2	1.00 (Ref)	1.12 (1.01-1.24)	1.17 (1.06-1.30)	1.21 (1.07-1.36)	1.21 (1.09-1.35)	0.0007
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.93-1.14)	1.04 (0.94-1.16)	1.05 (0.93-1.19)	1.05 (0.94-1.18)	0.3574
Cataracts	Mean grams/day	6.47 (18.29)	32.39 (33.57)	44.74 (37.54)	54.76 (41.18)		
	Total n/cases	43877/1566	168966/6176	157871/6207	55749/2192	426463/16141	
	HR (95%-CI), Model 0	1.00 (Ref)	0.90 (0.85-0.95)	0.90 (0.85-0.95)	0.88 (0.83-0.94)	0.90 (0.84-0.95)	0.0006
	HR (95%-CI), Model 1	1.00 (Ref)	0.96 (0.91-1.02)	0.97 (0.92-1.03)	0.93 (0.87-0.99)	0.94 (0.89-1.00)	0.0706
	HR (95%-CI), Model 2	1.00 (Ref)	0.97 (0.92-1.03)	0.98 (0.93-1.04)	0.93 (0.87-1.00)	0.95 (0.89-1.01)	0.1291
	HR (95%-CI), Model 3	1.00 (Ref)	0.97 (0.91-1.02)	0.97 (0.91-1.03)	0.92 (0.86-0.98)	0.93 (0.88-1.00)	0.0366
Cellulitis	Mean grams/day	6.47 (18.21)	32.64 (33.69)	45.02 (37.63)	55.02 (41.44)		
	Total n/cases	47352/336	183083/1252	172273/1327	61483/499	464191/3414	
	HR (95%-CI), Model 0	1.00 (Ref)	0.89 (0.79-1.01)	0.96 (0.85-1.09)	0.99 (0.86-1.13)	1.03 (0.90-1.18)	0.6607
	HR (95%-CI), Model 1	1.00 (Ref)	0.95 (0.84-1.07)	1.03 (0.91-1.16)	1.03 (0.89-1.18)	1.08 (0.94-1.23)	0.2679
	HR (95%-CI), Model 2	1.00 (Ref)	0.97 (0.86-1.10)	1.06 (0.93-1.20)	1.05 (0.91-1.21)	1.10 (0.96-1.26)	0.1598
	HR (95%-CI), Model 3	1.00 (Ref)	0.88 (0.78-1.00)	0.92 (0.82-1.05)	0.89 (0.77-1.03)	0.93 (0.81-1.07)	0.3005

Model 0: Stratified for sex, age group and region and adjusted for age (underlying time variable). **Model 1:** Model 0 additionally adjusted for race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18,National examination at age 16, unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current >15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs, 10-<50 excess METs, ≥ 50 excess METs, unknown), alcohol intake (none, < 1 g/day, 1-<10 g, 10-<20 g, ≥20 g/day, unknown), menopausal status (pre-, postmenopausal unknown), hormone-replacement therapy (HRT) (never, past, current, unknown) and oral contraceptive pill intake (OCP) (never, past, current, unknown), and parity (nulliparous, 1-2, 3 or more, unknown). **Model 2:** Model 1 additionally adjusted for total fruit and vegetable intake (<3 servings/day, 3-<4 servings/day, 4-<5 servings/day, ≥6 servings/day, unknown), cereal fibre intake (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,≥2 times/week, unknown) and non-oily fish intake (<1 time/week, 1 time/week, ≥2 times/week, unknown). **Model 3:** Model 2 additionally adjusted for BMI (sex-specific quintiles, unknown).

Additional file 1: Table 9. Risk of 25 common conditions by processed meat intake in UK Biobank.

		Processed meat intake (times/week)					
Disease	Model	0	<1	1	≥2	per 20g/day increase	p-value
Ischemic heart disease	Mean grams/day	3.94 (11.36)	15.54 (20.07)	21.23 (23.52)	28.89 (28.38)		
	Total n/cases	41076/878	133163/3429	126995/4010	133954/4992	435188/13309	
	HR (95%-CI), Model 0	1.00 (Ref)	1.05 (0.98-1.13)	1.12 (1.04-1.21)	1.18 (1.10-1.27)	1.16 (1.11-1.22)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.14 (1.06-1.23)	1.21 (1.13-1.31)	1.24 (1.15-1.34)	1.17 (1.11-1.23)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.16 (1.07-1.25)	1.23 (1.14-1.33)	1.25 (1.16-1.35)	1.16 (1.10-1.22)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.10 (1.02-1.19)	1.14 (1.06-1.23)	1.15 (1.06-1.24)	1.09 (1.04-1.15)	0.0006
Atrial Fibrillation and flutter	Mean grams/day	3.94 (11.36)	15.54 (20.07)	21.24 (23.54)	28.88 (28.37)		
	Total n/cases	41076/366	133163/1342	126995/1429	133954/1658	435188/4795	
	HR (95%-CI), Model 0	1.00 (Ref)	1.00 (0.89-1.12)	1.01 (0.90-1.14)	1.04 (0.93-1.17)	1.04 (0.96-1.13)	0.3266
	HR (95%-CI), Model 1	1.00 (Ref)	0.97 (0.86-1.09)	0.97 (0.86-1.09)	0.98 (0.87-1.10)	1.00 (0.92-1.08)	0.9140
	HR (95%-CI), Model 2	1.00 (Ref)	1.01 (0.89-1.13)	1.02 (0.90-1.15)	1.03 (0.92-1.16)	1.03 (0.95-1.12)	0.4929
	HR (95%-CI), Model 3	1.00 (Ref)	0.96 (0.85-1.08)	0.95 (0.84-1.07)	0.94 (0.83-1.06)	0.96 (0.88-1.04)	0.3377
Cerebrovascular	Mean grams/day	3.95 (11.36)	15.54 (20.06)	21.24 (23.53)	28.87 (28.34)		
	Total n/cases	41076/389	133163/1543	126995/1591	133954/1895	435188/5418	
	HR (95%-CI), Model 0	1.00 (Ref)	1.10 (0.98-1.23)	1.12 (1.00-1.25)	1.23 (1.10-1.37)	1.18 (1.09-1.28)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.14 (1.01-1.27)	1.14 (1.02-1.28)	1.20 (1.07-1.34)	1.13 (1.04-1.22)	0.0022
	HR (95%-CI), Model 2	1.00 (Ref)	1.15 (1.03-1.29)	1.16 (1.03-1.30)	1.21 (1.08-1.36)	1.13 (1.04-1.22)	0.0026
	HR (95%-CI), Model 3	1.00 (Ref)	1.14 (1.01-1.27)	1.13 (1.01-1.27)	1.17 (1.05-1.32)	1.10 (1.02-1.19)	0.0163
Ischaemic stroke	Mean grams/day	3.95 (11.36)	15.55 (20.07)	21.23 (23.53)	28.88 (28.35)		
	Total n/cases	41076/158	133163/626	126995/709	133954/890	435188/2383	
	HR (95%-CI), Model 0	1.00 (Ref)	1.07 (0.90-1.28)	1.16 (0.98-1.38)	1.31 (1.10-1.56)	1.29 (1.14-1.45)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.13 (0.95-1.35)	1.21 (1.01-1.44)	1.29 (1.09-1.54)	1.23 (1.09-1.38)	0.0009
	HR (95%-CI), Model 2	1.00 (Ref)	1.16 (0.97-1.39)	1.25 (1.04-1.49)	1.32 (1.10-1.57)	1.23 (1.09-1.39)	0.0009
	HR (95%-CI), Model 3	1.00 (Ref)	1.12 (0.94-1.34)	1.18 (0.99-1.42)	1.24 (1.03-1.48)	1.17 (1.04-1.32)	0.0107
Haemorrhagic stroke	Mean grams/day	3.94 (11.35)	15.54 (20.06)	21.23 (23.53)	28.87 (28.35)		
	Total n/cases	41076/86	133163/298	126995/267	133954/304	435188/955	
	HR (95%-CI), Model 0	1.00 (Ref)	1.02 (0.80-1.29)	0.96 (0.75-1.22)	1.07 (0.84-1.36)	1.05 (0.88-1.26)	0.5779
	HR (95%-CI), Model 1	1.00 (Ref)	1.04 (0.82-1.33)	0.97 (0.76-1.24)	1.05 (0.82-1.35)	1.02 (0.85-1.23)	0.7960
	HR (95%-CI), Model 2	1.00 (Ref)	1.06 (0.83-1.36)	0.98 (0.76-1.26)	1.05 (0.82-1.36)	1.02 (0.85-1.22)	0.8531
	HR (95%-CI), Model 3	1.00 (Ref)	1.08 (0.84-1.38)	1.01 (0.78-1.30)	1.08 (0.84-1.40)	1.04 (0.86-1.25)	0.6836
Venous thromboembolism	Mean grams/day	4.10 (11.61)	15.55 (20.08)	21.30 (23.58)	29.05 (28.47)		
	Total n/cases	43110/260	140376/1074	134963/1129	143900/1355	462349/3818	

	HR (95%-CI), Model 0	1.00 (Ref)	1.17 (1.02-1.34)	1.21 (1.06-1.39)	1.32 (1.15-1.51)	1.23 (1.12-1.35)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.18 (1.03-1.35)	1.21 (1.05-1.39)	1.29 (1.13-1.48)	1.19 (1.09-1.31)	0.0002
	HR (95%-CI), Model 2	1.00 (Ref)	1.20 (1.05-1.38)	1.23 (1.07-1.42)	1.31 (1.14-1.50)	1.19 (1.09-1.31)	0.0003
	HR (95%-CI), Model 3	1.00 (Ref)	1.12 (0.98-1.29)	1.12 (0.97-1.29)	1.16 (1.01-1.33)	1.10 (1.00-1.20)	0.0611
Varicose veins	Mean grams/day	4.09 (11.65)	15.56 (20.09)	21.37 (23.67)	29.20 (28.49)		
	Total n/cases	41923/267	135968/811	131318/797	141156/784	450365/2659	
	HR (95%-CI), Model 0	1.00 (Ref)	0.93 (0.81-1.07)	0.98 (0.85-1.12)	0.92 (0.80-1.06)	0.96 (0.86-1.06)	0.4112
	HR (95%-CI), Model 1	1.00 (Ref)	0.94 (0.81-1.08)	0.97 (0.84-1.11)	0.91 (0.79-1.05)	0.94 (0.85-1.05)	0.2613
	HR (95%-CI), Model 2	1.00 (Ref)	0.96 (0.83-1.10)	1.00 (0.86-1.15)	0.95 (0.82-1.10)	0.97 (0.87-1.08)	0.5975
	HR (95%-CI), Model 3	1.00 (Ref)	0.93 (0.81-1.07)	0.96 (0.83-1.11)	0.90 (0.78-1.05)	0.94 (0.84-1.04)	0.2405
Haemorrhoids	Mean grams/day	4.10 (11.61)	15.58 (20.07)	21.32 (23.63)	29.01 (28.50)		
	Total n/cases	42305/760	137568/2612	132420/2359	140682/2677	452975/8408	
	HR (95%-CI), Model 0	1.00 (Ref)	1.05 (0.96-1.13)	0.96 (0.89-1.05)	1.00 (0.93-1.09)	0.98 (0.92-1.04)	0.4802
	HR (95%-CI), Model 1	1.00 (Ref)	1.07 (0.98-1.16)	0.99 (0.91-1.07)	1.04 (0.95-1.13)	1.00 (0.94-1.06)	0.9903
	HR (95%-CI), Model 2	1.00 (Ref)	1.08 (0.99-1.17)	1.00 (0.92-1.09)	1.04 (0.96-1.14)	1.00 (0.94-1.07)	0.8915
	HR (95%-CI), Model 3	1.00 (Ref)	1.08 (0.99-1.17)	1.00 (0.91-1.09)	1.04 (0.96-1.14)	1.00 (0.94-1.07)	0.8935
Pneumonia	Mean grams/day	4.09 (11.56)	15.56 (20.06)	21.27 (23.57)	29.06 (28.50)		
	Total n/cases	43304/480	141138/1651	135522/1932	144325/2440	464289/6503	
	HR (95%-CI), Model 0	1.00 (Ref)	0.97 (0.88-1.08)	1.13 (1.02-1.25)	1.32 (1.20-1.46)	1.37 (1.28-1.47)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.04 (0.94-1.16)	1.17 (1.06-1.30)	1.27 (1.15-1.41)	1.26 (1.18-1.36)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.07 (0.97-1.19)	1.20 (1.08-1.33)	1.29 (1.16-1.43)	1.26 (1.17-1.35)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (0.96-1.19)	1.19 (1.07-1.32)	1.26 (1.14-1.40)	1.23 (1.15-1.32)	<0.0001
Gastro-oesophageal reflux disease	Mean grams/day	4.06 (11.64)	15.53 (20.07)	21.28 (23.63)	28.93 (28.33)		
	Total n/cases	41698/664	135257/2222	129683/2090	137919/2137	444557/7113	
	HR (95%-CI), Model 0	1.00 (Ref)	1.01 (0.92-1.10)	1.00 (0.92-1.10)	0.99 (0.91-1.08)	0.99 (0.93-1.06)	0.7367
	HR (95%-CI), Model 1	1.00 (Ref)	1.02 (0.94-1.12)	1.02 (0.93-1.11)	0.99 (0.91-1.09)	0.98 (0.92-1.05)	0.6377
	HR (95%-CI), Model 2	1.00 (Ref)	1.04 (0.95-1.14)	1.03 (0.94-1.13)	1.00 (0.91-1.10)	0.98 (0.92-1.05)	0.6273
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.93-1.12)	1.01 (0.92-1.10)	0.97 (0.88-1.07)	0.96 (0.90-1.03)	0.2515
Gastritis and duodenitis	Mean grams/day	4.08 (11.62)	15.55 (20.09)	21.27 (23.63)	29.04 (28.49)		
	Total n/cases	42458/1133	138632/3639	133120/3202	141608/3565	455818/11539	
	HR (95%-CI), Model 0	1.00 (Ref)	0.97 (0.91-1.04)	0.93 (0.86-0.99)	1.02 (0.95-1.09)	1.02 (0.97-1.07)	0.4537
	HR (95%-CI), Model 1	1.00 (Ref)	1.03 (0.97-1.11)	0.98 (0.91-1.05)	1.05 (0.98-1.13)	1.03 (0.98-1.08)	0.3064
	HR (95%-CI), Model 2	1.00 (Ref)	1.06 (0.99-1.13)	1.00 (0.93-1.07)	1.06 (0.99-1.14)	1.03 (0.98-1.09)	0.2670
	HR (95%-CI), Model 3	1.00 (Ref)	1.05 (0.98-1.13)	0.99 (0.92-1.06)	1.05 (0.98-1.13)	1.02 (0.97-1.07)	0.4706

Inguinal hernia	Mean grams/day	4.10 (11.64)	15.60 (20.12)	21.33 (23.52)	28.96 (28.43)		
	Total n/cases	42341/497	136864/1921	129868/2495	136518/3195	445591/8108	
	HR (95%-CI), Model 0	1.00 (Ref)	0.96 (0.87-1.06)	0.96 (0.87-1.06)	0.90 (0.82-0.99)	0.91 (0.85-0.97)	0.0035
	HR (95%-CI), Model 1	1.00 (Ref)	0.94 (0.85-1.04)	0.94 (0.86-1.04)	0.90 (0.81-0.99)	0.92 (0.86-0.98)	0.0105
	HR (95%-CI), Model 2	1.00 (Ref)	0.95 (0.85-1.05)	0.95 (0.86-1.06)	0.91 (0.82-1.00)	0.93 (0.87-0.99)	0.0326
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.92-1.13)	1.05 (0.95-1.17)	1.03 (0.93-1.13)	1.01 (0.95-1.08)	0.7005
Noninfective enteritis and colitis	Mean grams/day	4.08 (11.66)	15.55 (20.07)	21.25 (23.63)	29.07 (28.50)		
	Total n/cases	42584/615	139224/1940	134030/1819	142710/1957	458548/6331	
	HR (95%-CI), Model 0	1.00 (Ref)	0.94 (0.86-1.03)	0.96 (0.87-1.05)	1.02 (0.93-1.12)	1.05 (0.98-1.12)	0.2019
	HR (95%-CI), Model 1	1.00 (Ref)	0.97 (0.88-1.06)	0.97 (0.88-1.06)	1.01 (0.92-1.11)	1.02 (0.96-1.10)	0.4947
	HR (95%-CI), Model 2	1.00 (Ref)	0.99 (0.91-1.09)	1.00 (0.91-1.10)	1.03 (0.94-1.13)	1.03 (0.96-1.11)	0.3764
	HR (95%-CI), Model 3	1.00 (Ref)	0.99 (0.90-1.08)	0.98 (0.89-1.08)	1.01 (0.92-1.11)	1.02 (0.95-1.09)	0.6547
Diverticular disease	Mean grams/day	4.08 (11.64)	15.55 (20.08)	21.27 (23.61)	29.08 (28.52)		
	Total n/cases	43091/986	139689/3917	134286/3935	143145/4135	460211/12973	
	HR (95%-CI), Model 0	1.00 (Ref)	1.18 (1.10-1.26)	1.28 (1.19-1.37)	1.33 (1.24-1.42)	1.23 (1.17-1.29)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.15 (1.07-1.23)	1.23 (1.14-1.32)	1.25 (1.17-1.35)	1.18 (1.12-1.24)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.16 (1.08-1.24)	1.23 (1.15-1.33)	1.25 (1.16-1.34)	1.17 (1.11-1.23)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.11 (1.03-1.19)	1.17 (1.09-1.26)	1.17 (1.09-1.26)	1.11 (1.06-1.17)	<0.0001
Colon polyps	Mean grams/day	4.11 (11.71)	15.56 (20.12)	21.30 (23.69)	29.06 (28.42)		
	Total n/cases	42006/3171	136949/11092	131907/11177	139998/12439	450860/37879	
	HR (95%-CI), Model 0	1.00 (Ref)	1.03 (0.99-1.07)	1.08 (1.04-1.13)	1.15 (1.11-1.20)	1.14 (1.11-1.17)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.03 (0.99-1.07)	1.07 (1.03-1.12)	1.12 (1.08-1.17)	1.11 (1.08-1.14)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.04 (1.00-1.08)	1.09 (1.04-1.13)	1.13 (1.08-1.17)	1.11 (1.08-1.14)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.98-1.06)	1.06 (1.01-1.10)	1.09 (1.04-1.13)	1.08 (1.05-1.11)	<0.0001
Gallbladder disease	Mean grams/day	4.08 (11.66)	15.53 (20.09)	21.24 (23.56)	29.08 (28.52)		
	Total n/cases	42159/748	136794/2911	132328/2686	141978/2706	453259/9051	
	HR (95%-CI), Model 0	1.00 (Ref)	1.20 (1.11-1.30)	1.23 (1.14-1.34)	1.30 (1.20-1.41)	1.20 (1.13-1.27)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.21 (1.12-1.32)	1.24 (1.14-1.34)	1.29 (1.18-1.40)	1.18 (1.11-1.25)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.24 (1.14-1.34)	1.26 (1.16-1.37)	1.30 (1.19-1.41)	1.17 (1.11-1.25)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.10 (1.01-1.20)	1.08 (0.99-1.17)	1.07 (0.98-1.17)	1.02 (0.96-1.08)	0.5471
Osteoarthritis	Mean grams/day	3.97 (11.40)	15.53 (20.11)	21.28 (23.62)	28.94 (28.41)		
	Total n/cases	39626/1535	127755/5617	122886/5501	131283/5661	421550/18314	
	HR (95%-CI), Model 0	1.00 (Ref)	1.07 (1.01-1.13)	1.12 (1.06-1.19)	1.15 (1.08-1.22)	1.12 (1.07-1.17)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.06 (1.00-1.12)	1.10 (1.04-1.17)	1.12 (1.05-1.19)	1.09 (1.05-1.14)	0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.09 (1.03-1.16)	1.14 (1.08-1.21)	1.17 (1.10-1.24)	1.12 (1.08-1.17)	<0.0001

	HR (95%-CI), Model 3	1.00 (Ref)	1.00 (0.94-1.06)	1.01 (0.95-1.07)	1.00 (0.94-1.06)	1.00 (0.96-1.04)	0.9814
Kidney stones	Mean grams/day	4.11 (11.65)	15.53 (20.05)	21.28 (23.60)	28.97 (28.45)		
	Total n/cases	43487/190	141626/676	135892/720	144563/894	465568/2480	
	HR (95%-CI), Model 0	1.00 (Ref)	1.04 (0.89-1.23)	1.03 (0.88-1.22)	1.07 (0.91-1.25)	1.05 (0.94-1.17)	0.4186
	HR (95%-CI), Model 1	1.00 (Ref)	1.11 (0.95-1.31)	1.12 (0.95-1.32)	1.16 (0.98-1.36)	1.10 (0.98-1.23)	0.1013
	HR (95%-CI), Model 2	1.00 (Ref)	1.10 (0.94-1.30)	1.10 (0.93-1.30)	1.12 (0.95-1.32)	1.07 (0.95-1.20)	0.2828
	HR (95%-CI), Model 3	1.00 (Ref)	1.04 (0.88-1.23)	1.01 (0.86-1.20)	1.02 (0.86-1.20)	0.99 (0.89-1.12)	0.9257
Urinary tract infection	Mean grams/day	4.12 (11.61)	15.58 (20.10)	21.32 (23.60)	29.08 (28.48)		
	Total n/cases	43172/486	140985/1506	135870/1559	144947/1748	464974/5299	
	HR (95%-CI), Model 0	1.00 (Ref)	0.88 (0.80-0.98)	0.95 (0.85-1.05)	1.02 (0.92-1.13)	1.08 (1.00-1.17)	0.0378
	HR (95%-CI), Model 1	1.00 (Ref)	0.94 (0.85-1.05)	1.00 (0.90-1.11)	1.05 (0.94-1.16)	1.08 (1.00-1.17)	0.0522
	HR (95%-CI), Model 2	1.00 (Ref)	0.97 (0.88-1.08)	1.02 (0.92-1.14)	1.07 (0.96-1.19)	1.09 (1.01-1.18)	0.0327
	HR (95%-CI), Model 3	1.00 (Ref)	0.94 (0.85-1.05)	0.98 (0.88-1.09)	1.01 (0.90-1.12)	1.04 (0.96-1.12)	0.3682
Enlarged prostate	Mean grams/day	3.82 (11.92)	17.14 (22.10)	23.39 (25.73)	31.98 (30.37)		
	Total n/cases	11336/193	44230/785	61931/1112	90594/1500	208091/3590	
	HR (95%-CI), Model 0	1.00 (Ref)	0.93 (0.80-1.09)	0.96 (0.83-1.12)	0.93 (0.80-1.08)	0.97 (0.88-1.06)	0.4988
	HR (95%-CI), Model 1	1.00 (Ref)	1.00 (0.85-1.17)	1.05 (0.90-1.23)	1.03 (0.89-1.21)	1.04 (0.94-1.14)	0.4874
	HR (95%-CI), Model 2	1.00 (Ref)	1.01 (0.86-1.19)	1.07 (0.91-1.25)	1.05 (0.90-1.23)	1.04 (0.94-1.15)	0.4123
	HR (95%-CI), Model 3	1.00 (Ref)	1.01 (0.86-1.19)	1.07 (0.91-1.26)	1.06 (0.90-1.24)	1.05 (0.95-1.16)	0.3610
Female genital prolapse	Mean grams/day	4.16 (11.47)	14.82 (19.05)	19.51 (21.42)	24.25 (24.39)		
	Total n/cases	30742/668	92048/2323	69335/1817	49891/1313	242016/6121	
	HR (95%-CI), Model 0	1.00 (Ref)	1.11 (1.02-1.21)	1.16 (1.06-1.26)	1.18 (1.08-1.30)	1.14 (1.06-1.22)	0.0003
	HR (95%-CI), Model 1	1.00 (Ref)	1.04 (0.96-1.14)	1.05 (0.96-1.15)	1.08 (0.98-1.19)	1.06 (0.99-1.14)	0.1110
	HR (95%-CI), Model 2	1.00 (Ref)	1.07 (0.98-1.17)	1.08 (0.99-1.19)	1.12 (1.02-1.23)	1.09 (1.01-1.17)	0.0204
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.94-1.12)	1.04 (0.95-1.14)	1.06 (0.96-1.17)	1.05 (0.97-1.12)	0.2278
Uterine fibroids	Mean grams/day	3.91 (11.20)	14.65 (18.94)	19.67 (21.53)	24.36 (24.36)		
	Total n/cases	23633/1127	69107/3493	52613/2746	38130/1993	183483/9359	
	HR (95%-CI), Model 0	1.00 (Ref)	1.10 (1.02-1.17)	1.11 (1.04-1.19)	1.09 (1.01-1.17)	1.06 (1.00-1.12)	0.0354
	HR (95%-CI), Model 1	1.00 (Ref)	1.12 (1.04-1.20)	1.14 (1.06-1.22)	1.11 (1.03-1.19)	1.07 (1.01-1.13)	0.0135
	HR (95%-CI), Model 2	1.00 (Ref)	1.13 (1.06-1.21)	1.15 (1.07-1.24)	1.12 (1.04-1.21)	1.07 (1.02-1.13)	0.0109
	HR (95%-CI), Model 3	1.00 (Ref)	1.08 (1.01-1.16)	1.08 (1.00-1.16)	1.02 (0.95-1.10)	1.00 (0.95-1.06)	0.9818
Iron deficiency anaemia	Mean grams/day	4.12 (11.67)	15.58 (20.09)	21.30 (23.63)	29.06 (28.49)		
	Total n/cases	43173/562	141679/1351	136517/1423	145734/1464	467103/4800	
	HR (95%-CI), Model 0	1.00 (Ref)	0.70 (0.64-0.78)	0.78 (0.71-0.87)	0.79 (0.72-0.88)	0.92 (0.85-0.99)	0.0293

	HR (95%-CI), Model 1	1.00 (Ref)	0.81 (0.73-0.90)	0.92 (0.83-1.01)	0.91 (0.82-1.01)	0.99 (0.92-1.08)	0.8764
	HR (95%-CI), Model 2	1.00 (Ref)	0.85 (0.77-0.95)	0.97 (0.87-1.07)	0.95 (0.86-1.05)	1.02 (0.94-1.10)	0.6596
	HR (95%-CI), Model 3	1.00 (Ref)	0.83 (0.75-0.92)	0.93 (0.84-1.03)	0.91 (0.81-1.01)	0.98 (0.91-1.06)	0.6382
Diabetes	Mean grams/day	4.08 (11.63)	15.50 (20.01)	21.18 (23.50)	28.76 (28.27)		
	Total n/cases	42060/710	137006/2436	130655/2822	137630/3823	447351/9791	
	HR (95%-CI), Model 0	1.00 (Ref)	0.98 (0.90-1.07)	1.12 (1.03-1.22)	1.38 (1.27-1.49)	1.44 (1.35-1.52)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.19 (1.09-1.30)	1.37 (1.26-1.49)	1.62 (1.49-1.76)	1.52 (1.43-1.61)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.23 (1.13-1.34)	1.40 (1.29-1.53)	1.64 (1.51-1.79)	1.52 (1.43-1.61)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (0.98-1.17)	1.15 (1.05-1.25)	1.27 (1.16-1.38)	1.24 (1.17-1.32)	<0.0001
Carpal tunnel syndrome	Mean grams/day	4.08 (11.63)	15.55 (20.08)	21.28 (23.60)	29.03 (28.45)		
	Total n/cases	43129/446	140373/1644	135338/1548	144613/1506	463453/5144	
	HR (95%-CI), Model 0	1.00 (Ref)	1.13 (1.02-1.26)	1.18 (1.06-1.31)	1.19 (1.06-1.32)	1.12 (1.04-1.21)	0.0030
	HR (95%-CI), Model 1	1.00 (Ref)	1.17 (1.05-1.30)	1.20 (1.08-1.34)	1.18 (1.06-1.31)	1.10 (1.02-1.19)	0.0138
	HR (95%-CI), Model 2	1.00 (Ref)	1.20 (1.07-1.33)	1.26 (1.13-1.40)	1.24 (1.11-1.38)	1.14 (1.06-1.24)	0.0009
	HR (95%-CI), Model 3	1.00 (Ref)	1.10 (0.98-1.22)	1.11 (1.00-1.24)	1.06 (0.95-1.19)	1.02 (0.94-1.11)	0.5920
Cataracts	Mean grams/day	4.07 (11.59)	15.54 (20.05)	21.23 (23.52)	28.88 (28.31)		
	Total n/cases	40315/1651	131610/5194	125840/4721	132593/4766	430358/16332	
	HR (95%-CI), Model 0	1.00 (Ref)	0.88 (0.83-0.93)	0.86 (0.81-0.91)	0.89 (0.84-0.95)	0.94 (0.90-0.98)	0.0059
	HR (95%-CI), Model 1	1.00 (Ref)	0.94 (0.89-0.99)	0.93 (0.88-0.98)	0.96 (0.90-1.01)	0.98 (0.94-1.02)	0.3292
	HR (95%-CI), Model 2	1.00 (Ref)	0.95 (0.90-1.00)	0.94 (0.88-0.99)	0.96 (0.91-1.02)	0.98 (0.94-1.03)	0.4029
	HR (95%-CI), Model 3	1.00 (Ref)	0.94 (0.89-1.00)	0.92 (0.87-0.98)	0.94 (0.89-1.00)	0.97 (0.92-1.01)	0.1437
Cellulitis	Mean grams/day	4.10 (11.62)	15.55 (20.07)	21.27 (23.58)	29.05 (28.49)		
	Total n/cases	43704/295	142464/873	136848/1034	145630/1268	468646/3470	
	HR (95%-CI), Model 0	1.00 (Ref)	0.86 (0.76-0.99)	1.01 (0.88-1.15)	1.10 (0.97-1.25)	1.20 (1.09-1.32)	0.0003
	HR (95%-CI), Model 1	1.00 (Ref)	0.91 (0.80-1.04)	1.05 (0.92-1.20)	1.10 (0.96-1.25)	1.15 (1.05-1.27)	0.0034
	HR (95%-CI), Model 2	1.00 (Ref)	0.94 (0.82-1.08)	1.10 (0.96-1.25)	1.14 (1.00-1.31)	1.19 (1.08-1.31)	0.0006
	HR (95%-CI), Model 3	1.00 (Ref)	0.85 (0.74-0.98)	0.95 (0.83-1.09)	0.96 (0.84-1.10)	1.04 (0.94-1.15)	0.4349

Model 0: Stratified for sex, age group and region and adjusted for age (underlying time variable). **Model 1:** Model 0 additionally adjusted for race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18,National examination at age 16, unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current >15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs, 10-<50 excess METs, ≥ 50 excess METs, unknown), alcohol intake (none, < 1 g/day, 1-<10 g, 10-<20 g, ≥20 g/day, unknown), menopausal status (pre-, postmenopausal unknown), hormone-replacement therapy (HRT) (never, past, current, unknown) and oral contraceptive pill intake (OCP) (never, past, current, unknown), and parity (nulliparous, 1-2, 3 or more, unknown). **Model 2:** Model 1 additionally adjusted for total fruit and vegetable intake (<3 servings/day, 3-<4 servings/day, 4-<5 servings/day, ≥6 servings/day, unknown), cereal fibre intake (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,≥2 times/week, unknown) and non-oily fish intake (<1 time/week, 1 time/week, ≥2 times/week, unknown). **Model 3:** Model 2 additionally adjusted for BMI (sex-specific quintiles, unknown).

Additional file 1: Table 10. Risk of 25 common conditions by poultry meat intake in UK Biobank.

		Poultry meat intake (times/week)				
Disease	Model	0 - 1	2	≥3	per 30g/day increase	p-value
Ischemic heart disease	Mean grams/day	12.17 (24.09)	27.63 (32.47)	39.49 (38.33)		
	Total n/cases	69175/2096	155595/4987	210567/6216	435337/13299	
	HR (95%-CI), Model 0	1.00 (Ref)	0.99 (0.94-1.04)	1.03 (0.98-1.08)	1.04 (0.99-1.10)	0.1541
	HR (95%-CI), Model 1	1.00 (Ref)	1.05 (0.99-1.10)	1.11 (1.05-1.16)	1.12 (1.06-1.18)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.06 (1.00-1.11)	1.12 (1.06-1.18)	1.14 (1.08-1.20)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.98-1.09)	1.07 (1.01-1.12)	1.08 (1.02-1.14)	0.0082
Atrial Fibrillation and flutter	Mean grams/day	12.19 (24.13)	27.61 (32.44)	39.47 (38.32)		
	Total n/cases	69175/727	155595/1756	210567/2310	435337/4793	
	HR (95%-CI), Model 0	1.00 (Ref)	1.01 (0.92-1.10)	1.13 (1.04-1.22)	1.17 (1.07-1.28)	0.0008
	HR (95%-CI), Model 1	1.00 (Ref)	1.00 (0.91-1.09)	1.11 (1.02-1.21)	1.15 (1.05-1.26)	0.0019
	HR (95%-CI), Model 2	1.00 (Ref)	1.01 (0.92-1.10)	1.11 (1.01-1.20)	1.14 (1.04-1.25)	0.0048
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.90-1.07)	1.05 (0.97-1.15)	1.08 (0.99-1.18)	0.1012
Cerebrovascular	Mean grams/day	12.19 (24.12)	27.63 (32.46)	39.49 (38.32)		
	Total n/cases	69175/884	155595/2058	210567/2480	435337/5422	
	HR (95%-CI), Model 0	1.00 (Ref)	0.98 (0.91-1.06)	0.99 (0.92-1.07)	1.00 (0.92-1.09)	1.0000
	HR (95%-CI), Model 1	1.00 (Ref)	1.02 (0.94-1.10)	1.05 (0.97-1.13)	1.06 (0.97-1.15)	0.2025
	HR (95%-CI), Model 2	1.00 (Ref)	1.03 (0.95-1.12)	1.07 (0.99-1.16)	1.08 (0.99-1.17)	0.0813
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.95-1.11)	1.05 (0.97-1.14)	1.06 (0.97-1.15)	0.1996
Ischaemic stroke	Mean grams/day	12.18 (24.12)	27.63 (32.46)	39.47 (38.31)		
	Total n/cases	69175/404	155595/922	210567/1062	435337/2388	
	HR (95%-CI), Model 0	1.00 (Ref)	0.95 (0.85-1.07)	0.94 (0.84-1.06)	0.94 (0.83-1.06)	0.3251
	HR (95%-CI), Model 1	1.00 (Ref)	1.01 (0.89-1.13)	1.02 (0.91-1.14)	1.02 (0.90-1.16)	0.7332
	HR (95%-CI), Model 2	1.00 (Ref)	1.04 (0.93-1.17)	1.07 (0.95-1.20)	1.07 (0.94-1.21)	0.2889
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.91-1.15)	1.03 (0.91-1.16)	1.03 (0.91-1.17)	0.6437
Haemorrhagic stroke	Mean grams/day	12.19 (24.12)	27.62 (32.45)	39.48 (38.31)		
	Total n/cases	69175/160	155595/347	210567/450	435337/957	
	HR (95%-CI), Model 0	1.00 (Ref)	0.94 (0.78-1.14)	0.99 (0.82-1.18)	1.00 (0.83-1.22)	0.9636
	HR (95%-CI), Model 1	1.00 (Ref)	0.97 (0.81-1.17)	1.04 (0.86-1.24)	1.06 (0.87-1.29)	0.5868
	HR (95%-CI), Model 2	1.00 (Ref)	0.98 (0.81-1.19)	1.03 (0.86-1.25)	1.05 (0.86-1.29)	0.6163
	HR (95%-CI), Model 3	1.00 (Ref)	0.99 (0.82-1.20)	1.05 (0.87-1.27)	1.07 (0.88-1.31)	0.4991
Venous thromboembolism	Mean grams/day	12.27 (24.22)	27.45 (32.37)	39.29 (38.32)		
	Total n/cases	73329/583	165647/1461	223536/1774	462512/3818	

	HR (95%-CI), Model 0	1.00 (Ref)	1.06 (0.96-1.16)	1.04 (0.95-1.15)	1.03 (0.94-1.14)	0.5019
	HR (95%-CI), Model 1	1.00 (Ref)	1.08 (0.98-1.19)	1.09 (0.99-1.19)	1.08 (0.98-1.19)	0.1316
	HR (95%-CI), Model 2	1.00 (Ref)	1.10 (1.00-1.22)	1.11 (1.01-1.22)	1.10 (0.99-1.22)	0.0643
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (0.97-1.17)	1.04 (0.94-1.14)	1.02 (0.92-1.13)	0.6859
Varicose veins	Mean grams/day	12.25 (24.16)	27.44 (32.38)	39.34 (38.39)		
	Total n/cases	71629/410	161126/940	217783/1311	450538/2661	
	HR (95%-CI), Model 0	1.00 (Ref)	1.01 (0.90-1.14)	1.05 (0.94-1.17)	1.06 (0.94-1.19)	0.3673
	HR (95%-CI), Model 1	1.00 (Ref)	1.01 (0.89-1.13)	1.03 (0.92-1.16)	1.04 (0.92-1.17)	0.5101
	HR (95%-CI), Model 2	1.00 (Ref)	1.01 (0.90-1.14)	1.03 (0.91-1.15)	1.03 (0.91-1.16)	0.6366
	HR (95%-CI), Model 3	1.00 (Ref)	0.99 (0.88-1.12)	1.00 (0.89-1.12)	1.00 (0.88-1.13)	0.9440
Haemorrhoids	Mean grams/day	12.30 (24.25)	27.40 (32.43)	39.36 (38.42)		
	Total n/cases	71869/1272	162329/2943	218937/4200	453135/8415	
	HR (95%-CI), Model 0	1.00 (Ref)	1.01 (0.95-1.08)	1.05 (0.99-1.12)	1.06 (0.99-1.14)	0.0707
	HR (95%-CI), Model 1	1.00 (Ref)	1.02 (0.95-1.09)	1.05 (0.99-1.12)	1.06 (0.99-1.14)	0.0886
	HR (95%-CI), Model 2	1.00 (Ref)	1.03 (0.96-1.10)	1.06 (0.99-1.13)	1.07 (1.00-1.15)	0.0535
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.96-1.10)	1.06 (0.99-1.13)	1.07 (1.00-1.15)	0.0543
Pneumonia	Mean grams/day	12.26 (24.23)	27.45 (32.38)	39.33 (38.35)		
	Total n/cases	73543/1157	166340/2449	224574/2899	464457/6505	
	HR (95%-CI), Model 0	1.00 (Ref)	0.90 (0.84-0.96)	0.88 (0.82-0.94)	0.88 (0.82-0.95)	0.0009
	HR (95%-CI), Model 1	1.00 (Ref)	0.98 (0.91-1.05)	1.00 (0.93-1.07)	1.00 (0.93-1.08)	0.9329
	HR (95%-CI), Model 2	1.00 (Ref)	1.00 (0.93-1.07)	1.03 (0.96-1.11)	1.04 (0.96-1.12)	0.3130
	HR (95%-CI), Model 3	1.00 (Ref)	1.00 (0.93-1.08)	1.02 (0.96-1.10)	1.03 (0.96-1.11)	0.4236
Gastro-oesophageal reflux disease	Mean grams/day	12.28 (24.18)	27.43 (32.40)	39.38 (38.43)		
	Total n/cases	70796/1099	159339/2432	214566/3590	444701/7121	
	HR (95%-CI), Model 0	1.00 (Ref)	0.96 (0.90-1.04)	1.09 (1.02-1.17)	1.14 (1.06-1.23)	0.0005
	HR (95%-CI), Model 1	1.00 (Ref)	0.98 (0.91-1.05)	1.11 (1.03-1.19)	1.16 (1.08-1.25)	0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.00 (0.93-1.08)	1.14 (1.07-1.23)	1.20 (1.11-1.29)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	0.99 (0.92-1.06)	1.12 (1.04-1.20)	1.17 (1.09-1.26)	<0.0001
Gastritis and duodenitis	Mean grams/day	12.23 (24.21)	27.47 (32.37)	39.33 (38.40)		
	Total n/cases	72346/1770	163275/4116	220356/5649	455977/11535	
	HR (95%-CI), Model 0	1.00 (Ref)	1.01 (0.96-1.07)	1.04 (0.99-1.10)	1.05 (1.00-1.12)	0.0691
	HR (95%-CI), Model 1	1.00 (Ref)	1.05 (1.00-1.12)	1.09 (1.04-1.15)	1.10 (1.04-1.17)	0.0008
	HR (95%-CI), Model 2	1.00 (Ref)	1.08 (1.02-1.14)	1.12 (1.06-1.18)	1.13 (1.06-1.19)	0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (1.01-1.14)	1.11 (1.05-1.17)	1.12 (1.05-1.18)	0.0002

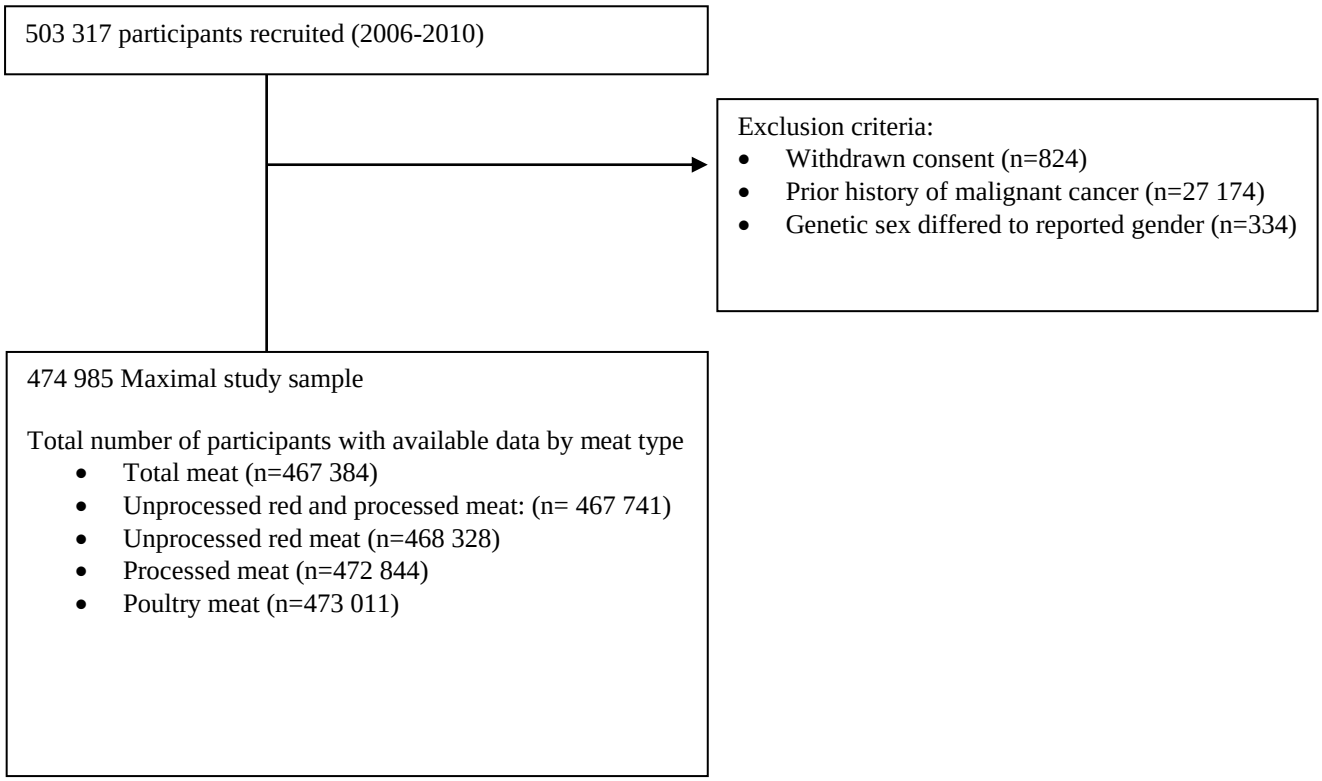
Inguinal hernia	Mean grams/day	12.12 (24.05)	27.48 (32.42)	39.35 (38.33)		
	Total n/cases	70659/1301	159040/3141	216071/3668	445770/8110	
	HR (95%-CI), Model 0	1.00 (Ref)	0.99 (0.93-1.06)	0.96 (0.90-1.02)	0.95 (0.89-1.02)	0.1476
	HR (95%-CI), Model 1	1.00 (Ref)	0.98 (0.92-1.05)	0.95 (0.89-1.01)	0.94 (0.88-1.00)	0.0637
	HR (95%-CI), Model 2	1.00 (Ref)	0.98 (0.92-1.05)	0.95 (0.89-1.01)	0.94 (0.87-1.00)	0.0607
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.95-1.09)	1.01 (0.95-1.08)	1.01 (0.94-1.08)	0.8681
Noninfective enteritis and colitis	Mean grams/day	12.23 (24.12)	27.46 (32.42)	39.28 (38.29)		
	Total n/cases	72732/1047	164534/2227	221443/3058	458709/6332	
	HR (95%-CI), Model 0	1.00 (Ref)	0.93 (0.86-1.00)	0.97 (0.91-1.05)	0.99 (0.92-1.07)	0.8662
	HR (95%-CI), Model 1	1.00 (Ref)	0.95 (0.89-1.03)	1.01 (0.94-1.09)	1.03 (0.96-1.12)	0.4038
	HR (95%-CI), Model 2	1.00 (Ref)	0.98 (0.90-1.05)	1.03 (0.96-1.11)	1.05 (0.97-1.14)	0.1914
	HR (95%-CI), Model 3	1.00 (Ref)	0.97 (0.90-1.05)	1.02 (0.95-1.10)	1.04 (0.96-1.13)	0.3108
Diverticular disease	Mean grams/day	12.30 (24.23)	27.43 (32.25)	39.39 (38.39)		
	Total n/cases	73133/1887	164754/4773	222480/6323	460367/12983	
	HR (95%-CI), Model 0	1.00 (Ref)	1.08 (1.03-1.14)	1.13 (1.08-1.19)	1.14 (1.08-1.21)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.07 (1.02-1.13)	1.13 (1.07-1.19)	1.14 (1.08-1.20)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.08 (1.03-1.14)	1.14 (1.08-1.20)	1.15 (1.09-1.22)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.06 (1.00-1.12)	1.09 (1.04-1.15)	1.10 (1.04-1.17)	0.0007
Colon polyps	Mean grams/day	12.20 (24.17)	27.42 (32.30)	39.34 (38.38)		
	Total n/cases	71500/5887	161643/13874	217881/18099	451024/37860	
	HR (95%-CI), Model 0	1.00 (Ref)	1.02 (0.99-1.05)	1.04 (1.01-1.07)	1.04 (1.01-1.08)	0.0095
	HR (95%-CI), Model 1	1.00 (Ref)	1.03 (1.00-1.06)	1.05 (1.02-1.09)	1.06 (1.03-1.10)	0.0002
	HR (95%-CI), Model 2	1.00 (Ref)	1.04 (1.01-1.07)	1.06 (1.03-1.10)	1.07 (1.04-1.11)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.99-1.06)	1.04 (1.01-1.08)	1.05 (1.01-1.08)	0.0052
Gallbladder disease	Mean grams/day	12.21 (24.13)	27.42 (32.37)	39.34 (38.41)		
	Total n/cases	72272/1342	162662/3136	218492/4577	453426/9055	
	HR (95%-CI), Model 0	1.00 (Ref)	1.03 (0.97-1.10)	1.15 (1.08-1.22)	1.19 (1.11-1.27)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.05 (0.99-1.12)	1.18 (1.11-1.26)	1.22 (1.15-1.31)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.09 (1.02-1.16)	1.23 (1.15-1.31)	1.27 (1.19-1.36)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.95-1.09)	1.09 (1.02-1.16)	1.11 (1.04-1.19)	0.0018
Osteoarthritis	Mean grams/day	12.05 (23.97)	27.38 (32.28)	39.43 (38.42)		
	Total n/cases	67217/2681	150676/6688	203802/8935	421695/18304	
	HR (95%-CI), Model 0	1.00 (Ref)	1.08 (1.03-1.13)	1.18 (1.13-1.23)	1.21 (1.15-1.27)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.07 (1.02-1.12)	1.17 (1.12-1.22)	1.19 (1.14-1.25)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.08 (1.03-1.13)	1.16 (1.11-1.22)	1.19 (1.13-1.24)	<0.0001

	HR (95%-CI), Model 3	1.00 (Ref)	1.02 (0.98-1.07)	1.06 (1.02-1.11)	1.07 (1.03-1.13)	0.0025
Kidney stones	Mean grams/day	12.23 (24.17)	27.47 (32.40)	39.32 (38.37)		
	Total n/cases	73956/361	166854/884	224927/1238	465737/2483	
	HR (95%-CI), Model 0	1.00 (Ref)	1.05 (0.93-1.19)	1.10 (0.98-1.24)	1.12 (0.99-1.27)	0.0835
	HR (95%-CI), Model 1	1.00 (Ref)	1.11 (0.98-1.26)	1.18 (1.05-1.33)	1.19 (1.05-1.35)	0.0063
	HR (95%-CI), Model 2	1.00 (Ref)	1.11 (0.98-1.26)	1.19 (1.05-1.34)	1.21 (1.06-1.37)	0.0041
	HR (95%-CI), Model 3	1.00 (Ref)	1.08 (0.95-1.22)	1.12 (0.99-1.27)	1.13 (0.99-1.28)	0.0622
Urinary tract infection	Mean grams/day	12.27 (24.19)	27.47 (32.37)	39.28 (38.34)		
	Total n/cases	73625/901	166616/1955	224888/2446	465129/5302	
	HR (95%-CI), Model 0	1.00 (Ref)	0.92 (0.85-1.00)	0.93 (0.86-1.01)	0.94 (0.86-1.02)	0.1428
	HR (95%-CI), Model 1	1.00 (Ref)	0.97 (0.90-1.05)	0.99 (0.92-1.07)	1.00 (0.92-1.09)	0.9980
	HR (95%-CI), Model 2	1.00 (Ref)	0.98 (0.91-1.06)	1.00 (0.92-1.08)	1.00 (0.92-1.09)	0.9212
	HR (95%-CI), Model 3	1.00 (Ref)	0.97 (0.89-1.05)	0.97 (0.89-1.05)	0.97 (0.89-1.05)	0.4449
Enlarged prostate	Mean grams/day	13.24 (24.97)	27.01 (33.20)	39.31 (39.44)		
	Total n/cases	31496/577	76672/1416	99945/1599	208113/3592	
	HR (95%-CI), Model 0	1.00 (Ref)	0.99 (0.90-1.09)	0.98 (0.89-1.08)	0.98 (0.88-1.08)	0.6374
	HR (95%-CI), Model 1	1.00 (Ref)	1.02 (0.93-1.13)	1.02 (0.93-1.12)	1.02 (0.92-1.13)	0.7598
	HR (95%-CI), Model 2	1.00 (Ref)	1.03 (0.94-1.14)	1.03 (0.93-1.13)	1.02 (0.92-1.14)	0.6751
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.94-1.14)	1.03 (0.93-1.13)	1.03 (0.92-1.14)	0.6424
Female genital prolapse	Mean grams/day	11.58 (23.71)	27.93 (31.82)	39.52 (37.48)		
	Total n/cases	40099/878	84287/2100	117775/3148	242161/6126	
	HR (95%-CI), Model 0	1.00 (Ref)	1.09 (1.01-1.18)	1.23 (1.14-1.32)	1.27 (1.17-1.38)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	0.99 (0.91-1.07)	1.07 (0.99-1.16)	1.11 (1.02-1.20)	0.0141
	HR (95%-CI), Model 2	1.00 (Ref)	1.01 (0.93-1.09)	1.10 (1.02-1.18)	1.13 (1.04-1.23)	0.0033
	HR (95%-CI), Model 3	1.00 (Ref)	0.98 (0.91-1.06)	1.05 (0.97-1.13)	1.08 (0.99-1.17)	0.0714
Uterine fibroids	Mean grams/day	11.32 (23.37)	27.76 (31.56)	39.35 (37.41)		
	Total n/cases	31179/1533	63704/3067	88697/4765	183580/9365	
	HR (95%-CI), Model 0	1.00 (Ref)	1.01 (0.95-1.07)	1.07 (1.01-1.13)	1.09 (1.02-1.16)	0.0089
	HR (95%-CI), Model 1	1.00 (Ref)	1.02 (0.96-1.09)	1.07 (1.01-1.13)	1.08 (1.02-1.16)	0.0118
	HR (95%-CI), Model 2	1.00 (Ref)	1.03 (0.97-1.10)	1.08 (1.02-1.14)	1.09 (1.03-1.17)	0.0066
	HR (95%-CI), Model 3	1.00 (Ref)	0.99 (0.93-1.06)	1.01 (0.95-1.07)	1.01 (0.95-1.08)	0.6656
Iron deficiency anaemia	Mean grams/day	12.30 (24.20)	27.47 (32.42)	39.34 (38.37)		
	Total n/cases	73817/920	167438/1785	226009/2091	467264/4796	
	HR (95%-CI), Model 0	1.00 (Ref)	0.84 (0.78-0.91)	0.76 (0.70-0.82)	0.74 (0.68-0.81)	<0.0001

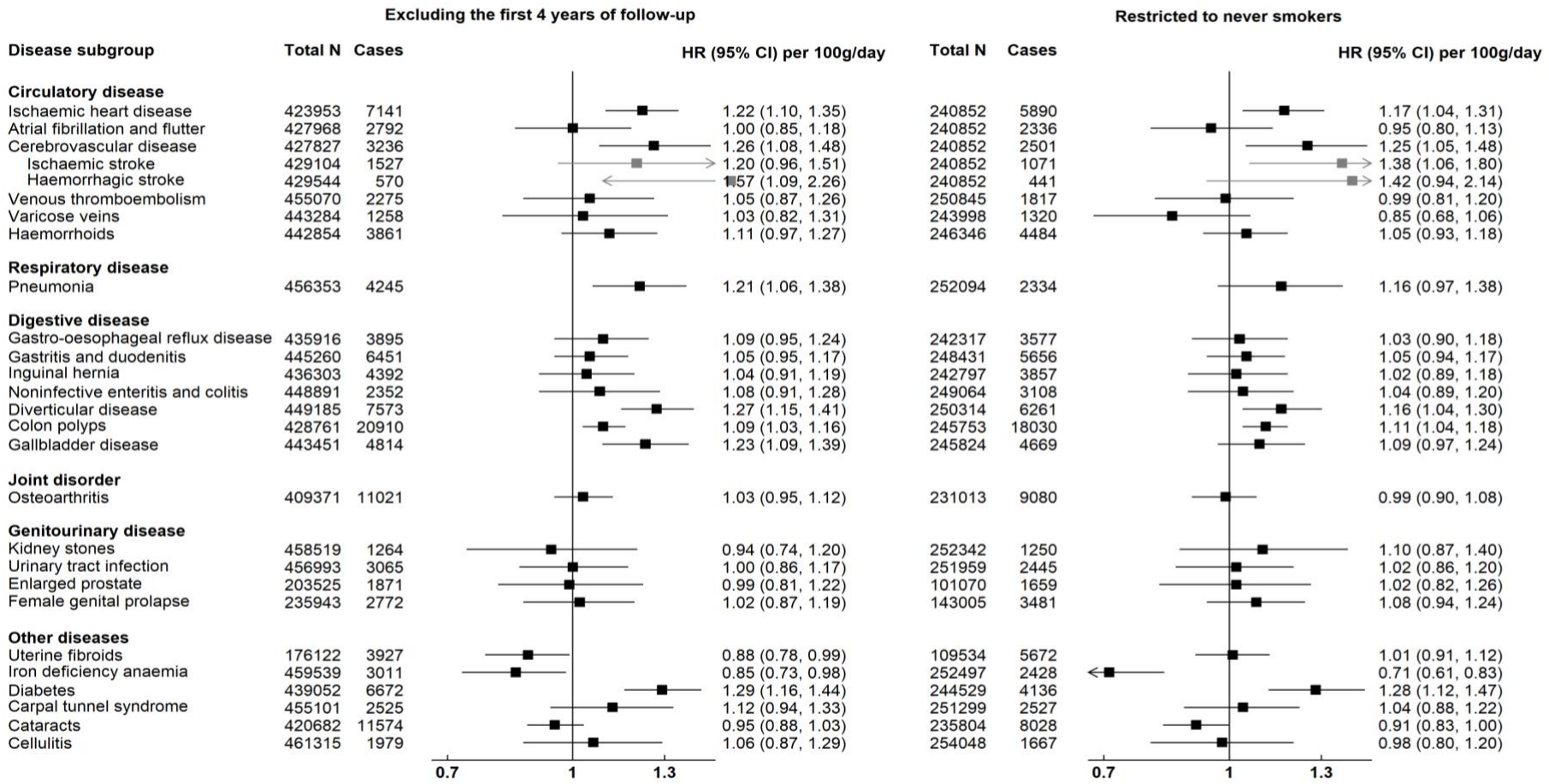
	HR (95%-CI), Model 1	1.00 (Ref)	0.93 (0.85-1.00)	0.84 (0.78-0.91)	0.82 (0.76-0.90)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	0.96 (0.89-1.05)	0.87 (0.81-0.95)	0.85 (0.78-0.93)	0.0003
	HR (95%-CI), Model 3	1.00 (Ref)	0.95 (0.88-1.03)	0.85 (0.78-0.92)	0.83 (0.76-0.90)	<0.0001
Diabetes	Mean grams/day	12.20 (24.16)	27.58 (32.45)	39.38 (38.22)		
	Total n/cases	70894/1481	160465/3499	216144/4819	447503/9799	
	HR (95%-CI), Model 0	1.00 (Ref)	1.00 (0.95-1.07)	1.12 (1.05-1.18)	1.16 (1.09-1.23)	<0.0001
	HR (95%-CI), Model 1	1.00 (Ref)	1.13 (1.07-1.21)	1.28 (1.21-1.36)	1.32 (1.24-1.41)	<0.0001
	HR (95%-CI), Model 2	1.00 (Ref)	1.15 (1.08-1.22)	1.30 (1.23-1.39)	1.35 (1.26-1.44)	<0.0001
	HR (95%-CI), Model 3	1.00 (Ref)	1.07 (1.00-1.13)	1.12 (1.06-1.19)	1.14 (1.07-1.21)	0.0001
Carpal tunnel syndrome	Mean grams/day	12.24 (24.21)	27.42 (32.37)	39.31 (38.34)		
	Total n/cases	73594/775	166145/1816	223872/2555	463611/5146	
	HR (95%-CI), Model 0	1.00 (Ref)	1.04 (0.95-1.13)	1.11 (1.02-1.20)	1.13 (1.03-1.23)	0.0069
	HR (95%-CI), Model 1	1.00 (Ref)	1.06 (0.98-1.16)	1.13 (1.04-1.23)	1.15 (1.06-1.26)	0.0014
	HR (95%-CI), Model 2	1.00 (Ref)	1.08 (0.99-1.18)	1.14 (1.05-1.24)	1.15 (1.06-1.26)	0.0015
	HR (95%-CI), Model 3	1.00 (Ref)	1.03 (0.94-1.12)	1.04 (0.95-1.13)	1.04 (0.95-1.13)	0.4186
Cataracts	Mean grams/day	12.12 (24.06)	27.70 (32.48)	39.45 (38.31)		
	Total n/cases	67820/2800	154075/6295	208624/7254	430519/16349	
	HR (95%-CI), Model 0	1.00 (Ref)	0.93 (0.89-0.97)	0.93 (0.89-0.97)	0.93 (0.89-0.98)	0.0053
	HR (95%-CI), Model 1	1.00 (Ref)	0.97 (0.93-1.01)	0.97 (0.92-1.01)	0.97 (0.92-1.01)	0.1623
	HR (95%-CI), Model 2	1.00 (Ref)	0.98 (0.93-1.02)	0.97 (0.93-1.02)	0.97 (0.93-1.02)	0.2587
	HR (95%-CI), Model 3	1.00 (Ref)	0.97 (0.93-1.02)	0.96 (0.92-1.01)	0.96 (0.92-1.01)	0.1192
Cellulitis	Mean grams/day	12.25 (24.18)	27.45 (32.37)	39.31 (38.36)		
	Total n/cases	74329/546	167971/1234	226517/1684	468817/3464	
	HR (95%-CI), Model 0	1.00 (Ref)	0.97 (0.88-1.07)	1.02 (0.93-1.13)	1.04 (0.94-1.16)	0.4341
	HR (95%-CI), Model 1	1.00 (Ref)	1.03 (0.93-1.14)	1.12 (1.01-1.23)	1.14 (1.03-1.27)	0.0120
	HR (95%-CI), Model 2	1.00 (Ref)	1.05 (0.94-1.16)	1.13 (1.02-1.24)	1.15 (1.03-1.28)	0.0097
	HR (95%-CI), Model 3	1.00 (Ref)	1.00 (0.90-1.10)	1.02 (0.92-1.13)	1.03 (0.92-1.14)	0.6162

Model 0: Stratified for sex, age group and region and adjusted for age (underlying time variable). **Model 1:** Model 0 additionally adjusted for race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18,National examination at age 16, unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current >15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs, 10-<50 excess METs, ≥ 50 excess METs, unknown), alcohol intake (none, < 1 g/day, 1-<10 g, 10-<20 g, ≥20 g/day, unknown), menopausal status (pre-, postmenopausal unknown), hormone-replacement therapy (HRT) (never, past, current, unknown) and oral contraceptive pill intake (OCP) (never, past, current, unknown), and parity (nulliparous, 1-2, 3 or more, unknown). **Model 2:** Model 1 additionally adjusted for total fruit and vegetable intake (<3 servings/day, 3-<4 servings/day, 4-<5 servings/day, ≥6 servings/day, unknown), cereal fibre intake (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,≥2 times/week, unknown) and non-oily fish intake (<1 time/week, 1 time/week, ≥2 times/week, unknown). **Model 3:** Model 2 additionally adjusted for BMI (sex-specific quintiles, unknown).

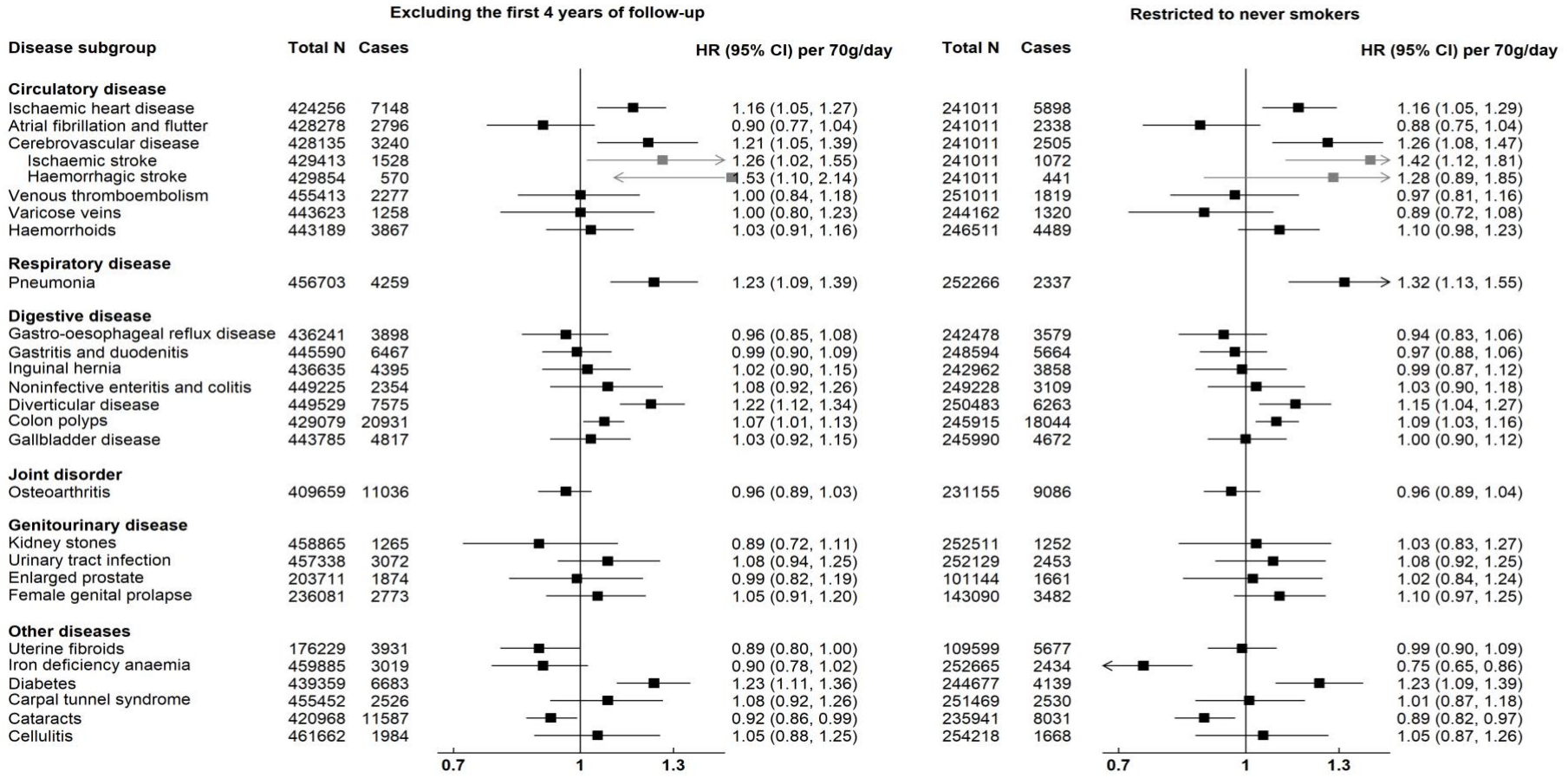
Additional file 1: Figures



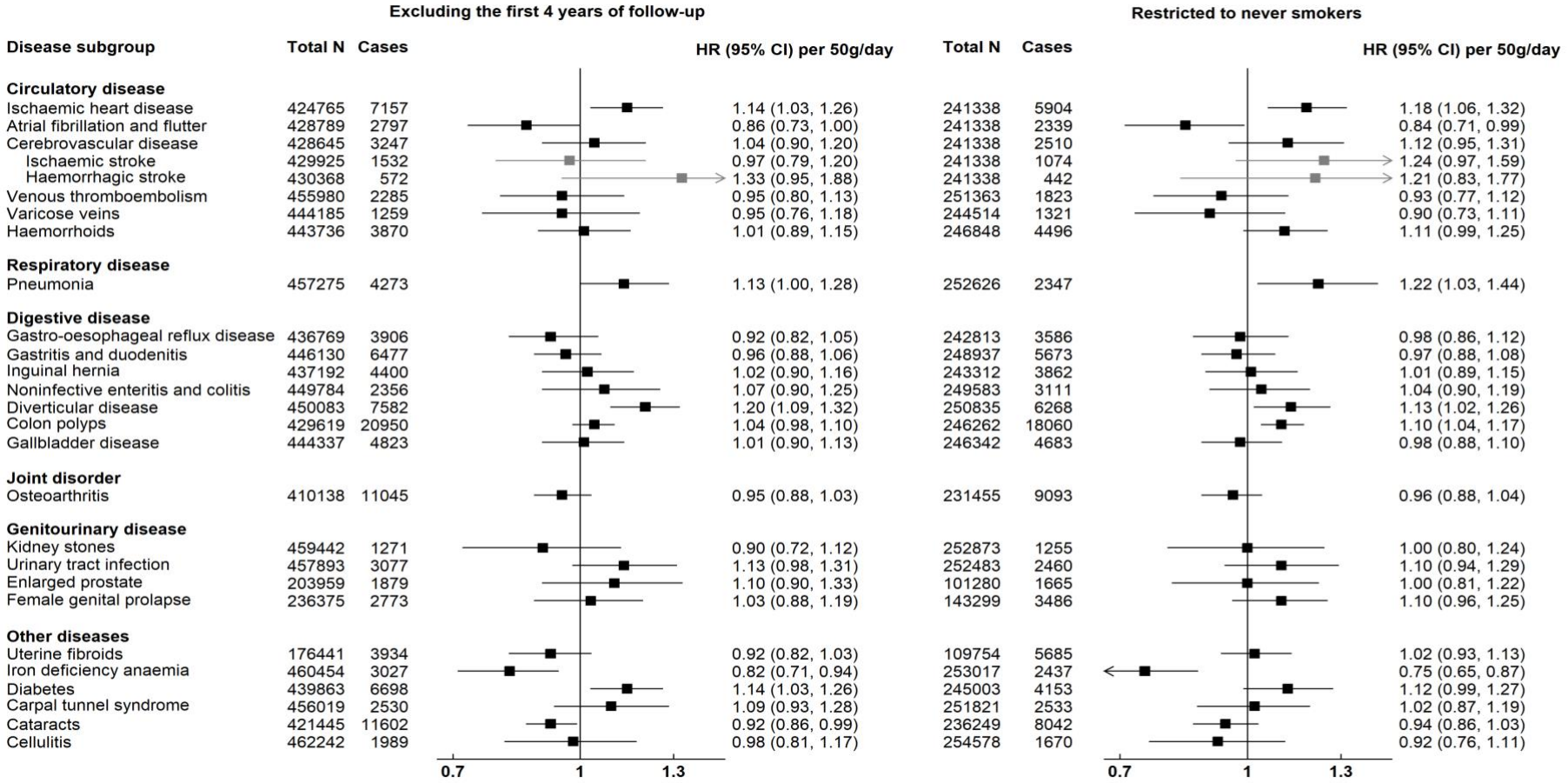
Additional file 1: Fig. 1. Participant flow chart of the study.



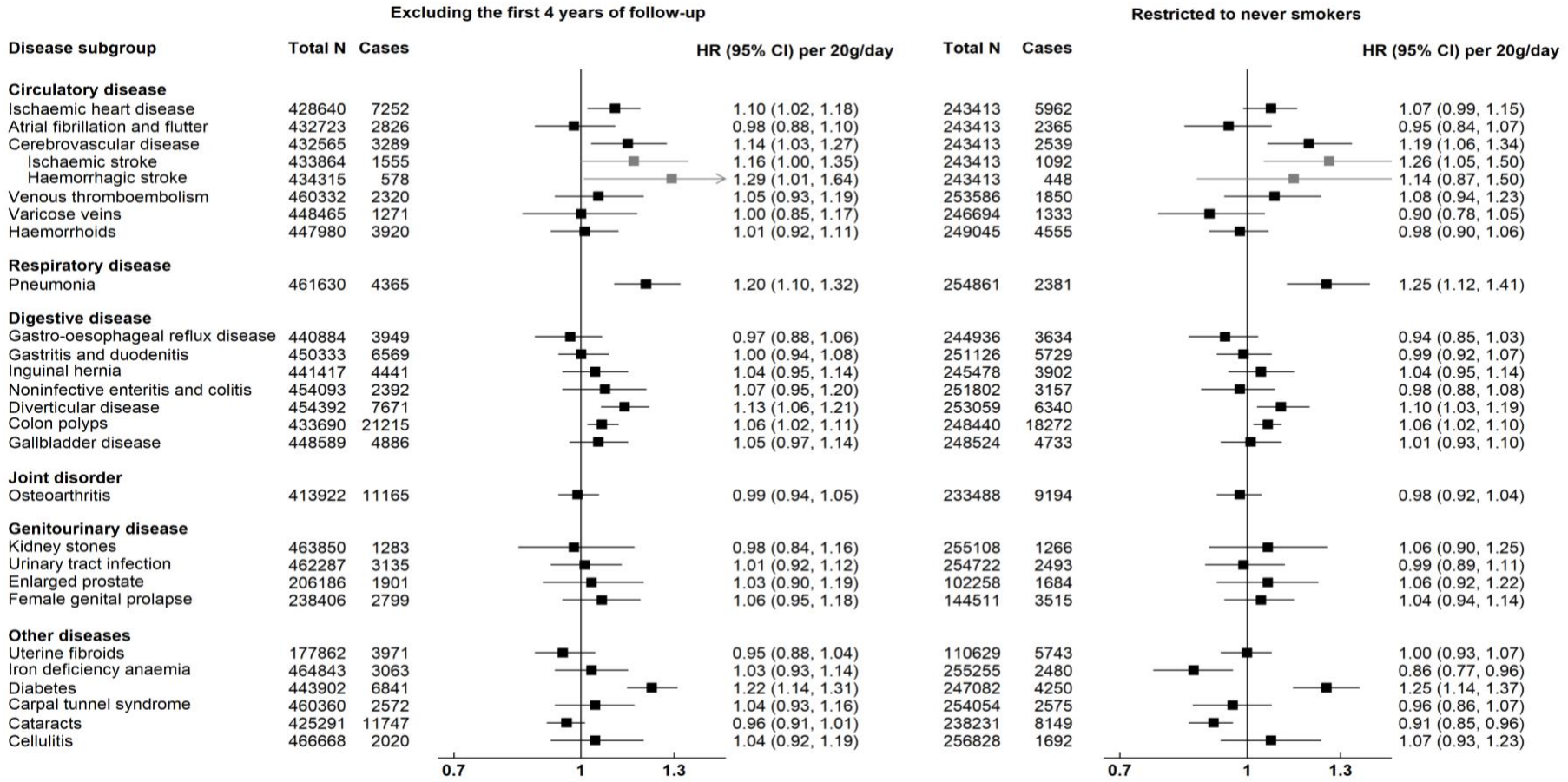
Additional file 1: Fig. 2. Risk of 25 common conditions by higher daily intake of <u>total meat</u> excluding the first 4 years of follow-up, in never smokers.
Stratified for sex, age group and region and adjusted for age (underlying time variable), race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18, National examination at age 16, other/unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current ≥ 15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs per/week, 10-<50 excess METs per/week, ≥ 50 excess METs per/week, unknown), alcohol intake (none, < 1 g/day, 1-<10 g/day, 10-<20 g/day, ≥20 g/day, unknown), total fruit and vegetable intake (< 3 servings/day, 3-< 4 servings/day, 4-< 6 servings/day, ≥ 6 servings/day, unknown), cereal fibre score (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,≥2 times/week, unknown), non-oily fish intake (<1 time/week, 1 time/week, ≥2 times/week, unknown), BMI (sex-specific quintiles, unknown), in women: menopausal status (pre-, postmenopausal, unknown), HRT (never, past, current, unknown), OCP use (never, past, current, unknown), and parity (nulliparous, 1-2, ≥ 3, unknown). BMI: Body mass index, HRT: hormone replacement therapy, OCP: oral contraceptive pill.



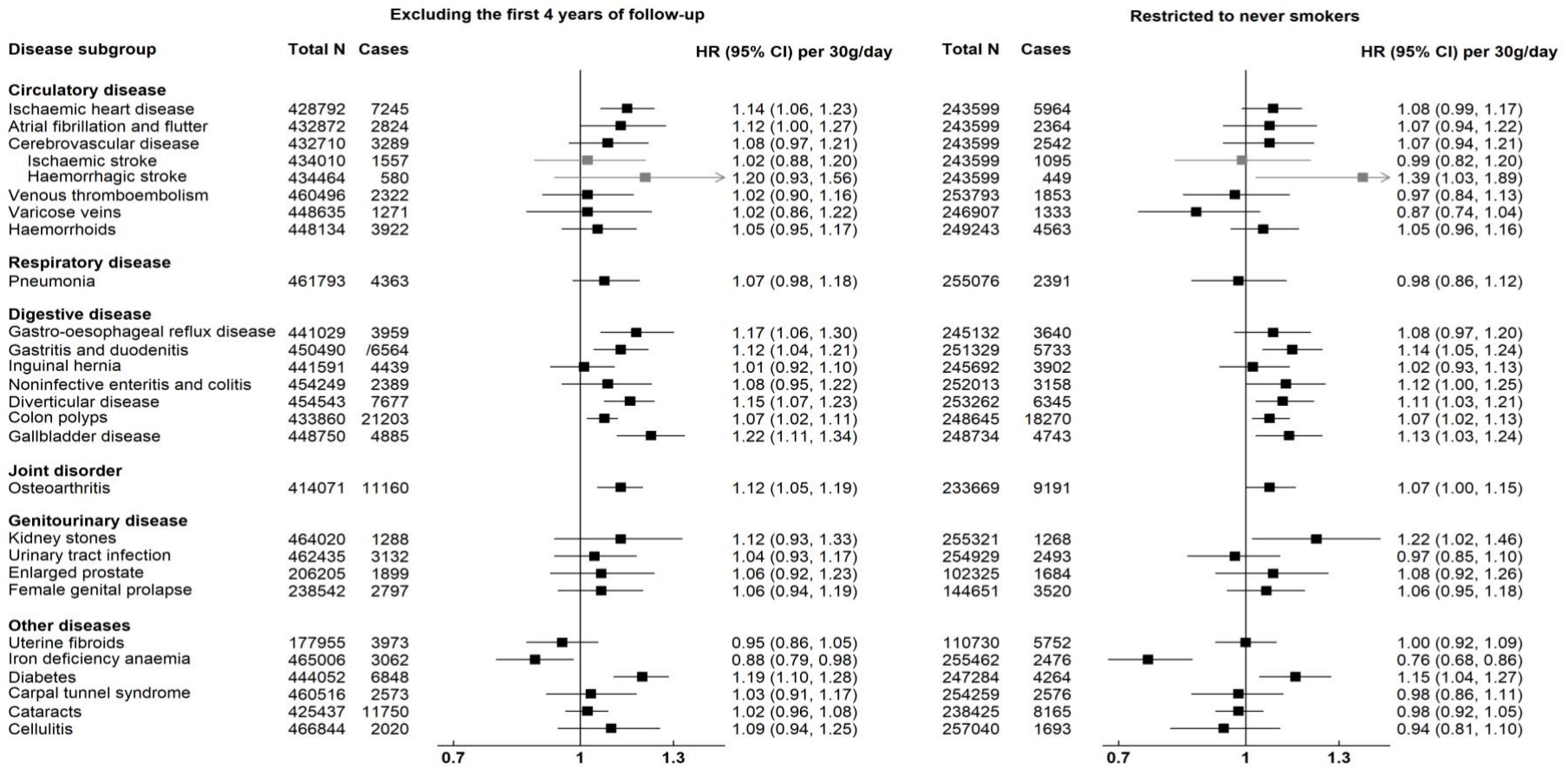
Additional file 1: Fig. 3. Risk of 25 common conditions by higher daily intake of <u>unprocessed red and processed meat</u> excluding the first 4 years of follow-up, in never smokers. Stratified for sex, age group and region and adjusted for age (underlying time variable), race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18, National examination at age 16, other/unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current ≥ 15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs per/week, 10-<50 excess METs per/week, ≥ 50 excess METs per/week, unknown), alcohol intake (none, < 1 g/day, 1-<10 g/day, 10-<20 g/day, ≥20 g/day, unknown), total fruit and vegetable intake (< 3 servings/day, 3-< 4 servings/day, 4-< 6 servings/day, ≥ 6 servings/day, unknown), cereal fibre score (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,≥2 times/week, unknown), non-oily fish intake (<1 time/week, 1 time/week, ≥2 times/week, unknown), BMI (sex-specific quintiles, unknown), in women: menopausal status (pre-, postmenopausal, unknown), HRT (never, past, current, unknown), OCP use (never, past, current, unknown), and parity (nulliparous, 1-2, ≥ 3, unknown). BMI: Body mass index, HRT: hormone replacement therapy, OCP: oral contraceptive pill.



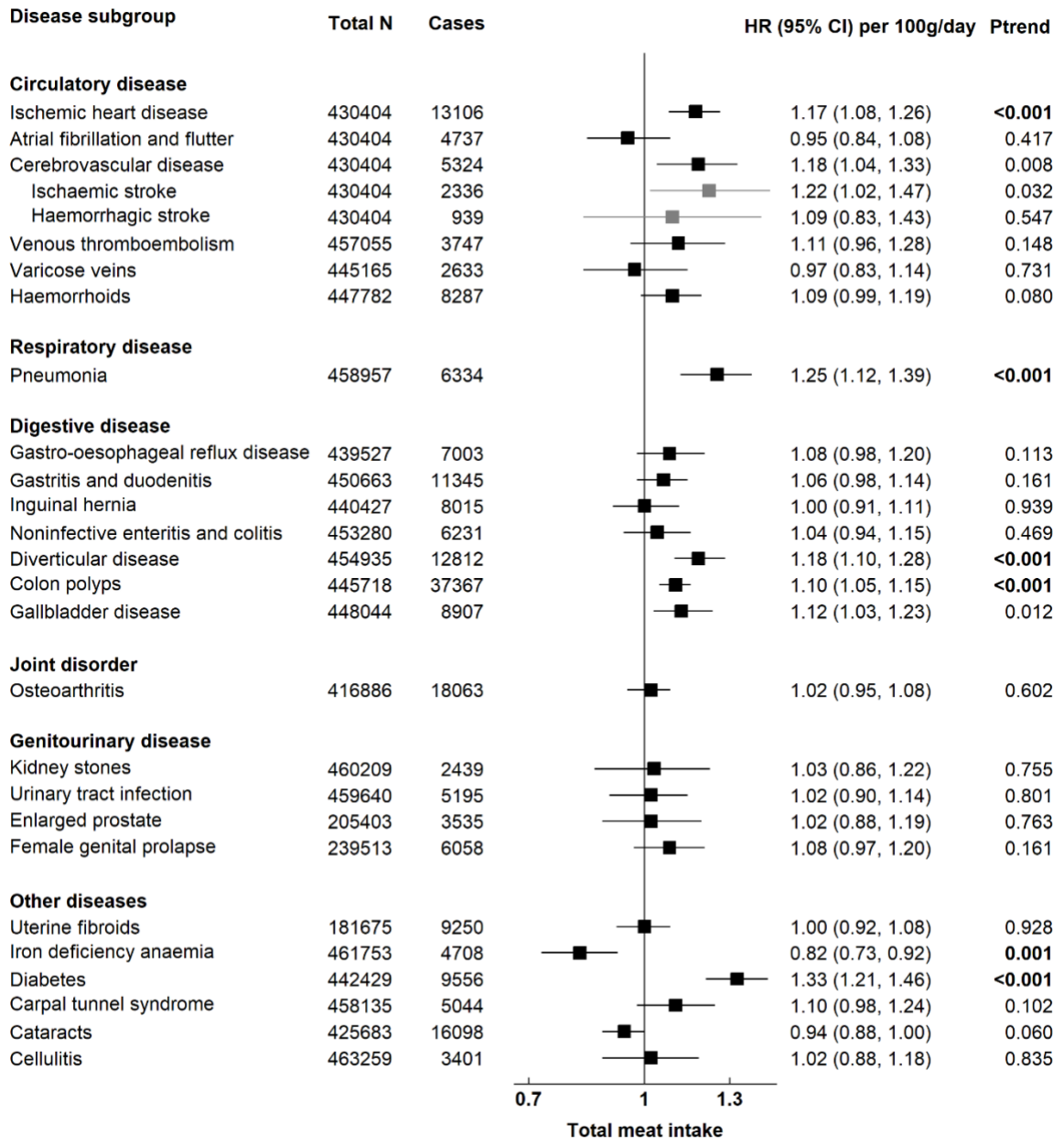
Additional file 1: Fig. 4. Risk of 25 common conditions by higher daily intake of <u>unprocessed red meat</u> excluding the first 4 years of follow-up, in never smokers. Stratified for sex, age group and region and adjusted for age (underlying time variable), race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18, National examination at age 16, other/unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current <u>≥</u> 15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs per/week, 10-<50 excess METs per/week, ≥ 50 excess METs per/week, unknown), alcohol intake (none, < 1 g/day, 1-<10 g/day, 10-<20 g/day, ≥20 g/day, unknown), total fruit and vegetable intake (< 3 servings/day, 3-< 4 servings/day, 4-< 6 servings/day, ≥ 6 servings/day, unknown), cereal fibre score (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,<u>≥</u>2 times/week, unknown), non-oily fish intake (<1 time/week, 1 time/week, <u>≥</u>2 times/week, unknown), BMI (sex-specific quintiles, unknown), in women: menopausal status (pre-, postmenopausal, unknown), HRT (never, past, current, unknown), OCP use (never, past, current, unknown), and parity (nulliparous, 1-2, ≥ 3, unknown). BMI: Body mass index, HRT: hormone replacement therapy, OCP: oral contraceptive pill.



Additional file 1: Fig. 5. Risk of 25 common conditions by higher daily intake of <u>processed meat</u> excluding the first 4 years of follow-up, in never smokers. Stratified for sex, age group and region and adjusted for age (underlying time variable), race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18, National examination at age 16, other/unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current ≥ 15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs per/week, 10-<50 excess METs per/week, ≥ 50 excess METs per/week, unknown), alcohol intake (none, < 1 g/day, 1-<10 g/day, 10-<20 g/day, ≥20 g/day, unknown), total fruit and vegetable intake (< 3 servings/day, 3-< 4 servings/day, 4-< 6 servings/day, ≥ 6 servings/day, unknown), cereal fibre score (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,≥2 times/week, unknown), non-oily fish intake (<1 time/week, 1 time/week, ≥2 times/week, unknown), BMI (sex-specific quintiles, unknown), in women: menopausal status (pre-, postmenopausal, unknown), HRT (never, past, current, unknown), OCP use (never, past, current, unknown), and parity (nulliparous, 1-2, ≥ 3, unknown). BMI: Body mass index, HRT: hormone replacement therapy, OCP: oral contraceptive pill.



Additional file 1: Fig. 6. Risk of 25 common conditions by higher daily intake of <u>poultry meat</u> excluding the first 4 years of follow-up, in never smokers. Stratified for sex, age group and region and adjusted for age (underlying time variable), race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18, National examination at age 16, other/unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current ≥ 15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs per/week, 10-<50 excess METs per/week, ≥ 50 excess METs per/week, unknown), alcohol intake (none, < 1 g/day, 1-<10 g/day, 10-<20 g/day, ≥20 g/day, unknown), total fruit and vegetable intake (< 3 servings/day, 3-< 4 servings/day, 4-< 6 servings/day, ≥ 6 servings/day, unknown), cereal fibre score (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,≥2 times/week, unknown), non-oily fish intake (<1 time/week, 1 time/week, ≥2 times/week, unknown), BMI (sex-specific quintiles, unknown), in women: menopausal status (pre-, postmenopausal, unknown), HRT (never, past, current, unknown), OCP use (never, past, current, unknown), and parity (nulliparous, 1-2, ≥ 3, unknown). BMI: Body mass index, HRT: hormone replacement therapy, OCP: oral contraceptive pill.



Additional file 1: Fig. 7. Risk of 25 common conditions per 100 g/day higher daily intake of <u>total meat.</u> Stratified for sex, age group and region and adjusted for age (underlying time variable), race (4 groups where possible: White, Asian or Asian British, Black or Black British, Mixed race or other, unknown), deprivation (Townsend index quintiles, unknown), qualification (College or university degree/vocational qualification, National examination at ages 17-18, National examination at age 16, other/unknown), employment (in paid employment, receiving pension, not in paid employment, unknown), smoking (never, former, current <15 cigarettes/day, current ≥ 15 cigarettes/ day, current unknown amount of cigarettes/day, unknown), physical activity (<10 excess METs per/week, 10-<50 excess METs per/week, ≥ 50 excess METs per/week, unknown), alcohol intake (none, < 1 g/day, 1-<10 g/day, 10-<20 g/day, ≥20 g/day, unknown), total fruit and vegetable intake (< 3 servings/day, 3-< 4 servings/day, 4-< 6 servings/day, ≥ 6 servings/day, unknown), cereal fibre score (sex-specific quintiles, unknown), oily fish intake (0 times/week,<1 time/week,1 time/week,≥2 times/week, unknown), non-oily fish intake (<1 time/week, 1 time/week, ≥2 times/week, unknown), BMI (sex-specific quintiles, unknown), in women: menopausal status (pre-, postmenopausal, unknown), HRT (never, past, current, unknown), OCP use (never, past, current, unknown), and parity (nulliparous, 1-2, ≥ 3, unknown). BMI: Body mass index, HRT: hormone replacement therapy, OCP: oral contraceptive pill. P trend in bold: P value robust to Bonferroni correction (P<0.002).