ALL follow-up non-fatal events
collected through the BRHS General Practice (GP) Record Review (RR)
(Raw data)

Dataset: BRHS ALL RR EVENTS 1978Q1_RR2024.dat

Follow-up period: Baseline 1978-1980 (Q1) to 2024 Record Review

Dataset description

The General Practice (GP) record review involved examining the primary care records of BRHS participants for specific events, primarily related to non-fatal cardiovascular disease. This scope was subsequently expanded to include additional cardiovascular events and treatments, as well as conditions such as diabetes, cancer, dementia, and frailty (see **Appendix A**).

This dataset includes all non-fatal events identified through the General Practice (primary care) record review (RR) for each BRHS participant during the follow-up period from Baseline (1978–1980, Q1) to the 2024 GP Record Review (RR24).

IMPORTANT NOTE on End of Follow-up Cut-off Date:
The dataset includes events recorded up to December 2025. However, not all participants were followed until that date.

Complete follow-up for all participants is only available up to **30 July 2025**. Therefore, **30 July 2025 should be used as the end-of-follow-up cut-off date** for all analyses.

A list of types of events included in the GP record review is shown in **Table 1** below.

Data file structure

The data file is in ASCII format and contains fixed-length records, with **20 lines per participant**. It includes information on **7,735 BRHS participants** who entered the study at baseline and have since been followed through their GP records. **Each line represents a single event**, meaning that up to 20 events may be recorded for each participant. The events are listed in **chronological order**, with the **earliest event appearing first** in the file (see **Table 2** for an example record). Each event includes **six types of associated variables**, which are described below. A complete list of variables in the data file is provided in **Table 3**.

The six **data variables** for each event (on each line) are:

1. Event number

Range of values is 1 to 20. It indicates the order the events were recorded e.g. 1st, 2nd, …. 20th .
Events were sorted in chronological order within each participant's record.

2. Event date

This is the date (day, month, and year) on which the event occurred, as recorded in the GP (primary care) records. The date is represented using **three separate variables**: **day**, **month**, and **year**.

3. BRHS Event type codes

Each type of event is assigned a **BRHS event code** (see **Table 1** below for event types and corresponding codes). Details of the **case criteria** for each event type are provided in **Section 2 of Appendix A**.
A code of **9** indicates that **none of the event types listed in Table 1** occurred.

Table 1. Event types included in the GP record review and their corresponding BRHS event codes

Event type	BRHS Event code
Myocardial infarction (MI)	1
Angina	2
Stroke	3
Transient ischemic attack (TIA)	4
Coronary artery bypass graft (CABG)	5
Percutaneous transluminal coronary angioplasty, (PTCA)	7
Diabetes	6
Heart failure (HF)	D
Cancer	8
Peripheral vascular disease (PVD)	A
Deep vein thrombosis (DVT)	B
Pulmonary embolism (PE)	C
Abdominal aortic aneurysm	X
Atrial fibrillation (AF)	G
Dementia	H
Dementia - Type not known	H0
Dementia - Vascular	H1
Dementia - Alzheimer	H2
Dementia - Mixed typed	H3
Dementia - Lewy body	H4
Dementia - Parkinson's disease	H5
Dementia - Alcohol related	H6
Dementia - Other type	H8
COVID-19	Z
NO EVENT	**9**

4. Definite or possible events

This variable indicates whether the event was a classified as **definite** or **possible** event. This information should normally apply only to **Myocardial Infarction (MI)** events.

A value of **1** indicates a **definite MI**, while **2** indicates a **possible MI**. Details of the case criteria for definite and possible MI events are provided in **Section 2 of Appendix A** of this document.

Although this classification should apply only to MI events, it was inconsistently recorded for other types of events as well. To address this issue, a revised dataset—**BRHS ALL RR EVENTS 1978Q1_RR2024 UKDS.dat**—has been created for depositing at UKDS, in which the **"def"** variable is applied exclusively to MI events, ensuring consistent and appropriate use.

4.1 New or recurrent event (obsolete data– DO NOT USE)

This was a variable to indicate if the event was a new or a recurrent event. It was originally based on the coder's judgement of whether an event was new or recurrent. However, this can be determined more accurately through statistical programming, so the manually coded information should not be used.

5. Date estimates

This variable indicates whether the **day and/or month** of the event date were estimated.

For all events, the **year** in which the event occurred is recorded. In cases where the **day and/or month** were missing, these values were estimated as follows:

- If **both day and month** were missing, the date was set to **1st June (1/6)**.
- If **only the day** was missing, it was set to **15** (mid-month).

The following are the codes used to indicate whether the day and/or month were estimated:

- **EE** = Both day and month were estimated (set to 1st June)
- **EN** = Only the day was estimated (set to 15)
- **NE** = Only the month was estimated (set to June=6)
- **NN** = Neither day nor month were estimated (original data was complete)

6. Cancer event diagnoses - ICD-9

For cancer diagnoses/events (BRHS Code 8), an ICD-9, indicating the cancer type, is recorded in a separate column/variable.

Table 2. Example data record for one BRHS participant

Example record:		1	2			3	4	5	6
This is an example of a participant who had 10 events during the follow-up period. Had a diabetes diagnosis(event) in 1992 followed by Angina and unspecified cancer type in 1997. He had a definite MI event in November 1997 and prostate cancer (ICD-9 C185) in 2001. In 2004 he had another definite MI. In 2006 he had a possible MI event and a PTCA. In 2008 he had a diagnosis of Atrial fibrillation and in 2015 he was diagnosed with Heart failure. The day and month for the 1992 diabetes event and the 1997 angina event were estimated (EE). The 2008 Atrial fibrillation event has an estimated date (EN).	Study ID	Event number	Event day	Event month	Event year	Event type code	Definite 1=definite 2=possible	Estimated date	Cancer type
	(serial)	(ev_num)	(ed)	(em)	(ey)	(event)	(def)	(est_d)	(Cancer_type)
	1234	1	1	6	1992	6	.	EE	na
	1234	2	1	6	1997	2	.	EE	na
	1234	3	8	8	1997	8	.	NN	na
	1234	4	12	11	1997	1	1	NN	na
	1234	5	25	6	2001	8	.	NN	C185
	1234	6	21	3	2004	1	1	NN	na
	1234	7	30	5	2006	1	2	NN	na
	1234	8	12	10	2006	7		NN	na
	1234	9	15	10	2008	G	.	EN	na
	1234	10	7	6	2015	D	.	NN	na
	1234	11	.	.	.	9	.	NA	na
	1234	12	.	.	.	9	.	NA	na
	1234	13	.	.	.	9	.	NA	na
	1234	14	.	.	.	9	.	NA	na
	1234	15	.	.	.	9	.	NA	na
	1234	16	.	.	.	9	.	NA	na
	1234	17	.	.	.	9	.	NA	na
	1234	18	.	.	.	9	.	NA	na
	1234	19	.	.	.	9	.	NA	na
	1234	20	.	.	.	9	.	NA	na

Table 3 List of Variables in the Data File – Non-Fatal Events Identified Through General Practice Records

Events 1-20	Variable description	Units/Category labels	Methods (section above)	BRHS variable name
Event 1 (line 1)	BRHS study ID			serial
	Event number	1	Section 1	ev1
	Day Month Year	1-31 1-12 1966-2024	Sections 2,5 Sections 2,5	ed1 em1 ey1
	Event type - code	See BRHS Event codes table	Section 3	event1
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def1
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new1
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d1
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_1
Event 2 (line 2)	BRHS study ID (repeated)			serial2
	Event number	2	Section 1	ev2
	Day Month Year	1-31 1-12 1978-2024	Sections 2,5 Sections 2,5	ed2 em2 ey2
	Event type - code	See BRHS Event codes table	Section 3	event2
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def2
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new2
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d2
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_2
Event 3 (line 3)	BRHS study ID (repeated)			serial3
	Event number	3	Section 1	ev3
	Day Month Year	1-31 1-12 1980-2024	Sections 2,5 Sections 2,5	ed3 em3 ey3
	Event type - code	See BRHS Event codes table	Section 3	event3
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def3
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new3
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d3
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_3
Event 4 (line 4)	BRHS study ID (repeated)			serial4
	Event number	4	Section 1	ev4
	Day Month Year	1-31 1-12 1983-2024	Sections 2,5 Sections 2,5	ed4 em4 ey4
	Event type - code	See BRHS Event codes table	Section 3	event4
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def4
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new4
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d4
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_4

Table1 cont.	Variable description	Units/Category labels	Methods (section above)	BRHS variable name
Event 5	BRHS study ID (repeated)			serial5
(line 5)	Event number	5	Section 1	ev5
	Day Month Year	1-31 1-12 1986-2024	Sections 2,5 Sections 2,5	ed5 em5 ey5
	Event type - code	See BRHS Event codes table	Section 3	event5
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def5
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new5
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d5
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_5
Event 6	BRHS study ID (repeated)			serial6
(line 6)	Event number	6	Section 1	ev6
	Day Month Year	1-31 1-12 1993-2024	Sections 2,5 Sections 2,5	ed6 em6 ey6
	Event type - code	See BRHS Event codes table	Section 3	event6
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def6
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new6
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d6
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_6
Event 7	BRHS study ID (repeated)			serial7
(line 7)	Event number	7	Section 1	ev7
	Day Month Year	1-31 1-12 1995-2024	Sections 2,5 Sections 2,5	ed7 em7 ey7
	Event type - code	See BRHS Event codes table	Section 3	event7
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def7
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new7
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d7
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_7
Event 8	BRHS study ID (repeated)			serial8
(line 8)	Event number	8	Section 1	ev8
	Day Month Year	1-31 1-12 1996-2024	Sections 2,5 Sections 2,5	ed8 em8 ey8
	Event type - code	See BRHS Event codes table	Section 3	event8
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def8
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new8
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d8
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_8

Table1 cont.	Variable description	Units/Category labels	Methods (section above)	BRHS variable name
Event 9 (line 9)	BRHS study ID (repeated)			serial9
	Event number	9	Section 1	ev9
	Day Month Year	1-31 1-12 1997-2024	Sections 2,5 Sections 2,5	ed9 em9 ey9
	Event type - code	See BRHS Event codes table	Section 3	event9
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def9
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new9
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d9
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_9
Event 10 (line 10)	BRHS study ID (repeated)			serial10
	Event number	10	Section 1	ev10
	Day Month Year	1-31 1-12 1998-2024	Sections 2,5 Sections 2,5	ed10 em10 ey10
	Event type - code	See BRHS Event codes table	Section 3	event10
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def10
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new10
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d10
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_10
Event 11 (line 11)	BRHS study ID (repeated)			serial11
	Event number	11	Section 1	ev11
	Day Month Year	1-31 1-12 2000-2024	Sections 2,5 Sections 2,5	ed11 em11 ey11
	Event type - code	See BRHS Event codes table	Section 3	event11
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def11
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new11
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d11
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_11
Event 12 (line 12)	BRHS study ID (repeated)			serial12
	Event number	12	Section 1	ev12
	Day Month Year	1-31 1-12 2000-2023	Sections 2,5 Sections 2,5	ed12 em12 ey12
	Event type - code	See BRHS Event codes table	Section 3	event12
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def12
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new12
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d12
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_12

Table 1 cont.	Variable description	Units/Category labels	Methods (section above)	BRHS variable name
Event 13 (line 13)	BRHS study ID (repeated)			serial13
	Event number	13	Section 1	ev13
	Day Month Year	1-31 1-12 2003-2023	Sections 2,5 Sections 2,5	ed13 em13 ey13
	Event type - code	See BRHS Event codes table	Section 3	event13
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def13
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new13
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d13
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_13
Event 14 (line 14)	BRHS study ID (repeated)			serial14
	Event number	14	Section 1	ev14
	Day Month Year	1-31 1-12 2004-2024	Sections 2,5 Sections 2,5	ed14 em14 ey14
	Event type - code	See BRHS Event codes table	Section 3	event14
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def14
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new14
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d14
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_14
Event 15 (line 15)	BRHS study ID (repeated)			serial15
	Event number	15	Section 1	ev15
	Day Month Year	1-31 1-12 2007-2024	Sections 2,5 Sections 2,5	ed15 em15 ey15
	Event type - code	See BRHS Event codes table	Section 3	event15
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def15
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new15
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d15
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_15
Event 16 (line 16)	BRHS study ID (repeated)			serial16
	Event number	16	Section 1	ev16
	Day Month Year	1-31 1-12 2012-2023	Sections 2,5 Sections 2,5	ed16 em16 ey16
	Event type - code	See BRHS Event codes table	Section 3	event16
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def16
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new16
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d16
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_16

Table1 cont.	Variable description	Units/Category labels	Methods (section above)	BRHS variable name
Event 17 (line 17)	BRHS study ID (repeated)			serial17
	Event number	17	Section 1	ev17
	Day Month Year	1-31 1-12 2013-2023	Sections 2,5 Sections 2,5	ed17 em17 ey17
	Event type - code	See BRHS Event codes table	Section 3	event17
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def17
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new17
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d17
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_17
Event 18 (line 18)	BRHS study ID (repeated)			serial18
	Event number	18	Section 1	ev18
	Day Month Year	1-31 1-12 2014-2023	Sections 2,5 Sections 2,5	ed18 em18 ey18
	Event type - code	See BRHS Event codes table	Section 3	event18
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def18
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new18
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d18
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_18
Event 19 (line 19)	BRHS study ID (repeated)			serial19
	Event number	19	Section 1	ev19
	Day Month Year	1-31 1-12 2016-2024	Sections 2,5 Sections 2,5	ed19 em19 ey19
	Event type - code	See BRHS Event codes table	Section 3	event19
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def19
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new19
	Estimated date	EE = Day and month estimatedEN= Day estimated onlyNE= Month estimated onlyNN= Neither estimated	Section 5	est_d19
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_19
Event 20 (line 20)	BRHS study ID (repeated)			serial20
	Event number	20	Section 1	ev20
	Day Month Year	1-31 1-12 2016-2016	Sections 2,5 Sections 2,5	ed20 em20 ey20
	Event type - code	See BRHS Event codes table	Section 3	event20
	New or recurrent event	Do not use -Not reliable/obsolete	Section 4.1	new20
	Definite or possible event	1=definite, 2=possible, .=n/a	Section 4	def20
	Estimated date	EE = Day and month estimated EN= Day estimated only NE= Month estimated only NN= Neither estimated	Section 5	est_d20
	Cancer type	ICD-9 code, na=not applicable	Section 6	Cancer_type_20

APPENDIX A

Follow-up of BRHS cohort participants through

General Practice (GP) records (i.e. primary care records)

The GP (primary care) Record review

Baseline (1978-1980) to 2024(30 July 2024)

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Appendices

Appendix 1 Event definitions – diagnoses details

Appendix 2 GP record review data collection form

Appendix 3 Additional confirmatory information enquiry forms (validation forms)

1. Follow-up of BRHS participants through primary care records

The General Practice (GP) record review

The GP record review is a review of BRHS participants' GP records (i.e. primary care records) for specified events mostly related to non-fatal cardiovascular disease, although this has subsequently been extended to include additional cardiovascular events and treatment, diabetes, cancer, dementia and frailty (table 1). The aim of the GP record review has been to identify and record the date of these events. The reviews have been carried out since baseline (1978-80) at intervals of typically every one or two years. A list of events including their definitions is provided for undertaking the review (Appendix 1). The reviewers are asked to search through the participants' medical records, identify events that match the definition terms, and record the first date of the events' occurrence on a form supplied for each participant (Record review form in Appendix 2). The start of data collection varied for different events, as shown in table 2.

Reference: The British Regional Heart Study 1975-2004. Walker M, Whincup PH, Shaper AG. International Journal of Epidemiology, Volume 33, Issue 6, December 2004, Pages 1185–1192, https://doi.org/10.1093/ije/dyh295

Table 1 Events included in the GP record review

Event type	Alternative terms used in the search	Other points noted in review
*Myocardial infarction	Heart attack, coronary thrombosis	
*Acute Coronary Syndrome	ACS	
Angina	Angina pectoris	Exertional or stress related chest pain
*Stroke	Cerebrovascular accident, CVA, cerebral thrombosis, embolism, or haemorrhage	
Transient ischaemic attack	TIA, Little / Minor Stroke	Transient cerebrovascular event (Complete recovery within 24 hours)
Diabetes	NIDDM, IDDM, Type 1 diabetes, Type 2 diabetes	
*Heart Failure	Congestive heart failure (CCF) Left ventricular failure (LVF) Pulmonary oedema	
Peripheral arterial disease	Peripheral vascular disease (PVD) Intermittent claudication Lower limb ischaemia Gangrene of foot/toes	
Abdominal Aortic aneurysm	Including complications (rupture and dissection)	
*Deep vein thrombosis (DVT)	Blood clot in the leg	
*Pulmonary embolism (PE)	Blood clot in the lung	
Atrial fibrillation (AF)		
Procedures for: Coronary Artery Bypass Graft (CABG) Coronary Angioplasty (PTCA)	Percutaneous coronary angioplasty, balloon treatment. Insertion of stents	
Cancer diagnosis and site		
Dementia - Vascular Dementia – Alzheimer Dementia - Other type Dementia - Type not known	Mixed typed, Lewy body, Parkinson's disease, Alcohol related, other type	
COVID-19		
Frailty/Frailty score	Electronic frailty index (eFI), other frailty assessment systems	

* Events requiring additional information. Reviewers are asked to complete a further enquiry form (validation form) and/or send a photocopy of the hospital summary sheet or discharge letter.

Table 2 Year data collection commenced for each event type

Event type	BRHS Event code	Year when data collection for events commenced*	Additional confirmatory information collected
Myocardial infarction (MI)	1	Baseline (1978)	Yes, since 1978
Angina	2	Baseline (1978)	
Stroke	3	Baseline (1978)	Yes, since 2000
Transient ischemic attack (TIA)	4	Baseline (1978)	
Coronary artery bypass graft (CABG)	5	1983	
Percutaneous transluminal coronary angioplasty, (PTCA)	7	1983	
Diabetes	6	1988	
Heart failure (HF)	D	1996	Yes, since 2000
Cancer	8	1996	
Peripheral vascular disease (PVD)	A	1998	
Deep vein thrombosis (DVT)	B	2000	Yes, since 2000
Pulmonary embolism (PE)	C	2000	Yes, since 2000
Abdominal aortic aneurysm	X	2000	
Atrial fibrillation (AF)	G	2014	
Dementia	H	2014	
Dementia - Type not known	H0		
Dementia - Vascular	H1		
Dementia - Alzheimer	H2		
Dementia - Mixed typed	H3		
Dementia - Lewy body	H4		
Dementia - Parkinson's disease	H5		
Dementia - Alcohol related	H6		
Dementia - Other type	H8		
COVID-19	Z	2020	
Frailty/Frailty score		2020	

*This is the year when data collection commenced and continued prospectively.

Note: events that occurred prior to the specified year were collected retrospectively but could only be collected for those participants who were still alive and whose GP records were available. GP records of deceased participants are not kept by the General Practices once a patient dies and therefore retrospective data collection was not possible on deceased participants.

2. Diagnostic criteria – definitions of non-fatal events identified through the GP record review

2.1. Myocardial Infarction

Non-fatal Myocardial Infarction events are classified as definite or possible. The case criteria for each are described below.

Definite Myocardial Infarction:

Criteria for definite Myocardial Infarction included: A history of typical features including chest pain, supported by ECG evidence consistent with MI, and/or abnormal cardiac enzyme (or troponin) levels (WHO criteria). Presence of two out of three of these criteria were classed as definite MI.

Possible Myocardial Infarction:

The criteria for a possible MI are met when only one of the following characteristics is present: a clinical diagnosis only, based on typical features including chest pain, MI picked up by routine ECG without typical history, and, cardiac enzyme/troponin changes.

2.2 Stroke

Non-fatal stroke diagnosis is based on an acute disturbance of cerebral function of presumed vascular origin lasting 24 hours or more as reported from GP records. Include subarachnoid haemorrhage, cerebral haemorrhage or thrombosis. Excludes cases where another diagnosis (e.g. cerebral neoplasm) is made.

2.3. Angina

Typical effort or stress-related chest pain.
Diagnosis was based on a doctor-confirmed diagnosis of Angina from General Practice (primary care) records.

2.4 Transient ischaemic attack (TIA)

Disturbance of cerebral function of vascular origin, lasting < 24 hours and leaving no residual deficit
Diagnosis was based on a doctor-confirmed diagnosis of Transient ischaemic attack (TIA) from General Practice (primary care) records.

2.5 Heart Failure

Diagnosis was based on a doctor-confirmed diagnosis of heart failure from General Practice (primary care) records.

2.6 Diabetes (NIDDM Type 2 / IDDM Type 1)

Diagnosis was based on a doctor-confirmed diagnosis of diabetes from General Practice (primary care) records.

2.7 Atrial fibrillation (AF)

Diagnosis was based on a doctor-confirmed diagnosis of Atrial fibrillation from General Practice (primary care) records.

2.8 Peripheral Arterial Disease (PAD, PVD)

Intermittent claudication or lower limb ischaemia.
Diagnosis was based on a doctor-confirmed diagnosis of PVD from General Practice (primary care) records.

2.9 Deep Vein Thrombosis (DVT)

Blood clot in the leg.
Diagnosis was based on a doctor-confirmed diagnosis of Deep Vein Thrombosis (DVT) from General Practice (primary care) records.

2.10 Pulmonary Embolism (PE)

Blood clot in the lung.
Diagnosis was based on a doctor-confirmed diagnosis of Pulmonary Embolism (PE) from General Practice (primary care) records.

2.11 Aortic Aneurysm

Rupture or dissection.
Diagnosis was based on a doctor-confirmed diagnosis of Aortic Aneurysm from General Practice (primary care) records.

2.12 Coronary artery bypass graft (CABG)

Recorded CABG procedure in General Practice (primary care) record.

2.13 Percutaneous transluminal coronary angioplasty (PTCA)

Recorded PTCA procedure in General Practice (primary care) record.

2.14 Cancer

Diagnosis was based on a doctor-confirmed diagnosis of Cancer (including cancer site) from General Practice (primary care) records.

2.15 Dementia

Diagnosis was based on a doctor-confirmed diagnosis for different types of Dementia from General Practice (primary care) records. Types of dementia included:

Vascular dementia

Alzheimer's disease

Mixed type dementia

Lewy body dementia

Parkinsons disease dementia

Alcohol related dementia

Other type of dementia

2.16 COVID-19

Diagnosis was based on a doctor-confirmed diagnosis of COVID-19 from General Practice (primary care) records.

3. Events with additional confirmatory information

For specific non-fatal cardiovascular disease events, an extended enquiry is carried out where additional confirmatory information relating to the events is collected from the GP records. General practices are asked to complete a separate enquiry form (validation forms in Appendix 3) and/or send a copy of the hospital summary sheet or discharge letter to help validate events. This process is carried out for the following types of events:

Myocardial infarction (MI)

Stroke

Heart Failure

Deep Vein Thrombosis

Pulmonary Embolism

3.1 Myocardial infarction (MI)

Additional confirmatory information used for MI event validation.

Questions included in the additional enquiry form (MI event validation form in Appendix 3**)**

Re: Myocardial Infarction

1. Did he have prolonged chest pain lasting at least half an hour? Yes No
   If not, how did he present? _____
2. Did he have an ECG? Yes No
   If yes, what was the result? _____
3. Did he have cardiac enzyme levels measured? Yes No
   If yes - what were these results? _____
4. Did he have troponin levels measured? Yes No
   If yes - what were the results? _____

3.2 Stroke event - additional confirmatory information

The additional confirmatory information has been collected since 2000.

Questions included in the additional enquiry form (Stroke event validation form in Appendix 3**)**

1. Did signs/symptoms last for longer than 24 hours? 1= Yes 2=No 3=Don't know

2. Did he have definite hemiparesis or hemiplegia (weakness affecting one side on the body)?
   If No, how did he present? _____

3. Did he have a CT/MRI scan? 1=Yes 2=No 3=Don't know

   If Yes, what was the CT/MRI Scan result?

Ischaemic stroke	1
Haemorrhagic stroke	2
Normal scan	3
Other pathology	4
Not a stroke	5
Results unavailable / Not known	6

4. What was the final diagnosis?

Ischaemic stroke	1
Haemorrhagic stroke	2
Subarachnoid haemorrhage	3
Stroke of uncertain pathological type	4
Not a stroke at all	5
Possible stroke	6
Transient Ischaemic Attack	7
Aneurysm/ Arteriovenous malformation	8
Vascular Dementia	9
Chronic Cerebrovascular Disease	10
Subdural Haematoma	11

5. Was he admitted to hospital? 1=Yes 2=No 3=Don't know

3.3 Heart Failure – additional confirmatory information collected since 2000

Questions included in the additional enquiry form (Heart Failure event validation form in Appendix 3)

1. Was an echocardiogram (cardiac ultrasound) performed? Yes No
2. If yes, did it show a diminished left ventricular ejection fraction? Yes No
3. Left ventricular ejection fraction (if available) _____%
4. If other factors were important in making the diagnosis of heart failure, please indicate which ones:
   - Good response to diuretic treatment
   - Chest X-ray result
   - Radionuclide scan result
   - Cardiac catheterisation result
   - Other (please give details)_____
5. Cause of heart failure _____
6. Is there a hospital diagnosis of heart failure? Yes No

3.4 Deep Vein Thrombosis (DVT) - additional confirmatory information collected since 2000.

Questions included in the additional enquiry form (DVT event validation form in Appendix 3)

1. Was the Deep venous thrombosis investigated by?
   - Duplex ultrasound scan Yes No
   - Venogram Yes No
   - D-dimer test Yes No
2. Did the results of the test show evidence of DVT?
   - Duplex ultrasound scan Yes No
   - Venogram Yes No
   - D-dimer test Yes No
3. What was the D dimer result (if available)_____

3.5 Pulmonary Embolism (PE) - additional confirmatory information collected since 2000.

Questions included in the additional enquiry form (PE event validation form in Appendix 3)

1. Was the Pulmonary Embolism investigated by:
   - Ventilation-perfusion scan Yes No
   - CT scan Yes No
   - Pulmonary angiogram Yes No
   - D-dimer test Yes No
2. Did the results of the test show evidence of PE?
   - Ventilation-perfusion scan Yes No
   - CT scan Yes No
   - Pulmonary angiogram Yes No
   - D-dimer test Yes No
3. What was the D dimer result (if available)

4 Data collection process of the GP record review (i.e. primary care records)

General Practices

The BRHS cohort participants were recruited from their General Practice, most of whom have remained with that practice over the study period. Those who moved ("removals"/migrants) were traced to their new General Practice using data from Primary Care registration services and NHS Digital and continued to be followed.

The General Practice record review procedure

1. The BRHS clinical director (Peter H Whincup) writes to the GP Partners and Practice Manager of the original 25 General Practices from where BRHS participants were recruited, seeking

   a) ongoing consent for the GP Record Review of BRHS participants within their practice, and
   b) a named person who can liaise with the BRHS team about the undetaking of the review. This person is normally the Practice Co-ordinator.

2. A BRHS Record Review pack is sent to the General Practice Co-ordinator.

The BRHS Record Review pack includes:

- Cover letter to the General Practice Co-ordinator with instuctions on how to carry out the review
- A list of the specified events with agreed definitions to be used in the medical record search for events. (Appendix 1).
- A Record Review form for each participant registered at the General Practice. The review forms include some necessary personal identifiers such as the BRHS study identifier, name, address, NHS number and date of birth to ensure correct participant identification (Appendix 2).
- Blank event validation forms for Myocardial Infarction (MI), Stroke, Heart Failure (HF), Deep Vein Thrombosis (DVT), Pulmonary Embolism (PE). The validation forms are used to collect additional confirmatory event information for event validation (Appendix 3).
- Labelled tamper proof envelope for the return of the record review and validation forms back to the BRHS Study Co-ordinator.

3. The General Practice Co-ordinator completes the record review form confirming:

1. the participant is still registered at the General Practice
2. the participant's contact details are correct
3. the participant has consulted at the practice in the specified time frame as shown on the record review form
4. whether any of the specified health outcomes (events) listed on the record review form have occurred
5. Attaches **event validation forms/ additional confirmatory information form** or any other necessary additional documents such as hospital summaries, and discharge letters related the following events:

   1) Myocardial infarction (MI)
   2) Stroke
   3) Heart Failure
   4) Deep Vein Thrombosis
   5) Pulmonary Embolism

Participants who moved home or General Practice

Participants no longer registered at their GP practice because they moved home or genral practice are traced through Primary Care registration services/ NHS Digital to their new General Practice. Contact is made with their new practice and follow-up is arranged/continues with the new practice.

Non-response from General Practices

Reminders to the General Practices are sent four weeks after the initial mailing.

Data update and storage

On completion of the GP record review process, information is updated on the BRHS database held on the university's (UCL) Data Safe Haven (DSH). The date of completion of the record review is recorded. Identifiable information on paper records is redacted and the paper records are filed in a locked BRHS storeroom.

BRITISH REGIONAL HEART STUDY RECORD REVIEW 2022

FURTHER DETAILS OF DIAGNOSES

NOTE: If the patient has had a diagnosis of Heart Attack, Acute Coronary Syndrome, Stroke, Heart Failure, Pulmonary Embolism or Deep Vein Thrombosis please complete the relevant coloured validation sheet or send a copy of the hospital summary sheet or discharge letter.

	ALTERNATIVE TERMS USED	OTHER POINTS
HEART DISEASE AND STROKE		
***Myocardial infarction**	Heart attack, coronary thrombosis	
***Acute Coronary Syndrome**	ACS	
Angina	Angina pectoris	Exertional or stress related chest pain
***Stroke**	Cerebrovascular accident, **CVA**, cerebral thrombosis, embolism, or haemorrhage	
Transient ischaemic attack	**TIA**, Little / Minor Stroke	Transient cerebrovascular event (Complete recovery within 24 hours)
Diabetes	NIDDM, IDDM, Type 1, Type 2 diabetes	
***Heart Failure**	Congestive heart failure (CCF) Left ventricular failure (LVF) Pulmonary oedema	

OTHER CARDIOVASCULAR DISEASES		
Peripheral arterial disease	Peripheral vascular disease (PVD) Intermittent claudication Lower limb ischaemia Gangrene of foot/toes	
Aortic aneurysm	including complications (rupture and dissection)	
***Deep vein thrombosis (DVT)**	Blood clot in the leg	
***Pulmonary embolism (PE)**	Blood clot in the lung	

*** If Yes, please complete the appropriate coloured forms or send a photocopy of the hospital letter or discharge summary**

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NAME: : **Address:** **DOB:** **NHS No:**	Please tick if address is correct ☐	New address:

Serial No: xxxxx

BRHS (men) Record Review 2022

THE QUESTIONS ON THIS PAGE RELATE TO THE PERIOD FROM **1ST JULY 2020** TO PRESENT

YES NO

1 Is the above patient still registered with you? ☐ ☐

2 Has he **consulted** you since 1st July 2020? ☐ ☐

3 Was any consultation for a **new episode** of: (day, month, year)

***Myocardial Infarction** (MI) Heart attack, Coronary thrombosis	☐ ☐	Date: ……..*
***Acute Coronary Syndrome**	☐ ☐	Date: ……..*
Angina Exertional or stress related chest pain	☐ ☐	Date: ……
***Stroke** Cerebrovascular accident (CVA), cerebral thrombosis, haemorrhage embolism	☐ ☐	Date: ……..*
Transient Ischaemic Attack (TIA/ TCIA) Cerebrovascular disturbance (<24 hours); leaving no residual damage	☐ ☐	Date: ……
Diabetes (NIDDM Type 2 / IDDM Type 1)	☐ ☐	Date: ……
***Heart Failure** Congestive Cardiac Failure (CCF) or Left Ventricular Failure (LVF)	☐ ☐	Date: ……..*

Other Cardiovascular disease:

Peripheral Arterial Disease (PAD,PVD) Intermittent claudication, lower limb ischaemia	☐ ☐	Date: ……
Aortic Aneurysm- rupture, dissection	☐ ☐	Date: ……
***Deep Vein Thrombosis** (DVT) blood clot in the leg	☐ ☐	Date: ……..*
***Pulmonary Embolism** (PE) blood clot in the lung	☐ ☐	Date: ……..*

*** If Yes, please send a copy of the hospital letter or discharge summary**

YES NO

4 Has he been referred to a Consultant for any new cardiovascular condition? ☐ ☐ Date: ……

Diagnosis: ……..

5 Have any of the following procedures taken place: **YES NO**

Coronary Artery Bypass Graft (CABG)	☐ ☐	Date: ……
Coronary Angioplasty (PTCA) Percutaneous coronary angioplasty, balloon treatment. Insertion of stents ☐	☐ ☐	Date: ……

6 Has he had a Cancer diagnosis? ☐ ☐ Date: ……

Site: ……..

7 Has there been a diagnosis of: **YES NO**

COVID-19	☐ ☐	Date: ……
Atrial Fibrillation	☐ ☐	Date: ……
Dementia	☐ ☐	Date: ……

If yes, please give details of the type of dementia:

Vascular dementia ☐

Alzheimer's disease ☐

Other ☐ please give details ……..

Dementia type not known ☐

8 **Frailty** Has a frailty score been calculated? Yes, eFI score ☐ Yes, other score ☐ No frailty score calculated ☐

If yes, please provide details – enter **last** frailty score recorded in each year.

Date of Frailty Score	**Electronic *frailty* index (eFI)**	**Other** Frailty Assessment System		Do you consider this patient to be clinically frail?
Month / Year	**eFI Score**	Name of score	Grade/value	**YES NO NOT ASSESSED**
……../2020				☐ ☐ ☐
……../2021				☐ ☐ ☐
……../2022				☐ ☐ ☐

Signed …… Date:……..

British Regional Heart Study, Department of Primary Care & Population Health, UCL Medical School, Royal Free Campus, Rowland Hill Street, London NW3 2PF.
Tel: 020 8016 8021 Email: l.lennon@ucl.ac.uk

VALIDATION FORM: HEART ATTACK / MI / ACUTE CORONARY SYNDROME

Study No:

Name:

Address:

DOB:

NHS:

BRITISH REGIONAL HEART STUDY

Dear Doctor,

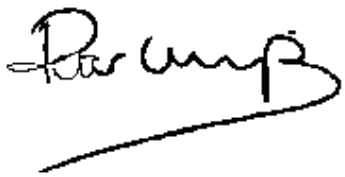
Thank you for supplying information on the above patient who took part in the British Regional Heart Study. We note that he has had a major IHD event recently and would be most grateful if you could complete the following brief enquiry to provide documentation for our record, **OR send us a photocopy of the hospital letter or discharge summary.** This information is critical for the validation of our case criteria.

Re: Myocardial Infarction **Date of event:** _____

		Yes	No
1.	Did he have prolonged chest pain lasting at least half an hour? If not, how did he present? History of typical features including chest pain? Yes/No	☐	☐
2.	Did he have an ECG? If yes, what was the result? Is ECG evidence consistent with MI? Yes/No	☐	☐
3.	Did he have cardiac enzyme levels measured? If yes - what were these results? Abnormal Cardiac enzyme (WHO criteria)? Yes/No	☐	☐
4.	Did he have troponin levels measured? If yes - what were the results? Abnormal Troponin level (WHO criteria)? Yes/No	☐	☐

We are extremely grateful for the co-operation we have received from so many GPs and hope to provide valuable information for the treatment and prevention of IHD in the future.

Yours sincerely



Prof Peter H Whincup
Professor of Cardiovascular Epidemiology

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VALIDATION FORM: STROKE

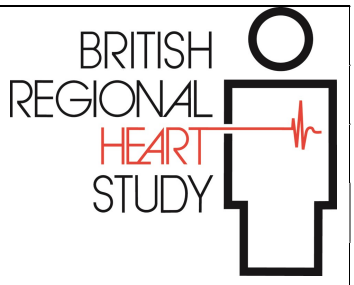
Study No:

Name:

Address:

DOB:

NHS:



Dear Doctor,
Thank you for supplying information on the above patient who took part in the British Regional Heart Study. We note that he has had a major CVA event recently and would be most grateful if you could complete the following brief enquiry to provide documentation for our record, **OR send us a photocopy of the hospital letter or discharge summary.** This information is critical for the validation of our case criteria.

RE: STROKE **Date of Event** _____

		Yes	No	Don't Know
1.	Did signs/symptoms last for longer than 24 hours?	☐ 1	☐ 2	☐ 3
2.	Did he have definite hemiparesis or hemiplegia? (weakness affecting one side on the body)	☐ 1	☐ 2	☐ 3

2.1 If No, how did he present? _____

		Yes	No	Don't Know
3.	Did he have a CT/MRI scan?	☐	☐	☐

3.1 If Yes, what was the CT/MRI Scan result?

- Ischaemic stroke ☐ 1
- Haemorrhagic stroke ☐ 2
- Normal scan ☐ 3
- Other pathology, not a stroke ☐ 4
- Results unavailable / Not known ☐ 5

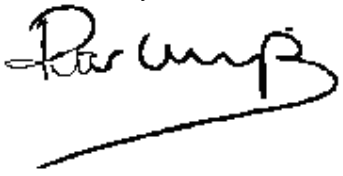
4. What was the final diagnosis?

- Ischaemic stroke ☐ 1
- Haemorrhagic stroke ☐ 2
- Subarachnoid haemorrhage ☐ 3
- Stroke of uncertain pathological type ☐ 4
- Not a stroke at all ☐ 5
- Possible stroke ☐ 6
- Transient Ischaemic Attack ☐ 7
- Aneurysm/ Arteriovenous malformation ☐ 8
- Vascular Dementia ☐ 9
- Chronic Cerebrovascular Disease ☐ 10
- Subdural Haematoma ☐ 11

		Yes	No	Don't Know
5.	Was he admitted to hospital?	☐	☐	☐

We are extremely grateful for the co-operation we have received from so many GPs and hope to provide valuable information for the treatment and prevention of strokes in the future.

Yours sincerely



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VALIDATION FORM: HEART FAILURE

Study No:

Name:

Address:

DOB:

NHS:

BRITISH REGIONAL HEART STUDY

Dear Doctor,

Thank you for supplying information on the above patient who took part in the British Regional Heart Study. We are seeking further information about diagnoses of heart failure, particularly to take account of the results of investigations (particularly echocardiograms) performed. We note from our records that this patient has had a diagnosis of heart failure and would be most grateful if you could complete the enclosed brief enquiry to provide documentation for our records, **or send us a photocopy of the hospital letter or discharge summary**. This information is critical for the validation of our case criteria.

RE: Heart Failure **Date of Diagnosis:** _____

		Yes	No
1.	Was an echocardiogram (cardiac ultrasound) performed?	☐	☐
2.	If yes, did it show a diminished left ventricular ejection fraction?	☐	☐

3. Left ventricular ejection fraction (if available)_____%

4. If other factors were important in making the diagnosis of heart failure, please indicate which:-

(please tick if important)

Good response to diuretic treatment ☐

Chest X-ray result ☐

Radionuclide scan result ☐

Cardiac catheterisation result ☐

Other (please give details)_____

5. Cause of heart failure

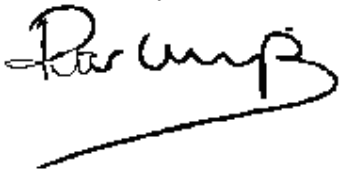
Please write the cause of heart failure below if known - if not known please write `not known'

_____

		Yes	No
6.	Is there a hospital diagnosis of heart failure?	☐	☐

We are extremely grateful for the co-operation we have received from so many GPs and hope to provide valuable information for the treatment and prevention of cardiovascular disease in the future.

Yours sincerely



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VALIDATION FORM: DEEP VEIN THROMBOSIS and / or PULMONARY EMBOLISM

Study No:

Name:

Address:

DOB:

NHS:

BRITISH REGIONAL HEART STUDY

Dear Doctor,

Thank you for supplying information on the above patient who took part in the British Regional Heart Study. We are seeking further information about diagnoses of a Deep Vein Thrombosis and / or Pulmonary Embolism that have occurred since the re-examination 1998-2000, particularly to take account of the results of investigations performed.

We note from our records that this patient has had a diagnosis of Deep Vein Thrombosis and / or Pulmonary Embolism and would be most grateful if you could complete the enclosed brief enquiry to provide documentation for our records, **or send us a photocopy of the hospital letter or discharge summary**.

This information is will be very helpful for the validation of our case criteria.

RE: DEEP VEIN THROMBOSIS **Date of Diagnosis:** _____

1 Was the deep venous thrombosis investigated by

	Yes	No
Duplex ultrasound scan	☐	☐
Venogram	☐	☐
D-dimer test	☐	☐

2 Did the results of the test show evidence of DVT?

Duplex ultrasound scan	☐	☐
Venogram	☐	☐
D-dimer test	☐	☐

3 What was the D dimer result (if available)_____

RE: PULMONARY EMBOLISM **Date of Diagnosis:** _____

1 Was the Pulmonary Embolism investigated by

	Yes	No
Ventilation-perfusion scan	☐	☐
CT scan	☐	☐
Pulmonary angiogram	☐	☐
D-dimer test	☐	☐

2 Did the results of the test show evidence of PE?

Ventilation-perfusion scan	☐	☐
CT scan	☐	☐
Pulmonary angiogram	☐	☐
D-dimer test	☐	☐

3. What was the D dimer result (if available)_____

We are extremely grateful for the co-operation we have received from so many GPs and hope to provide valuable information for the treatment and prevention of cardiovascular disease in the future.

Yours sincerely

Prof Peter H Whincup
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