Supplement: Summary of evidence on trends in incidence.

Outcome	Age-standardised trends	Age-specific trends	Study type	Strength of the evidence
Colorectal cancer	No clear trends between 1997 and 2007.		Systematic review[1]	Conclusions of the review were based on 5 separate studies based on cancer registry data. Evidence published since 2017 has similarly leveraged registry data, and two studies used primary care records (THIN, CPRD). Use of registry and administrative data increases generalisability. However, there have been important changes in screening over time. Survival improved over the period, contributing to increases in prevalence.
	Overall, incidence has remained stable or declined (1970s to mid-2010s). Incidence of young onset (<50 years) colorectal cancers increased since the 1990s, whereas incidence rates at older ages have been more stable or declined.	Diverging trends in younger and older 10-year age-groups. Declines in incidence in older groups driving declines in overall incidence. Increasing incidence lagged across age-groups, suggestive of younger cohorts with worse health, particularly for those born since 1960.	Period trends[2–7]	
Breast cancer	Increasing incidence of breast cancer between 1971 and 2007.	Evidence for increases in all age-groups.	Systematic review[1]	Conclusions of the review based on 7 studies using mostly national cancer registry and mortality data. Use of registry data increases generalisability. However, there have been important changes in screening over time. Survival improved significantly over the period, contributing to increases in prevalence.
		Increase between 2000-2021 for younger women (18-29, 30-39), decrease for older women (50-69) from 2005 -2009.	Period trends[8]	Use primary care records (CPRD). Use of electronic healthcare data increases generalisability. Trends in incidence strongly influenced by changes in screening programme age eligibility. Survival improved over time, contributing to increases in prevalence (also documented in this paper).

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Outcome	Age-standardised trends	Age-specific trends	Study type	Strength of the evidence
Lung cancer	Incidence peaked in the late 1970s for men and then declined. Incidence has increased in women.		Systematic review[1]	Conclusions of the review are based on 9 studies, using cancer registry data (mostly national, one from SE England, one from Glasgow). Additional paper used CPRD data. Mortality rates have been declining for both men and women.
	Incidence decreased for males between 2004 and 2021 but increased for females between 2000 and 2021.	Incidence decreased for younger age-groups (<50 years), remained stable at ages 50-59, and increased for women aged >60 (remaining stable for older men).	Period trend[9]	
Any cancer		Higher incidence in later born pseudo-cohorts accounting for age (1912-1963 and 1915-1970).	Pseudo cohort[10,11]	Both studies use self-reported outcomes in ELSA (2002-2016/2018)
Coronary heart disease	Declines in incidence since mid-1960s, particularly due to reductions in incidence of myocardial infarction.		Systematic review[1]	Conclusions of review based on 5 studies. Data sources included longitudinal studies (including the BRHS), primary care data (THIN), and regional data on mortality and hospitalisation, and the WHO MONICA project. Mortality rates have also declined rapidly, and it is unlikely that increases declines in incidence have been large enough to compensate, leading to increases in prevalence.
Heart failure	Declining incidence (2000-2014) at age ≥20.		Period trends[12]	Using nationally representative primary care data (CPRD). Consistent with trends in coronary heart disease described above.
Any heart condition		Higher incidence in later born pseudo-cohorts accounting for age (1912-1963 and 1915-1970).	Pseudo cohort[10,11]	Both studies use self-reported outcomes in ELSA (2002-2016/2018)

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Outcome	Age-standardised trends	Age-specific trends	Study type	Strength of the evidence
Stroke	Declines in overall stroke incidence since early 1980s.	Declines driven by <75 age-group.	Systematic review[1]	Conclusions of the review based on 7 studies, one using whole-country primary care data (GPRD), two using linked hospital and mortality data for Scotland, and the remained using regional cohort studies from Oxfordshire (OxVasc) and inner London (SLSR). Two studies pubished since 2017 so use data from OxVasc and SLSR. This limited generalisability to the whole of England/UK, and demographic differences between the target populations of SLSR and OXCASC could explain different findings between the studies. Two other studies self- (or proxy) reported outcomes in ELSA (2002-2016/18). Mortality rates have declined significantly.
		Between 2002-2018, Incidence declined in ≥55 age-group and increased in <55 age-group. Incidence of other major vascular events (including myocardial infarction) declined in the <55 age-group over the same period.	Period trends[13]	
	Overall declines in ischaemic stroke incidence 2000-2015.	Declines observed in both ≥55 and <55 groups between 2000-2015.	Period trends[14]	
		Higher incidence in later born pseudo-cohorts accounting for age (1912-1963 and 1915-1970).	Pseudo cohort[10,11]	

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Outcome	Age-standardised trends	Age-specific trends	Study type	Strength of the evidence
Type 2 diabetes	Increasing diabetes incidence.		Systematic review[1]	Conclusions of the review based on 6 studies using nationally representative primary care data (THIN, GPRD, CPRD), linked registry and mortality data from Scotland, or BRHS. The two additional studies also use primary care data (CPRD and THIN). While one study found declining incidence in the UK, other studies covering the same period and the same dataset have found evidence for an increase in incidence.
	Stable incidence 2004-2014	Increasing diabetes incidence in 16–34-year-olds between 2000 and 2014.	Period trends[15]	
	Declining incidence in UK since 2004, and stagnation/increase in Scotland.		Period trends[16]	
Any diabetes		Higher incidence in later born pseudo-cohorts accounting for age (1912-1963 and 1915-1970).	Pseudo cohort[10,11]	Both studies used self-reported outcomes in ELSA (2002-2016/18)
Osteoarthritis		Increase in incidence for those aged 35-44 between 2003 and 2010.	Systematic review[1]	Review found evidence from 1 study using primary care data from North Staffordshire, limiting generalisability to England/UK. Study added to the review used CPRD. The study using CPRD found that incidence declined while prevalence increased, however, in the most recent cohort prevalence stabilised as declines in incidence accelerated.
	Age-standardised incidence decreased between 1997 and 2017.	Later born cohorts had lower age-specific incidence, particularly for those born after 1960s.	Period trends[17]	
Arthritis		Later born cohorts had higher incidence (born 1915-1970)	Pseudo-cohort[11]	Using self-reported outcomes in ELSA (2002-2018).

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Outcome	Age-standardised trends	Age-specific trends	Study type	Strength of the evidence
Alzheimer's and other dementias	Decreasing incidence overall.		Systematic review[1]	Systematic review found 2 studies on dementia incidence, one using ELSA, which identified declines in dementia incidence, the other using Welsh registry data which found increasing incidence at ages >75. Studies published since 2017 used diagnosis from the MRC CFAS I & II (regional cohort with participants from Cambridgeshire, Nottingham and Newcastle),[18] and two studies used ELSA, one deriving dementia algorithmically from cognitive tests,[19] and the other using self-reported (or proxy reported) outcomes. Diagnosis based definitions are more likely to be affected by changes in awareness and diagnosis. While past declines in dementia incidence are well-evidenced, the persistence of these trends is uncertain. There have been reports of increasing dementia incidence since the 2010s[19] or stalling improvements in cognitive functioning for cohorts born since the 1950s,[20] but caution is needed since there have been changes in dementia awareness, and in the tools used to measure cognitive decline in population-based surveys.[21]
		Lower incidence at age ≥65 years in all 5-year age-groups up to 85-89 in 2008-2010 compared to 1991.	Period trends[18]	
	Declines in age-standardised incidence between 2002-2010, followed by increases between 2010-2019.	Similar trend found for both those aged >75 and ≤75.	Period trends[19]	
		Higher incidence if self-reported or proxy-reported dementia, Alzheimer's disease or memory loss in later born pseudo-cohorts accounting for age (1912-1963 or 1915-1970)	Pseudo cohort[10,11]	

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Outcome	Age-standardised trends	Age-specific trends	Study type	Strength of the evidence
Asthma	Decrease in overall incidence between 2001 and 2005.	Most rapid declines in incidence in children aged <5 years.	Systematic review[1]	Review identified only 1 study using the QRESEARCH database (primary care records). The observation period is very short, making it challenging to interpret findings from a cohort perspective. During the same period, lifetime prevalence in adults (aged ≥15 increased substantially). The authors mention the impact of changes in diagnostic recommendations during this period.
Any lung disease		Higher incidence in later born pseudo-cohorts accounting for age (1912-1963).	Pseudo cohort[10]	Using self-reported outcomes in ELSA (2002-2016)
Anxiety, depression or stress, or pharmaceutical treatment for these conditions		Increase in incidence for all cohorts born 1980-2003 between 2009 and 2020 with most rapid increases in younger cohorts.	Pseudo-cohort and period trends[22]	Using CPRD data. Strength is generalisability, weakness is reliance on diagnostic and prescription codes which may not reflect underlying unmet need. Trends in CPRD are triangulated against trends in survey-measured psychological distress levels in Understanding Society, reported in Table 3.4.

Note: THIN = The Health Improvement Network. CPRD = Clinical Practice Research Datalink. BRHS = British Regional Heart Study. WHO MONICA = World Health Organisation Multinational Monitoring of Trends and Determinants in Cardiovascular Disease. GPRD = General Practice Research Database (preceded CPRD). OxVasc = Oxford Vascular Study. SLSR = South London Stroke Register. ELSA = English Longitudinal Study of Ageing. MRC CFAS = Medical Research Council Cognitive Function and Ageing Study.

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