**Title**: Trends in annual consultation incidence of clinical osteoarthritis between 1992-2013 in UK primary care: analysis of the Clinical Practice Research Datalink

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**Background**: Recent trends and future projections in the population burden of osteoarthritis and primary joint arthroplasty rates across Europe point to a growing challenge for population health and health services. However there are few studies on whether the rate of new cases presenting to primary care is also increasing, and no published national studies in the UK.

**Objectives**: To determine the temporal trend in annual consultation incidence of clinical OA in UK primary care between 1992-2013.

**Methods**: We used the Clinical Research Practice Datalink (CPRD), a nationally representative database of primary care electronic health records (650 practices, 5 million population) to estimate the annual consultation incidence of clinical OA. To allow for known variation in codes used in primary care for coding osteoarthritis we using established Read codelists to define a new case of clinical OA as a recorded diagnosis of OA or, in adults aged over 45 years, a recorded non-specific peripheral joint pain code likely to reflect OA. Incident cases of OA in each calendar year had a coded record of clinical OA during the year, and no such record in the previous 3 years. Additionally we excluded cases with a record of a systemic inflammatory disease, spondyloarthropathy, or crystal disease in the previous 3 years or following 1 year, or a record of another specific non-OA diagnosis (soft-tissue disorders, other bone/cartilage diseases) at the same joint in the six months period before or after the recorded OA consultation. Prevalent OA cases identified in the previous 3 years were excluded from the denominator for each year to establish the at-risk population. Incidence density based on exact person time was applied to estimate annual incidence. Annual incidence was estimated for each year between 1992-2013 for any OA and for joint-specific (knee, hip and hand) OA, overall (all ages) and stratified by gender and age). Overall and gender estimates were age-standardised to the population of England in 2013. Sensitivity analyses included restricting the analysis to practices continuously registered with CPRD between 1992 and 2013, and to diagnosed OA only.

**Results**: Annual consultation incidence of clinical OA decreased from 30.7 per 1000 person-years (95% CI:30.7-30.8) in 1992 to 28.4 (28.4-28.5) in 1999, then increased to 41.2 (41.1-41.2) in 2009 before decreasing to 32.8 (32.8-32.9) in 2013. The corresponding estimates among females were 36.2 (1992), 33.8 (1999), 48.7 (2009) and 39.2 (2013); for males, 25.3 (1992), 23.2 (1999), 34.1 (2009), and 26.8(2013). Similar temporal trends in annual incidence were observed within each age-stratum and for knee and hip, different from the increasing trend (from 1.9 in 1992 to 4.9 in 2013) observed for hand OA. Similar trends were seen when restricting analysis to practices continuously registered with CPRD. Incidence of diagnosed OA decreased steadily from 2004.

**Conclusions**: We found no evidence of a sustained increase in the age-standardised consultation incidence of clinical osteoarthritis in UK primary care over recent years, a finding that held across a range of case definitions and sensitivity analyses.