Total hip and knee replacement among incident osteoarthritis and rheumatoid arthritis patients within the UK Clinical Practice Research Datalink (CPRD) compared to Hospital Episode Statistics (HES): a validation study.

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Background
The UK CPRD is a rich source of primary care health data and has been previously used to research total hip replacement (THR) and total knee replacement (TKR) among arthritis patients and in the general population.

Aims
We aimed to validate primary THR and TKR Read code definitions in CPRD against the HES dataset. HES contains all admissions data from NHS hospitals in England.

Methods
Patients with HES linkage and a first diagnosis of rheumatoid arthritis (RA), hip osteoarthritis (OA) or knee OA between 1995-2014 were identified in CPRD using pre-defined Read code lists. Exclusion criteria were age<18 years, GP practice outside England, prevalent arthritis or multiple types of arthritis during follow-up (hip and knee OA allowed). Subsequent primary THR and TKR events among each arthritis cohort were similarly identified. THR and TKR in HES were identified using OPCS4 codes. We compared THR and TKR events in CPRD to HES (considered as gold standard) by calculating sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV). Events in HES were

not counted if event was present in both datasets but with more than a 60 day interval.

Results

Of 24,435 patients identified in CPRD with hip OA, 10,059 had a THR of which 7,320 also had a THR in HES: sensitivity = 86.6%, specificity 82.9%, PPV = 72.8% and NPV = 92.1%. Of 51,696 patients identified in CPRD with knee OA, 8,937 had a TKR of which 6,663 also had a TKR in HES: sensitivity = 88.0%, specificity 94.8%, PPV = 74.6% and NPV = 97.9%. Of 14,979 patients identified in CPRD with RA, 630 had a THR of which 426 also had a THR in HES: sensitivity = 81.6%, specificity = 98.6%, PPV = 67.6% and NPV = 99.3%. 811 RA patients had a TKR in CPRD of which 574 also had a TKR in HES: sensitivity = 85.3%, specificity 98.3%, PPV = 70.8% and NPV = 99.3%.

Conclusions

Primary THR and TKR can be identified among RA and OA arthritis patients in CPRD with a high degree of agreement with HES. This confirms the validity of using the CPRD to study THR and TKR in these populations.