29th ECCMID Amsterdam, Netherlands 13 – 16 April 2019

The congress of ESCMID

P2527 Caveat emptor: endocarditis admissions, cases, and the potential pitfalls of electronic health record studies

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Background: There is concern that the incidence of endocarditis may be increasing due to changes in antibiotic dental prophylaxis guidance published 2006-8. Several international studies using electronic health records have found increasing incidence, including a UK study that suggested an immediate change in incidence rates post guideline change. However, there are limited data on the accuracy of diagnostic codes used in these studies.

Materials/methods: Electronic health records data were compared to clinical cases of endocarditis assessed by objective clinical criteria in two UK tertiary care centres. Administrative data were linked with a prospectively-collected clinical endocarditis service database (Leeds Teaching Hospital) or with retrospective clinical audit and microbiology laboratory blood culture results (Oxford University Hospitals Trust). The relationship between diagnostic codes for endocarditis and clinical cases of endocarditis was assessed, together with sensitivity/specificity and positive/negative predictive value of the codes. Trends in endocarditis codes, streptococcal codes, and clinical cases were estimated using Poisson regression.

Results: In Leeds during 2006-2016, 738/1681 (44%) admissions containing an endocarditis code represented a definite or possible case based on Duke criteria, while 263/1001(24%) definite/possible endocarditis cases had no endocarditis code assigned. In Oxford 307/552 (56%) reviewed admissions in 2010-2016 represented a clinical case. Estimating endocarditis incidence using admissions with any diagnostic code overestimated incidence trends two-fold. Removing non-specific codes, very short hospital stays and readmissions improved predictive ability. Streptococcal-coded endocarditis admissions also apparently increased in Leeds and Oxford, but these trends were small in magnitude and did not reach significance in clinical cases or blood culture-confirmed cases. Reasons for discrepancies included changes in coding behaviour over time and coding guidance that allowed for a code mentioning 'endocarditis' to be assigned in cases where endocarditis was never mentioned in clinical notes.

Conclusions: Studies conducted using health records that assume that diagnostic codes represent a clinical case, without examining the predictive value of the diagnostic codes used, can give inaccurate estimations of incidence and trends. Careful data curation can mitigate these issues. Similar considerations may well apply to other diseases. Caution is needed in recommending changes in clinical guidance based on health record studies alone