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## LETTERS

## ACCURACY OF RECORDING ACUTE MYOCARDIAL INFARCTION EVENTS

## Authors' reply to Stevens and McManus

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We thank Stevens and McManus for pointing out that using unlinked primary care databases may underestimate the absolute risk of myocardial infarction because these databases fail to capture all events.<sup>1,2</sup> Non-differential under-recording may not cause bias in studies solely focusing on relative effects, but for predicting absolute risks or rates, using a single data source—whether from primary or secondary care settings—may lead to biased estimates. Ideally, all events should be recorded definitively in a single electronic health record. Because this currently doesn't occur in the NHS or other health systems, we recommend the use of linked data sources, such as those available through the Clinical Practice Research Datalink, to overcome under-recording in individual sources.

In the Cardiovascular disease research using Linked Bespoke studies and Electronic health Records (CALIBER) programme,<sup>3</sup> we are developing prognostic models for patients with coronary disease in a linked dataset, using multiple data sources for outcome ascertainment. We are investigating the use of free text entered by doctors as an additional source of diagnostic information.<sup>4</sup> We are part of the new network of four UK

e-health informatics research centres,<sup>5</sup> which will make use of linked datasets available through the Clinical Practice Research Datalink, facilitate further linkages, and enable greater use of electronic health records for research.

Competing interests: None declared.

- 1 Stevens RJ, McManus R. Unlinked data sources underestimate risk of cardiovascular disease. *BMJ* 2013;346:f3737.
- 2 Herrett E, Shah AD, Boggon R, Denaxas S, Smeeth L, van Staa T, et al. Completeness and diagnostic validity of recording acute myocardial infarction events in primary care, hospital care, disease registry, and national mortality records: cohort study. *BMJ* 2013;346:f2350. (21 May.)
- 3 Denaxas S, George J, Herrett E, Shah A, Kalra D, Hingorani AD, et al. Data resource profile: cardiovascular disease research using linked bespoke studies and electronic records (CALIBER). *Int J Epidemiol* 2012;41:1625-38.
- 4 Shah AD, Martinez C, Hemingway H. The freetext matching algorithm: a computer program to extract diagnoses and causes of death from unstructured text in electronic health records. *BMC Med Inform Decis Mak* 2012;12:88.
- 5 Medical Research Council. E-health informatics research—securing the UK as a world leader. 2013. [www.mrc.ac.uk/Ourresearch/ResearchInitiatives/E-HealthInformaticsResearch/index.htm](http://www.mrc.ac.uk/Ourresearch/ResearchInitiatives/E-HealthInformaticsResearch/index.htm).

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