## Non-attending patients in general practice

We agree with Frans Smits and Gerben ter Riet when, in their comment,<sup>1</sup> they suggest that it could be valuable to frame questions relating to non-attendance in terms of societal benefits and harms. However, we would like to take this opportunity to provide some additional clarification with regards to our analysis and presentation of results.<sup>2</sup>

Smits and ter Riet argue that we should have included information on medical diagnoses in our study<sup>2</sup> rather than provide this analysis in a future publication. Our decision to incorporate this information into a future publication was not taken lightly; the issues were raised during the review process, with one reviewer suggesting that the burden of longterm conditions is likely to be an important factor in the unmet need and behaviours of the patients within this population.3 However, we judged that presenting these data satisfactorily in a single paper would have been overly complex, with other reviewers supporting this decision. In addition to a paper that will focus specifically on patients with multiple long-term conditions, we also plan to publish a future overarching paper focused on unmet need along with health-care utilisation across the health system.

Smits and ter Riet also suggested that our analysis might benefit from a multilevel approach that would involve the use of zero-inflated negative binomial models. Such an approach might be particularly useful, given that 54% of patients did not miss any appointments. We considered that the negative binomial models fitted the data reasonably well. An initial analysis attempted to use a mixed effects regression allowing for random practice effects, but even the simplest of models proved intractable in a dataset of this size, which was

held with limited computational capacity (Safe Haven). To counter this limitation, we adjusted the analysis for available practice-level variables.

In our article,<sup>2</sup> we focused on describing the data, and the main effects of several patient and practice-level factors. To examine cross-factor interactions would have added another layer of complexity, which would have been very difficult to condense into a single paper. Such analyses would probably best be focused on interactions between a single factor (eg, sex) and factors that predict frequent non-attendance to address a coherent research question.

Finally, we agree that frequent attenders are indeed an interesting subgroup within themselves, which was why all our models were offset for the number of appointments made.<sup>2</sup> However, the claim that frequent attendance would prompt more changes to clinical work than non-attendance is unfounded. Although frequent attenders and frequent non-attenders are qualitatively different in terms of social and socioeconomic problems, they provide two equally important examples of unmet need.<sup>2,4,5</sup>

We declare no competing interests.

Copyright © The Author(s). Published by Elsevier Ltd.
This is an Open Access article under the CC BY-NC-ND
4.0 license

\*David A Ellis, Ross McQueenie, Alex McConnachie, Philip Wilson, Andrea Williamson

## d.a.ellis@lancaster.ac.uk

Department of Psychology, Lancaster University, Lancaster, UK (DAE); General Practice and Primary Care, School of Medicine, Dentistry and Nursing, MVLS, University of Glasgow, Glasgow, UK (RM); Robertson Centre for Biostatistics, Institute of Health and Wellbeing, MVLS, University of Glasgow, Glasgow, UK (AM); Centre for Rural Health, Institute of Applied Health Sciences, University of Aberdeen, Aberdeen, UK (AW).

- Smits FT, ter Riet G. Non-attending patients in general practice. Lancet Public Health 2017; 2: e538.
- Ellis DA, McQueenie R, McConnachie A, Wilson P, Williamson AE. Demographic and practice factors predicting repeated non-attendance in primary care: a national retrospective cohort analysis. Lancet Public Health 2017; 2: e551–59.

- Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B. Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. *Lancet* 2012; **380**: 37–43.
- Smits FT, Brouwer HJ, ter Riet G, van Weert HC. Epidemiology of frequent attenders: a 3-year historic cohort study comparing attendance, morbidity and prescriptions of one-year and persistent frequent attenders. BMC Public Health 2009; 9: 36.
- Williamson AE, Ellis DA, Wilson P, McQueenie R, McConnachie A. Understanding repeated nonattendance in health services: a pilot analysis of administrative data and full study protocol for a national retrospective cohort. BMJ Open 2017; 7: e014120.

