Reviewer’s report

Title: Variations in chemoprophylaxis for meningococcal disease: a retrospective case note review, analysis of routine prescribing data and questionnaire of general practitioners

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Reviewer: Dr Anna Gilmore

Level of interest: A paper whose findings are important to those with closely related research interests

Advice on publication: Accept after revision, which I do not need to see

This is an interesting, clearly written and very useful piece of work. What really happens when chemoprophylaxis is recommended is largely unknown and yet there are, as the authors highlight, important implications in terms of lack of protection on the one hand and over-prescribing on the other.

However, I feel that the paper should give far greater clarity to the data sources and methods used and discuss further some of the issues highlighted below.

Many of these issues relate to the difficulty of using routine data sources and may therefore be difficult to address. Nevertheless an attempt to clarify the systems of data collection and highlight potential weaknesses of the data would be useful.

Methods:

On page 5:
1. It would be useful to clarify a few specific points:
   . Dates for which the PACT data were available
   . Why was hospital dispensing data only available from March 1999?
   . Why was rifampicin the only drug used in the hospital- what was to happen in cases where it was contraindicated (or did these not occur during that relatively short period)? This is particularly intriguing as a mixture of rifampicin and prophylaxis is used in primary care and leads me to ask what the local protocol recommends (and whether it differs for hospital and community)?

On page 6:
2. In classifying the contacts into 4 groups it might be useful to clarify (although admittedly reasonably obvious!) that group 2 cases were known to the CCDC and group 4 cases were not.

3. I would like to see further details of the questionnaire sent to GPs. Exactly what data were they asked to retrieve and how? Were they asked to identify all patients that had been prescribed a single dose of these drugs over the study period (and if so, can EMIS or other systems identify single doses or just all prescriptions for cipro?) Or were they asked to identify all cases recorded as a meningitis contact (is there an EMIS code for this?). This is important given some of the findings.
4. Statistics: it is not clear until the results section what the tests are being used to compare, it would therefore be useful to state this in the methodology.

Results
5. For a non-expert audience, it might be useful to define what is meant by confirmed disease or at least refer to the appropriate paper giving the definition.

Contact tracing:
6. The issue of bias accounting for the difference in number of contacts between those interviewed in person and by phone needs to be considered. In particular, I would be interested to know if the difference could be due to the fact that the phone interviews were done out of hours by less experienced physicians? Related to this it would be good to clarify:
   . whether the contact tracing sheet on which details are recorded specifically asks if the interview was conducted in person or by 'phone? (If not, this could be a useful piece of data to add for future work).
   . Is there some systematic reason (that could influence the results) why in 18% of cases it was impossible to determine the method of contact tracing? eg were more of these performed out of hours and therefore likely to have been done by more junior physicians.
   . the proportion of telephone interviews vs in-person interviews that were conducted by the CCDC.

Prescribing
7. I am concerned that some of the overprescribing identified by PACT data could be due to gonococcal disease. For example in the practices that provided data on the questionnaires, only 179 out of the 305 PACT data prescriptions (59%) were identified by the practice - why was this so low if the prescriptions really were for meningococcal disease? (hence my reason for wanting to know more about the data GP’s were asked to provide, see also discussion section below). Similarly, amongst these 179 prescriptions identified by GPs, 96 were recommended by the CCDC making the over-prescribing rate (admittedly in a highly selected group) much lower than that identified using the PACT data. This discrepancy should be discussed.

8. Either in the methods section or in table 3, it would be good to clarify that the p value given in the table is for the comparison of the mean no. of additional prescriptions per GP (not for example the rate of disease in each LA which is also given in the table). Both the text and table should stress that this comparison of prescribing rates is based on PACT data not the questionnaire data (I presume).

9. It would be useful to control for other potential confounding factors that might explain the over-prescribing at local authority level such as the level of deprivation in each LA.

GP questionnaires
10. I have a few concerns about this data given the lack of clarity over its collection as outlined above. In particular, I feel the issue of out of hours prescribing has not been sufficiently addressed. This impact of out of hours prescribing will clearly vary according to the local out of hours arrangements, but unless all GPs in the health authority do their own on call, GPs will be issuing prescriptions out of hours for patients who are not on their own practice list. My understanding is that GPs use their own prescription pads when working for example in the local co-op. These prescriptions will appear on their PACT data but not their internal patient records and thus may explain why extra prescriptions are seen in the PACT data. On the other hand, this could also have the opposite impact eg some of the 62 patients for whom the practice had no prescription record, may have received a prescription out of hours from other doctors working for the on call service.

11. If the PACT data given at the bottom of page 8 is for the whole of the district rather than just the
practices asked to prescribe for contacts, this issue is overcome (unless of course the co-ops or out of hours services cover patients out of the district) and thus, assuming that all cipro issued is for MCD, the 118% would stand. It could however still affect the data at the bottom on page 9 and the comparisons in Table 4 which are restricted to only a proportion of the practices in the district. Based on PACT data vs CCDC recommendations, the overprescribing rate in this group is the same as in all the practices and perhaps this is therefore less of an issue than I think. Without knowing what the GP questionnaire data is based on, it is difficult to hypothesise further.

12. As stated, the PACT-based overprescribing rate is very similar in this group of practices as in the total sample, but are they comparable in other respects? - computerisation, size of practice etc.

13. Figure 1 is probably not necessary and this data may be best presented in the text.

Discussion
The main issues that need further work/discussion are:
14. The conclusion that less unnecessary prophylaxis is given when informants are interviewed personally. As mentioned above, I think it is import to ensure that this is not accounted for by the experience of those physicians performing the personal interviews compared with those doing the phone calls.

15. The assumption that all single dose ciprofloxacin prescribed in primary care was for meningococcal disease particularly given the discrepancy between the PACT based overprescribing rates and the practice-based data overprescribing rates. Whilst the proportionality ratio data is reasonably convincing and the studies finding that overprescribing is greatest in areas with greatest publicity is highly plausible, it would nevertheless be useful to see some further validation of the assumption about all single dose cipro. I was wondering for example if it would be possible to compare the no. of cases of gc identified in microbiology lab vs the no. identified on KC60 returns - if the former is larger, it might imply that cases are being treated in primary care.

16. Reasons for the discrepancy in over-prescribing rates between the two sources of data (see no. 7 above).

Other more minor issues:
17. The impact of deprivation on over-prescribing by local authority should be considered as outlined above.

18. In the last paragraph, out of hours prescribing could also explain why practices had no record of the prescription being written.

19. Finally, perhaps the authors would like to make some recommendations on how to prevent over-prescribing whilst ensuring that real contacts are appropriately treated.

Competing interests:
None declared.