Reviewer's report

Title: Variability in prescription drug expenditures explained by adjusted clinical groups (ACG) case-mix. A cross-sectional study of patient electronic records in primary care.

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Reviewer: Lee Vermeulen

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Thank you for the opportunity to review the paper entitled “Variability in prescribing drug expenditures explained by adjusted clinical groups (ACG) case mix” by Aguado et al.

One of the most frustrating aspects of secondary data analysis is that under usual care conditions, prescribing is not a random process… it is guided by many factors, some measurable and some not easily measured. When trying to evaluate efficiency in prescribing, measurable factors that influence cost (such as patient age, etc.) can be controlled for statistically. Patient acuity, however, is not easily measured and thus, it is not easy to control for. When presented with data suggestive of inefficient prescribing, prescribers often argue that their costs are higher than comparative groups “because my patients are sicker.” Without adequate control of acuity of illness, there is little that can be done to argue this point. This paper describes an analysis of prescribing data, using the adjusted clinical groups (ACG) method to control for patient acuity (case mix) as a determinant of cost variability.

The authors should address several concerns before this paper is considered for publication.

1. The process by which the authors mapped ICPC-2 codes to ICD-9-CM codes (used to determine ACG case-mix) should be more clearly described, and if possible, the validation of that mapping should be referenced.

2. Similarly, the method used to determine quality of prescribing must be described more fully. What method was used? How was that method validated?

3. The authors calculate a very high rate of non-adherence (24.9% of prescriptions were written by apparently never filled). An analysis of these unfilled prescriptions should be conducted. Are any systematic biases introduced into the ACG adjustment due to certain types of prescriptions not being filled by patients?

4. As shown in table 1, sites D and E had a number of pediatric patients similar to the other sites, but had a median of 0 expenditures per patient. These values stand in stark contrast to the other sites. Could that have been a typo, or were there substantial inherent differences amongst the sites?