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Title	Effects of implementing electronic medical records on primary care billings and payments: a before–after study
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Reviewer 1	John Maxted MD MBA
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General comments	This is an intense study with a number of variables that could have an impact on the final conclusions. The authors are to be congratulated for their perseverance as the resulting study is not an easy read and requires a fair amount of scrutiny. While one cannot disagree with the generalizable Conclusions (pages 13-14), the authors seem to avoid reference to the potential importance of some variables and limitations of the study. This may be intentional as the stated goal is simply to separate the impact of primary care model change and starting an EMR on billings and payments. It is nevertheless, very difficult to ignore other variables and limitations. For example, the EMRALD database (Table 1, page 18) has a significant bias towards a higher proportion of younger and female family physicians in comparison to the general population of Ontario family physicians. That younger family physicians are increasingly female is born out by current trending statistics. But probably of greater importance, an analysis of the National Physician Surveys undertaken by the CFPC, RCPSC and CMA (2004, 2007 and 2010) highlights that work-life balance is increasingly important to younger physicians and that the practice patterns of female physicians tend to differ from male physicians, especially at younger ages. The interacting effects of these variables on generalizable results in this study could be considered when examining billings and payments. In addition, the authors make explicit reference to the rurality of EMRALD family physicians and hence, their practice populations, under Limitations of this study (page 13). While it remains uncertain from this study how rurality could affect billings when a practice changes its primary care model (FFS to capitation) or initiates an EMR, the significant impact of practices changing to capitation models prior to starting an EMR is largely ignored. Over the past few years there has been considerable debate about the effects of Ontario's capitation models on billings as well as the balance between billings (or income) and productivity in these new models. This is still being assessed. So while the authors state this study is not a comparison to non-EMR users (Limitations, page 13), the fact that the EMR study population had already switched to capitation makes the identified billings and payments effects of changing to an EMR somewhat suspect.
Reviewer 2	Scott McKay MD
Institution	Schulich School of Medicine and Dentistry, Western University, London, Ont.
General comments	Overall very interesting paper. Relevant to current family practice physicians. Extensive, very detailed and clear methods. Good interpretation with acknowledgement of limitations and future directions well outlined. Major comments: 1. I was slightly confused with the language around office visit payments and MOHLTC payments. The definitions on page 6 are adequate, but the specific wording "office visit payments" is not used subsequently in the document (paragraph 1 on page 10 or in Figure 2). Referring only to "monthly payments" (page 10, line 27) and "payments" (right lower box in figure 2). For clarity, consider using the specific language you defined. 2. On page 12, line 36 you state "it is not likely these payments are related to FP EMR use." Of the payments listed prior to this statement, I would suggest that both the bonus payments and block fees could be related to EMR use in that tracking, flagging, and reporting is made much easier with an EMR and this could enhance payments for these items. Minor Comments: 1. Page 2, line 48: comma omitted after "Finally" 2. Page 10, line 57: space omitted between "in2007"
Author response	**Reviewer 1's comments:**

	We agree that there are physician, practice and patient factors that have an impact of on family physicians workload. This will ultimately be reflected in their billings and payments. In fact we (RLJ and SES) have examined family physician workloads and trends of graduates over time1 and strongly agree that these factors do affect workload. We chose a before after analysis over a two and half year time period to really focus on the impact of changing models or starting an EMR. For this study, our numbers limit subgroup analyses. For example, our numbers for looking at an interaction between rural female FPs and urban or suburban female FPs are too small. We have added you comment/concerns to our study limitations. Family physicians practicing in rural locations are eligible for rural-based incentives, outside of their office visit billings/payments. These payments are included in our calculations of MOHLTC payments for both the change in model and the start of an EMR analyses. However, other and likely unknown differences in payments between rural and urban physicians may still exist. Ultimately a larger cohort study, powered to address more subgroup analyses would better look at these interactions. We agree that family physicians changing to capitation models will have an important impact on billings. That is why we stratified our analysis to examine the effect of EMR change on billings/payments for office visits and payments for all MOHLTC sources with FPs who did not change their payment model at least 18 months prior to their starting an EMR, In fact about 60% of this EMR start group had been in a stable model practice for several years prior to starting their EMR. We did other time line cut offs where we included family physicians who did not change their model for 24 months and got the same results. We chose 18 months as this gave us a better sample size and we thought 18 months was a reasonable time frame to assess changes in billing/payments. Our comment about not being able to compare our EMRALD family physicians (all of whom use an EMR) to non-EMR users in Ontario is because we currently do not have provider level information on the use of EMRs amongst all Ontario family physicians. Our study was focused on starting an EMRs on billings and payments, while acknowledging that changing to a capitation model cannot be ignored when doing this analysis. Comparing billings and payments between capitation and non-capitation models, without any focus on EMR use is another study. **Reviewer 2's comments:** Comment 1: We have made changes for consistency of language used for office visit payments and MOHLTC payments in the results section and with the figures. Comment 2: Your comment about bonus payments and tracking related to using EMRs is well taken. It is interestingly that there is a lack of information about how EMRs are being used in clinical practice and the full use of EMR capabilities in the Canadian literature. But we agree that EMRs offer a potential for tracking services that get additional payments and have added a sentence in the discussion. Minor comments on Page 2 and Page 10 have been corrected. This work was presented as a poster presentation at the Canadian Association of Health Services and Policy Research conference in Vancouver in May 2013. It has not been submitted to another journal for publication, nor has it been published in another journal. It does not appear as any report on a website. This work was funded as a service agreement for the Institute for Clinical Evaluative Sciences (ICES) by Canada Health Infoway Inc. The results and conclusions are those of the authors. No official endorsement by Canada Health Infoway, ICES or the Ontario Ministry of Health and Long-Term Care is intended or should be inferred. No authors have competing interests or a conflict of interest. All the authors were involved in the conception and design of the study. Liisa Jaakkimainen prepared the first and final draft of the article. She also prepared the revisions to this paper. Susan Schultz was primarily responsible for the data analysis. Karen Tu and Susan Schultz revised the article critically for its content. All of the authors reviewed the article and approved the final version for publication.