Author's response to reviews

Title: Counting on commitment; the quality of primary care-led diabetes management in a system with minimal incentives

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Author's response to reviews: see over
## Response to reviewers’ comments

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<th>Reviewer</th>
<th>Comment</th>
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<td>1. Christopher Millett</td>
<td>The main limitation of this study is that it does not compare like for like i.e. compares ‘volunteer’ practices in Ireland with a special interest in diabetes with more representative practice data from England and Scotland. Although the authors highlight this as a limitation a question remains about how meaningful the comparison is and what the implications of the study are.</td>
<td>This is a valid observation however the intended purpose of the comparison is to employ data from the UK as a standard or yardstick. In the absence of a national diabetes programme in Ireland, we feel it is important to highlight and benchmark the standard achieved by practices providing structured care to patients. The following sentence is included in the discussion to reemphasize the purpose of the paper: “It should be stressed that this study is not a comparison of ‘like with like’ but rather a benchmark of the performance of a select group of special interest practices providing structured care in Ireland against the standard of care observed in countries supported by a national diabetes management infrastructure. Furthermore the results of this study are not typical of diabetes care in Ireland. The lack of routine data collection in Ireland prohibited the inclusion of a reference group of practices not participating in initiatives delivering structured care.”</td>
<td>Discussion page 19</td>
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<td>1.2.</td>
<td>In the Methods section (Page 6; Data Collection) the authors describe that the data were collected during 2008/2009 across 3 regions of Ireland. They say they draw comparisons with the National Diabetes Audit of England and Wales for the corresponding period of 2007/2008. If this is not a typographical error, the corresponding period would be the NDA for the period of 2008/2009. This is important as both the recording of the</td>
<td>This is a good point and in the manuscript we have used 2009 data as recommended by the reviewer. With regard to the achievement of targets, the figures have also been revised in line with the new targets introduced by NICE in 2008-2009. The following text has been inserted: “The target in the UK in 2008-2009 was ≤140/80 for patients without eye, kidney or vascular disease. Applying this target”</td>
<td>Results section p12-p15</td>
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<td>1.3</td>
<td>Since the Quality and Outcomes Framework has less stringent treatment targets for intermediate outcomes than the national guidelines, these direct comparisons raise some concerns. Comparing the QOF target achievement in Ireland and the UK might be fairer as GPs are financially incentivised to reach QOF targets. In the case the authors find similar results, it would better correspond with the conclusions currently drawn; that the proportion of patients in Ireland achieving targets for intermediate outcomes are similar despite the lack of a comparable incentive structure.</td>
<td>This is a good suggestion however comparing with the QOF data presents a number of difficulties not least the resources and IT support to translate performance in the sample to QOF points. The purpose of this study is to benchmark audit data available in Ireland to similar diabetes-specific audits conducted in the UK, as opposed to QOF data which were established as part of a financial incentive structure. Similar data from Ireland have previously been benchmarked to the NDA for England and Wales. With regard to the less stringent targets for intermediate outcomes in QOF, the target for HbA1c of ≤7.5% is the same as the target reported in the NDA and therefore used as a benchmark in this study. The Irish target for blood pressure (130/80) is closer to the NICE target of 140/80 than the QOF target of 145/85 thus we feel it is a more relevant standard for comparison.</td>
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<td>1.4</td>
<td>Since there are large variations in the proportion of people achieving the targets by age and sex, it would be important to show the age and sex distribution of the populations compared.</td>
<td>In the revised manuscript we have addressed this point in the following text included at the start of the results section (p11): “The profile of patients was similar to that reported in the National Diabetes Audit for England and the Scottish Diabetes Survey. Of the 3,010 patients, 56.5% were male (n = 1,701) (gender unknown for 0.4% of the sample, n = 11) comparable to 54.6% of males with diabetes in Scotland. Data on the gender breakdown of patients included in the NDA for England</td>
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were not available. The mean age of patients in this sample was 65.7 years (SD=12.2). Over half of patients were aged 65 years or over (56.5%, n=1691) comparable to 70% of patients in Scotland. Only 25% of the people included in the National Diabetes Audit for England were <40 years old. There was a statistically significant age difference between males and females in this sample (64.7 vs. 67.1, p<0.001)."

There are many factors showing association with processes of care measures and target achievement such as practice organisational factors, list size, caseload, number of staff at GP practice. The lack of these data should be discussed in the Discussion section.

The reviewer’s comment has been addressed in the revised manuscript with the addition of the following text to the discussion:

"This study focuses on the group-level performance of GPs involved in primary care diabetes initiatives however there are a number of practice-level factors which could influence the quality of care. For example, in this study there were within-group differences in performance associated with the receipt of financial incentives. Future research should examine other practice-level characteristics such as case load and staff levels which could discriminate between levels of performance within this group of interested GPs."

A more detailed description of the NDA and the Scottish Diabetes Survey should be provided and a clear rationale as to why QOF data wasn’t used.

In the revised manuscript more detail has been included in the methods section:

"Comparisons were drawn with the National Diabetes Audit of England for the corresponding period of 2008/2009 [5]. This is the largest annual audit of diabetes services in the world with over 1.5 million people with diabetes included, 75% of the diabetic population in 2008/09. All primary care trusts in England (N=152) contributed data from 71% of GP practices (N=5920) [6]. The NDA 2008/2009 data are contained on the NDA “Dashboard” where data are not broken down by type of diabetes. The published report contains some results stratified..."
by type and where available figures for Type 2 diabetes are used. Data from the National Diabetes Audit of Wales were excluded from this study as results were based on data from 31% of practices in Wales and therefore were not considered representative.”

“Results were also compared to the Scottish Diabetes Survey, a population level survey published annually by the Scottish Diabetes Survey Monitoring Group. It collates nationally agreed data submitted by 14 NHS Boards in Scotland incorporating both primary and secondary care. Diabetes registers, held by each health board, are the main source of data for the survey. In 2009 over 220,000 people were included in the survey, of whom 87.4% had Type 2 diabetes. Results from 2009 were chosen as data were stratified by type of diabetes allowing for direct comparison with Type 2 diabetes management. Data on recording and outcomes were similar across the 2008 and 2009 Scottish Diabetes Survey.”

We have previously addressed why we have chosen audit data and have not used QOF data – see comment 1.3

| 1.7 | Presentation of p values in the abstract and results would help reader interpret whether percentage differences were significant. For example there are no statistical test findings for any of the process of care measures. P values should be included in Tables 2 & 3. | In response to the reviewer’s comments we have included 95% CI in Table 2 to allow the reader to judge the process of care performance among the 3 primary care initiatives however it was not appropriate to test carry out tests of significance on proportions from different populations therefore no p values have been included. | Results p12 Table 2 |
| 1.8 | Figure 1 presents too much detail on obesity cut points and could probably be omitted. | Having considered the reviewers suggestion, we feel it is important to specify the cut-off points for obesity and have used internationally recognised categorises from the WHO | Figure 1 & Method Section p8 |
1.9 A clearer description of the sampling is required. What proportion of practices involved in the 3 special interest group participated?

This is a good point and in the revised manuscript the following paragraph has been added to the methods section under ‘sample’:

**Practices**

A purposive sample of 3 primary care initiatives participated in this study. Three of the most well-established schemes were chose, all of which conducted and disseminated regular audit. There are currently 10 diabetes initiatives in Ireland however most did not engage in routine audit at the time. Although a purposive sample of schemes was used, within each scheme all practices took part in the audit (n=63). The sample represents a small proportion of the total number of GPs in Ireland (approx. 1%), reflecting the special interest nature of diabetes management in primary care. 

Participating practices were from a mixture of urban and rural areas and included single-handed and group practices. All practices provided structured care to patients in the general practice setting which involved continuing professional education, incorporating guidelines, maintaining practices registers and engaging in regular audit and feedback. Each practice employed a Practice Nurse. Specialist input was provided in one initiative by a Diabetes Nurse Specialist while
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<td>the other two initiatives were coordinated by a Diabetes Nurse Facilitator. Practice also received administrative and audit/research support to manage the initiatives. Two of the three initiatives financially reimbursed practices for their involvement in the scheme.</td>
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| 2. Afaf Al-Adsani | 2.1. Authors should include general background to the subject studies. There are several papers in the literature describing the effects of the organisation and physician characteristics on the quality of care | In the revised manuscript we introduce the increasing emphasis on the structure and organisation of diabetes care (p4):

*The management of chronic conditions such as diabetes requires planned, structured care which is integrated in the wider health system (3). Enhancing the structure and coordination of care within and between settings has been shown to improve the quality of care for patients with diabetes (4, 5). As a result there is growing emphasis internationally and nationally on system, practice and professional-level initiatives to improve the quality of care.*

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| 2.2. The last paragraph if the introduction should be replaced by mentioning the objectives of the study, describing the parameters which were studies to assess the quality of diabetes care in comparison to that observed in UK and Scotland in order to define the question posed by the authors. | In response to the reviewers comment, more detail has been provided on the objective of the study in the revised manuscript:

*The aim of this study was to assess the quality of care provided by three primary care initiatives adopting a structured approach to Type 2 diabetes management in Ireland benchmarked against national guidelines and diabetes audit results observed in England and Scotland. The quality of care was assessed in terms of processes of diabetes care and* | Introduction p5 |
intermediate outcomes of care.

2.3. Acronym ‘GPs’ should be clarified
In the revised manuscript the acronym GP has been clarified in 1st paragraph of Introduction section:
At general practice level, care is often ad-hoc reflected in the absence of patient registries, irregular review and the lack of guideline use among General Practitioners (GPs) [6].

Introduction p4

2.4. Authors should describe the standards of care studied.
In the revised manuscript the standards of care studied are described in more detail in the methods section with the inclusion of the following text:
The national guidelines for diabetes care in the community “A Practical Guide to Integrated Type 2 Diabetes Care”, were used to define the optimal standard of care in Ireland. The guidelines outline the appropriate processes of care involved in diabetes management, set targets for the achievement of intermediate outcomes and specify the relevant cut-off points which are included in the text of the results section.

Methods p8

2.5. Authors should include the characteristics of the providers in the methodology since the paper is mainly studying the impact of provider initiatives on the quality of care
This point was also raised by reviewer 1 and therefore was previously addressed in section 1.9 above
See Method Section p6

2.6. Table 1 should be typed on a separate page
Based on the information provided to authors by BMC HSR tables integral to the manuscript should be included in the text while figures should be provided as separate files.

Method section

2.7. The characteristics of the providers should be described
The characteristics of the participating practices have been described in the method section under ‘sample’ in response to comment 2.5.- please see pg6
Method Section p6

2.8. Citations for references should be avoided in the text of the results
In response to this comment, in the revised manuscript references have been removed from the results section and instead the relevant targets are outlined in the methods section
Method section

2.9. The methodology of stratification of HbA1c given
In conjunction with comment 2.8. the methodology of
Method section
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<th><strong>2.10</strong></th>
<th>Tables should be typed on separate pages</th>
<th>Based on the information provided to authors by BMC HSR tables integral to the manuscript should be included in the text while figures should be provided as separate files.</th>
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<td><strong>Table 3 &amp; 4 should be merged and blood pressure findings should be included in the merged table</strong></td>
<td>While this is a good suggestion we feel merging Table 3 and 4 would confuse the comparisons being made. Table 3 presents an international comparison of the HbA1c results in the 3 initiatives compared to England and Scotland. Table 4 presents a national comparison benchmarking the 3 initiatives against national standards and examines the differences between males and females in terms of their lipid profile. However in response to the reviewers suggestion blood pressure has been added to Table 4.</td>
<td>Results Table 4 p17</td>
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<td><strong>2.11. Acronyms in the text and tables should be clarified</strong></td>
<td>The acronyms NDA (National Diabetes Audit) and GP have been clarified throughout the revised manuscript.</td>
<td>Table 4 p17</td>
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<td><strong>2.12 Discretionary revision- to omit results of HbA1c in mmol/mol</strong></td>
<td>We would prefer to present both % HbA1c and mmol/mol given the transition in measurement which is underway.</td>
<td>Discussion</td>
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<td><strong>2.13. The authors should discuss other studies reporting the impact of the organisation and physician factors on the quality of care to support their data.</strong></td>
<td>In response to the reviewers comment the following text has been added to the discussion section in the revised manuscript: <strong>A number of studies have highlighted the positive impact of enhancing organisation and physician behaviour through multidimensional interventions (ref). Practices involved in these primary care initiatives have introduced a number of organizational and professional strategies, including patient registers and ongoing audit, which have been shown to be effective in improving delivery and outcome of care [22, 23].</strong></td>
<td>Discussion</td>
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**Reviewer 3: Michael Lynge Pedersen**
| 3.1. | Three diabetes care initiatives in Ireland are included in this study. Are these all primary care-led initiatives in Ireland? If not how were the initiatives selected to be included in the study? Were some excluded? | This point was raised previously by the 1st and 2nd reviewer and the point has been addressed in section 1.9 of this table. See also method section p6 in revised manuscript. | Method section p6 |
| 3.2. | The three groups of general practices included represent a proportion of the population in Ireland. How much of the population in Ireland are presented by the three groups? | With regard to the general population, it is not mandatory for individuals to register with a single GP in Ireland therefore there is no accurate data on the size of practice populations in Ireland or indeed the prevalence of diabetes in the sample. This point is highlighted in the method section. In terms of the GP population, this sample represent less than 1% and this point is made in the methods section of the revised manuscript in the following text: The sample represents a small proportion of the total number of GPs in Ireland (approx. 1%), reflecting the special interest nature of diabetes management in primary care. | |
| 3.3. | Sample: Adult patients with Type 2 diabetes who were registered with a participating practice were eligible for inclusion. What was the definition of an adult? | In the revised manuscript the following text has been added to clarify the definition: Adult patients (≤18 years of age) with Type 2 diabetes, who were registered with a participating practice on their electronic practice register, were eligible for inclusion in the analysis. | Method section |
| 3.4. | What was the definition of Type 2 diabetes? Was Type 1 diabetes defined? Were any patients with non-Type 2 diabetes excluded? How many? | In the revised manuscript the following text was added to the method section: Type 2 diabetes was defined on the basis of standard clinical and blood glucose criteria (12). Patients with Type 1 diabetes and Pre-diabetes were excluded from the analysis as the care of these patients is not part of routine audit in all three initiatives. | Method |
| 3.5. | How were patients registered? Electronically? | Patients were registered on electronic patient registers | Method |
Could there be patients with diabetes not registered because they were not enrolled in the diabetes programme leading to an overestimation of the quality reported?

maintained by the practices as part of their involvement in the primary care initiatives. This is clarified in the revised manuscript:

Adult patients (≤18 years of age) with Type 2 diabetes, who were registered with a participating practice on their electronic practice register, were eligible for inclusion in the analysis. With regard to representativeness within each initiative the following text has been added to address the reviewers comment:

In the Diabetes Interest Group all patients with Type 2 diabetes registered with participating practices were included in the audit. In the Diabetes Watch programme, all patients who attended the GP for their 2nd diabetes visit were included in the audit. Due to the large number of patients enrolled on the HSE Midland Diabetes Structured Care Programme (>3000 patients) a random sample was selected from each practice and included in the overall analysis.

3.6. How was the random sampling performed?

In the revised manuscript the following explanation has been added:

The sample size was calculated using glycaemic control (HbA1c level) as the outcome measure with a confidence level of 95% and a difference of 2%. In a previous audit, the mean HbA1c for the total sample was 7.6% and the 95% confidence interval was ± 0.111% which equates to ~1.5%. A sample size calculator returned an estimated sample size of 1,168 (51.3% of the total sample). Data were available on 989 patients with Type 2 diabetes (47.1% of total sample) which was 97 patients less...
than the determined sample size as a number of patients recorded on the database as current and active had died, left the practice or had been transferred to a nursing home.

| 3.7. | A quite a large proportion of data are missing. What was the reason for missing data? Was the missing data a special problem in specific practices or was it a general problem. Could missing data indicate lower quality? | Missing data is a quality indicator used within this study as a marker of the performance of practices involved in primary care initiatives therefore it is taken to be indicative of lower quality where it occurs. Process of care recording or non-recording is a common indicator of quality. |
| 3.8. | The data are compared to the data from UK. These data include both Type 1 and Type 2 diabetes which is not the case in the present study. Were there other differences between the UK data and the present data? Are the patients comparable concerning gender, age and duration of diabetes | The only other difference between the data was representativeness. The data from 3 initiatives represents less than 1% of GPs in Ireland while data from England represents <70% of GPs while data from Scotland represent all 14 Health Boards. This has been highlighted in the method section in the following text:  

*The sample represents a small proportion of the total number of GPs in Ireland (approx. 1%), reflecting the special interest nature of diabetes management in primary care. All primary care trusts in England (N=152) contributed data from 71% of GP practices (N=5920) [6] Results were also compared to the Scottish Diabetes Survey, a population level survey published annually by the Scottish Diabetes Survey Monitoring Group. It collates nationally agreed data submitted by 14 NHS Boards in Scotland incorporating both primary and secondary care.*  

The patients were comparable in terms of age and gender which is outlined at the start of the results section (see section 1.4. in this table)- results page |
Duration of diabetes was not recorded across all three initiatives therefore it was not included in the merged dataset, see Table 1.

| 3.9 | Are the data from the UK representative for all primary diabetes care in the UK or do they represent a proportion of the population as in the present study where the supposed best diabetes care in Ireland is estimated? | Please see the response to the previous comment which clarifies that the data from the UK are representative of primary diabetes care in the England and Scotland. | Method |
| 3.10 | P=0.000 does not make sense. I suggest p<0.001. This is also the case in table 4. | Based on the reviewers suggestion p values in Table 4 have been changed to p<0.001 as well as the p values reported in the text. | Results section |
| 3.11 | Agree with the first part of the conclusion. However the lack of a reference group with documented lower quality in diabetes limits the strength of the last sentence which I suggest removed. | In agreement with the reviewers comment the last sentence of the conclusion has been removed. | |

**Reviewer 4: John McKnight**

| 4.1 | This report describes the results relating to diabetes care in three selected groups of GPs in Ireland and compares their results to the England and Wales National Diabetes Audit and the Scottish Diabetes Survey. In their conclusion they generalise their results to ‘Ireland’ and they cannot justify this from their study. | In the revised manuscript the word ‘Ireland’ has been replaced with “the three primary care initiatives studied”:

The quality of primary care-led diabetes management in the three initiatives studied appears broadly consistent with results from the UK with the exception of recording lifestyle factors. | Abstract |
| 4.2 | The Scottish Diabetes Survey is a comprehensive dataset including 237,000 patients with diabetes covering the whole population whereas this description is of 3010 patients from selected groups of practices and may not be at all representative of care in ‘Ireland’. It would be reasonable to describe the project as a comparison of three managed areas in Ireland but from the data provided there is no justification for | We accept this reviewers comment that the quality of care presented in this paper is not representative of care in Ireland and in the revised manuscript we try to make this point more clearly for example by removing the word ‘Ireland’ in the abstract as suggested in comment 4.1. Also in the discussion section we reemphasize this important point with the addition of the following text: It should be stressed that this study is not a comparison of ‘like | Discussion |
suggesting this can occur across the whole country. The above is a major flaw in the description and it should not be published without this correction.

with like’ but rather a benchmark of the performance of a select group of special interest practices providing structured care in Ireland against the standard of care observed in countries supported by a national diabetes management infrastructure. Furthermore the results of this study are not typical of diabetes care in Ireland. The lack of routine data collection in Ireland prohibited the inclusion of a reference group of practices not participating in initiatives delivering structured care.

4.3. Methods: page 6 needs to have some description of how the practices are organised with training and support. What size are the practices for example 63 practices, only 50 patients per practice, what is the prevalence of diabetes in their practice? What is the case ascertainment? One might expect around 4 to 5% of people in Ireland to have diabetes (as per Scotland). If the prevalence in each practice is much less this is a potential problem.

Methods: page 6 needs to have some description of how the practices are organised with training and support. What size are the practices for example 63 practices, only 50 patients per practice, what is the prevalence of diabetes in their practice? What is the case ascertainment? One might expect around 4 to 5% of people in Ireland to have diabetes (as per Scotland). If the prevalence in each practice is much less this is a potential problem.

See comment 1.9. for description of how the practices are organised which is outlined in the revised manuscript in the method section.

Regarding prevalence it was not possible to calculate the prevalence of Type 2 diabetes in this sample as general practices in Ireland do not have a registered practice population therefore we lack a population denominator. The predicted prevalence for 2010 in each of the 3 regions was in line with the national estimated prevalence of 4.6%. This point has been clarified in the method section of the revised manuscript:

**Prevalence**

*Data were available for 3,010 patients with Type 2 diabetes from 63 practices. It was not possible to calculate the prevalence of Type 2 diabetes in this sample as it is not mandatory in Ireland for patients to register with a single general practice therefore we lack a reliable population*
denominator. The predicted prevalence for each of the three regions in which the initiatives are based, (4.3. Dublin North Leinster, 4.4. Dublin Mid-Leinster, 4.9 Southern region) was comparable with the estimated national prevalence (4.6%) and the prevalence of Type 2 diabetes in Scotland (4.4.%) and England (4.1%).

| 4.4. | They quote the Scottish diabetes survey from 2008 and have difficulty using it as it is not stratified for type of diabetes. The 2009 survey has similar data for comparison and is diabetes type stratified. It would be reasonable to use this as a comparator rather than the 2008 despite the slight time difference this would create – the data in 2008 and 2009 has similar ‘performance’ for the measures described in the manuscript. | This is a very helpful suggestion and in the revised manuscript the data have been changed to 2009 results. The following text was also added in the methods section: 

Results from 2009 were chosen as data were stratified by type of diabetes allowing for direct comparison with Type 2 diabetes management. Data on recording and outcomes were similar across the 2008 and 2009 Scottish Diabetes Survey. |

| 4.5. | In many ways this whole comparison is flawed as this is comparing an interested group of practices that are managed with a total population described from Scotland. I believe the English and Welsh data are voluntary and therefore could not be representative of the whole population. | To address the 1st point – this study is not proposing a comparison of like-with-like but rather a benchmark of the performance of a select group of special interest practices in Ireland with a national standard of care achieved in countries supported by a diabetes management infrastructure. The results achieved in the UK illustrate what can and should be achieved nationally in Ireland. The group studied in the manuscript have made a start and are achieving a similar standard to the UK. This point has been clarified in the discussion section. 

With regard to the 2nd point- the data from England represent 71% of practices in the country and all primary care trusts and therefore are considered representative of the majority of |
4.6. Table 3 and other tables have Ireland at the top of the column which is very misleading as described above. The same applies to the reference to Ireland at the top of page 17 vs. Netherlands. Based on this feedback the headings have been replaced with ‘Three selected primary care initiatives in Ireland’. The comparison with the Netherlands has been removed from the discussion.

4.7. The points about overall healthcare systems and financial incentives for those without special interest compared to special interest groups may well be valid but cannot be supported from the data provided in the text. In response to this comment and feedback from other reviewers the last sentence of the conclusion has been removed.

In relation to editors comments- this study was based on secondary data analysis of anonymised data which had previously been published and disseminated in individual audit reports from each of the three initiatives therefore ethical approval was not sought for the collated secondary analysis. The data was collected for the purpose of service evaluation which did not require patient consent.