

Running out of steam? The impact of QOF on the management of type 2 diabetes

Neel Basudev

This study was conducted to assess the impact of the QOF on changes in BMI, blood pressure, urinary albumin–creatinine ratio and lipid profile in people with type 2 diabetes who had been attending a busy inner London general practice for a continuous period between 2004/5 and 2009/10. The results show that there was a significant improvement in diastolic blood pressure and total cholesterol over the study period, with no deterioration in HbA_{1c}, and no significant change in BMI. Much of the success of maintaining glycaemic control has been through more intensive treatments especially increasing use of insulin. Consideration should be given to other QOF targets, especially managing weight and impaired glucose regulation.

There are currently around 3 million people with diabetes in England and the prevalence is predicted to increase from 4.9% to 6.5% by 2025 (Association of Public Health Observatories, 2011). The incidence is rising in almost all populations worldwide and is linked to the rise in obesity. This equates to at least 1 in 10 people being currently obese and 1 in 20 having type 2 diabetes in the UK. Obesity continues to be an ongoing problem; the Foresight report estimates that 50% of the UK population will be obese by 2050 (Foresight, 2007). It is evident that people with type 2 diabetes are gaining weight and whether this is related to environmental factors, more intensive treatments, or other reasons, remains unclear. The UK Prospective Diabetes Study (UKPDS) has shown that diabetes is not a

static disease and glycaemic control tends to deteriorate over time while body weight tends to increase, especially in those who are intensively treated with drugs such as insulin (UKPDS Group, 1998).

QOF was introduced into UK primary care in 2004 as part of the new General Medical Services (GMS) contract and has become an ever present feature of clinical care since. Diabetes is one of the largest represented conditions within the clinical domain of QOF and often generates debate regarding some of the attainment thresholds required, as well as some of the perceived limitations to the various indicators.

Methodology

Data extraction and analysis was done retrospectively on a cohort of 98 people,

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1. Data extraction and analysis was done retrospectively on a cohort of 98 people, using the practice computer system (EMIS-PCS) for all people with type 2 diabetes attending the author's practice between 2004/5 and 2009/10.
2. The improvement in mean total cholesterol reached statistical significance, as did the improvement in diastolic blood pressure; systolic blood pressure did show a non-significant improvement.
3. It may be time to consolidate current attainment with forward thinking and planning of how best to use the QOF to deal with the impending burden of disease in diabetes through measures such as lifestyle intervention and patient education.

Key words

- Cholesterol
- HbA_{1c}
- QOF

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1. As part of the inclusion criteria, each individual had to have complete sets of notes and data for the QOF years 2004–2010 and they had to be continuously registered at the practice during this period.
2. Statistical analysis software (GraphPad Prism) was used to analyse the data. Data were also gathered from the Lambeth public health department to look at QOF trends during the period of study.
3. This study was conducted at a busy inner London general practice with a patient list size of around 5700.

using the practice computer system (EMIS-PCS) for all people with type 2 diabetes attending between 2004/5 and 2009/10. Data were collected from individuals by analysis of their case notes held on the system. As part of the inclusion criteria, each individual had to have complete sets of notes and data for the QOF years 2004–2010 and they had to be continuously registered at the practice during this period.

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Outcome measures studied over this 5-year period included changes in:

- BMI.
- HbA_{1c} level.
- Systolic and diastolic blood pressure.
- Total cholesterol.
- Urinary albumin–creatinine ratio (ACR).

Data were also collected on the duration of diabetes and medication usage, in particular people who were newly started on insulin.

Results

This study was conducted at a busy inner London general practice with a patient list size of around 5700. The area has a diverse and largely non-white British population, with 55% of the population mainly comprising people of Portuguese, African or Caribbean descent. There are high levels of deprivation in the ward within which the practice is located, coupled with high rates of unemployment (Office for National Statistics, 2011).

The results show that from a total type 2 diabetes population of approximately 210 people, complete sets of data were collected for 98 people. Mean duration of diabetes was 9.1 years, calculated from date of

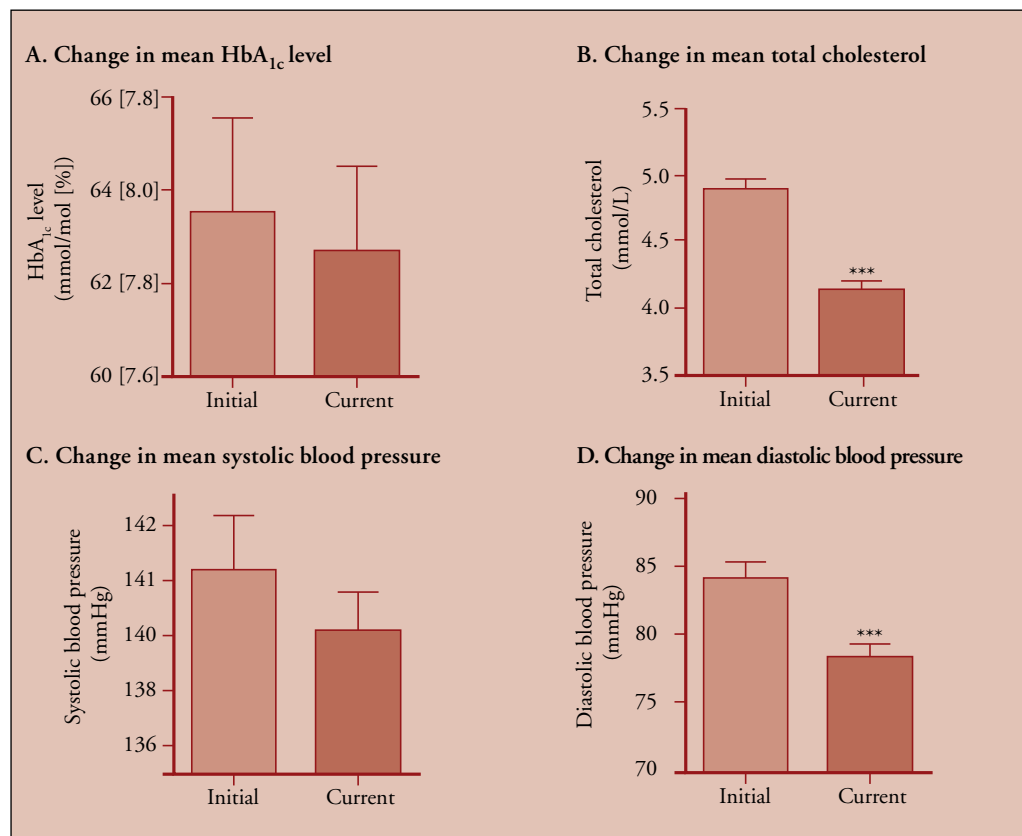


Figure 1. Change in HbA_{1c}, total cholesterol, systolic and diastolic blood pressure from the beginning of QOF in 2004 until 2010. ***=statistically significant result.

diagnosis to the end of the QOF year in 2010. The range of diabetes duration was from 5–35 years and the mean age of the population was 64 years with a standard deviation of 12 years.

The improvement in mean total cholesterol (*Figure 1*) reached statistical significance (initial, 4.9 mmol/L vs current, 4.1 mmol/L; $P < 0.001$), as did the improvement in diastolic blood pressure; systolic blood pressure did show a non-significant improvement (initial, 142/84 mmHg vs current, 140/78 mmHg; systolic $P = 0.10$; diastolic $P < 0.001$) (*Figure 1*). There was no significant change in BMI and a small reduction in HbA_{1c} from 63.2 mmol/mol (7.94%) to 62.4 mmol/mol (7.86%) during the study period (*Figure 1*). The only diabetes-related complication with measurable data that could be studied was nephropathy but there was no significant change in urinary ACR measurements. Changes in medication usage were assessed and showed that a total of 15 people initiated insulin therapy during the period of data collection.

Figure 2 shows QOF trends in Lambeth for the indicators DM7 (the percentage of people with diabetes in whom the last HbA_{1c} level is $\leq 10\%$ (≤ 86 mmol/mol) in the previous 15 months), DM12 (the percentage of people with diabetes in whom the last blood pressure is $\leq 145/85$ mmHg), and DM17 (the percentage of people with diabetes whose last measured total cholesterol within the previous 15 months is ≤ 5 mmol/L). DM6 (the percentage of people with diabetes in whom the last HbA_{1c} level is $\leq 7.4\%$ (≤ 57 mmol/mol) in the previous 15 months) and DM20 (the percentage of people with diabetes in whom the last HbA_{1c} level is $\leq 7.5\%$ (≤ 58 mmol/mol) in the previous 15 months) have been combined for illustrative purposes.

These data reflect the old QOF indicators, some of which have subsequently changed and been updated. These indicators have been chosen to demonstrate population trends over the same time frame as the study. The results demonstrate that there

was some initial improvement in diabetes indicators, which coincided with the beginning of QOF, but there has been a plateau over the past 3–4 years.

Discussion

The impact of QOF on chronic disease management is often debated, not least when new indicators come in and old ones are phased out. This process is overseen by NICE in conjunction with individuals and relevant stakeholders with the aim being to ensure that indicators reflect clinical- and cost-effectiveness and address health inequalities (NICE, 2009). The diabetes QOF makes up a large part of the clinical QOF domain that GPs have to deal with, and it too has undergone changes over the years with the introduction of different HbA_{1c} and blood pressure standards and more recently with the introduction of a foot risk assessment.

However, the true value of the QOF is whether it has really made any difference to patient care and outcomes or whether it has simply become institutionalised.

This study was conducted to look at practice change and to see what impact QOF may have had on patient care in a single practice located in a deprived and ethnically diverse area of London. Larger studies looking at QOF trends have shown that for selected clinical indicators, improvements may have begun before QOF was implemented (Dixon

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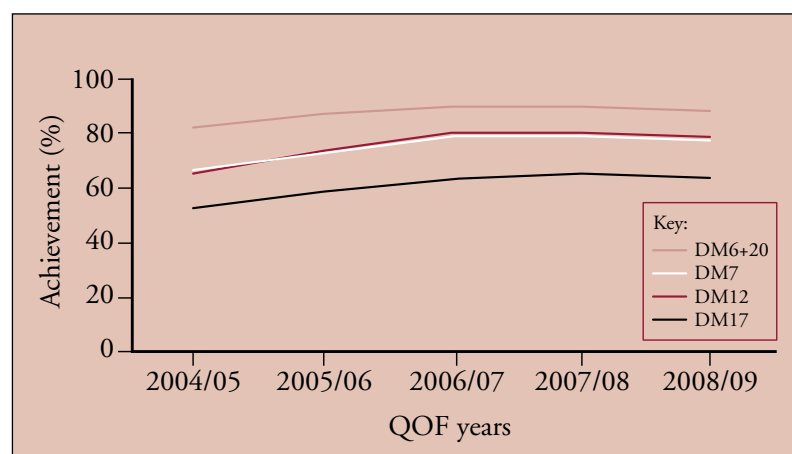


Figure 2. QOF trends in Lambeth.

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1. The perennial question of whether incentivised care makes a difference is challenging to answer, but it certainly does focus the mind when money is on the line; it has been shown that quality scores for non-incentivised activities, such as those in asthma and heart disease, have dropped between 2005 and 2007.
2. For the purposes of this study, and to ensure data quality, only complete data sets were included in the results so that confounding factors could be minimised and any suggestion of trends in the data could be reasonably assumed to be as a result of QOF rather than other external influences.
3. This study showed that since the introduction of QOF, people with type 2 diabetes have shown no deterioration in HbA_{1c} level, contrary to the expected decline in glycaemic control with increasing duration of diabetes.
4. Significant improvements were noted in blood pressure treatment and cholesterol among the practice population studied.

et al, 2010). As Campbell et al (2007) have shown, there have been improvements in the quality of care for diabetes in the first 2 years of QOF, but these improvements may have now slowed (Campbell et al, 2007; 2009). Interestingly, this initial improvement was at a rate that mirrored the rate before QOF was introduced, begging the question of how influential QOF was in these trends of improvement in its early years. The perennial question of whether incentivised care makes a difference is more challenging to answer, but it certainly does focus the mind when money is on the line; it has been shown that quality scores for non-incentivised activities, such as those in asthma and heart disease, have dropped between 2005 and 2007 (Campbell et al, 2009).

The data sets used for this study come from a cohort of 98 people. The remaining people on the practice diabetes register did not have complete data sets available for all QOF years in question. This is mainly because the practice population is quite mobile as people migrate from one area to another. Some people also spend a significant amount of time abroad and their diabetes care is divided between different countries and different treatment strategies.

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Glycaemic control

This study showed that since the introduction of QOF, people with type 2 diabetes have shown no deterioration in HbA_{1c} level, contrary to the expected decline in glycaemic control with increasing duration of diabetes. HbA_{1c} values have remained quite static for many people and show a classic “see-saw” effect of treatment titration as HbA_{1c} levels climb, followed by a period of stability until disease progression forces the issue of titration once more.

Much of the success of maintaining glycaemic control has been through more intensive treatment, especially an increasing use of insulin. Despite this treatment escalation, people with diabetes have had no significant change in their BMI. This could be due to the study being inadequately powered to detect such a change. Another way of interpreting this is that HbA_{1c} has not remained stable or improved through any changes in BMI among participants. This is reflected in national data for England showing that, while the proportion of adults whose BMI was in the normal and overweight range decreased between 1993 and 2010, there was a marked increase in the proportion of obese adults, up from 13% in 1993 to 26% in 2010 for men and from 16% to 26% for women during that same period (NHS Information Centre, 2010).

Although these data are not disease specific, it is a challenging statistic suggesting that we may be just keeping a lid on things by increasing medication use but perhaps not targeting the underlying issues of weight and lifestyle changes. Again, this may come down to how clinical care and pathways of care are incentivised.

Blood pressure and cholesterol

Significant improvements were noted in blood pressure treatment and cholesterol among the practice population studied (*Figure 1*). This is most likely due to the greater use of statins and more aggressive blood pressure targeting over the years, although it is unclear why significant change was seen in diastolic and not systolic blood pressure. This may have been a type 2 error and the study may have been underpowered to detect a change.

The trend in systolic blood pressure does show a decline which would support this possibility. It would be interesting to see how the new lower blood pressure indicator of 140/80 mmHg (DM31) affects this trend over subsequent QOF years. This is all important as part of the holistic care people receive, as diabetes is a strong predictor

of macrovascular outcomes and treatment should be multi-interventional (Gaede et al, 2008). Again, however, QOF trends for Lambeth as a whole show that we have reached a plateau over the past few years so perhaps we have done all we can in terms of holistic therapy and secondary prevention. Is it therefore time to move on while maintaining the good work achieved thus far?

Limitations of QOF

When QOF was first introduced, it was certainly an innovative scheme and the first of its kind. A major flaw of QOF in terms of diabetes has always been that it provides incentivisation to engage in secondary prevention measures but little for public health and primary prevention. There are many other aspects of diabetes care that are not incentivised and rely on individual clinicians or on the practice ethos, such as diabetes education and reduction of the prevalence gap.

The ability of QOF to target high-risk and hard-to-reach groups is also an issue that has an all-too-easy escape route through exception reporting. The recent NICE guidance on the prevention of type 2 diabetes (NICE, 2011) shows that the themes of disease recognition, lifestyle intervention, and effective healthcare delivery are still high on the NICE agenda and now may be the time to recognise some of them through QOF. The second part of this guidance, due to be released this year, will add further credence to the need for disease prevention to be recognised.

Possible new QOF indicators could be set up around patient education and impaired glucose regulation (IGR). As examples, the number of people with new onset type 2 diabetes who are referred to and attend a form of structured education such as DESMOND (Diabetes Education and Self Management for Ongoing and Newly Diagnosed) could be incentivised.

Language barriers to its use exist, so people who do not speak English as a first language may need to be exception reported. Also, practices could, in the first instance,

be incentivised to keep a register of people with IGR. This could be set up around HbA_{1c} measurements and based on the soon-to-be-published NICE guidance in this area. As indicators evolve, practices could then be further incentivised to ensure that patients on the register have been followed-up and repeat an HbA_{1c} test at a later date. Any such indicators would need the support of commissioners and the required infrastructure around nutritional and lifestyle interventions to be in place.

The evidence for the positive effect of lifestyle interventions on IGR and reducing the incidence of type 2 diabetes is well documented (Gillies et al, 2007). Surely if we know that type 2 diabetes prevalence and costs are only going to increase in future, it makes both clinical and economic sense to start dealing with the issues of IGR recognition and patient education as early as possible. A radical rethink of current practice may be required.

Limitations and further work

This study has several limitations, not least that there is no control group and so it cannot be confirmed that improvements in some aspects of diabetes care are as a result of QOF. Also, issues around measurement, recording bias and sample size mean that we cannot draw any firm conclusions from the results and outcomes. There is no power calculation as the study is a retrospective analysis of data and trends.

The introduction of newer blood glucose-lowering therapies over recent years will also have a bearing on the results presented here. However, the results for both the practice and on larger populations do show some important trends regarding the attainment of QOF indicators and suggest that other areas of diabetes care need to be explored and possibly incentivised under QOF if improvements are to be continued. The plateau effect on QOF is consistent both here and with other work that has been done in this area. Any new QOF indicators around IGR, patient education, lifestyle, or weight

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management in diabetes should be welcomed as part of the evolution of QOF.

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Conclusion

The introduction of QOF into primary care was a landmark moment; never before had care been scrutinised and incentivised in such a way. Whatever people may think of QOF, there is no doubt that it has influenced the way we manage certain diseases and collate data. Every April now seems to bring a raft of fresh ideas and indicators and the future looks no different as indicators are tightened and primary care is asked to do more and more. However, as this study has shown, there is a danger that we may have reached a limit of achievement in some areas, and rather than flogging the proverbial dead horse, it may be time to consolidate current attainment with forward thinking and planning of how best to use QOF to deal with the impending burden of disease in diabetes through measures such as lifestyle intervention and patient education. ■

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