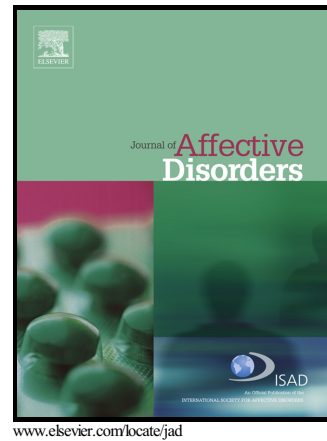


## Author's Accepted Manuscript

Did NICE guidelines and the quality Outcomes framework change GP antidepressant prescribing in England? Observational study with time trend analyses 2003-2013

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**Did NICE guidelines and the Quality Outcomes Framework change GP antidepressant prescribing in England? Observational study with time trend analyses 2003-2013.**

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**Abstract**

**Background:** Both the 2004 NICE depression guidelines and 2006 general practice Quality Outcomes Framework (QOF) encouraged improved targeting of antidepressant treatment for depression.

**Methods:** Possible effects of the NICE guideline from January 2005, and QOF from April 2006, on rates of GP antidepressant prescribing were examined using time trend analyses of anonymised data from 142 English practices contributing to the Clinical Practice Research Datalink (CPRD), 2003-2013.

**Results:** Sustained reductions were found in the proportion of first-ever depression episodes treated within 12 months, of 4.2% (95% C.I. 1.0%-7.3%) following introduction of the NICE guideline, and 4.4% (2.3%-6.5%) following introduction of the QOF. Treatment rates for first-ever episodes fell from 72.5% (70.8%-74.1%) in Quarter 2 (Q2) 2003 to 61.0% (59.3%-62.7%) in Q1 2012, but treatment rates for recurrent episodes increased from 74.3% (72.8%-75.8%) to 77.8% (76.5%-79.1%), so overall rates remained around 70%. Mean prescriptions per patient per year doubled from 2.06 (2.05-2.07) to 3.98 (3.97-3.99).

**Limitations:** Participating practices were larger than average and not representative across regions. Inferences of cause and effect from time trend analyses are subject to the possibility of unidentified confounders. No data were available on depression severity or appropriateness of prescribing.

**Conclusions:** Rates of GP antidepressant treatment for patients with incident depression fell following introduction of NICE depression guidelines and the QOF, but treatment rates for recurrent depression increased. Prescription numbers increased due to longer treatment courses. To impact on antidepressant prescribing rates, guidelines and performance indicators must address recurrent and long-term prescribing, rather than initial treatment decisions.

[Word count 250]

**Key words:** depression, antidepressants, primary care, guidelines, pay for performance, QOF

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## Background

Antidepressant use in Western countries doubled between 2003 and 2013 (McCarthy, 2013). In England, antidepressant prescribing increased by more than 10% per year from 1998 to 2010 (Ilyas & Moncrief, 2012), and by 2014 more than 1 in 10 adults were taking them (Craig & Mindell, 2014). In the UK, most antidepressants are prescribed by general practitioners (GPs), who have been accused of over-diagnosing and over-treating depression (Dowrick & Francis, 2013; Spence, 2013).

Studies of GP record databases found that the prevalence of adults with depression treated with antidepressants approximately doubled between 1993 and 2004 (Morgan et al, 2008; Moore et al, 2009). However, the increase was found to be due to longer courses of treatment rather than any increase in the number of people being started on treatment each year, which was actually declining between 2000 and 2005 (Moore et al, 2009).

These studies predated the economic recession from April 2008, following which there was an increase in GP consultations for depression (NHS National Services Scotland, 2013; Kendrick et al, 2015). However, antidepressant use in England has continued to rise with a much steeper trajectory than the prevalence of recorded depression since 2008. Between 2008 and 2013 annual antidepressant prescriptions dispensed increased by 17.4 million (48%) to 53.3 million (Health & Social Care Information Centre, 2013), while the recorded prevalence of depression in general practices increased by only around 4% in the same period (Kendrick et al, 2015).

The studies above also predated the publication of the UK National Institute for Health and Clinical Excellence (NICE) guidance on the management of depression in December 2004, which discouraged the use of antidepressants for mild depression (NICE, 2004), and the introduction of a performance indicator in the UK GP Quality and Outcomes Framework (QOF) pay for performance scheme from April 2006, for the assessment of depression at diagnosis (BMA & NHS Employers, 2006). The performance indicator required assessment of the severity of a patient's depression with validated symptom questionnaires, in order to target initial treatment more accurately at those with more severe depression. The indicator applied to people with a categorical diagnostic code for depression (e.g. 'major depressive disorder'), but not to people whose depression was given a symptom code only (e.g. 'low mood'). Both the NICE guidance and the QOF if effective would reduce the likelihood of GPs prescribing antidepressants for depression.

We have previously shown that GPs responded to the QOF by switching from diagnostic to symptom codes, reducing the number of patients requiring assessment with symptom questionnaires (Kendrick et al, 2015). In this analysis, we looked for possible effects on antidepressant treatment rates for depressive episodes, of both the NICE guidelines from January 2005 and the QOF from April 2006, using time trend analyses.

## Methods

The Clinical Practice Research datalink (CPRD), formerly known as the General Practice Research Database (GPRD), is an anonymised research database aggregating medical records data from participating practices across the UK (Williams et al, 2012; MHRA 2014). The study protocol was given ethical approval by the MHRA Independent Scientific Advisory Committee. Data were obtained from all 142 general practices in England which were in the CPRD continuously from 2003 to 2013,

and whose recording of data was judged to be up to standard (UTS) (Williams et al, 2012), to provide a relatively stable denominator for calculating treatment rates (Kendrick et al, 2015).

#### *Inclusion and exclusion criteria*

We included all patients who between 1<sup>st</sup> April 2003 and 31<sup>st</sup> March 2013 had clinical or referral events recorded which included a Read code for non-psychotic depressive symptoms or diagnoses, or for assessment using depression symptom questionnaires. Read codes are a coded thesaurus of clinical terms and have been used in the NHS since a GP Dr James Read developed them in 1985 (Health & Social Care Information Centre, 2015). We excluded patients with codes for psychotic diagnoses, and patients prescribed antidepressants for indications besides depression (see Kendrick et al, 2015 for the sample size calculation and demographic details).

#### *Analysis of rates of treatment with antidepressants*

We analysed changes over time in the proportion of episodes of depression treated with antidepressants within participating practices. We defined the start of an episode as the appearance of a Read code for depression symptoms or diagnoses in the consultation or referral files of a patient with no depression codes in the preceding 12 months, and no codes for antidepressant treatment in their therapy file in the preceding 12 months either. Treatment was defined as the appearance of a code for prescription of an antidepressant in the therapy file within 12 months of the start of an episode. We excluded patients who were already on antidepressants in April 2003, or on joining the database if they transferred into a participating practice within the study period. We also excluded patients who did not remain in the database for 12 months after the start of the episode, either because the episode started after the end of March 2012, or because the patient died or transferred out of the practice within 12 months.

We considered treatment rates might differ between incident and recurrent episodes, because the NICE guidelines recommend drug treatment should be considered more readily for people with recurrent depression<sup>11</sup>. We therefore divided episodes into first-ever (incident) episodes, in patients with no previous recorded Read codes for depression diagnoses, symptoms or antidepressant treatment recorded, either within the study period or in their history prior to April 2003; and recurrent episodes, among patients who did have previous recorded codes. We were unable to determine whether patients had had previous unrecorded depression, as the data were anonymised and so we could not ask the patient or their GP about any previous unrecorded episodes prior to their registration with a CPRD practice. 'First-ever' therefore means first-ever recorded depression.

We also divided episodes into those with any diagnostic category codes within the quarter which qualified patients for inclusion in the denominator for the QOF performance indicators (QOF-qualifying episodes), and those which had depressive symptom codes only, which did not qualify patients for the QOF (non-QOF-qualifying episodes). QOF-qualifying codes 'trumped' non-QOF-qualifying codes, i.e. any mention of a QOF-qualifying code during an episode of depression would make it QOF-qualifying, regardless of whether it was also given non-QOF-qualifying codes (see Kendrick et al, 2015 for the complete list of codes used).

We conducted time trend analyses to determine whether significant changes in the quarterly (three monthly) rates of treatment of episodes of depression were found following the publication of the December 2004 NICE guideline on the management of depression in primary and secondary care (NICE, 2004) from January 2005, and following the introduction of QOF indicators for the assessment

of depression with severity questionnaires at diagnosis from April 2006 (BMA & NHS Employers, 2006). Quarterly time periods were chosen for the time series analyses because yearly periods would have given too few time periods to look at changes either side of the events in 2005 and 2006. Analysing quarterly rates also allowed us to take into account seasonality as well as the underlying trend, as rates of depression are known to vary with the seasons of the year (Harmatz et al, 2000).

Data were analysed as an interrupted time series using segmented regression (Wagner et al, 2002). This divided the time series into two periods, before and after the event of interest, and tested whether there was a significant step change, or change in the slope of the line following the event. Our regression model was:  $Y_t = \beta_0 + \beta_1 \times \text{time}_t + \beta_2 \times \text{event}_t + \beta_3 \times \text{time after event}_t + e_t$  where:  $\beta_0$  = the level of treatment at the start of the observation period in 2003,  $\beta_1$  = the secular trend in level of treatment,  $\beta_2$  = the change in the level of treatment in the quarter of the event,  $\beta_3$  = the change in trend after the event, and  $e_t$  = the error term, which included an allowance for autocorrelation. We tested for autocorrelation using the Durbin-Watson statistic (Durbin & Watson, 1971) which indicated it was present, so the regression model was fitted using the Stata 'prais' command to fit a Cochrane-Orcutt transformation and control for seasonal effects.

#### *Analysis of duration of treatment prescribed*

We analysed changes over the 10 years in the mean duration of prescription items in days, together with changes in the mean number of antidepressant prescription items recorded per patient per year. We were not able to calculate the number of prescriptions per episode because we could not tell when an episode ended – while the start of an episode is recorded with a diagnostic or symptom code, the end of an episode is not routinely recorded. So we used a year as the denominator for number of prescriptions rather than an episode.

We were aware from our previous analyses of the GPRD (Moore et al, 2009) that a proportion of prescription records would not include a stated duration, or a daily dose, from which the duration could be calculated given the total amount prescribed. Where neither the duration nor daily dose was recorded, we therefore imputed the mean duration we found for prescriptions of the same amount and strength of preparation for which duration or daily dose had been recorded.

## **Results**

The dataset included 142 practices, at which a total of 2,326,673 patients were registered during the study period. Compared to national practice data, participating practices were broadly representative in terms of age, gender and deprivation, but larger than average and not representative across English regions (Campbell et al, 2013; Kendrick et al, 2015). Over the 10 years, 293,596 patients (12.6%) had recorded computer codes for depressive diagnoses, symptoms or questionnaire assessments.

#### *Rates of treatment of episodes of depression*

For this analysis, 50,011 patients were excluded as they were already on antidepressant treatment on joining the database, and 52,468 patients were excluded as they did not remain in the database for 12 months after the start of the episode. Among the remaining 191,117 patients, 104,337 first-ever episodes were identified between April 2003 and March 2012, and 132,841 recurrent episodes

(a total of 237,178 episodes, greater than the number of patients because some had both first-ever and recurrent episodes, and some had more than one recurrent episode).

Of the 104,337 first-ever episodes, 7,959 (7.6%) occurred in patients under 18 years old, 84,691 (81.2%) in patients aged 18-64, and 11,687 (11.2%) in patients aged 65 and over. Of the 132,841 recurrent episodes, 1,847 (1.4%) occurred in patients under 18, 114,466 (86.2%) in patients aged 18-64, and 16,528 (12.4%) in patients aged 65 and over. Of all 237,178 episodes, 9,806 (4.1%) occurred in patients under 18, 199,157 (84.0%) in patients aged 18-64, and 28,215 (11.9%) in patients aged 65 and over.

Figure 1 shows the percentage of incident (first-ever), recurrent and all episodes treated with antidepressants within 12 months (see Web Table 1 for values).

[Figure 1 here]

(i) Incident (first-ever) episodes

Among the 104,337 patients with incident depression, the proportion of first-ever episodes treated within 12 months fell significantly from 72.5% (95% confidence interval (CI) 70.8%-74.1%) in Quarter 2 (Q2) of 2003 to 61.0% (59.3%-62.7%) in Q1 2012.

(ii) Recurrent episodes

Among all 191,117 patients, the proportion of recurrent episodes treated increased slightly from 74.3% (95% CI 72.8%-75.8%) in Q2 2003 to 77.8% (76.5%-79.1%) in Q1 2012.

(iii) All episodes

Among all 191,117 patients, the proportion of all episodes of depression treated fell slightly from 73.4% (95% CIs 72.3%-74.5%) in Q2 2003 to 70.1% (69.0%-71.2%) in Q1 2012.

*Time trend analyses of changes in the proportion of episodes treated*

Table 1 shows the time trend analyses of quarterly changes in the proportion of episodes of depression treated over the 10 years, to determine whether there were significant changes from January 2005 following the publication of the NICE depression guideline, and from April 2006 following the introduction of the QOF depression indicators (indicated by vertical lines on Figure 1).

[Table 1 here]

For first-ever episodes, prior to Q1 2005, the proportions treated were falling slowly, with a trajectory just borderline significantly lower than zero. Significant step change reductions occurred in the proportion of first-ever episodes treated in Q1 2005 of 4.2% (1.0%-7.3%), and in Q2 2006 of 4.4% (2.3%-6.5%). There was then no further significant change in the proportion of first-ever episodes treated throughout the rest of the study period.

For both recurrent episodes and all episodes overall, there were no significant changes in the trajectory or level of proportions treated related to Q1 2005 or Q2 2006.

*Age and gender differences*

For first-ever episodes, the 18-64 age group followed the same pattern as for the whole cohort. The 65 and over age group showed a very similar pattern as well, but the step change downwards in

percentage treated in Q2 2006 was greater (-11.18 (95% CIs -19.30, -3.06);  $p=0.009$ ). None of the results was significant for the under 18 age group.

For recurrent episodes the results for all age groups were not significant, in line with the results for the sample as a whole.

For all episodes, in both the under 18 and 18-64 age groups, all results were non-significant, just as for the whole sample. For the 65 and over group however, there was a significant step change downward in the percentage of all episodes treated in Q2 2006 (-7.62 (95% CIs -13.56, -1.68);  $p=0.014$ ), reflecting the larger step change seen in first-ever episodes in Q2 2006 in that group (see Web Table 2 for full analyses by age group).

The results for first-ever episodes in females and males were very similar to those for the whole sample, though the step change downwards in males in Q1 2005 was just borderline non-significant (-4.54 (95% CIs -9.17, 0.08);  $p=0.054$ ).

For recurrent episodes and all episodes, the results among women and men analysed separately were essentially the same as for the sample as a whole (see Web Table 3 for full analyses by gender).

#### *Treatment of episodes with QOF-qualifying versus non-QOF-qualifying Read codes*

Among all 237,178 episodes of depression between April 2003 and March 2012, 100,635 (42.4%) were labelled with a QOF-qualifying diagnostic Read code at the start of the episode, and 136,543 (57.6%) with a non-QOF-qualifying symptom code.

Figure 2 shows the percentage of first-ever, recurrent, and all episodes of depression treated within 12 months, dividing episodes according to whether patients received a QOF-qualifying diagnostic Read code, or a non-QOF qualifying symptom code (see Web Table 4 for values).

[Figure 2 here]

#### (i) Incident (first-ever) episodes

Among the 104,337 patients with incident depression, the proportion of QOF-qualifying first-ever episodes treated within 12 months ranged between 77.6% and 87.1% (mean 82.8%). The range among non-QOF-qualifying first-ever episodes was 42.0%- 62.1% (mean 50.8%).

#### (ii) Recurrent episodes

For all 191,117 patients, the proportion of QOF-qualifying recurrent episodes treated ranged between 59.4% and 92.3% (mean 81.6%). The range for non-QOF-qualifying recurrent episodes was 58.7%-71.5% (mean 66.4%).

#### (iii) All episodes

For all 191,117 patients, the proportion of all QOF-qualifying episodes treated ranged between 65.6% and 89.7% (mean 82.0%). The proportion of all non-QOF-qualifying episodes treated ranged between 50.6% and 66.1% (mean 59.1%).

Treatment rates for QOF-qualifying episodes were therefore consistently higher than for non-QOF qualifying episodes, whether first-ever or recurrent.

Table 2 shows the time trend analysis of changes in the proportion of episodes treated following the introduction of the QOF depression performance indicators from April 2006 (indicated by the vertical line on Figure 2).

[Table 2 here]

For first-ever episodes, the proportions treated were already falling prior to Q2 2006. In Q2 2006 there was a significant step change reduction among non-QOF-qualifying episodes, but no evidence of a step change for the QOF-qualifying episodes. From Q2 2006 onwards the proportions of all first-ever episodes treated rose again but at a greater rate for QOF-qualifying than for non-QOF-qualifying episodes.

For recurrent episodes, there was no significant trend in the proportion treated prior to Q2 2006. In Q2 2006 there was a significant step change increase for QOF-qualifying recurrent episodes, and a (borderline) significant step change decrease for non-QOF-qualifying episodes. Again, from Q2 2006 onwards the proportions of all recurrent episodes treated rose again but at a greater rate for QOF-qualifying than for non-QOF-qualifying episodes.

For all episodes of depression, the proportions treated were falling prior to Q2 2006 for QOF-qualifying episodes, while the trajectory was not significantly different to zero for non-QOF-qualifying episodes. In Q2 2006 there was a significant step change increase for QOF-qualifying episodes and a significant step change decrease for non-QOF-qualifying episodes. Once again, from Q2 2006 onwards the proportions of all episodes treated rose again but at a greater rate for QOF-qualifying than for non-QOF-qualifying episodes.

#### *Duration of treatment*

The 293,596 patients included in our dataset had 6,016,353 antidepressant prescription items recorded between them over the 10 year study period. Of these 5,392,432 (89.6%) had either the prescription duration recorded, or a quantity of medication recorded together with the daily dose, from which the intended duration could be calculated. The remainder had neither duration nor daily dose recorded and so were assigned the mean duration imputed from the calculated duration of prescriptions of the same strength and amount for which information on duration was available. We found a trend in the proportion of prescriptions without a recorded duration or daily amount, which increased steadily from 6.9% in 2003 to 16.1% in 2013.

The mean prescription duration decreased slightly from 33.5 days (95% CI 33.4-33.5) to 32.0 days (31.9-32.1) over the 10 year period. However mean prescription numbers per patient per year approximately doubled from 2.06 (95% CI 2.05-2.07) to 3.98 (3.97-3.99).

For patients with first-ever episodes, mean prescriptions per person per year were significantly lower than for those with recurrent episodes.

Mean prescription numbers per year for first-ever cases given QOF-qualifying Read codes increased from 0.61 (95% CI 0.60-0.62) to 2.75 (2.73-2.76) over the 10 years, remaining significantly greater than mean prescription numbers for first-ever cases given non-QOF qualifying codes, which increased from 0.27 (0.26-0.27) to 1.81 (1.80-1.83).



## Discussion

### Main findings in relation to other studies

We found small but significant step change decreases in the rate of GP antidepressant treatment of patients with first-ever recorded episodes of depression following publication of the NICE guidelines in December 2004, and again after the introduction of the QOF in April 2006, which persisted thereafter. However, reductions in prescribing for first-ever episodes were outweighed by higher rates of prescribing for recurrent episodes, so overall rates of treatment remained around 70%. No significant changes were found among patients aged under 18 years, which is perhaps not surprising, given that both the NICE guidelines and QOF applied only to adult patients aged 18 and over.

We previously showed that GPs responded to the QOF by switching from diagnostic to symptom Read codes, removing depressed patients from the denominator for QOF-incentivised severity assessment with symptom questionnaires (Kendrick et al, 2015). We have now shown that episodes given non-QOF-qualifying codes were associated with significantly lower treatment rates, of around 60% compared to over 80% for QOF-qualifying episodes - so after the QOF was introduced GPs apparently became more selective in their treatment decisions. Our findings are consistent with previous research showing rates of treatment of around 80% for patients assessed using QOF-incentivised severity questionnaires, among whom the likelihood of treatment correlated positively with questionnaire scores (Kendrick et al, 2009). However, while changes in prescribing could have resulted from severity assessment, we do not have data on whether patients were assessed with questionnaires in this study, nor on their scores. Qualitative research on the effects of NICE guidelines and the QOF suggests associations found could represent post-hoc labelling with QOF-qualifying codes to back up prior decisions to treat based on global assessment alone (Dowrick et al, 2009; Mitchell et al, 2011).

Mean prescriptions per patient roughly doubled from two to four per year over the 10 years. The mean duration of prescriptions decreased only by around two days, so the increase in prescriptions was not due to GPs prescribing a greater number each of shorter duration, as has been suggested (McCartney, 2014), but due to an increasing length of antidepressant treatment. Mean prescriptions per year for patients with first-ever episodes given non-QOF-qualifying codes were significantly lower than for those given QOF-qualifying codes, but reductions in prescribing following introduction of the QOF did not have a significant effect on overall prescription numbers, which increased steadily over the 10 years. Burton et al (2015) also found longer treatment duration was associated with diagnostic coding, which put patients into the QOF denominator for symptom questionnaire assessment at follow-up as well as diagnosis from 2009 onwards, suggesting the QOF might have increased duration of prescribing for QOF-qualifying cases. However, increased duration of prescribing predates the QOF (Moore et al, 2009), and surveys in the USA (where there is no QOF) as well as the UK have consistently found increasing long-term prescribing of antidepressants over the last 10 years, with more than half of patients being treated for two years or more, and a mean duration of treatment of between four and six years (Petty et al, 2006; Pratt et al, 2011; Johnson et al, 2012; Mojtabai & Olfson, 2014).

### Strengths and weaknesses of the study

Prescribing data were available on all patients with recorded depression in a large number of practices over a 10 year continuous period. Participating practices were relatively representative in

terms of population age, gender and deprivation, but relatively large (Campbell et al, 2013), and not representative across English regions (Kendrick et al, 2015). Clinical data recording is probably incomplete, and we used aggregated data across practices. We have no data on the use of QOF incentivised questionnaires within practices or on the severity of depression identified, and cannot comment on the appropriateness of prescribing of antidepressants at the level of individual patients. Although we defined particular points in advance for the time series analyses, any inference of cause and effect is subject to the possibility of unidentified confounding factors also related in time to changes in prescribing. For example, the Improving Access to Psychological Therapies (IAPT) programme may have helped reduce antidepressant prescribing for new cases, by providing an alternative approach to antidepressants, although a time series analysis study relating prescribing rates to IAPT provision found no evidence of an effect (Sreeharan et al, 2013). However, the difference in treatment rates between episodes given QOF-qualifying and non-QOF-qualifying codes which developed after the introduction of the QOF supports our interpretation that the fall in treatment rates for first-ever episodes seen since 2006 was related to its introduction.

#### Implications for policy, practice and research

Guidelines and quality improvement schemes must address duration of treatment and treatment of recurrent cases, rather than the initial treatment decision, to have any impact on rates of antidepressant prescribing. It has been suggested increasing long-term prescribing is simply the result of correcting what was previously inadequate duration according to guidelines (Reid et al, 2014). While longer-term antidepressant use in Australian practices was found to be associated with a history of recurrent depression and more complex mental, physical and social problems, the authors concluded nevertheless that many patients could benefit from treatment re-evaluation (Ambresin et al, 2015). However, reviews of patients taking antidepressants have been found to decline with longer use (Sinclair et al, 2014), reducing the opportunity for review of appropriateness of treatment. Further research is needed on the appropriateness of long-term treatment, the adequacy of monitoring over time, and the potential benefits of reviewing patients with a view to discontinuing treatment.

[Word count 3913]

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Figure caption:

**Figure 1 Percentage of new episodes of depression treated within 12 months of diagnosis**

**Figure 2 Percentage of episodes of depression treated: QOF-qualifying versus non-QOF-qualifying Read codes**

**Table 1 Time trend analysis of changes in the proportion of depression episodes treated with antidepressants**

| Changes in proportions of episodes of depression treated | Coefficient (95% CI) | p-value |
|--|----------------------|---------|
| <b>First ever episodes</b>                               |                      |         |
| Secular trend  | -0.55 (-1.07, -0.02) | 0.042   |
| Change in level in Q1 2005                               | -4.15 (-7.26, -1.03) | 0.011   |
| Change in trend after Q1 2005                            | 0.74 (-0.16, 1.64)   | 0.102   |
| Change in level in Q2 2006                               | -4.38 (-6.48, -2.28) | <0.001  |
| Change in trend after Q2 2006                            | -0.04 (-0.80, 0.72)  | 0.907   |
| <b>Recurrent episodes</b>                                |                      |         |
| Secular trend  | -0.06 (-0.98, 0.87)  | 0.907   |
| Change in level in Q1 2005                               | 0.26 (-4.77, 5.30)   | 0.916   |
| Change in trend after Q1 2005                            | -0.29 (-1.83, 1.25)  | 0.705   |
| Change in level in Q2 2006                               | 1.24 (-2.24, 4.71)   | 0.471   |
| Change in trend after Q2 2006                            | 0.79 (-0.46, 2.03)   | 0.206   |
| <b>All episodes</b>                                      |                      |         |
| Secular trend  | 0.28 (-0.85, 0.29)   | 0.316   |
| Change in level in Q1 2005                               | 1.60 (-4.79, 1.59)   | 0.312   |
| Change in trend after Q1 2005                            | 0.20 (-0.76, 1.16)   | 0.668   |

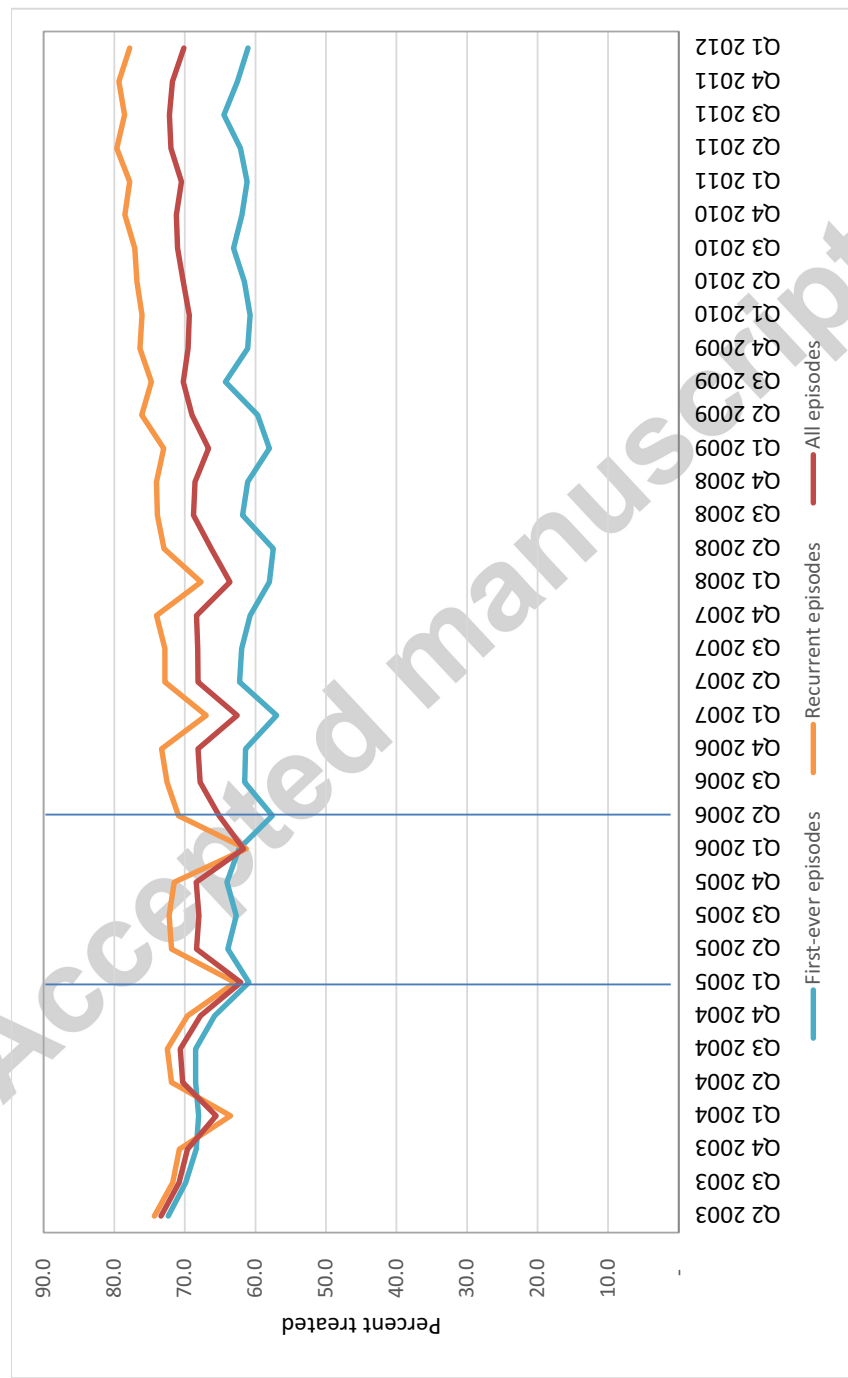
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|-------------------------------|--------------------|-------|
| Change in level in Q2 2006    | 1.15 (-3.33, 1.04) | 0.290 |
| Change in trend after Q2 2006 | 0.38 (-0.40, 1.17) | 0.324 |

**Table 2** Time trend analysis of changes in the proportion of episodes treated following the introduction of QOF performance indicators from April 2006

| <b>First ever episodes of depression with QOF-qualifying codes – proportions treated</b>     | <b>Coefficient (95% CI)</b> | <b>p-value</b> |
|--|-----------------------------|----------------|
| Secular trend  | -0.51 (-0.85, -0.18)        | 0.004          |
| Change in level in Q2 2006   | 1.83 (-0.47, 4.13)          | 0.115          |
| Change in trend after Q2 2006  | 0.77 (0.41, 1.12)           | <0.001         |
| Trend after Q2 2006  | 0.25 (0.15, 0.35)           | <0.001         |
| <b>First ever episodes of depression with Non-QOF-qualifying codes – proportions treated</b> |                             |                |
| Secular trend  | -0.60 (-0.91, -0.29)        | <0.001         |
| Change in level in Q2 2006   | -4.31 (-6.63, -1.98)        | 0.001          |
| Change in trend after Q2 2006  | 0.77 (0.45, 1.09)           | <0.001         |
| Trend after Q2 2006  | 0.17 (0.07, 0.26)           | 0.001          |
| <b>Recurrent episodes of depression with QOF qualifying codes – proportions treated</b>      |                             |                |
| Secular trend  | -0.24 (-0.68, 0.20)         | 0.280          |
| Change in level in Q2 2006   | 5.74 (2.39, 9.09)           | 0.002          |
| Change in trend after Q2 2006  | 0.95 (0.49, 1.41)           | <0.001         |
| Trend after Q2 2006  | 0.71 (0.57, 0.85)           | <0.001         |
| <b>Recurrent episodes of depression with Non-QOF-qualifying codes – proportions treated</b>  |                             |                |
| Secular trend  | 0.08 (-0.31, 0.47)          | 0.672          |
| Change in level in Q2 2006   | -3.37 (-6.17, -0.58)        | 0.020          |
| Change in trend after Q2 2006  | 0.25 (-0.16, 0.66)          | 0.227          |
| Trend after Q2 2006  | 0.33 (0.21, 0.45)           | <0.001         |
| <b>All new episodes of depression with QOF-qualifying codes – proportions treated</b>        | <b>Coefficient (95% CI)</b> | <b>p-value</b> |
| Secular trend  | -0.48 (-0.79, -0.17)        | 0.004          |
| Change in level in Q2 2006   | 5.05 (2.70, 7.39)           | <0.001         |
| Change in trend after Q2 2006  | 1.00 (0.68, 1.32)           | <0.001         |
| Trend after Q2 2006  | 0.52 (0.43, 0.62)           | <0.001         |
| <b>All new episodes of depression with Non-QOF-qualifying codes – proportions treated</b>    |                             |                |
| Secular trend  | -0.19 (-0.49, 0.12)         | 0.221          |
| Change in level in Q2 2006   | -3.69 (-5.93, -1.45)        | 0.002          |
| Change in trend after Q2 2006  | 0.44 (0.12, 0.75)           | 0.009          |
| Trend after Q2 2006  | 0.25 (0.16, 0.34)           | <0.001         |

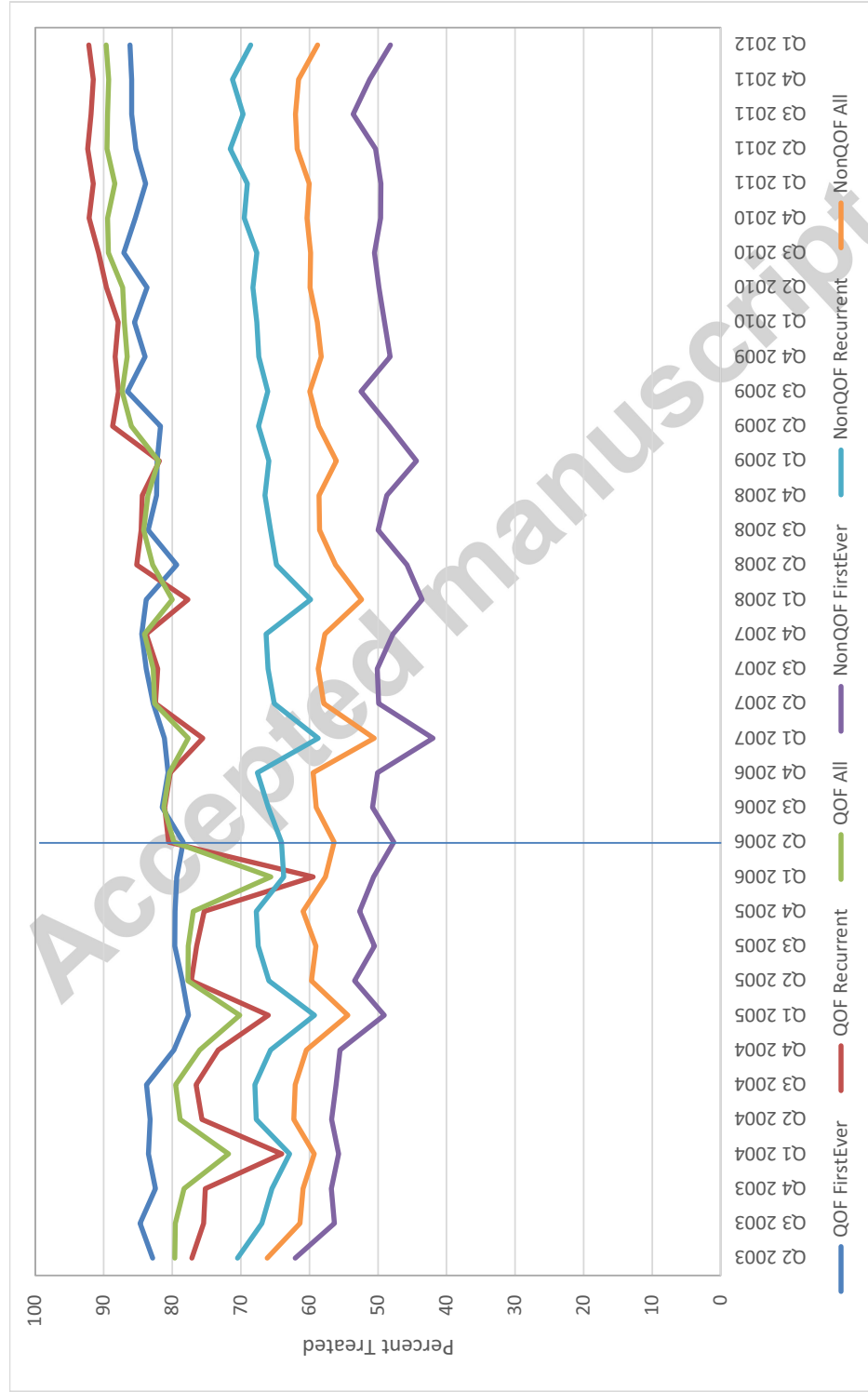
**Highlights**

- Sustained reductions were found in the proportion of incident (first-ever) episodes of depression treated with antidepressants by GPs within 12 months, of 4.2% (95% C.I. 1.0%-7.3%) following introduction of the NICE guideline, and 4.4% (2.3%-6.5%) following introduction of the QOF
- Overall treatment rates for incident episodes fell from 72.5% (70.8%-74.1%) in Quarter 2 (Q2) 2003 to 61.0% (59.3%-62.7%) in Q1 2012
- However, treatment rates for recurrent episodes increased from 74.3% (72.8%-75.8%) to 77.8% (76.5%-79.1%), so overall treatment rates remained around 70% over the 10 years
- Mean prescription duration decreased slightly from 33.5 (33.4-33.5) to 32.0 (31.9-32.1) days over the 10 year period. However mean prescription numbers per patient per year roughly doubled from 2.06 (2.05-2.07) to 3.98 (3.97-3.99), so prescription numbers increased due to longer treatment courses



Q1 = Quarter 1 (January-March), Q2 = Quarter 2 (April-June), Q3 = Quarter 3 (July-September), Q4 = Quarter 4 (October-December).





Q1 = Quarter 1 (January-March), Q2 = Quarter 2 (April-June), Q3 = Quarter 3 (July-September), Q4 = Quarter 4 (October-December). QOF = Quality and Outcomes Framework