Stepped collaborative depression care: primary care results before and after implementation of a stepped collaborative depression programme

Luc G Gidding*, Mark G Spigt and Geert-Jan Dinant

Department of Family Medicine, Maastricht University/CAPHRI School for Public Health and Primary Care, Maastricht, The Netherlands

*Correspondence to Luc G Gidding, Maastricht University, Department of Family Medicine, PO Box 616, 6200 MD Maastricht, The Netherlands; E-mail: Luc.Gidding@maastrichtuniversity.nl

Received July 18 2013; revised October 7 2013; Accepted October 8 2013.

Abstract

Background. Numerous intensive research projects to assess the effects of stepped collaborative care (SCC) for depressed patients have been reported in primary care, yet it is unclear how SCC is sustained in usual care.

Objective. To assess how SCC for depression is actually being used and how it performs in usual primary care by studying medical data that are routinely collected in family practice, outside the research setting.

Methods. Retrospective before and after comparison of electronic medical records (EMR) regarding the implementation of an SCC depression programme in a large primary care organization from 2003 to 2012. Depression care parameters included prevalences, minimal interventions, Beck Depression Inventory-2 (BDI-2), antidepressants, referrals to psychologists and psychiatrists and primary health care consumption.

Results. After programme implementation, differentiation between levels of depression severity increased, more patients were treated with minimal interventions and more patients were monitored with BDI-2. These effects occurred in both nonseverely and severely depressed patients, although they were larger for patients registered as nonseverely depressed. Antidepressant prescription rates and referral rates seemed not to have been influenced by the SCC programme. Health care consumption of the depressed patients increased significantly.

Conclusions. The depression care parameters changed to a different extent and at a different pace than after previous implementation initiatives. Future research should identify whether SCC uptake in primary care is best enhanced by intensive external guidance or by making care providers themselves responsible for the implementation. Analyses of EMR can be valuable in monitoring the implementation effects, especially after research projects are completed.

Key words: Depression/mood disorder, electronic medical records, managed care, mental health, multidisciplinary care, primary care.

Introduction

Depressive disorders are common and contribute considerably to workload and costs in health care. One-year and lifetime prevalences of 5% and 13%, respectively, have been reported in both the USA and Europe (1,2). Depression is projected to become the leading cause of burden of disease globally and depression health care costs are massive (3–6). Most depressed
persons present in family practice, and GPs play a crucial role in assessing symptoms and managing patients based on their initial assessment (7).

Although depression guidelines exist to support GPs, suboptimal psychosocial diagnosis, inadequate treatment and large interpractice quality variations have frequently been found in family practice (8–14). Efforts to improve primary depression care have given considerable attention to the development and implementation of stepped collaborative care (SCC) for depression. SCC offers patients the least intensive and least expensive treatment option that is expected to provide significant health improvement, based on the patient’s clinical situation and symptom severity. SCC includes evaluating treatment regularly to know when to ‘step up’ the treatments and integrating several mental health professionals and other care providers, e.g. practice nurses (PNs) in primary care to support GPs. SCC depression models have proved to be more effective and cost-effective than usual depression care in several settings and are increasingly being implemented in primary care (15–20). The goals of SCC for depression include better differentiation between levels of depression severity, reducing overtreatment of nonseverely depressed patients and avoiding undertreatment of severe depression by preserving specialist resources for patients who most need them.

Several studies investigated whether these goals are being achieved in primary care. However, most studies on SCC were randomized clinical trials (15,21–25) or pragmatic studies on the translation of evidence-based SCC models into practice (26–31). Although these studies showed promising effects, none of them actually assessed SCC in everyday primary care, because they only included patients who met inclusion/exclusion criteria and who were willing to participate, or studied patients and care providers who knew they were being studied, or used data that were not recorded routinely but specifically collected for the study (26–31).

In order to assess how SCC for depression actually performs in practice, it is important to study data that are unbiased by a research setting. We therefore compared routinely collected depression care indicators before and after the introduction of SCC in a primary care organization. The study hypothesis was that SCC would improve relevant depression care parameters when evaluated in a self-sustaining primary care setting.

Methods

Design

A retrospective before (July 2003 through December 2007) and after (January 2008 through June 2012) comparison of electronic medical records (EMR) in family practice regarding the implementation of a stepped collaborative depression care programme.

Setting

The Eindhoven Corporation of Primary Health Care Centres (Stichting Gezondheidscentra Eindhoven) (32) consisted of 10 multidisciplinary primary care centres with about 64 000 patients in the city of Eindhoven, the Netherlands.

Depression care programme

Before 2008, depressed patients were managed on the basis of the Clinical Practice Guideline on Depressive Disorder of the Dutch College of General Practitioners (33). This used diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV). The choice of therapy depended on the characteristics of the individual patient’s depression and the patient’s preferences. Recommended treatments primarily included (i) counselling or psychological intervention by the GP, possibly combined with antidepressants (ADs), (ii) referral for counselling by a psychologist or social worker, possibly with ADs or (iii) referral for psychotherapy or to a psychiatric institute.

In January 2008, an SCC care programme for depressed patients was implemented, which consisted of initial symptom assessment by the GP, based on the DSM-IV criteria for major depressive disorder, and a symptom severity assessment to differentiate between nonsevere and severe depression. Both groups of patients were linked to specific therapeutic options including minimal interventions (steps 1 + 2) for nonsevere depression and steps 3 and 4 for severe depression (Fig. 1). Also, monthly monitoring using the Beck Depression Inventory-2 (BDI-2) was recommended (34). This model was collaborative in that it introduced PNs for psychosocial care (social workers or social psychiatric nurses) to support the GPs. Additionally, from April 2007 onwards, a team of psychologists was employed to work in the same health care centres. This enhanced the access of GPs to psychologists, as until that time it had only been possible to refer patients externally. In the spring of 2009, a psychiatrist was employed as well, primarily for consultation. A multidisciplinary depression team facilitated the programme implementation by providing written information and a limited number of instructive sessions.

The goals of the programme were to (i) differentiate between nonsevere and severe depression, (ii) reduce overtreatment of patients designated as nonseverely depressed, (iii) reduce undertreatment of patients designated as severely depressed and (iv) monitor depressed patients using the BDI-2. A detailed description of the content and the implementation strategy of the programme is provided in online supplementary material Appendix 1.
Data collection

Since 2003, all of the health care centres participating in our study have been using the same system for EMR. Relevant data were extracted from the EMR and imported into SPSS statistical software. All prevalences and care parameters were calculated for each of the eighteen 6-month periods between 1 July 2003 and 1 July 2012 based on all patients of all ages, ever registered. We will refer to the first 6 months of a year as ‘.1’ and the second as ‘.2’.

All patient information was extracted anonymously and patients were identified by their unique patient number. When new patients are registered, they are asked permission for their medical records data to be used for care analyses. The Medical Ethics Committee of the Maastricht University Medical Centre approved this study.

Identification depressed patients

Depressed patients were identified by searching for the International Classification of Primary Care (ICPC) codes P03 for nonsevere and P76 for severe depression. If these codes were registered at least once in the EMR as reason for patient encounter in a 6-month period, patients were designated as depression cases in that period.

To check how accurately GPs used ICPC codes in the EMR, we also analysed the free text of the EMR of all patients. We selected free text lines meant for diagnosis in which the GPs put down at least ‘depr’, ‘Depr’ or ‘DEPR’ without an accompanying ICPC code for depression. Selected and neighbouring free text lines were read by the principal investigator to exclude instances that did not indicate the mood disorder of depression, e.g. ‘ECG shows ST-depression’. During this check, the investigator was blinded to the dates. Whenever a patient had a depression according to the free text but without an ICPC code for depression in the EMR during that 6-month period, nor during the previous or the subsequent 6 months, we designated this as ‘undocumented depression’.

Depression care parameters

We selected the EMR codes for the minimal interventions (Fig. 1: steps 1 + 2). These included step 1 and 2 treatments...
Stepped collaborative depression care provided by psychologists. To identify the percentage of depressed patients monitored with BDI-2, we selected BDI-2 administrations registered as diagnostic measurements, which is the required method of registration to allow automated data extractions. To check how often GPs had registered BDI-2 as a diagnostic measurement, as opposed to only logging it as free text in the EMR, we also selected instances of ‘bdi’, ‘Bdi’ or ‘BDI’ from the free text, and the principal investigator checked whether these concerned BDI-2 administrations. Again, the investigator was blinded to the dates. Unique administrations from both sources were added, resulting in a total BDI-2 count. From the medication list, we selected prescriptions with the Anatomical Therapeutic Chemical classification code N06A. Referrals to psychologists and psychiatrists were extracted from the referral file. Minimal interventions provided by psychologists were only counted as minimal interventions. We analysed health care consumption by calculating the number of contacts with either the GP or a practice nurse (practice consultations, home visits or telephone consultations) per patient per 6 months.

**Statistical analysis**

Descriptive statistics were used to visualize 6-month values in graphs. Prevalences of nonsevere and severe depression were calculated per 6-month period.

Percentages of patients treated with at least one minimal intervention, monitored with at least one BDI-2 administration, prescribed at least one AD or referred to a psychologist or a psychiatrist at least once, as well as the median number of contacts per patient, were calculated for all three patient groups for each 6-month period.

To assess the effect of the implementation of the SCC programme, we calculated cumulative absolute values for two periods; before and after 1 January 2008, by adding up the numbers of patients from the nine 6-month periods. Depression prevalences and care parameters were compared before and after programme implementation using Pearson’s chi-square tests. Median numbers of contacts in the two periods were compared using the Median test. Time trends in depression prevalences and care parameters were compared by calculating 6-month increments (linear regression coefficients) before and after the SCC programme implementation.

**Results**

The total number of patients ranged from 49 841 in 2003.2 to 64 289 in 2012.1. Table 1 shows the total numbers and prevalences of nondepressed, nonseverely and severely depressed patients for three 6-month periods. The free text check yielded very few additional patients that had not been given an ICPC code in the EMR. The number of undocumented depressed patients averaged 3.1% of the total number of depressed patients identified with ICPC codes, per 6-month period. This means that, on average per 6-month period, the GPs did not enter an ICPC code in the EMR for 1 out of every 34 depressed patients.

**Depression severity**

Table 2 compares the periods before and after the implementation of the SCC programme. The period prevalences for nonsevere depression were 0.39% and 0.63%, respectively, while the corresponding prevalences for severe depression were 1.39% and 1.69%, respectively. Hence, a patient was 1.3 times less likely to be registered as severely depressed after programme implementation than before (Fig. 2).

---

**Table 1. Absolute numbers and prevalences of patient populations**

<table>
<thead>
<tr>
<th>Development patient populations</th>
<th>ICPC-populations(^a) N (%)</th>
<th>Free text in EMR check(^b) N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nondepressed patients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003.2</td>
<td>49 211 (98.7%)</td>
<td>49 808 (99.9%)</td>
</tr>
<tr>
<td>2008.1</td>
<td>52 731 (97.9%)</td>
<td>53 851 (100%)</td>
</tr>
<tr>
<td>2012.1</td>
<td>62 793 (97.7%)</td>
<td>64 243 (99.9%)</td>
</tr>
<tr>
<td><strong>Nonsevere depression</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003.2</td>
<td>144 (0.3%)</td>
<td>33 (0.1%)</td>
</tr>
<tr>
<td>2008.1</td>
<td>312 (0.6%)</td>
<td>16 (0.0%)</td>
</tr>
<tr>
<td>2012.1</td>
<td>456 (0.7%)</td>
<td>46 (0.1%)</td>
</tr>
<tr>
<td><strong>Severe depression</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003.2</td>
<td>521 (1.0%)</td>
<td>NA</td>
</tr>
<tr>
<td>2008.1</td>
<td>877 (1.6%)</td>
<td>NA</td>
</tr>
<tr>
<td>2012.1</td>
<td>1125 (1.8%)</td>
<td>NA</td>
</tr>
</tbody>
</table>

\(^a\)Based on ICPC codes in EMR.

\(^b\)Not based on ICPC codes; no depression subgroups can be identified.
### Table 2. Assessment and comparison of before and after SCC implementation periods

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cumulative value</td>
<td>6-month increase</td>
<td>Cumulative value</td>
</tr>
<tr>
<td>Nondepressed patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>441 096</td>
<td>–</td>
<td>524 488</td>
</tr>
<tr>
<td>Treated with minimal</td>
<td>0.05%</td>
<td>0.01%†</td>
<td>0.55%</td>
</tr>
<tr>
<td>intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitored with BDI-2</td>
<td>0.01%</td>
<td>0.00%</td>
<td>0.08%</td>
</tr>
<tr>
<td>Prescribed antidepressants</td>
<td>2.10%</td>
<td>0.03%</td>
<td>2.43%</td>
</tr>
<tr>
<td>Referred to psychologist</td>
<td>0.20%</td>
<td>0.04%*</td>
<td>0.79%</td>
</tr>
<tr>
<td>Referred to psychiatrist</td>
<td>0.06%</td>
<td>0.00%†</td>
<td>0.17%</td>
</tr>
<tr>
<td>Median no. of contacts</td>
<td>1.0 (0.0–3.0)</td>
<td>Constant</td>
<td>1.0 (0.0–3.0)</td>
</tr>
<tr>
<td>with GP/PN per 6 months (IQR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonsevere depression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>1747</td>
<td>–</td>
<td>3405</td>
</tr>
<tr>
<td>Prevalence</td>
<td>0.39%</td>
<td>0.02%**</td>
<td>0.63%</td>
</tr>
<tr>
<td>Treated with minimal</td>
<td>2.35%</td>
<td>0.15%</td>
<td>16.12%</td>
</tr>
<tr>
<td>intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitored with BDI-2</td>
<td>0.52%</td>
<td>0.04%</td>
<td>11.54%</td>
</tr>
<tr>
<td>Prescribed antidepressants</td>
<td>38.69%</td>
<td>0.10%</td>
<td>28.08%</td>
</tr>
<tr>
<td>Referred to psychologist</td>
<td>6.35%</td>
<td>1.08%*</td>
<td>15.42%</td>
</tr>
<tr>
<td>Referred to psychiatrist</td>
<td>1.20%</td>
<td>−0.11%</td>
<td>2.50%</td>
</tr>
<tr>
<td>Median no. of contacts</td>
<td>4.0 (2.0–4.0)</td>
<td>0.00</td>
<td>5.0 (3.0–9.0)</td>
</tr>
<tr>
<td>with GP/PN per 6 months (IQR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe depression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>6232</td>
<td>–</td>
<td>9059</td>
</tr>
<tr>
<td>Prevalence</td>
<td>1.39%</td>
<td>0.05%*</td>
<td>1.69%</td>
</tr>
<tr>
<td>Treated with minimal</td>
<td>0.72%</td>
<td>0.03%</td>
<td>8.95%</td>
</tr>
<tr>
<td>intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitored with BDI-2</td>
<td>0.77%</td>
<td>0.18%†</td>
<td>6.36%</td>
</tr>
<tr>
<td>Prescribed antidepressants</td>
<td>61.52%</td>
<td>−0.23%</td>
<td>56.56%</td>
</tr>
<tr>
<td>Referred to psychologist</td>
<td>3.50%</td>
<td>0.53%**</td>
<td>9.02%</td>
</tr>
<tr>
<td>Referred to psychiatrist</td>
<td>1.80%</td>
<td>0.02%</td>
<td>3.75%</td>
</tr>
<tr>
<td>Median no. of contacts</td>
<td>4.0 (2.0–7.0)</td>
<td>Constant</td>
<td>5.0 (2.0–9.0)</td>
</tr>
<tr>
<td>with GP/PN per 6 months (IQR)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IQR = interquartile range.
†P < 0.05, *P < 0.005, **P < 0.001.
Minimal interventions

We observed a large increase in minimal interventions in the SCC period, in both nonseverely and severely depressed patients (Fig. 3). In the SCC period, 16.12% of the nonseverely and 8.95% of the severely depressed patients had one or more of these interventions registered as treatment (Table 2).

Beck depression inventory

There were 1316 BDI-2 administrations registered as diagnostic measurements, while free text analysis of the EMR yielded another 468 BDI-2 administrations. Before January 2008, BDI-2 was hardly ever administered: <1% of patients in both the nonseverely and severely depressed groups (Table 2, Fig. 3). After programme implementation, higher proportions per period and larger 6-month increments were observed, especially for nonsevere depression.

Antidepressant prescriptions

In the depressed patient population, there were statistically significant differences between the pre- and postimplementation periods in the proportion of patients prescribed ADs (both \( P < 0.001 \); Table 2, Fig. 4). In the nonseverely depressed group, this difference was more than 10%, reaching 28.08% in period two. However, considering there were no significant differences between the time trends in both periods for both depressed groups (\( P \)-values 0.141 and 0.175), the decreases in AD rates seemed not to have been caused by the SCC implementation but were initiated previously.

Referrals to psychologists

Although the percentages of patients referred to psychologists in both depression groups more than doubled in period two,
the implementation of the programme appeared to neither cause this nor influence the referral patterns, as the 6-month increments for both depressed patient groups were not significantly different between the two periods (P-values 0.088 and 0.312, Table 2, Fig. 5).

Referrals to psychiatrists
While the percentages of depressed patients referred to psychiatrists were generally low (Table 2), Fig. 5 shows increasing trends for both depression groups, especially from 2009.1 onwards, with, for instance, a 6-month percentage of 5.42% of all severely depressed patients being referred in 2012.1.

Health care consumption
Figure 6 visualizes the median number of contacts with the GP/PN per 6-month period. The nondepressed patients had fewer contacts than the depressed ones during the entire study period, with a median of one contact per 6 months in the two

![Figure 3](image-url)
periods. After programme implementation, there was a significant increase for both depression groups compared with the pre-implementation period (both \( P < 0.001 \); Table 2, Fig. 6).

**Discussion**

**Summary of main results**

Several depression care parameters changed significantly after implementation of the SCC programme. The changes were in the desired direction in terms of SCC goal achievement, although there is still room for improvement. After the implementation, larger proportions of the depressed patients were registered as nonseverely depressed, were treated with minimal interventions and were monitored with BDI-2. These effects occurred in both nonseverely and severely depressed patients, although they were larger for nonseverely depressed patients. AD prescription rates and referral rates seemed not to have been influenced by the SCC programme. Health care consumption increased significantly in both depressed patient groups.
Undocumented depression

The number of undocumented depressed patients per 6-month period averaged 3.1% of the total number of depressed patients identified with ICPC codes. We were particularly interested in this percentage, to assess the extent of strategic labelling of depression. This can occur, for instance, when a GP does not register a case of depression by the appropriate ICPC code, to avoid having to adhere to the SCC treatment structure. However, the small percentage we found indicates that ICPC coding was being used very consistently in these EMR to indicate the reason for encounter when GPs recognized depressive symptoms. This is remarkable, especially for depression, where there appear to be barriers that make GPs reluctant to register the ICPC codes, e.g. fear of patient stigmatization (35). It contradicts previous findings in which ICPC coding appeared not well documented and confirms the value of using ICPC codes for EMR analyses (36).

Interpretation of depression care parameters

The BDI-2 was hardly used before 2008 and for <17% of the depressed patients afterwards. This indicates that GPs probably

Figure 5. Referrals to psychologists and psychiatrists.
only use such instruments when they are asked to. Otherwise, it seems that GPs do not think they are sufficiently beneficial or think they are too time-consuming to administer, as has been reported before (35,37). To really improve patient monitoring, it should become easier for GPs to administer questionnaires, perhaps with automated web-based versions that patients can fill in at home.

As regards AD prescriptions, there was a large difference between the nonseverely and severely depressed patient groups; even in 2003.2, AD prescription rates decreased in both groups although this was already initiated before 2008 and prescription rates were relatively low compared with those reported by other international studies, especially for nonsevere depression (28,38,39). Nevertheless, previous Dutch EMR research found

Figure 6. Health care consumption.
similar prescription rates, as well as similar decreasing trends (40,41). This finding seems to reflect the recommendation to be reluctant to prescribe ADs when symptoms are nonsevere, as has been recommended in the depression guidelines of the Dutch College of GPs since 2003 (42–44).

Changes in referrals seemed to be access driven rather than SCC driven, e.g. referrals increased substantially when psychologists were employed by the organization and, contrary to SCC principles, the referral rate was higher in the non severely depressed group than in the severely depressed patients (Fig.5, line 1 versus line 2).

Health care consumption increased in both depression groups. This reflects the objectives of the Dutch government and health insurance companies to delegate certain procedures from specialist care to primary care.

Strengths and limitations
This study was based entirely on medical data already collected routinely. This enabled us to assess large patient numbers over 9 years. Although this source has advantages as it provides usual care data not influenced by research settings and it includes patient groups not willing to actively participate in research, its major shortcoming is the absence of sufficient measurements of symptom recovery. This means that GPs use different methods to monitor how their patients recover. If we wish to increase the relevance of EMR research, we should develop strategies in which registration of treatment outcomes is actually convenient and uncomplicated for GPs, not just an intrusive administrative obligation. This could be achieved by including self-monitoring by patients with automated data transfer to the EMR (45).

Relevance for health care
This study is relevant for health care on two different levels. Firstly, it can be relevant for primary care organizations and health care providers who consider implementing (elements of) an SCC depression programme. The primary care organization in our study chose a specific implementation strategy. Although a multidisciplinary depression programme team provided the individual health care centres with the SCC programme, the team subsequently transferred implementation responsibilities to the care providers themselves, designating GPs and PNs at each centre to coordinate bottom-up SCC implementation. The implemented SCC model contained three important collaborative care roles including the GPs, the PNs as care managers and the psychologists and psychiatrist as mental health specialists (13,46). Additionally, a reimbursement structure supported the SCC implementation, which seems a crucial factor for successful implementation and was a main success factor in adapting the Depression Improvement Across Minnesota, Offering a New Direction (DIAMOND) initiative from the Improving Mood–Promoting Access to Collaborative Treatment (IMPACT) study (21,47).

Yet, the implementation strategy used in our study seemed to imply less intensive support and less close supervision than previous implementation initiatives. For instance, the intensity of DIAMOND implementation activities were substantial including a sequence of training activities, surveys, contact calls, networking opportunities, monthly review of data by a measurement analysis group with follow-up discussions, follow-up of warning signs regarding implementation and systematic patient follow-up tracking and monitoring with a registry (46,48). Other SCC implementations including an IMPACT post study, included elements like assigning researchers to support the care teams intensively, providing multiple structured training and implementation refinement cycles, weekly work group meetings, researchers monitoring patients during follow-up and registering outcomes in EMR, continued education, depression care managers who inform all patients about treatment options and separate web-based tracking systems facilitating treatment decisions (26,28,30,31,49,50). The Re-Engineering Systems for Primary Care Treatment of Depression (RESPECT-Depression) project seemed to have a similar implementation intensity but worked exclusively with clinicians who had a special interest in depression care innovation (51).

The primary care organizations that participated in these research projects of limited duration with such substantial external support achieved more desirable SCC outcomes compared with our results, and achieved these faster (31,52). The question remains whether extensive external guidance and tools ultimately enhance or obstruct the usual care continuation, after the research project is completed. SCC implementation initiatives coordinated by care providers themselves might take longer to achieve improvements, but be more successful in the long run because they become the care providers’ own responsibility and are ultimately more likely to be perceived as usual care rather than yet another research project.

Additionally, the implementation of a new care programme for a major primary care issue like depression can be daunting for family practices. Before the implementation, substantial financial investments and organizational adaptations are necessary, especially when implementation strategies are chosen that rely on long-term intensive external support and specifically developed tools. Yet, uncertainty of programme effectiveness and of health care providers’ ability and willingness to change routines can make primary care organizations decide not to take the risk. Our study shows that SCC implementation is possible and can show desirable results even when implementation intensity is minimal and essentially without external support.

Especially for primary care organizations that do wish to implement SCC but do not have many resources or have health
care providers not especially interested in depression innovation, these results can be reassuring and make SCC more accessible. Our study broadens the range of implementation evaluations that seemed to be primarily made up of short-term, high-intensity, externally guided efforts.

Secondly, our study is relevant for researchers wanting to evaluate SCC implementation. Our evaluation is different from most implementation evaluations because we were able to compare SCC results with a historical control group and we monitored SCC indicators over a relatively long period (4.5 years), unbiased by a research setting, using the routinely used EMR. Additionally, we visualized indicator development in the post implementation period, whereas prior evaluations mostly assessed post implementation periods as a whole that can complicate interpretation of long-term sustainability. Possibly, our analyses strategy can lead to even more relevant evaluations in the future.

Conclusions
The introduction of the SCC programme for depression as usual care in our study changed several depression care parameters, though to a different extent than previous implementation initiatives. Future research should identify whether SCC uptake in primary care is best improved by external guidance or by making care providers themselves responsible for the implementation. EMR analyses can be valuable in monitoring the implementation effects, especially after research projects have been completed.

Supplementary material
Supplementary material is available at Family Practice online.

Acknowledgement
None.

Declaration
Funding: none.
Ethical approval: the Medical Ethics Committee of the Maastricht University Medical Centre approved this study.
Conflict of interest: none.

References
20. Thota AB, Sipe TA, Byard GJ et al.; Community Preventive Services Task Force. Collaborative care to improve the management of


