Systematic computerised cardiovascular health screening for people with severe mental illness.

David Yeomans (1), Kate Dale (2), Kate Beedle (3)

(1) Consultant psychiatrist, Leeds and York Partnership NHS Foundation Trust. David.Yeomans@nhs.net
(2) Mental/physical health project Lead, Bradford District Care Trust
(3) Data quality specialist, West & South Yorkshire & Bassetlaw Commissioning Support Unit.

Abstract

Aims and method. People with Severe Mental Illness (SMI) die young with mortality rates four times higher than average, mainly from natural causes. We developed a physical health screening template for use with primary care information systems and evaluated its introduction across a whole city against standards recommended by the National Institute for Health and Care Excellence (NICE) for physical health and cardiovascular risk screening.

Results. A significant proportion of SMI patients were excluded from the SMI register. Only a third of people on the SMI register had an annual physical health check recorded. The new computer-based physical health screening template was taken up by 75% of GP practices and was associated with better quality screening than usual care, doubling the rate of cardiovascular risk recording and more than doubling the early detection of high cardiovascular risk.

Clinical implications. A computerised annual physical health screening template can be introduced to clinical information systems to improve quality of care.

Introduction

People with diagnoses of severe mental illness (SMI) such as schizophrenia and bipolar disorder die 15-20 years earlier than the general population, mainly from natural causes. In particular, they have an increased risk of cardiovascular disease (CVD) (1). This health inequality was reviewed in 2006 by the Disability Rights Commission in a report called ‘Equal treatment: Closing the gap’ (2). Deprivation and lifestyle were major factors, but not sufficient to account for the health inequalities. The report proposed that ‘Diagnostic Overshadowing’, or clinical blindness to physical problems in people with mental illness was a form of inadvertent discrimination by health professionals that led to under-diagnosis, under-investigation and under-treatment of potentially preventable or treatable physical disease in people with mental illness. The Royal College of Psychiatrists has made recommendations to address physical health inequalities through better training of psychiatrists and better collaboration with primary care (3). Psychiatrists believe that
physical health is important and are aware that pharmacological treatment is another factor producing a higher risk of mortality. Antipsychotic medications can cause sudden cardiac death (4) and diabetes (5), and have a dose dependent relationship to mortality (6).

Early death in people with severe mental illness (SMI) has been recognised since the 1990s (7, 8). Since then evidence has grown that there are high death rates from cardiovascular disease and other natural causes (9, 10, 11, 12). The risk of dying from cardiovascular disease alone significantly exceeds the risk of dying from suicide (11, 13). In contrast to suicide risk assessment and prevention, cardiovascular risk assessment is relatively well evidenced, with clinical algorithms for cardiovascular risk prediction and a range of clinical interventions for primary prevention, such as lifestyle advice and treatment for elevated blood pressure and lipids. However routine screening for CVD risk is less common than screening for suicide risk, especially in secondary care. In primary care however screening for CVD is commonplace.

Aims

We planned to carry out a service evaluation of the quality of physical health monitoring of all registered SMI patients in the Bradford & Airedale region using the standards recommended by the National Institute for Health and Care Excellence (NICE) for schizophrenia (14). We designed, implemented and promoted a computer template for the primary care information system to support a standard annual physical health check for SMI patients. We wanted to see if SMI patients offered the template-based screening received better or worse quality care than patients who were not offered the template-based screening in a side by side comparison.

All people diagnosed with a severe mental illness like schizophrenia should have an annual physical health check that includes metabolic screening (15). NICE has also recommended a standard cardiovascular disease risk calculation as part of the annual health check since 2002 (16). In this study we focus on the cardiovascular risk assessment element of the computerised physical health check template.

Method

All but one GP practice in the Bradford region used the same computer system, SystmOne, allowing data on almost the whole SMI register to be anonymously and centrally collated. This would have been a huge task if done manually using paper-based checklists.

We designed a physical health screening template for the primary care computer system to help GPs to carry out a high quality annual health check using standards recommended by NICE for physical health checks in schizophrenia (14). We also designed it to help GPs submit data returns for the Quality and Outcomes Framework (QoF) (17) which makes payments to GP practices for specific tasks including physical health monitoring in SMI.

The physical health screening template is two pages long (with two further pages of explanation and information). It is updated by the data quality team if NICE standards and QoF criteria change. It guides GPs to collect the clinical information needed to identify a range of physical morbidity and health risks, including cardiovascular risk, without needing to learn the detailed NICE guidance or the requirements of QoF. The template looks like every other template on the system and fits into GP’s normal workflows. It automatically
includes any pre-existing data from the patient record in order to increase efficiency. It facilitates the allocation of tasks to the primary care team (e.g. ordering blood tests). Results are fed back through the usual channels in the computer system. This integrates physical health monitoring for SMI patients into normal practice.

We then began a process of promoting the template to GP practices in 2011-2012. All 80 practices using SystmOne were contacted and 48 received a 30 minute training session for practice staff delivered by the data quality specialist (KB) and/or the physical health project lead (KD).

We carried out the evaluation in a naturalistic setting, using data that were recorded in the course of day to day practice, by primary care teams. Almost all practice activity is recorded on the computer system, and our method necessarily disregards any activity not recorded in this way. We used ‘Quality and Outcomes Framework’ or QoF codes (15) to construct reports. QoF codes identify elements of activity in the primary care information system and are used to generate incentive payments to GP practices in order to improve service quality. There are specific QoF codes for physical health monitoring in SMI and also for the details of clinical historical data, examination findings and test results. We wrote our reports in the SystmOne reporting module.

The reports captured activity for all patients registered with SystmOne GPs in the Bradford & Airedale region. We compared the usual practice of annual monitoring of physical health of SMI patients in primary care with the new practice of using a standard physical health screening template in the annual check-up.

We chose to use the standard QRisk2 cardiovascular risk calculator in our template (18). The information system already had rules that calculated “default” QRisk2 scores even without health data entered: Average population data are inserted into blank fields within the default QRisk2 calculator, meaning that the scores potentially under-represent risk in a high risk population such as SMI patients. We created a new report to identify “data-rich” QRisk2 scores in which the following four factors were always recorded: systolic blood pressure, HDL:cholesterol ratio, smoking status and Body Mass Index (BMI). In doing this we aimed to audit calculations that were more accurate than those provided as a default by the computer system.

We were aware that there was a second Joint British Societies CVD risk calculator available to GPs on the system and recorded when it was used.

We had support from a number of primary care leaders, including nurses and doctors. We also had support from the mental health services in Bradford District Care Trust and the West & South Yorkshire & Bassetlaw Commissioning Support Unit. Ethical boundaries on the use of ‘big data’ are not yet standardised and we thought it appropriate to have oversight for the project from the relevant employers. No patient identifiable data were used in the evaluation.

Results

Results were derived from reports written for this evaluation in the SystmOne reports module. We used all relevant QoF codes recorded in the system to construct the reports.
Tests for significance in our comparisons were calculated using the chi-squared test function in Microsoft Excel.

On 1st July 2013, there were 568,677 patients registered fully with GPs in Bradford and Airedale. There were 5056 people on the Severe Mental Illness (SMI) register. The SMI register was incomplete because 576 patients (10.2% of the potential register) were excluded after initial allocation for various reasons. This compares to only 3.3% exclusions of potential diabetic register patients in the region (p<0.01). Only 32% of people on the SMI register received an annual physical health check recorded with by QoF code.

Sixty (75%) general practices used the screening template at least once during the 12 month period 1/7/12-1/7/13. (Twelve of these had not received the direct health promotion session, but had discovered the template on the system independently). Twenty practices included at least ten patients.

335 template-based physical health reviews were carried out. This amounted to 20.5% (335/1631) of patients given a physical health review in the 12 month period. 23% (77/335) of SMI patients with a template-based review had a "data-rich" Qrisk2 recorded compared to only 8.5% (120/1296) of patients with an annual physical review without a template-based health check (p<0.01). When the template was used, the proportion of QRisk2 scores >20% (indicating a need for primary prevention even without overt pathology) was higher than in reviews without the template (3.9% v 1.5% p<0.01), indicating a significantly higher detection rate of at-risk patients using the template.

The proportion of SMI patients with a QRisk2 >20% was 16.8%. This is somewhat higher than the 9.3% rate in the general adult population in Bradford & Airedale derived from the GP database (p<0.05) and the 10.5% population estimate from Dalton et al (19).

Overall, only 7% (352/5056) of SMI register patients received a “data-rich” QRisk2 score, indicating a low rate of screening for cardiovascular risk. The alternative Joint British Societies CVD risk calculator was used for 2.4% of patients on the SMI register, so less than 10% of patients overall received good quality CVD risk estimations.

Use of the annual physical health check template was also associated with an increased proportion of patients receiving individual measures (coded for by QoF) relevant to calculating cardiovascular risk (p<0.01). Table 1. compares the frequency of recorded measures that are used in the calculation of cardiovascular risk for the whole SMI register and for those patients that had a template-based review.
Clinical history and examination measures were conducted for about three quarters of patients not using the template, but fewer than half had the necessary blood tests for lipids. In contrast, three quarters of patients with a template-based review received the recommended lipid screening and over 90% had the history and physical examination measures. This suggests that use of the template had the effect of encouraging primary care teams to collect the data needed to make high quality cardiovascular risk assessments.

Discussion

Our data are derived from an administrative system rather than a research protocol and therefore rely on clinicians’ behavior, the IT system architecture and reporting capabilities. SystmOne has a powerful reporting module that makes use of QoF codes. Reports can be built that accurately represent the physical health screening activity offered to patients. It is likely that all activity recorded on the system was captured and this accurately reflects the real rate of physical health checks recorded in primary care. The reports could be used in future to audit changes in the rates of physical health checks.

Based on our reports we found that people with SMI experienced disadvantages in relation to health screening compared with other high risk groups. Fewer people with severe mental illness were included in the SMI register compared to the proportion of diabetics included in the diabetes register. Despite long standing evidence of high physical and cardiovascular health risks, SMI patients are less likely than diabetics (another high risk group) to have access to physical health checks in primary care. The death rate in adults with SMI is four times higher than the general population (20) and health screening is potentially life-saving in this high risk group.

Although there are areas of good practice, the systematic prevention and treatment of physical disease in people with SMI has received relatively little attention. Many guidelines have been produced but none have been adequately implemented (21). De Hert et. al. (22) have helpfully summarised a range of actions that could be taken, but were unclear on the

Table 1.

<table>
<thead>
<tr>
<th>Proportion of patients with measures recorded</th>
<th>Whole SMI Register</th>
<th>SMI Register with template review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic blood pressure</td>
<td>75%</td>
<td>97%</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>71%</td>
<td>91%</td>
</tr>
<tr>
<td>HDL:Cholesterol ratio</td>
<td>45%</td>
<td>76%</td>
</tr>
<tr>
<td>Smoking status</td>
<td>72%</td>
<td>92%</td>
</tr>
</tbody>
</table>
mechanism to bring about these quality improvements. Health screening using a paper based template is one possible mechanism and has been promoted by the Royal College of Psychiatrists (using the Positive Cardiometabolic Health (Lester) Algorithm (23)) and Rethink, a campaigning mental health charity (24, 25). It is hard to see how these screening templates can be systematically implemented in paper form. Our study took the step of integrating a standard health screening tool into the primary care information system, so it could be automated, in the hope that this would facilitate the practice of physical health screening in SMI.

Overall we found that adherence to the NICE standard of one physical check-up per year for SMI patients was lamentably low at 32%. This could be due to low adherence to the standard for health checks or low adherence to recording them with the correct QoF code. If GPs are carrying out work without recording it properly then there is an opportunity to improve practice by better recording. Similarly, CVD risk assessment received a low priority with less than 10% of patients on the SMI register getting a high quality “data-rich” risk calculation. If this is merely a data quality issue, then better recording would help. Our method depended upon accurate data recording and could not tease out how much unrecorded activity may have taken place.

Uptake of the template was about 1 in 5 of all annual physical reviews, which is encouraging given that there was no incentive to use the template other than to improve quality of care. We did not employ any performance targets.

Use of the template was associated with more than double the rate of adherence to the NICE standards in relation to the calculation of cardiovascular risk. The template was also associated with more than double the rate of detection of significant cardiovascular risk. These findings suggest that by making a computerised health screening tool available, GP teams were aided to carry out higher quality physical health reviews and detect more patients at risk of early cardiovascular death.

NICE and QoF have not yet delivered universal physical health checks for people with severe mental illness in primary care. Although our computer-based template appears to increase quality it may not be easy to replicate this work in future, since the standard QoF incentive for annual health checks in primary care will be removed in 2014. Instead, NHS England will write a new CQUIN (Commissioning for Quality and Innovation) incentive that will encourage mental health trusts to monitor and improve the physical health of SMI patients (26). The problem with this secondary care approach is that mental health trusts lack the clinical skills in physical health care and the sophisticated information systems present in primary care. However, it should still be possible to introduce health screening templates into mental health information systems and build reports from them.

We found that the practices that received promotion of the template to were more likely to use it, so stronger promotion of a computerised physical health check template could increase the uptake. It is likely that secondary care trusts will implement performance targets to achieve the new CQUIN payment.
It is not yet clear if screening for cardiovascular risk in people with SMI can lead to a reduction in risk of early death, although structured intervention programs based on screening have demonstrated small health gains (27).

The computerised physical health screening template is a device that makes high quality practice more convenient than lower quality practice. If it is easier to do a good job than a poor one, patients should benefit.

Notes

SystmOne users can ask for information about the template from Kate Beedle at data.quality@wsybcusu.nhs.uk. A version for EMIS WEB has been developed.

Declaration of interest. The authors have provided a single consultation to another primary care organisation that has used the template.

References


14. NICE. *Schizophrenia Guideline 82*. www.nice.org.uk/CG82

15. NICE *Lipid modification guideline 67*. www.nice.org.uk/CG67

16. NICE *Schizophrenia guideline 1*. www.nice.org.uk/CG1

   


